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Proposal to Encode the Modi Script in ISO/IEC 10646

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1 Introduction

This is a proposal to encode the Modi script in the Universal Character Set (ISO/IEC 10646). It replaces the following documents:

- L2/09-249R "Preliminary Proposal to Encode the Modi Script in ISO/IEC 10646"
- N3780 L2/10-084 "Revised Code Chart and Names List for the Modi Script"

2 Background

Modi (मोडी, मेरे modi) is a Brahmi-based script used mainly for writing Marathi (ISO 639: mar), an Indo-Aryan language spoken in western and central India, predominantly in the state of Maharashtra. It is believed that the script was developed in the 16th century before the rise of the Maratha dynasties; the earliest Modi document is dated to the early 17th century. Modi was the official script of the Maratha dynasties from the 17th century and continued to be used in Maharashtra until the middle of the 20th century, when it was formally replaced by Devanagari.

The majority of Modi documents are manuscripts. Printing in Modi began in the early 19th century. Thousands of Modi documents are preserved in India, Denmark, and France, owing to the Danish and French presence in Tanjore, Pondicherry, and other regions in south India through the 20th century. There is an active Modi user community in Maharashtra. Newspapers were written in Modi (see Figure 14) and several script primers were produced for teaching the script in schools (see Figure 18). Courses for learning Modi are offered by Bharat Itihas Samshodhak Mandal (BISM) in Pune and by other institutions. There is also a scholarly community engaged in research on Modi documents and in the study of the script.

2.1 Relationship to Devanagari

Although Modi is based upon the same model as Devanagari, it differs considerably from the latter in terms of letterforms, rendering behaviors, and orthography. A comparison of the two scripts is shown in Figure 3 and 4. The shapes of some consonants, vowels, and vowel signs are similar. The actual differences are visible in the behaviors of these characters in certain environments, such as consonant-vowel combinations

and in consonant conjuncts, that are standard features of Modi orthography. Proper representation of Modi in plain-text requires the preservation of its distinct rendering behaviors. This can only be accomplished at the character level, through character content that is independent of font changes or other formatting.

3 Proposal Details

3.1 Script Name

The characters are proposed for encoding in a new script block to be named 'Modi'.

3.2 Allocation

The block is allocated to the Supplementary Multilingual Plane (SMP) at the range U+11600..1164F.

3.3 Character Repertoire

A total of 79 characters is required to encode a basic character set for Modi. The character names follow the UCS convention for Indic scripts. The proposed code chart and names list are shown in Figure 1.

3.4 Encoding Principles

The proposed encoding for Modi seeks to represent the script in plain text. It is understood that Modi is a highly stylistic and cursive script. The proposed Modi glyphs shown in the code chart are an attempt to represent the basic graphical structure of Modi letters, as is done in traditional *barakhadi*. The joining features and other stylistic elements of the script should be considered typographic matters and managed through the design of fonts and other features at the presentation level.

4 Writing System Details

4.1 Structure

The general structure (phonetic order, *mātrā* reordering, use of *virāma*, etc.) of Modi is similar to that of Devanagari.

4.2 Styles

There are four major styles of Modi:

Chitnisi:

मेने दी के प्रोप्तां चामध्रायामीतां चरत् मठाभा धंत्रागार्श्विद्वाधियां प्रयागित्वा कि प्राणार्श्व का प्राणां के लि प्राणां के प्राणां के प्राणां के प्राणां के लि प्राणां के जा के लि के के लि प्राणां के लि लि के के के के

Bahamani:

Peshve:



Angalkal:



4.3 Virāma

The Modi \bigcirc VIRAMA is identical in function to the corresponding character in other Indic scripts. The Marathi name for this sign is *halant*.

4.4 Vowels

There are 14 vowel letters:

খ্য	Α	0	U	ल	VOCALIC L	धे	0
U	AA	\mathfrak{G}	UU	ॡ	VOCALIC LL	র্থ	AU
छ	Ι	স্থ	VOCALIC R	ষ্ট	Ε		
র্চ	II	ক্ষ	VOCALIC RR	ষ্ট	AI		

4.5 Vowel Signs

There are 13 combining vowel signs:

্র	SIGN AA	ু	SIGN UU	ૣ	SIGN VOCALIC LL	ो	SIGN AU
ी	SIGN I	ূ	SIGN VOCALIC R	े	SIGN E		
ী	SIGN II	ૄ	SIGN VOCALIC RR	ॅ	SIGN AI		
ु	SIGN U	ૢ	SIGN VOCALIC L	ो	SIGN O		

Certain vowel signs have special rendering behaviors when they occur in consonant-vowel combinations (see Section 4.7 and Table 1.)

4.6 Consonants

There are 34 consonant letters:

ห	KA	ञ	NYA	र्ध	DHA	୪	LA
থ্য	KHA	ত	TTA		NA	υ	VA
ग	GA	ਹ	TTHA	ប	PA	ટા	SHA
घ	GHA	ङ	DDA	પ્ન	PHA	ष	SSA
<u>ड</u> .	NGA	$\overline{\mathbf{v}}$	DDHA	ਹ	BA	স	SA
ন্য	CA	छ त्	NNA	મ	BHA	ប	HA
ন্ত	СНА	ત	ТА	\mathcal{H}	MA	ळ	LLA
જ	JA	ন্য	THA	ण	YA		
झ	JHA	ঘ	DA	τ	RA		

Each consonant letter bears an inherent vowel, represented by /a/. This inherent vowel is silenced using the \bigcirc VIRAMA. Certain consonants have contextual forms or special rendering behaviors when they occur in consonant-vowel combinations (see Section 4.7) or in consonant conjuncts (see Section 4.8).

4.7 Consonant-Vowel Ligatures

Combinations of particular consonant letters and vowel signs are shaped in a manner different from the normal combination behavior exhibited in scripts such as Devanagari. The majority of consonant-vowel (CV) combinations in Modi are represented as ligatures. Special CV combinations are shown in Table 1. While there may be a pattern to the shaping of certain CV combinations, some are idiosyncratic and cannot be predicted. There are three models for shaping CV combinations in Modi, which are described below.

4.7.1 Method 1: CV with normal shaping

The representation of a CV with no change to glyph shapes is the normal behavior. Only 8 consonants follow this pattern for all CV combinations: ঘ GHA, ਓ NGA, ਓ CHA, ਓ DDHA, ਓ NYA, হা SHA, ૫ SSA, ਓ LLA.

4.7.2 Method 2: CV with contextual form of consonant letter

There are 7 consonant letters that take a contextual form when they combine with certain vowel signs: \mathfrak{V} THA, \mathfrak{V} DA, \mathfrak{V} DHA, \mathfrak{V} PA, \mathfrak{K} MA, \mathfrak{V} YA, \mathfrak{I} RA. The contextual forms never occur independently and occur only in CV combinations with the vowel signs below:

	regular	contextual	occurs with
THA	ধ্য	খ	ा -АА, ु -U, ू -UU, ो -O, ॉ -AU
DA	ঘ	ट	ा -aa, ो -o, ॉ -au
DHA	रा	ર્ચ	ा -aa, ू -uu, ो -o, ॉ -au
PA	ঘ	प	ा -АА, ु -U, ू -UU, ो -O, ॉ -AU
MA	ਸ	म	ु -U, ू -UU
YA	छ	य	<i>ु</i> -U, ू -UU
RA	τ	र	ा -AA, ु -U, ू -UU, ो -O, ॉ -AU

4.7.3 Method 3: CV as ligature

Certain CV combinations with $\neg t - AA$, $\neg t - U$, $\neg t - O$, $\neg t - AU$ are represented as ligatures. Generally, the ligature consists of a reduced or half-form of the consonant letter and a contextual form of the vowel sign.

1. Ligatures with -AA, -O, -AU

When the vowel signs $\neg t - AA$, $\neg t - O$, $\neg t - AU$, combine with certain consonant letters, the basic shape $\neg t$ of the sign changes to $\neg t$. Ligatures formed with these vowel signs can be divided into two classes based upon the structure of the consonant:

- (b) Consonant glyphs without looped right-hand terminals The final upwards stroke is truncated and directed rightwards in order to join to the vowel sign: affects the following letters: むкна, マ JA, む TTA, む TTHA, マ NA, 된 BA, マ LA, む VA.
- 2. Ligatures with -U, -UU

	regular	contextual	occurs with
SIGN U	়	ঁণ্	र CA, झ JHA, ज NYA, U DHA, U BA, V LA, U VA
SIGN UU	્ર	্ব্য	र CA, झ JHA, ज NYA, य BA, V LA, U VA

3. Special Ligatures

Certain combinations of consonants and vowel signs are shaped using special ligatures:

- -AA, -O, -AU: 3 ca, 7 ma, 7 ya, 8 la, 7 sa, 7 ha
- -I, -II: ত dda, ত la
- -U, -UU: स ka, उ kha, ग ga, श ja, त ta, उ da, श na, स pha, J ra, छ sa, छ ha
- -R: न्न ka

See Table 1 for the representation of ligatures.

4.8 Consonant Conjuncts

Consonant clusters are generally represented as ligatures. Certain consonants have special shapes and rendering behaviors when they are written as part of a conjunct.

