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Typography in Publication Design

Tending to the Inheritance of Tulu Script

A work in progress

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Abstract: Tulu is a language from South India that had a script of its own. This script over time disappeared due to the introduction of Kannada printing presses. Tulu which was largely an oral language has seen two renaissances where many literary works have emerged and is today as much a written language as spoken one. In this context, there is scope for reviving the old Tulu script by rendering it with appropriate technologies that make it easy to use.

This paper describes the project to standardize the Tulu script and consequently translate it into a usable typeface. It discusses the need for bringing back the Tulu script and the steps that need to be taken in order to employ the script at various levels.

Key words: Indic Script Standardization, Tulu Script, Tulu Font, Tulu Typeface, Indic script, Indic Typeface, Proto South Dravidian Language, Minority Language, Tulu Lipi.

1. Introduction

पुराणमित्येव न साधु सर्व ।

न चापि काव्यं नवमित्यवद्यम् ॥

संतः परीक्ष्यान्यतरद् भजते ।

मूढः परप्रत्ययनेय बुद्धिः ॥

“Ancient knowledge need not be superior merely by the virtue of age; nor is the present-day noesis necessarily inferior. The wise examine before approving while the fools accede to others’ views.”

1.1 Before it's Written Off—Need for Linguistic Diversity and Role of a Native Script in the Cultural Landscape of Language

Language is a tool that helps us understand each other. A script is the messenger which transmits language on behalf of the speaker. The manner in which a script is used (written/ presented) personifies the message. We read into the way things are presented to us visually beyond the written words. If I were to engrave this paragraph calligraphically on a wall, it would completely transform your experience of reading it, yet, the matter would remain the same. Typefaces and symbol systems have a large role to play in communication today. One must have the facility to communicate with minimum distortion of the intended message which goes beyond the written message itself. Communication designers provide for such tools wherever there is a need for effective communication.

Messages are often read between the lines. A script for a language is like its personality. It's a garb worn to identify its roots. It is a function of its lineage. It is a code of belonging to a specific faction. During a *Yakshagaana* performance, the characters are dressed in their traditional costumes as it is the identifying element of the message and puts it in the right context for the audience to interpret and take pleasure in. I would therefore say that every effort should be made to clothe a language in its authentic script and further render it in appropriate typefaces.

Language/script revitalization activities are of great importance where the practices of intergenerational transmission of language and cultural traditions are fading. Change is constant. Human nature needs it despite the anxieties that are attached to it. Homogeneity leads to monotony and loss of identity. Who we are has a lot to do with how we perceive ourselves.

In India, despite the multilingual ecology, speakers of many minority languages are migrating towards dominant speech communities. This is usually a result of social, political and economic pressures. Such practices over a long period of time commonly results in the loss of personal identity and indigenous knowledge. Under such circumstances, it is refreshing to see Tulu, a minority language receive a good amount of attention by its native speakers. The attitude of this entire community towards protecting, promoting and maintaining its linguistic and cultural heritage has been gathering a healthy momentum.

