L2/11-026

உத்தமம்
INFITT
உலகத் தமிழ்த் தகவல் தொழில்நுட்ப மன்றம்
International Forum for Information Technology in Tamil

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தலைவர்	**செயல் இயக்குநர்**	**துணைத் தலைவர்**

Subject: INFITT Working Group Comments on the Grantha Encoding proposals

Dated: January 31, 2011

To

Dr. Lisa Moore
Chair, Unicode Tech Committee,
Unicode Consortium, U.S.A.

Dear Dr. Lisa Moore

International Forum for Information Technology in Tamil (INFITT - http://www.infitt.org) through its Unicode Working Group has reviewed the various Grantha proposals and has commented on those in the enclosed documents. The Working Group also conducted tow in-person meetings where it assembled several scholars and domain experts and the minutes of those meetings are also enclosed. Please find the following documents enclosed for consideration at the next UTC meeting in February 2011.

INFITT-WG02-Report-on-Grantha-Encoding-Unicode-Proposals.pdf

Note: the document mentioned here and appendices A-E are included in this PDF file.

and

A. Appendix A: WG02 Investigation of Grantha Encoding Proposals Data Collection Summary
B. Minutes of the WG02 meeting on Grantha Unicode Proposals at EFEO, Pondicherry
C. Minutes of the WG02 meeting on Grantha Unicode Proposals at Symantec, Chennai
D. ASI South Indian Inscriptions, Vol XXIII, No. 310, Trilingual (Tamil, Sanskrit, Telugu) Inscriptions, pp 400-405
E. ASI South Indian Inscriptions, Vol XXIV, No. 310, Inscriptions of the Srirangam Temple, Bilingual (Sanskrit, Kannada) Inscriptions, pp 321-322

Best Regards,

Mani M. Manivannan

Chair, INFITT Working Group 2

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International Forum for Information Technology in Tamil

A California Non-Profit Technical Society

WG02 Report on Grantha Encoding Proposals

1. Introduction

On November 1st, 2010, INFITT had requested Unicode Technical Committee ("UTC" in this document) to consider delaying a formal decision on the proposals **L2/10-426 and L2/10-447** proposals to encode Grantha script in Unicode until INFITT working groups can study these and related documents and report their findings to the UTC. The Tamil Nadu Government ("TNG" in this document) had also requested the Government of India ("GoI" in this document) to ask for a deferral of its submission of the Grantha proposal to Unicode to have a high level government panel to investigate the proposal in depth. At the November meeting, the UTC did defer decisions on the Grantha proposal with the expectations that the various groups would meet and discuss the proposals.

The INFITT working group 2 ("WG02" in this document) on Unicode encoding, carefully reviewed the various Grantha proposals and related documents in the UTC docket to understand issues of interest to INFITT. It consulted various experts in and out of Tamil Nadu to study these proposals in depth. Recently the TNG has announced a high level committee to investigate these proposals and make a formal recommendation on these to the GoI. It is hoped that this technical report would be of interest to the TNG panel in addition to the UTC.

While proper encoding of the Grantha script is of immense interest to Tamil Nadu in digitizing, encoding, analyzing and researching the more than 100,000 inscriptional records, the WG02 restricted itself to the investigation of the proposal add the seven Tamil/Dravidian characters to the Grantha character set, namely

1130E Letter E
11312 Letter O
11329 Letter NNNA
11331 Letter RRA
11334 Letter LLLA
11346 Letter Vowel Sign E
1134A Letter Vowel Sign O

2. Expert Panels

INFITT WG02 called for an in-person meeting of the working group with experts in Epigraphy, Grantha, Sanskrit, Tamil, Linguistics along with technical experts familiar with Unicode encoding and Internationalized Domain Names (IDN). The first of these

sessions were held in collaboration with École française d'Extrême-Orient, Pudhucceri (EFEO) on December 22 at EFEO and the second session was held on December 23rd at Symantec Corporation's Chennai offices.

The following experts attended these meetings:

1. Prof. G. Vijayavenugopal, EFEO, Epigraphist
2. Dr. Sathyanarayanan, EFEO, Epigraphist
3. Dr. Santhalingam, Epigraphist, Government of Tamil Nadu (Retd.)
4. Dr. Rajavelu, Archeological Survey of India, Epigraphist
5. Shri R. Varada Desikan, EFEO, Expert on Sri Vaishnavaite manuscripts in Grantha
6. Dr. Krishnamurthy Sastri, Sanskrit scholar, Grantha publisher and Retd. Principal, Sanskrit College, Chennai
7. Dr. Shankaranarayanan, Manuscript Expert working on Grantha OCR, Department of Sanskrit, Shri Chandrashekharendra Sarasvati Vishva Maha Vidyalaya, Kanchipuram, (on the phone)
8. Dr. Jean-Luc Chevillard, Tamil Scholar, CNRS, France deputed to EFEO, Pudhucceri.
9. Dr. Dominic Goodall, Sanskrit scholar, Head, EFEO, Pudhucceri.
10. Prof. Deivasundaram, Linguist, Retd. Head of the Dept. of Tamil, Univ. of Madras.
11. Dr. Nakkeeran, Director, Tamil Virtual Academy

In addition, the following WG02 members participated in these dicussions in person and on the phone:

1. *Mr. Mani M. Manivannan, Sr. Director of Engineering, Symantec, and Chair, WG02*
2. *Dr. Rama. Krishnan, Tamil scholar and retired Chemical Engineering Executive*
3. *Mr. Shriramana Sharma, Sanskrit Research scholar, Grantha specialist, author of* ***L2/09-372,*** *one of the Grantha proposals*
4. *Mr. Vinodh Rajan, Software engineer, Grantha tools developer*
5. *Mr. S. Srivas, Software Developer (on the phone)*

The summaries of these meetings are added to this report as appendix B and C.

3.0 Preamble to the Investigation

The working group and its experts panels examined various documents as listed in Appendix A for their consideration. Before we describe the arguments for and against the addition of the seven Tamil/Dravidian characters in these documents, we make the following observations:

1. The inclusion of the seven Tamil/Dravidian characters was proposed originally by Dr. N. Ganesan ("Author1" in this document) in L2/09-141 with the claim that use of these characters in Grantha as native characters is attested. Evidence in support of such a claim was presented.

2. The inclusion of these characters and the claimed evidence was challenged almost immediately in L2/09-206 by the ICT agency of Sri Lanka and in L2/09-316 by Shriramana Sharma ("Author2" in this document), author of a second Grantha Proposal (L2/09-372).

3. Commenting on Author1's samples in L2/09-141, Author2 writes in L2/09-316 strongly doubting the authenticity of the samples provided as attestation for use of the Tamil/Dravidian characters in Grantha script. He specifically mentions that he has not been able to persuade Author1 to send him the details on "Samskrita Grantha Lipi Sabha" mentioned as the source of some of these samples.

4. In L2/09-372, Author2 discusses the inclusion of these seven characters and supports the addition of the short E/O and their corresponding vowel signs for *modern, proposed* transliteration of Kannada, Telugu names as part of "extended Grantha". But he does *not* include the three Tamil/Dravidian characters LLLA/RRA/NNNA as part of "extended Grantha."

5. However, in L2/10-085, Author2 accepts the inclusion of the remaining Tamil/Dravidian characters LLLA/RRA/NNNA also as part of "extended Grantha" but with an annotation similar to the Devanagari that these characters are to be used for Dravidian transcription (see section 3.6 for further discussions). However, later during WG02 discussions Author2 said that at the time he had accepted this characters for Grantha because he thought otherwise script=tamil characters would cause word boundaries when used in script=grantha text. However UTR #29 it is clearly said "Normally word breaking does not require breaking between different scripts".

6. The original GoI Grantha Proposal (L2/10-048) that was submitted *after* L2/09-141 and L2/09-372 did **not** include these seven Tamil/Dravidian Characters. The GoI experts apparently either did not consider or weren't persuaded by the arguments for extending Grantha.

7. In L2/10-233, Sanskrit Grantha scholars make the observation that "It is not possible for every script to be equally capable – in representing any language other than its native language – as the native script of that language. [..] Therefore there is no meaning in adding newer and newer characters to make Grantha (or any other script) equally as capable as other scripts, … in representing other languages, i.e. languages which the script was not originally

evolved for, which in the present case all languages other than Sanskrit". [However they have conceded that it might be considered useful by some people. But see 3.4 for more.]

8. The summary of the GoI meeting as published in the INFITT GB List by Dr. Nakkeeran and a modified summary as published in UTC L2/10-409, the GoI states that its aim was to encode "Indian heritage scripts i.e. Vedic Sanskrit and Grantha in the Unicode Standard so that our ancient knowledge could be represented on electronic media, computers, etc." (see section 3.4 for further discussion).

9. The summary also recorded that some scholars objected to the presence of characters not used in Sanskrit, however the committee overruled them with the statement: "though these characters are not used for writing Sanskrit in the Grantha script, they may be useful in transcribing words of other languages like Tamil or English into the Grantha script and hence these should be encoded for Grantha." (see section 3.4 for further discussion)

10. Since Grantha is an important heritage script of epigraphic significance to Tamil Nadu in addition to being a script in use by a religious community based primarily in Tamil Nadu, one would have expected that the epigraphists from Tamil Nadu who deal with hundreds of thousands of mixed Tamil and Grantha inscriptions to be consulted but until INFITT WG02 reached out to them it doesn't appear that they were.

11. After UTC published the consensus basis document (L2/10-053, L2/10-265r) combining the three competing proposals, the GoI seems to have accepted the addition of the seven Tamil/Dravidian characters and did not verify the attestation samples submitted in L2/09-141, L2/09-141R and L2/09-345 though the authenticity of these were challenged repeatedly by Author2.

12. The most recent GoI proposal (L2/10-426) includes all the seven Tamil/Dravidian characters as part of the Grantha encoding. Though the official rationale for adding these characters appears to be for the purpose of representing "all sounds present in North Indian as well as South Indian scripts" in Grantha script, it is noteworthy that no attempt was made to make the Grantha encoding completely compatible with the Devanagari script. (see section 3.3 for more discussion).

The primary task of the WG02 and the experts it consulted was to essentially review the attestation samples submitted in L2/09-141, L2/09-141R and L2/09-345. Subsequently, the WG02 needed to review the conflicting requirements in encoding a script whose primary value is in preserving heritage manuscripts and inscriptions vs. an evolutionary modern usage of a heritage script and extend it to handle characters that it didn't

appear to have integrated into its system despite its co-existence with the Tamil/Dravidian scripts for well over 1400 years.

The WG02 also notes the significant attention these proposals have garnered in Tamil Nadu and the diaspora. The WG02 has attempted to investigate all of the various grantha proposals and provide as much technical information to the Unicode Technical Committee as well as others interested in this issue.

3.1 Goals of the Investigation

Thus there are essentially three cases that the WG02 needs to review and comment on.

1. Verify the claimed attestation for the presence of the seven Tamil characters in native Grantha script as claimed in the proposals L2/09-141, L2/09-141R and L2/09-345 since this is the foundation for the consensus basis document that GoI's Grantha proposal is based on.

2. Review the transliteration requirement in the current Government of India proposal (L2/10-426) and see if that leads to any technical problems, such as confusables in digitizing and encoding inscriptions and manuscripts.

3. Review the issues raised by L2/11-002, about the security considerations caused by confusable characters that are common to both Tamil and Grantha scripts but well attested in Grantha.

3.2 Observations from the Investigation

We make the following observations:

1. Historically Grantha script is believed to have been created to write Sanskrit and the script only had characters defined for Sanskrit language. While it seems to have been adapted to write other languages related to the Indo-Aryan language family and sometimes Telugu and Kannada, it is erroneous to classify it as a multilingual script. In the inscriptional records of the south, the letters from grantha and Tamil scripts are found to have been freely mixed. The GoI proposal clearly identifies context of the use for the proposed characters as "Used for writing Sanskrit (including Vedic) both independently and as part of Tamil Manipravalam". Sanskrit scripts are not known to have included the seven Tamil characters. The modern Devanagari script seems to have included the Tamil/Dravidian characters in the late 20th century for administrative transliteration purposes though it is rare to see them included in popular usage including government signs in the south where one would expect to use them. Also, in the Devanagari encoding, brand new glyphs for the Tamil/Dravidian

characters were designed that don't bear any similarity to the Tamil characters unlike those proposed for Grantha.

2. The proposed additional characters don't appear to have been native part of the Grantha script nor can we find any authentic attested use of such characters though in the 1400 years of its use one would have seen enough examples had it been otherwise.

3. The only purported attestation that we can find is from the Grantha proposals L2/09-141, L2/09-141R and L2/09-345 submitted to the Unicode Technical Committee. However, we found several issues with these proposals and in particular found that the evidence claimed in support of the proposal to add the seven Tamil/Dravidian character to be less than credible. (see section 3.3 for detailed discussion of these proposals.)

4. The technical experts that we consulted believe that the encoding of Tamil/Dravidian characters in Grantha is likely to cause confusion when inscriptions and manuscripts in mixed Tamil-Grantha scripts are digitized.

    a. The five Tamil characters and the two Tamil vowel signs belong to the Tamil script and they must be recognized and encoded as such when the inscriptions spanning 1400 years are digitized. As there is no attested usage of these Tamil characters in the Grantha script it is not appropriate to encode them as Grantha characters. That may mislead future scholars when studying these inscriptions. It would compromise the integrity of these documents and the process of documenting them. While it has been suggested by Author1 during the WG02 discussions that the Grantha Independent E/O are visually different from the Tamil Independent E/O, the *puḷḷi* is essentially a feature of Tamil orthography and not Grantha orthography. As such observing the *puḷḷi* a digitizer would select the Grantha characters with *puḷḷi*. Grantha scholars also inform us that the Grantha O has a glyphic variant identical to the Tamil O, therefore it is still confusable.

    b. To record the inscriptions with historical accuracy, the scripts should preserve the language attribution, leaving the interpretation to scholars. Printing of such inscriptions should correctly render the Tamil parts and the Grantha parts. Replacing the Tamil characters with equivalent neo-Grantha characters can lead to imprecise recording and printing of historical documents.

    c. The two scripts also follow different orthographic rules (linear Tamil vs. stacking conjuncts for Grantha) and without the use of dot (*puḷḷi*) for the

Tamil characters, applying Grantha orthographic rules for these Tamil characters is problematic and inaccurate and of course unattested.

d. The historical inscriptions have to be in both Tamil and Grantha scripts and encoding these Tamil characters in both Tamil and Grantha scripts in the same document is bound to cause confusion as to the identity of the script since the characters are nearly identical.

e. From epigraphic record considerations, the addition of Tamil characters that have not been attested to be part of the Grantha script to the proposed Grantha block should be disallowed.

5. The Grantha and Tamil scripts already have several common characters and there is concern that such characters could lead to phishing attacks and other problems with internationalized domain names are registered. IDN experts formulate appropriate defense mechanisms to prevent such attacks. However, there is a recognition among several of us that disunifying the Tamil and Grantha scripts is the right decision. To address these IDN concerns, the IDN committee advising the Government of India is of the opinion that the government should not permit mixing of Tamil script and Grantha script in registering domain names and the IDN committee advising the Government of Malaysia is inclined to disallow registering domain names in Grantha script entirely. We also note that http://unicode.org/reports/tr39 already addresses whole script and mixed script confusables.

6. In view of the number of similar characters between Tamil and Grantha already attested to be part of both scripts, it is unwise to add more to this mix by arbitrarily creating seven unattested Tamil/Grantha characters in the Grantha block.

3.3 Claims of attestation of the contested seven characters in Grantha

The proposals L2/09-141, L2/09-141R and L2/09-345 are the only ones that asserted that the seven Tamil/Dravidian characters have been integral part of Grantha script citing samples as attestation in support of this claim. In order to evaluate the validity of this suggestion, it is necessary to examine the reasons and evidence submitted. Let us look at what the Author1 said were the reasons for adding the seven Tamil/Dravidian characters.

> From [L2/09-345, p3]:
>
> Devanagari script in Unicode allows for the transcription of Dravidian language letters – vowels short *e*, short *o*, consonants *RRA, LLLA* and *NNNA.* In a similar fashion, in order to facilitate the transliteration from the four Dravidian language scripts and Devanagari script, these five letters

> from Dravidian languages need to be encoded in the Grantha script block. Samples are included in Section 14.0 (pages 20, 21). Adding the capability to transcribe the Dravidian language letters is called "extended" Devanagari or Grantha script in literature. These Dravidian letters in Grantha script, as in Devanagari, are essential to write down nouns such as personal, river and place names and so on.
>
> R. Gruenendahl, Ref. [1], page xiiv, states the need for short *e* and short *o* vowels: "Both long and short diphthongs (*e*l*e, o*l*o*), the distinction of which is a characteristic of several Dravidian languages and scripts, have found their way into South Indian Sanskrit manuscripts and prints." These short letters are usually indicated using a dot (*puḷḷi*) sign over the corresponding long vowels.