- 1. Ligatures There two consonant ligatures:
 - (a) 뚮 *ksa* <도 кА + ् VIRAMA + 도 SSA>
 - (b) त्र tra < TA + ् VIRAMA + उ RA>
- 2. Half Forms C_1 is generally represented using a half-form. Some examples are: $TA \ \overline{\tau} \rightarrow \overline{c}$; $SA \ \overline{v} \rightarrow \overline{v}$; S
- 3. Contextual Forms Some consonants have a contextual form when they appear in a cluster: THA \mathfrak{V} $\rightarrow \mathfrak{A}$; PA $\mathfrak{V} \rightarrow \mathfrak{A}$; YA $\mathfrak{V} \rightarrow \mathfrak{A}$. For example, $\mathfrak{A} \triangleleft \mathfrak{A} \leftarrow \mathfrak{V}$ IRAMA $+\mathfrak{V}$ YA>.

4.9 Forms of RA

When written independently, the letter \Im RA takes the basic shape:



It takes different shapes based upon environment. These are identified in figures 23–26 and described below:

4.9.1 Conjunct: RA as C₁

. When RA appears as the first element in a consonant cluster it takes the following shapes:

1. *Repha* The ⁶ *repha* is produced as <ℑ RA + (VIRAMA>:



2. Eyelash RA The form \neg is used in certain contexts and is known as the 'eyelash RA'. It is to be represented as in Devanagari using the sequence $\langle J RA + 0 VIRAMA + []] ZWJ >$. It contrasts with *repha*; compare *ryā*

with *rya*:

There has been some discussion regarding the suitability to encode 'eyelash RA' as an independent character. This has been identified as an issue for further discussion in Section 6.1.

4.9.2 Conjunct: RA in Other Positions

When \Im RA is the second (or greater) element of a conjunct, it is represented in the following ways. The encoding representation of all these forms is $\langle C + \heartsuit$ VIRAMA + RA>. The actual representation is managed in the font.

1. *Rakar* The subjoined form , *rakar*. For instance *pra*:



2. Vattu The subjoined form $\gtrsim vattu$. For instance *stra*:



3. *Special ligatures* Some sequences with RA are represented as distinct ligatures: For instance *tra*:



4.9.3 Word-Level Ligatures

The form of RA is also influenced at the word level depending upon the characters in the preceding syllable. The forms described below are to be managed in the font using substitutions.

1. \Im KA Sequences with of KA + RA are represented using distinct ligatures: The sequence kara <KA + RA> is represented using the ligature \Im , as shown below:

The sequence $k\bar{a}ra < KA + -AA + RA >$ is represented using the ligature \bar{K}_{A} :

Contrast with the conjunct kra < KA + VIRAMA + RA >:

Vowel signs are used with these ligatures in the normal practice:

2. If RA occurs after the sequence <PA + -U> it takes the shape , as in the word *purepura* below:



3. \mathfrak{B} sa With sa it takes the shape $\overline{\mathfrak{R}}$

4. Other letters In sequences with consonant letters that have a right descender, RA takes the shape .



This shape is also used when RA follows vowels signs with vertical descenders such as -AA and -O:

In some cases, this form of RA is written with DANDA-s in abbreviations (see Section 4.12).

5. Rounded letters After rounded letters it takes the shape 7:

4.10 Ruled Lines and Headstrokes

Several manuscripts and books show Modi with a head-line similar to that of Devanagari. The line is not a headstroke, but a typographic device. In general practice, lines are drawn upon a page prior to writing. The text is then written with the Modi letters hanging from the line. In some cases, lines are used in Modi text for emphasis, titling, or sectioning.

The specimen below shows the indiscriminate use of ruled lines. The text is written upon ruled lines, but numbers are written freely, except for the last value, which is a total of the preceding figures:

40006. तोक्राह्यगी संघारम 20006 นู้สองหน่อมีลิการเน่นอารายก อิตาอมาสุรภ 20006 นู้านที่เอ็มนี้คนูนนั่นอารายก २००६-पंनषचर्णित्रप्रनिष्ठापेप्याचा রীশাহদ্ধাব্য

Although the line is not part of a character's graphical structure it was incorporated into the design of glyphs of the first Modi metal fonts. This was likely an attempt to represent the appearance of hand-written Modi documents. The practice of designing Modi glyphs with headstrokes continues in digital typography.

If there is a requirement to represent Modi without the headstroke, font developers should produce sets of Modi fonts with head-strokes and without. This will facilitate the representation of Modi text that is not written under ruled lines.

4.11 Word and Section Boundaries

Word boundaries are generally not marked in Modi. This is on account of Modi being an administrative script, which is characterized by the practice of rapid writing. Section boundaries appear in some Modi documents.

Spacing in a typical Modi document looks like:

The practice of marking such boundaries depended upon the scribe or the occasion. The following specimen is written with word-spacing; it is not known if spacing was introduced intentionally, perhaps in order to enhance legibility:

The manner of marking word boundaries changes between printed and written Modi. In some printed books, word and sentence boundaries are marked. In the specimen below, word boundaries are indicated with spaces and the ends of sentences are marked using a period:



4.12 DANDAS

The punctuation | DANDA and || DOUBLE DANDA are used in Modi:

भेक्ष मेन्डाता 1 go tota 20094 দেহনী মহার্টা पारमपू

The DANDA-s are proposed for disunification from the corresponding Devanagari characters on account of special behavior required of these characters in Modi. The example below shows the form < || DOUBLE DANDA $+ \Im$ RA> $\rightarrow ||$ (see Section 4.9.3):

ĸ.	नार.	रा॥र	राहणार
<u>ع</u> .	चार	द॥र	दस्तुर
۹٥.	र्गान	ब॥र	बरोबर
99.	उन्न गर्	सब र॥र	सब रजिस्ट्रार

4.13 Other Punctuation

Modi books printed by the American Tract Society use Latin punctuation, such as comma and semi-colons:



4.14 Abbreviations

Abbreviations are indicated using the Modi • ABBREVIATION SIGN:



4.15 Transcription of Loanwords

The sign $\check{\circ}$ ARDHACANDRA is used for transcribing loanwords and sounds from English.

4.16 Digits

Modi a full set of decimal digits: $\overline{\circ}$ ZERO, $\overline{\neg}$ ONE, $\overline{\Sigma}$ TWO, $\overline{\Im}$ THREE, $\overline{\nabla}$ FOUR, $\overline{\nabla}$ FIVE, $\overline{\varepsilon}$ SIX, $\overline{\heartsuit}$ SEVEN, $\overline{\zeta}$ EIGHT, $\overline{\heartsuit}$ NINE.

4.17 Number Forms and Unit Marks

Number forms and unit marks are commonly found in Modi documents, eg. - U+A833 NORTH INDIC FRACTION ONE SIXTEENTH, = U+A834 NORTH INDIC FRACTION ONE EIGHTH, \equiv U+A835 NORTH INDIC FRACTION THREE SIXTEENTHS, etc. Other signs include < U+A837 NORTH INDIC PLACEHOLDER MARK, which is called $\exists a \bar{l} \bar{l}$ or $\exists a \bar{l} \bar{l}$ in Marathi, as well as \int U+A838 NORTH INDIC RUPEE MARK. See N3367 L2/07-354 for details on these characters.

These signs are important for the complete representation of Modi, but they are not exclusive to the script. They are used across several north Indic scripts, such as Devanagari, Gujarati, Gurmukhi, and Kaithi. For this reason the characters are encoded in the "Common Indic Number Forms" block (U+A830..U+A83F).

Other number forms not yet encoded in the UCS are attested in Modi documents, such as '÷':

छयापावारी द्वापरन छा ४ न लत्ते चेन्छी गतायाचे स ज्याजन्यती - ट्रेक्सार्डास् भागयाधेनी घरांचेरी प्ययने ७ र मरा छपो छच्नपी छेन्न

This character is likely a sign that indicates a remaining value or fraction. The following example shows the use of \checkmark NORTH INDIC PLACEHOLDER MARK as well as '÷':

The Modi '÷' is not currently proposed for encoding because of insufficient information.

4.18 Special Signs

Several invocations and special signs are used in Modi documents. The Devanagari $\Re \hat{f} sr\bar{i}$ is written at the top of letters and other correspondence. Other such signs are shown in figures 29 and 28. Of these only the following is currently proposed for encoding:

1. J HUVA The invocation sign HUVA is written at the top of several Modi documents. It is derived from the Arabic هوا huva.

	J
6 1- 12 12	
	অপমতান্দতান্দ্র বি
	गाधचनजनसोयचीनस्ते
	मयाखेनराष चेरमन्छय

Additional research is required to determine the suitability of encoding other signs.

