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# Some Properties of Burmese Script

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# 0 Introduction

## 0.1 Indic Scripts

- The group of phonogramic script systems which are descendants of the script of Aśokan prākṛit inscriptions in 3cBC. (Sawada 2011: 48, originally in Japanese, slightly modified)
- Indic scripts in Southeast Asia developed from the ‘extensive’ use of (Pallava-)Grantha script, i.e. the application of the script originally invented for Prākṛit and Sanskrit to local languages. (Sawada 2008: 456, originally in Japanese)

## 0.2 Burmese language and Burmese script

### *Burmese language*

- Burmic, Burmish, Lolo-Burmese, Tibeto-Burman (Nishi 1999)
- ✧ Burmish group consists of Burmese dialects such as Yangon-Mandalay, Dawe (Tavoyan), Rakhine (Arakan), Intha, as well as Maruic languages such as Lhaovo (Maru), Lacid (Lashi), Zaiwa (Atsi), Ngochang (Nishi 1999)

### *Burmese script*

- Assumed to be the result of the application of Mon script to Burmese language
- The oldest dated document in Burmese language is *Rājakumār (Myazedi) Inscriptions* (AD1112).

- Discrepancies between spelling and sounds of Modern Burmese due to historical sound change, observable from the following data:
  - Transcriptions with Chinese Characters of *Miǎn-Tiàn-Guǎn-Yì-Yǔ* 緬甸館訳語 compiled in Ming period, AD15c (Nishida 1972)
  - Borrowing words from Aryan languages (mainly Pāli) into Burmese
  - Borrowing words from Burmese into Shan
  - Phonological correspondence between Burmese and other Burmish languages
- Thought to be the base of such scripts as Ahom, Shan and Tai-Na

# 1 Retention of *virāma* အသံတံ

## 1.1 Akṣara segmentation

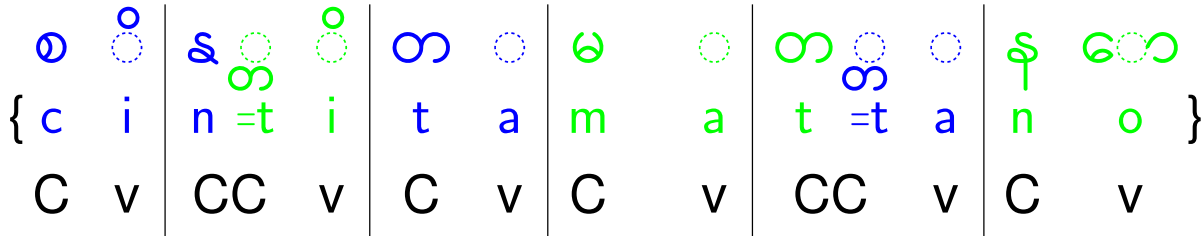
Pāli. *cintita-m attan-o* (thought-ACC self-GEN) ‘one’s own thought’



The image shows the Pāli script for the phrase 'cintita-m attan-o'. The script is written in a stylized, circular form. The characters are: 'စိ' (cintita), 'တ' (m), 'အ' (attan), 'တ' (o). The diacritics are represented by small circles above and below the characters. The first character 'စိ' has two circles above it, the second 'တ' has one circle above it, the third 'အ' has one circle above it, and the fourth 'တ' has one circle above it. The circles below the characters are: one below 'စိ', one below 'တ', one below 'အ', and one below 'တ'.

(*Rājakumār Inscription*, Pillar A, Pāli Face, l.19)

- Akṣara segmentation segments a sound sequence into akṣaras, i.e. units which end in a vowel: CV, CCV, CCCV.



- A sequence of consonants is notated by a **conjunct consonant letter (ligature)**, which essentially is a cluster of consonant glyphs stacked vertically: e.g.  $\text{န}$  {n=t},  $\text{တ}$  {t=t}
- An akṣara (delimited by | s) often does not coincide with a syllable notation (indicated by coloring).