Author1's quote from Grünendahl selectively withholds information contradicting his case for including *e* and *o* in the Grantha set. What Grünendahl says is given in full below:

> **Both long and short diphthongs (*e/ē* and *o/ō*), the distinction of which is a characteristic of several Dravidian languages and scripts, have found their way into South Indian Sanskrit manuscripts and prints. In some sources they seem to be used indiscriminately while in others preference is given to one or the other. As a rule, I have given exact transliteration of long and short diphthongs although the distinction is inconsequential for Sanskrit (for examples see the lists of conjuncts).**[1]

The fact that the two glyphs *e* vs. *ē* (or *o* vs. *ō*) were used indiscriminately indicates that they represented/encoded the same sound, i.e., Sanskrit long e (or long o). It is because of this "the distinction is inconsequential for Sanskrit". Given this statement by Grünendahl, we do not see any basis for concluding that Grünendahl states the need for short *e* and short *o* vowels in Sanskrit.

Author1 further states that short *e* and short *o* "are usually indicated using a dot (*puḷḷi*) sign over the corresponding long vowels." Author1 not only assumes that Grünendahl is talking about Grantha script alone but also, in the way this sentence reads, may lead the reader to think that in Sanskrit manuscripts and prints short *e* and short *o* are 'usually' represented with dot over the corresponding long vowels. If anything, the representation of short *e* and short *o* with a dot over the corresponding long vowels is seen only in the case of Tamil. Author1 has singularly failed to provide any attested evidence from printed books or palm leaf manuscripts or epigraphs for the use of short *e* with dot or short *o* with dot to indicate short vowels in Sanskrit manuscripts or prints. Indeed it is also commonly understood that Sanskrit has only the long vowels e and o.

The *puḷḷi* diacritic is essentially a Tamil orthographic feature that has been historically used in the various Tamil scripts starting from Tamil Brahmi, through Vaṭṭeḻuttu to the

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1 ┐ Grünendahl, p. xiii

modern Tamil script. The use of dot (*puḷḷi*) sign to indicate short vowels e and o as well as base consonants without the inherent 'a' was prescribed for Tamil in the ancient grammar Tolkappiyam. Use of *puḷḷi* in Tamil orthography since 1st century C.E. is well attested. (see Figure 1).

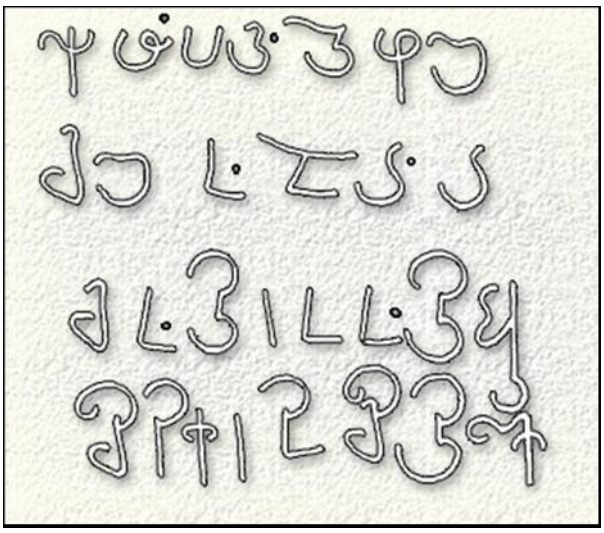

Figure 1. Thirunatharkunru Tamil Vattezhuttu inscription, 6th century CE, showing *puḷḷi*
(Courtesy Dr. S. Swaminathan)

While use of *puḷḷi* is often seen in inscriptions, it is rare to see *puḷḷi* being used in palm leaf manuscripts, particularly as a short vowel sign. Figure 2 shows an extremely rare instance discovered by Dr. Jean-Luc Chevillard at the EFEO, Pudhucceri (manuscript no 1529, leaf 16b) while specifically researching *puḷḷi* in response to private inquiries.

Figure 2. Palm leaf manuscript showing *puḷḷi* as a vowel marker
(courtesy EFEO, Pudhucceri)

Dr. Chevillard also pointed us to another use of *puḷḷi* in palm manuscripts – as an error mark to indicate incorrect inscription of characters. In Figure 3, the *puḷḷi* on top of the fourth character from the right indicates that it was inscribed in error and must be discarded while reading.

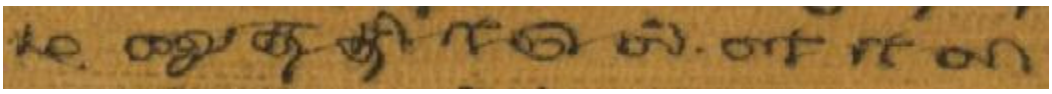

Figure 3. MSS showing *puḷḷi* as an error mark (courtesy Dr. Jean-Luc Chevillard)

(See http://www.linguist.univ-paris-diderot.fr/~chevilla/glyphlst.htm)

Dr Iravatham Mahadevan, the well-known Tamil epigraphist, while praising *puḷḷi* as the greatest invention in Indian Epigraphy, observes that the use of *puḷḷi* enabled Tamil to do away with the cumbersome conjunct consonant system of Nagari and Grantha while also making it possible to write basic consonants in the final position which Prakrit inscriptions could not. He believes that the virama symbol used in Nagari to mark basic consonants is an adaptation of the Tamil *puḷḷi* system.

Grantha script uses Virama in its orthography to indicate basic consonants especially in the word final positions. If the Tamil equivalent of virama i.e. *puḷḷi* which has been used for short e and o in Tamil is borrowed for the same in Grantha, it is a misrepresentation of the historical forms of the scripts especially since the Grantha virama is still being used to indicate basic consonants. Besides, since *puḷḷi* is also used as an error marker in palm leaf manuscripts, using it as a short vowel marketer as suggested by Author1 can create ambiguity when such manuscripts are scanned and encoded.

Experts consulted by WG02 have not come across any inscriptions, manuscripts or printed documents to substantiate the use of *puḷḷi* as a diacritic to mark short e and short o in Grantha. In fact, as Grantha is used for Sanskrit and Sanskrit does not have short e and o, one wonders why Grantha manuscripts would ever use *puḷḷi* for short e and o.

Author1 further says the following to support his case for including the seven Tamil characters into the Grantha set.

> On the transcription of Dravidian language letters – vowels short *e*, short *o*, consonants *RRA, LLLA* and *NNNA* in the Grantha script, P. Visalakshy (ref. [2]. Page 66) states that "The variety of Grantha script suitable enough to represent both Tamil and Sanskrit is known as 'Tamil Grantha' or 'Grantha Tamil.'[2]

We contacted Dr. Visalakshy directly to understand the context of this quote. She told us that by Tamil Grantha or Grantha Tamil, she only meant a character set that included a character for 𑌳 (ḷa). She did not mean to add the seven additional Tamil characters to Grantha as proposed by Author1. She does not advocate adding the letters to Grantha alphabet. WG02 is willing to provide the contact information of Dr Visalakshy in this regard so that UTC may independently verify our feedback from her.

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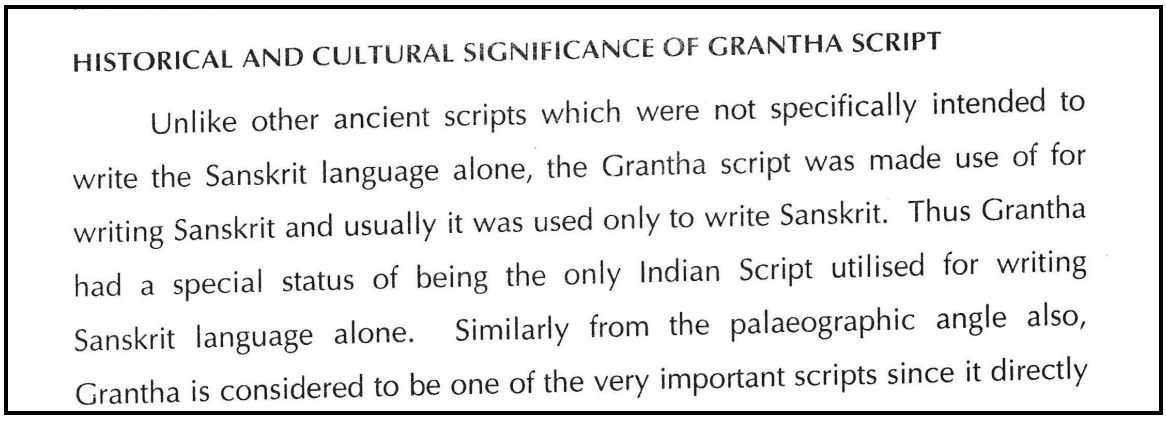
2 ┐ L2/09-345, pp. 3-4

While Author1 has been using Dr. Visalakshy's quote to emphasize his concept that Grantha is a superscript that was used to write both Sanskrit and Tamil, it is pertinent to note that Dr. Visalakshy clearly identifies Grantha as essentially a script "intended to write the Sanskrit language alone." (see Fig. 4)



HISTORICAL AND CULTURAL SIGNIFICANCE OF GRANTHA SCRIPT

Unlike other ancient scripts which were not specifically intended to write the Sanskrit language alone, the Grantha script was made use of for writing Sanskrit and usually it was used only to write Sanskrit. Thus Grantha had a special status of being the only Indian Script utilised for writing Sanskrit language alone. Similarly from the palaeographic angle also, Grantha is considered to be one of the very important scripts since it directly

Figure 4. "The Grantha Script", P. Visalakshy(2003), p69

Researching further into Dr. Visalakshy's sources, we found that Burnell (Elements of South Indian Palaeography, 1878, p 44) refers to the post-Vatteluttu Tamil as Grantha Tamil, because it was adapted from what he considers the Grantha script -- the ancestor of the modern Grantha script. Burnell says, under the caption "Grantha-Tamil":

> "The origin of this Tamil alphabet is apparent at first sight; it is a Brahminical adaptation of the Grantha letters corresponding to the old Vaṭṭeḻuttu, from which, however, the last four signs (l̲, ḷ, r̲ and n̲) have been retained, the Grantha not possessing equivalents."

He later on adds:

> "The Grantha-Tamil differs from the Grantha-alphabet in precisely the same way as the Vaṭṭeḻuttu, as far as the reduplication of consonants and the expression of the absence of the inherent vowel (virama) are concerned".

Again, these references don't imply that Tamil and Grantha are essentially part of a "super script" called "Grantha-Tamil" or "Tamil Grantha".

Author1 further says the following to support his case for including the seven Tamil characters into the Grantha set.

> Malayalam script is a direct descendent of the Grantha script, and can be seen using all these 5 Dravidian letters. Because Grantha script block will have to be disunified from Malayalam and Tamil blocks as requested by user communities,

> like all other letters, these Dravidian language letters are needed in the Grantha block itself.

This seems to imply that because Malayalam is a descendant of Grantha, and Malayalam uses the 5 characters, Grantha should have them as well. This is entirely misleading. Burnell, 1878, p 42 clearly says that while the Grantha script was adapted for writing Malayalam, the letters for r̲a, l̲a and ḷa were adopted from Vatteluttu. This clearly indicates they were not present in Grantha but only came to Malayalam from Vaṭṭel̲uttu.

Further it is stated that:

> The virama shape and location are quite different from Tamil or Malayalam, and conjunct clusters are preferred in the Grantha script examples as shown in Pages 21 and 22.

The Grantha script examples of the Nalayiram Author1 has provided in pp. 21 and 22 are not from any published book or epigraph or palm leaf manuscript. They appear to be made up evidence composed of handwritten samples of Tamil texts written in Grantha script. More on this later.

In connection with this it should be noted that the supposed evidence is full of errors.

As far as the Nalayira Divya Prabandham evidence on page 21 is concerned:

1. The title Periyāl̲vār Tirumol̲ikaḷ must in fact be Periyāl̲vār Tirumol̲i.
2. Before ”Cevvi Tirukkāppu” the word Cēvaṭi is missing.
3. Appāñcacan̲n̲iyam Pallāṇṭu must in fact read Pallāṇṭē at the end as per Tamil prosody rules, while some internet sources give it erroneously as shown here.
4. Perutān̲ukku should in fact be Porutān̲ukku.
5. Kuṟutumē should be Kūṟutumē with a long initial ū.
6. Vaṭivār Cōti Valattuṟaiyum Cutarāl̲iyum Pallāṇṭu has been written with the cīr (Tamil metrical unit) distributed wrongly. Proper academic publications of Tamil verses do not transgress the cīr rules in publications nor would scholars do it.
7. The general practice in writing Tamil Vaishnava texts in other scripts such as Devanagari and Telugu (see http://prapatti.com for such texts in PDF form) is to use the third varga consonant to indicate the voiced sound – for example pallāṇṭu maṅkai etc is actually written as pallāṇḍu maṅgai in Devanagari or Telugu scripts to help them understand the Tamil pronunciation. However, this text seems to have done a one-to-one transliteration which is not the practice.

In summary, this evidence cannot be taken as been given by a proper Vaishnava scholar at all because of all the above errors within the few verses given here itself. It seems to be written by somebody who is not a Vaishnava scholar and is also not well versed with these verses. Thus this is not proper attestation.

Next on page 22 some random collection of place names etc., has been given in handwriting. Here also errors like Kīḻppākkam missing the double pa and showing one pa are seen. The example oṟṟiyūr, embedded as a separate image in the PDF below the other examples seems an afterthought, because otherwise the independent short vowel O does not occur in the Nalayira Divya Prabandham sample. The handwriting in these random place name samples is identical to that of the Divya Prabandham sample. It is also unknown why a proper Sabha will give such a random collection of names in a real publication and in such an untidy manner. All this calls the authenticity of the evidence into question.

These samples are said to be originating from one institution called Samskrita Granthalipi Sabha, Chennai.

a. Native Tamil scholars of Sanskrit publishing Grantha works for over 30 years that we contacted are not aware of any such institution. Our expert panels had never heard such an institution. Despite repeated public requests, Author1 has not provided any details about the said institution.

b. Author2, a member of the Government of India committee, had also registered the fact that such an institution is not traceable in a document filed with the UTC (L2/09-316, p 20).

c. It is noted that this institution is said to have provided only a handwritten document and not any print references.

d. Even if such an institution were to exist, the standards of verification for any claimed attestations would be expected to insist on multiple sources independently confirming such usage as the norm, particularly for a script as Grantha with such long, continuous usage for over 1400 years. The WG02 expert panels couldn't find any other sources to validate the claims attributed Samskrita Grantha Lipi sabha. Any attestation for such an historical script should have high standards of attestation and this fails to meet that standard.

e. One cannot make any conclusion based on one hand-written document from the 21st century. If Tamil literature were written in Grantha script, there would be a long tradition stretching back centuries. In the absence of such track record, we have to conclude that the attribution to the Samskrita Granthalipi Sabha is unverifiable at the least and hence must be disregarded.

f. While the experts group doubts the authenticity of the hand-written document from the "Samskrita Granthalipi sabha, Chennai" that is said to contain Tamil literature in Grantha script (L2/09-141R), it is ready to reconsider any further contact information for the Samskritha Granthalipi Sabha at Chennai is provided so that the evidence submitted to the UTC could be independently verified.

Apart from the unverifiable Samskrita Granthalipi Sabha evidence, In further support of the presence of the Tamil characters in Grantha Author1 states:

> Tamil texts such as Tiruvempavai, Tevaram, Nalaayiram have been written in Grantha script on palm leaves. For these Grantha letters to behave the same way in clusters, virama taking, etc., they need to be encoded in the Grantha block.[3]

The Nalayiram evidence has been examined above and shown to be untenable. As for the Tiruvempavai and Devaram evidence, Author1 himself says in section 4 of his proposal:

> J. R. Marr, ("Some Manuscripts in the Grantha Script in Bangkok", Bulletin of the School of Oriental and African Studies, XXXII, pt. 2, 1969. pp. 281-322) describes several Tamil/Dravidian texts written in the Grantha script in Thailand and are still used in royal coronation rituals. Some samples provided from Samskrita Granthalipi Sabha, Chennai (Madras), India are included as samples in the next page.

Author1 has failed to indicate the real nature of the manuscripts in Bangkok. The corrupted nature of the texts in question is described by Marr in the following words.

> As will be shown in connection with the texts, they are so corruptly presented that all rules of phonology of the original language are ignored. For example, no distinction is made between plosives of the retroflex and dental series. While this is normal in a Thai context, the barrier between the two is fundamental to Dravidian and to Tamil in particular. Moreover, since the syllabaries of these MSS are Grantha containing four plosives per varga rather than the one of Tamil, it follows that eight characters are used indiscriminately to represent the various phonemes written with 1 ṭ and 1 t in Tamil. Thus, apart from graphemes for voiced plosives, those for the aspirates are introduced, against Tamil phonological rules as well as those of its writing system.

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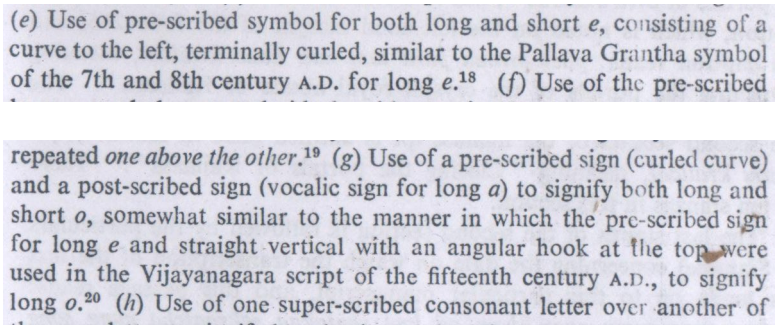
3 ┐ L2/09-345, pp. 3-4

The original Tamil texts, then, were of little help in the decipherment of the script which indeed affords the Tamil student a good measure of ortho-graphic disinformation. Such corrupt texts cannot be used as a basis for developing any standard character set for any alphabet, let alone Grantha.

