

Title: Proposal to Encode the Gangga Malayu Script in ISO/IEC 10646
Source: Script Encoding Initiative (SEI)
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Status: Liaison Contribution
Action: For consideration by UTC and WG2
Date: 2011-05-02

1 Introduction

This is a proposal to encode the Gangga Malayu script in the Universal Character Set (ISO/IEC 10646). It replaces the document “Preliminary Proposal to Encode the Gangga Malayu Script” (N3798 L2/10-173).

2 Background

Gangga Malayu is an abugida based upon the Arabic abjad. According to C. O. Blagden, it was used in the Malay peninsula until at least the early 20th century and is described as a ‘cipher alphabet’ or ‘secret script’. In *A Dictionary of the Malay Language* (1894), Gangga Malayu is described as “[t]he name of an alphabet used in Pêrak which, however, is of modern origin and only employed for the purposes of intrigue.”¹ Additionally, Blagden writes that the script was used for writing *chiri*, the old coronation formula of the Malaya kings. Apart from the specimen shown in Figure 2, no materials in the script have been identified.

The origin of Gangga Malayu is unknown. However, there are suggestions that the letters of the script are modified forms of Arabic letters used for writing Malay. R. A Kern writes:

The greater part [of the script] can be traced back to the usual [Arabic] characters, being reversions of these in a vertical or horizontal direction, and by the replacing of the dots by short strokes variously attached to the character that forms the basis of the several letters, which are differentiated in the ordinary writing by the number of dots employed in each case.²

While the characters may be derived from Arabic, the structure of Gangga Malayu appears to be based upon the Brahmi model with features adapted from other writing systems, such as Javanese. In fact, Blagden suggests that some “of the primary elements themselves might be of ancient date, and might go back to pre-Muhammadan days.”³

The shapes of certain letters adhere to Kern’s hypothesis of an Arabic origin, most obviously / ALIF (cf. Arabic ﻻ ALEF), but others markedly do not, eg. ๐-๐ KAP (cf. Arabic ﻛﺎﻑ KAF). Moreover, Kern indicates that he is unable to see any correspondence between the Gangga Malayu and Arabic forms of eleven letters: ๙ THA, ๙ JIM, ๙ CHA, ๙ HHA, ๙ KHA, ๙ PA, ๙ KOP, ๐-๐ KAP, ๐+๐ GA, ๙ NUN, ๙ WAU.

The shapes of digits are based upon the following graphical model: The digits ๐ ZERO and ๑ ONE resemble Arabic-Hindu digits. The digits ๓ THREE, ๔ FOUR, ๕ FIVE are based upon a common glyph shape, while ๒ TWO, ๖ SIX, ๗ SEVEN, ๘ EIGHT, ๙ NINE are based upon another common pattern.

¹ Clifford and Swettenham 1894: 458.

² Kern 1908: 208.

³ Blagden 1908: 208

3 Writing System

Character Repertoire There are 52 characters: 32 consonant letters, 3 vowel signs, 3 nasal signs, 1 gemination sign, 1 VIRAMA-like sign, 2 final consonant signs, and 10 digits. The proposed code chart and names list is given in Figure 1.

Character Names While the names for several characters may be Arabic and Javanese in origin, the spellings shown in Kern (1908) are used. These deviate from the UCS character names; eg. ALIF instead of Arabic ALEF, CHECHAQ instead of Javanese CECAK.

Structure The underlying model is based upon Brahmi and uses a VIRAMA-like character for marking bare consonants and consonant conjuncts. Each consonant letter possesses the inherent vowel *a*. The phonological value of a consonant letter is the value of the Arabic letter + the inherent vowel *a*. The inherent vowel is changed by the use of vowel signs. The inherent vowel is silenced by the ◌ JAZMA.

Directionality The script is written from left-to-right.

Joining Each letter is written separately. There are no joining properties for the letters.

Virama The ◌ JAZMA is used for silencing the inherent vowel of a consonant letter. It is identical to the VIRAMA of Indic scripts and appears to be graphically derived from ◌ ARABIC SUKUN. It is written visibly.

Consonant Conjuncts Consonant conjuncts are produced by marking the vowel-less members of the conjunct with JAZMA.

Vowels Vowels are represented using combining signs. There are three vowel signs: ◌ SIGN AA, ◌ SIGN I, ◌ SIGN U. The vowel signs are always written.