## 1.2 Syllable-based segmentation

Old Burmese ‘one thousand six hundreds (twenty-eight)’

တစ်ထောင်ခြောက်ရာ

(*Rājakumār Inscription*, Pillar A, Burmese Face, ll.1–2)

cf. ModB.

တစ်	ထောင်	ခြောက်	ရာ	
/ tǎ	t <sup>h</sup> auN <sup>L</sup>	c <sup>h</sup> auʔ	ya <sup>L</sup>	/
one	thousand	six	hundred	

**Virāma** ဝ် {} (called အသတ် /ʔăṭaʔ/ ‘killer’ in Burmese) explicitly indicates final consonant letters, i.e. the end of closed syllable notation.

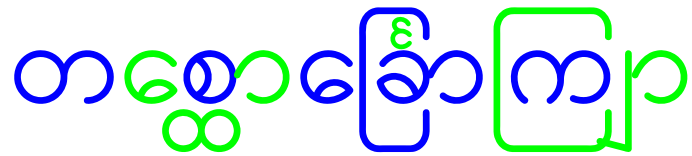
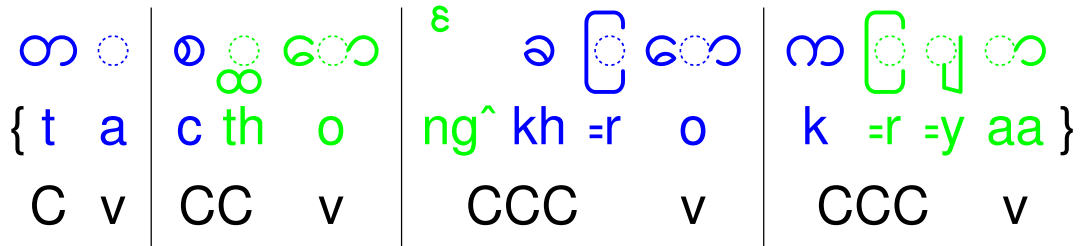
တ	ဝ	စ	ဝ်	ထ	ဝေ	င	ဝ်	ခ	[	ဝေ	က	ဝ်	ရ	ဂျ	ာ		
{	t	a	c	’	th	o	ng	’	kh	=r	o	k	’	r	=y	aa	}
C	v	C	’	C	v	C	’	CC	v	C	’	CC	v				

Virāma is essential to syllabic segmentation in Burmese script because the consonant letters without *virāma* are taken as ‘non-final’.

တ	ဝ	စ	ဝ်	ထ	ဝေ	င	ဝ်	ခ	[	ဝေ	က	ဝ်	ရ	ဂျ	ာ		
{	t	a	c	a	th	o	ng	a	kh	=r	o	k	a	r	=y	aa	}
C	v	C	v	C	v	C	v	CC	v	C	v	CC	v				



Akṣara segmentation does not fit in with Burmese. If ‘one thousand six hundreds’ is written using akṣara segmentation, the spelling will become tremendously complicated.



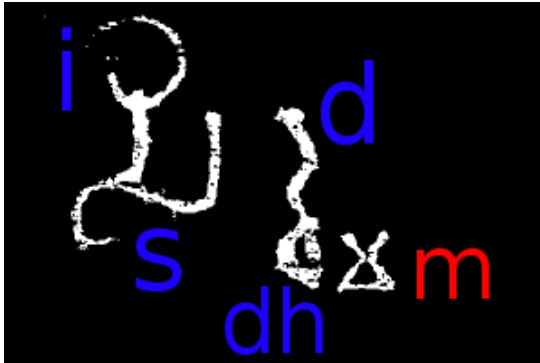
Compare with the actual spelling:



### 1.3 History of *virāma*

In Pāli, consonants do not appear in absolute final position. But in Sanskrit (and also some variants of Prākṛit) consonants can appear in the position, though it is rare.

To notate such consonants, for which neither single nor conjunct consonant letters are unavailable, the convention of subscript consonant letter were introduced.