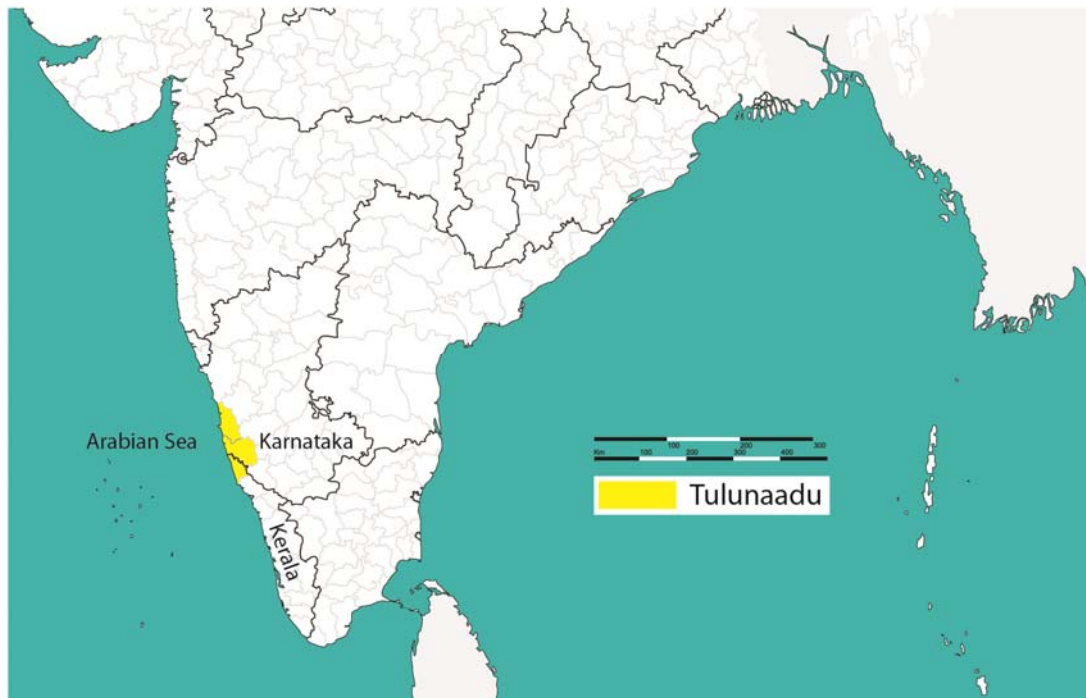


Figure.1 The yellow highlight marks the region called *Tulunaadu*

1.2 About Tulu, the language, the heritage and its people

Udupi and Dakshina Kannada districts of Karnataka and Kasargod district of Kerala constitute the birth place of a language called Tulu and this region is therefore popularly known as '*Tulunaadu*' which literally means 'the land of Tulu'. Tulu refers to both the language as well as the culture. Native speakers of this language are called *Tuluvas*. Tulu is considered one of the highly developed languages of the Proto-South Dravidian stream and the existence of an independent Tulu state with a distinctive culture of its own can be traced back to over 2,500 years. *Tulunaadu* has been a curiosity for many owing to its characteristics that have incorporated several native and non native customs that has resulted in a unique, strong and vibrant culture. A culture that is still alive and vigorous despite the high levels of migration out of this region.

Today, Tulu is spoken by a community of around 1,552,259 speakers (source: census of India 1991) and is estimated to be twice this number if the Tulu Diaspora residing outside of India is taken into account. Tulu still remains a practical and functional language spoken across the social domain of *Tulunaadu*.

Tulunaadu, previously known as the Dakshina Kannada District, boasts of a high percentage of literacy. Ironically, *Tuluvas* are mostly unaware of the existence of a Tulu script that

was used to write this language as recently as fifty years ago. The disappearance of Tulu script is ascribed to the Basel Missionaries who set-up a press in Mangalore and introduced Kannada script to publish books in Tulu language in the 19th century. This was accepted as a pragmatic solution by the bilingual Tulu minority community; *Tulunaadu* being contiguous to a large Kannada speaking region.



Figure.2 First printing press set-up by the Basel Missionaries at Mangalore
(Courtesy: Basel Mission image archive, Basel)

During my final year project as a graphic design student, I opted for Tulu script research and revival. This was in the year 2005. Most people I approached regarding this were convinced that Tulu did not have a script. I found a book at Mangalore University by Dr A C Burnell called *The Elements of South Indian Paleography*. He was the first to formally document the Tulu script in the year 1874. This was my first glimpse into the world of Tulu alphabets. Later I got to meet some manuscriptologists and researchers who knew about script. I was also lucky to learn the script from a few people who use even now, for mainly religious purposes.

Much has changed over the past seven years. Discoveries of several Tulu epic poems and novels amongst the old manuscripts have renewed the interest in this script amongst the *Tuluvas*. Today, there is popular consensus amongst the *Tuluvas* to breathe life into this ancient script and create a robust ecosystem for transition of Tulu from a largely spoken to

a written language. Tulu literature has seen a revival and is written and published in Kannada script. Efforts have been made to introduce Tulu script. But this effort has not been researched sufficiently nor implemented effectively. However, there is a genuine interest in this. There are a few eminent scholars who disagree with this point of view as they feel a modified Kannada script would serve the purpose better. It would be unfair to not take this argument into consideration and let the people decide with the options presented to them.

2. Tulu Script Revival Project

Tulu script revival is the main objective of this project which would entail the development of a set of fonts, creating instructional books/ websites and other materials for learning the script and developing relevant computational tools to support the fonts. The first stage in this exercise is to make a comprehensive Tulu character set with inputs from the fields of Linguistics, Manuscriptology, Archaeology, Mythology, Theology and Typography.

The initial research project is divided into three stages. Stage 1 involves looking at the social context of Tulu as a culture, language and a script. Stage 2 deals with delving deeper into the details of relevant topics at various stages of research. The Stage 3 is script specific and is about filling in the gaps regarding the major influencing factors that shaped the Tulu script.