Even if it is taken as evidence for some need of accurately representing those manuscripts, it should be noted that these manuscripts give no room for encoding separate short vowels e o (with or without *puḷḷi*) or for the Dravidian consonants LLLA RRA and NNNA. Please see:

In a paper titled after the same "Theevaaram verses in Pallava-Chola-Grantha script", Proceedings of the Second International Conferenc–Seminar of Tamil Studies, (Madras, International Association of Tamil Research, 1971), Vol. 2. pp. 70-78, S Singaravelu states about the orthography:

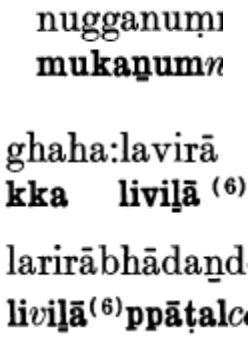


(*e*) Use of pre-scribed symbol for both long and short *e*, consisting of a curve to the left, terminally curled, similar to the Pallava Grantha symbol of the 7th and 8th century A.D. for long *e*.[18] (*f*) Use of the pre-scribed

repeated *one above the other*.[19] (*g*) Use of a pre-scribed sign (curled curve) and a post-scribed sign (vocalic sign for long *a*) to signify both long and short *o*, somewhat similar to the manner in which the pre-scribed sign for long *e* and straight vertical with an angular hook at the top were used in the Vijayanagara script of the fifteenth century A.D., to signify long *o*.[20] (*h*) Use of one super-scribed consonant letter over another of

clearly indicating that the short and long vowels e and o were not distinguished.

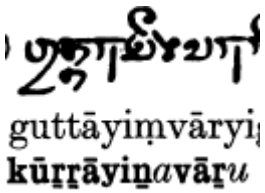
As for the consonants, the manuscripts have replaced LLLA by RA, RRA by TA and NNNA by NA as seen in the following samples from pp 312 and 314 of Marr's paper where the first line is the direct transcription of the Thai Grantha manuscript and the second line is the transcription of the standard version of the tēvāram accepted in Tamil Nadu:



nugganuṃ
mukaṉumn

ghaha:lavirā
kka liviḻā (6)

larirābhādaṉd
liviḻā(6)ppāṭalc



Marr (on p 291) even considers one example of what seems to be the Tamil NNNA glyph and rejects it as an error for the retroflex NNNA.

As such it is clear that Marr's paper or the Thai Grantha manuscripts referred to does not in any way support the encoding of these characters.

Finally to support the use of indicating the use of dots to indicate short e and short o in Grantha, Author1 says the following. [4]

> Capt. Henry Harkness, M.R.A.S, Ancient and Modern alphabets of the Popular Hindu Languages of the Southern peninsula of India, Royal Asiatic Society, London, 1838 uses the dot, called *puḷḷi*, symbol on top of the vowel signs for short e and short o vowels. This practice is seen in inscriptions of the temples of Tamil Nadu and grammars like Tolkaappiyam.

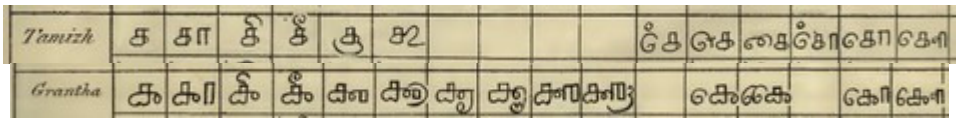


Figure 4. Puḷḷi diacritics on Tamil vowel signs but not on Grantha (Harkness 1838, p2)

The only problem here is that Harkness is talking about Tamil script and not Grantha script as can be seen in Figure 4.

The part which shows the script name Tamil was not shown by Author1. It should also be noted that Harkness does not attest the three consonants under Grantha but only for Tamil.

In conclusion, we can state that there is no attested evidence of Grantha script ever having included characters for short e or short o or Tamil consonants LLLA, RRA, NNNA. It is then advisable that the UTC only implement a Grantha proposal that does not include any unattested Tamil letters in the Grantha script and also ensure that texts in Tamil mixed with Sanskrit texts are properly identified.

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4 ┐ L2/09-345, p. 20,

3.4 Considering the transliteration argument for Grantha

Another reason advanced by Author1 to include the seven Tamil characters in the Grantha script is given below.

> The Grantha script code chart also includes the Dravidian letters (Section 4.0) needed for transcribing Dravidian texts and nouns such as place names inscribed in other Indian scripts such as Tamil or Devanagari.[5]

Indeed this reason seems to have been accepted by Author2 in his Grantha proposal also. Author2 says,

> Kannada and Telugu, while totally phonetic scripts, do have the short vowels E and O, and to transliterate these, one requires Grantha characters for those vowels, both independent and dependent. The shapes proposed for these characters are the same as those of the long vowels with a "*puḷḷi*" added on top. The Tamil script formerly marked its short vowels thus (as shown below from ref 12 pp 1 and 2) and the same would be appropriate for Grantha today.

Author2 however clearly states that these are adapted from Tamil only and not an attested part of the Grantha script.

Transliteration and transcription mean the same thing when it comes to a phonetic script like Kannada or Telugu. (They will mean different things in the context of Tamil, a phonemic script.) One of the examples Sharma cites to illustrate this is the place name Oṅgōlu in Andhra Pradesh as given below.

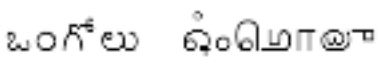

Figure 5. Place name Ongole in Telugu and Grantha scripts

Telugu rendering is on the left and proposed Grantha rendering is on the right. Now compare the Devanagari rendering of the same name at the railway station in the town.[6]

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5 ┐ L2/09-345, p. 20.

6 ┐ http://ongoleinfo.com/ongpics/images/index.php?start=15 , visited December 19, 2010.

Figure 6. Ongole Railway Station

It so happens that this place has been mentioned as Ōṃgōḍu in a two Pallava copper plate inscriptions whose dates range from 5th to 7th century CE. The script used in one of the inscriptions was Telugu-Kannada script of the 7th century CE and the language was Sanskrit. This inscription is published in Grantha script in "Thirty Pallava Copper Plates" (reprinted 1999 by Ulaga Tamil Araycchi Niruvanam, Chennai). As seen in line 18 in Appendix D, the name of the place is rendered in Grantha as 𑌒𑌂𑌗𑍋𑌳𑍁 in the book.[7] If the initial vowel in the place name in the 7th century was the same as it is today, then we note that the inscriber did not bother to inscribe a short *o*.

Thus the Telugu place name Oṃgōlu has been transcribed in Hindi using Devanagari script as Ōṃgōlu today. Its 7th century name had been rendered in Sanskrit as Ōṃgōḍu using Telugu-Kannada letters and even in Grantha. Writing Telugu place names with the letters available in traditional Devanagari or Grantha has been the customary practice.

This can also be seen in a Tri-lingual inscription in Sanskrit, Telugu, and Tamil. Telugu inscription in Grantha script of the 13th century.[8] There is no use of short *o* with dots on top of Grantha long *ō* as can be seen in the Telugu word *okkaṭi* rendered as 𑌒𑌕𑍍𑌕𑌟𑌿 .

7

┐ Sastri (1982 [1919-20]:255) (Epigraphia Indica 15, p. 255) has read the name in the inscription as Ōgōṃḍu and suggests that it be corrected to read as Ōṃgōḍu. I have taken the reading in the later publication, "Thirty Pallava Copper Plates," to be an updated reading. In either case, the first letter is not a short o.

8

┐ South Indian Inscriptions 23, no. 580, pp. 400-405 (Appendix D)

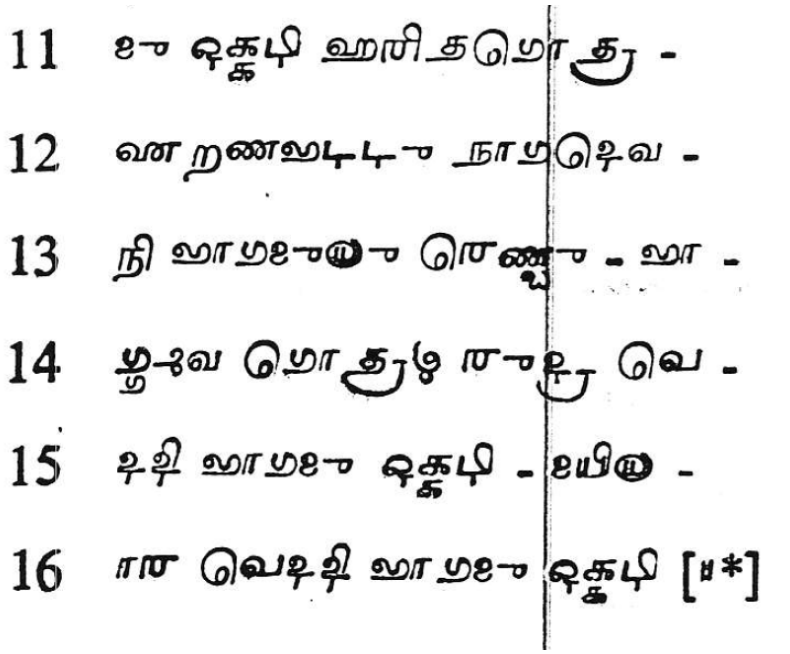

Figure 7 Trilingual Inscription showing Telugu Okkati in Grantha (See Appendix D)

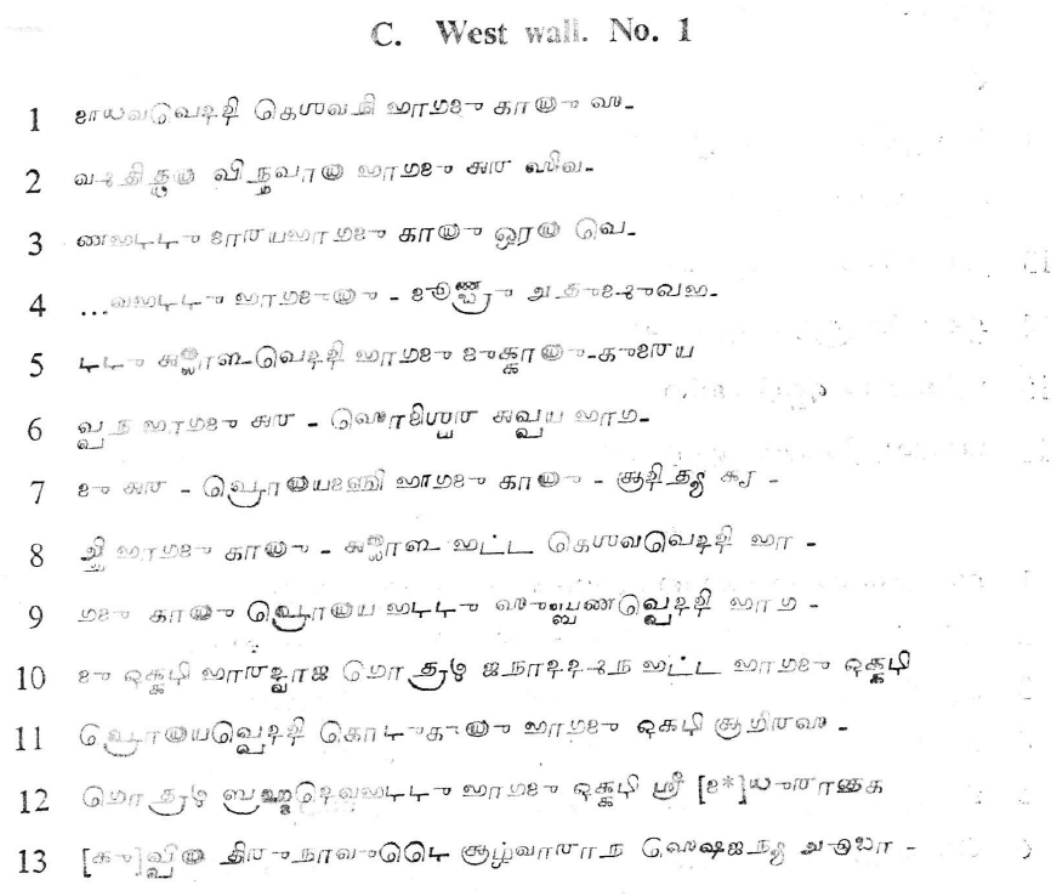

Figure 8. Trilingual (Sanskrit/Tamil/Telugu) Inscription showing complex Grantha usage of Tamil characters (See Appendix D)

In the same trilingual inscription, we see a complex usage of Tamil characters and Dravidian sounds in this mixed script. In line 3, though a Grantha long O could have been used, a Tamil long O is used. In line 4, the word mūn̲r̲u the is written as mūṇdru showing that the Tamil r̲ is avoided entirely with the transcription of the sounds with native Grantha characters. On the other hand, Figure 7 shows that the Tamil r̲ is borrowed as is. Line 13 is more complex. The Tamil letter l̲ is borrowed as is with Tamil *puḷḷi*. In this inscription, the Tamil portion shows a liberal borrowing of native Grantha letters in the midst of Tamil words and sentences. Epigraphists that WG02 consulted are of the opinion that the inscribers were mixing letters from both Tamil and Sanskrit using both Tamil and Grantha scripts and that they should be encoded in their original language using their original glyphs. (See Appendix D, Telugu in Grantha inscription)

Similarly, a Kannada inscription in Srirangam temple is inscribed in Grantha script.[9] Here again there is no effort to use any short *e* or short *o* letters with dots over the corresponding long *ē* or long *ō* in Grantha. This can be seen in the word *nelanu* rendered as in line 7 in the Srirangam inscription without using any dot or any other mark of distinction over the Grantha long *ē*.

The next two figures show an identical title "Sri Kaḷvarkaḷvan̲" that are inscribed in the Sendalai Pillar inscriptions. Except for the "Sri" prefix, the rest of the names are written in either Tamil script or Grantha script. It is instructive to notice the various differences of the two scripts. In the Grantha script, the consonant cluster "ḷva" is stacked while in the Tamil script because of the use of puḷḷi the consonant cluster is linearized and written as a sequence. Also note that the Grantha script does not use the Tamil consonant NNNA preferring to use the Grantha consonant NA while the Tamil version does use the consonant NNNA.

9 ┐ South Indian Inscriptions 24, no. 310, pp. 321-322 (Appendix E)

Figure 9. Sendalai Pillar Inscription - Sri Kaḷvarkaḷvaṉ in Grantha

(courtesy: http://www.tnarch.gov.in/images/epi-ins/grantha/pic5.gif)

Figure 10. Sendalai Pillar Inscription - Sri Kaḷvarkaḷvaṉ in Tamil

(courtesy Dr. S. Palaniappan)

Another example of how in the inscriptional records, script boundaries have been ignored by the inscribers is seen in the Trilingual inscription (Appendix D – ASI South Indian Inscriptions Vol XXIII, p400-405) that contains Sanskrit and Telugu text in Grantha and the Tamil text in *mostly* Tamil script. In section E (pp 404-405), the Tamil section shows free borrowal of Grantha characters in the middle of Tamil words and sentences. This attestation doesn't mean that these Grantha characters should now be part of Tamil encoding or that Tamil and Grantha should be enclosed in a superset. It only shows that inscriptional records are complex and that it is best to leave them to the epigraphists and linguists to study them while the engineers should attempt to help the specialists interpret the data as they see fit without adding to the complexity. In this record, it is best to leave the Tamil characters in Tamil block and the Grantha characters in the proposed Grantha blocks and to the extent possible minimize confusion by not trying to duplicate any character that belongs to the other script in the mistaken notion that one of the scripts is a superscript.

In this context the statement of the Sanskrit scholars recounted above under 3.0 point 7 about scripts not being unnecessarily extended to represent sounds of other languages is particularly relevant.

However we should also concede that the same scholars have given a proviso saying that "If at all it is considered useful, it may be only done so long as it does not have any bad effects on the way Sanskrit is written in Grantha. We repeat this only to emphasize our strong view on this." [10]

While the Sanskrit scholars were right to point out that there should not be any adverse effect on Sanskrit due to the addition of new characters to Grantha, we believe that the same scholars, being Tamilians native of Tamil Nadu, and perhaps being the first scholars to submit a document in Tamil (with English translation) to the UTC, will also certainly accept to add the condition that the addition of new characters do not adversely affect Tamil as well, seeing as Tamil texts are mixed in with Sanskrit/Grantha texts in many inscriptions.

The GOI has also said in their meeting summary L2/10-409 and proposal L2/10-426 that transliteration is the rationale for encoding of these characters. However there doesn't seem to have been a discussion in the Government of India committee to design different glyphs for these additional characters like in Devanagari rather than simply borrow them from Tamil and it doesn't appear that the Government of India committee considered whether the attestation accepted by UTC can be verified. Given the above concerns in confusability in digitization of mixed Tamil and Grantha manuscripts the GOI may be requested to reconsider the transliteration issue.

It is noteworthy that no attempt was made to make the Grantha encoding completely compatible with the Devanagari Unicode block which contains many more characters.

Though both Devanagari and Grantha scripts were created and historically used to write Sanskrit, modern Devanagari has assumed the role of an administrative super-script that attempts to encode all sounds present in both North and South Indian language. Devanagari has a very large installed base of users running into hundreds of millions and is the official state script for Hindi, an official language of India.

