To: South Asian Subcommittee and UTC
From: Deborah Anderson, Rick McGowan, and Ken Whistler
Title: Summary and Assessment of Grantha Proposals
Date: 28 January 2010

I. Reference Documents

The main proposal documents are:

- Shriramana Sharma (L2/09-372 and for GRANTHA LENGTH MARK, L2/09-374)
- Naga Ganesan's proposal (L2/09-345) ("Ganesan" in this document)
- Government of India ("GoI" in this document) proposal by M.D. Kulkarni (L2/10-048)
  Comments on the GoI document have been made by:
  (a) H.S. Rao (see http://tdil.mit.gov.in/pdf/Grantha2.pdf)
  (b) T. Ganesan (see http://tdil.mit.gov.in/pdf/Grantha.pdf)
  (c) K.E. Govindan (see http://tdil.mit.gov.in/pdf/Grantha3.pdf)
  (d) Dr. Ajay Kumar (see http://tdil.mit.gov.in/pdf/Grantha4.pdf)
  (e) Kirti Kant Sharma (see http://tdil.mit.gov.in/pdf/Grantha5.pdf)

II. Agreed-Upon Characters

All three proposals agree on the following 55 characters, in both the names and order. The codepoints listed below are in the 11300 block, where Grantha is currently allocated, according to the Roadmap for the SMP (http://www.unicode.org/roadmaps/smp/). The GoI document uses the 0800 block; those codepoints are given in square brackets below.

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11305   GRANTHA LETTER A [0805]
11306   GRANTHA LETTER AA [0806]
11307   GRANTHA LETTER I [0807]
11308   GRANTHA LETTER II [0808]
11309   GRANTHA LETTER U [0809]
1130A   GRANTHA LETTER UU [080A]
1130B   GRANTHA LETTER VOCALIC R [080B]
11310   GRANTHA LETTER AI [0810]
11314   GRANTHA LETTER AU [0814]
11315   GRANTHA LETTER KA [0815]
11316   GRANTHA LETTER KHA [0816]
11317   GRANTHA LETTER GA [0817]
11318   GRANTHA LETTER GHA [0818]
11319   GRANTHA LETTER NGA [0819]
1131A   GRANTHA LETTER CA [081A]
1131B   GRANTHA LETTER CHA [081B]
1131C   GRANTHA LETTER JA [081C]
1131D   GRANTHA LETTER JHA [081D]
1131E   GRANTHA LETTER NYA [081E]
1131F   GRANTHA LETTER TTA [081F]
11320   GRANTHA LETTER TTHA [0820]
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11321   GRANTHA LETTER DDA [0821]
11322   GRANTHA LETTER DDHA [0822]
11323   GRANTHA LETTER NNA [0823]
11324   GRANTHA LETTER TA [0824]
11325   GRANTHA LETTER THA [0825]
11326   GRANTHA LETTER DA [0826]
11327   GRANTHA LETTER DHA [0827]
11328   GRANTHA LETTER NA [0828]
1132A   GRANTHA LETTER PA [082A]
1132B   GRANTHA LETTER PHA [082B]
1132C   GRANTHA LETTER BA [082C]
1132D   GRANTHA LETTER BHA [082D]
1132E   GRANTHA LETTER MA [082E]
1132F   GRANTHA LETTER YA [082F]
11330   GRANTHA LETTER RA [0830]
11332   GRANTHA LETTER LA [0832]
11333   GRANTHA LETTER LLA [0833]
11335   GRANTHA LETTER VA [0835]
11336   GRANTHA LETTER SHA [0836]
11337   GRANTHA LETTER SSA [0837]
11338   GRANTHA LETTER SA [0838]
11339   GRANTHA LETTER HA [0839]
1133D   GRANTHA SIGN AVAGRAHA [083D]
1133E   GRANTHA VOWEL SIGN AA [083E]
1133F   GRANTHA VOWEL SIGN I [083F]
11340   GRANTHA VOWEL SIGN II [0840]
11341   GRANTHA VOWEL SIGN U [0841]
11342   GRANTHA VOWEL SIGN UU [0842]
11343   GRANTHA VOWEL SIGN VOCALIC R [0843]
11344   GRANTHA VOWEL SIGN VOCALIC RR [0844]
11348   GRANTHA VOWEL SIGN AI [0848]
1134D   GRANTHA SIGN VIRAMA [084D]
11360   GRANTHA LETTER VOCALIC RR [0860]
11361   GRANTHA LETTER VOCALIC LL [0861]