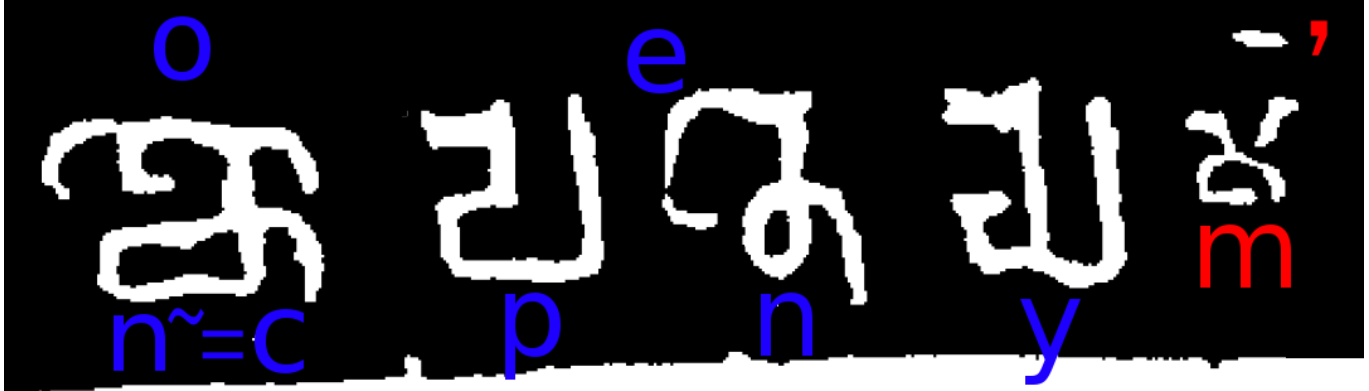
An example of subscript consonant letter

{sid=dham}

Prākṛit inscription of the 10th cave, Nāsik, Maharashtra, India. ca.AD1c.

(*Epigraphia Indica*. Vol. VIII. Plate 6.)

In the late AD4c ~ 5c, a short horizontal line (maybe functioned as a reference line) was added above the subscript consonant letter.



An example of *virāma*

{(ñ=c) opaneyam'}

Sanskrit copper plate inscription of King Chandravarman of Kalinga, Bobbili, Andhra Pradesh, India.  
1st half of AD5c. (*Epigraphia Indica*. Vol. XXVII. Plate 8)

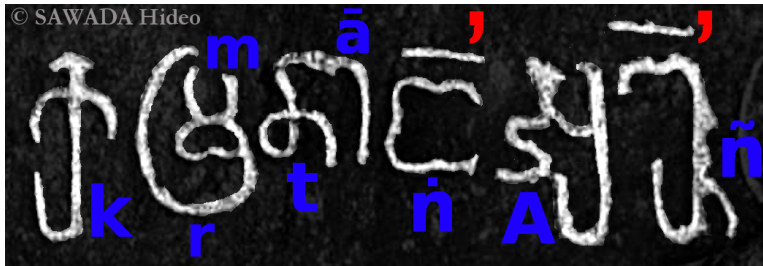
*Virāma in Southeast Asian Indic scripts*



Mon:

{klam' ti Dey'}

Wat Pho Rāng Inscption,  
Nakhon Pathom, Thailand, AD5c.  
(Coedès 1929: 30)



Khmer:

{kamratān' Añ'}

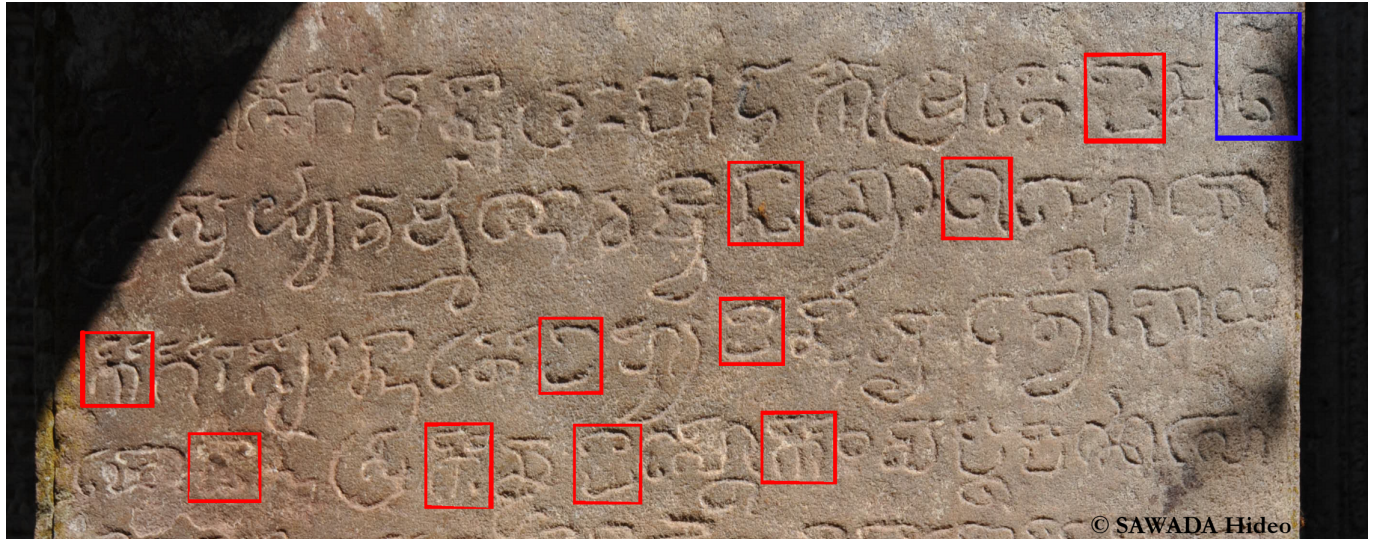
K149, Prasat Sambor, Sambor Prei Kuk,  
Kompong Thum, Cambodia, AD6–7c.



Cham:

{niy' kāla}

C37, Po Nagar Temple,  
Khanh Hoa, Vietnam, AD813.




K31, Phnom Chisor, Ta Keo, Cambodia, AD1019. ll.1–4:


the supposedly earliest Khmer inscription almost lacking *virāma*

**Consonant letters without *virāma***, **Consonant letter with *virāma***


*Types of final consonant notation in modern SE Asian Indic scripts*

**Virāma type** using *virāma* to mark final consonant letters: **Javanese, Mon, Burmese, Shan** etc. Burmese  ‘domino-like game’

**Final letter type** using *special final consonant letters*, as the compensation for *virāma*: **Cham** Cham  ‘to do commerce’

**Unmarked type** using *consonant letters by themselves* as final consonant letters: **Khmer, Thai\*, Lao\*** Thai  ‘sedge’

\* indicates that the script has never had *virāma*

**Subscript type** using consonant letters *subscript to the vowel sign* as final consonant letters: **Tham\*** N.Thai  ‘sedge’

cf. Sgo Karen, Missionary Pwo Karen (no final consonants);  
Buginese (Final consonants are unwritten.)

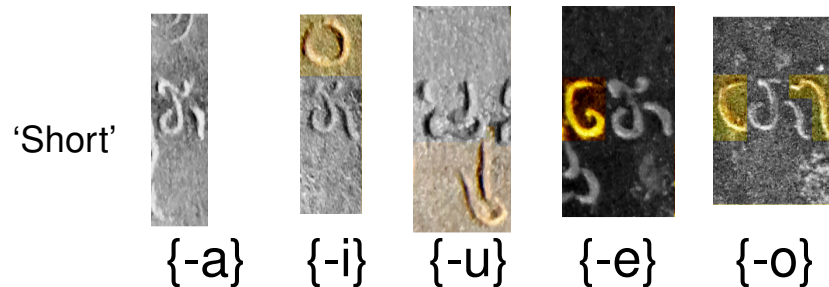
## 2 Reinterpretation of the length opposition of vowel signs

