Proposal to encode Vedic characters for the Grantha script

Shriramana Sharma (jamadagni-at-gmail-dot-com), India

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This document is pursuant to my earlier document L2-09/372 "Proposal to encode the Grantha script in Unicode" dated 2009-Oct-24. This present document requests the encoding of Vedic characters specific to the Grantha script. All the characters being proposed here have already been proposed as part of the Grantha character repertoire in my Grantha proposal. This document is merely a separate request for the same characters since the Vedic characters were 'postponed' in the confusion between three different Grantha proposals. I may remind the UTC at this juncture that I did not fail to make efforts from my side to both the other two Grantha proposers to create a unified proposal and those efforts failed due to no fault of mine, in my humble opinion.

§1. Characters being proposed

The following characters are being proposed in this document:

1.   Vedic anusvara-s that are specific to Grantha – 2 in number

ௐ   1135E GRANTHA LETTER VEDIC ANUSVARA

ௐ   1135F GRANTHA LETTER VEDIC DOUBLE ANUSVARA

2.   Sama Vedic svara markers that are specific to Grantha – 12 in number

ௐ   11366 COMBINING GRANTHA DIGIT ZERO

ௐ   11367 COMBINING GRANTHA DIGIT ONE

ௐ   11368 COMBINING GRANTHA DIGIT TWO

ௐ   11369 COMBINING GRANTHA DIGIT THREE

ௐ   1136A COMBINING GRANTHA DIGIT FOUR

ௐ   1136B COMBINING GRANTHA DIGIT FIVE

ௐ   1136C COMBINING GRANTHA DIGIT SIX

ௐ   11370 COMBINING GRANTHA LETTER A

ௐ   11371 COMBINING GRANTHA LETTER KA

ௐ   11372 COMBINING GRANTHA LETTER NA

ௐ   11373 COMBINING GRANTHA SYLLABLE VI

ௐ   11374 COMBINING TAMIL LETTER PA

§2. Characters not being proposed but used in Grantha for Vedic

Those characters that used in Grantha for Vedic but are not Grantha-specific and hence not included in this proposal are:

◌̱	0952	Devanagari Stress Sign Anudatta (Vedic sign anudatta)
◌́	0953	Devanagari Stress Sign Udatta (Vedic sign svarita)
◌̆	1CF4	Vedic Tone Candra Above
◌̄	1CD0	Vedic Tone Karshana
◌̂	1CD2	Vedic Tone Prenkha
◌*	20F0	Combining Asterisk Above
‖	1CD3	Vedic Sign Nihshvasa

Of these, 1CF4 alone has not yet been officially encoded but I have submitted L2/09-344 proposing it and this proposal has been accepted. 1CD3 as shown in the Vedic Extensions block code chart has a slightly oblique glyph but the upright glyph shown above has been used in books in both Grantha and Devanagari scripts and therefore I will consider the upright glyph as a mere glyphic variant of 1CD3. All other characters are already encoded with the same glyphs as seen in Grantha.

As for 20F0, I should note that I (as of the moment of submission of this proposal) have some misgivings as to whether this character should be used or a separate character Vedic Svara Marker Asterisk should be encoded. I choose to discuss this matter separately – and if necessary propose a separate character – in a future document.

§3. Description and attestation of the characters

While I am proposing only 14 of the characters used in Grantha for Vedic, I will however give attestation and description for all of them for the sake of completeness.

3.1. Vedic Anusvara

Ref 8 details the four different types of anusvara-s occurring in the Krishna Yajur Veda. Of these the Agama Anusvara and Lupta Agama Anusvara are denoted by this character:

This sample from p 382 of ref 5 shows this character with all svara marks possible for it (see the arrows). It is possible to distinguish from the context which of the two anusvara-s is meant by the symbol. When a consonant cluster follows (as in line 2 of the photo) it is the Lupta Agama Anusvara. Otherwise it is just the Agama Anusvara.

In some printings of the Sama Veda, this Vedic anusvara sign is used to denote the normal anusvara (as in this sample from ref 6 Gana p 2), while the normal anusvara sign is a 'shortcut' for

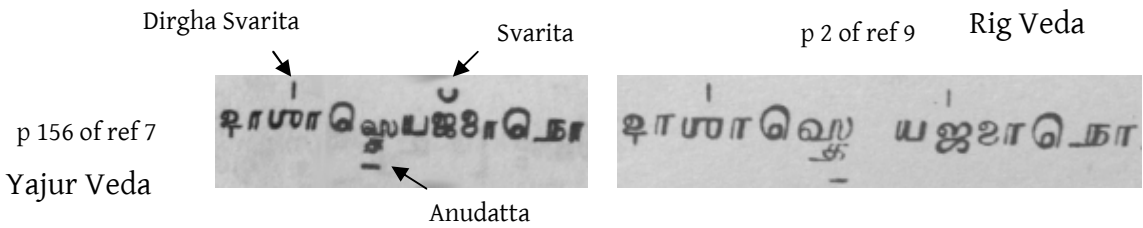the homorganic nasal of the following consonant. This usage is however not seen consistently.
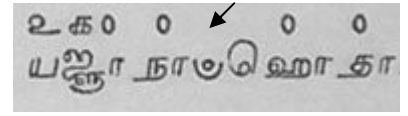
3.2. Vedic Double Anusvara
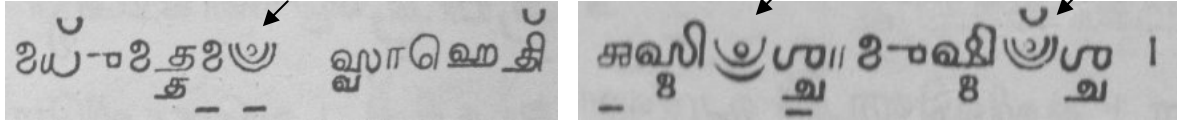
The Dvir Bhuta ("doubled") Lupta Agama Anusvara of the Krishna Yajur Veda mentioned in ref 8 is denoted by this symbol. Samples from pp 75 and 94 of ref 5 are given above.