III. List of differences between proposals
1. Various signs

a.   11301 GRANTHA SIGN ANUNASIKA [Sharma and Ganesan]
     [Missing in GoI]

b.   11302 [/0802] GRANTHA SIGN ANUSVARA [Ganesan / GoI]
     11302   GRANTHA LETTER ANUSVARA [Sharma]

c.   11303 [/0803] GRANTHA SIGN VISARGA [Ganesan / GoI]
     11303   GRANTHA LETTER VISARGA [Sharma]

2. Independent vowels

a.   1130C   GRANTHA LETTER VOCALIC L [Sharma and Ganesan]   ௭௰

080C   GRANTHA LETTER VOCALIC LA [GoI] எ

b.   1130E   GRANTHA LETTER E [Sharma and Ganesan] ஹ்ன்
      080F   GRANTHA LETTER E [GoI] வண

c.   1130F   GRANTHA LETTER EE [Sharma and Ganesan] வண
      [Missing in GoI]

d.   11312   GRANTHA LETTER O [Sharma and Ganesan] ஓ்
      0813   GRANTHA LETTER O ஓ் [GoI]

e.   11313   GRANTHA LETTER OO [Sharma and Ganesan] ஓ்
      [Missing in GoI]

3. Consonants
      a. Consonants used to transcribe Dravidian sounds [Ganesan only]
         11329 GRANTHA LETTER NNNA
         11331 GRANTHA LETTER RRA
         11334 GRANTHA LETTER LLLA

4. Dependent vowel signs

a.   11346   GRANTHA VOWEL SIGN E [Sharma and Ganesan] ி்◌
      0847   GRANTHA VOWEL SIGN E [GoI] ெ◌

b.   11347   GRANTHA VOWEL SIGN EE   [Sharma and Ganesan] ெ◌
      [Missing in GoI]

c.   11357   GRANTHA VOWEL SIGN AU [Sharma]
      11357   GRANTHA AU LENGTH MARK [Ganesan]

5. Two-part dependent vowel signs

a.   1134A   GRANTHA VOWEL SIGN O [Sharma and Ganesan] ி்◌ா
      084B GRANTHA VOWEL SIGN O   [GoI] ெ◌ா

b.   1134B   GRANTHA VOWEL SIGN OO [Sharma and Ganesan] ெ◌ா
      [Missing in GoI]

c.   1134C [/084C]   GRANTHA VOWEL SIGN AU [Ganesan / GoI]
      1134C   GRANTHA VOWEL SIGN AU OLD [Sharma]

6. Virama
        a.   1134E GRANTHA SIGN LIGATING VIRAMA [Sharma only]

7. Various signs
        a.   1133C GRANTHA SIGN NUKTA [Sharma only]

        b.   11350 GRANTHA OM [Ganesan, noted by Dr. Ajay Kumar in GoI comment]

        c.   11355 GRANTHA LENGTH MARK (proposed separately in L2/09-374) [Sharma only]

        d.   1134E GRANTHA SIGN CHILLU MARKER [Ganesan only]

        e.   1135D GRANTHA SIGN PLUTA [Sharma only]
                 (Archaic symbol which appears in Vedic, but not exclusively)

        f.   Vedic signs [Sharma only]
                       1135E GRANTHA LETTER VEDIC ANUSVARA
                       1135F GRANTHA LETTER VEDIC DOUBLE ANUSVARA