### 2.1 'Traditional' vowel-tone chart of Modern Burmese script

	/a/	/i/	/u/	/e/	/ɛ/	/ɔ/	/o/
Creaky	{-a}	{-i}	{-u}	{-e}	{-aY}	{-o}	{-ui}
Level	{-aa}	{-ii}	{-uu}	{-e}	{-ay}	{-o}	{-ui}
Heavy	{-aa:}	{-ii:}	{-uu:}	{-e}	{-aY}	{-o}	{-ui:}

- **Pattern A:** only heavy tone sign appears.
- **Pattern B:** both heavy and creaky tone signs appear.
- **Pattern C:** only creaky tone sign appears.

※ Level tone does not have its own sign.

2.2 Original  $5 \times 2$  system of vowel notation of Indic script

from Sanskrit Inscription  
C38. AD784. Found at  
Po Nagar temple, Vietnam.  
Now at Historical Museum,  
Ha Noi.

In Sanskrit, {ai} vs. {e} and {au} vs. {o} are taken as 'long-short' oppositions.



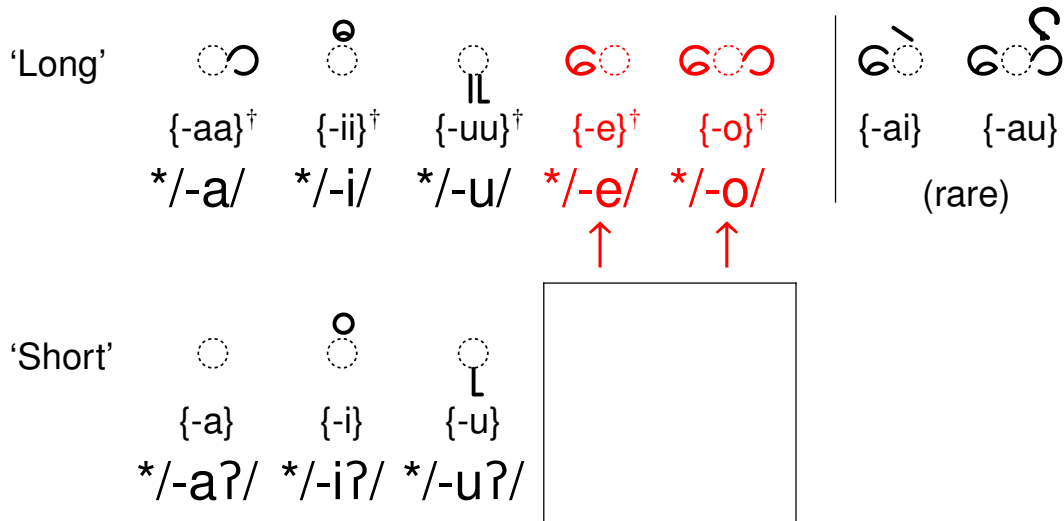
### 2.3 Vowel notation of Mon script in AD11c

In Mon script, the ‘long-short’ opposition of vowel signs are reinterpreted as that of syllable types:

**‘long’ notations signified open syllables, and**

**‘short’ notations signified closed syllables ending with \*/-ʔ/.**

{e} and {o}, treated as ‘long’ notations distinct from {ai} and {au} respectively, lacked the corresponding ‘short’ notations.



So, the complex ‘short’ notations containing the final consonant letter အိ{’} signifying \*/-ʔ/ were introduced to fill the gap.

