Reinventing Tamil Script

Transition from Palm leaves to digital screens

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Abstract

The rise in number of smartphones and ISP's competition to provide unlimited data at a lower cost has made it possible for people in rural parts of India to access smartphones. These people would want to access technology via smartphones in their regional language as they do not have proficiency in other languages. Recent surveys too confirm this by stating that there has been a decline in the usage of English language across the internet. The truth is, there has been a rise in people expressing their thoughts on internet in a language they are comfortable with, due to the advancements in telecommunication spectrum. Ever since, there has been a push to create digital typefaces for non-Latin scripts. Supporting this statement is a report, released by NASSCOM-Akmai Technologies last August, which said, 'by 2020, there will be an estimated 730 million Internet users in India — and of the new users, 75% will access it from rural India, and a similar number will engage using local languages.' This gives rise to the question, if we have enough fonts for every regional language, especially Tamil, which happens to be my native language. Upon reading through the works of various researchers and scholars, it was evident that the typeface designers and other tech giants like Google and Adobe have realised the potential to create digital fonts for Indian markets. Over the past few years, there have been a flurry of digital Indic fonts making its way to the font repositories, but these works are predominantly designed for Devanagari and other north Indian scripts like Bengali and Guajarati. Tamil is given very little attention. This thesis aims to identify the gaps in the research and typographical works of typeface designers, thereby establishing why there is a need for more digital Tamil fonts. This study also acknowledges the time and effort it takes to create a typeface for Tamil script. It is partly due to the number of characters and also because it requires proper understand of the writing system. If ignored or slightly modified, these fonts might become illegible. Therefore these typefaces, while retaining their linguistic features, must be made available to the native readers, for them to customise them based on their requirements. With Google and Adobe expressing interest in Variable fonts and also trying to expand their Indic typeface collections, this thesis explores the solution of using type design technologies like OpenType Variable fonts, to reinvent Tamil script for digital screens.

Acknowledgements

I would first like to thank my parents and friends for all their love and constant support, without which I would not be where I'm now. Also, I would like to take this opportunity to thank my Tamil tutor Jeyanthi, who inspired me at a very young age to explore the boundless beauty of Tamil language.

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Ramya Srinivasan

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Introduction

This thesis aims to establish the pressing lack of typefaces for Indic scripts, with the focus on Tamil script, for the growing digital world. Majority of the content found in the internet were in English language in mid-nineties. However, there is a decrease in use of the English language, which can be attributed to the growing diversity of scripts and languages. This change has been brought about by Digital technology. Technological tools have enabled people to communicate in a language of their choice. India, a vast multi-linguistic country, is trying to mark its footprint in the digital world. When this happens, people in rural areas of the country will want to access the technology. Like noted above, they would want to do so in their regional language. While creating Indian typefaces can require knowledge of the writing system, time and attention to detail, this thesis explores the journey of Tamil script from scriptures to its present state. It also analyses if OpenType variable fonts can provide a solution. To the growing need for more digital Tamil fonts.

The following section of literature review sheds light on Indian scripts from a western viewpoint. Indian writings have often been misinterpreted and Indian characters have been approached with roman alphabets. This is explored through the books of famous scholars. This implies the ignorance of Tamil script by westerners. Even at the present, authors do not pay attention to typography and instead focus on the writing system more generally. The typographic beginning of Indian scripts was from outside India. To be precise, European colonisation was the reason that the scripts which were so far engraved on stone pillars and written on palm leaves, were cast out as metals. Due to limitation in understanding of the Indian writing systems, Indian scripts were initially cast with Latin typefaces. The birth of Indian typography is revisited in this section through the writing of Fiona Ross. There has been a growing body of young researchers and typeface designers such as Vaibhav Singh and Erin McLaughlin, interested in Indian typography. However, their areas are limited to Devanagari and other north Indian scripts. The publications of these authors are also analysed to explore the questions of why other Tamil script requires attention and what can be the feasible solution in this matter.