3.3. Rig/Yajur Vedic svara markers

The Krishna Yajur Vedic svara-s anudatta, svarita and dirgha svarita are marked as shown on the sample to the above left. In the Rig Veda, the same symbol is used for both the svarita and dirgha svarita. Our enquiries revealed that there exist no Shukla Yajur Vedic or Atharva Vedic texts written in Grantha with svaras. Therefore no samples from them are provided here.

3.4. Sama Vedic svara markers

As this is a quite complicated matter, we accord it special treatment here. The Sama Veda has two chief parts – the Arcika or poetry part and the Gana or singing part.

The mantra-s which are in the form of poetry are included in the Arcika part with svara-s appropriate for recitation. These svara-s are four – udatta, svarita, anudatta and pracaya.

The Gana part contains these same mantra-s in the form in which they must be sung, and here seven svara-s (comprising a full octave) named krushta, prathama, dvitiya, tritiya, chaturtha, mandra and atisvarya are present.

There are somewhat complicated rules on how the svara-s should be marked. We enumerate them below. All markers are placed on top of the syllables they are applied to ('superscript') unless specified otherwise. To 'add' a marker to a syllable means to place it after an existing marker, or to place it newly on the syllable if no marker previously exists.

We will give rules for the markup of the Arcika part and Gana part separately.

3.4.1. Markup of the Arcika part Of the Sama Veda

UDATTA:

1. The udatta is marked by the number 1.
2. It is marked by the number 2 when it is: a. followed by an anudatta, or b. occurs at the end of a sentence.

3. If there are many sequential udatta-s only the first is marked by rules 1 or 2.

4. If there are many udatta-s followed by an anudatta, a Tamil-like PA is added to the first (the only marked one). [Such an udatta sequence is called shivaka.]

SVARITA:

5. The svarita is marked by the number 2.

6. If it follows a sequence of more than one udatta, a 0 is added to it.

7. Independent svarita-s (a special kind of svarita) are marked by KA+2+0 when they do not follow an udatta, but are: a. followed by an anudatta, b. followed by a pracaya or c. occur at the end of a sentence. (The condition of not following an udatta may be satisfied by their occurring at the beginning of a sentence or after an anudatta.)

8. Independent svarita-s followed by an udatta are called kampa-s. They are marked by 2+KA (without 0) on top and an avagraha and digit 3 on the mainline.

9. If such kampa-s are also preceded by an udatta, the 2 (only) is removed.

ANUDATTA:

10. The anudatta is marked by the number 3.

11. If there are many sequential anudaatta-s, only the first is marked.

PRACAYA:

12. The pracaya is unmarked.

Attestations for the above rules taken from the Arcika part of ref 6 are given below. The page numbers are given with the samples. One example each of every case in the rules is marked by the rule number.
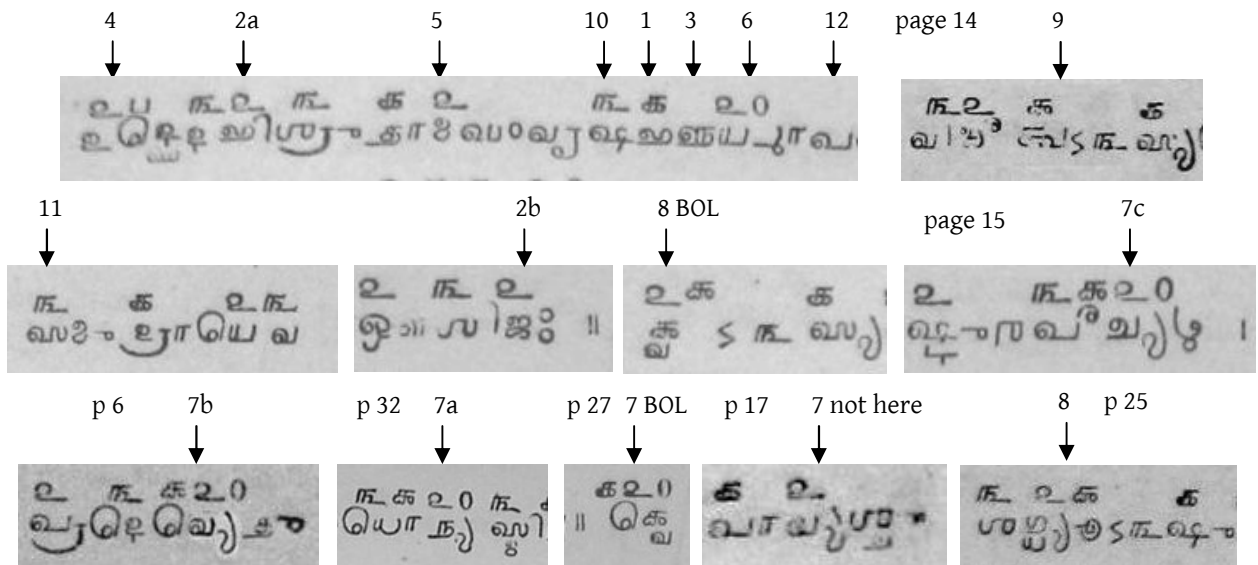
It is worthy to note here that many scholars, including the authors of N3366 which proposed Sama Vedic svara markers for Devanagari, have analysed the superscript KA in Devanagari as an addition to 3 marking an anudatta when such anudatta is followed by an independent svarita or kampa. From the samples we have given here, it is obvious that at least in Grantha the KA does not belong