8. Punctuation

        a.   11364 [/0864]   GRANTHA DANDA [Ganesan / GoI]
                 Use 0964 DEVANAGARI DANDA [Sharma]

        b.   11365 [/0865]   GRANTHA DOUBLE DANDA [Ganesan / GoI]
                 Use 0965 DEVANAGARI DOUBLE DANDA [Sharma]

9. Digits
        a. 0-9 DIGITS [Ganesan /GoI]
                 11366 [/0866]   GRANTHA DIGIT ZERO
                 11367 [/0867]   GRANTHA DIGIT ONE
                 11368 [/0868]   GRANTHA DIGIT TWO [glyph in GoI chart]
                 11369 [/0869]   GRANTHA DIGIT THREE
                 1136A [/086A]   GRANTHA DIGIT FOUR
                 1136B [/086B]   GRANTHA DIGIT FIVE
                 1136C [/086C]   GRANTHA DIGIT SIX
                 1136D [/086D]   GRANTHA DIGIT SEVEN
                 1136E [/086E]   GRANTHA DIGIT EIGHT
                 1136F [/086F]   GRANTHA DIGIT NINE

                 Use Tamil digits 0BE6-0BEF [Sharma]

10. Numerics
        a.   11370   GRANTHA NUMBER TEN [Ganesan]
                 0870   GRANTHA DIGIT TEN [GoI]
                 Use 0BF0 TAMIL NUMBER TEN [Sharma]

        b.   11371   GRANTHA NUMBER ONE HUNDRED [Ganesan]
                 0871   GRANTHA DIGIT ONE HUNDRED [GoI]

Use 0BF1 TAMIL NUMBER ONE HUNDRED [Sharma]

c.   11372   GRANTHA NUMBER ONE THOUSAND [Ganesan]
       0872   GRANTHA DIGIT ONE THOUSAND [GoI]
       Use 0BF2 TAMIL NUMBER ONE THOUSAND [Sharma]

11. Fractions

a. Set of three "major" Grantha fractions

       0BFB   TAMIL FRACTION ONE QUARTER [Sharma in L2/09-376]
       0BFC   TAMIL FRACTION ONE HALF [Sharma]
       0BFD   TAMIL FRACTION THREE QUARTERS [Sharma]

       0855   GRANTHA FRACTION 80/320 [GoI] "read as ¼"
       0856   GRANTHA FRACTION 160/320 [GoI] "read as ½"
       0857   GRANTHA FRACTION 240/320 [GoI] "read as ¾"

b. Set of Grantha fractions [GoI only]
       0873   GRANTHA FRACTION 1/320
       0874   GRANTHA FRACTION 2/320
       0875   GRANTHA FRACTION 4/320
       0876   GRANTHA FRACTION 8/320
       0877   GRANTHA FRACTION 12/320
       0878   GRANTHA FRACTION 16/320
       0879   GRANTHA FRACTION 20/320
       087A   GRANTHA FRACTION 32/320
       087B   GRANTHA FRACTION 40/320
       087C   GRANTHA FRACTION 48/320
       087D   GRANTHA FRACTION 60/320
       087E   GRANTHA FRACTION 64/320

Note 1: According to L2/09-398, INFITT will propose a set of archaic Tamil fractions for encoding as a set in the SMP; they number ca. 30.
Note 2: In a separate document (L2/09-416), Sri Lanka reports about 20 Tamil fractions that need encoding, and recommends they go into the SMP as a set, alongside other archaic Tamil symbols and signs.

