Title: Preliminary Proposal to Encode the Tikamuli Script in ISO/IEC 10646
Author: Anshuman Pandey (pandey@umich.edu)
Status: Individual Contribution
Action: For consideration by UTC and WG2
Date: 2010-11-05

1   Introduction

This is a preliminary proposal to encode the Tikamuli script in the Universal Character Set (ISO/IEC 10646). Tikamuli is used in Nepal for writing the Sunuwar (Kõits) language. This document provides a basic description of the writing system, a preliminary code chart and names list, character properties, and a few specimens. Additional research on the script is required and is being performed by the present author.

There is another script used in Sikkim, India for writing Sunuwar, which is called 'Jenticha'. A preliminary proposal (N3962) to encode Jenticha in the UCS has been submitted by the present author to the Unicode Technical Committee (UTC) and ISO/IEC JTC1/SC2/WG2 for review.

2   Background

Tikamuli is a script used for writing Sunuwar [suz], a Tibeto-Burman language of the Kiranti family that is spoken in eastern Nepal and the state of Sikkim in India. Sunuwar is spoken by forty thousand persons in Nepal. It is an official language in Sikkim, although no population data is available.

Sunuwar (सुनुवार *sunuvāra*) is also spelled 'Sunwar', and is also known by the name 'Mukhiya' (मुखिया *mukhiyā*); both are Nepali exonyms. The autonym is काँइच *kõica*, which is normalized as 'Kõits'. The language is called काँइच लो *kõica lo* 'Kõits Lo' or किराँती-काँइच *kirā̃tī-kõica* 'Kiranti-Kõits'. The name 'Kõits' is also romanized as 'Koinch', 'Koincha', 'Koints', etc.

Tikamuli was developed by Tikaram Mulicha. It is known as तिकामुली ब्रेःसे *tikāmulī brese*, 'Tikamuli Brese'. The name is an acronym derived from the first four letters of Mulicha's first (TIKA) and last (MULI) names.

Additional research is required in order to determine the status and usage of Tikamuli. It appears that the Sunuwar Welfare Society in Kathmandu, Nepal is promoting the use of Tikamuli (see Figure 2). There are reports that the organization plans to produce books in the script for primary-level education.[1] It appears that use of Tikamuli is limited to the Sunuwar community in Nepal; the preference in Sikkim for writing Sunuwar is Jenticha,

Tikamuli has been adapted for use in digital media. Two Tikamuli fonts, 'Lonkuch' and 'Prem', have been designed by Krishna Sunuwar (see Figure 2 and 3). They are based on the ISO-8891 encoding and characters are mapped to Latin code points (see Figure 4). The 'Lonkuch' font is used throughout this document and in the code chart in Figure 1.

---

[1] Krishna Sunuwar, personal correspondence, November 2010.

3   Writing System

Structure   Tikamuli is an alphasyllabic writing system based on the Brahmi model. It is written from left to right.

Character Repertoire   The script consists of 43 characters: 6 vowels, 24 consonants, 3 signs, and 10 digits.

Vowels   There are 6 vowels. These are represented by writing a vowel sign with Ʒ A:

ō	VOWEL SIGN AA	Ʒ A	+	ō	→	Ʒ̄ *ā*
ô	VOWEL SIGN I	Ʒ A	+	ô	→	Ʒ̂ *i*
ŏ	VOWEL SIGN U	Ʒ A	+	ŏ	→	Ʒ̆ *u*
ŏ	VOWEL SIGN E	Ʒ A	+	ŏ	→	Ʒ̆ *e*
o̊	VOWEL SIGN O	Ʒ A	+	o̊	→	Ʒ̊ *o*

Vowel Length   Vowel lengthening is indicated by the use of two marks: o̒ LONG VOWEL SIGN o̓ EXTRA LONG VOWEL SIGN. These signs are written to the right of the vowel sign they modify, eg. Ʒ̂̓ = *ī*.