to such anudatta, because it even occurs in the case of independent svarita-s or kampa-s which occur at the beginning of a line (see samples marked BOL) where there is no previous anudatta.

Further, modern printings use an asterisk (*) instead of KA in rule 7. Thus the asterisk indicates independent svarita-s which are not kampa-s.

In summary, the svara markers used in the Arcika part of the Sama Veda are: the number 1 for the udatta, 2 for the udatta and svarita, 3 for anudatta, 0 as additional marker for some svarita-s, KA as additional marker or sometimes alone for some svarita-s, Tamil PA for shivaka udatta-s, and asterisk (*) for some svarita-s.

<u>3.4.2. Markup of the Gana part of the Sama Veda</u>

1. The normal svara-s krushta to atisvarya are marked by 11, 1, 2, 3, 4, 5 and 6 respectively. The 11 is optionally preceded by an asterisk (*).

2. If sequential syllables carry the same svara, only the first syllable is marked.

3. The special svara-s abhigita, namana, vinata, dipta, prenkhana and ayata are different manners of pronouncing the normal svara-s. They are indicated respectively by adding A, NA, VI, Tamil PA, dash (‾) and caret (^).

4. Long vowels are by default prolated in singing. Each syllable with a long vowel that should not be prolated gets the number 0 added it.

5. If the vowel of a syllable is continued in other svara-s than the one it first carries (primary svara), the syllable is followed by an avagraha on the main line followed by the numbers marking such secondary svara-s also placed on the main line.

6. If the last secondary svara of a syllable is the primary svara of the next syllable, then the next syllable will NOT be marked as per 1.

7. Vowels are normally pronounced in secondary svara-s for a period of 3 mora-s (traditionally called 'matra'). For each secondary svara that persists only for 1 mora a superscript 1 is placed on top of the number indicating the svara.

Here are attestations from the Gana part of ref 6 marked with the rule numbers and for rules 1, 3 and 5 followed by the svara marker that was placed by the rule:


5

Note that we were not able to get attestation for superscript 6 or mainline 11 in ref 6. However, in N3366 attestation is provided for Devanagari superscript 6 and Grantha superscript 6 will certainly be required if that source is to be written in Grantha. In any case, the requirement for superscript 6 for the atisvarya svara is very real.

In the case of mainline 11, attestation is not a must for the present proposal since mainline svara markers are going to be composed as the regular digits anyway.

Further we note that we do not currently propose the encoding of superscript 7, 8 and 9 as they have no current use. We however reserve space for them.

3.5. Sama Vedic Punctuation

In the Rig Veda, which consists wholly of verses, half-verses and full-verses are ended by a danda and double danda respectively, as is normal for all Sanskrit poetry. In the Krishna Yajur Veda, which comprises mixed verses and prose, the danda is often used throughout without special regard to verses or prose. Sometimes the double danda may be used for full-verses. In the Arcika part of the Sama Veda, their usage is as in the Rig Veda, as it also wholly comprises verses.