Grantha script, on the other hand, is a heritage script of immense importance from epigraphical perspective with more than hundred thousand inscriptional records containing Tamil and Grantha script mixed together. The user community for Grantha is tiny, numbering less than 50,000, mostly Hindu priestly communities and to a smaller

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┐ Request from scholars of the Grantha user community, L2/10-233, p. 4

extent research scholars interested in the heritage documents of Tamil Nadu and other southern states.

While adding Dravidian characters to Devanagari with newly designed characters has no impact on the heritage documents, adding Tamil-identical characters to Grantha has the potential to create confusion when epigraphical records containing mixed Grantha and Tamil characters begin to get encoded.

While Sanskrit scholars in general are understandably reluctant to add non-Sanskrit characters to the Grantha script, they have gone on record stating that "if at all it is considered useful, it may be only done so long as it does not have any bad effects on the way Sanskrit is written in Grantha." These scholars are also understandably sensitive to the concerns of users of other scripts who may feel threatened by a southern “super script.”

This is not to say that Grantha as a heritage script must be frozen. However, it is important to let the user community of epigraphists, religious users and research scholars decide for themselves over the years to see how this script should evolve. Proposals by non-specialists or committees with little interaction with all of the user communities including epigraphists, need to be reviewed very carefully by the real world usage before such evolutionary steps can be taken. The stability principle of Unicode pretty much mandates that deprecation is difficult but addition is relatively easy. And such additions are best initiated by the user community itself. If that can be done at all in a way that doesn't conflict with the interests of other scripts or the interests of preservation of accurate historical records, then it is entirely viable.

Therefore it may be concluded that the addition of these characters for the transliteration issue might be reconsidered and at least postponed for the present pending discussions with epigraphists, linguists and other stakeholders involved.

3.5 IDN security considerations

The number of characters between Tamil and Grantha code charts that are identical or very similar are listed in L2/11-002 (pp 4-5) by Kaviarasan. This large overlap of identical characters can lend itself to significant IDN security issues both as Mixed Script and as Whole Script confusable strings as documented in Unicode Technical Report 36 (http://www.unicode.org/reports/tr36/) and Unicode Technical Report 39 (http://www.unicode.org/reports/tr39/). However, the native Grantha orthography (stacked characters) if used correctly can disambiguate between similar looking glyphs. Nevertheless, it is possible to construct visually identical strings, however meaningless in Tamil or Sanskrit or both using Grantha and Tamil code points.

Rather than unify the common characters in the Tamil block and wrestle with the orthographic requirements of Grantha while using characters from the Tamil block, it is still best to keep these disunified but handle the visually confusing characters using the mechanisms already recommended by TR36, TR39 and ICANN's guidelines for implementation (http://www.icann.org/en/topics/idn/implementation-guidelines.htm). The registration and usage requirements of domains using Grantha character set are likely to be tiny considering the size of the user community (< 50,000) in comparison to the 70 million+ strong Tamil user community. This will require a careful modification of the confusables.txt (http://www.unicode.org/Public/security/revision-04/confusables.txt) and a tight control of the registry in consultation with the experts handling the IDN security issues in India and other countries where Tamil domains are likely to be popular.

4.0 Conclusions and Recommendations from the Investigation

Based on the above and in the absence of verifiable attested evidence in Grantha for any of these characters, it is to be concluded that:

a) there is no satisfactory attested evidence or justification to encode the Tamil/Dravidian characters in the Grantha block

b) addition of these characters can cause problems of misidentification in digitization and the transliteration requirement may clash with this requirement and

c) in addition they unjustifiably add to the security problems in IDNs

The Chief Minister of Tamil Nadu has announced that a high level experts group will investigate the proposal in sufficient depth. The technical experts in the INFITT WG02 would like to assist the Chief Minister's High Level Experts group with the required information so that they can make an informed decision. So far, we have not been satisfied with the only purported evidence for the presence of these characters as part of Grantha script in the UTC docket, that provided by L2/09-141, L2/09-141R and L2/09-345. It is also noted that no other document claims that these characters are attested to be part of the Grantha script.

WE, the INFITT Working Group 02 on Tamil Unicode, find that the addition of the seven Tamil characters to Grantha script is not supported with the evidence submitted to the UTC and we ask that these seven characters be withdrawn from the script proposal.

We further request that the transliteration requirement be reviewed more completely with significant particpation by epigraphists and linguists familiar with Tamil and Grantha scripts, Sanskrit, Tamil and other Dravidian languages and pending the result of that review, suspend the transliteration requirement.

We further record that we support the disunification of the Tamil and Grantha scripts but state for the record that the internationalized domain registrars and authorities take cognizance of the potential security issues caused by the confusables between these two scripts and take appropriate measures to protect the user community.

We find that the Tamil/Dravidian characters are not attested as Grantha characters, as far as the experts that we consulted can determine. We further request that solid evidence be supplied and documented before these are considered for encoding and that these characters be removed from the UTC consensus proposal until further study.

5.0 References

1) R. Gruenendahl, 2001, South Indian Scripts in Sanskrit Manuscripts and Prints Grantha Tamil – Malayalam – Telugu – Kannada – Nandinagari, O. Harrassowitz, Wiesbaden
2) P. Visalakshy, 2003, The Grantha Script, Dravidian Linguistics Association, St. Xavier's College, University of Kerala, Trivandrum, India.
3) Iravatham Mahadevan, 2003, Early Tamil Epigraphy from the Earliest Times to the Sixth Century A.D, Harvard University Press.
4) Iravatham Mahadevan, Occurrence of the PuLLi in the Tamil-Brahmi script, p. 141-167, in Michael Lockwood, Indological essays: Commemorative Volume II for Gift Siromoney, Dept. of Statistics, Madras Christian College, 1992
5) Capt. Henry Harkness, M.R.A.S, Ancient and Modern alphabets of the Popular Hindu Languages of the Southern peninsula of India, Royal Asiatic Society, London, 1838
6) J. R. Marr, "Some Manuscripts in the GranthaScript in Bangkok", Bulletin of the School of Oriental and African Studies, XXXII, pt. 2, 1969. pp. 281-322
7) "Theevaaram verses in Pallava-Chola-Grantha script", Proceedings of the Second International Conferenc–Seminar of Tamil Studies, (Madras, International Association of Tamil Research, 1971), Vol. 2. pp. 70-78,

Appendix List

A. WG02 Investigation of Grantha Encoding Proposals Data Collection Summary
B. Minutes of the WG02 meeting on Grantha Unicode Proposals at EFEO, Pondicherry
C. Minutes of the WG02 meeting on Grantha Unicode Proposals at Symantec, Chennai
D. ASI South Indian Inscriptions, Vol XXIII, No. 310, Trilingual (Tamil, Sanskrit, Telugu) Inscriptions, pp 400-405
E. ASI South Indian Inscriptions, Vol XXIV, No. 310, Inscriptions of the Srirangam Temple, Bilingual (Sanskrit, Kannada) Inscriptions, pp 321-322

International Forum for Information Technology in Tamil

A California Non-Profit Technical Society

WG02 Investigation of Grantha Encoding Proposals
Data Collection Summary

Starting Documents:

Name	Description
09141r-Grantha Proposal by Ganesan.pdf	Ganesan's revised Grantha proposal
09277-tamil-grantha-cmt.pdf	Kent Karlsson on Common glyphs between Tamil and Grantha
09324-comments-on-kent-karlsson-09277.pdf	Arguments showing that Grantha and Tamil should be encoded separately
09345-grantha-proposal-final--ganesan.zip	Dr. Ganesan's Final Grantha proposal to UTC
10053-summary-of-grantha-proposals.pdf	Grantha UTC consensus document
10265r-grantha-characters-proposed-for-encoding.pdf	Grantha UTC consensus basis document
10426-grantha-proposal.pdf	GoI Grantha Proposal to UTC
10472-grantha-letter-dr-sudalaimuthu-reduced-size.pdf	Dr. Palaniappan's comments on Grantha Proposal

Annotations:

09141r-Grantha Proposal by Ganesan.pdf, 09345-grantha-proposal-final--ganesan.zip

These are the original proposals by Dr. Ganesan advocating the addition of Tamil/Dravidian characters into the Grantha script. Ganesan's original proposal is the only one that attempts to make the case for adding Tamil/Dravidian characters with historical evidence that the use of these characters as part of the Grantha script.

Ganesan's proposal cites several different cases in support of the claim that these Tamil/Dravidian characters have been part of the Grantha script and you can read the proposal in detail to understand it.

But to summarize Ganesan's claims here are the cases he cites:

1. Section 14, page 19, 20, 21: Naalaayira Divya Prabandham, a Tamil text in Grantha script, including additional hand-written samples from a "Samskrita Grantha Lipi Sabha, Chennai (Madras)"
2. Section 14, page 19. "Tamil/Dravidian texts" written in the Grantha script in Thailand citing J. R. Marr's papers
3. Section 14, page 19, Capt. Henry Harkness, to cite the use of puLLi as supporting evidence for the characters with puLLI in Grantha short e and o
4. Section 4, page 3, cites Grunendahl et al to show that use of short e and short o (characteristic of Dravidian languages and scripts) have found their way into South Indian manuscripts and prints
5. Section 4, page 3, 4, cites Visalakshy to describe a Grantha script to represent both Tamil and Sanskrit as "Tamil Grantha" or "Grantha Tamil."

6. Section 4, page 4, “The virama shape and location are quite different from Tamil or Malayalam, and conjunct clusters are preferred in the Grantha script examples as shown in Pages 21 and 22. Tamil texts such as Tiruvempavai, Tevaram, Nalaayiram have been written in Grantha script on palm leaves. For these Grantha letters to behave the same way in clusters, virama taking, etc., they need to be encoded in the Grantha block.”

Ganesan’s main point seems to be that usage of these 7 characters that are not part of the Sanskrit language need to be added to Grantha because they have been historically used to transliterate Tamil/Dravidian text using Grantha orthography with Grantha clusters and viramas. He asserts that “Tamil texts such as Tiruvempavai, Tevaram, Nalaayiram have been written in Grantha script on palm leaves” though the evidence that he cites are all hand-written. No estampages from inscriptions or photographs of palm manuscripts have been cited. It is also noted that no contact information for the “Samskrita Grantha Lipi Sabha, Chennai (Madras)", the source for these handwritten documents has been provided.

It is also important to include Ganesan's comments on Sharma’s Grantha proposal L2/09-372 with his document L2/09-405:

> <quote>
>
> *I just went through the Grantha proposal by Mr. S. Sharma (L2/09-372). The main problem is that the close genetic relationship between Malayalam and Grantha scripts is NOT acknowledged in Sharma’s proposal.*
>
> *Isaac Taylor (1829-1901), The alphabet: an account of the origin and development of letters. Vol. 2, page 356,*
>
> *... From it [i.e., Grantha script] are derived two vernacular alphabets which are used on the Malabar coast; one is the Tulu Grantha (line 23), and the other the Malayalam,*
> *Student's Brittanica India, 5 volumes, Editors: Dale Hoiberg and Indu Ramchandani, (2000) pg. 349 has the entry on Malayalam language.*
>
> *Of particular interest is the fact that Malayalam is also written using Tamil Grantha script that includes all the 5 Dravidian letters - e, o, lla, nnna and rra.*
>
> *pg. 349, Malayalam language:*
>
> *...*
>
> *... the Malayalam script (derived from the Grantha script, itself derived from Brahmi): it has letters to represent all the Sanskrit sounds, besides the Dravidian sounds. The language also uses a script called Kolezhuttu (Rod script), which is derived from the Tamil writing system. The Tamil Grantha script is used as well to represent all Dravidian letters."*
>
> *My Grantha proposal, L2/09-345, requests encoding the Tamil Grantha script in the SMP of Unicode, that includes all the Dravidian letters. As they form conjunct clusters and virama uses are very different from Tamil script, the 5 Dravidian letters have to be encoded in Grantha block in the SMP.*
>
> *(b) Dravidian letters in Grantha script - History*
>
> *Some social factors that Dravidian letters came to be written inside Grantha script are described by prof. S. N. Sadasivan that may be of interest.*
>
> *Dr. S. N. Sadasivan, A social history of India, A. P. H. Publishing Co., N. Delhi, 2002, pg. 604*

"... The first script of Malayalam, as a dialect, was Vattezuttu ... A third group of letters the Grantha-lipi (book script) was said to have been introduced ... avidly learned the Grantha lipi and used it for extensive writing. Modern Malayalam script is the reformed Grantha letters popularized by Tunchat Ezhuttaccan."

In old times, Grantha script was used extensively to write Tamil and other Dravidian texts not just in South India, but also in South East Asian countries as well.

</quote>

Again despite his assertion that "Grantha script was used extensively to write Tamil and other Dravidian texts not just in South India, but also in South East Asian countries as well" he doesn't provided much attestation for this "extensive" usage except the handwritten evidence from "Samkrita Grantha Lipi Sabha."

09277-tamil-grantha-cmt.pdf and 09324-comments-on-kent-karlsson-09277.pdf

In 09277, Kent Karlsson makes the case that Grantha script is not really an independent script as there is a large overlap of glyphs between Tamil and Grantha and proposes that all of the additional Grantha characters be added to Tamil block. He suggests that orthographic variations can be handled in font implementation. In 09324, Shriramana Sharma makes the case that "Tamil does not stack consonants, does not have a "repha", "ra-vattu" or "ya-phalaa" and uses only the single ligature K·SSA. Grantha, however, regularly stacks consonants, uses the "reph", "ravattu" and "ya-phalaa" consistently and has very many ligatures apart from K·SSA." He notes that besides the orthographic differences there are other issues that make the Grantha script unique to the native users. He writes "If we go beyond mere orthography, Tamil is phonemic and the same character represents different sounds, whereas Grantha is for the most part phonetic and uses each character for only one sound." He argues that a Tamil and Grantha scripts are sufficiently different from each other that "Tamilians (those whose mother tongue is Tamil) who can read Grantha can also read the Tamil script. However, the converse is not true. Only a very small fraction of those who can read Tamil can also read Grantha. There are also some people who are not Tamilians but are comfortable with Grantha owing to have studied the Veda-s using that script. These people cannot read Tamil well."

These two papers are of interest to those that are concerned about the confusables that are common to both Tamil and Grantha, in particular as it applies to the internationalized domain names. There can be additional discussions on the pros and cons of keeping identical glyphs in two separate blocks, though to UTC, this seems to be a settled issue since all three proposals agree.

10053-summary-of-grantha-proposals.pdf and 10265r-grantha-characters-proposed-for-encoding.pdf

This is a critical document as this is where UTC attempts to find a consensus among the three competing proposals [09345-Ganesan, Sharma and C-DAC]. It is very important to note that despite their later claims for transliteration etc., the original C-DAC Grantha Proposal (http://tdil.mit.gov.in/pdf/Unicode_proposal-Grantha_.pdf) by the Government of India didn't include the Tamil/Dravidian characters and neither did the original Grantha proposal by Mr. Sharma. It was only after the UTC created a consensus character set that combined the three proposals

referred to above and made it the base document that the Government of India committee seems to have tried to rationalize the addition of the Tamil characters. The minutes of the GoI meeting, posted to the GBINFITT by Dr. Nakkeeran indicated that the Sanskrit scholars in the GoI committee "objected to the presence of characters not used in Sanskrit" and the full committee then reconciles the presence of the "Dravidian" characters with the potential need to transcribe Tamil or English words into Grantha script.

The UTC's formula for consensus seems to have been to "approve those characters that are agreed upon by at least two parties, are well-documented, and follow standard Unicode encoding practices." But since only Ganesan proposed the addition of 3 Tamil characters ழ, ற, ன, the UTC chose to accept Ganesan's evidence as having been attested for the three consonants used to transcribe Dravidian sounds, and recommend those three be accepted. As for ள, ஜ, since Sharma's final proposal also conceded potential use for transliteration of Kannada and Telugu proper names into Grantha and accepted Ganesan's proposed glyph for the same, UTC also accepted those two as well as the vowel signs with puLLi markers as a consensus.

The Government of India committee starts with 10265r as the base document and has little freedom to challenge the consensus assumed by UTC. When the Sanskrit scholars convened by the Government of India objected to the presence of characters not found in Sanskrit in the "consensus" proposal, the Government of India committee has a weak response with a recommendation that "though these characters are not used for writing Sanskrit in the Grantha script, these may be useful in transcribing words of other languages like Tamil or English into the Grantha script and hence these should be encoded for Grantha." [Summary of GoI Grantha Unicode committee meeting, October 18, 2010].

10426-grantha-proposal.pdf and Grandha-GOI-Sep06MtgSummary_TVA.pdf

The summary of the Government of India committee meeting describes the basis document that the GoI committee was using and its attempt to resolve the objections of the Sanskrit scholars and the UTC consensus document. It relied on the fact that Devanagari already has the Tamil/Dravidian characters to support the notion that Grantha may also have that though unlike the Devanagari script, the newly added Tamil/Dravidian characters are similar or identical to Tamil. There doesn't seem to have been a discussion in the Government of India committee to design different glyphs for these additional characters rather than simply borrow them from Tamil and it doesn't appear that the Government of India committee considered whether the attestation accepted by UTC can be verified.

10472-grantha-letter-dr-sudalaimuthu-reduced-size.pdf

Dr. Palaniappan, reviews the Grantha proposal from epigraphical perspective and argues that to preserve historical accuracy of the inscriptions, letters and characters in the inscriptions be preserved in the orthographic style and language of the original.