3. Tulu Script

3.1 History of Tulu Script

Traditionally, Tulu script was taught mostly from father to son and this practice resulted in the script getting distorted over time and different geographic regions. This polymorphic quality of Tulu written script calls for great care and proper examination in the course of formulating a unanimous glyph set. Once the different versions of the script are identified, the next step is to examine it from a typographic and linguistic perspective and come to a consensus for the initial glyph-set.

Every character is studied from the standpoint of various influencing factors like the source of information, writing materials, historic and cultural influences, distortion due to various natural conditions, influence of other scripts and so forth.

Letter 'ka' - from Brahmi to Grantha

𑀓 𑀔 𑀕 𑀖 𑀗 𑀘 𑀙

Tulu script samples

𑒀 𑒁 𑒂 𑒃 𑒄 𑒅 𑒆 𑒇 𑒈 𑒉

Figure.3 Evolution of Tulu Script from Brahmi and versions of Tulu script

(Ref. Brahmi to Grantha, Ganesh Vidya, Lipikar Sri Wakankar)

Tulu was and still remains largely a spoken language and is well-regarded for its oral traditions. *Tulunaadu* was ruled for over a thousand years by the Alupas Dynasty who were feudatories to other rulers who mostly patronized Kannada language. This is how Kannada became the language of commerce in these coastal districts but Tulu remained the spoken language. Tulu Brahmins who migrated into this region from other parts of India adopted the later Chola Grantha script to write Sanskrit texts. Consequently, this script was used to write Tulu literature and became popular for letter writing, account keeping and in other religious practices. Over the course of time, the Chola Grantha characters used in this region morphed to what we call the Tulu Script. To this day, the Tantric symbols in the *rangolis* of this region use Tulu script.

Around the 16th century, this form of Grantha script was adopted famously by Ezhutachan in Kerala for writing Malayalam and was called Arya-ezhuttu. This consequently became the present day Malayalam script replacing other parallel competing alphabet systems.

3.2 Standardising the Script and Making it Functional for Tulu Language

All through the course of this project, ambiguities arising from the influence of Kannada, Malayalam and original Grantha scripts are examined carefully while deriving the Tulu Script Set. Some samples even bear unmistakable influences from English running hand seen very clearly in the slant and character structure of the hand.



Figure.4 The Influence of Grantha on Tulu Script. The later influences of Malayalam and Kannada on Tulu can also be seen.

Hundreds of script samples are collected and studied from various sources belonging to different regions of *Tulunaadu*. It is from these samples an approximate skeleton of Tulu handwritten characters is dawn out and strung together to form a complete Tulu script set.

A few glyphs such as the double half-u vowel diacritic (Virama+ half u) present in words like 'aayennhu' (here n will be halved and u will be halved) need further examination with inputs from various sources.

A few vowels and Matras required to write Tulu are not found in the Tulu script. The addition of these new characters to the original script allows for better representation of the language in its written form. To arrive at a consensus to determine the required characters, the functional load between the Tulu phonemes is examined and the final character set determined based on this.

These additional characters are designed to follow the logical style and structure present in the rest of the Tulu script and introduced as an addendum to the existing glyph set. These characters have not received unanimous acceptance, yet, a number of experts have given their consent towards this. Since it's a logical step towards making Tulu script a functional script set for Tulu language, it would be advisable to include these new characters. Yellow highlights in the figure. 5 indicate the new characters.

TULU CHARACTER REPERTOIRE

Magenta text indicates characters unique to Tulu script.

Yellow highlights new characters (addendum).

Vowels

(half centralised a) ṁ	ṁ	ṁ
(Half Back ā) ṁṁ	ṁṁ	ṁṁ
a	ṁ	ṁ
ā	ṁ	ṁ
i	ṁ	ṁ
ī	ṁ	ṁ
u	ṁ	ṁ
ū	ṁ	ṁ
r	ṁ	ṁ
ṛ	ṁ	ṁ
!	ṁ	ṁ
!	ṁ	ṁ
(half mid e) ε	ṁ	ṁ
(half front ē) εε	ṁ	ṁ
e	ṁ	ṁ
ē	ṁ	ṁ
ai	ṁ	ṁ
o	ṁ	ṁ
ō	ṁ	ṁ
au	ṁ	ṁ