page 32 of Ārcika part of ref 6
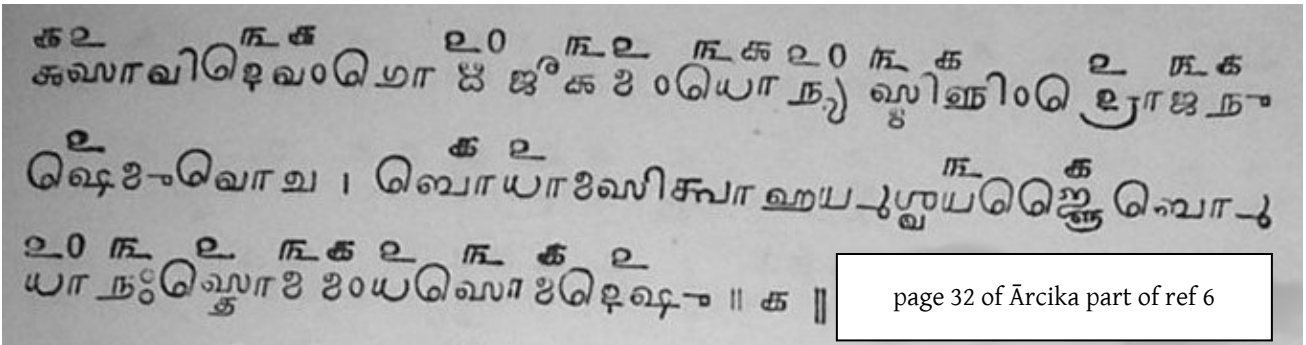
In the Gana part of the Sama Veda, there are special conventions. This part comprises of mantra-s from the Arcika part sung to different melodies called Saman-s. While thus being sung the distinction and identity of the words itself is often lost, what to say of half-verses and full-verses. Thus the subdivision and punctuation are done differently as in this sample from p 3 of ref 6:
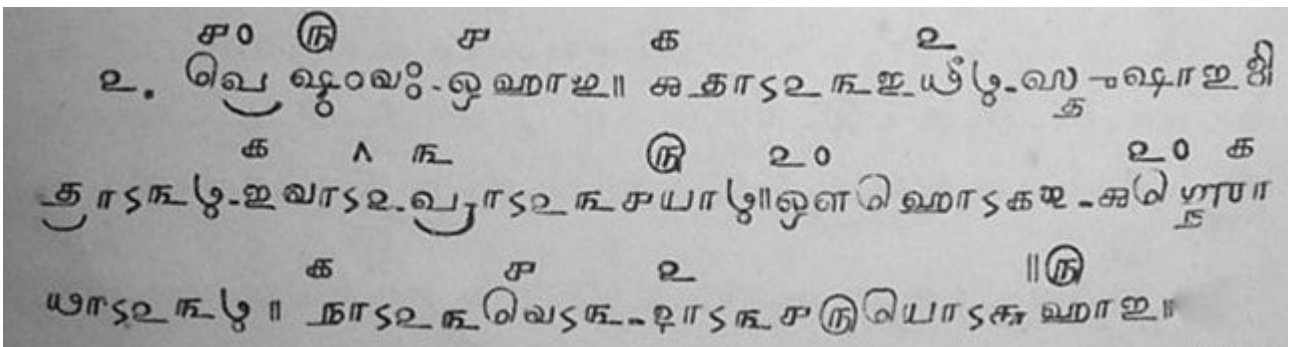
In rituals, each mantra is sung in either five or seven sections called bhakti-s. There are ritualistic specifications as to which of many persons participating in the rituals should sing which bhakti. To denote the end of a bhakti, the double danda is used.

Within each bhakti, there are groups of syllables (let us call them 'phrases') which are to be sung without pausing in between even for taking in breath. The hyphen marks the end of each such phrase where a pause is made and one may take breath. Where the end of a phrase coincides

with the end of a bhakti, the pause is indicated by the double danda terminating the bhakti, and so no hyphen is added for that purpose.

3.5.1. The special punctuation superscript double danda

Normally phrases are totally contained within bhakti-s. Sometimes, however, phrases will cross bhakti boundaries. One syllable of a phrase will be in one bhakti and the next in the next. In such cases, it is necessary for the person(s) who are responsible for singing the next bhakti to start precisely at the end of the first syllable pronounced by the person(s) singing the previous bhakti.

At this point, if a normal double danda is placed to mark the end of the first bhakti in the midst of a phrase, it causes the erroneous impression that a pause can be made at that point, since that is how it is used everywhere else. To avoid this error, a double danda is inserted in superscript between the two syllables of the phrase at the precise border of the bhakti. This indicates that the bhakti changes but that no pause is allowed, as the phrase continues beyond this point.

Here we should mention that though until now we have been using the term superscript for non-spacing markers placed above the base character, this 'superscript' character is seen to be spacing, though its advance width is very small (and should be so in fonts designed to support Sama Veda markup). It should also be placed at the precise border of the two bhakti-s.

3.5.2. The existing character for this special punctuation

This superscript double danda is represented by 1CD3 Vedic Sign Nihshvasa, though the representative glyph in the Vedic Extensions block code chart is somewhat oblique rather than upright as in Grantha texts. Whether upright or oblique, the purpose of the character is clear and is one and the same. In Devanagari texts we come across both the upright and oblique forms. To cater to the expectation of Sama Vedic scholars using Grantha, a Grantha font can show an upright glyph. Therefore these are mere stylistic variations and hence not worthy of disunification.

Here it should be noted that the name of the character 'nihshvasa' (meaning 'taking breath' in Sanskrit) and the corresponding explanation in N3366 (which proposed 1CD3 for encoding) "used to indicate to the performer where a breath can be conveniently taken" are quite misleading. If a person singing the previous bhakti has to also participate in singing the next (which can occur as per the ritualistic rules) then he is prohibited from taking a breath here as that would cause a pause in the middle of a phrase.

The informative alias "vaidika saamagaana yogakaala" merely means in Sanskrit "the timepoint of joining in (i.e. where those who should sing the next bhakti join in) in Sama Vedic singing", which is no doubt quite appropriate. However, this does not clearly indicate that taking a breath here is prohibited, which is indeed the very point of using a superscript double danda rather than a regular double danda. To clarify this, we suggest adding the following annotation: "Separates sections of Sama Vedic singing between which a pause is disallowed".

