Proposal to postpone encoding of the new Tulu script from the Karnataka Tulu Sahitya Academy

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(*Karnataka Tulu Sahitya Academy will be referred to as 'Academy' in this paper*)

The Academy has proposed a Tulu Script Unicode Proposal L2/21-019 :
https://www.unicode.org/L2/L2021/21019-tulu.pdf

The authors of this paper have examined this closely and have come to the following conclusions :

1. The Academy's modified character orthography does not present a character model that would align with the Unicode Standard.

2. Ongoing modifications do not seem stable enough for a permanent repertoire of characters.

3. User communities (both scholarly and modern revival communities) will benefit from dedicated repertoires and glyphs.
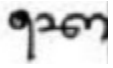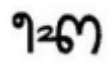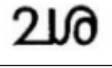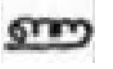
────────────────────── < Elaborating on this > ──────────────────────

1.

The Academy's modified character orthography does not present a character model that would align with the Unicode Standard :

The Tulu-Tigalari script was used exclusively to record the Sanskrit language. The Academy is trying to introduce this script to write the Tulu language. In-order to do this, several missing characters have to be introduced to the Tulu-Tigalari script. While the academy could have simply added the missing characters to the original orthography, the route taken seems to be extremely different. Adding the missing character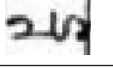s would be the most straightforward way to add the support to write the Tulu language. Instead, the Academy has modified the original script to a large extent as illustrated in a few examples below.

Several characters representations are inaccurate when compared to the existing manuscript forms. A few of these characters mirror the inaccuracies found in the Burnell's chart (from 1878) :

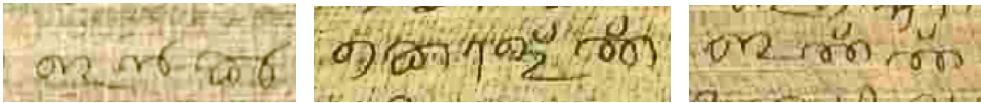| Character	AC Burnell's South Indian paleography	Academy's Proposal	Original Tulu-Tigalari
AI	೧ೞಣ	೧ೞೂ	೧ೞೞ / ೧ೞೞ
KHA	೮ಒ	೮ಒ	೮ಒ / ೮ಒ
NGA	೮ಇ	೮ಇ	೮ಇ
CHA	೨ಒೞ	೨ೞಠ	೮ಠ / ೨ಠ
NYA	೮ಌಠ	೮ಌಠ	೮ಠ / ೮ಠ / ೮ಠ

Tulu-Tigalari manuscripts in Tulu language have the Vowel/Vowel Signs A and AA associated with what is identified as 'TULU LETTER u̱' by the academy and 'ೞ' by the Tulu-Tigalari proposal. Academy proposes to use the <Vowel/Vowel Sign U + Virama> to represent the same. This combination with the vowel U seems to be influenced by Malayalam orthography and does not follow the original orthography as seen in the eight Tulu language, Tulu-Tigalari script manuscripts.

Academy's Proposal :

ೞ	TULU LETTER u̱	೮ಠ

Tulu-Tigalari Proposal to represent ೞ :

vowel : ೮ಠ , vowel Sign : ◌̆

(LEFT) N ೮ಠ, K ೮ಠ (CENTRE) LL ೞ̆ , TT ೮ಠ , Tulu Word : KOLLೞTTೞ, ಕೊೞೆತ್ತ್
(RIGHT) TT ೮ಠ , TT ೮ಠ, Tulu Word : ITTೞTTೞ, ಇತ್ತೆತ್ತ್
(SOURCE) Tulu Ananta Vruta Kathe, Govinda Pai Research Centre, Udupi

There are borrowed characters in the Academy's proposal, from the Kannada script, while these character already exists in the original Tulu-Tigalari orthography :

Character	Academy's Proposal	Kannada	Original Tulu-Tigalari
Vowel Sign Vocalic RR	◌ೄ	◌ೄ	ೄ / ೄ / ೄ
LLLA	ೞ	ೞ	ೞ

The character used by the Academy to represent RRA looks identical to LLLA in the original Tulu-Tigalari Orthography.