4.19 Vowel Equivalences

Some atomic vowel letters may be represented using a sequence of a base vowel letter and a vowel sign. This practice is not recommended. The atomic character should always be used. The characters in question are specified below:

RECOMMENDED	NOT RECOMMENDED
VOWEL LETTER E	${\mathfrak V}$ vowel letter a + $\stackrel{\frown}{}$ vowel sign e
\mathfrak{V} vowel letter ai	${\mathfrak V}$ vowel letter a $+$ $\stackrel{\scriptstyle{\sim}}{}}$ vowel sign ai
री vowel letter o	${rak C}$ vowel letter AA + $ cei$ vowel sign e
U vowel letter au	ी vowel letter aa $+$ ें vowel sign ai

4.20 Collation

The collating order for Modi follows the pattern for Marathi:

```
\begin{array}{l} \mathfrak{V}_{A} < \mathfrak{V}_{AA} < \mathfrak{V}_{I} < \mathfrak{S} \mathfrak{I}_{II} < \mathfrak{I}_{I} U < \mathfrak{K} \mathfrak{I}_{U} < \mathfrak{R} \text{ vocalic } R < \mathfrak{R} \text{ vocalic } R < \mathfrak{R} \text{ vocalic } R < \mathfrak{V}_{I} < \mathfrak{V}_{I} = \langle \mathfrak{V}_{I} =
```

4.21 Linebreaking

Letters, vowel signs, and digits behave as in Devanagari.

5 Character Data

5.1 Character Properties

The properties for Modi characters in the Unicode Character Database format are:

```
11600; MODI LETTER A; Lo; 0; L;;;;; N;;;;;
11601; MODI LETTER AA; Lo; 0; L;;;;; N;;;;;
11602; MODI LETTER I; Lo; 0; L;;;;; N;;;;;
11603; MODI LETTER II; Lo; 0; L;;;;; N;;;;;
11604; MODI LETTER U; Lo; 0; L;;;;; N;;;;;
11605; MODI LETTER UU; Lo; 0; L;;;;; N;;;;;
11606; MODI LETTER VOCALIC R; Lo; 0; L;;;;; N;;;;;
11607; MODI LETTER VOCALIC RR; Lo; 0; L;;;;; N;;;;;
11608; MODI LETTER VOCALIC L;Lo;0;L;;;;N;;;;
11609; MODI LETTER VOCALIC LL; Lo; 0; L;;;;; N;;;;;
1160A; MODI LETTER E; Lo; 0; L;;;;; N;;;;;
1160B; MODI LETTER AI; Lo; 0; L;;;;; N;;;;;
1160C; MODI LETTER 0; Lo; 0; L;;;;; N;;;;;
1160D; MODI LETTER AU; Lo; 0; L;;;;; N;;;;;
1160E; MODI LETTER KA; Lo; 0; L;;;;; N;;;;;
1160F; MODI LETTER KHA; Lo; 0; L;;;;; N;;;;
11610; MODI LETTER GA; Lo; 0; L;;;;; N;;;;;
11611; MODI LETTER GHA; Lo; 0; L;;;;; N;;;;;
11612; MODI LETTER NGA; Lo; 0; L;;;;; N;;;;;
11613; MODI LETTER CA; Lo; 0; L;;;;; N;;;;;
11614; MODI LETTER CHA; Lo; 0; L;;;;; N;;;;;
11615; MODI LETTER JA; Lo; 0; L;;;;; N;;;;;
11616; MODI LETTER JHA; Lo; 0; L;;;;; N;;;;;
11617; MODI LETTER NYA; Lo; 0; L;;;;; N;;;;;
11618; MODI LETTER TTA; Lo; 0; L;;;;; N;;;;;
11619; MODI LETTER TTHA; Lo; 0; L;;;;; N;;;;;
1161A; MODI LETTER DDA; Lo; 0; L;;;;; N;;;;;
1161B; MODI LETTER DDHA; Lo; 0; L;;;;; N;;;;;
1161C; MODI LETTER NNA; Lo; 0; L;;;;; N;;;;;
1161D; MODI LETTER TA; Lo; 0; L;;;;; N;;;;;
1161E; MODI LETTER THA; Lo; 0; L;;;;; N;;;;;
1161F; MODI LETTER DA; Lo; 0; L;;;;; N;;;;;
11620; MODI LETTER DHA; Lo; 0; L;;;;; N;;;;;
11621; MODI LETTER NA; Lo; 0; L;;;;; N;;;;;
11622; MODI LETTER PA; Lo; 0; L;;;;; N;;;;;
11623; MODI LETTER PHA; Lo; 0; L;;;;; N;;;;;
11624; MODI LETTER BA; Lo; 0; L;;;;; N;;;;;
11625; MODI LETTER BHA; Lo; 0; L;;;;; N;;;;;
11626; MODI LETTER MA; Lo; 0; L;;;;; N;;;;;
11627; MODI LETTER YA; Lo; 0; L;;;;; N;;;;;
11628; MODI LETTER RA; Lo; 0; L;;;;; N;;;;;
11629; MODI LETTER LA; Lo; 0; L;;;;; N;;;;;
1162A; MODI LETTER VA; Lo; 0; L;;;;; N;;;;;
1162B; MODI LETTER SHA; Lo; 0; L;;;;; N;;;;;
1162C; MODI LETTER SSA; Lo; 0; L;;;;; N;;;;;
1162D; MODI LETTER SA; Lo; 0; L; ;; ;; N; ;; ;;
1162E; MODI LETTER HA; Lo; 0; L;;;;; N;;;;;
1162F;MODI LETTER LLA;Lo;0;L;;;;;N;;;;;
11631; MODI VOWEL SIGN AA; Mc; 0; L;;;;; N;;;;;
11632; MODI VOWEL SIGN I; Mc; 0; L;;;;; N;;;;;
11633; MODI VOWEL SIGN II; Mc; 0; L;;;;; N;;;;;
11634; MODI VOWEL SIGN U; Mn; 0; NSM; ;; ;; N; ;; ;;
11635; MODI VOWEL SIGN UU; Mn; 0; NSM; ;; ;; N; ;; ;;
11636; MODI SIGN VOCALIC R; Mn; 0; NSM; ;;;; N; ;;;
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11637; MODI SIGN VOCALIC RR; Mn; 0; NSM; ;; ;; N; ;; ;;
11638; MODI SIGN VOCALIC L; Mn; 0; NSM; ;; ;; N; ;; ;;
11639; MODI SIGN VOCALIC LL; Mn; 0; NSM; ;; ;; N; ;; ;;
1163A; MODI VOWEL SIGN E; Mn; 0; NSM; ;; ;; N; ;; ;;
1163B; MODI VOWEL SIGN AI; Mn; 0; NSM; ;; ;; N; ;; ;;
1163C; MODI VOWEL SIGN O; Mc; 0; L;;;;; N;;;;;
1163D; MODI VOWEL SIGN AU; Mc; 0; L;;;;; N;;;;;
1163E; MODI SIGN ANUSVARA; Mn; 0; NSM; ;; ;; N; ;; ;;
1163F;MODI SIGN VISARGA;Mc;0;L;;;;;N;;;;;
11640; MODI SIGN VIRAMA; Mn; 9; L;;;;; N;;;;;
11641; MODI SIGN ARDHACANDRA; Mn; 0; NSM; ;; ;; N; ;; ;;
11642;MODI DANDA;Po;0;L;;;;;N;;;;
11643; MODI DOUBLE DANDA; Po; 0; L;;;;; N;;;;
11644; MODI ABBREVIATION SIGN; Po; 0; L;;;;; N;;;;;
11645; MODI SIGN HUVA; So; 0; L;;;;; N;;;;;
11650;MODI DIGIT ZERO;Nd;0;L;;0;0;0;N;;;;;
11651; MODI DIGIT ONE; Nd; 0; L;; 1; 1; 1; N;;;;;
11652; MODI DIGIT TWO; Nd; 0; L;; 2; 2; 2; N;;;;;
11653; MODI DIGIT THREE; Nd; 0; L;; 3; 3; 3; N;;;;;
11654; MODI DIGIT FOUR; Nd; 0; L;; 4; 4; 4; N;;;;;
11655;MODI DIGIT FIVE;Nd;0;L;;5;5;5;N;;;;;
11656; MODI DIGIT SIX; Nd; 0; L;; 6; 6; 6; N;;;;;
11657; MODI DIGIT SEVEN; Nd; 0; L;; 7; 7; 7; N;;;;;
11658; MODI DIGIT EIGHT; Nd; 0; L;; 8; 8; 8; N;;;;;
11659; MODI DIGIT NINE; Nd; 0; L;; 9; 9; 9; N;;;;;
```