§4. Rendering of Vedic characters

4.1. The Rig/Yajur Vedic svara markers

The Rig/Yajur Vedic svara markers can generally be applied to all syllables. The anudatta is displayed below its base. The other two (straight line above and chandra above) are displayed above, and above any anunasika sign (or ascenders of vowel signs).

The anudatta and svarita marks can also be applied to the two Vedic anusvara-s. For samples see §3.1. They can also be applied to vowelless consonants rendered in any virama form. Some samples from ref 5 pp 126, 120 and 114 are given below:
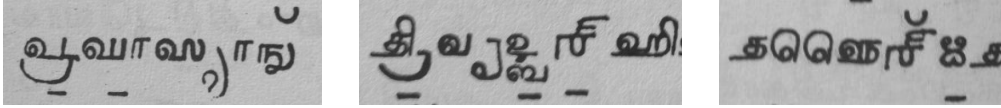
Therefore the sequence VOWELLESS CONSONANT + SVARA MARK should be rendered properly. Here VOWELLESS CONSONANT is any one of the four sequences defined in L2/09-372 §6.2.1 for virama forms.

Further, in the Rig Veda, the sequences TAMIL DIGIT ONE/THREE + DIRGHA SVARITA + ANUDATTA are used to indicate kampa-s (a kind of svarita). The Yajur Veda also uses TAMIL DIGIT ONE/TWO + ANUDATTA for some kampa-s. Samples are shown below:
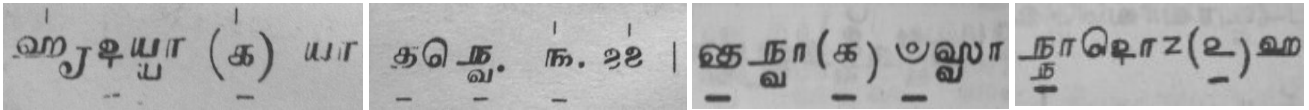
ref 9 p 3   ref 9 p 6   ref 5 p 733   ref 5 p 877

So generic support for svara marks applied to the unified Tamil-Grantha digits should be provided.

4.2. The Sama Vedic svara markers

The Sama Vedic svara markers are all placed above their base and above the level of any anunasika sign (or ascenders of vowel signs). They can be applied to syllables and digits. For samples see §3.4. As the rules of Sama Veda svara markup are already complicated, it is best to generically provide support for rendering Sama Vedic svara markers as applied to syllables and digits without going into details like which markers are valid for syllables, which for digits etc. Support should also be provided for the generic Sama Vedic svara markers that are not encoded in the Grantha block.

Another important thing about Sama Vedic svara markers is that they are used in various combinations with each other. In these combinations, they should be placed side-by-side and not stacked. The following list is a guide to the various possible combinations:

In the Arcika part of the Sama Veda:

1.   0 and 2 and KA are used in the combinations 2, 0, 2+0, KA, KA+2+0 and 2+KA.
2.   Modern printings have *+2+0 and KA+2 instead of the last two.
3.   The Tamil letter PA is used either alone or after 2 (as 2+PA).

In the Gana part of the Sama Veda:

1.   All markers except the asterisk can occur alone.
2.   The digit 0 can occur after all other markers.
3.   One and only one marker from point 10a of the Grantha repertoire (L2/09-372 §3.1) other than 0 can be followed by one and only one marker from point 10b/c.

4.   The digit 0 can occur after such a combination.
5.   The sequences 1-1, *-1-1, 1-1-PA and *-1-1-PA can occur.

Support for these combinations must be provided in the font and rendering engine. Generic support for placing other as-of-now unforeseen combinations of such marks may also be provided.

§5. Codepoints and naming

In the code chart (§10) the two Vedic anusvara-s have been placed at an arbitrary location but next to each other. (In L2/09-372 I have placed the pluta mark also along with them.)

The superscript digits 0 to 6 used as Sama Vedic svara markers are also placed at 11366 to 1136C parallel to the normal digits from the Tamil block 0BE6 to 0BEC though there is no serious semantic relationship between the superscript and normal digits. As I have sufficiently demonstrated in L2/09-372 §3.3, there are no Grantha digits distinct from Tamil digits. If separate Grantha digits are encoded, it would mean that whole separate sets of (glyphically and behaviourally identical) fractions (of which Tamil/Grantha have very many as I have shown in L2/09-317 p 4) should be encoded for Tamil and Grantha, which is meaningless. The two scripts have been used in the same cultural and geographical region in a mutually complementary manner for the two languages Tamil and Sanskrit, but the concept of numbers and fractions is not language-specific (while it may be culture-specific), and hence the two scripts have shared the characters that denote the numbers and fractions. Therefore, since the numbers that are needed for Grantha are already present in and can be reused from the Tamil block, the corresponding space in the Grantha block can be confidently used for another purpose (viz. Sama Vedic svara markers) without any misgivings whatsoever.

The non-numeric Sama Vedic svara markers have been placed arbitrarily.