Diphthongs The dependent form of the diphthong /ai/ is written as ◌ <SIGN I, YA, JAZMA>.

Nasalization There are three signs for nasalization: ◌ AN, ◌ IN, ◌ UN. These appear to be based upon the Arabic *tanwīn* signs.

Gemination The ◌ TASHDID is used for marking geminated consonants.

Syllable-Final Consonants There are two syllable-final consonant marks. These appear to be borrowed from Javanese.

- *Layar* The ◌ LAYAR represents syllable-final /t/. It corresponds to ◌ U+A982 JAVANESE SIGN LAYAR.
- *Chechaq* The ◌ CHECHAQ represents syllable-final /ŋ/. It corresponds to ◌ U+A981 JAVANESE SIGN CECAK.

Digits Digits represent decimal numbers: 0 ZERO, 1 ONE, 2 TWO, 3 THREE, 4 FOUR, 5 FIVE, 6 SIX, 7 SEVEN, 8 EIGHT, 9 NINE.

Punctuation Script-specific punctuation is not attested.

Collation The sort order follows the encoding order.

Character Properties Properties for the script are as follows:

```

14990;GANGGA MALAYU LETTER ALIF;Lo;0;L;;;;N;;;;;
14991;GANGGA MALAYU LETTER BA;Lo;0;L;;;;N;;;;;
14992;GANGGA MALAYU LETTER TA;Lo;0;L;;;;N;;;;;
14993;GANGGA MALAYU LETTER THA;Lo;0;L;;;;N;;;;;
14994;GANGGA MALAYU LETTER JIM;Lo;0;L;;;;N;;;;;
14995;GANGGA MALAYU LETTER CHA;Lo;0;L;;;;N;;;;;
14996;GANGGA MALAYU LETTER HHA;Lo;0;L;;;;N;;;;;
14997;GANGGA MALAYU LETTER KHA;Lo;0;L;;;;N;;;;;
14998;GANGGA MALAYU LETTER DAL;Lo;0;L;;;;N;;;;;
14999;GANGGA MALAYU LETTER ZAL;Lo;0;L;;;;N;;;;;
1499A;GANGGA MALAYU LETTER RA;Lo;0;L;;;;N;;;;;
1499B;GANGGA MALAYU LETTER ZE;Lo;0;L;;;;N;;;;;
1499C;GANGGA MALAYU LETTER SIN;Lo;0;L;;;;N;;;;;
1499D;GANGGA MALAYU LETTER SHIN;Lo;0;L;;;;N;;;;;
1499E;GANGGA MALAYU LETTER SOD;Lo;0;L;;;;N;;;;;
1499F;GANGGA MALAYU LETTER THOD;Lo;0;L;;;;N;;;;;
149A0;GANGGA MALAYU LETTER TOH;Lo;0;L;;;;N;;;;;
149A1;GANGGA MALAYU LETTER ZOH;Lo;0;L;;;;N;;;;;
149A2;GANGGA MALAYU LETTER AIN;Lo;0;L;;;;N;;;;;
149A3;GANGGA MALAYU LETTER RHIN;Lo;0;L;;;;N;;;;;
149A4;GANGGA MALAYU LETTER NGA;Lo;0;L;;;;N;;;;;
149A5;GANGGA MALAYU LETTER PA;Lo;0;L;;;;N;;;;;
149A6;GANGGA MALAYU LETTER KOP;Lo;0;L;;;;N;;;;;
149A7;GANGGA MALAYU LETTER KAP;Lo;0;L;;;;N;;;;;
149A8;GANGGA MALAYU LETTER GA;Lo;0;L;;;;N;;;;;
149A9;GANGGA MALAYU LETTER LAM;Lo;0;L;;;;N;;;;;
149AA;GANGGA MALAYU LETTER MIM;Lo;0;L;;;;N;;;;;
149AB;GANGGA MALAYU LETTER NUN;Lo;0;L;;;;N;;;;;
149AC;GANGGA MALAYU LETTER WAU;Lo;0;L;;;;N;;;;;
149AD;GANGGA MALAYU LETTER HA;Lo;0;L;;;;N;;;;;
149AE;GANGGA MALAYU LETTER YA;Lo;0;L;;;;N;;;;;
149AF;GANGGA MALAYU LETTER NYA;Lo;0;L;;;;N;;;;;
149B0;GANGGA MALAYU VOWEL SIGN AA;Mn;0;NSM;;;;N;;;;;
149B1;GANGGA MALAYU VOWEL SIGN I;Mn;0;NSM;;;;N;;;;;
149B2;GANGGA MALAYU VOWEL SIGN U;Mn;0;NSM;;;;N;;;;;
149B3;GANGGA MALAYU NASAL SIGN AN;Mn;0;NSM;;;;N;;;;;
149B4;GANGGA MALAYU NASAL SIGN IN;Mn;0;NSM;;;;N;;;;;
149B5;GANGGA MALAYU NASAL SIGN UN;Mn;0;NSM;;;;N;;;;;
149B6;GANGGA MALAYU SIGN TASHDID;Mn;0;NSM;;;;N;;;;;
149B7;GANGGA MALAYU SIGN JAZMA;Mn;0;NSM;;;;N;;;;;
149B8;GANGGA MALAYU SIGN LAYAR;Mn;0;NSM;;;;N;;;;;
149B9;GANGGA MALAYU SIGN CHECHAQ;Mn;0;NSM;;;;N;;;;;
149C0;GANGGA MALAYU DIGIT ZERO;Nd;0;L;0;0;0;N;;;;;