5.2 'Confusable' Characters

Below is a list of Modi characters that may resemble others encoded in the UCS:

```
; 090C DEVANAGARI LETTER VOCALIC L
 11608 MODI LETTER VOCALIC L
 11608 MODI LETTER VOCALIC LL ; 0961 DEVANAGARI LETTER VOCALIC LL
 11610 MODI LETTER GA
. ..... ....DEVANAGARILETTER GA11011MODILETTER GHA; 0918DEVANAGARILETTER GHA11612MODILETTER NGA; 0919DEVANAGARILETTER NGA11614MODILETTER CHA; 0910DEVANAGARILETTER NGA11616MODILETTER JHA; 0910DEVANAGARILETTER JHA11617MODILETTER NYA; 0911DEVANAGARILETTER NYA11625MODILETTER BHA; 0920DEVANAGARILETTER BHA11626MODILETTER SSA; 0937DEVANAGARILETTER SSA11627MODILETTER LLA; 0933DEVANAGARILETTER LLA11631MODIVOWEL SIGN I; 0940DEVANAGARIVOWEL SIGN11633MODIVOWEL SIGN UU; 0942DEVANAGARIVOWEL SIGN11635MODIVOWEL SIGN VOCALLOR DINTERINTERINTER
                                                 ; 0917 DEVANAGARI LETTER GA
                                                 ; 0940 DEVANAGARI VOWEL SIGN II
                                                 ; 0941 DEVANAGARI VOWEL SIGN U
                                                 ; 0942 DEVANAGARI VOWEL SIGN UU
 11635 MODI VOWEL SIGN VOCALIC R \ ; 0943 DEVANAGARI VOWEL SIGN VOCALIC R
 11636 MODI VOWEL SIGN VOCALIC RR ; 0944 DEVANAGARI VOWEL SIGN VOCALIC RR
 11637 MODI VOWEL SIGN VOCALIC L ; 0962 DEVANAGARI VOWEL SIGN VOCALIC L
 11638 MODI VOWEL SIGN VOCALIC LL ; 0963 DEVANAGARI VOWEL SIGN VOCALIC LL
 11639 MODI VOWEL SIGN E ; 0947 DEVANAGARI VOWEL SIGN E
 1163D MODI SIGN ANUSVARA
                                                 ; 0902 DEVANAGARI SIGN ANUSVARA
 1163E MODI SIGN VISARGA
1164A MODI SIGN HUVA
                                                 ; 0903 DEVANAGARI SIGN VISARGA
                                                   ; 0644 ARABIC LETTER LAM
```

6 Issues

6.1 Eyelash RA

The form \neg is proposed for encoding as the independent combining sign EYELASH RA for Modi. In Devanagari, its recommended encoded representation is \triangleleft RA + \triangleleft VIRAMA + $\boxed{2}$ ZWJ>. See Muller (2004) for a detailed analysis of the rationale for independently encoding EYELASH RA.

The EYELASH RA and *repha* are contrastive in Modi. Compare its use in the following conjunct $ry\bar{a} < -\circ + v$ $y_A + \circ v - A_A > \rightarrow < -\circ + v$

"म्रानीहरिजिली" यहरी देखनी याणगान्छ हेनोली पाषडांग्र मण

with $rya < \Im RA + \bigcirc VIRAMA + \heartsuit YA >$



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Anshuman Pandey



Figure 1: Proposed code chart for Modi.

Independent vowels

11600 11601 11602 11603 11604 11605 11606 11607 11608	ত হা ম হাণ্ডিয় দ ত	MODI LETTER A MODI LETTER AA MODI LETTER I MODI LETTER II MODI LETTER U MODI LETTER VOCALIC R MODI LETTER VOCALIC RR MODI LETTER VOCALIC L
11609 1160A	ষ্টেন্দ্র	MODI LETTER VOCALIC LL MODI LETTER E
1160B 1160C	ਹ ਪ੍ਰੇ	MODI LETTER AI MODI LETTER O
Con	ם פסו	nodileitek au
	301	
1160E	к Н	MODI LETTER KA
1160F	<u>ତ</u>	MODI LETTER KHA
11010	भ	MODILETTER GA
11611	ચ	MODI LETTER GHA
11012	<u>S</u> .	MODI LETTER NGA
11013	<u>ন্</u>	MODILETTER CA
11014	U W	MODILETTER CHA
11015	8	MODILETTER JA
11610	26	MODILETTER JHA
1161/	36	MODILETTER NYA
11610	<u>0</u>	MODILETTER TTA
11619	<u>0</u>	MODILETTER DDA
1101A	5	MODILETTER DDA
1161D	ू जा	MODI LETTER DDHA
1161C	স	MODILETTER NNA
1101D 1161E	रा इन्हर	MODILETTER TA
1101E 1161E	्य	MODILETTER DA
11620	र श	MODILETTER DA
11620	र ज	MODILETTER DIA
11621	<u>ه</u>	MODILETTER DA
11622	रू प्रा	MODILETTER PA
11623	ភ	MODILETTER PRA
11624	ত্র ঘ্র	MODILETTER BA
11625	ਸ ਸ	MODILETTER MA
11620	<u>हा</u>	MODILETTER VA
11628	ਹੱ	MODILETTER RA
11629	ਕ	MODILETTER LA
1162A	π	MODI LETTER VA
1162B	र्य	MODI LETTER SHA
1162C	ષ	MODI LETTER SSA
1162D	উ	MODI LETTER SA
1162E	ฮ	MODI LETTER HA
1162F	φ	MODI LETTER LLA
Dep	enc	dent vowel signs
11630	्र	MODI VOWEL SIGN AA
11631	्रो	MODI VOWEL SIGN I
11632	ঠ	MODI VOWEL SIGN II
11633	ુ	MODI VOWEL SIGN U
11634	ू	MODI VOWEL SIGN UU

1163E ः	MODI SIGN VISARGA
1163F ्	MODI SIGN VIRAMA
	= halant
11640 <u>ੱ</u>	MODI SIGN ARDHACANDRA

Punctuation

11641	MODI	DANDA
	(

- 11642 🗎 MODI DOUBLE DANDA
- 11643 ° MODI ABBREVIATION SIGN

Invocation

11644 J MODI SIGN HUVA

Digits

11650	ō	MODI DIGIT ZERO
11651	٩	MODI DIGIT ONE
11652	Σ	MODI DIGIT TWO
11653	3	MODI DIGIT THREE
11654		MODI DIGIT FOUR
11655	Y	MODI DIGIT FIVE
11656	3	MODI DIGIT SIX
11657	ভ	MODI DIGIT SEVEN
11658	7	MODI DIGIT EIGHT
11659	छ	MODI DIGIT NINE

Various signs

1163D · MODI SIGN ANUSVARA

116379MODI SIGN VOCALIC LI116389MODI SIGN VOCALIC LL116399MODI VOWEL SIGN E1163A0MODI VOWEL SIGN AI1163B0MODI VOWEL SIGN O1163C0MODI VOWEL SIGN AU

11635QMODI SIGN VOCALIC R11636QMODI SIGN VOCALIC RR11637QMODI SIGN VOCALIC L11(20)MODI SIGN VOCALIC L

Figure 2: Proposed names list for Modi.

	Α	AA	Ι	Π	U	UU	R	0	AU
KA	ୟ	ନ୍ନ			চি	(মন্ট)	મ્ઉ	न्ने	র্দ্ধ
KHA	থ্য	\mathcal{L}			ક્રિ	(6 7)		र्रहे	th
GA	ग					50			
СА	ন	ন্য			ন্ডা	ন্দ্ত		ন্স	ন্ট
JA	४	ૠ			ઉત	(3न)		न्ने	ক্ষ
JHA	झ	इत			হ্রহী	হ্নন্তি		इत्रे	হ্র্র্ট
NYA	ञ	æ			- ক্রি	স্থি		न्दे	जें
TTA	ত	৯						ळे	र्दे
TTHA	ত	لحك						ઝે	र्दे
DDA	उ		ভি	ব্য					
ТА	ন				ন্ত	(ন্তি)			
THA	ধ্য	થા			थु	थु		થો	ર્થો
DA	ঘ	रा			চ্চ	চ্চ		रो	Ĕ
DHA	र्ग	धा			रछी	धु		થો	धो
NA	४	\mathcal{H}			રુત	(उन)		ਨੇ	ਨੱ
PA	ប	પા			पु	(पु)		पो	पो
РНА	प्र	46			प्र	(ਸ ੍ਹ)		फ्रे	দ্দ
BA	घ	પ્ર			চ্চি	চ্চি		દ્ધે	র্ম
BHA	ભ	34				•		क्रे	ক্ষ
MA	\mathcal{H}	ਸ			मु	ন্তি		मे	ਸ਼ੋ
YA	ण	જ			यु	(यु)		र्रे	ਸ਼ੋ
RA	$\boldsymbol{\Sigma}$	ના			२८	(स)		नो	नो
LA	8	પ્ત	5	(Z)	স্নচী	স্বন্থ্য		न्ने	ਸ਼ੋ
VA	υ	\mathcal{J}			ট্টো	ট্টে		प्रे	प्रे
SA	ম	দ্য			रछी	रईहे		फ्रे	फ़े
HA	ប	ঘ			(छ)	ণ্ডি		र्घ	চ্ট

Table 1: Special consonant-vowel combinations in Modi.