12. Additional vowels

a.   11362   GRANTHA VOWEL SIGN VOCALIC L   [Sharma and Ganesan]
       [Missing in GoI]

b.   11363   GRANTHA VOWEL SIGN VOCALIC LL   [Sharma and Ganesan]
       [Missing in GoI]

c.   Set of two old vocalic signs [Sharma only]
               1137E GRANTHA VOWEL SIGN VOCALIC L OLD
               1137F GRANTHA VOWEL SIGN VOCALIC LL OLD

13. Additional consonant

a.　　0858　GRANTHA SUBSIDIARY CONSONANT YA [GoI only]

14. Additional characters

a.　　Set of Sama Vedic Svara Markers [Sharma only]

　　　　11366 COMBINING GRANTHA DIGIT ZERO
　　　　11367 COMBINING GRANTHA DIGIT ONE
　　　　11368 COMBINING GRANTHA DIGIT TWO
　　　　11369 COMBINING GRANTHA DIGIT THREE
　　　　1136A COMBINING GRANTHA DIGIT FOUR
　　　　1136B COMBINING GRANTHA DIGIT FIVE
　　　　1136C COMBINING GRANTHA DIGIT SIX
　　　　1136D <reserved>
　　　　1136E <reserved>
　　　　1136F <reserved>

　　　　11370 COMBINING GRANTHA LETTER A
　　　　11371 COMBINING GRANTHA LETTER KA
　　　　11372 COMBINING GRANTHA LETTER NA

　　　　11373 COMBINING GRANTHA SYLLABLE VI
　　　　11374 COMBINING TAMIL LETTER PA

IV. Significant Issues

1. Errors in character names

a. The names for the anusvara and visarga in Sharma's proposal ("GRANTHA LETTER ANUSVARA" and "GRANTHA LETTER VISARGA") appear to in error. In other Indic scripts the names for the anusvara and visarga are "[script] SIGN ANSUVARA" and "[script] SIGN VISARGA." (III.1.b, III.1.c.)

b. The name in the GoI proposal for GRANTHA LETTER VOCALIC LA, seems to be a typographical error for GRANTHA LETTER VOCALIC L. (III.2.a.)

c. If the separately encoded Grantha numbers are to be included in the repertoire, the names in the GoI document for '10,' '100,' and '1000' should be changed to from "DIGIT" to "NUMBER." This naming convention is used elsewhere in Unicode. (III.10)

d. The name for 1134C, which varies between GRANTHA VOWEL SIGN AU (Ganesan and GoI) and GRANTHA VOWEL SIGN AU OLD (Sharma), is discussed in section 5.k, below. (III.5.c.)

e. The name for 11357, which varies between GRANTHA AU LENGTH MARK (Ganesan) and GRANTHA VOWEL SIGN AU (Sharma), is discussed in section 5.k, below. (III.4.c)


2. Significant glyph errors

a. In comparing the order, glyphs, and names of characters of the various proposals, it appears that four glyphs in the GoI document are missing a circle above their glyphs. The circled forms appear in the proposals of Sharma and Ganesan (as shown on the right below).

080F   GRANTHA LETTER E   வண   should be: வ் (III.2.b)

0813   GRANTHA LETTER O   ଗ   should be: ଗ் (III.2.d)

0847   GRANTHA VOWEL SIGN E   ெ◌   should be: ◌் (III.4.a)

084B   GRANTHA VOWEL SIGN O   ெ◌ா   should be: ◌ா (III.5.a)

b. Other glyph errors in the GoI proposal are noted in the comments by Rao, T. Ganesan, etc., cited in section I. They are not repeated here, but we recommend the GoI representatives review these comments and compare them to the glyphs in the other proposals.

3. Apparent errors in repertoire

Based upon a comparison of the three proposals, the GoI document seems to be missing a number of characters, which appear in the other two proposals. This seems to be an error, and we ask the representatives of the GoI to review the repertoire and see if indeed these are errors of omission.

Missing characters include:
GRANTHA SIGN ANUNASIKA (III.1.a)
GRANTHA LETTER EE (III.2.c)
GRANTHA LETTER OO (III.2.e)
GRANTHA VOWEL SIGN EE (III.4.b)
GRANTHA VOWEL SIGN OO (III.5.b)
GRANTHA VOWEL SIGN VOCALIC L   (III.12.a)
GRANTHA VOWEL SIGN VOCALIC LL (III.12.b)

4. Numbering

Since the Roadmap assigns the 13000 block for Grantha and the 0800 block is already filled by Samaritan and Mandaic (up to -085F), the numbering in the GoI proposal must be changed to 13000ff.