International Forum for Information Technology in Tamil

A California Non-Profit Technical Society

MINUTES OF THE WG02 MEETING
Expert panel on the technical problems pertaining to the digital encoding of Tamil written Heritage-2010

Date : 22.12.2010
Time : 10.00 A.M. to 5:00 PM
Venue : EFEO Conference Room, Pudhucceri.

INFITT MEMBERS PRESENT:

1. **Mr. Mani M. Manivannan,** — Chair, WG02
   Senior Director of Engineering,
   Symantec Corporation, Chennai

2. **Dr. Rama. Krishnan**, — Member, WG02
   Tamil Scholar, Retd. Engineering Executive
   SPIC Petrochemical Limited, Chennai

CONSULTING EXPERTS PRESENT:

1. **Dr. Jean-Luc Chevillard**, — Tamil Research Scholar
   CNRS, France,
   Deputed to Ecole française d'Extrême-Orient (EFEO),
   Pudhucceri.

2. **Dr. Dominic Goodall**, — Sanskrit Research Scholar
   Head, Ecole française d'Extrême-Orient (EFEO)
   Pudhucceri.

3. **Dr. G. Vijayavenugopal**, — Epigraphist
   Editor of the 2 volumes :
   ***Pondicherry Inscriptions*, 2006 and 2010.**
   Institut Français d'Indologie et École Française d'Extrême-Orient.
   Collection Indologie, 83.1 and 83.2 (ISBN: 2-85539-661-1 and 978-81-8470-179-1
   EFEO, Pudhucceri.

4. **Shri Varada Desigan**, — Tamil and Sanskrit Scholar
   Grantha and Tamil Manuscript Expert
   Engaged in the cataloguing of EFEO collection of
   Shri Vaishnavaite Manuscripts
   EFEO, Pudhucceri.

5.	**Dr. Sathyanarayanan,** EFEO, Pudhucceri.	Tamil and Sanskrit Epigraphist
6.	**Dr. S A S Sarma**, EFEO, Pudhucceri.	Sanskrit and Tamil Research Scholar
7.	**Shri Shriramana Sharma**, Kanchi Shankara Matham, Kanchipuram.	Sanskrit Research Scholar Grantha specialist, Member, WG02

Experts participating by phone:

Dr Shankaranarayanan,
Dept of Sanskrit,
Shri Chandrashekharendra Sarasvati Vishva Maha Vidyalaya (deemed university), Enathur, Kanchipuram

SUMMARY:

SESSION 1 (11 AM to 11:45 AM):

The WG02 Chair thanked the EFEO for hosting the expert panel and described the goals of the meeting. Besides the INFITT WG02 representatives, the panel consisted of experts in Sanskrit, Tamil, Grantha script, Epigraphy, Sri Vaishnavaite manuscripts, etc. The EFEO is a French Institution which has existed for the past 110 years, having currently 17 research centers in 12 Asian countries [http://www.efeo.fr/base.php?s=2]. It has had a permanent center in Pondicherry for the past 55 years. It has collections of estampages (in Pondicherry and in Paris) of inscriptions in various Asian languages (including Tamil and Sanskrit), several of which have been published, and it is interested, like the Tamil University (Thanjavur), in the digitizing of its collection. The EFEO is also a consultant to the Tamil University, Thanjavur on digitization of the 100,000+ inscriptional records since 1908 whose estampages are yet to be published. The panel would consider the technical issues relating to the digital encoding of the heritage scripts Grantha, Tamil , Tamil Brahmi, and also consider other special Tamil characters such as those with with the help of experts in Epigraphy, Palm-leaf Manuscripts, traditional texts, and other attested records.

The intent is to study the Grantha Unicode proposal from an epigraphist's perspective, evaluate the evidence presented to UTC in support of the addition of Tamil/Dravidian characters to the Grantha script, understand the implications of the addition of Tamil/Dravidian characters to Grantha, consider the OCR related challenges of scanning in a mixed script manuscript or estampage in relation to encoding, study the need to encode Tamil , as well as the need to encode other special characters in Tamil (such as those with).

Dr Shankaranarayanan participating by phone gave a technical outline of the proposed Grantha OCR he is working on and the issues he faces or expects to face regarding it.

The first effort will be to be able to scan printed Grantha texts and later move on to manuscripts as the latter involve many more variants. Projected recognition accuracy: 80% to 85% from printed text. Handling mixed Grantha+Tamil text will involve much greater sophistication and is not planned currently.

However, it is expected that some mechanisms will be needed to disambiguate Grantha and Tamil segments of the text when a particular written form is common to both Tamil and Grantha. In such cases, orthographic styles must be examined. If Grantha-style vowel signs or stacking is observed it will clearly belong to Grantha. Further, preceding and succeeding characters may also need to be considered, and semantic analysis may also need to be performed.

[Explanatory note: (not from Dr Shankaranarayanan) For instance in a word brahmadēyamāyaḷitta the first ya is a part of Sanskrit language text and the next a part of Tamil language text. By seeing the preceding dē one can identify the first ya as Grantha and by seeing the preceding mā one can identify the second ya as Tamil. However, it is not always as simple as this.]

Concern raised: The number of common characters between Tamil and Grantha should be kept to the absolute minimum required.

SESSION 2 (12:00 Noon to 1:30 PM)

The second session featured a presentation by EFEO/IFP epigraphists on estampages, production methods and concerns about digitization. One of the examples presented was the Tiruvannamalai project, a research project conducted jointly by the EFEO and the IFP in the 1980-s, which resulted in a collection of estampages of multilingual (Tamil-Sanskrit) texts and in a series of 6 volumes of studies about the Tiruvannamalai Shiva temple (Study of the Inscriptions [edition and translation], archeological study of the site, study of the rituals, study of the town, sociological study of the various communities involved).

It was first noted that digitization involved two steps. The immediate step would be to preserve them in image form. Later encoding the text would be considered. While EFEO/IFP projects have been implementing both image scanning and encoding as part of their projects, it was learned that the digitization initiative by Tamil University with the ASI's 100,000+ inscriptional records is focussed primarily on creating and preserving digital images of the estampages and not on encoding the texts for indexing, searching and analysis. The life span of a paper estampage is estimated to be anywhere from 60 years to 100 years depending on how well they are preserved. It was also learned that the recorded estampages didn't always cover all of the inscriptions at the visited sites and that there was no way to verify the completeness of records without revisiting the sites. Since the ASI

publications cover estampages published only up to 1908 we have already crossed the upper limit of the life span of some of the oldest estampages and there is an urgency in image scanning of the older estampages.

The various orthographic quirks seen in inscriptions and copper plates were discussed. It was mentioned that occasionally the Tamil word சுழி is written with a "Grantha-style CA". Regarding this it was emphasized when the digitization is performed the character must be recorded as is. A linguist would be interested in analysing the content as it is for tracing the phonology of the language. However, it is seen that very many variants of writing the same word occur in the same inscription.

It was suggested that there is a high degree of mixing two sets of characters. A counterpoint was put forth that in the early days (i.e. before the 9th/10th centuries) it was possible that the writers did not consider that there were two distinct sets of characters in the first place.

The various periods of evolution of Tamil writing were noted. After Brahmi (which is already encoded in Unicode) evolved for writing Tamil. Its orthographic features were described and samples shown on the screen. A suggestion was put forward that Vatteluttu should have its own encoding similar to Grantha in the SMP space. An objection was raised that it is the same Tamil language written in a different way -- thus it could be taken care of by fonts. A counter-point was placed that Unicode encodes distinct orthographic systems and not languages. The same language and phonetic content may be written in different orthographic systems. It was also seen from epigraphical records the glyphs for the various uyirmey series did not appear to follow a regular pattern as in the later Tamil script. No decision was taken on this at this point.

Vatteluttu script was supplanted by the Tamil script starting from Pallava era. (Ref: Iravatham Mahadevan, 2003, p 213.) Even in Pallava times, it is noted that Tamil words and Sanskrit ("Grantha") words exhibit distinct orthographies. The same word may be written with their consonant clusters presented in stacked form or using the puḷḷi.

After the Pallavas, during the times of the Cholas even clearer distinction between Tamil and Grantha emerges. This solidifies into modern Tamil and Grantha writing.

The marking of the short vowels E/O and the vowelless consonants using the puḷḷi in Tamil writing (as per the Tolkāppiyam) across the ages was discussed. It was noted that even in the earliest inscriptions the distinction was not always maintained. The famous Vēḷvikkuṭi plates in show the puḷḷi-s for short E/O and vowelless consonants. But even in the distinction was not consistently maintained. [Accessory reference: Burnell p 46: "The Tolkāppiyam states that a dot is to be put over e and o. ... Of this also I have not been able to find the least trace in the inscriptions.]

As for later Tamil writing, the puḷḷi is almost never seen in these cases except for rare manuscripts of Tamil grammars in the examples of the rules of the Tolkāppiyam and later Tamil grammars like the Naṉṉūl. Evidence was presented from Harkness's 1837 Hindu alphabets of the Southern Peninsula of India showing the puḷḷi on top of the short vowels in Tamil and also in the corresponding vowel signs on top of the kombu.

The suggestion was placed that short vowels E/O and corresponding vowel signs with puḷḷi must be encoded in the Tamil block for pedagogical purposes. No decision was taken on this.

SESSION 3 (3:30 PM to 5:00 PM)

The third session largely examined the evidence provided in L2/09-141R (and later in L2/09-345) for the usage of the short vowels E/O (and corresponding vowel signs) using puḷḷi and the consonants LLLA, RRA and NNNA.

The Samskrita Granthalipi Sabha evidence was examined.

None of the scholars present were aware of the existence of a Samskrita Granthalipi Sabha in Chennai. It was also noted that repeated inquiries in various ways as to the location of said Sabha were fruitless.

It was clearly noted that the Nalayira Divya Prabandha sample is handwritten, and the handwriting is highly similar to that of the miscellanneous words like "chennai" written on the next page. The sample for "oṟṟiyūr" showing the independent vowel short O with puḷḷi is noted as being separate from the other samples. There is no other occurrence of this character in the Divya Prabandha text or in the first list of miscellaneous examples. This sample seems to be a later addition to complete the set of characters.

One of the senior manuscript scholars belonging to the Shrivaishnava tradition (who hold the Divya Prabandha in great esteem) was consulted. He said that in his examination of over 6000 palm manuscripts, he has not come across the Nalayira Divya Prabandham or any original Tamil texts having been written in Grantha script.

Textual errors in the provided Divya Prabandha sample were also noted. The word "tirumoḻikaḷ" should be just "tirumoḻi". The word "cēvaṭi" is missing before "cevvi". [Later further errors were identified.]

Due to all the above reasons, the authenticity of the samples from the Samskrita Granthalipi Sabha was considered suspect.

The evidence of Tamil language Tēvāram hymns written in Grantha in Thailand provided by J R Marr's 1969 SOAS paper was considered. It was noted that even though the Tēvāram is

indeed written in Grantha here, the written text is a highly distorted form of Tamil. There is no example of the usage of pu̱ḻi for short vowels E/O. There is also no example of the usage of LLLA, RRA and NNNA. [Later in the next day meeting at Chennai one of the experts clarified that even though Thai-s write things differently, the pronunciation will be quite close to native Tamil. However, the absence of LLLA etc still stands. It was also noted that LLLA in Tamil was written as RA in this Thai Grantha manuscript in cases like vi̱ḻā, RRA was changed to TA and NNNA to NA [pp 312, 314 Marr].]

The evidence from Harkness for pu̱ḻi vowels being used in Grantha was considered. It has been previously noted that Harkness shows the short vowels E/O with pu̱ḻi for Tamil. It was noted that this evidence was misleadingly provided for Grantha by snipping off the label saying "Tamil". Harkness does not show any short vowels E/O in the Grantha section. Harkness also does not show the usage of LLLA, RRA, NNNA as part of Grantha.

The evidence quoting from Gruenendahl for the existence of short E/O in Grantha was found to be misleading. Gruenendahl does indeed state that in Sanskrit manuscripts one finds both the short and long forms of writing E/O but in the next sentence he clearly says that both of them indicate the long E/O of the Sanskrit language only. This second sentence was omitted in advocating the encoding of short E/O for Grantha.

Multilingual inscriptions with Sanskrit and Telugu in Grantha script and Tamil in Tamil script as well as Sanskrit and Kannada in Grantha script were examined. It was noted that in the Telugu and Kannada inscriptions written in Grantha script, no evidence for short E/O was available. Epigraphists have never seen evidence of short E/O in Grantha script in any of the inscriptions that they had examined.

In summary, it was decided that the evidence provided in L2/09-141R (and later in L2/09-345) for the encoding of the short E/O characters as well as the consonants LLLA RRA and NNNA does not validate upon close examination.

It is noted that due to the enormous complexity of the orthography of inscriptions etc, many unexpected usages of characters would be present, and in order to digitize them correctly certain unusual encodings may also need to be done. However everything should be done based on logic and proof which is in this case not present for the inclusion of these characters. It was a privilege to hear from EFEO researchers who have a first-hand knowledge of Asian inscriptions and manuscripts and collaborate with an institution that has been engaged in such activities for more than 100 years.

Concern raised: Characters should not be encoded based on misleading or unverifiable evidence.

Conclusion:

We were reminded that in a field there are things that are better known and things that are not known (and that one sometimes meets with false evidence).

The scholars assembled agreed:

-- that having the "Core Grantha" encoded in Unicode would be useful for researchers
-- that decisions concerning the "7 items" do not meet scholarly consensus

International Forum for Information Technology in Tamil

A California Non-Profit Technical Society

MINUTES OF THE WG02 MEETING
Expert panel on the Grantha Unicode Encoding Proposals

Date : 23.12.2010
Time : 10.00 A.M. to 5:00 PM
Venue : Symantec Corporation, Chennai.

INFITT MEMBERS PRESENT:

1.	**Mr. Mani M. Manivannan,** Senior Director of Engineering, Symantec Corporation, Chennai	Chair, WG02
2.	**Dr. Rama. Krishnan**, Project Director (Retd.), SPIC Petrochemical Limited, Chennai	Member, WG02

CONSULTING EXPERTS PRESENT:

1.	**Dr. P. R. Nakeeran**, Director, Tamil Virtual Academy, Chennai.	TN Govt. IT Authority
2.	**Prof. Deivasundaram**, Retd. Head of the Department, Department of Tamil, University of Madras Chennai.	Computational Linguist Tamil Scholar
3.	**Mahamahopadhyaya Dr. Krishnamurthy Shastri**, Heritage India Educational Trust, Chennai Fmr. Principal, Sanskrit College, Chennai.	Sanskrit/Grantha Scholar Grantha Publisher
4.	**Dr. Rajavelu**, Archeological Survey of India Tamil University, Thanjavur.	Sr. Epigraphist
5.	**Dr. Santhalingam,** Dept. of Archeology Tamil Nadu Government.	Epigraphist (Retd.)

6.	**Mr. Vinodh Rajan**, Software Engineer Cognizant Technology Solutions	Grantha Software Tools Developer Member, WG02
7.	**Shri Shriramana Sharma**, Kanchi Shankara Matham, Kanchipuram.	Sanskrit Research Scholar Member, WG02
8.	**Mr. Poongundran M.** Pavalareru ThamizhkkaLam, Chennai.	Tamil Scholar Observer

Experts participating by phone:

Mr Sinnathurai Srivas,
Tamil Fonts Developer,
United Kingdom

SUMMARY:

SESSION 1 (11 AM to 12:30 PM):

The WG02 Chair quickly summarized the Expert Panel at EFEO the previous day. The discussion centered on the attestation of the seven Tamil characters in Sanskrit Grantha text. The great Sanksrit scholar Mahamahopadhyaya Dr. Krishanmurthy Shastri who is also a renowned Grantha publisher confirmed that he was not aware of "Samskritha Grantha Lipi Sabha." He also confirmed that he has never seen the use of the seven Tamil characters in any Sanskrit Grantha texts.

The intent is to study the Grantha Unicode proposal from an epigraphist's perspective,

Concern raised: The number of common characters between Tamil and Grantha should be kept to the absolute minimum required.