Character	Academy's Proposal	Kannada	Original Tulu-Tigalari
LLLA	ೞ	ೞ	ೞ
RRA	ೞ	ಱ	ೞ / ೞ

The Vowel Sign U is represented inaccurately. This Academy's vowel sign will cause confusion with the original Tulu-Tigalari combining TA ligatur forms. For example : P.TA ಌ , S.TA ಌ etc., :

Character	Academy's Proposal	Devanagari	Original Tulu-Tigalari
Vowel Sign Vocalic UU	◌	◌	◌ / ◌

Below are a few glyphs representations proposed by the academy that can lead to confusion as they are of a different character/value in the original Tulu-Tigalari :

Academy's Proposed Value	Academy's Proposal	Original Tulu-Tigalari Value	Original Tulu-Tigalari
KHA	ಬ	CA	ಬ
NGA	ಞ	NYA	ಞ
CHA	ಬೕ	CCHA	ಬೕ

The Academy has taken a lot of outdated standardisation practices and applied it to the Tulu-Tigalari script. The conjunct/ligature behaviour proposed by the Academy, closely follows the modern Malayalam and Kannada orthographies. These scripts were modified due to limitations in the printing technologies and can be handled much better today.

The academy's attempt aims to simplify the script behaviour to a large extent by normalizing variants. It has broken all the ligature forms and has introduced a standard vottu behaviour similar to the Kannada script :

Character	Kannada	Academy's Proposal	Original Tulu-Tigalari	Reformed Malayalam
K.KA	ಕ್ಕ	ದ	ᎣᎣ	ക്ക
KH.KHA	ಖ್ಖ	ಬ	ᎣᎣ	ഖ്ഖ
G.GA	ಗ್ಗ	ಬ	ᎣᎣ / ᎣᎣ	ഗ്ഗ
GH.GHA	ಘ್ಘ	ಬ	ᎣᎣ	ഘ്ഘ

This modified script borrows many of the same principles adopted by the reformed Malayalam script that was invented due to constraints in hot-metal printing and typewriters.

- Normalizing the U, UU, VOCALIC R, VOCALIC RR Vowel signs to be uniform and non-ligating. In the traditional script, they usually ligate (and rather inconsistently) and also change shape with the preceding consonant.
- Simplifying the two-part AU vowel sign to right-side only.
- Choosing simple stacking-forms over conjoined forms (that are common in the Tulu-Tigalari manuscript forms).

Character	Traditional Malayalam	Reformed Malayalam	Traditional Tulu-Tigalari	Academy's Proposal
K.U	കു	ക്കു	ൽ	౦
T.U	ഇ	ത്തു	ൽ	౦
K.UU	ക്ക	ക്കൂ	ൾ	౦
T.UU	ഈ	ത്തൂ	ൾ	౦
K.VocR	കൃ	ക്കൃ	ൃ	౦
T.VocR	ഈ	ത്തൃ	ൃ	౦
K.AU	കൌ	കൗ	ൌ	౦
T.AU	തൌ	തൗ	ൌ	౦
K.K.U	ക്ക	ക്കു	ൽ	౦ (? not clear)
K.T.U	ക്ത	ക്തു	ൽ	౦ (? not clear)

Vowels and Vowel Signs for E,EE and O & OO have been shifted around in the Academy's proposal.

The original form of the Tulu-Tigalari script has no short Vowels/Vowel Signs for E & O. It uses the long Vowels/Vowel Signs EE & OO to represent the same.

The academy has switched the Vowels/Vowel Signs for EE & OO to represent E & O. It has created a new character for Vowels/Vowel Signs for EE & OO.

	Academy's Proposal	Original Tulu-Tigalari
Vowel E	౦	---
Vowel Sign E	౦	---
Vowel EE	౦	౦ / ౦
Vowel Sign EE	౦	౦

Vowel O	ಇ	---
Vowel Sign O	﹖◌ೕ	---
Vowel OO	೮ಃ	ಇ / ಛ / ೞ
Vowel Sign OO	೨◌ೕ	೧◌ೕ

2.
Ongoing modifications do not seem stable enough for a permanent repertoire of characters.

The glyphs used by the Academy to represent the invented characters are not particularly stable. They need a broader discussion among it's users before being accepted as a standard form. Currently there seems no consensus regarding which forms to use. Encoding unstable glyphs has proved very problematical in past Unicode script additions. The community can wind up with unreadable, unreliable documents.