149C1;GANGGA MALAYU DIGIT ONE;Nd;0;L;1;1;1;N;;;;;
149C2;GANGGA MALAYU DIGIT TWO;Nd;0;L;2;2;2;N;;;;;
149C3;GANGGA MALAYU DIGIT THREE;Nd;0;L;3;3;3;N;;;;;
149C4;GANGGA MALAYU DIGIT FOUR;Nd;0;L;4;4;4;N;;;;;
149C5;GANGGA MALAYU DIGIT FIVE;Nd;0;L;5;5;5;N;;;;;
149C6;GANGGA MALAYU DIGIT SIX;Nd;0;L;6;6;6;N;;;;;
149C7;GANGGA MALAYU DIGIT SEVEN;Nd;0;L;7;7;7;N;;;;;
149C8;GANGGA MALAYU DIGIT EIGHT;Nd;0;L;8;8;8;N;;;;;
149C9;GANGGA MALAYU DIGIT NINE;Nd;0;L;9;9;9;N;;;;;

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‘Confusable’ Characters A list of Gangga Malayu characters that are ‘confusable’ with those encoded in other script blocks in the UCS:





















































14990 GANGGA MALAYU LETTER ALIF ; 2215 DIVISION SLASH
 14996 GANGGA MALAYU LETTER HHA ; 0048 LATIN CAPITAL LETTER H
 1499E GANGGA MALAYU LETTER SOD ; 2B2D WHITE HORIZONTAL ELLIPSE
 149A0 GANGGA MALAYU LETTER TOH ; 2283 SUPERSET OF
 149A1 GANGGA MALAYU LETTER ZOH ; 2285 NOT A SUPERSET OF
 149A3 GANGGA MALAYU LETTER RHIN ; 27D2 ELEMENT OF OPENING UPWARDS
 149A5 GANGGA MALAYU LETTER PA ; 0034 DIGIT FOUR
 149A6 GANGGA MALAYU LETTER KOP ; 27DC LEFT MULTIMAP
 149A7 GANGGA MALAYU LETTER KAP ; 29D7 DOUBLE-ENDED MULTIMAP
 149B1 GANGGA MALAYU VOWEL SIGN I ; 030A COMBINING RING ABOVE
 149B7 GANGGA MALAYU SIGN JAZMA ; 0323 COMBINING DOT BELOW
 149B8 GANGGA MALAYU SIGN LAYAR ; A982 JAVANESE SIGN LAYAR
 149B9 GANGGA MALAYU SIGN CHECHAQ ; 0307 COMBINING DOT ABOVE

4 References

- Blagden, C. O. 1908. “Prefatory Note”. In R. A. Kern, ‘A Malay Cipher Alphabet’, *Journal of the Royal Anthropological Institute of Great Britain and Ireland*, vol. 38 (Jan. – Jun. 1908), pp. 207–208.
- Clifford, Hugh and Frank A. Swettenham. 1894. *A Dictionary of the Malay Language: Malay–English*. Part I.—The Letter “A.” Taiping, Perak: Government Printing Office.
- Kern, R. A. 1908. “A Malay Cipher Alphabet”. Prefatory Note by C. O. Blagden. *Journal of the Royal Anthropological Institute of Great Britain and Ireland*, vol. 38 (Jan. – Jun. 1908), pp. 207–211.
- Pandey, Anshuman. 2010. “Preliminary Proposal to Encode the Gangga Malayu Script” N3798 L2/10-173, May 6, 2010. <http://std.dkuug.dk/JTC1/SC2/WG2/docs/n3798.pdf>

5 Acknowledgments

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	1499	149A	149B	149C
0	 14990	 149A0	 149B0	 149C0
1	 14991	 149A1	 149B1	 149C1
2	 14992	 149A2	 149B2	 149C2
3	 14993	 149A3	 149B3	 149C3
4	 14994	 149A4	 149B4	 149C4
5	 14995	 149A5	 149B5	 149C5
6	 14996	 149A6	 149B6	 149C6
7	 14997	 149A7	 149B7	 149C7
8	 14998	 149A8	 149B8	 149C8
9	 14999	 149A9	 149B9	 149C9
A	 1499A	 149AA		
B	 1499B	 149AB		
C	 1499C	 149AC		
D	 1499D	 149AD		
E	 1499E	 149AE		
F	 1499F	 149AF		

Consonant letters

- 14990 / GANGGA MALAYU LETTER ALIF
- 14991 Ɪ GANGGA MALAYU LETTER BA
- 14992 Ɪ̇ GANGGA MALAYU LETTER TA
- 14993 Ɪ̈ GANGGA MALAYU LETTER THA
- 14994 Ɪ̉ GANGGA MALAYU LETTER JIM
- 14995 Ɪ̊ GANGGA MALAYU LETTER CHA
- 14996 Ɪ̋ GANGGA MALAYU LETTER HHA