Consonants

ka	ṁ	ṁ	ṁ
kha	ṁ	ṁ	ṁ
ga	ṁ	ṁ	ṁ
gha	ṁ	ṁ	ṁ
ṅa	ṁ	ṁ	
ca	ṁ	ṁ	
cha	ṁ	ṁ	
ja	ṁ	ṁ	
jha	ṁ	ṁ	
ṅa	ṁ	ṁ	
ṭa	ṁ	ṁ	
ṭha	ṁ	ṁ	
ḍa	ṁ	ṁ	
ḍha	ṁ	ṁ	
ṇa	ṁ	ṁ	
ta	ṁ	ṁ	
tha	ṁ	ṁ	
da	ṁ	ṁ	
dha	ṁ	ṁ	
na	ṁ	ṁ	
pa	ṁ	ṁ	
pha	ṁ	ṁ	
ba	ṁ	ṁ	
bha	ṁ	ṁ	
ma	ṁ	ṁ	

Nasalisation

(anuswāra) ṁ ṁ

Semi-vowels		Special Characters	
ya	𑍩 𑍪	(visarga) ḥ	𑍫
ra	𑍬 𑍭	(arka) r-	𑍮
la	𑍯 𑍰	(virama/ halantha)	𑍱
va	𑍲 𑍳	(arka + virama)	𑍴
śa	𑍵 𑍶	(nukta two dots below)	𑍷
ṣa	𑍸 𑍹	(avagraha)	𑍺
sa	𑍻 𑍼	śrī	𑍽
ha	𑍿 𑎀	(purna virama)	𑎁 / 𑎂 / 𑎃
la	𑎄 𑎅	(double danda)	𑎆 / 𑎇
la	𑎈 𑎉	ōm	𑎊

		Numerals											
		0	1	2	3	4	5	6	7	8	9	10	100
Telugu-Kanarese	0	౦	౧	౨	౩	౪	౫	౬	౭	౮	౯	౧౦	౧౦౦
Tulu	0	𑍫	𑍬	𑍭	𑍮	𑍯	𑍰	𑍱	𑍲	𑍳	𑍴	𑍵	𑍶

Tulu Number System

11	20	21	25	30	200
𑍫𑍬	𑍬𑍭	𑍬𑍮	𑍬𑍯	𑍬𑍰	𑍬𑍱

Figure.5 Tulu Script set. The yellow highlights indicate the newly characters that are not traditionally present in the script. The magenta text indicate the new phonemes identified in the Tulu Lexicon (Volume -1 published by Rakshtrakavi Govinda Pai Research Centre, Udipi).

3.3 Varnamala - A string of letters

Tulu script has 18 vowels, 2 diphthongs (Tulu language has 8 diphthongs but only 2 of them are represented as a glyph, source: Tulu Nigantu, Rashtrakavi Govinda Pai Research Centre), 26 consonants (amongst this, there are 6 nasals and 11 semivowels, trills, laterals and fricatives), 11 numerals (from one to 10 and 100) and a special form of full-stop that is seen in some manuscripts.

3.4 Conjuncts (Consonant Clusters/ Ligature)

The numbers of conjuncts in traditional Tulu script are numerous. It is however impractical and clumsy to add endlessly to the glyph set. 94 conjuncts that are seen frequently across various script samples are added to the character set. As more samples are examined, some more may be added.