‘Long’							
	{-aa}†	{-ii}†	{-uu}†	{-e}†	{-o}†	{-ai}	{-au}
	*/-a/	*/-i/	*/-u/	*/-e/	*/-o/	(rare)	
‘Short’							
	{-a}	{-i}	{-u}	{-e@’}	{-o@’}		
	*/-aʔ/	*/-iʔ/	*/-uʔ/	*/-eʔ/	*/-oʔ/		

† ‘There were not open syllable words in Proto Mon. The first ones seem to have been introduced by borrowing from adjacent languages and Sanskrit-Pāli.’ (Ferlus 1974: 66. Original in French.)

## 2.4 Vowel(-tonal) notation of Burmese script in AD12c

In Burmese script, the ‘long-short’ opposition was reinterpreted again as tonal opposition L, H vs. C.

‘Long’					
	{-aa}	{-ii}	{-uu}	{-e}†	{-o}†
	<i>*/-a<sup>L,H</sup>/</i>	<i>*/-i<sup>L,H</sup>/</i>	<i>*/-u<sup>L,H</sup>/</i>	<i>*/-e<sup>L,H</sup>/</i>	<i>*/-o<sup>L,H</sup>/</i>
‘Short’					
	{-a}	{-i}	{-u}	{-e@}†	{-o@}†
	<i>*/-a<sup>C</sup>/</i>	<i>*/-i<sup>C</sup>/</i>	<i>*/-u<sup>C</sup>/</i>	<i>*/-e<sup>C</sup>/</i>	<i>*/-o<sup>C</sup>/</i>

*Incorporating the notations of rhymes with \*/-y/, \*/-w/*

\*/-aw/

ᳵᳶ (ᳵᳶᳵ) Vowel sign traced back to {-au} in the original system.

ᳶ {-aW} Originally a part of ᳵᳶ, extracted as a distinct sign.

Analyzed as a final consonant sign {-W} to notate \*/-w/.

✱ So, ᳵᳶ can be reanalyzed as the combination of vowel sign {-o} + final consonant sign {-W} in parallel with ᳵᳶᳵ {-ow'}, a variant of ᳶᳵ {-aw'}.





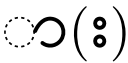



## 2.5 Change to the modern vowel notation system


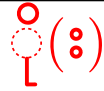
### *Sound changes*



AD12c		ModB.
*/-ay/	→	/-ε/
*/-uy/	→	/-wε/
*/-iy/	→	/-e/
*/-ɔ/	→	/-ɔ/
*/-aw/	↗	
*/-əw/	→	/-o/




‘Long’						
	{-aa}	{-ii}	{-uu}	{-e}	{-o}	
	*/-a <sup>L,H</sup> /	*/-i <sup>L,H</sup> /	*/-u <sup>L,H</sup> /	*/-e <sup>L,H</sup> /	*/-o <sup>L,H</sup> /	
		{-aY}		{-aW} ( {-oW} )		
		{-ay’}	{-uy’}	{-iy’}	{-aw’} ( {-ow’} )	{-uiw’}
		*/-ay <sup>L,H</sup> /	*/-uy <sup>L,H</sup> /	*/-iy <sup>L,H</sup> /	*/-aw <sup>L,H</sup> /	*/-eW <sup>L,H</sup> /