5. Other issues

a. Dandas (III. 8.a and III.8.b)

Script-specific dandas are requested by Ganesan and GoI; Sharma instead opts for the use of the Devanagari dandas, providing examples of Grantha dandas on p. 5 of his proposal.

Ganesan cites the "Principles and Procedures" for new scripts in support of his request ("The existence of the use of Dandas in orthographies for a script proposed for encoding is generally taken as sufficient justification for encoding of script-specific Dandas for that script"). Ganesan says the shape should be "something larger than Sourashtra for visual uniformity with Grantha script, and to differentiate a little from Devanagari signs." No specific examples comparing the Grantha dandas to Devanagari dandas are provided, however, though pages 17, 19, and 23 contain examples of the Grantha dandas.

The sentence that follows the one above from the "Principles and Procedures" document could, however, equally well apply in Sharma's request to use the Devanagari dandas: "However, there may be considerations that would favor use of particular already-encoded Dandas from another block instead. In any case, the determination must be made when the script is approved for encoding."

b. OM (III.7.b)

Ganesan says the OM symbol is "well published" and appears in manuscripts, temples, and in papers such as *India Abroad*. He provides an example (p. 17 of his proposal) from a webpage that includes several different artistic OM signs (but without attribution as to where they appeared or in what script context). The OM sign in the codechart does not match that in the figure on page 17.

Sharma has reserved space for a Grantha OM, if attestation of a unique Grantha sign is provided. The sign is not included in the GoI proposal.

c. Vedic characters (III.7.e, III.7.f, III.14)

Sharma provides extensive documentation of the Vedic characters in Grantha. (The GRANTHA PLUTA SIGN appears in Vedic, but is not an exclusive Vedic sign. It is being included for this discussion in the set of other Vedic signs.) The Vedic signs were not included in Ganesan's proposal, nor that of the GoI.

d. Fractions (III.11)

Sharma proposes (L2/09-376) three "major" fractions, ¼ , ½, and ¾, be encoded in the Tamil block on the BMP, similar to the three "major" fractions encoded for Malayalam; he provides documentation of their use. The same three characters are proposed by GoI, but with different

names, and located within the Grantha block. The proposal by Sharma has not yet been discussed by the UTC.

Neither the proposal of Sharma nor Ganesan includes the set of fractions in section III.11.b.

Ganesan, writing for INFITT, reports that a set of 30 archaic Tamil fractions will be proposed for the SMP (L2/09-398). Additionally, Sri Lanka requests a delay in approving the three "major" fractions, as there are over 20 that should be encoded, and Sri Lanka would this like a set of fractions encoded on the SMP (L2/09-416).

e. Digits (III.9) and Numerics (III.10)
Ganesan and GoI propose separate Grantha numbers (0-10, 100, 1000), whereas Sharma recommends use of Tamil numbers at 0BE6 to 0BF2, for the digits 0-9 and the numbers 10, 100, 1000. Ganesan says the Grantha numbers are distinctive from those in Tamil, particularly for 2, 3, 7, and 10, but no examples comparing the two are provided, and his chart is missing glyphs for 2, 4, and 8 (though the GoI proposal has glyphs). Examples of the numbers 0-9 are given in Sharma (p. 5), who compares the shapes favorably with Tamil.

f. NUKTA (III.7.a)
Sharma alone proposes a NUKTA be encoded, so as to be able to extend the alphabet for non-native sounds, as is done in other scripts. He advocates a Grantha-specific NUKTA be encoded at this point, rather than relying on, for example, the KANNADA SIGN NUKTA (0CBC). Though a "usage example" is provided on page 45 of his proposal, no textual examples showing actual attestation are given.

g. SUBSIDIARY CONSONANT YA (III.13)
Only the GoI proposal includes this character in its proposal. The character has an accompanying comment, "added to base consonants," but provides no further discussion.