- 14997 Ɪ̌ GANGGA MALAYU LETTER KHA
- 14998 Ɪ̍ GANGGA MALAYU LETTER DAL
- 14999 Ɪ̎ GANGGA MALAYU LETTER ZAL
- 1499A Ɪ̏ GANGGA MALAYU LETTER RA
- 1499B Ɪ̐ GANGGA MALAYU LETTER ZE
- 1499C Ɪ̑ GANGGA MALAYU LETTER SIN
- 1499D Ɪ̒ GANGGA MALAYU LETTER SHIN
- 1499E Ɪ̓ GANGGA MALAYU LETTER SOD
- 1499F Ɪ̔ GANGGA MALAYU LETTER THOD
- 149A0 Ɪ̕ GANGGA MALAYU LETTER TOH
- 149A1 Ɪ̖ GANGGA MALAYU LETTER ZOH
- 149A2 Ɪ̗ GANGGA MALAYU LETTER AIN
- 149A3 Ɪ̘ GANGGA MALAYU LETTER RHIN
- 149A4 Ɪ̙ GANGGA MALAYU LETTER NGA
- 149A5 Ɪ̚ GANGGA MALAYU LETTER PA
- 149A6 Ɪ̛ GANGGA MALAYU LETTER KOP
- 149A7 Ɪ̜ GANGGA MALAYU LETTER KAP
- 149A8 Ɪ̝ GANGGA MALAYU LETTER GA
- 149A9 Ɪ̞ GANGGA MALAYU LETTER LAM
- 149AA Ɪ̟ GANGGA MALAYU LETTER MIM
- 149AB Ɪ̠ GANGGA MALAYU LETTER NUN
- 149AC Ɪ̡ GANGGA MALAYU LETTER WAU
- 149AD Ɪ̢ GANGGA MALAYU LETTER HA
- 149AE Ɪ̣ GANGGA MALAYU LETTER YA
- 149AF Ɪ̤ GANGGA MALAYU LETTER NYA

Dependent vowel signs

- 149B0 Ɪ̥ GANGGA MALAYU VOWEL SIGN A
- 149B1 Ɪ̦ GANGGA MALAYU VOWEL SIGN I
- 149B2 Ɪ̧ GANGGA MALAYU VOWEL SIGN U

Nasal signs

- 149B3 Ɪ̨ GANGGA MALAYU NASAL SIGN AN
- 149B4 Ɪ̩ GANGGA MALAYU NASAL SIGN IN
- 149B5 Ɪ̪ GANGGA MALAYU NASAL SIGN UN

Various signs

- 149B6 Ɪ̫ GANGGA MALAYU SIGN TASHDID
- 149B7 Ɪ̬ GANGGA MALAYU SIGN JAZMA
- 149B8 Ɪ̭ GANGGA MALAYU SIGN LAYAR
- 149B9 Ɪ̮ GANGGA MALAYU SIGN CHECHAQ

Digits

- 149C0 Ɪ̯ GANGGA MALAYU DIGIT ZERO
- 149C1 Ɪ̰ GANGGA MALAYU DIGIT ONE
- 149C2 Ɪ̱ GANGGA MALAYU DIGIT TWO
- 149C3 Ɪ̲ GANGGA MALAYU DIGIT THREE
- 149C4 Ɪ̳ GANGGA MALAYU DIGIT FOUR
- 149C5 Ɪ̴ GANGGA MALAYU DIGIT FIVE
- 149C6 Ɪ̵ GANGGA MALAYU DIGIT SIX
- 149C7 Ɪ̶ GANGGA MALAYU DIGIT SEVEN
- 149C8 Ɪ̷ GANGGA MALAYU DIGIT EIGHT
- 149C9 Ɪ̸ GANGGA MALAYU DIGIT NINE

Figure 1: Proposed code chart and nameslist for Gangga Malayu

ARABIC-MALAY ALPHABET AND GANGGA MALAYU COMPARED.

ا	ب	ت	ث	ج	چ	ح	خ	د	ذ	ر	ز	س	ش
/	7	3	⌒	⌒	⌒	H	H	⌒	0	H	H	⌒	⌒
alif	ba	ta	tha	jim	cha	ha	kha	dal	zal	ra	ze	sin	shin
ص	ض	ط	ظ	ع	غ	ڠ	ق	ق	ک	گ	ل	م	
o	o	o	D	u	u	u	⌒	o	o	o	<	o	
sod	thod	toh	zoh	ain	rhin	nga	pa	kop	kap	ga	lam	mim	
ن	و	ه	ي	ب									
H	τ	o	⌒	⌒									
nun	wau	ha	ya	nya									
		a	i	u	an	in	un	ba	bi	bu			
		/	o	/	/	l	⌒	⌒	⌒	/			

LETTER IN GANGGA MALAYU WITH transliteration.

ڠ ڠ ڠ ڠ ڠ ڠ ڠ ڠ ڠ ڠ ڠ ڠ ڠ ڠ ڠ ڠ
 di - ma'alumkan mēngadap tuwan G. M. I(a)id - lāu yang
 ڠ(ڠ?) ڠ ڠ
 muliya
 ڠ
 di - ma'alumkan yang sahya - pun bēsar duka chita dari
 ڠ
 hal hurup ganga (= gangga) Malayu ini ka - rana tiyada-lah
 ڠ
 di - dapāi bageimana mu - la - nya yang bulih di - dapati ulih
 ڠ
 bapa sahya itu mēl(a)inkan yang sahya dapat itu dengan penga-
 ڠ
 jaran daripada bapa sahya itu juwa ada-nya.
 ڠ
 daripada Muhammad Sirajudin.
 1 2 3 4 5 6 7 8 9 10
 A MALAY CIPHER ALPHABET.

Figure 2: Comparison of Gangga Malayu and the Arabic Malay scripts, and a small text in Gangga Malayu (from Kern 1931: Plate XVII).

**ISO/IEC JTC 1/SC 2/WG 2
PROPOSAL SUMMARY FORM TO ACCOMPANY SUBMISSIONS
FOR ADDITIONS TO THE REPERTOIRE OF ISO/IEC 10646¹**

Please fill all the sections A, B and C below.