	А	В		А	В		А	В		Α	В
A	ণ্ড	খ্য	KA	Я	જ	DA	ঘ	ঘ	ZERO	0	ō
AA	U	ণ্	KHA	रे	ধ্য	DHA	र्ध	री	ONE	7	१
I	চ	छ	GA	ગ	ग	NA	V	४	TWO	2	Σ
Π	র্চ	র্চ	GHA	ઘ	घ	PA	प्	ম	THREE	3	3
U	ର	G	NGA		ડ.	PHA	प्र	प्र	FOUR	8	8
UU	60	ର	CA	2	ন	BA	घ	घ	FIVE	ሯ	Y
R		স্ব	СНА	છ	ন্ত	BHA	ન્ન	મ	SIX	٤	3
RR	_	ক্ষ	JA	V	४	MA	H	\mathcal{H}	SEVEN	$\overline{\boldsymbol{v}}$	ভ
L	—	ल	JHA	হন	झ	YA	ण	छ	EIGHT	7	7
LL	—	ल्ट	NYA	ন	ञ्च	RA	J	τ	NINE	و	र
E	ট্য	ষ্ঠ	TTA	ত	ਹ	LA	8	ጿ			
AI	উ	উ	TTHA	હ	ত	VA	υ	D			
0	Ù	धे	DDA	ড	उ	SHA	રા	टा			
AU	Ÿ	र्चे	DDHA	ଓ	$\overline{\boldsymbol{\delta}}$	SSA	প	ष			
			NNA	ण्	ण	SA	ប	ম			
			TA	ন	ন	НА	ঘ	ប			
			THA	શ	ধ্য	LLA	$\overline{\mathbf{v}}$	ळ			

Table 2: Comparison of basic Modi characters in ('A') the Hemadree font by Somesh Bartakke and ('B') the font designed by Anshuman Pandey.

न

व

R

ব

भा दां जा वे ल ल ल ज ज हो से से ख षे ले व नः खः ·IS まずややきをそうときをやきたいで、 希望市寺寺寺寺寺寺寺寺寺寺寺寺寺寺 ももちちちょうちゃもも र्म की की হ æ Ē ন to. ि E) 9 न ব **Fi** ₽ व 5 त्र Б F Б F 5 2 $\overline{\mathbf{b}}$ 5 5 5 3 रा से रा F ち **₩** ব to to to to Ы त 卢 ष ri) V つ 0 **3**2 ঠ 0 9 2

जे दे जे वे जे जे जे की ही खे चे ले

Figure 3: Comparison of consonant-vowel combinations in Modi and Devanagari (from Strandberg 1983: 32, 33)

5

Figure 4: Comparison of consonant-vowel combinations in Modi and Devanagari (from Strandberg 1983: 34, 35).

遭援怨没法海径自治法抗进法避难打击 सा स का आ म व से या आ भ त म म म ज वो ये पे ग द 事事要要要要要要要要要要要要要要 मो के शे था, से के को जो जो भे तो में से जो से तो ग दो की की था भी के जो थी まややややややややややややや छ का आ मे के को को के भा ये में में को के में T ন্য 년 ज 5 F 4 9 F र त न ন F F 8 E. ন F he 4 ष ज व अ भ द H the 18 to Its 5 T Ħ A Þ 0

22

5 0 2 ब्ध जन Ø मूळा Ş P 6 9 ЦШ K 202) रंग्रे 12 C 5 375 9 R 1 5

Figure 5: Comparison of consonant-vowel combinations in Modi and Devanagari (from Strandberg 1983: 30, 31).

In all cases the *aksara* with short i and u may also be used for long i and u and vice versa. Among the variants occurring in our material we may list those which are not so easily recognisable:



Figure 6: Variant forms of consonant letters and consonant-vowel combinations (from Strandberg 1983: 36).

うろ io : D 6 3 3 9 9 3 5 3 0) ġ ह < े द I 2 J 75 9 5 \Box б Q ٦ 3 0 5 0 Q ${\mathfrak H}$ Э Ø 29 5 31 で 5 80 29 30 30 あころ 3 0 0 र भ 3 9 っ H J Þ D 9 0 3 5 3 7 5 5 \mathbb{S} T 0 3 T 7 3 શ 7 AL 7 y 54 04 5 8 J ሻ 3 3 I (र्धरत 3 ĭ 3 تن 7 ~ 3 7 53 2 3 S 3 D 7 3 シート **D** ŝ J ? Ð $\overline{\mathbf{v}}$ τ Ö 3 Q ন ら 7 و 6 ~0 7 3 d b D 7 Þ I J 50

Figure 7: Modi table (from Naik 1971: 130, 131).

18 KD WAND IN WAN צעו חאו איווי זאו פואי נווי ४ द्भ हा।. धर्म. भ 3. घम्स \$ в LUNAR . loo N 272 8 12 64 5/0 - OTX7. GOM. NEW. GG. 122 18 X 14 up. Jaral **L D** 2 HOIGHA 2 C C C C nn 8201 C X I SIDUR धातम 5110 151. JPUA 6873 Net 3 'Inera GUID GUID GUID S al US ົວ 0 1 00 M 5023 <u>8118</u> 50 X Y 6 9 30 $\overline{\mathbf{v}}$ ତ 2 0 5 -8 Τ \$ T 5 Σ Ŀ -8' 5 8 びして 8 7 ī 8 n à J > 5 I स सा -8 એ 96 5 34 21 Z 자 J ত 4 6 百 6 p F Ø \square

Figure 8: Modi table (from Naik 1971: 132, 133).

2022 उ ger (108316. **F**J. ग्रेि रेग्रेताप्रा रहेप्र से जिल्ला के ये विष्ठा र र र र ण्छारयेष्ट धराता रहि पाठीन् एकेन राम पाउ पाठीका

Figure 9: Modi table (Naik 1971: 134).

मोडी (मराठी) खिपि. Ì ख षि ध छे ਹੈਂ Ø දා त तृ ষ্ট ণ্ডা जि मे मु থা: দ ব্য 20 प 3 र Ę Б ग IJ บ घ ন্য ন্ত য ዏ स्र छ ण a យ ঘ ন Р 9 ढ Ś की Ψħ. ਸ মী গী প্ম প্স Ð J मी ಹ ${f Q}$ Π হা ম ড ีย ጽ ਸ 0 को कौ कं E ٤ হ में में मि एम में में में 923 9 \sim . 5 と ۶ て

Figure 10: Chart of Modi (from Ojhā 1999: 79).

1. MODI CHARACTERS.

•		
	Vowels.	
श्र a, ध a, छ i, G	u, De, Jai, 20.	धै au, उं am, धः ah
	Consonants.	
A ku	उ da	$\mathbf{\Pi} m q$
रे र्5 kha	to dha	य ya
ग _{ga}	BI na	\mathbf{J} ra
ध gha	१ _{ta}	8 la
उ • na	T tha	T va
र cha	T da	रा sa
छ chha	${f y}_{dha}$	ষ sha
₹i j x	न na	I sa
Ş7 jha	${f U} p_{0}$	${f \mathfrak{V}}$ has
ञ ña	Д рha	ळ la
d ta	U ba	ET ksha
ð tha	भ bha	स dnya

1. The Modí letters are thus written and pronounced :--

2. The following are three Modí Bárákhadís, or modies of syllabification:-

ka	ká	ki	kí	ku	$k \boldsymbol{u}$	ké	kai	ko	kau	ka m	kah.
				- G m		-77	$-\widetilde{n}$		<u>~</u>		
н	hd	ы	20	121	HC.	Я	н	244	hri	~	m.
ga	gá	gi	$oldsymbol{g}^i$	gu	gu	$g \boldsymbol{e}$	gai	go	gau g	y a m g	ah.
	-	- πî					$\frac{1}{2}$	- 777-	$\frac{\widetilde{\pi}}{1}$		л
•1	•11	•17	•11	9	91	•1	•1	•11	-11	-1	-1.
ţa	t a	ţí	ţi j	țu ț	u to	ţa	i țo	ţa u	i <u>t</u> am	ţah.	,
×			~~			\sim		$\underline{\sim}$			
Ø	С	01 0	<i>)</i>	G .	g o	C,	4 04	Q	0	1	

Figure 11: Chart of Modi printed in metal types (from Navalkar 1925: 374).

•

 $Mar \ddot{a} th \ddot{i} is usually written in the so-called B \ddot{a} lb \ddot{o} dh or in the so-called M \ddot{o} d\ddot{i} character.$

Written character.Bālbödh, *lit.* 'teachable to children' is identical with Dēva-
nāgarī, and has been described in Vol. v. Part ii, pp. 7 and ff.It is used in almost all printed books, and also, to a great extent, in private transactions and
letters. The Mōdī character is almost totally confined to the latter kind of writing. An
example of its use will be found on pp. 259 and ff. It consists of the following signs :--

		Vowels.		
۵) a	Qã į		5 <i>u</i> , <i>ū</i> ,	
छी ।	ත් ai	a o	Dau A	am U:ah
TT ka	2 44	CONSONANTS	le	
¥ Na	C KRA	J ga	\mathfrak{A}^{gha}	3 • na
3 cha	E chha	🍞 ja	jha jha	ज ña
J ta	J tha	J da	Zo dha	IT na
T ta	W tha	v da	U dha	न गव
D pa	n pha	E ba	N bha	A ma
U ya	J ra	8 la	V va	
٤٦ śa	S sha	ত ১৫	T ha	
न १व	G ksha	E daya		

The forms of the vowels given above are only used at the beginning of words or syllables. When the vowels follow a consonant they are expressed by means of secondary signs in the same way as in the Dēvanāgarī alphabet. For the sake of teaching these signs the alphabet is disposed in $B\bar{a}r\bar{a}kh^{a}d\bar{s}$, or series of twelve letters, each containing a consonant combined with all possible vocalic sounds. Such Bārākh^adīs are :--

		_	-			~		~	5	• • •	
म-	-ਸ਼	-มิ	"मी	ন্তিম	''র্টিম	-प्रे-	− प्रे-	—ਸ਼ੇ	-ਸ਼ੇ-	-ग्रं-	50
ka	kā	ki	kī	ku	$kar{u}$	kē	kai	kō	kau	kam	kah
			<u> </u>	<u> </u>	A		1	1	5	•	
기 :	211	11-	गा (51	ডা –	7 -	- ग –	<u>'ग</u> -	'गा -	- म-	गः
ga	gā	gi	gi	gu	gū	gē	gai	go	gau	$g_{a\dot{m}}$	gaḥ
-						<u> </u>		- 2 -	-2		
д	d	91	91	ð	ð	δ	δ	C	C	9	जः
ţa	tā	ţi	ţī	ţu	ţū	ţē	ţa i	ţõ	ţau	ţam	ţaķ



Figure 12: Chart of Modi from the Linguistic Survey of India (from Grierson 1905: 20).