h. LENGTH MARK (III.7.c)
Sharma alone requests this character, which is only used regularly with independent vocalic RR. It can appear with other vowels (independent U, independent vocalic L, and dependent vowel sign vocalic L), but these other vowels all have other means of representing length. If this character were encoded, Sharma states that it would be necessary to make clear one can't use a vowel plus this length mark (except for vocalic RR). He voices concerns about encoding this as a separate character in his proposal (L2/09-374), and admits he proposes it "purely in consideration of the potential need to denote this glyph in plaintext."

i. Letters for Dravidian sounds (III.3)
Ganesan's proposal includes three consonant letters for transcribing Dravidian sounds, and provides examples in his proposal. Sharma recommends using the Tamil letters in this case. (Note: The short e and short o, which are also used to transcribe Dravidian sounds, are included in the proposals of both Ganesan and Sharma.)

j. GRANTHA VOWEL SIGN VOCALIC L OLD/ GRANTHA VOWEL SIGN VOCALIC LL OLD (III.12.c)

According to Sharma, the dependent form of vocalic L (and LL) may occur to the right of a consonant (as appears in 11362 GRANTHA VOWEL SIGN VOCALIC L and 11363 GRANTHA VOWEL SIGN VOCALIC LL), or below a consonant. Since users would need to be able to search for both and because they have different CCs, he proposes the two positional variants be encoded separately, but provide a canonical decomposition from the old-style, with the vocalic L below the consonant (1137E/1137F), to the "new" style (11362/11363), with the vocalic L to the right of the consonant. The "new" style would then be the default. The two characters do not appear in the proposal by Ganesan or GoI.

k. GRANTHA VOWEL SIGN AU vs. GRANTHA VOWEL SIGN AU OLD and GRANTHA AU LENGTH MARK vs. GRANTHA VOWEL SIGN AU (III.5.c, III.4.c)

Sharma notes that the two-part dependent GRANTHA VOWEL SIGN AU (1134C) is the old-style form, whereas in most modern publications only the right-half of the character (proposed at 11357) appears . He differentiates the two by naming the two-part form GRANTHA VOWEL SIGN AU OLD, and calling the more modern form GRANTHA VOWEL SIGN AU. In contrast, Ganesan and GoI name the two-part character GRANTHA VOWEL SIGN AU, and the one-part vowel GRANTHA VOWEL MARK. The naming convention of Ganesan and GoI has a direct parallel in Malayalam.

l. GRANTHA SIGN CHILLU MARKER (III.7.d)

The GRANTHA SIGN CHILLU MARKER is proposed by Ganesan, as a way of handling "virama ligatures," rather than using joiners or other means. He draws on the fact that the Grantha script is close to Malayalam, and Malayalam has chillus encoded (though Sharma draws a sharp distinction between the chillu of Malayalam and the "chillu" in Grantha).

To Sharma, the chillu forms have no semantic distinction in Sanskrit from overt virama forms, and should not be represented, as they are only surface representations**.**

m. LIGATING VIRAMA (III.6.a)

This character is proposed by Sharma to specifically request the virama-ligated forms of consonants. It is canonically decomposable to the regular virama. For visibility, it is placed next to the default virama**.** The LIGATING VIRAMA is proposed as a means of handling the repha: the repha can occur between a consonant and a spacing virama, but it cannot be placed between a consonant and the ligating virama.

A summary of the use of the LIGATING VIRAMA vs. spacing virama in Grantha is:

    C + VIRAMA ---> Default desired virama form
    C + ZWNJ + VIRAMA ---> Spacing virama form
    C + LIGATING VIRAMA ---> Touching virama form
    C + ZWJ + LIGATING VIRAMA ---> Ligating virama form

V. Suggestions and recommendations

We recommend the following:

1. Accept the common set of 55 characters listed in Section II, with codepoints as given in Ganesan/Sharma. See accompanying codechart and names list.