Below are three books of recent times that show varying representations of Vowels/Vowel Signs for E, EE, O & OO.

	(A) Book : 'Parishkrutha Tulu Lipi' Dr. Radhakrishna Belluru Kasargod, 2009	(B) Digitised Book : S. A. Krishniah published by RGPRC Udupi	(C) School Text Book : 'Tulu Aksharamaale' By the Academy Mangalore, 2011	(D) Academy's Proposal: L2/21-019 23/09/2020	(E) Original Tulu-Tigalari
Vowel E	ಎೂ	ಎಾ	ಎಾ	ಎೂ	---
K.E / V.Sign E	೧ಡ	೧ಡ	---	﹖◌	---
Vowel EE	ಎಿ	ಎಾ	---	ಎಾ	ಎೂ / ഝ
K.EE/ V.Sign EE	೮ಡ	---	೧ಡ	﹖◌	೧◌
Vowel O	ಇ	ಇ	ಇ	ಇ	---
K.O / V.Sign O	೧ಡೕ	೧ಡೕ	---	﹖◌ೕ	---
Vowel OO	೮ೕ	---	೧ಡೕ	೮ಃ	ಇ / ಛ / ೞ
K.OO / V.Sign OO	೮ಡೕ	---	---	೨◌ೕ	೧◌ೕ

The Academy's has published several primers to teach this script. While these books have examples of the ligature forms, their proposal does not support this behaviour. (Source : G V S Ullal, Tulu Akshara Maaley, Approved by the Tulu Sahitya Academy, Mangalore, 2012)


Ligatures formed with vowel signs U, UU (recorded as-oo-below in Koo), Vocalic R are different from the proposal.


Cover pages of many books published by Academy reflect the traditional forms like Repha, T.U, K.U ,T.YA etc.,. These are not mentioned in their proposal. The below images read Karnataka Tulu Sahitya Academy, Kudala (ಕರ್ನಾಟಕ ತುಳು ಸಾಹಿತ್ಯ ಅಕಾಡೆಮಿ, ಕುಡಲ).

The book 'Tulu lipi parichaya' published by the Academy in 2008, uses the traditional A+Virama. Their proposal however supports the U+Virama combination to support the same sound.

ಲ | TULU LETTER *u* | ಲಿ
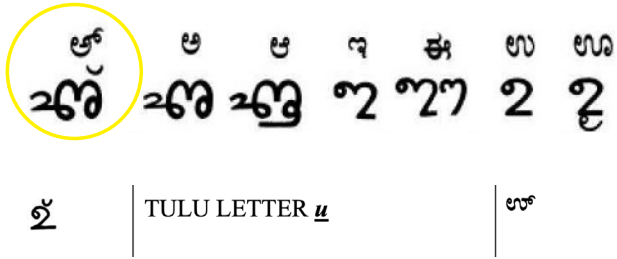
Ligated special forms of Virama are not mentioned in the Academy's proposal. However, it is mentioned in a book 'Tulu lipi parichaya' published by academy. Example below : K+Virama.
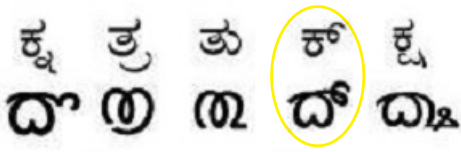
Overall, the so called standardization exercise by the Karnataka Tulu Sahitya Academy comes across as random and preliminary.

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3 ·
User communities (both scholarly and modern revival communities) will benefit from dedicated repertoires and glyphs.