স্মী

নাঙ্গাত্রতার্দেশিকাদানশকা श्रीन्तराउद्यसाधचेडिलामीगोण Tring पोष्पद्वीराजिएल्लन्न**प्राननस**्तर्जजीर्धीणी एछम्ताफ्लोनस्य NOM *นสามมงชินุกิสงขณฑ*าสกาสก พญษณิงสภาพิรณสเขา <u>एवाण</u> অন্যাসী त्रीप्रध्यमध्रदे*ने*ण्ड manon longhan ติเกามน/การการกิบมารี่ Herborn Ha णोनज्ञल्ती MARTIONGRAND क्ल किरणराज्यां एखराष्म्या एकलको जनकि किर्तराज्य HAM अत्या अत्य का भाषा के भ nt sulfin Brilingthroma ปรกมสิงก บริสารสราชมีรายหยุกทุกกลางบริสารสา จระช่วยงางสาวเกล जिपार्थम राधकार गपारोगेगो พิสเซามหายินอาการ์ เมายินสาวเรา िरियण्यत्रभोगाणीमायनात्नित्वद गोन 2107000

Figure 13: A letter from the office of Bājīrāva Ballāla Peśave, dated December 1721 (from Dīksit and Khobarekar 1969: 71–73).



Figure 14: First page of the *Khabardar*, the first newspaper printed in Modi. Courtesy of Bharat Itihas Sanshodhak Mandal (BISM) and Suresh Pethe.

	च्याज्ञता.
MAHKATTA DICTIONARY.	our a. unfeeling, unmerciful.
	Tureford, a. without tergiversation, sincere, undissembled,
	unadulterated.
ব্যস	यास्त्रयाण, s. bad fortune, an unfortunate thing.
usuf, a. out of debt, not in debt.	TRATITI, ad. suddenly, mexpectedly.
urate, a. not having a piece of the cloth which is worn round	राष्ट्रास्त, s. malice, revenge in the mind.
the loins tucked in behind.	auditation a. composed, undisturbed, unanxious.
षाप्रश्चरोप्तर्छ, a. of an unascertained terrific form.	and, s. uscless, improper.
यासच्या, a. unspeakable, unfit to be spoken, obsoene.	and a. causeless, needless, useless.
URTU-LET, a. unspeakable, unutterable, unfit to be spoken, ob-	ardes, a. out of season, unseasonable. s. a famine,
scene.	राज्यका, a. born out of due time, abortive.
usu, a. ingenuous, frauk, honest, sincere.	and a proper time.
धप्रर्ताचा, a. improper to be done, improper.	aured, ad. prematurely.
यमणेत्रहा, a. without bored ears, (an epithet of reproach to	याज्ञों जून, a. destitute, not possessing any thing.
a Musulman.)	यास्य शांता, a. unshared, undivided.
Unit, a. useless.	घासनीप्र, a. unartificial, not counterfeited, genuine, pure,
चाम्रोत, a. useless, unfit for any purpose, indolent.	usur, s. an elder sister.
यान्नी ए. a. useless, unfit for any purpose, indolent.	याज्ञा, a. eleven.
untraug, a. useless, not fit for any purpose.	याजिताचे, a. the eleventh.
aurian, a. unfit to be done.	या जाल्कपी जाल्क, a. unascertained, uncertain.

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			M	ARA	ŢHIS	CH.			
Zeichen	Wert	Zeichen	Wert	Zeichen	Wert	Zeichen	Wert	Zeichen	Wert
ন্দ	a	দ	ka	স	ńa	न	na	ष्ठ	ļa
स्र	ā	ರೆ	kha	ਰ	ţa	ದ	pa	ν	va
র্য	i	ਸ	ga	उ	da	ম	pha	ত	sa
ର	u	य	gha	ច	dha	व	b a	ম	śa
' क	ŗ	য়ন	ňa	ডা	ņa	দ	bha	ষ	ša
छे	е	च	tša, tsa	7	ta	T T	ma	ਹ	ha
ষ্ট	ai	ভ	tšha,tsha	ैय	tha	प	ya		
फे	0	ন	dža, dza	ত	da	ि	ra		
ਸੈਂ	au	सि	dzha, dzha	यि	dha	४	la		
				Liga	aturen.	- 1		-1	
स्प	swa	प्र	pra	দ	wā	ਸ਼	kša	न्त	nta
स्य	stha	ದ	pr	ಹ	hā	र स्प	kšya	प्टम	ddha
त्र	tra	ষ্	šợha	ট্য	tu	ट्छ	mha	স	kta

Vokalverbindung: 패 kā, র ki, স ku, র ke, র kai, ঈ ko, ঈ kau, র rk, র kā.

Die Marathen, welche einen Theil des Dekhan erobert haben, sind die einzigen Bewohner dieses Theiles von Indien, welche sich der Sanskritsprache bedienen, sie schreiben dieselbe entweder mit Devanagari und nennen diese Schrift Balbodh oder mit ihrer eigenen Schrift, die Mod heisst. Diese Schrift schwankt zwischen Gudžaratisch und Devanagari, die Form I na scheint eine Zusammenziehung von Sindh 3 ka und Devanagari A zu sein. Mit der Devanagari hat sie die Verbindung der Zeichen sowohl durch die Schreiblinie (welche aber nicht wie bei uns unter, sondern über den Buchstaben hinläuft) als auch die Verbindungen der Konsonanten gemein, doch ist der herabreichende Strich noch nicht so konsequent ausgebildet und selbst bei manchen $\overline{\alpha}$. Formen nicht isolirt, während andere mit der Devanagari übereinstimmen, z. B. $\forall \mathbf{I} y \overline{a}$. Die Unterscheidung zwischen *i* und *i*, *u* und \overline{u} ist nicht zu bemerken, auch scheint kein eigenes Zeichen für *tha* vorhanden zu sein, denn dieses wird durch *ta* oder auch durch \overline{A} wiedergegeben.

Die Sanskritlaute $t\check{s}$, $d\check{z}$ lauten nur vor e, i und \tilde{i} in gleicher Weise, vor a, o, u, r, l wie ts und dz; um $t\check{s}a$ und $d\check{z}a$ zu schreiben wird von manchen Schreibern ein ya eingeschoben oder ein Punkt unter die Zeichen gesetzt.

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Figure 16: Specimens of glyphs from a Modi metal font (from Faulmann 1880: 124).

Figure 17: A Modi document from the Linguistic Survey of India showing Modi written with word spacing (from from Grierson 1905: 259–260) ut the Do in 40 the of 4 w on 40,200 u 4124 612 होये हेम u avay to the o our and wet a and deal cours if going को प्राय प्रसार जुनु - अगो पांच सनाए युगे ने की To Har the she wanter in the she of the sol Jon as will us yor a dai usidud a ulus my the of Set NUT & BUTHA HUN 200 200 HOUL & WAR HO CH MUSHUS SIVEN U asi w the generate & the by the will no Jorg H 4101 4134 6 2110 H & 0 OV 1/ 19 W they was way and when the and the second of the second the Kit with a ware of my with with www a HYK, Hour v drint via wan H 41) & AN ATH 2H BA 298 Nod BHAS HOD 1) 2000 थम प सेडे डोमे मन उर हो प हागा ह उमन High JA ary 4 www oging & Dur उटे प्रम एक फ्रायेन मी ए क्रावेप Lond unda 6 भ ना उ 4131 27 MW <u>ch</u> 61K (DISTRICT WARDHA.) 6616 9131 31 4 67 9 STATEMENT OF AN ACCUSED PERSON. is and & an B) Ell the mit of (D) & (D) MARATHI. 1012 1 Jak EU KCUP - 800 to to UN ACIA HUCK lork n36 HSH 4)8 SAL HJ 4)0 y z e - 777 -NAGPURI DIALECT. 1591 145 6 K

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Figure 18: Excerpt from a Modi school book (Pathavardhana: 4-5).