The names for the Vedic anusvara-s were decided on the basis of the existing convention among Grantha users. Unlike in Devanagari, these are not called "candrabindu". That name is used by Grantha users only for the anunasika sign. These characters, however, are anusvara-s and that is what they are called. Since they act as independent letters in taking svara markers etc (see §4.1 above) they have been called letters. The names for the Sama Vedic svara markers have been based on the corresponding Devanagari versions from A8E0-A8F0. However, since the combining "VI" is not a 'letter' but a 'syllable', the word in the name has been accordingly replaced.

§6. Collation

In the Rig Veda, Yajur Veda and the Arcika part of the Sama Veda, the various svara markers should be reduced to their underlying svara and then sorting must be done in the order:

<div align="center">UDATTA < SVARITA < ANUDATTA < PRACAYA</div>

In Rig and Yajur Veda texts in Grantha, the udatta and pracaya are not distinguished, but these are self-sorting due to the grammatical rules behind their usage. In the Sama Veda Arcika, distinction exists in markup so identification is not a problem. Further, between the two Yajur Vedic svarita-s:

<div align="center">SVARITA < DIRGHA SVARITA</div>

Among the Sama Vedic svarita-s:

<div align="center">ORDINARY SVARITA < INDEPENDENT SVARITA < KAMPA SVARITA</div>

As regards the Gana part of the Sama Veda, the svara marker sequences *-1-1 and 1-1 both form a single collation-unit and have equal weight. (Effectively, the * should be disregarded.) Apart from this, each additional combining mark should increase sorting weight (assuming that "lighter" < "heavier"). The markers of the seven svara-s sort in descending order of the tone denoted:

$$11 < 1 < 2 < 3 < 4 < 5 < 6$$

Special care should be taken when handling Sama Vedic svara markers since the rules governing them are quite complicated, as described in §3.4.1 and §3.4.2. Svara markers are often omitted and must be inferred from preceding syllables. The rules however provide for unambiguously determining which syllable carries which svara when they are understood and applied properly.

Further, for the special Sama Vedic svara markers A, VI, NA, Tamil PA, ^ and ‾, no specific order is defined. From what we were able to learn from Sama Vedic scholars, it is highly unlikely that these markers determine order. If at all required, sorting may be done by codepoint!

§7. Linebreaking

Printed Vedic texts show linebreaks before the Vedic anusvara-s of Grantha, so it is not required to prevent linebreak before them (unlike in N3383 §3 where it is required to prevent linebreak before the glyphically different Devanagari anusvara-s proposed there).

The question of linebreak before combining marks does not arise.

§8. Unicode character properties

These properties have been based on the properties of the correponding letters in the Devanagari Extended block. Some names have been constructed differently, however. For details on that, see §5 above.

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1135E;GRANTHA LETTER VEDIC ANUSVARA;Lo;0;L;;;;;N;;;;;
1135F;GRANTHA LETTER VEDIC DOUBLE ANUSVARA;Lo;0;L;;;;;N;;;;;
11366;COMBINING GRANTHA DIGIT ZERO;Mn;230;NSM;;;;;N;;;;;
11367;COMBINING GRANTHA DIGIT ONE;Mn;230;NSM;;;;;N;;;;;
11368;COMBINING GRANTHA DIGIT TWO;Mn;230;NSM;;;;;N;;;;;
11369;COMBINING GRANTHA DIGIT THREE;Mn;230;NSM;;;;;N;;;;;
1136A;COMBINING GRANTHA DIGIT FOUR;Mn;230;NSM;;;;;N;;;;;
1136B;COMBINING GRANTHA DIGIT FIVE;Mn;230;NSM;;;;;N;;;;;
1136C;COMBINING GRANTHA DIGIT SIX;Mn;230;NSM;;;;;N;;;;;
11370;COMBINING GRANTHA LETTER A;Mn;230;NSM;;;;;N;;;;;
11371;COMBINING GRANTHA LETTER KA;Mn;230;NSM;;;;;N;;;;;
11372;COMBINING GRANTHA LETTER NA;Mn;230;NSM;;;;;N;;;;;
11373;COMBINING GRANTHA SYLLABLE VI;Mn;230;NSM;;;;;N;;;;;
11374;COMBINING TAMIL LETTER PA;Mn;230;NSM;;;;;N;;;;;
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§9. References

L2/09-372:   Proposal to encode the Grantha script in Unicode

Note: Since the description section (§3) of this document is reproduced almost verbatim from my Grantha proposal L2/09-372, I have retained the reference numbers in order to avoid dangling references caused by my updating some reference numbers and forgetting others. Therefore the reference numbers below do not start with 1 (and that they are sequential is a coincidence).

5.   Taittirīya Brāhmaṇam, Heritage India Education Trust, Chennai, India, 1980.

6.   Sāma Veda Saṃhitā, AVMSSGDPS Samithi, Kumbakonam, Tamil Nadu, India, 1985.

7.   Taittirīya Saṃhitā, Heritage India Education Trust, Chennai, India, 1980.

8.   A Monograph on the Anusvara of the Taittiriya Krishna Yajur Veda, Shriramana Sharma, http://sanskritweb.net/sansdocs/anusvara.pdf, retrieved 2009-Sep-09.

9.   Āśvalāyana Śrāddha Prayoga, AVMSSGDPS Samithi, Kumbakonam, Tamil Nadu, 1985.