The Tulu-Tigalari proposal closely follows the manuscript forms and hopes to provide a sable platform to build fonts for academic use. There are a few basic differences in the way the characters will be handled in the Tulu-Tigalari proposal and the Academy's proposal :

Academy's Tulu Proposal	Tulu-Tigalari Proposal
Virama is a control character	Virama is an independent character
Virama is used to create conjuncts	A separate joiner character is used to create conjuncts
Supports disjoint Vowel Signs	Supports Vowel Ligatures
Uses disjoint conjuncts	Supports both ligated and disjoint conjuncts
Reph is a ligature and not encoded separately	Repha is encoded separately

Vowel/Vowel Sign E & O uses the Vowel/Vowel Sign EE & OO from the original orthography	Retains the Vowel/Vowel Sign EE & OO as is
Characters like KHA, NGA, CHA, LLLA, RRA are interchanged between both these orthographies.	

Clarifications requested from the Tulu Sahitya Academy on the Unicode Proposal L2/21-019

"Poets like Arunabja, Vishnuthunga have enriched the Tulu literature by their outstanding works and have retained the treasure of old Tulu in their literary works. Tulu has uniquely preserved its word vocabulary in oral traditions as well as its word-original forms in transcribed palm leave manuscripts."

Please give reference to where these palm leaf manuscripts that are available. Also, what script is used in these manuscripts? Its unclear if the Tulu poems are written in Kannada or Tulu script.

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"There is one more variant of same known as 'Tigalari Script'",

Please provide proofs based on manuscripts to illustrate the difference between these two script.

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During the time of Madhvacharya (Seer, Krishna Mutt, Udupi), Tulu script was very popular in Tulunadu. Madhvacharya wrote all his literature in Tulu Script. In fact, he used to put his signature in Tulu Script. Hence the period of 11th to 12th century could be considered as the evolution period for Tulu Script. People had strong religious affiliation to this script since most of the characters in Tulu script are written in clockwise orbital (because of the importance in Hinduism) and also people had a strong will to inscribe all ritual *mantras* in Tulu scripts.

Grantha Script transformed into Arya script, Tulu Malayalam Script, Tulu Script, Tigalari Script on various period of history and taken form of current Tulu Script.

Where is this information found in the Burnell's book quoted above. Please specify the references. The Burnell's book has the following as he's referring to Tulu-Malayalm script (pp.42) :

[2] I have been told by a Brahman of the Mādhva sect that the founder (Ānandatirtha, † 1198 A. D.) wrote his works in this character on palm leaves, and that some are still preserved in a brass box and worshipped at Uḍupi. It is probable, but I have not been able to get any corroboration of this story. The MSS. (if still existing) must be reduced by time to the condition of tinder; for the oldest MS. that I have seen in S. India which was of the 15th century, could not be handled without damage to it.

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"Tigalari Script on various period of history and taken form of current Tulu Script.".

Is this from Burnell's book or VenkatarajaPuninchithaya's book? Do clarify.

_____

"A book in Hindi about Indian scripts lists Tulu script as a separate script. Thousands of manuscripts in Tulu script were found in Tulunadu. Most of them relate to Veda, Vedanta, Jyotisha, Sanskrit literature, medicine, etc. Venkatraja Puninchathaya discovered "Shree Bhagavatho", an epic written in Tulu script and Tulu language. Thereby he proved that Tulu script used to write Tulu language also has a history of ancient literature. After that he discovered, edited, and published ancient books titled Kaveri, Devi Mahatme and Mahabharatho. S. R. Vighnaraj discovered, edited and published 9 th chapter of Tulu Bhagavatho. Radhakrishna Belluru discovered, edited and published Tulu Anantha Vrata story, some manuscripts of 5 th chapter of Tulu Bhagavatho, and some more manuscripts. Many inscriptions in Tulu script were found in Tulunadu. One copper inscription was also found in Tulunadu."

Pg 4 mentions manuscripts and inscriptions in Tulu script. Please provide attestations of these Inscriptions and manuscripts and sample images along with transcription if possible. Does it reflect the modified orthography?

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"Due to the efforts of KTSA lot of interest has been generated among the people of Tulunadu to revive and use the Tulu script." Pg 5.

The Academy's proposal is not reviving the traditional Tulu script and orthography as seen in manuscripts and inscriptions. Rather, the Academy is using a new orthography which is still preliminary and not fully accepted by all scholars and the user community. There are many inconsistencies between the traditional Tulu script and with the Academy's proposal.