Consonants   There are 24 consonant letters (see Figure 1). Each consonant letter bears the inherent vowel *a*. The inherent vowel is changed by writing a dependent vowel sign after the letter. The inherent vowel may be silenced by writing ꞏo VIRAMA beneath the consonant.

The structure of consonant letters follows a uniform pattern. Letters for aspirated consonants are produced by attaching a 'tail' ꞏ to the unaspirated letter. For example ꓱ KA + ꞏ → ꓱ KHA.

The letter ẟ BBA is used for writing the bilabial implosive [ɓ]. It is represented in Devanagari as अव्.[2]

The letter Ŀ SSA is used for representing the sibilant [ʃ]. It is represented in Devanagari orthography for Sunuwar using both श SHA and ष SSA.[3] See also the charts in Figure 2 and Figure 3. The letter Ŀ could be renamed SHA.

Null Vowel   The ꞏo NULL VOWEL behaves similar to VIRAMA in Brahmic scripts. It is always rendered visibly in Tikamuli.

Digits   The script has digits for representing numbers of the decimal system: 0 ZERO, l ONE, L TWO, Δ THREE, Ọ FOUR, Ŀ FIVE, X SIX, ꓧ SEVEN, Ζ EIGHT, 6 NINE.

Punctuation   There are no native punctuation marks.

Collation   The sort order appears to follow the general Brahmi pattern. The letter ẟ BBA is shown to be sorted after ⨆ HA.

---

[2] Borchers 2008: 34.   [3] Borchers 2008: 32.