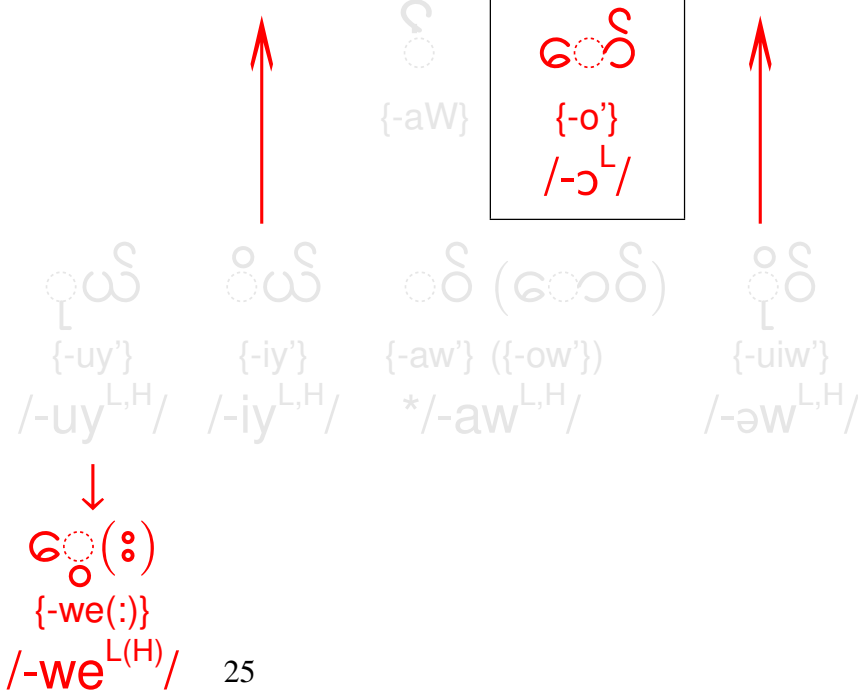
 {-aa(:)} /-a <sup>L(H)</sup> /	 {-ii(:)} /-i <sup>L(H)</sup> /	 {-uu(:)} /-u <sup>L(H)</sup> /	 {-e(:)} /-e <sup>L(H)</sup> /
--	--	--	---


 {-o} /-ɔ <sup>H</sup> /	 {-ui(:)} /-o <sup>L(H)</sup> /
---	--

 {-aY} /-ɛ <sup>H</sup> /
 {-ay'} /-ɛ <sup>L</sup> /

  
 {-aW}

 {-o'} /-ɔ <sup>L</sup> /
--




  
 {-we(:)}  
 /-we<sup>L(H)</sup>/

### Heavy tone sign –ः

- derived from *visarga* which signifies syllable final aspiration in Sanskrit
- *Visarga* also appears in Burmese inscriptions of AD12c, but it is merely optional.
- The first inscription using –ः to write /a<sup>H</sup>/ obligatorily is maybe *Kaunghmudaw Pagoda Inscription* (AD1636) in Sagaing.







Note that ◯ः, not ◯ः


ex.  (Reverse, l.79)

- Current usages with 'long' vowel signs, such as ◯ः | ◯ः | ◯ः | ◯ः | ◯ः became obligatory not earlier than AD18c.

'Short'	◌◌	◌◌◌	◌◌ └	◌◌◌◌	◌◌◌◌
	{-a}	{-i}	{-u}	{-e@}	{-o@}
	*/-a <sup>C</sup> /	*/-i <sup>C</sup> /	*/-u <sup>C</sup> /	*/-e <sup>C</sup> /	*/-o <sup>C</sup> /

◌◌◌◌ အ	◌◌◌◌ └အ	◌◌◌◌ အ	◌◌◌◌ (◌◌◌◌ အ)	◌◌◌◌ └အ
{-ay=@}	{-uy=@}	{-iy=@}	{-aw=@} ({-ow=@})	{-uiw=@}
*/-ay <sup>C</sup> /	*/-uy <sup>C</sup> /	*/-iy <sup>C</sup> /	*/-aw <sup>C</sup> /	*/-əw <sup>C</sup> /

 {-a} /-a <sup>C</sup> /	 {-i} /-i <sup>C</sup> /	 {-u} /-u <sup>C</sup> /	 {-e.} /-e <sup>C</sup> /	 {-o.} /-o <sup>C</sup> /	 {-ui.} /-o <sup>C</sup> /
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 {-aY.}  
 /-ε<sup>C</sup>/