First chapter explains the origin of Tamil script. Tamil and almost 200 other different scripts originated from one source, Brahmi. Tamil, derived from Grantha, which in turn is derived from Brahmi, originated in eight century. It occupies a very special position in the family of south Indian languages. This chapter explains the development of the writing style of the script, CV (consonant and vowel) sequence and combinations. This chapter will also describes the script reforms that the Tamil script underwent. Following this, second chapter summarizes the journey of Tamil script from palm leaves to hot metal. Tamil was the first Indian script to be printed in India. It was the work of the Portuguese missionaries. The origins of Indian typography and the transition of these fonts from metal cast to electronic screens are discussed in this chapter.

The next chapter on analysis, explores to find a solution to the question that comes out of chapter two, which is, why there is a need for digital Tamil fonts. For this, this chapter considers the research done by growing body of type designers and identify the gaps in their research works. This chapter explores on using OpenType variable fonts. Creating a font from scratch is time consuming, while sharing the source code can help other type designers to create entirely different and unique font with much ease. Many Indian type designers are releasing their digital font designs with open source license. This ensures the code is readily available for other designers, enabling them to contribute for the digital scripts. There has been a recent push to create typefaces for world's writing systems. This has been identified by many tech giants. Google is now including digital Indian fonts in its open source Google Font repository which is a welcoming move. Ultimately, this thesis, apart from throwing light on the history and development of Indian typography, establishes how variable fonts can help the Indian font family by paving way for various Indic fonts to mark their presence on the digital screen.

Literature Review

It is fascinating that we still use the term 'non-Latin' to represent all writing systems of the world that does not include Latin alphabets. Even the people with best intentions to contribute towards non-Latin typefaces, have this word embedded in their vocabulary. This very idea of calling everything that does not belong to Latin as non-Latin, although they have their own differences, shows the contempt that westerners had for languages other than English.[1] When westerners saw the potential to convert people of India, they decided to use their print technology for their conversion purposes.[2] However Graham Shaw in his article *An Initiative That Backfired*, writes that using printed materials for conversion purpose did not turn out as they expected it to. This was because when the printing restrictions were lifted, many small-scale native users started to print and publish their own books in their printing press. Other religious organisations realised the potential of printing and how Christian missionaries were using them for their conversion purposes. They soon started to print slogans opposing the conversion and hence the initiative might have not achieved what it intended but it did leave a scar. According to Adrian Frutiger, a language holds within it the spirit of that time. Tamil script was reformed and refined over the years that the eventually lost its spirit to print.

Till date Roman characters are used in one way or the other to represent Indic scripts. A paper published in the *Trailblazer: Colloquium in Communication, Composition and Conversion – a Compendious Convergence* conference by Srinivas S. Kumar and Vishvesh Unni Ragunathan, elaborates on the difficulties faced while transliterating Tamil words in Roman scripts.[3] The paper discusses about how the twenty six or so letters of Roman alphabetical writing system complicates the transliteration when it comes to representing the certain sounds, such as vowel sounds. Like mentioned above, using Roman characters to represent Indic scripts began in the middle of sixteenth century. The first Indian script to be printed was Tamil. Due to lack of Tamil typefaces, roman characters were used to print

[1] Fiona Ross and Graham Shaw, *Non-Latin Scripts: From Metal to Digital Type*, ed. by Fiona Ross and Vaibhav Singh (St Bride Foundation, 2012).
[2] Ross and Shaw.
[3] Srinivas S. Kumar and Vishvesh Unni Ragunathan, 'Difficulties in Transliterating Tamil Words in the Roman Script', in *Tamil to Roman Transliteration*, 2019.