Proposal to Encode the Modi Script in ISO/IEC 10646

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Anshuman Pandey

ورا पाफ्यान्री-नुष्टि मछामरीषरु पाज्याछ शाह्यामछा स्त्राप्ठ य न्य पार्थसन्न ຈີ່ 2 2 £ 410 841 8 MB MIG. GIRWOHIOHYAN G we <u>www.r.</u>0 म्रीम्मण्ड रेएजने-अंभ्यार्थात् **ग्रीगोहरूनिप्रिय्यो** . w राष्ट्रयार्थिंगीयाण्ड्रकाते सं 225 onia raibidi (21 - 20) - 30 יאועאטטממי 3 DER STEUNATO 20), Aarwis 416940 मरु भग भत् १८ में परोट 206 Mar Han Briller तीयरूणक् पाळी झा झ R-04/201 मनात, तांध्य いたいたい ধ [ઈ] d Ŷ 5 2 L AND म् 2010 5 で
と गतित ती ७-या के ध्या याते पा छा ध्या श्व ? <u> ચાન્ઝ ઐપ્</u>ય ઐ) **કાપ્ટો મો સ**ે પ્રે ॥सयत्रमाणंकुरुतेत्येकस्तदनुवनती × ॥य घहाचरतिश्रेष्ठस्त सदे वे तरोजनः॥ रंचा को मरीरोति पि पर में हे ती ह, उगर 50 5 <u>षानिष्टेणाय जीय येहा मेहा रहि</u> 13)वेम्स्सर-राग 5 **J** H H H ? न् प्रफ्रान्ता भग्न ्याचाग 2 FUX4 माक्षन मर्गत म्ही <u>م</u> 211-22 Hissign vor Б Ergh, un न्मच्छर्यानेपी हलाम्रत्भुष्य 04-20 मूर्णराज र भाषा का J B 7

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Figure 20: Proofs of Charles Wilkin's Modi font (from Ross 1999: 29).

มโซบา '53' ซบา '5' สีขวา 'กี ซบา 'มีขา 'มีขา 'สา 'มา 'สา เมติม' ขาน กำลุณระเทษ กำบิรบา 'สา แนะ นา '5' กำเหก มี เกิด เมื่อ - มาสา ' ยนเนนเษณยกา เสษก 'มี หามี เขติ - นา หามี เขติ - นา '10 - นา '10

ব্য	ರ್	ର	छ	ष्प	ग े	રુ	ग	घ	च	ন্ত	ন্	झ	ਰ	व	ਰ	
ত	6	ण	ন	थ	ข	ध	ন	ດ	फ	ষ	भ	ম	य	र	ষ	
σ	भ	ष	ত	ਹ	ଞ	τ	f 3	f	~	Ŷ	¢	•	i	~	~	~
म	<u> </u>	त्त	त्र	क्ष	ध	6	्र ग्र	ैघ्र	Þ	ଷ୍ଟି	ন্ম	ভ	ন	ন	ণ্ড	
त्त	त्र	চ	ध्र	ম	ট	न्त	LJ	ণ্ড	EX	ট্য	प्र	म्र	भ्र	ਸ	ম	3
भ	ह	ন	ভ	তি য়	তে,	τ	र श्र	। ভ	र	ভি	ब्ज	स्त्र	æ	ଞ	ক	
£	ह	ç 2	6	5	16	L	5 3	с о	τ	$\overline{\Omega}$	£	Ŧ	2	٤	6 1	F
				, c	ર વ	З	8	9	٢	e	0					

Figure 21: Specimen of Charles Wilkin's Modi font (from Ross 1999: 29).

एन्हाफ्रमा एदीक्रमा फोन् रीपीयाण 21 R लारामप्रदे ON GRAGAD? तीचामण्जि घेमवा मंगवान घेमव फर्जिन्तराधनन्द्रधियाधरायानी 470) d <u>ऋयातम</u> mor प्ररो 4 ७७७। ४१-च 7 3

Figure 22: Document showing Modi written upon ruled lines and in free form (from Dīkṣit and Khobarekar 1969: 209).

७. ` र ' ची करामत `र` हे मराठी व्यंजनमालेतील सत्ताविसावे व दंड (I) नसलेले एकमेव व्यंजन आहे. `र` चा पाढा वाचणे म्हणजे रडगाणे सांगणे किंवा दुबळेपणा दाखविणे पण मोडी लिपीत मात्र र चे कर्तृत्व अफाट आहे. या र मुळेच मोडी लिपीला एक वैभव प्राप्त होऊन तिच्यात ऐटबाजपणा व डौलदारपणा आला आहे. कसे ते पाहू --ज्या मोडी अक्षराला बालबोधप्रमाणे काना असतो, त्या कान्याला 🔭 🕻 ۹) असा र जोडणे. उदा. च, द, द, द, रू, रु, राण, ताण, भ काना नसलेले मोडी अक्षर जेथे संपते तेथेच त्या अक्षराला 🥂 असा `र` 3) जोडणे वरील १ व २ प्रकारे जोडून काढलेल्या 'र' ला काना, वेलांटी, मात्रा, अनुस्वार 3) देणे. उदा इग्र, झर्रि, झरीनोड, जरोणझरी, गोश, आंश क किंवा का ह्या अक्षरांच्या पूर्ततेपूर्वी त्याला 쳧 🏂 असा `र` जोडणे. 8) म्रम्, स्रम्स, हरा, प्रय, म्र , म्रम्, हरा, बालबोध काना असलेल्या मोडी अक्षराला 'उ' कार जोडून त्या 'उ' काराला ዓ) पूढे 'र' जोडणे उदा. सु, सु, सु, हु, हु, हु, के (द) 'र' हे व्यंजन जोडाक्षरात आल्यास ते चार प्रकारांनी लिहिले जाते. raial from the second s अशी चिन्हे आहेत जदा. मुझ, च्याण, एन्छड, नरकू

Figure 23: Description of the forms of J RA (from Mhātre 2009: 25). Continued in Figure 24

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चार प्रकार खालीलप्रमाणे -६अ) काही व्यंजनानंतर जोडाक्षरात `र` आल्यास तो 🎾 असा लिहितात. तेथे एक गोष्ट लक्षात घ्यायला हवी की `र` हे जोडाक्षरातील पुढे येणारे व्यंजन असेल तर व्र , 💝 असे लेखन. म्हणजे या जोडाक्षरात `र` चा उच्चार पूर्ण आहे. भग्रहे, प्राणेंग्रेण, भूजकत्तर, ध्रूप, जत्र, ध्रीरा, पत्र, मुगिए पत, वत, (हानर) न सेए, (एनर) - स्ताप, যান 🚽, হা, ডা, ফ, স, ড, প, স या व्यंजनानंतर 'र' जोडून येणारी जोडाक्षरे मोडी लिपीत नाहीत. भू 🕂 📮 पूर्व असे जोडाक्षर मोडी लिपीत आढळत नाही. मात्र फ्रेलेफ्रम, पुरिष्ठ, फ्रेंड्र असे इंग्रजी शब्द मोडी लिपीत आले आहेत. ६आ) `रेफ` / `रफार` `र` या व्यंजनानंतर येणाऱ्या अक्षरावर्णी असे चिन्ह दिले जाते. उता. खार्ग, पूर्व, एव, छेरी, घडाग्रार्ट्स, यर्थत, यात 'र' चा उच्चार 'र' च्या मागील अक्षराबरोबर (23.1+0) होतो व त्या अक्षरावर आधात (जोर) येतो. अशा वेळेला जोडाक्षरात येणारे र हे व्यंजन पढील अक्षरावर ं रेफ हे चिन्ह देउन दर्शविले जाते. याला रफार असेही म्हणतात मोडी शब्दातील रफार (रेफ) कोणत्या अक्षरावर येईल यासंबंधी मोडी लिपीत गोंधळ आढळून येतो. उदा. : ग्रीछन्ने ऐवजी पीर्छन्न छंपुर्छा रिवजी खप्रीण, प्रहारित वजी शहाकिल, अशी चुकीची रुपे लिहिलेली आढळतात.



६इ) 'र' हे व्यंजन जोडाक्षरात आधी आले तर 'र' या चिन्हाने दाखविले जाते. हे चिन्ह `र` या व्यंजनानंतर येणाऱ्या अक्षरात जोडतात. ज्या ग्रन्थ, सन्धर, दीन्छर, न्रार्ट, खान्या सुऱ्या या शब्दात 'र' नंतर य हे अक्षर आले आहे. ते उच्चारताना सु + - + या असे उच्चारले जाते. मागील अक्षरावर आंघात (जोर) मुळीच दिला जात नाही. उलट सूर्य या शब्दाचा उच्चार करताना सू वर आघात येतो य `र` चा उच्चार सू बरोबर (सूर् + य) होतो. एकदरीत 'र' या व्यंजनाचा उच्चार त्याच्यापुढील अक्षरासह होतो व 'र' च्या मागील अक्षरावर आघात किंवा जोर दिला जात नाही. तेव्हा 'र' व्यंजनाऐवजी 'र' असेल तर 🕂 हे चिन्ह केव्हा वापरायचे व 'न' हे चिन्ह केव्हा वापरायचे ते लक्षात येईल. मोडी लिपीतील सर्व 'उ' कार -हस्व असतात्, 'उ' काराबाबत मोडी लिपीत -हस्व दीर्घ भेदाभेद नाही. त्यामुळे उछिए , उछी-या यातील ' 2017' सारखाच काढतात. ६ई) 'टू' आणि 'डु' नंतर 'र' आल्यास हे चिन्ह ट किंवा ड च्या खाली येते. उदाः : ट्राम, इम, षड्रस, राष्ट्र : ट्रांम इम षड्र नाळू 👩 आणि 🎖 या व्यंजनानंतर `र` जोडून येणारी जोडाक्षरे मोडी लिपीत नाहीत 'र' बाबत जोडाक्षरात वारंवार होणाऱ्या चुका स् + र-सः स्नोग्, स्नाप, उग्रसापधी, धेप्रसा स + त + र - स्त्र: स्त्री, परला, डरिरलाण, डारभी ७) ज्या शब्दाचे पहिले अक्षर `र, री, रे, रे, रं ने सुरू होते अशा वेळी 'नुने या मुळाक्षरानेच शब्द सुरू होतो. रा : ना किंवा रु : सः असे काढतात. उदा नामराम, नामनंछ, नामनाए, रूप्पे, समार