2. Approve those characters that are agreed upon by at least two parties, are well-documented, and follow standard Unicode encoding practices.
These include:

      11301 GRANTHA SIGN ANUNASIKA
      11302 GRANTHA SIGN ANUSVARA
      11303 GRANTHA SIGN VISARGA
      1130C GRANTHA LETTER VOCALIC L
      1130E GRANTHA LETTER E
      1130F GRANTHA LETTER EE
      11312 GRANTHA LETTER O
      11313 GRANTHA LETTER OO
      11346 GRANTHA VOWEL SIGN E
      11347 GRANTHA VOWEL SIGN EE
      1134A GRANTHA VOWEL SIGN O
      1134B GRANTHA VOWEL SIGN OO
      1134C GRANTHA VOWEL SIGN AU
      11362 GRANTHA VOWEL SIGN VOCALIC L
      11363 GRANTHA VOWEL SIGN VOCALIC LL

3. Accept 1133C GRANTHA SIGN NUKTA, as it will bring Grantha in-line with other Indic scripts.

4. Adopt the name GRANTHA AU LENGTH MARK for 11357, as this name parallels use elsewhere. We also request this character be accepted for encoding.

5. Since evidence is attested for the three consonants used to transcribe Dravidian sounds, we recommend the following be accepted:

      11329 GRANTHA LETTER NNNA
      11331 GRANTHA LETTER RRA
      11334 GRANTHA LETTER LLLA

6. Recommend the following characters be postponed for further study, as they are not needed for the core repertoire of Grantha:

      Vedic characters
      fractions

7. Postpone the following characters for encoding, until additional evidence can be provided that shows distinct graphic usage:

      digits and numerica (show forms that are distinct from Tamil)

      dandas (show forms that are distinct from Devanagari dandas)

      OM

8. Recommend the GRANTHA SUBSIDIARY CONSONANT YA character not be separately encoded, as it is a ya-phalaa,, a presentation form of YA. However, discussion of Grantha rendering in the standard should discuss this. (We refer the proposal author to chapter 9 of The Unicode Standard to see how it is handled in Bengali.)

9. Postpone for further study or for discussion during the South Asia Subcommittee:

      GRANTHA VOWEL SIGN VOCALIC L OLD / GRANTHA VOWEL SIGN VOCALIC LL OLD

      GRANTHA LENGTH MARK

10. We recommend that the UTC discuss the issues regarding the representation of chillu forms. This is a significant architectural issue for the script. The choice is between (a) identifying the chillu formation as the default, and marking conjuncts via another mechanism, such as ZWJ, or (b) using the virama for conjunct formation, and specify the chillus by using a CHILLU MARKER.

11. Discuss the LIGATING VIRAMA, as proposed by Sharma in his proposal and discussed further in L2/09-375.

We recommend the proposal authors review this summary and provide feedback regarding the suggested recommendations about name and glyph discrepancies.

	1130	1131	1132	1133	1134	1135	1136	1137
0		ெந 11310	௦ 11320	௰ 11330	ௐ 11340		௾ 11360	
1			உ 11321	௱ 11341			௿ 11361	
2			ஊ 11322	௲ 11332	ௗ 11342			
3			ண 11323	ஐ 11333	ௗ 11343			
4		�ௗ 11314	த 11324		ௗ 11344			
5	௮ 11305	௯ 11315	௳ 11325	வ 11335				
6	௮ 11306	வ 11316	உ 11326	௴ 11336				
7	ஈ 11307	௬ 11317	௰ 11327	ஷ 11337				
8	·௰ 11308	௫ 11318	௴ 11328	ஸ 11338	ெ௦ 11348			
9	உ 11309	ஈ 11319		ஹ 11339				
A	௨ௗ 1130A	உ 1131A	௴ 1132A					
B	ஃ 1130B	௨ 1131B	௴ 1132B					
C		ஜ 1131C	ப 1132C					
D		ஈப 1131D	௵ 1132D	௳ 1133D	ௗ 1134D			
E		௫ 1131E	உ 1132E	௦ா 1133E				
F		ட 1131F	ய 1132F	ௗி 1133F				