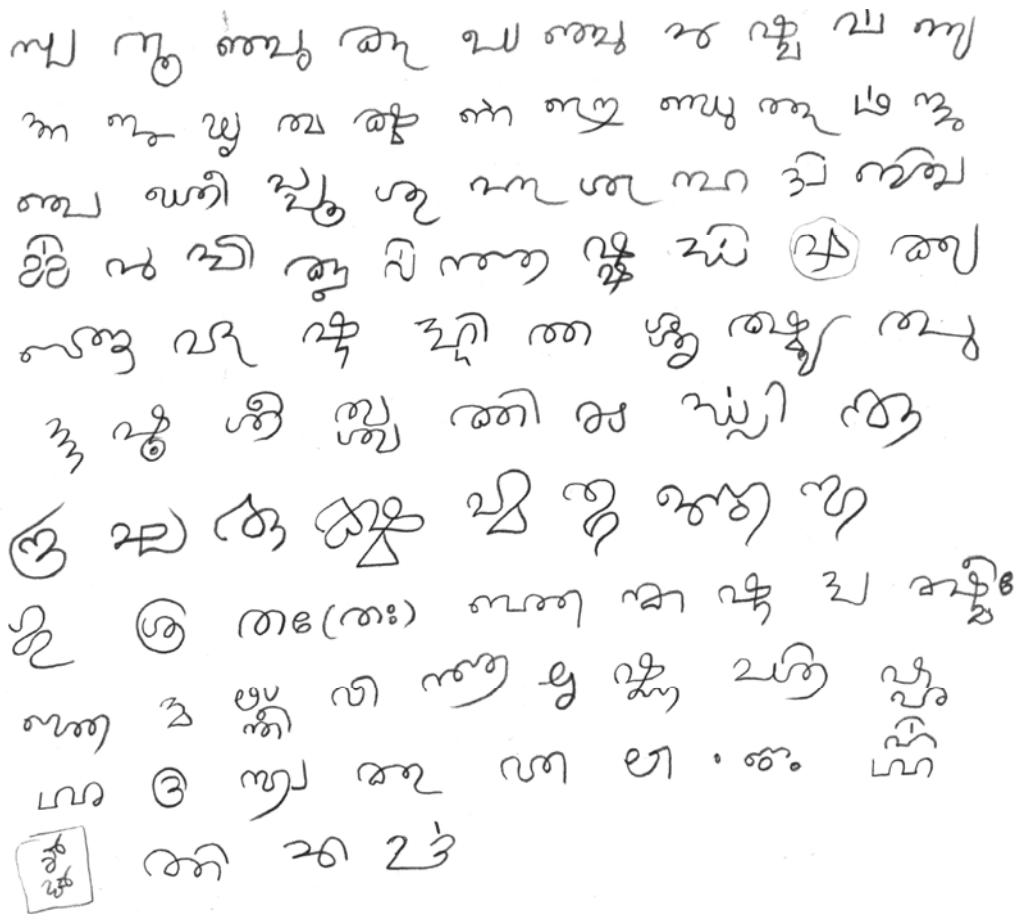


Figure.6 A few Tulu Conjuncts samples found in manuscripts around Udupi district

3.5 Sanké (Number)

Tulu has traditionally used Telugu-Kanarese number systems. It is however found recently that Tulu had its own numerals and number system (S R Vighnaraj, Sri Manjunatheshwara Samskriti Samshodana Pratishtana, Dharmasthala). These are included in the typeface along with the Telugu-Kanarese numerals as an option. This is done primarily keeping in mind the need for accurate documentation of manuscripts and give flexibility of choice to the end user.

3.6 Vattakshara - Compound Character

Tulu script is an ambugida and like most other Indian scripts. Consonants and Semi-vowels become Vattaksharas when added to another consonant or semi-vowel. The standard practice is to add Vattaksharas as post base forms (stacked forms) to the lower right of the Consonant (refer, Figure. 9). Malayalam script that is a close relative to the Tulu script has gone through a revival and this practice of writing Vattaksharas has been modified to be placed next to the halved consonant using the Viama Matra. This adds to the even grey value of the page and improves the visual quality to a large extent. When it comes to Tulu script, this practice can be easily adopted and used as an alternate option. The general consensus however is to adopt the traditional method which is also used in writing the Kannada script. The typeface will provide for both these options and the issue will have to be resolved after studying it further from both visual and cultural perspectives before standardizing the practice.

3.7 Matra (vowel sign diacritic) and Vattakshara

Matras are dependent vowel signs that are attached to a single consonant/ semi-vowel or a consonant/ semi-vowel cluster. These signs appear before, after, on top of, below and sometimes attached to the bottom right of the characters.

The three ways of writing Tulu are:

1. Adding Matra to both the Top character (which constitutes character height) and the Vattakshara. (Refer, Figure. 7)

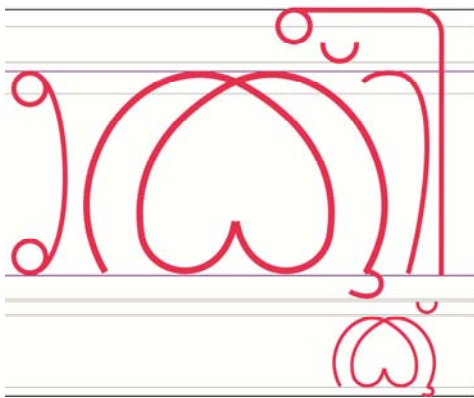


Figure.7

2. Adding Matra on the top, right and left of the Top character and the lower Matra combined with the Vattarkshara. (Refer, Figure. 8)