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§10. Official proposal summary form

A. Administrative

1. Title

Proposal to encode Vedic characters for the Grantha script

2. Requester's name

Shriramana Sharma (jamadagni-at-gmail-dot-com), India

3. Requester type (Member body/Liaison/Individual contribution)

Individual Contribution

4. Submission date

2010-Jul-09

5. Requester's reference (if applicable)

6. Choose one of the following:

6a. This is a complete proposal

Yes

B. Technical – General

1. Choose one of the following:

1a1. This proposal is for a new script (set of characters)

No

1a2. Proposed name of script

1b1. The proposal is for addition of character(s) to an existing block

Yes

1b2. Name of the existing block

Grantha (allocated at 11300-1137F and proposals made)

2. Number of characters in proposal:

14

3. Proposed category:

Category A – Contemporary, or Category B1 – Specialized Small Collections

4a. Is a repertoire including character names provided?

Yes

4b. If YES, are the names in accordance with the "character naming guidelines" in Annex L of P&P document?

> *Yes*

4c. Are the character shapes attached in a legible form suitable for review?

> *Yes*

5a. Who will provide the appropriate computerized font (ordered preference: True Type, or PostScript format) for publishing the standard?

> *Elmar Kniprath (kniprath-at-online-dot-de), Germany, TrueType*

5b. If available now, identify source(s) for the font and indicate the tools used:

6. References:

6a. Are references (to other character sets, dictionaries, descriptive texts etc.) provided?

> *Yes*

6b. 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 detailed proposal.*

8. Additional Information:

> *Additional information about properties of the proposed characters and script that will assist in their correct understanding of and correct linguistic processing are provided in the detailed proposal.*

C. Technical – Justification

1. Has this proposal for addition of character(s) been submitted before? If YES, explain.

> *Yes. The contents of this proposal were part of L2/09-372 submitted by the same author for the entire Grantha script complete with Vedic characters. However, it became necessary to submit a separate proposal for the Vedic characters because they did not form part of the consensus between the three different Grantha proposals (made by the present author and two other parties separately).*

2a. Has contact been made to members of the user community (for example: National Body, user groups of the script or characters, other experts, etc.)?

> *Yes*

2b. If YES, with whom?

> *Shriramana Sharma is part of the user community and is in daily contact with people, especially the teachers and students of traditional Vedic schools and other Vedic/Sanskrit scholars who use the script for teaching and studying Sanskrit (classical and Vedic) and for religious purposes. The following Grantha users who are all accomplished Vedic scholars were consulted:*
>
> *1. Shri Svami Atma Bodha Tirtha, who is a Sama Veda scholar and before taking to holy orders was the principal of the Raja Veda Pathashala, Kumbakonam, Tamil Nadu, one of the oldest thriving pathashala-s of India established in the 15th century CE.*

2. *Mahamahopadhyaya Dr R Krishnamurti Shastri, who is an expert in the Yajur Veda, Vedanta and traditional commentaries on the Veda-s; retired principal of Madras Sanskrit College, Chennai; well known Vedic/Shastric/Sanskrit scholar in Tamil Nadu and at the Indian national level; chief trustee of Heritage India Education Trust which has been publishing works in Grantha for over twenty years. (See also: an Indian newspaper article on Dr Shastri:* http://www.thehindu.com/fr/2009/02/06/stories/2009020651000300.htm*.)*

3. *Dr R Mani Dravid, an expert in Vedanta and Yajur Veda scholar, lecturer of Mimamsa at Madras Sanskrit College, Chennai, and President's Award (Badarayana Puraskar) awardee.*

4. *Shri Jambunatha Ghanapathi, expert in Yajur Veda and Vedanga-s, principal and managing trustee, Shri CCVV Trust Pathashala, Coimbatore, Tamil Nadu.*

5. *Shri Shrikrishna Shrauti, expert in Sama Veda and traditional ritualistic procedures, Department of Sama Veda Bhashyam, Shri Venkateshvara Vaidika University, Tirupati, Andhra Pradesh.*

6. *Shri Venugopala Ghanapathi, Rig Veda teacher at Kanchi Shankara Matham, Kumbakonam.*

7. *Shri Parameshvara Dikshitar, scholar of Yajur Veda and Atharva Veda, Chidambaram, Tamil Nadu*

8. *Dr P Sambandham Gurukkal, Shaiva Agama Research Assistant, French Institute for Oriental Research, Pondicherry and founder of Sadyojata Samskrita Prakashana, Cuddalore, Tamil Nadu, which has published a Grantha infant reader and also yearly religious almanacs.*

9. *Dr K Ramasubramanian, Assistant Professor, Department of Humanities and Social Sciences, IIT Mumbai, scholar of the Yajur Veda and various Shastra-s*

10. *many peers of Shriramana Sharma, all part of the Tamil Nadu Vedic scholar community.*

The following Grantha users who hold engineering degrees were also consulted regarding many aspects, especially technical: Vinodh Rajan, Sri Ramadoss M, both of Chennai.