4   Character Properties

Character properties for Tikamuli are as follows. The use of code points starting at U+11C00 is arbitrary.

```
11C00;TIKAMULI LETTER A;Lo;0;L;;;;;N;;;;;
11C01;TIKAMULI LETTER KA;Lo;0;L;;;;;N;;;;;
11C02;TIKAMULI LETTER KHA;Lo;0;L;;;;;N;;;;;
11C03;TIKAMULI LETTER GA;Lo;0;L;;;;;N;;;;;
11C04;TIKAMULI LETTER GHA;Lo;0;L;;;;;N;;;;;
11C05;TIKAMULI LETTER NGA;Lo;0;L;;;;;N;;;;;
11C06;TIKAMULI LETTER CA;Lo;0;L;;;;;N;;;;;
11C07;TIKAMULI LETTER CHA;Lo;0;L;;;;;N;;;;;
11C08;TIKAMULI LETTER JA;Lo;0;L;;;;;N;;;;;
11C09;TIKAMULI LETTER JHA;Lo;0;L;;;;;N;;;;;
11C0B;TIKAMULI LETTER TTA;Lo;0;L;;;;;N;;;;;
11C0C;TIKAMULI LETTER TTHA;Lo;0;L;;;;;N;;;;;
11C0D;TIKAMULI LETTER DDA;Lo;0;L;;;;;N;;;;;
11C0E;TIKAMULI LETTER DDHA;Lo;0;L;;;;;N;;;;;
11C0F;TIKAMULI LETTER NNA;Lo;0;L;;;;;N;;;;;
11C10;TIKAMULI LETTER TA;Lo;0;L;;;;;N;;;;;
11C11;TIKAMULI LETTER THA;Lo;0;L;;;;;N;;;;;
11C12;TIKAMULI LETTER DA;Lo;0;L;;;;;N;;;;;
11C13;TIKAMULI LETTER DHA;Lo;0;L;;;;;N;;;;;
11C14;TIKAMULI LETTER NA;Lo;0;L;;;;;N;;;;;
11C15;TIKAMULI LETTER PA;Lo;0;L;;;;;N;;;;;
11C16;TIKAMULI LETTER PHA;Lo;0;L;;;;;N;;;;;
11C17;TIKAMULI LETTER BA;Lo;0;L;;;;;N;;;;;
11C18;TIKAMULI LETTER BHA;Lo;0;L;;;;;N;;;;;
11C19;TIKAMULI LETTER MA;Lo;0;L;;;;;N;;;;;
11C1A;TIKAMULI LETTER YA;Lo;0;L;;;;;N;;;;;
11C1B;TIKAMULI LETTER RA;Lo;0;L;;;;;N;;;;;
11C1C;TIKAMULI LETTER LA;Lo;0;L;;;;;N;;;;;
11C1D;TIKAMULI LETTER VA;Lo;0;L;;;;;N;;;;;
11C1F;TIKAMULI LETTER SSA;Lo;0;L;;;;;N;;;;;
11C20;TIKAMULI LETTER SA;Lo;0;L;;;;;N;;;;;
11C21;TIKAMULI LETTER HA;Lo;0;L;;;;;N;;;;;
11C22;TIKAMULI LETTER BBA;Lo;0;L;;;;;N;;;;;
11C23;TIKAMULI VOWEL SIGN AA;Mn;0;NSM;;;;;N;;;;;
11C24;TIKAMULI VOWEL SIGN I;Mn;0;NSM;;;;;N;;;;;
11C25;TIKAMULI VOWEL SIGN U;Mn;0;NSM;;;;;N;;;;;
11C26;TIKAMULI VOWEL SIGN E;Mn;0;NSM;;;;;N;;;;;
11C27;TIKAMULI VOWEL SIGN O;Mn;0;NSM;;;;;N;;;;;
11C28;TIKAMULI VOWEL SIGN VIRAMA;Mn;0;NSM;;;;;N;;;;;
11C29;TIKAMULI VOWEL SIGN LONG VOWEL SIGN;Mn;0;NSM;;;;;N;;;;;
11C2A;TIKAMULI VOWEL SIGN EXTRA LONG VOWEL SIGN;Mn;0;NSM;;;;;N;;;;;
11C30;TIKAMULI DIGIT ZERO;Nd;0;L;;0;0;0;N;;;;;
11C31;TIKAMULI DIGIT ONE;Nd;0;L;;1;1;1;N;;;;;
11C32;TIKAMULI DIGIT TWO;Nd;0;L;;2;2;2;N;;;;;
11C33;TIKAMULI DIGIT THREE;Nd;0;L;;3;3;3;N;;;;;
11C34;TIKAMULI DIGIT FOUR;Nd;0;L;;4;4;4;N;;;;;
11C35;TIKAMULI DIGIT FIVE;Nd;0;L;;5;5;5;N;;;;;
11C36;TIKAMULI DIGIT SIX;Nd;0;L;;6;6;6;N;;;;;
11C37;TIKAMULI DIGIT SEVEN;Nd;0;L;;7;7;7;N;;;;;
11C38;TIKAMULI DIGIT EIGHT;Nd;0;L;;8;8;8;N;;;;;
11C39;TIKAMULI DIGIT NINE;Nd;0;L;;9;9;9;N;;;;;
```

5   Relationship to Other Scripts

Tikamuli has no genetic relationship to other writing systems, although it has similarities to the Limbu (Sirijonga) and Lepcha (Rong) scripts. The Tikamuli system for representing vowels using a carrier-letter is similar to that of Limbu and Lepcha. Some characters are similar to those found in Lepcha, eg. ⍥ ʟᴀ and ⍦ U+1C1C ʟᴇᴘᴄʜᴀ ʟᴇᴛᴛᴇʀ ʟᴀ.

The design of letterforms appears to be inspired by Limbu and Lepcha. Given the cultural importance of these scripts in the region, some influence may be expected. But, Tikamuli is very distinct from Limbu and Lepcha (see Table 1).

6   Issues

Script Name   The script is tentatively assigned the name 'Tikamuli'. The final name will be determined through correspondence with specialists and potential users.