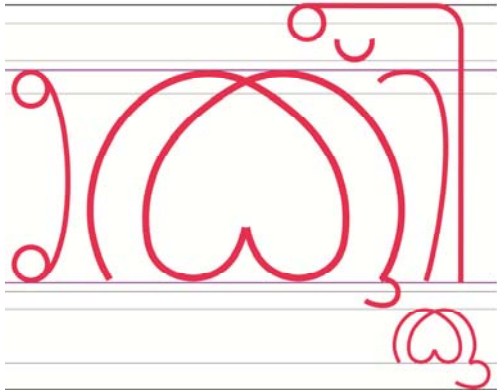


Figure.8

3. Matra added to the Top character and Vattakshara placed below it. (Refer, Figure. 9)

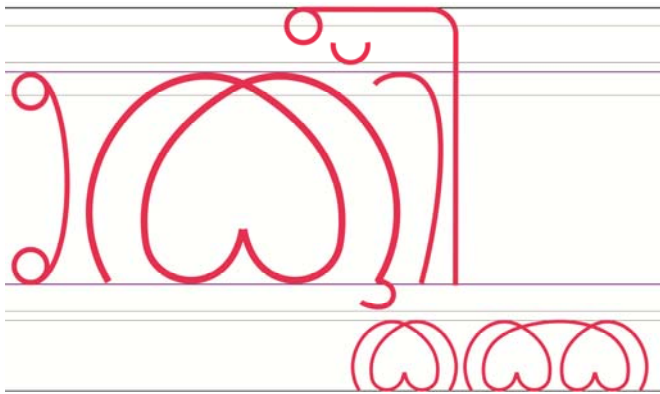


Figure.9 The standard method of writing Vattakshara

(If there are more than one Vattakshara, then they are placed next to each other in the order of their pronunciation and the Matra will apply to the last consonant/ semi-vowel.)
(Refer, Figure. 9)

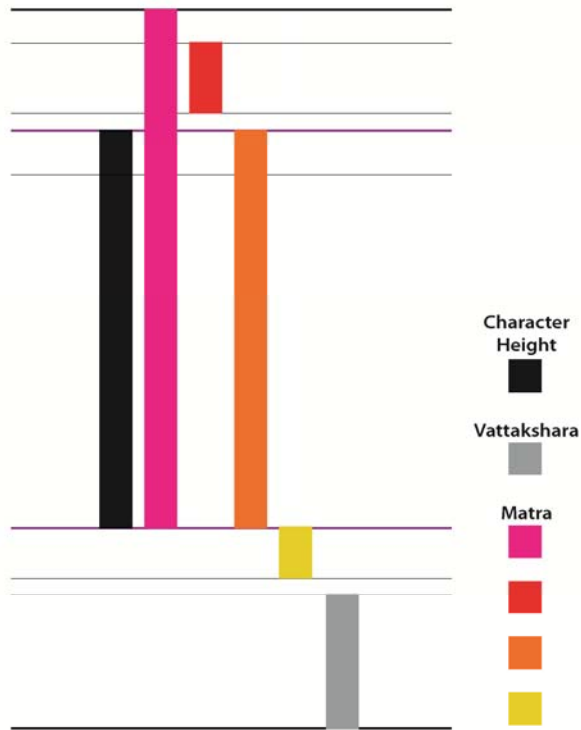


Figure.10 Grid for the Typeface based on option 3 of writing Tulu

Options 1 and 2 are rare, uncommon and clumsy. Therefore, the conventional system of attaching the Matra to the main conjunct/ semi-vowel mentioned in option 3 is adopted for the typeface.

4. Tulu Typeface and the Challenges it Presents

Tulu script set which is being used to make a set of typefaces can be seen in Figure. 5. Since this an early attempt at reviving an existing script, the characters are designed to make it a medium for learning the script. Stress is given to structure and the original form of the characters as it is supposed to be written. The intended use of this script is for the instructional books to learn Tulu script, to support the Unicode proposal and for documenting Tulu Manuscripts. Definitive steps need to be taken to ensure the original script is presented in its simplest and most authentic form. There will be obvious visual inconsistencies at times. However, the typeface can be rendered in a manner that better suits print and screen purposes subsequently.

Tulu script was used mostly on palm leaf manuscripts. Since straight lines were damaging to the grains, the script took on a curved character with minimal horizontal and vertical strokes. A stylus was used to engrave into the dry palm leaves. Tulu manuscripts are known for their writing style that resembles a string of pearls, that is to say, neat, rounded, with

an even stroke thickness and perfectly spaced characters. This is the basis for the typeface. A very simple, clean typeface with minimal deviation from the script.