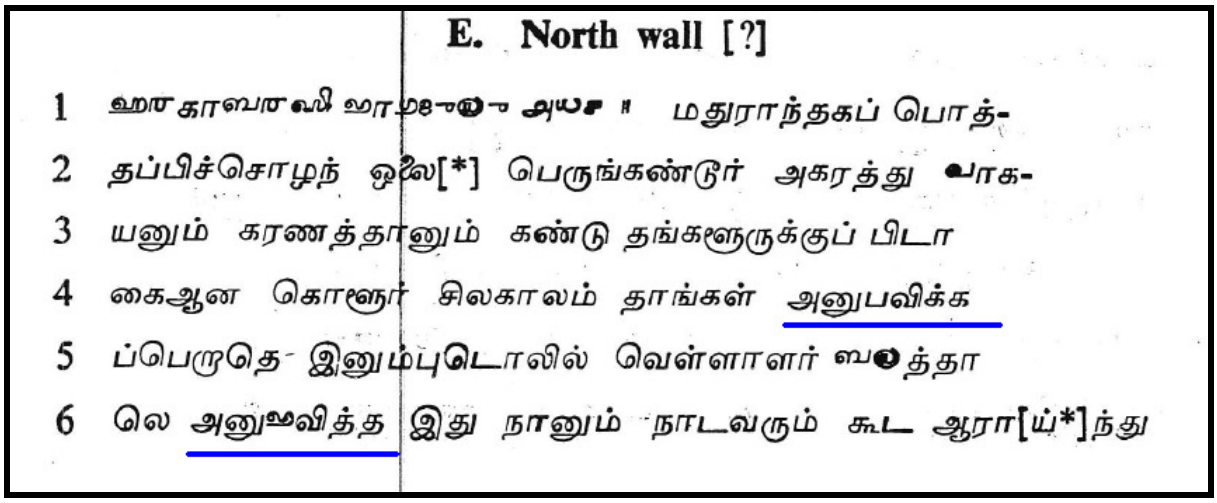
SESSION 2 (1:30 PM to 3:30 PM) and SESSIONS 3 (3:30 PM to 5:00 PM

In the second and third sessions, the focus was on the requirements of epigraphists in digitizing and encoding the more than 100,000 inscriptions that have Tamil and Grantha scripts mixed liberally. Epigraphists Rajavelu from Tamil University and ASI and later Santhalingam, retired Tamil Nadu Government Department of Archeology participated in these discussions. The epigraphists and scholars present discussed various aspects of Unicode encoding, rendering of the glyphs, ability to index, search, retrieve texts etc. Several specific examples of inscriptions, copper plates and palm manuscripts were discussed. The Sendalai Pillar inscriptions with Grantha and Tamil texts both showing the title "*Sri Kaḷvarkaḷvan̲*" was discussed an illustration of the difference in orthographic styles

between Tamil and Grantha. It was noted that in the Grantha script, the consonant cluster "l̤va" was stacked without the use of virama while the Tamil script used *pul̤li* of and wrote the same cluster as a linear sequence. It was also noted that the Grantha script used the Grantha consonant NA with a virama while the Tamil script used Tamil consonant NNNA. To the epigraphists, this was a clear indication that the Tamil consonant NNNA was not considered to be part of Grantha script by the inscribers.

The epigraphists considered *pul̤li* as a distinct Tamil orthographic feature that could not be considered part of Grantha orthography. They noted that though it is rare to see *pul̤li* on top of short vowels e and o even in Tamil inscriptions, the idea of applying *tolkāppiyam* rule to apply *pul̤li* to Grantha long e and long o to artificially create short e and short o looked very wrong. They noted that while it is common to see both Tamil and Grantha letters borrowed to represent sounds that didn't exist in Tamil or Sanskrit, they were considered by the epigraphists to be foreign to the respective scripts. In other words, they considered the proposal to add the seven Tamil characters to Grantha to be wrong.

The sessions also reviewed tal̤avāypuram copper plates, utayēntiram copper plates, kūram copper plates, as well as the trilingual (Sanskrit/Telugu/Tamil) inscription A. R. No. 580 of 1907 (Appendix D) and the bilingual (Sanskrit/Kannada) inscription A. R. No. 121 of 1937-38 (Appendix E). Several features stood out in these records.


E. North wall [?]

1 ஹஸ்தாவஸ்தி ஹாமஸ்ய அய ॥ மதுராந்தகப் பொத்-

2 தப்பிச்சொழந் ஒலை[*] பெருங்கண்டூர் அகரத்து வாக-

3 யனும் கரணத்தானும் கண்டு தங்களூருக்குப் பிடா

4 கைஆன கொளூர் சிலகாலம் தாங்கள் அனுபவிக்க

5 ப்பெறுதெ- இனும்புடொலில் வெள்ளாளர் ஐத்தா

6 லெ அனுஷவித்த இது நானும் நாடவரும் கூட ஆரா[ய்*]ந்து

Figure 1.Tamil inscription mixed with Grantha letters (Appendix D, p 405)

As seen in Figure 1, the same word "anubhavi" is written in Tamil, once with the phonemic Tamil pa and a second time with the phonetic grantha bha. That these words within a line of each of other shows that there is no internal consistency and that this cannot be taken to mean that the grantha bha should be considered part of Tamil script any more than a Tamil ṟa be taken to be part of Grantha script when it is inserted in side a Grantha word as is common. The epigraphists want to preserve the inscriptions as is but have a clear

expectation of which character belongs to which script regardless of the language and would like the encoding reflect that expectation.

The various orthographic quirks seen in inscriptions, copper plates and manuscripts were reviewed. As seen in Figure 2, where Grantha text is rendered in Devanagari text, Sanskrit words and letters are written in Grantha style in the middle of Tamil texts. Sometimes the same word is rendered in multiple styles in the same inscription. The epigraphists placed a great value on recording the texts as they are – with Grantha, vaṭṭeḻuttu, or Tamil orthography.

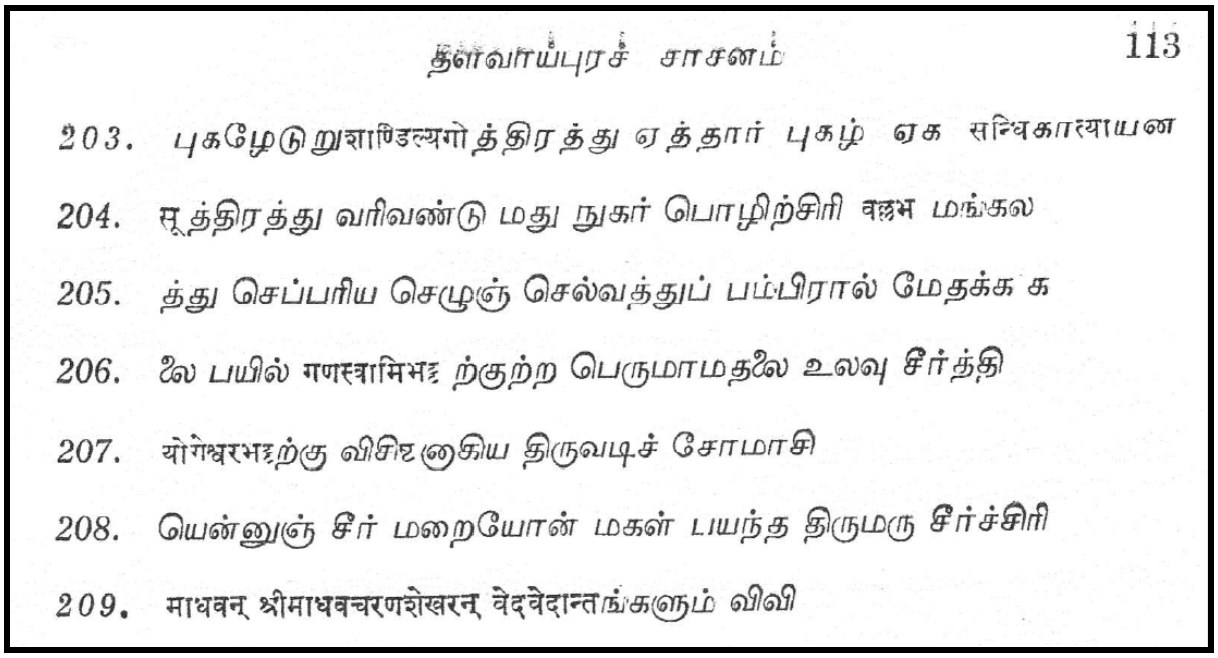


Figure 2. taḷavāypuram copper plate: Grantha (shown as Devanagari) mixed in Tamil text

Mixing of script and characters was not just one way – from Grantha to Tamil but it was two way as can be seen in Figure 3 where Tamil text in Tamil script is mixed inside Sanskrit text written in Grantha script.

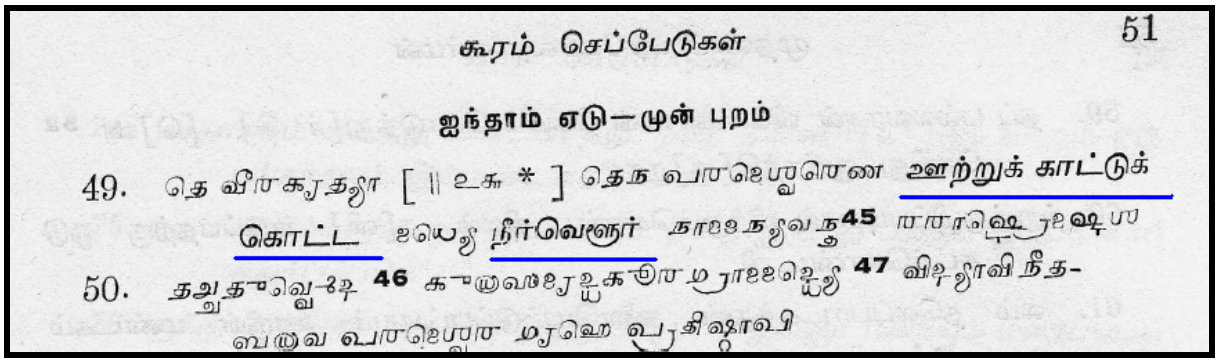


Figure 3. kūram Copper Plates showing Tamil script mixed in Grantha text

Epigraphists supported the idea that Vatteluttu should have its own encoding similar to Grantha in the SMP space as the uyirmey series did not have a regular pattern as in the later Tamil script. There was a consensus that this should be taken up as a separate initiative.

The next two figures show an identical title "Sri Kaḷvarkaḷvaṉ" that are inscribed in the Sendalai Pillar inscriptions. Except for the "Sri" prefix, the rest of the names are written in either Tamil script or Grantha script. This is seen as a good example that showed the distinct difference between the scripts. While the Grantha text uses conjunct consonant stacked orthography without virama to show the consonant cluster "ḷva", the Tamil text uses puḷḷi and linearizes consonant cluster which is written as a sequence. The epigraphists pointed out that the Grantha script did not use the Tamil consonant NNNA preferring to use the Grantha consonant NA while the Tamil version used the consonant NNNA characteristic of Tamil names while both used virama or puḷḷi.

Figure 4. Sendalai Pillar Inscription - Sri Kaḷvarkaḷvaṉ in Grantha
(courtesy: http://www.tnarch.gov.in/images/epi-ins/grantha/pic5.gif)

Figure 5. Sendalai Pillar Inscription - Sri Kaḷvarkaḷvaṉ in Tamil
(courtesy Dr. S. Palaniappan)

Vatteluttu script was supplanted by the Tamil script starting from Pallava era. (Ref: Iravatham Mahadevan, 2003, p 213.) Even in Pallava times, it is noted that Tamil words and Sanskrit ("Grantha") words exhibit distinct orthographies. The same word may be written with their consonant clusters presented in stacked form or using the pu்li.

The epigraphists also have never heard of the Samskritha Grantha lipi sabha in Chennai. They examined the text purported to be a Grantha rendering of the Tamil sacred text Nalayira Divya Prabhandam and some random samples (Grantha Proposal L2/09-345 pp 21-22). They were quite amused by the Grantha rendering as something that was written by someone who was neither a Srivaishnavaite familiar with this most important hymn but also someone that didn't know how to render consonant clusters in Grantha. The errors that were identified are listed in Tamil below:

பாட்டின் முதல் ஆறு வரிகளிலேயே 12 தவறுகள் இருக்கின்றன. எல்லா வரிகளையும் பார்த்தால் இன்னும் பல தப்புகள் தென்படுகின்றன.

1. பாட்டின் தலைப்பாய் "பெரியாழ்வார் திருமொழிகள்" என்று எந்த வைணவரும் பன்மையில் எழுத மாட்டார். "பெரியாழ்வார் திருமொழி" என்று ஒருமையில் தான் எழுதுவார்.
2. "பல்லாண்டு" என்பதில் டகரம் முதல் டகரமாய் இருக்கிறது. அது ஒலிப்பின் படி மூன்றும் டகரமாய் இருக்கவேண்டும். இங்கு தவருக எழுதப் பட்டிருக்கிறது.
3. "பலகோடி" என்பதிலும் மூன்றும் டகரம் வரவில்லை.
4. "மல்லாண்ட" - மூன்றும் டகரக் குழப்பம்
5. "திண்தோள்" என்று எழுதப் பட்டிருக்கிறது. பழைய முறையில் அது புணர்ச்சி விதியின் படி "திண்டோள்" என்றுதான் இருக்கும். புணர்ச்சி பிரித்து எழுதியிருந்தால் எல்லாவிடமும் புணர்ச்சி பிரித்திருக்க வேண்டும். சில இடங்களிற் பிரிந்தும் சில இடங்களிற் பிரியாமலும் இருப்பது அந்தக் காலப் பதிப்புகளிற் கிடையாது.
6. "சேவடி செவ்வி திருக்காப்பு" என்பதற்கு மாறுய் "செவ்வி திருக்காப்பு" என்று சேவடியை முழுங்கிவிட்டுப் பதிந்திருப்பது இதை பதித்தவர் வைணவர் இல்லை என்று சொல்லுகிறது. இப்படி ஒரு தப்பை ஒரு வைணவர் செய்ய மாட்டார்.
7. அடியோமோடும் - மூன்றும் டகரக் குழப்பம்
8. மூன்றுவது வரியில் "ஆயிரம்" என்பதின் அடியில் "பல்லாண்டின்" "ப" தொடங்குகிறது.
9. "மங்கையும்" என்பதில் "ங்கை" என்னுங் கூட்டெழுத்து தவருக எழுதப் பட்டிருக்கிறது. எழுதியவருக்கு இந்தக் கூட்டெழுத்து என்னவென்று தெரியவில்லை.
10. "வடிவார் சோதி வலத்துறையும் சுடராழியும் பல்லாண்டு" - தவருகச் சீர்பிரித்து எழுதப் பட்டிருக்கிறது.
11. "முழங்கும்" என்பதில் "ங்கு" என்னும் கூட்டெழுத்து தவறு
12 "பாஞ்ச சன்னியம்" என்பதில் "ஞ்ச" கூட்டெழுத்து தவறு

13. அப்பாஞ்சசன்னியமும் பல்லாண்டு என்பதில் முதல் பத்தில் உள்ள மற்ற செய்யுள்களுடன் ஒப்பிட்டால் பல்லாண்டே என்று ஏகாரம் இருக்கவேண்டும் என்று தோன்றுகின்றது.
14. .பொருதானுக்கு என்பதற்கு பெருதானுக்கு என்று உள்ளது
15. .கூறுதுமே என்பதற்கு குறுதுமே என்று உள்ளது.

பொறுப்பாக ஒரு நூலை வெளியிடும் எந்த ஒரு ஸபாவும் மூன்று பாசுரங்களுக்குள் இத்தனை பிழைகள் செய்திருப்பது பொருத்தமா?

மொத்தத்தில் இந்தச் சான்று ஒரு வைணவர் பதிப்பித்ததாகக் கொள்ளமுடியாது. அப்படிப் பதிப்பித்ததாகச் சொல்லுவதின் மெய்மையைப் பெரிதுங் குறைக்கிறது. யாரோ ஒரு வைணவர் அல்லாத, இந்தப் பாட்டு பழக்கமில்லாதவர் ஒருவரைக் கொண்டு, கிரந்த எழுத்துமுறை தெரியாதவரைக் கொண்டு இது எழுதப் பட்டிருக்கிறது.

இரண்டாம் பக்கத்தில் சில தமிழ் ஊர்கள் கிரந்த எழுத்தில் எழுதப் பட்டிருக்கின்றன. அவற்றிலும் தவறுகள் மிகுந்து இருக்கின்றன.

1. ”கீழ்ப்பாக்கம்” என்ற ஊரில் ”ழ்ப்பா” என்று மூன்றெழுத்துக் கோவை அடுக்குமுறையில் எழுதப் படவேண்டும். இங்கு “ழ்பா” என்று ஈரெழுத்துக் கோவையே எழுதப் பட்டிருக்கிறது. ஆங்கிலத்தில் இருப்பதை அப்படியே எழுதிவிட்டார்கள் போலும்.

2. ”கொங்கு நாடு” என்பதில் ”ங்கு” என்ற கூட்டெழுத்துத் தவறு. தவருன டகரம் புழங்கப் பட்டிருக்கிறது. மேலே இருப்பவை எல்லாம் சான்றுகளாய்த் தெரியவில்லை. யாரோவொருவர் கிரந்த எழுத்தில் இவற்றைத் தப்பும் தவறுமாய் எழுதிக் காட்டியிருக்கிறார்.

The epigraphists were familiar with the evidence of Tamil language Tēvāram hymns written in Grantha in Thailand provided by J R Marr's 1969 SOAS paper. They considered that this sample to be non-standard and internally not self consistent as several varga letters of Grantha were used indiscriminately without trying to render Tamil text with literal transliteration or transcription preserving the pronunciation. One of the experts present clarified that even though Thai-s write things differently, the pronunciation will be quite close to native Tamil and they didn't make any distinction between the voiced and unvoiced letters or the aspirates. The absence of the proposed seven Tamil characters as part of this version of Grantha was noticed but the scholars wondered whether the original Thai text needs to be examined to get more details though they were skeptical of finding anything there. The scholars also noted that LLLA in Tamil was written as RA in this Thai Grantha manuscript in cases like vi̲l̲ā, RRA was changed to TA and NNNA to NA [pp 312, 314 Marr].]

The scholars considered evidence from Harkness for pu̱̱i vowels being used in Grantha cited in Proposal L2/09-345 to be a misinterpretation by the author while they considered the evidence quoting Gruenendahl for the existence of short E/O in Grantha to be misleading.