Please read Principles and Procedures Document (P & P) from <http://www.dkuug.dk/JTC1/SC2/WG2/docs/principles.html> for guidelines and details before filling this form.

Please ensure you are using the latest Form from <http://www.dkuug.dk/JTC1/SC2/WG2/docs/summaryform.html>.

See also <http://www.dkuug.dk/JTC1/SC2/WG2/docs/roadmaps.html> for latest Roadmaps.

A. Administrative

1. Title: **Proposal to Encode the Gangga Malayu Script in ISO/IEC 10646**
2. Requester's name: *Script Encoding Initiative (SEI) / Anshuman Pandey <pandey@umich.edu>*
3. Requester type (Member body/Liaison/Individual contribution): *Liaison contribution*
4. Submission date: *2011-05-02*
5. Requester's reference (if applicable):
6. Choose one of the following:
This is a complete proposal: Yes
(or) More information will be provided later:

B. Technical – General

1. Choose one of the following:
 - a. This proposal is for a new script (set of characters): Yes
Proposed name of script: *Gangga Malayu*
 - b. The proposal is for addition of character(s) to an existing block:
Name of the existing block:
2. Number of characters in proposal: *52*
3. Proposed category (select one from below - see section 2.2 of P&P document):
A-Contemporary B.1-Specialized (small collection) B.2-Specialized (large collection)
C-Major extinct D-Attested extinct E-Minor extinct
F-Archaic Hieroglyphic or Ideographic G-Obscure or questionable usage symbols
4. Is a repertoire including character names provided? Yes
 - a. If YES, are the names in accordance with the "character naming guidelines" in Annex L of P&P document? Yes
 - b. Are the character shapes attached in a legible form suitable for review? Yes
5. Fonts related:
 - a. Who will provide the appropriate computerized font to the Project Editor of 10646 for publishing the standard? *Anshuman Pandey*
 - b. Identify the party granting a license for use of the font by the editors (include address, e-mail, ftp-site, etc.): *Anshuman Pandey <pandey@umich.edu>*
6. References:
 - a. Are references (to other character sets, dictionaries, descriptive texts etc.) provided? Yes
 - b. Are published examples of use (such as samples from newspapers, magazines, or other sources) of proposed characters attached? Yes
7. Special encoding issues:
Does the proposal address other aspects of character data processing (if applicable) such as input, presentation, sorting, searching, indexing, transliteration etc. (if yes please enclose information)? Yes, *see proposal for additional details*

8. Additional Information:

Submitters are invited to provide any additional information about Properties of the proposed Character(s) or Script that will assist in correct understanding of and correct linguistic processing of the proposed character(s) or script. Examples of such properties are: Casing information, Numeric information, Currency information, Display behaviour information such as line breaks, widths etc., Combining behaviour, Spacing behaviour, Directional behaviour, Default Collation behaviour, relevance in Mark Up contexts, Compatibility equivalence and other Unicode normalization related information. See the Unicode standard at <http://www.unicode.org> for such information on other scripts. Also see <http://www.unicode.org/Public/UNIDATA/UCD.html> and associated Unicode Technical Reports for information needed for consideration by the Unicode Technical Committee for inclusion in the Unicode Standard.

