# Negotiating the issues of encoding and producing traditional scripts on computers: Working with Unicode

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# How Unicode Process Works

1. Users, linguists identify script/characters not in Unicode/ISO standard
2. Unicode script proposal written
3. Two standards committees review proposals and vote whether to accept them
4. Publication of script in Unicode/ISO standard
5. Create fonts, keyboards, update software

# Script diversity in South and South East Asia

- Indic-based (Brahmi-derived)
  - Thought to originate from contact with West Asia/Europe
- 'Indigenous scripts'
  - Chinese
  - Japanese Kana
  - Korean
- New Scripts

# Writing systems of the world

# Case Studies

1. Tai in Northeast India
   - Grouping glyphs regarded by speakers as different in the same encoding points
2. Assamese / Bengali
   - Naming of characters
3. Ordering for Tai words
   - Visual order versus Logical order

# 1. Tai in Northeast India (a)

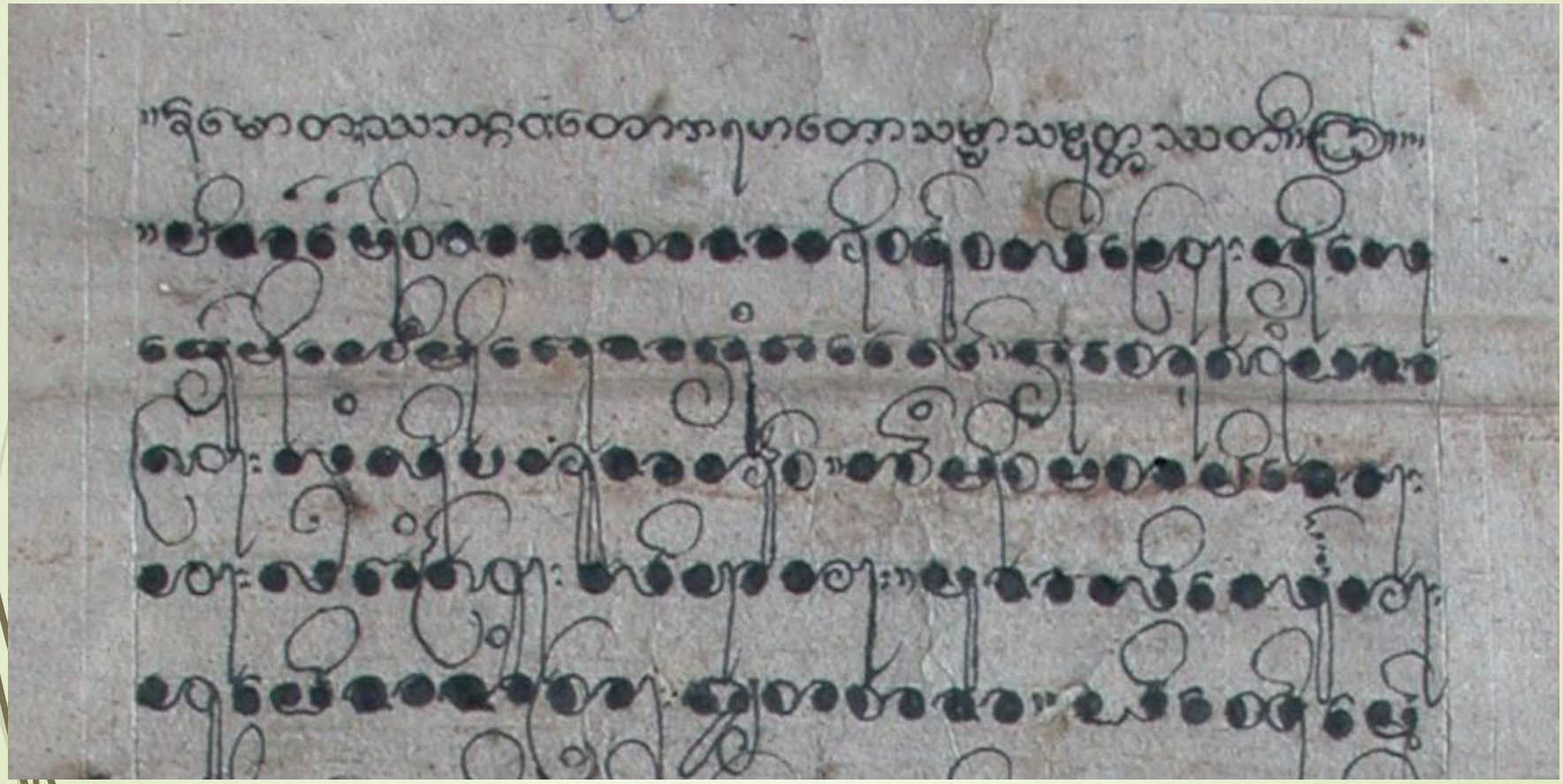
Two scripts in Northeast India

(1) ***Tai Ahom*** script, said to have been brought from Muang Mao in the 13th century. Historically very similar to Dehong Dai or Tai Mao script