The epigraphists clarified that the evidence for short E/O in Tamil script itself would be rare in inscriptional records and were skeptical about such usage in native Grantha script. They didn't support the addition of short E/O with the pu̱̱i diacritic in Grantha. They considered use of LLLA, RRA or NNNA in Grantha inscriptional records, if present, to be borrowals from Tamil to render Tamil names and not native part of Grantha script. They were concerned that adding these letters in Grantha script using Grantha's stacked orthography is likely to confuse encoding the typically mixed Tamil and Grantha inscriptional records and advised against it.

Thiru Poongundran who attended this special meeting as an observer expressed satisfaction at the detailed investigation of the Grantha proposal. He said he now understood the complicated inscriptional records a little better and agreed that these should be encoded for better analysis and preserving these records as pure image files would be insufficient.

In summary, the experts present considered that the evidence cited in L2/09-345 in support of the claim that the seven Tamil characters belonged to Grantha script to be invalid and rejected such claim. The epigraphists wanted to have a closer examination of the Grantha proposal to study the impact of the encoding from the perspective of professional epigraphists.

Concern raised: Epigraphical perspective should be considered before encoding characters that are not considered native to Grantha script and that any review committee should consult professional epigraphists.

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15. ஸாலுநிழ விஜயவ-ழிஜீஷணம் விக்ஷாயிக்ஷழ ||— ஸ்ரீ ஸிஜ்ஜிஹிமவஸ்ய லுமு நுமிநா லுமிய-ழ தெஜலா விஜயாதிக்ய தெவெந ஸாலுநம் ஸாஜ்ஜீகூடதிழ ॥— ஜயஜ்ஜி விஜயாதிக்யதெவஸ்ய வ்ரயாகீத்தயः யவ-

16. ஜீகூத விஷ்ணு விஜயஸ்கந்தாவாரானுயாः ।— ஸுக்ஷகூரம் வாஸுகூரம் வா யொ ஹரத வலாகுரழ ஷஷ்டிம் வஷ-ுவஹஸ்ராணி விஷாயாம் ஜாயதெ கூரவिः ॥— பெஹுமஹி வ-ுவாயா உத்தா ராஜஹி ஸ்ஜஹராதிஹிः

17. யஸ்ய யஸ்ய யதா ஹுமி ஸ்துஸ்ய தஸ்யதயா அலுழ ॥—

North base 3rd tier

1. ராஜ்ஞோ விகூரதொட-

2. ஸ்ய அராணாழபாஜ ரெணவः [1*]

3. ஜயஜ்ஜி வுண தாரெஷநர-

4. வகொடீஸ அாழபிநः [॥*]

No. 580

(*A. R. No. 580 of 1907.*)

Nandalūru, Rajampet Taluk, Cuddapah District

Saumyanātha temple—on the 5th tier of the north base, the north and west walls of the same *maṇḍapa* and the north wall of the central shrine Rājēndra-Chōḷa III year 13 : 1257-58 A.D.

The inscription is also dated in Saka 1179, Piṅgala, Mēsha-Saṅkrānti. It is written in three languages, the first part being in Sanskrit ; the next comprising mostly of the names of the donees with the number of their shares of land, is in Telugu but in Grantha alphabet like the first part; and the last portion of about 20 lines, giving the main gist of the record is in Tamil. The epigraph begins with a eulogy of a king by name Triṇētra (Trilōchana-Pallava ?) who founded many *agrahāras* to the east of the Tripurāntaka hill. A successor of his of the same name-Mukkaṇṭi-Kāḍuveṭṭi established and gave the village Peruṅgaṇḍūr in Paśchima-Pāka-nāḍu a division of Adhirājendra-Chōḷa-maṇḍalam to 52 Brāhmaṇas in Saka 723 (mistake for Saka 730 ?), Sarvadhāri, Mēsha-Saṅkramaṇa, ba. 6, Wednesday, Mūlā (A.D. 808, March 21, Tuesday ?). The donees were in enjoyment of their shares for a long time, when some Velumas from Inumbrōlu escaping from the *māri-jvaram* of their place, settled in fields near them, agreeing to pay rents for their lands, alongside the residents of Sakali-Kōḍūra who had also emigrated from their place on account of some riots. During a famine that followed the Brāhmaṇas left their places and when they returned found themselves supplanted in their possessions by the new comers who had in the meantime named their new settlement as Kōḍūru, and refused to give the rent due to the Brāhmaṇa landlords. The latter then made a representation to the chief Manumasiddhi, whose genealogy is here introduced viz Dāyabhīma, Bētabhūpa, Eṟasiddhi, Manmasiddha, and Tikkaṇṟipa the father of the ruling chief. This Manumasiddhi is said to have conquered a chief named Vijaya and tried to secure the friendship of Kākatīya-Gaṇapati by fighting a battle for him on the banks of the Gōdāvari. He was a feudatory under the Chōḷa king Rājēndra-Chōḷa III whose regnal year is quoted.

Manumasiddhi sent for the cultivators against whom the complaint was made and after due enquiry with witnesses, decided the case in favour of the dispossessed Brāhmaṇas, to whom he renewed the grant of the village Kōḍūru for the merit of his

father. Then follows a detailed list of all the share-holders, in Telugu. The concluding portion of the inscription which is in Tamil registers an order of Madurāntaka-Pottappi-Chōḷa Manumasiddhi, granting the village Kōḍūru a hamlet of Peruṅgaṇḍūr to the Brāhmaṇas, thus restoring their ancient possessions, when the inhabitants from Inumbuḍōl (Inumbrōlu) could not prove their case.

Text

1 [illegible]

2 [illegible]

Section II

1 [illegible]

2 [illegible]

3 [illegible]

உதி தொரவ வபஉட வீிதூாவ ஊரநக நற ஸ்ரீயமினிகி வஸ்ல ஸ்ரீ தொரவ
உதூரநரா[ஷ] நூயிர கி உதூர்ந கெதூரதெவினிமபி உதூரந வாதி நயிர தி
வபஉட உமிக ஈவிஸ்ல ஈவிஸ்ல உ —

4 — ஸ்ரீ யமினிகி வஸ்ல் உமஹிதொரவ தெக்ஷிணாந உ[ஙி]வவி[வ]ாதஉ ஹ கொ
நற கொஹந வஉ கொஹ விபஉதி வகவக்ஷ்தமவசுந [ஹ்ணு] தொரவ
தொரவ சூதெயஉந ஹஜ்ஜிகண்ணுறெவு ஸ்ரீயமினி வவஉஹக கஉர கொண்ண
ஹக வொஸ்ரதெவ ஸ்ரீஸ்ரானூயஉ நஹந நற வெரஹினிகி ஸ்ரீயமினிகி வஸ்ல ஸ்ரீஸ்க
ண்ணெ[ய] . . உக்ஷிணாந ஹஜ்ஜி வபஉதி யரஉக நரெதெஉ ரெதெஉ சூதெயஉந
வாஷாண வ[ஞி] சூதெயஉந வெதூர்ஹஜி ஊதி ஸ்ரீயமினி அக ஸ்ஸிஉந உகணி
காவ வெடிபி[ஙி] விஜிதிநந ஸ்ரீயமினி வஸவிவிஸ்ண்ண வ்ரதிஹ நற ஸ்ரீஸ்ஹஸ்ம
வெதூகாஹஉ கநஹவிண்ண அநஷ்ண்ணஸ்மாந வகஹிகொவரிவாற கஉவெஸ்ரஉ
கஹஹயிந வஹ வவஷ்ணெறுவு, உதஉகப கொஉந நதிஉ —

5 — கிழஹகொ[வி]நந உநழிவொஹி வெஹஉஹ கஉ ஊர ஈரிஷ்ணஉ கயிந
ஈக கயெடி திஹ்வரிதூ வஉ ஸ்ரீஸ்பவஹஹொ காவ உண்டி விக்ஷ்தூ
உவ நத ஸீக கரிகொர வெடிபி உண்டூதி கரிகொர வொர வரிநண்ணஸ்மாந
கணக விநஸ்மதி கூஷ்ணஉந திஹ்வரிக வெஸ்ரஹ்ரஉ வொயிநநற கொவஸ்மதி வொர
[ெ]வடிபி[ெ]காதி உண்டஸ்மாந வஉ கூஷ்ணஉ, தெரியஸ்மாவிஷ்டி ஈக்ஷ்தூஉ வழிவதி
கரிகொ[ர]வெடிபடஉஹ வெடிபக ஈவஹவஹநஹிநதவ்வெட வறிஸ்மி ரிஆயிநதெ
வெஹி அரிக கரிகொர வடிபகொதி உண்டஸ்மாந உநஉவிஷ்டிரிஆஜநக வஉ
ஸ்ரீ வடிபாஸ்ர. விந்தவஉ தெஹிந ரிஆஜந கவயரிஸ்மி உநதெஹ்ரயி வெஹ்ரஹ
விஹ்வழிவஞி வாக நாபி ஹரிவாரிதி ஒதூவெடிபிகொதிவு —

6 — உ க்ஷ்தூஉ கவ நடிபகாந ஹபவவடிபதூஉதியத ரிஹிர விரி வடிபிஹ.....
.....ரி கநஸ்மாந ரிஆஜந ஹரிவாரிஹ உதி ஹ்ரஹ்ரஹ க்ஷ்தூஉ கவ
நதி திநபயிஞி ஸகாஹஉஹ வெயி[நரிபி வாப]வ தொஉதிதி வெடிபந விரிரா
தெஹ்ரதொஉ தெவதிகி வஉஹபவஸ ஸ்ரீராஹி கயிந [விஸ்ரஹ] வஸ்வ ஹ்ரஹழி தெஷஹஸ்ம
[கூராஞி]...தண்டி திரிகாஉதெவ உஹாரிஆஜஹ்ரஹக யஉதூவகாந ஸ்ரீஸ்ம வ்ரவ
கயிந கொவரிர யாரவொஹி உஷ்டி வாஹ நஉ உஷ்டி ஈக வரிவபஉ வ்ரதிஹ்ரஹ
வஹவிரெண்ண தொந உந கூகாஹஉ ஊரி ஊரி வஉதூாய உக்கம் கயஉ கொந்த
வ்ரதிஹ்ரஹ ஸ்ரீவஹ்ரதொதூஉ கரிஞி ஈரதொஈர ஹடிதெத கூயஉ கொந்த ஹாமஉ
ஒக்ஷ்பி நி —

7 — கதொதூஉ நாராயண கவுயதெதகூயஉ கொ..... கூவிகஈநாரிதெதம
கூயஉ கொந்த[ஹ]ாமஉ ஒகபிக ஸ்ரீ நாஹ்ரஉக ஹாமஉஹ்ரஉக உ.....
ஹவ்யஉ வஹவிவெறு உவாயஉ.....காஹ உவிதயிநஉஹ்ரயஉநக கஉதிந
ஹாமஉஹ்ரஹ உவுவிகுறுந வஹவபவ்வதூஹ்ரஹ நாஹ்ரவவி வஉநவிதி ஹடிதக
பரஹி வஉழிஹவி நாஹ்ரஸ்ம தெவி ஹ்ரஹக்ஷ்தூஉஹ்ரஹ ஒக லம்பிதெவி உண்யை
வயிஹ்ரகொதி கநஹவி —

8 — ஹாமஉ ஒக்ஷ்பி கொண்ணெரி வஹபணை.....கயஹடி ஹாமஉ ஒக்ஷ்பி [உ]ம
ம[ண]வொதிஸ்ரஹடி ஹ்ரஉஹ்ரஹ [ரெண்ண]..... ...தொக்ஷஹடி ஹாமஉ.....
ணை ஹாமஉ ஒக்ஷ்பி ஈரிய ஸ்ரீ யரவெதிதி ஹாமஉஹ்ரஹ ரெண்ண ஈரெ ஷஉமர
ஹாமஉ ஒக்ஷ்பி தீஞெரி நாராயண வெதிதி ஹாமஉ ஒக்ஷ்பி வெ[ரெ]ரி சூதி கயஹடி
ஹாமஉஹ்ரஹ ரெண்ண வெஹ்யஹடி கூர்ராஉ ஏஞி ஹாமஉ ஒகபிஹ —

Section III

A. North wall. No. 1

1 — திதெ ஹமாஉ ஒக்ஷ்பி மொவிஷ் சுணை ஹடிண ஹாம-

2 உ ஒக்ஷ்பி வெஉநஉஞி ஹாமதி ருஸ்தூ வெந்தயஹ -

3 டிண வொரயவெதிதி ஹாமஉ சுர - ஸ்ரீராஉ கவுயஹடிண

4 ஹாமதி சுர-ராமயகஉதி ஹாமஉ காஹ வாஹய கொண்ணி

5 ஹாமஸ காலு-வஸ்ஸணஹடி சுந்தயவெடி ஹாமஸ சுர-ஹாரா-

6 ப உந்து ஹடி ஹாமஸ சுர - மஜஜலு ஹாவ்சு தெவமி ஹாமஸ ஒ-

7 கபி நாராயண ஹடி வொரிஷ்ணு கவ்யஹாமஸ சுர - அ-

8 ணயஹடி வெந்தயவெடி ஹாமஸ காலு சூதி கயஹடி ம-ஷ்ணு -

9 ரவெடி ஹாமஸ சுர - கஷ்ணு ஸ்ரீசுர வெடி ஹாமஸ காலு - நாரா -

10 யண கவ்ய ஹாமஸ காலு - கொண்டவெடி ஹாமஸ காலு - கெ-

11 ாண்டி மொதழி கொண்டவிடு ஸ வெடியஹாமஸ ஒக்கபி [வெ-

B. North wall. No. 2

1 .....ன்ஹடி ஹாமஸ ஒக்கபி - சூதி கய அதவெடி ஹாமஸ ஒக்கபி வி-

2 நதெரயய ஹடி ஹாமஸ ஒக்கபி அங்கதவு ம-ஷ்ணஹடி ஹாம-

3 [ஸ ஒக]கபி- கஸமலு வொரிஷ்ணஹடி ஹாமஸ ஒக்கபி வாஸரா தி-

4 வாரிஷ்ணஹடி ஹாமஸ ஒக்கபி வொதிதலஹடி ஹாமஸ ஒக்கபி தி-

5 வதி வாங்கிஷ்ணவெடி ஹாமஸ சுர-கணஸ நாஷிம்ஹ கம்பி

6 ஹாமஸ சுர-தெலுவஸங்கி நாராயணதி ஹாமஸ காலு சுண்ண கவ்-

7 ய ஹாமஸ சுர-தி-வாஸயவெடி சூதி கயதி ஹாமஸ காலு-வாலுய சு-

8 வ நடிவெடி ஹாமஸ காலு - [வ]ஸ்தாதி வாலுயஹடி ஹாமஸ காலு- ஜ-

9 ஸ்தி வதிமொதழி காரணஸ கதி கயவெடி ஹாமஸ ஒக்கபி - க -

10 ஸ்தி ஸாதிரோஷதி ஹாமஸ ஒக்கபி - நல்லிவிஷய சமிதெ ஹாமஸ ஒக்க -

11 பி - பொரண கூடெ ஹாமஸ சுர - தெலுவடு லிங்கணஹடி நாகதெ -

12 வஸங்கி ஹாமஸ சூரு - மொவிடி கவ்ணவெ ராஸி ஹாமஸ காலு

C. West wall. No. 1

1 ஸாலவெடி தெலுவதி ஹாமஸ காலு வ-

2 வஸ்திஸ்து விந்தவாலு ஹாமஸ சுர வித-

3 ணஹடி ஸாரயஹாமஸ காலு ஒரலு தெ-

4 ...வஹடி ஹாமஸலு - உலுஜ்ஜ அதஸ்தவ-

5 டி ஸ்ரீராம வெடி ஹாமஸ உக்காலு-தலய

6 வ நஹாமஸ சுர - வொரிஷ்ணு கவ்ய ஹாம-

7 ஸ சுர - தெரயவங்கி ஹாமஸ காலு - சூதி கய கவ -

8 ஸ்தி ஹாமஸ காலு - கஸ்ரா ஹட்ட தெலுவவெடி ஹா -

9 மஸ காலு தெரயய ஹடி வ-ஷ்ணவெடி ஹாம -

10 ஸ ஒக்கபி ஹாலஸ்வாஜ மொதழி ஜநாதி-ந ஹட்ட ஹாமஸ ஒக்கபி

11 தெரயவெடி கொட-தலு ஹாமஸ ஒகபி சூதிமவ -

12 மொதழி ஐஹ்ஹதிவஹடி ஹாமஸ ஒக்கபி ஸ்ரீ [ஸ*]ஸ்ரீராக

13 [கு]வ்வி கிர-நாவ-ரெ சூழ்வாஸ்ரந வொஷஜந்ய அஞ்சா -

14 ஜணி ஹாமழ ஸுஹ - கவிமொத்ரூழ ஜறவாடிய ஹட்ட

15 ஹாமழ காடு - ஸ்ரீ ராஜணி கொபாக்ஷு ஹாமஜ ஒக்ஷி

16 காஶ்யவமொத்ரூழ நாமொதரஹட்ட ஹாமஜ ஒக்ஷி குண்ணிஷெ -

17 ணய ஹட்ட ஹாமஜ ஒக்ஷி ஸவ்ணவொஜநு ஹாமஜடு மெ -

18 ண்டு - மஜஜாங்காஜாணி ஹட்ட ஹாமஜ ஒக்ஷி - வாஸஜெரி வாடிய -

19 ஹட்ட ஹாமஜ ஒக்ஷி வெதந வெூாடிய ஹட்ட ஹாமஜ ஒக்ஷி வாடிய -

20 ஜணி த்ரிவிக்ரமஹட்ட ஹாமஜ ஸர - வொதெ ஹட்ட வெூாடிய ஸவ்ய

21 ஹாமஜ ஜாகாண - குத்ரய மொத்ரூழ ஷொணய ஹட்ட ஹாமஜ ஒக்ஷி

22 கடண க்ருஷ்ணெத ஹாமஜ ஒக்ஷி - கடவழ கெஶவவெதநி ஹாமஜ காடு

23 ஜாயவ ஸ்ரீ ராஜவெதநி ஹாமஜ காடு லொஹித மொத்ரூழ வொ -

24 ஹங்க அடிவெ ஹாமஜ ஒக்ஷி - மெளதஜ மொத்ரூழ ஹெ -

D. West wall No. 2

1 ஸ்வாஸ்தி ஶ்ரீ

2 ஹாமஜ ஒக்ஷி மெ -

3 ஜளஷமர்ய மொ -

4 த்ரூழ ஸறவிஷெ -

5 குஹிதா நடு

6 ஹாமஜ ஒக்ஷி - மா

7 ஹழ மொத்ரூழ ஸவ் -

8 ண வாடிய ஹாமஜ ஒ -

9 க்ஷி - வஞ்திஜாஷமொ

10 த்ரூழ ஸ்ரீராஜ ஸவ்ய ஹாம -

11 ஜ ஒக்ஷி ஹரிதமொத்ரு -

12 ஸறணஹட்ட நாமதெவ -

13 நி ஹாமஜடு மெண்ணு - ஹா -

14 ஹழவ மொத்ரூழ ரஷ்ட வெ -

15 நநி ஹாமஜ ஒக்ஷி - ஜயிடு -

16 ரா வெதநி ஹாமஜ ஒக்ஷி [॥*]