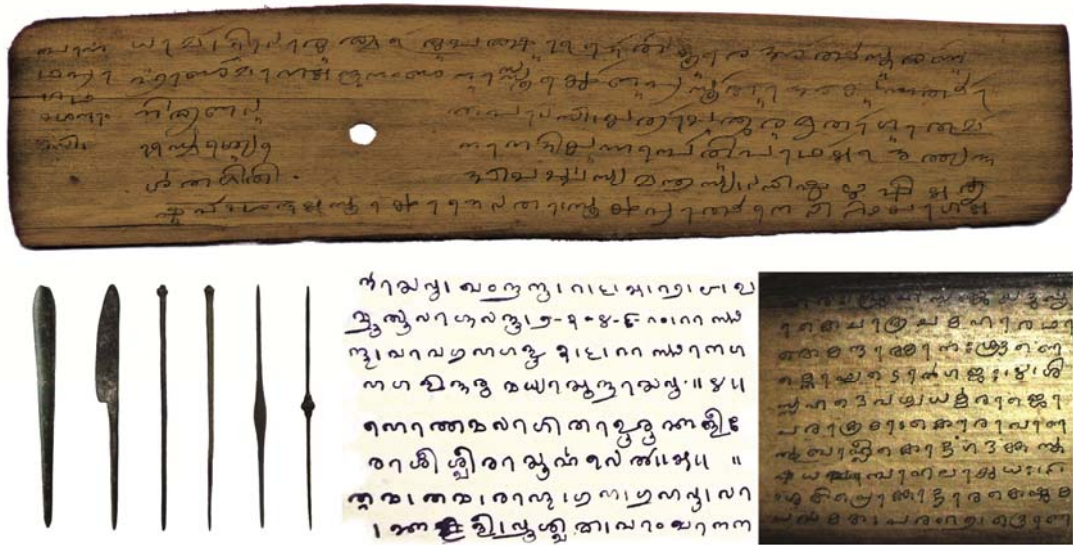


Figure.11 Samples of Tulu writing on palm leaf seen on top and bottom right and images. The top image shows the practice of writing titles, numbers and notes on the left margin of a manuscript. This sample is from Dodmane, Udupi. The lower center image shows a more recent sample with ink on paper (Sri Manjunatheshwara Samskriti Samshodana Pratishthana, Dharmasthala). The bottom two writing styles are more commonly seen in *Tulunaadu*. To the bottom left are different kinds of stylus use to inscribe on a palm leaf. The second stylus from the left has a knife on one end to cut and trim the palm leaves and the other end has been sharpened to write on the palm leaves.

4.1 Clear-cut characters for better Readability

It is essential to make the written word unambiguous for better readability. Tulu script has many characters that look similar. These characters are rendered with easily distinguishable features which will translate well in handwriting. This is done taking into account the original characteristics of the script and only the demarcating features are slightly exaggerated or where there are common multiple variations of a glyph, the one that stands out most in its uniqueness is selected. The character ‘da’ looks very similar to the number 3. This is the only character that needs special care while designing future typefaces.

ka	𑌒		𑌒		𑌒
ca	𑌒	𑌒			
pa	𑌒		𑌒	𑌒	
ma		𑌒			𑌒𑌒𑌒
va		𑌒		𑌒	𑌒𑌒

Figure.12 Many Tulu characters are traditionally found to be written in a manner that is confusing as the glyphs are very similar in shape. The above table shows one example of such similar characters. The characters highlighted in yellow indicate the ones that were selected to be taken forward for each phoneme to avoid confusion between the characters.

4.2 Need for Alternate Characters

Some characters have more than one way of writing them. Since it is the early stages of this script, both the options are included in the typeface.

4.3 Balancing the Characters

Care needs to be taken while adding thickness to the character as they are largely curved forms adding to the complexity of this exercise. The center of gravity often needs balancing as some characters are not balanced and tend to look unstable otherwise. The counters and curves of the characters that are more complex tend to look clunky and heavy. This is managed by altering and stretching the curves evenly; making room for more breathing space within the character and adding to the even grey value on the whole.