11305	ꦅ	GRANTHA LETTER A
11306	ꦆ	GRANTHA LETTER AA
11307	ꦇ	GRANTHA LETTER I
11308	ꦈ	GRANTHA LETTER II
11309	ꦉ	GRANTHA LETTER U
1130A	ꦊ	GRANTHA LETTER UU
1130B	ꦋ	GRANTHA LETTER VOCALIC R
1130C		<reserved>
1130D		<reserved>
1130E		<reserved>
1130F		<reserved>
11310	ꦌ	GRANTHA LETTER AI
11311		<reserved>
11312		<reserved>
11313		<reserved>
11314	ꦍ	GRANTHA LETTER AU
11315	ꦎ	GRANTHA LETTER KA
11316	ꦏ	GRANTHA LETTER KHA
11317	ꦐ	GRANTHA LETTER GA
11318	ꦑ	GRANTHA LETTER GHA
11319	ꦒ	GRANTHA LETTER NGA
1131A	ꦓ	GRANTHA LETTER CA
1131B	ꦔ	GRANTHA LETTER CHA
1131C	ꦕ	GRANTHA LETTER JA
1131D	ꦖ	GRANTHA LETTER JHA
1131E	ꦗ	GRANTHA LETTER NYA
1131F	ꦘ	GRANTHA LETTER TTA
11320	ꦙ	GRANTHA LETTER TTHA
11321	ꦚ	GRANTHA LETTER DDA
11322	ꦛ	GRANTHA LETTER DDHA
11323	ꦜ	GRANTHA LETTER NNA
11324	ꦝ	GRANTHA LETTER TA
11325	ꦞ	GRANTHA LETTER THA
11326	ꦟ	GRANTHA LETTER DA
11327	ꦠ	GRANTHA LETTER DHA
11328	ꦡ	GRANTHA LETTER NA
11329		<reserved>
1132A	ꦢ	GRANTHA LETTER PA
1132B	ꦣ	GRANTHA LETTER PHA
1132C	ꦤ	GRANTHA LETTER BA
1132D	ꦥ	GRANTHA LETTER BHA
1132E	ꦦ	GRANTHA LETTER MA
1132F	ꦧ	GRANTHA LETTER YA
11330	ꦨ	GRANTHA LETTER RA
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11332	ꦩ	GRANTHA LETTER LA
11333	ꦪ	GRANTHA LETTER LLA
11334		<reserved>
11335	ꦫ	GRANTHA LETTER VA
11336	ꦬ	GRANTHA LETTER SHA
11337	ꦭ	GRANTHA LETTER SSA
11338	ꦮ	GRANTHA LETTER SA
11339	ꦯ	GRANTHA LETTER HA
1133A		<reserved>
1133B		<reserved>
1133C		<reserved>
1133D	꧑	GRANTHA SIGN AVAGRAHA
1133E	ꦰ	GRANTHA VOWEL SIGN AA
1133F	ꦱ	GRANTHA VOWEL SIGN I
11340	ꦲ	GRANTHA VOWEL SIGN II
11341	꦳	GRANTHA VOWEL SIGN U
11342	ꦴ	GRANTHA VOWEL SIGN UU

11343	ꦵ	GRANTHA VOWEL SIGN VOCALIC R
11344	ꦶ	GRANTHA VOWEL SIGN VOCALIC RR
11345		<reserved>
11346		<reserved>
11347		<reserved>
11348	ꦷ	GRANTHA VOWEL SIGN AI
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1134A		<reserved>
1134B		<reserved>
1134C		<reserved>
1134D	ꦸ	GRANTHA SIGN VIRAMA
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1135E		<reserved>
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11360	ꦹ	GRANTHA LETTER VOCALIC RR
11361	ꦺ	GRANTHA LETTER VOCALIC LL