Figure 25: Description of the forms of J RA (from Mhātre 2009: 27). Continued in Figure 26

८) मोडी लिपीमध्ये रराष्ट्र (र रा री) अशी बालबोधसदृश अक्षरे काढलेली आढळतात.
उदा. म्रार, मराउ, मरा, मरत, मराष्ट्र, मराष्ट्र, म्रार्थ, म्रार्थ, प्रार्थ, ट्रार्थ, उदा. क्रार्ट, (तबर), ठेठ्र (हुनूर), रुपम् (साबनूर)
उदा. क्रार्ट, (नंबर), ठेठ्र (हुनूर), रुपम् (साबनूर)
इर्ह, (नरेवर), म्राप्क, (साबनूर)
इर्ह, (नरेवर), म्राप्क, (साबनूर)

ेर` हे अक्षर मोडी लिपीत मुळाक्षरांच्या पायाशी, कमरेत, कुशीत, पोटात आणि डोक्यावर कोठेही कसेही घुसून आपले अस्तित्व दाखवून देते.

`र` हे मोडी लिपीत जास्तीत जास्त व्यंजनांना निरनिराळ्या प्रकारे जोडण्यात येणारे एकमेव अक्षर आहे.

१०) 'र' शी संबंधित अक्षरे व जोडाक्षरे :

あ+マッア	फी स्त	म+र=म	- १झता	र+क=के	न्ध्रम -
ग+र=ग्र	गण्या	वनरव्द्र	प्रमाय	र+म=म	- प्रप्त-
तनर=त्र	त्रयोण्धा	ज्ञानरः अ	- अ ुरीफ़ा	र+य - म	छप
<i>द</i> नर=द्र	च्रपीऽ	स+र-स	থিস্কচা	र+य=र्य,ञ्य	ন কায়িছি
प+र=प्र	्रप्राप्त	न्त+त+र० रु	ন ন্সাচ্য	र+व=वे	ਐਸ਼ਪੀ
वि+रः व	্রন্থায়	₹+ ₹ ≁₹	'ਸ-ਹੇਤੇ'	रनहर्ट	श्चर्वता
भन र= झ	माता	ट+र= द्र	रूर्री	र+अ=र्ख	- वर्ष
धनर- प्र	द्रावा	ड+र= झॄ	ड्रॉप्ट्	र+य=चे	ষ্ট্রই
ख + र = ख्र	्रेंगेस्तो	रन्य = व	छषे	र.+ध=ध	चीर्घ
फा + र = भू	मूम		-	1	

Figure 26: Description of the forms of J RA (from Mhātre 2009: 28).

J

महारलराक्ती खामर खीरमी राषेयां नी ए हादात रा स्तगाहाहान एफारमेठजीनकोधीतरछंगरगीनरतरमंघाडीयांखी आध पयाद्मरणे चिढेंबे किशीन्वेनायाणा७क्विनरणरस्तीतेंदा दिनतरपंघाखिए छेनिनधरीय प्राप्तयांचे प्रतेयन छेजेमनया मन्वेमन्त्रण्या तत्रिषी घण्डप्रधानु धामनेधंगरा सनयगी द्यापार्यानयान्वेतंस्थानाउपनियमधेतधेतीने कहा ग्रीज्जित्रेंचण्डेर सांग्रतफान्दाक्ये स्थान्वीकारीघतांग देंगांत दिंधारी में कांगती कते छ एमन एमन्द्रीता रमां छामन्वेमन क्र घतन जंतोष हो छिन्द्री मधीयापीष छेडी उनप्र रितां चे सङस्य देन शी देग गिय रन दे जनपा उपी खा स्थानचे धे गेरद्या हा आ छन्द्या प्रती तां फन्छी जु छीन्द्रा प्रस णेंप्राह्नचार्य्याजननीश्चर्येप्रङ्ज्ञकानतीं चेन्डा देंकि चेछीनमगेघंछरापरीधान्यायसपश्चमीम्यनयुगच्छे

Figure 27: Document showing the invocation J SIGN HU (from Strandberg 1983: 192).



Figure 28: Special signs used in Modi. Examples of some signs are given in Figure 29.



Figure 29: Some invocations used in Modi documents.

Anshuman Pandey



Figure 30: Modi letters and combinations that are graphically similar. Courtesy of Rajesh Khilari.

ISO/IEC JTC 1/SC 2/WG 2 PROPOSAL SUMMARY FORM TO ACCOMPANY SUBMISSIONS FOR ADDITIONS TO THE REPERTOIRE OF ISO/IEC 10646 ¹ 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 <i>Roadmaps</i> .
A. Administrative
Proposal to Encode the Modi 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: 2011-07-25 5. Requester's reference (if applicable): 2011-07-25 6. Choose one of the following: Yes (or) More information will be provided later: Yes</pandey>
B. Technical – General
1. Choose one of the following:
2. Number of characters in proposal: 79
3. Proposed category (select one from below - see section 2.2 of P&P document): A-Contemporary X B.1-Specialized (small collection) B.2-Specialized (large collection) C-Major extinct D-Attested extinct E-Minor extinct Image: Section 2.2 of P&P document): F-Archaic Hieroglyphic or Ideographic D-Attested extinct Image: Section 2.2 of P&P document Image: Section 2.2 of P&P document): 4. Is a repertoire including character names provided? Image: Section 2.2 of P&P document? Image: Section 2.2 of P&P document? a. If YES, are the names in accordance with the "character naming guidelines" Image: 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></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)? 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 for such information by the 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 fo	r addition of charac	cter(s) been submitted before?	No
	ada ta mambara a	the uppr community (for example: National Pady	
	ade to members of	are other experts etc.)?	Ves
	ith whom?	Rajesh Khilari <rajeshkhilari@amail.com< td=""><td>700</td></rajeshkhilari@amail.com<>	700
IFVES of		aumonto:	
II TEO, av		the proposed characters (for example:	<u></u>
3. Information on the u	iser community for	the proposed characters (for example,	Ves
Boforonco:	Marathi-speakin	a communities in India and elsewhere: institutions exist fo	r the promotion
Reference.	and use of Modi	historians linguists and other specialists in India and Fu	rope See text of
	and dee of moul,	proposal for additional details.	000 1001 000
4. The context of use f	or the proposed ch	aracters (type of use; common or rare)	Common
Reference:	Administrative	e documents from the Maratha period and from European of	countries with
	former p	resence in Marathi-speaking regions of South Asia. Also, µ	personal
	corresponden	nce and private documents of Marathi speakers See text of	f proposal for
		additional details.	
5. Are the proposed ch	naracters in current	use by the user community?	Yes
If YES, where?	Reference:	I here is an active scholarly community, primarily in Mal	narashtra, India
		and in parts of Europe, engaged in the study of Modi a	na aocuments ar dotaile
6 After giving due con	siderations to the r	whiten in the Script. See lext of proposal for future	tors be entirely
in the BMP2		sinciples in the F&F document must the proposed charact	No
	is a rationale provi	ded2	
	ES reference:		
7 Should the propose	d characters be ker	at together in a contiguous range (rather than being seatte	rod)2
7. Should the propose	acad characters be kep	or together in a contiguous range (rather than being scatte	
character or cha	racter sequence?	considered a presentation form of an existing	No
	is a rationale for its	sinclusion provided?	
	ES reference:		
0 Can any of the prop	osed characters be	ancoded using a composed character sequence of either	
existing characte	oseu characters be	encoded using a composed character sequence of enner	No
	is a rationale for its	sinclusion provided?	
	ES reference		
10 Can any of the pro	nosed character(s)	be considered to be similar (in appearance or function)	
to an existing ch	aracter?		Yes
If YES	is a rationale for its	s inclusion provided?	Yes
If Y	ES reference	See text of proposal.	
11 Does the proposal	include use of com	bining characters and/or use of composite sequences?	Yes
If YES is a ratio	nale for such use n	rovided?	Yes
If Y	ES reference:	Combining yowel signs: see text of propos	al
Is a list of compo	site sequences an	d their corresponding glyph images (graphic symbols) prov	vided?
If Y	ES reference		
12 Does the proposal	contain characters	with any special properties such as	
control function	or similar semantic	s?	Yes
If YES	describe in detail (i	include attachment if necessary)	Virama:
n 120,	decomo in detail (see text of proposal	
13. Does the proposal	contain any Ideogr	aphic compatibility character(s)?	No
If YES, is the eq	uivalent correspond	ding unified ideographic character(s) identified?	
If YES,	reference:		