Stage 1 : Collecting and analysing Tulu Script samples (example character : \bar{a})



Stage 2 : Grouping similar characters

repeated forms (mirror images)

\bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a}

one straight line

\bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a}

\bar{a}

\bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a}

\bar{a}

\bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a}

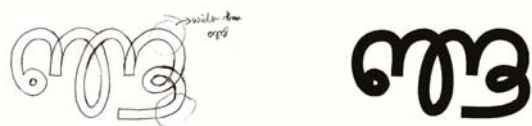
\bar{a} \bar{a}

\bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a} ; \bar{a}

Stage 3 : Refining the Skeleton

Stage 4 : Adding thickness

Stage 5 : Adding thickness (curve stress based on handwriting samples)



Stage 6 : Creating the glyph (refining the curves on the computer)



Figure.13 The various stages involved in making a typeface- briefly illustrated for the character \bar{a} .

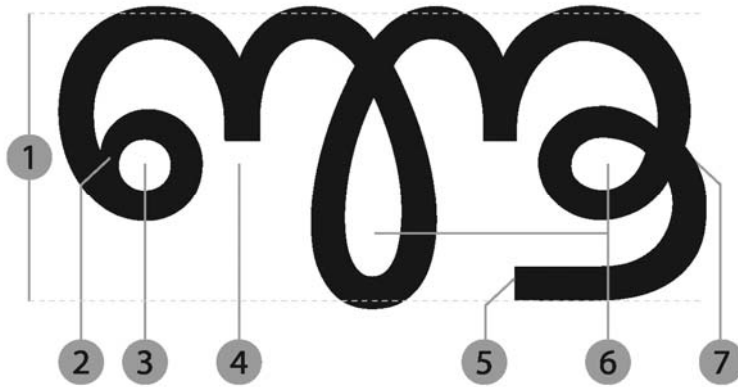


Figure.14 Anatomy of the character ā:

1. Character Height
2. Scaling; to visually balance the mono-linear character
3. Initial counters are circular
4. Character density needs to be managed carefully
5. Terminals are kept simply, horizontal and vertical
6. Knots are common and tricky to balance. Handwriting samples are studied to add stress to the angles.

The typeface is kept simple to aid learning. The approach is geometric and light. The stress is more towards accurately representing the proper glyph structure and takes is prioritized over the visual balance between the characters.

5. Conclusion

The Tulu typeface is being made to enable future Tulu activities in its native script and to efficiently organize the information contained in the past heritage of Tulu manuscripts, literature etc. It is an attempt at reintroducing a forgotten hue to the colorful culture of *Tulunaadu*. The process so far has involved going back to the basics and questioning communication and understanding the various communication systems, materials, past events and scripts that have influenced Tulu script. The journey so far has mapped-out the foundations and has suggested the direction forward. The challenges of learning the basics of linguistics, paleography, manuscriptology and typography has been exhilarating, despite the lack of any funding or resources, as is common in the research into Indic scripts and typefaces.

Reviving the Tulu script and making a comprehensive typeface is an attempt to add to the popular movement in aiding the revitalization of this ancient language and culture towards

further development. A comprehensive Unicode proposal for the representation of the Tulu Script by a team of qualified people is being prepared for technical evaluation. This project is an attempt at formulating relevant methodologies in reviving minority scripts, and demonstrates how these scripts can be revived from old manuscripts and successfully transformed for use on contemporary mediums such as print and screen.

As language planning and formalization takes a forefront for Tulu today, we see Tulu typefaces playing an important role in shaping the linguistic landscape of Tulu people. Efforts in these fronts have so far translated into introduction of Tulu as an optional language in schools across *Tulunadu*. Books and study materials for learning Tulu script need to be written and designed for this purpose. This will be taken-up as an initiative consequent to completing the typeface. Books, study materials and websites teamed with creative education programmes will be designed and organized.

Technology allows for the representation of multiple points of view. This includes the use of multiple languages and scripts in today's technological devices. There is ample space for the existence and proliferation of Tulu typography which would in turn help the *Tuluvas* communicate their thoughts and traditions more effectively.

Acknowledgements

Girish Dalvi, S R Vighnaraj, Sri Manjunatheshwara Samskriti Samshodana Pratishtana, Dharmasthala, Basel Mission, Rashtrakavi Govinda Pai Research Centre, Udupi, Dr Vinod Vidwans.

References

- Figure 1. Map, Arun Ganesh, District Boundaries accurate upto 2001.
Elements of South Indian Paleography, A C Burnell, Mangalore, 1874.
Tulu Lexicon, Volume 1 (1988). Rashtrakavi Govinda Pai Research Centre, Udupi.
Transliteration Std. ISO 15919, 2000(1.0).