  
 {-ay=@'  
 /-ε<sup>C</sup>/

  
 {-uy=@'  
 /-uy<sup>C</sup>/


  
 {-iy=@'  
 /-iy<sup>C</sup>/

  
 {-aw=@'  
 \* /-aw<sup>C</sup>/

  
 ( {-ow=@'  
 /-ow<sup>C</sup>/

  
 {-uiw=@'  
 /-eW<sup>C</sup>/



  
 {-we.}  
 /-we<sup>C</sup>/

*Creaky Tone sign*    ◌◌

◌◌(=◌◌)  
H    32

◌◌    >    ◌◌



Sagaing  
Kaunghmudaw Pagoda  
Inscription  
Obverse, l.24  
AD1636



Bagan  
Uyingyi Monastery  
Ink Inscription  
l.9 (left) & l.4 (right)  
AD1768



computer font  
modern

## Summary of vowel-tone notation

	/a/	/i/	/u/	/e/	/o/	/ɛ/	/ɔ/
Level	{-aa}	{-ii}	{-uu}	{-e}	{-ui}	{-ay}	{-o}
Heavy	{-aa:}	{-ii:}	{-uu:}	{-e:}	{-ui:}	{-aY}	{-o}
Creaky	{-a}	{-i}	{-u}	{-e}	{-ui}	{-aY.}	{-o.}

- **Pattern A: only heavy tone sign appears.**

Two vowel signs constituting a ‘long-short’ pair are used for tonal distinction: Heavy tone sign –: cooccurs with ‘long’ vowel signs (for L).

- **Pattern B: both heavy and creaky tone signs appear.**

One and the same vowel sign is used for all tones.

- **Pattern C: only creaky tone sign appears.**

Two ‘unpaired’ notations are used for tonal distinction:

Creaky tone sign –̣ cooccurs with notations for H.

### 3 Class change of vowel letter ॐ

#### *Prākṛit/Sanskrit inscriptions*

- Originally {a} belongs the class of vowel letter.
- Very low occurrence ratio. (Vowel letters usually occur only sentence-initially.)

#### *Mon inscriptions*

- ॐ {@'} has already occurred in the earliest inscriptions.
- A letter which can take a *virāma* is taken to belong to the class of consonant letter.  
(Remember that the function of *virāma* is to indicate final consonants explicitly.)



- အ<sup>၀</sup> notates \*/ʔ/. → အ<sup>၁</sup> notates \*/ʔaʔ/.

✘ Therefore, it is in fact inappropriate to call အ ‘zero’-consonant letter.

- Accordingly, အ<sup>၁</sup> was reanalyzed as the combination of a consonant letter {<sup>@</sup>} and a vowel sign {-aa}.
- Other vowel letters က္က<sup>၁</sup> ဤ<sup>၁</sup> ဥ<sup>၁</sup> ဦ<sup>၁</sup> ဧ<sup>၁</sup> [သ<sup>၁</sup>] must have notated syllables with \*/ʔ-/.
- In AD11–12c Mon inscriptions, အ<sup>၁</sup> took a vowel sign only in အုတ်<sup>၁</sup> {<sup>@</sup>ut’} ‘all’.

### *Burmese inscriptions*

- Burmese inherited အ̃, hence အ as a consonant letter, from Mon.
- The earliest usage of အ with vowel signs:

အို(ဝ်) \*/ʔəw<sup>L</sup>/ <title prefixed to the name of a woman> (AD1147)

※ Note that the syllable cannot be written with any existing vowel letter.

- Native Burmese lexical words came to be written with အ later than the mid AD15c.
- In ModB. script, vowel letters are used in words borrowed from Pāli, and ‘Zero’-consonant letter is used in native Burmese words, in principle.

*Distribution of 'zero'-consonant letter in modern SE Asian Indic scripts*

**Scripts with both vowel letters and 'zero'-consonant letter**

- Vowel letters are used regularly, and 'zero'-consonant letter is used optionally: **Cham**
- 'Zero'-consonant letter is used to notate syllables which cannot be notated by any vowel letter: **Mon**
- 'Zero'-consonant letter is used to write native words in principle: **Burmese, Khmer, Tham( Lanna); Javanese** (h- is used as 'zero'-consonant letter.)

**Scripts with 'zero'-consonant letter but not vowel letters**

**Thai, Lao, Shan**

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