7   References

Borchers, Dörte. 2008. *A Grammar of Sunwar: Descriptive Grammar, Paradigms, Texts and Glossary*. Tibetan Studies Library; Languages of the Greater Himalayan Region, vol. 5/7. Leiden: Brill.

kiratisaathi.com. 2007. 'sunuwar font'. `http://kiratisaathi.com/forum.php?P=viewtopic&t=161`

Pandey, Anshuman. 2010. "Preliminary Proposal to Encode the Jenticha Script in ISO/IEC 10646" (N3962). November 5, 2010. `http://std.dkuug.dk/JTC1/SC2/WG2/docs/n3962.pdf`

8   Acknowledgments

	11C0	11C1	11C2	11C3
0	ろ 11C00	イ 11C10	イ 11C20	0 11C30
1	ส 11C01	ૉ 11C11	૮ 11C21	I 11C31
2	ฮ 11C02	ৰ 11C12	၆ 11C22	L 11C32
3	ฮ 11C03	ঌ 11C13	◌̄ 11C23	Δ 11C33
4	ஏ 11C04	৬ 11C14	◌̂ 11C24	◻ 11C34
5	ৼ 11C05	Ɀ 11C15	◌̬ 11C25	Ƅ 11C35
6	৪ 11C06	ౘ 11C16	◌̗ 11C26	Ӿ 11C36
7	ஜ 11C07	৫ 11C17	◌̊ 11C27	♠ 11C37
8	ஜ 11C08	ஞ 11C18	◌̲ 11C28	Z 11C38
9	ஜ 11C09	५ 11C19	◌̔ 11C29	ß 11C39
A	⁄⁄⁄	⌐ 11C1A	◌̕ 11C2A	⁄⁄⁄
B	ส 11C0B	৭ 11C1B	⁄⁄⁄	
C	ஊ 11C0C	௶ 11C1C	⁄⁄⁄	
D	௮ 11C0D	O 11C1D	⁄⁄⁄	
E	௮ 11C0E	⁄⁄⁄	⁄⁄⁄	
F	ஜ 11C0F	৬ 11C1F	⁄⁄⁄	

Vowel

11C00 ろ TIKAMULI LETTER A

Consonants

11C01 ส TIKAMULI LETTER KA
11C02 ฮ TIKAMULI LETTER KHA
11C03 ฮ TIKAMULI LETTER GA
11C04 ஏ TIKAMULI LETTER GHA
11C05 ৼ TIKAMULI LETTER NGA
11C06 ৪ TIKAMULI LETTER CA
11C07 ஜ TIKAMULI LETTER CHA
11C08 ஜ TIKAMULI LETTER JA
11C09 ஜ TIKAMULI LETTER JHA
11C0A ▨ <reserved>
11C0B ส TIKAMULI LETTER TTA
11C0C ஊ TIKAMULI LETTER TTHA
11C0D ௮ TIKAMULI LETTER DDA
11C0E ௮ TIKAMULI LETTER DDHA
11C0F ஜ TIKAMULI LETTER NNA
11C10 イ TIKAMULI LETTER TA
11C11 ૉ TIKAMULI LETTER THA
11C12 ৰ TIKAMULI LETTER DA
11C13 ঌ TIKAMULI LETTER DHA
11C14 ৬ TIKAMULI LETTER NA
11C15 Ɀ TIKAMULI LETTER PA
11C16 ౘ TIKAMULI LETTER PHA
11C17 ৫ TIKAMULI LETTER BA
11C18 ஞ TIKAMULI LETTER BHA
11C19 ५ TIKAMULI LETTER MA
11C1A ⌐ TIKAMULI LETTER YA
11C1B ৭ TIKAMULI LETTER RA
11C1C ௶ TIKAMULI LETTER LA
11C1D O TIKAMULI LETTER VA
11C1E ▨ <reserved>
11C1F ৬ TIKAMULI LETTER SSA
11C20 イ TIKAMULI LETTER SA
11C21 ૮ TIKAMULI LETTER HA
11C22 ၆ TIKAMULI LETTER BBA

Dependent vowel signs

11C23 ◌̄ TIKAMULI VOWEL SIGN AA
11C24 ◌̂ TIKAMULI VOWEL SIGN I
11C25 ◌̬ TIKAMULI VOWEL SIGN U
11C26 ◌̗ TIKAMULI VOWEL SIGN E
11C27 ◌̊ TIKAMULI VOWEL SIGN O