E. North wall [?]

1 ஹரகாவரஸி ஹாமஜடு அயஜ ॥ மதுராந்தகப் பொத்-

2 தப்பிச்சொழந் ஒலே[*] பெருங்கண்டூர் அகரத்து வாக-

3 யனும் கரணத்தானும் கண்டு தங்களூருக்குப் பிடா

4 கைஆன கொளூர் சிலகாலம் தாங்கள் அனுபவிக்க

5 ப்பெறுதெ இனும்புடொலில் வெள்ளாளர் வஜத்தா

6 லெ அனுஷவித்த இது நானும் நாடவரும் கூட ஆரா[ய்*]ந்து

7 இவ்வெள்ளாளரை இவ்வூர் ப்ராஹ்மணக்ஷேத்ரம் அல்ல வெ[ன்*]று நிங-
8 கள் மழுப்பிடித்தல் ப்ராஹ்மணரை மழுப்பிடிப்பித்து கொ-
9 ள்ளுகுதல் செய்யுங்கொள் ஸந்த இரண்டுப்பிக்கும் மாட்டா-
10 மையால் இக்கொளூர் ஸர்வாதிகாரத்தில் ப்ராஹ்மணருதெயாஜை-
11 கயால் பிங்கள ஸம்வத்ஸர[*த்]தில் சித்திரை விஷுவிலெ அந்நஜி-
12 யர் திருக்காளதேவமஹாராஜாவுக்கு ஸர்வமாந்யமாக தங்களுக்கு நிர்வா[ர்*]த்-
13 துக்[கு]டுத்து [இ]ந்த ஸாஸநம் குடுத்தோம் இந்நாள் முதல்
14 அனுபவிப்பதெ[||*] ஸாமாந்யோயம் தர்மஸேதுர் ந்ரு-
15 பாணாம் காலே காலே பாலநீயோ பவத்பிஃ ஸர்வா நே-
16 தாந் பாவிநஃ பார்த்திவேந்த்ராந் பூயோ பூயோ யாசதே ரா-
17 மசந்த்ரஃ [||*] தாநபாலநயோர்மத்யே தாநாச்ச்ரேயோநுபாலநம்
18 தாநாத் ஸ்வர்க்கமவாப்நோதி பாலநாதச்யுதம் பதம் [||*] ஸ்வதத்தாம் ப[ர]-
19 தத்தாம் வா யோ ஹரேத வஸுந்தராம் [ஷ*]ஷ்டிம் வர்ஷஸஹஸ்ராணி வி-
20 ஷ்டாயாஜ்ஜாயதே க்ருமிஃ [||*] இப்படி[க்*]கு அறிவொம் பெரியநாட்டு வி-
21 ஷயத்தாரொ[ம்*] யா[ண்*]டு பதுமுன்று இவைச்சால் வந்த வரி இரு-
22 நூற்று ஒருபத்து ஒன்று உ

No. 581

(A. R. No. 581 of 1907.)

Nandalūru, Rajampet Taluk, Cuddapah District

Saumyanātha temple—on the 4th tier of the same base

Kulōttuṅga-Chōla III. Year 31 : 1208-09 A.D.

The cyclic year is also given as Vibhava. This records a gift of two lamp-stands worth 15 *māḍai* and 180 *kuḻi* of land for burning two perpetual lamps in the temple of Kulōttuṅgaśōḻa-Viṇṇagar-Emberumāṉ Sokkapperumāḷ for the merit of his deceased mother Mēḍasāni by Bayirappi-Reḍḍi son of Bhūmi-Reḍḍi a *maṉṟāḍuvār* (assembly member) of Taṅgaṭṭūr in Mēṟpākkai-nāḍu.

Text

1 ஸ்வஸ்தி ஸ்ரீ [ii*] குலொத்துங்க சொழதெவற்கு யாண்டு ௩௰௧-வது ஆவதாந விபவஸம்வத்ஸரத்து ஆனிமாச மதிராசெஷிரமண்டலத்து மெற்பாக்கை ஞட்டுத் தங்கட்டூர் மன்ருடுவார் பூமிரெட்டியார் மகந் பயிரப்பி ரெட்டியெந் யெங்கள் தாயார் மெடசாநியார் சுவற்கஸ்தராந பின்பு அவருக்கு நன்ருகவெணுமென்று குலொத்துங்கசொழவிண்ணகர் எம்பெருமாந் சொக்கப்பெருமாளுக்கு இரண்டு திருநன்தாவிளக்கு நித்த சித்தமாகச் செல்லக்கடவிதாக இவ்வெம்பெருமாந்

2 திருவிடையாட்டமாந ஞயகத்தெவிக் கமுகந்தொட்ட த்துக்கு வடக்கு திருவிடையா[ட்*]டமாந மடுத்துரத்துக் குடுத்த நிலம் குழி ௱அ௰ யிந்நிலம் ௱அ௰-தில் பொகத்திலெ பதினஞ்சு மாடையாலெ இரண்டு திருக்குத்தி விளக்குங் கொண்டு யிட்டு இத்திருநன்தாவிளக்கு இரண்டு மெற்றிந பலம் யெங்கள் தாயார் மெடசாநியாற்கு நன்ருக இத்திரு நன்தாவிளக்கு இரண்டும் அன்ருடு கூட்டப்பெருமக்களும் ஸ்ரீவைஷ்ணவர்களும் அனுஸந்தாநம் பண்ணி சந்திர ஆ-

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NĀṆMUGAṆ-VĀŚAL, INNER WALL

No date

Records a royal order in Kannaḍa written in Grantha, to Śrīraṅga-
āyaṇa-Jīyyar, Uttama-Nambi, and the *Sthānikas* of the temple
on the representation made to the king by Uttama-Nambi,
oyal gift of land in the four villages Suṇḍakkāyi, Gōvattakkuḍi,
aiyūr and Karuṅguḷam, was made to Uttama-Nambi and his brother
kkrarāya for a service instituted in the temple in the name of Dēvarāya
hārāya I and the brothers were made the agents (*karttas*) of the temple,
mpted from the payment of the *jōḍi* on the granted lands and remunerated
ash and in kind, in addition to an eighth share in the contributions to the
ple from these villages. The record is not dated.

Text

1 𑌸𑍍𑌵𑌸𑍍𑌤𑌿[।*] 𑌶𑍍𑌰𑍀𑌮𑌨𑍍 𑌮𑌹𑌾𑌰𑌾𑌜𑌾𑌧𑌿𑌰𑌾𑌜 𑌰𑌾𑌜𑌪𑌰𑌮𑍇𑌶𑍍𑌵𑌰 𑌶𑍍𑌰𑍀𑌵𑍀𑌰𑌪𑍍𑌰𑌤𑌾𑌪 𑌦𑍇𑌵 𑌰𑌾𑌯𑌮𑌹𑌾𑌰𑌾𑌯𑌰𑍁 𑌶𑍍𑌰𑍀𑌰𑌂𑌗𑌨𑌾𑌰𑌾𑌯𑌣𑌜𑍀𑌯𑌰𑌿

2 𑌗𑍆 𑌉𑌤𑍍𑌤𑌮𑌨𑌂𑌬𑌿𑌯𑌰𑌿𑌗𑍆 𑌸𑍍𑌥𑌾𑌨𑌿𑌕𑌰𑌿𑌗𑍆 [𑌨𑌿𑌰𑍂𑌪][।*] 𑌶𑍍𑌰𑍀𑌰𑌂𑌗𑌨𑌾𑌥 𑌦𑍇𑌵𑌰𑌿𑌗𑍆 𑌨𑌮𑍍𑌮 𑌹𑍆𑌸𑌰𑌲𑍍𑌲𑌿 𑌨𑌡𑍆𑌵 [illegible] . . [illegible]-

3 [illegible] 𑌗𑍍𑌰𑌾𑌮𑌂𑌗𑌳𑍍 𑌕𑍊𑌟𑍍𑌟𑍆𑌵𑍆 [illegible] 𑌶𑍍𑌰𑍀𑌰𑌂𑌗𑌨𑌾𑌥 𑌦𑍇𑌵𑌰𑌿𑌗𑍆 𑌕𑍊𑌟𑍍𑌟 𑌗𑍍𑌰𑌾𑌮𑌂𑌗𑌳 𑌜𑍋𑌡𑌿𑌯𑌨𑍍 𑌕𑌳𑍆-

4 [illegible] 𑌉𑌤𑍍𑌤𑌮𑌨𑌂𑌬𑌿 [illegible] 𑌬𑌿 . . . [illegible] 𑌶𑍍𑌰𑍀𑌰𑌂𑌗 𑌨𑌾𑌥𑌦𑍇𑌵𑌰𑌿𑌗𑍆 𑌕𑍊𑌟𑍍𑌟 𑌸𑍁𑌣𑍍𑌡𑌕𑍍𑌕𑌾𑌯𑌿 𑌗𑍋𑌵𑌤𑍍𑌤-

5 𑌕𑍍𑌕𑍁𑌡𑌿 [illegible] 𑌗𑍍𑌰𑌾𑌮𑌂𑌗𑌳 𑌜𑍋𑌡𑌿[𑌕]𑌳𑍆 [illegible] 𑌦𑍇𑌵𑌰𑌾𑌯𑌮𑌹𑌾𑌰𑌾𑌯𑌰𑍍 𑌕𑍊𑌟𑍍𑌟 𑌤𑍊-

6 [illegible] 𑌵𑌿𑌜𑌯𑌰𑌾𑌯𑌮𑌹𑌾𑌰𑌾𑌯𑌰𑍍 𑌕𑍊𑌟𑍍𑌟 . . . [illegible] . . . . 𑌗𑍍𑌰𑌾𑌮𑌂𑌗𑌳𑌨𑍍𑌨𑍁 𑌉𑌤𑍍𑌤𑌮𑌨𑌂𑌬𑌿𑌗𑍆 𑌨𑌾𑌮 𑌕𑍊𑌟𑍍𑌟 [illegible]-

7 [illegible]

8 [illegible]

9 [illegible] 𑌉𑌤𑍍𑌤𑌮𑌨𑌂𑌬𑌿 𑌗𑍆 𑌶𑍍𑌰𑍀𑌰𑌂𑌗𑌨𑌾𑌥𑌦𑍇𑌵𑌰 [illegible]-

10 [illegible] . . . . [illegible]

11 [illegible]

12 [illegible] 𑌶𑍍𑌰𑍀𑌰𑌂𑌗𑌨𑌾𑌥𑌦𑍇𑌵𑌰 [illegible] 𑌶𑍍𑌰𑍀𑌰𑌂𑌗𑌨𑌾𑌥 𑌦𑍇𑌵(𑌂)𑌰𑌿𑌗𑍆 [illegible] 𑌗𑍍𑌰𑌾𑌮𑌂𑌗𑌳 [illegible]

13 . . [illegible] [𑌨𑍈][illegible] 𑌉𑌤𑍍𑌤𑌮𑌨𑌂𑌬𑌿 [illegible] [𑌂𑌰]𑌕𑍊𑌟𑍍𑌟 𑌗𑍍𑌰𑌾-

14 . . . [illegible] . . . . [illegible] . [illegible]-

15 ஸ்ரீவத்ர யிவரிமெ கொயிஸி . வர . . . ஸகலஜ்ர ஸகலஜ்ர . . .
ரோமி ஸ்ரீரம்மத . . . கெ கக்ஷ்ரோமி ஸ்ரீரம்மதாய தெவர வம்ஜ-

16 வ்ரதஷ்டாரவத்ர தயஸிய[1]ரவிமெ . . . வதிககி நாஉ ராஸி . . . .
வ்ராணித . . . . கொ[ம*]ஜஹாரமெ யிவ்ராணிமெ உத்தரத-

17 ழபிமெ ராயஹவத்ர சிக்தயிஷிதவாமி . . . . வத்ர தெவர-ம்ர்பி வஹியஸ்
பர . . . . ஸஹவத்ர பரத்ர நாஉ கொடுட ராயஹவ-

18 த்ர தெவர ஹஜ்ஞாரத்ரஸ்ம ஹரி . . . . . உ

No. 311

(*A.R. No.* 84 *of* 1937–38)

ĀRYABHAṬṬĀḶ-VĀŚAL, INNER WALL-RIGHT OF ENTRANCE

No date

States that **Uttama-Nambirāya,** the brother of **Chakrarāya,** obtained fro Prauḍha Dēvarāya (I) several honours like the royal umbrella, ornamen vehicles, etc., and the proprietory rights of administration in the temple. T record is in Sanskrit in Grantha characters.

Text

1 ஷ்வஸ்திஶ்ரீ [ः*] ஜ்ரைராஜஶ்ரீதெவராயபாத்ரஹத ஜிதரு ஜெளக்ஷிக ஸ்ரத்ர-ச்ரழ ஹெளய
ழழ ஹர்ய ழழ

2 கதகஜகரூபழ காஹலெ ஜீவிகெ ச । ப்ராவக் ஹெளவண-ஃஜ்ரழ ஜணிமணவ
ரம்மரு—

3 ஸ்ரீரதவாயொவாஹம் ஹெஜழ கலாரழ விஜயதமரவதெர-த்தெர கழவிரராய ः [।
த்ரஜ்ரீவெடகதெவராயதர்ய-

4 வதிவ்ராவ்ரஷ்ட-ரதெளக்ஷிகஸ்ரத்ராஹாவிதஹெளயஜெஜகரூபீஜீவ்ரவ்ரிகாஹல
ஸ்ரீளாத-த்தெரா-

5 ய வஷ விஜயக்ஷாணீவதெ ः காஜ்ரதழ ஜக்ரம ஹெஜகலாரரம்செிதயபரா ः ப்ரா
ப்ரதாவொஜ்ரத ः । [।ர*]

6 காரர்யவாஜ்ர(வா)யவிஸ்ர ரீதஹொசிரத்ரி-ஃகாழ காம்க்ஷிதாத்ர-வ்ரழ-வெிஜ்ரிரம்
ஃஜவ்ரிகா[ழ*] । ராரிரஷ்டவெஜவவ்ர்ய ரம்மயாஜ-

7 ய-ஞ்ஜஹொ[2]। ரர்யாழ்ரீகிம்காரவ்ர ஜெவராயஹவ்ரவதெ ः । [।க*]வாவ்ர ஹெவ
ஹவ்ரிவ ச்ரத-ஜ்ரீவீகா ஹவதராஜஹெஜக-ழ-

8 ஹாகலாஹஜஜ்ரவாஜ்ராஜ்ர்[3]சிஜ்ரஜெளக்ஷிகாதவ தஹ ஜ்ரகாஹலழ ராதர்யவழ-ஹவ்ரஷ்ர
வாஹதாதி ராழ்ரஜ்ரவீக் । [ர*]

9 ரர-ஹஜவ்ர-[।*] யவ்ரிஜ்ரர்வ்ர்ஹாரவ்ரயழ ஹணிவதெள கிஜ்ராதி ரம்மெ ஹரிः வாஜ்ரம
ஹஜ்ர-ர்யஜ்ரிவதத்தஜெளள-

10 ஜ்ரிஹ்ரஜா வாத்ரி-ர்வா ः யஹெர்யாவெஜ்ரெஹவஜெ உஹெம்ஜ்ர்யபரவ[:*]ஸ்ரீவக்ரராஜெ
ஹ்ரகக்ஷாத-த்தெராய-

11 வஷ ஹ-வெ ஹஜ்ரரி ரம்மாயிவ ः । [।ஏ*]

---

[1] for நயஸியவரிமெ

[2] Read ய-வ்ர-ஃஹொ

[3] The mistake of *yati bhaṅga* has occurred in the syllable ஜ்ரா in this word.