Dr Gerhard Ehlers of the Orientabteilung, Staatsbibliothek zu Berlin, expert in manuscript cataloguing and author of many works on manuscripts also was consulted. (His online page at: http://www.geschkult.fu-berlin.de/e/indologie/mitarbeiter/lehrbeauftragte/ehlers/index.html*.)*

2c. If YES, available relevant documents:

Appended to L2/09-372 endorsement by Dr R Krishnamurti Shastri as well as words of approval from Dr Gerhard Ehlers.

3. Information on the user community for the proposed characters (for example: size, demographics, information technology use, or publishing use) is included?

Yes, see detailed proposal

4a. The context of use for the proposed characters (type of use; common or rare)

Used for writing Vedic Sanskrit in the Grantha script

4b. Reference:

5a. Are the proposed characters in current use by the user community?

Yes

5b. If YES, where?

Chiefly in Tamil Nadu but also in other parts of India, Sri Lanka and elsewhere.

6a. After giving due considerations to the principles in the P&P document must the proposed characters be entirely in the BMP?

> *Yes, but as there is insufficient space in the BMP, we agree to encode the Grantha script in the SMP.*

7. Should the proposed characters be kept together in a contiguous range?

> *Yes*

8a. Can any of the proposed characters be considered a presentation form of an existing character or character sequence?

> *No*

9a. Can any of the proposed characters be encoded using a composed character sequence of either existing characters or other proposed characters?

> *No.*

10a. Can any of the proposed character(s) be considered to be similar (in appearance or function) to an existing character?

> *It may be suggested that 1135E GRANTHA LETTER VEDIC ANUSVARA is similar to A8F2 DEVANAGARI SIGN SPACING CANDRABINDU in the Devanagari Extensions block.*

10b. If YES, is a rationale for its inclusion provided?

> *The two characters 1135E GRANTHA LETTER VEDIC ANUSVARA and 1135F GRANTHA LETTER VEDIC DOUBLE ANUSVARA are used with their specific shape only in Grantha. A8F2 does not stand on the baseline whereas 1135E does. Removal of 1135E alone would leave 1135F without its pair.*

11a. Does the proposal include use of combining characters and/or use of composite sequences (see clauses 4.12 and 4.14 in ISO/IEC 10646-1: 2000)?

> *No*

12a. Does the proposal contain characters with any special properties such as control function or similar semantics?

> *No*

13a. Does the proposal contain any Ideographic compatibility character(s)?

> *No*

§16. Code Chart

	1135	1136	1137
0			சூ◌
1			கூ◌
2			ந◌
3			வி◌
4			ப◌
5			
6		○◌	
7		க◌	
8		உ◌	
9		ங◌	
A		ச◌	
B		ரு◌	
C		சூ◌	
D			
E	அ		
F	உள		

Since Grantha reuses many characters from other blocks, the Grantha code chart must contain sufficient annotations to help users to locate their desired characters. Further, in view of the importance of Grantha for Vedic, copious annotations are provided for the Vedic characters.

Rig/Yajur Vedic Svara Markers (reserved):

For Rig/Yajur Vedic svara markup, use the generic Vedic characters 0951, 0952 and 1CF4.

11351   <reserved>

     → 1CF4 ◌ Vedic Tone Candra Above

     → 0951 ◌ Vedic Tone Svarita

11351   <reserved>

     → 0952 ◌ Vedic Tone Anudatta

Various Characters:

1135E   ౮   Grantha Letter Vedic Anusvara

1135F   ౮   Grantha Letter Vedic Double Anusvara

Sama Vedic Svara Markers:

For Sama Vedic svara markers not encoded here, use 1CD0 ◌ Vedic Tone Karshana, 1CD2 ◌ Vedic Tone Prenkha and 20F0 ◌ Combining Asterisk Above.

11366   ◌   Combining Grantha Digit Zero

    *   marks some special svarita-s in recitation

    *   marks vowels that are not prolated in singing

11367   ◌   Combining Grantha Digit One

    *   marks udatta in recitation, prathama svara in singing

    *   sometimes indicates vowel length

11368   ◌   Combining Grantha Digit Two

    *   marks udatta and svarita in recitation, dvitiya svara in singing

11369   ◌   Combining Grantha Digit Three

    *   marks anudatta in recitation, tritiya svara in singing

1136A   ◌   Combining Grantha Digit Four

    *   marks caturtha svara in singing

1136B   ◌   Combining Grantha Digit Five

    *   marks mandra svara in singing

1136C   ◌   Combining Grantha Digit Six

	*	marks atisvarya svara in singing
1136D		<reserved>
1136E		<reserved>
1136F		<reserved>
11370	$\circ$	COMBINING GRANTHA LETTER A
	*	marks abhigita svara in singing
11371	$\circ$	COMBINING GRANTHA LETTER KA
	*	marks kampa and other special svarita-s in recitation
11372	$\circ$	COMBINING GRANTHA LETTER NA
	*	marks namana svara in singing
11373	$\circ$	COMBINING GRANTHA SYLLABLE VI
	*	marks vinata svara in singing
11374	$\circ$	COMBINING TAMIL LETTER PA
	*	marks shivaka udatta in recitation, dipta svara in singing

Sama Vedic Special Punctuation:

For separating sections of singing where a pause is disallowed, use 1CD3 ‖ VEDIC SIGN NIHSHVASA.