(2) ***To Lik Tai*** (body book Tai) – scripts for the spoken Tai languages based on Shan and Burmese, used for Aiton, Phake, Khamti, Khamyang

# 1. Tai in Northeast India (b) Tai Ahom

# 1. Tai in Northeast India (c) To Lik Tai and Burmese



# 1. Tai in Northeast India (e) Comparison

| Letter | Tai Mau | Tai Ahom | To Lik Tai | Padauk | Burmese |
|---|---|---|---|---|---|
| ka | □ | 𑜀 | ᦀ | ကာ | ကာ |
| kha | □ | 𑜁 | ᦁ | ခာ | ခာ |
| nga | □ | 𑜂 | ᦂ | ငာ | ငာ |
| cha | □ | 𑜃 | ᦃ | ဆာ | ဆာ |
| sa | □ | 𑜄 | ᦄ | သာ | သာ |

# 1. Negotiating with Unicode

1. Separately encoding a script
   - Structural differences or just different glyph shapes?

2. Possibilities for *To Lik Tai*
   - Add new characters?
   - Create *To Lik Tai* font (at current code points)?
   - Use Variation Selector to get wanted shapes?
   - Ask Facebook to support 2 fonts?
   - Add wording about To Lik Tai to Unicode Standard?

# 2. Assamese (a)

- Today Assamese and Bengali languages are written with the same script
- The two scripts have a common ancestor, developing separately over centuries and re-converging
- The Unicode encoding of this common script is called simply ‘Bengali’
- Members of the Assamese community are upset that the whole script is named ‘Bengali’ without reference to them

# 2. Assamese (b) History

5th century: Umachal rock inscription

13th century: proto-Assamese shapes

Middle ages: Three varieties *Kaitheli* (used by non-Brahmins), *Bamuniya* (used by Brahmins, for Sanskrit) and *Garhgaya* (used by state officials of the Ahom kingdom)

19th century: first Assamese script for printing

Bengali and Assamese lithography converged to the present standard that is used today.

20th century: Unicode names all characters as 'Bengali'

# 2. Assamese (c)

The following two letters are not used at all in Bengali, but have been given complicated names by Unicode:

- ৰ Bengali Letter ra with middle diagonal
  - Real name: Assamese letter ra
- ৱ Bengali Letter ra with lower diagonal
  - Real name: Assamese letter wa

# 2. Assamese (c)

ক্ষ pronounced [kʰjɔ] or sometimes just [kʰ], this letter is historically a conjunct consonant of [k] and [ʂ] (/kʂ/) but is a full consonant in Assamese, such as

ক্ষণ ‘measure of time equal to 4 minutes, a while’

# 2. Negotiating with Unicode

- Name of script/characters: Problem
- For Bengali/Assamese issue (Unicode 1.1, 1993)
  - Changes to Unicode prose section, webpages
  - Submit information to Common Locale Data Repository?

# 3. Ordering for Tai words

Consider the Tai word /kɛ/ ‘old’

In standard Thai it has to be encoded as

แ + ก แก

ɛ + k kɛ

But in Shan, Tai languages of Northeast India, it has to be encoded as

ၵ + ɛ◌ ɛၵ

k + ɛ kɛ

# 3. Negotiating with Unicode

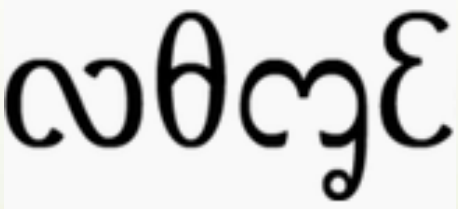
- Two encoding models:
  - Thai follows a **visual model**: type the letters as you see them in left-to-right order (for Thai, for ex.)
  - Shan follows the **logical order**: dependent vowels follow consonant, even though they display before the consonant. Logical order is the default for Unicode.

# 3. Negotiating with Unicode

- Scripts used for Tai languages:
  - Thai (1993, Unicode 1.1) [visual order]
  - Lao (1993, 1.1) [visual order]
  - Tai Dam = Tai Viet (2009, 5.2) [visual order]
  - New Tai Lue (2005, 4.1) [changing to visual]
  - Shan = Myanmar (1999 +) [logical order]
  - Ahom (2015, 8.0) [logical order]
  - Tai Tham (2009, 5.2) [logical order]
  - Tai Le (2003, 4.0) [logical order]

# 3. Negotiating with Unicode

- Ex. of encoding model change: New Tai Lue (published 2005, Unicode 4.1)
  - Originally encoded in logical order
  - Changed to visual order in 2015, because main user community in China had data stored in visual order and fonts relied on storing data in visual order



# 4. Improving Relations with Unicode

- Make contact with at least one member of the Unicode Technical Committee (or active contributor to Unicode) early on
- Try to call in to UTC meetings on topics of interest (or attend meetings in person)
- Meet with UTC member or participant, if possible

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