¹ Form number: N3702-F (Original 1994-10-14; Revised 1995-01, 1995-04, 1996-04, 1996-08, 1999-03, 2001-05, 2001-09, 2003-11, 2005-01, 2005-09, 2005-10, 2007-03, 2008-05, 2009-11)

C. Technical - Justification

1. Has this proposal for addition of character(s) been submitted before? If YES explain	No
2. Has contact been made to members of the user community (for example: National Body, user groups of the script or characters, other experts, etc.)? If YES, with whom? If YES, available relevant documents:	No
3. Information on the user community for the proposed characters (for example: size, demographics, information technology use, or publishing use) is included? Reference:	Yes <i>See text of proposal.</i>
4. The context of use for the proposed characters (type of use; common or rare) Reference:	Rare <i>See text of proposal.</i>
5. Are the proposed characters in current use by the user community? If YES, where? Reference:	No
6. After giving due considerations to the principles in the P&P document must the proposed characters be entirely in the BMP? If YES, is a rationale provided? If YES, reference:	No
7. Should the proposed characters be kept together in a contiguous range (rather than being scattered)?	Yes
8. Can any of the proposed characters be considered a presentation form of an existing character or character sequence? If YES, is a rationale for its inclusion provided? If YES, reference:	No
9. Can any of the proposed characters be encoded using a composed character sequence of either existing characters or other proposed characters? If YES, is a rationale for its inclusion provided? If YES, reference:	No
10. Can any of the proposed character(s) be considered to be similar (in appearance or function) to an existing character? If YES, is a rationale for its inclusion provided? If YES, reference:	Yes Yes <i>See text of proposal.</i>
11. Does the proposal include use of combining characters and/or use of composite sequences? If YES, is a rationale for such use provided? If YES, reference: Is a list of composite sequences and their corresponding glyph images (graphic symbols) provided? If YES, reference:	Yes Yes <i>Combining signs; see text of proposal</i>
12. Does the proposal contain characters with any special properties such as control function or similar semantics? If YES, describe in detail (include attachment if necessary)	Yes <i>Virama;</i> <i>see text of proposal</i>
13. Does the proposal contain any Ideographic compatibility character(s)? If YES, is the equivalent corresponding unified ideographic character(s) identified? If YES, reference:	No