Various signs

11C28 ◌̲ TIKAMULI SIGN VIRAMA
11C29 ◌̔ TIKAMULI LONG VOWEL SIGN
11C2A ◌̕ TIKAMULI EXTRA LONG VOWEL SIGN

Digits

11C30 0 TIKAMULI DIGIT ZERO
11C31 I TIKAMULI DIGIT ONE
11C32 L TIKAMULI DIGIT TWO
11C33 Δ TIKAMULI DIGIT THREE
11C34 ◻ TIKAMULI DIGIT FOUR
11C35 Ƅ TIKAMULI DIGIT FIVE
11C36 Ӿ TIKAMULI DIGIT SIX
11C37 ♠ TIKAMULI DIGIT SEVEN
11C38 Z TIKAMULI DIGIT EIGHT
11C39 ß TIKAMULI DIGIT NINE

Figure 1: Tentative code chart and nameslist for Tikamuli.

5

Figure 2: Chart showing the Tikamuli script promoted by the Sunuwar Welfare Society of Kathmandu, Nepal (from kiratisaath.com 2007).

-[सुनुवार लिपी]-

NP	अ	आ	इ	ई	उ	ऊ	ए	ऐ	ओ	औ	अं	अः
TR	३	३	३	-	३	-	३	-	३	-	-	-
NP	क	ख	ग	घ	ङ	च	छ	ज	झ	ञ	ट	ठ
TR	⪽	⪾	⪼	⪿	⪿	⪿	⪿	⪿	⪿	-	⪿	⪿
NP	ड	ढ	ण	त	थ	द	ध	न	प	फ	ब	भ
TR	⪿	⪿	⪿	⪿	⪿	⪿	⪿	⪿	⪿	⪿	⪿	⪿
NP	म	य	र	ल	व	श	ष	स	ह	क्ष	त्र	अ्व
TR	⪿	⪿	⪿	⪿	⪿	-	⪿	⪿	⪿	-	-	३
NP	१	२	३	४	५	६	७	८	९	०		
TR	।	⪿	⪿	⪿	⪿	⪿	⪿	⪿	⪿	⪿		

मात्राहरु : ⎯ आकार   ^ इकार   ⎦ उकार   ° ओकार   ⎣ एकार   _ हलन्त   ꞈ दिघ   ꞉ अति

Figure 3: Glyphs of the 'Prem' font (from kiratisaath.com 2007).

7

Figure 4: A keyboard map for the 'Lonkuch' and 'Prem' fonts (from kiratisaath.com 2007).

	TIKAMULI	LIMBU	LEPCHA		TIKAMULI	LIMBU	LEPCHA
A	᠌	᠌	᠌	DA	᠌	᠌	᠌
KA	᠌	᠌	᠌	DHA	᠌	᠌	—
KHA	᠌	᠌	᠌	NA	᠌	᠌	᠌
GA	᠌	᠌	᠌	PA	᠌	᠌	᠌
GHA	᠌	᠌	—	PHA	᠌	᠌	᠌
NGA	᠌	᠌	᠌	BA	᠌	᠌	᠌
CA	᠌	᠌	᠌	BHA	᠌	᠌	—
CHA	᠌	᠌	᠌	MA	᠌	᠌	᠌
JA	᠌	᠌	᠌	YA	᠌	᠌	᠌
JHA	᠌	᠌	—	RA	᠌	᠌	᠌
NYA	—	᠌	᠌	LA	᠌	᠌	᠌
TTA	᠌	—	—	VA	᠌	᠌	᠌
TTHA	᠌	—	—	SHA	—	᠌	᠌
DDA	᠌	—	—	SSA	᠌	᠌	—
DDHA	᠌	—	—	SA	᠌	᠌	᠌
NNA	᠌	—	—	HA	᠌	᠌	᠌
TA	᠌	᠌	᠌	BBA	᠌	—	—
THA	᠌	᠌	᠌				

Table 1: Comparison of letters of Tikamuli, Limbu, and Lepcha.