Tamil script.[4] Europeans mainly used print technology for their world-dominating purposes. As explained by Fiona Ross, '[the] typographic beginnings of non-Latin fonts were dominated from outside by European powers, their interest being religious and secular. Their purpose was to convert the heathen and impose foreign rule'.[5] When typographical development of Indian scripts began in the end of eighteenth century, the British East India Company encouraged its employees to learn local language to better understand the customs and belief, so they use it in order to rule them.[6] This eventually led to type founders like Joseph Jackson producing Bengali and Devanagari fonts but they were inferior to the designs produced in India.[7]

There has been an extensive linguistic research on Tamil script by authors such as Annamalai. But these research are more focused on the writing system and phonetics, rather than paying attention to typography. In the recent times, there has been a growing number of young researchers and typeface designers such as Vaibhav Singh, Fernando De Mello Vargas and Erin McLaughlin, who are interested in typefaces for Indian scripts. However the research to date and their typeface contributions deals predominantly with Devanagari. Little to no emphasis is given for Tamil script which is one of the oldest surviving language in the world. At the present, it is spoken by almost 61 million people, which constitutes for 6% of the total population. One such research by Vaibhav Singh, analyses Frutiger's Devanagari (Univers) script. In his work, he mentions that the westerners have recurrently failed to understand the writing systems of Indic scripts. There was another typeface designed by Frutiger for Tamil script which has its own flaws too. This is discussed in detail in the coming chapters. However, there has been no more than a handful of research works on Tamil typefaces. One such notable work by Vargas is his dissertation *Evolution of Tamil typedesign: Origins and development*. This thesis discusses in detail about the transition and transformations that Tamil script went through for over three centuries.[8]

[4] Graham Shaw, 'An Initiative That Backfired', *The Hindu*, 4 January 2014 <https://www.thehindu.com/books/an-initiative-that-backfired/article5534044.ece>.
[5] Ross and Shaw.
[6] 'The English East India Company's Language Policy and the Encounter with Persian' <http://shodhganga.inflibnet.ac.in/bitstream/10603/18867/7/07_chapter 1.pdf>.
[7] PIJUSH K. GHOSH, 'An Approach to Type Design and Text Composition in Indian Scripts' (Stanford) <http://infolab.stanford.edu/pub/cstr/reports/cs/tr/83/965/CS-TR-83-965.pdf>.
[8] Fernando de Mello Vargas, 'Evolution of Tamil Typedesign: Origins and Development' (The University of Reading, 2007)

1. Tamil Script

There are almost 200 scripts in India. All of these scripts are derived from one common source. The parent script of all modern Indian scripts is called Brahmi writing.[9] Cristian Violatti, an independent author and former editor of Ancient History Encyclopaedia, in his web article, discusses various research by scholars on the origin of Brahmi script.[10] According to Violatti, some researchers like Georg Buhler proposed that Brahmi was derived from the Semitic script and in the later years Brahman scholars adapted it to suit to the phonetic of Sanskrit and Prakrit scripts. Few other scholars are of the opinion that the predecessor of Brahmi script is from a system of symbols, like those found on graffiti marks that were discovered in several sites across south India, to be specific, in Tamil Nadu. The third position claimed that Brahmi was derived from Indus script. Indus script was a writing system employed in Indus Valley Civilisation. Unfortunately the script came to an end when the civilisation collapsed.

Florian Coulmas, in his encyclopedia, *The Blackwell Encyclopedia of Writing Systems* and also in his other book on *The Writing Systems of the world*, explains that early writing history of India is poorly understood. He agrees with Geor Buhler on his opinion that the Brahmi script can be traced eventually to Semitic source.[11] The basic writing units represents syllables of various consonant and vowel sequence like CV, CVC, CCCV, CVCC, etc., Generally, such scripts would be classified as syllabic, but because the consonant and vowel components are clearly distinguishable and since vowels are represented with diacritic marks attached to consonants, they are classified as alpha-syllabary. This was suggested by William Bright, an American linguistic who specialised in Native American and South Asian languages.[12] Therefore Indic scrips are placed under Abugida, a term proposed by Peter T. Daniels in his journal article. [13] An Abugida refers to a writing system in which

<https://web.archive.org/web/20120311223833/http://www.leonidas.org/rdg/matd/dissertation/FernandoMello_dissertation.pdf>.

[9] Florian Coulmas, 'The Blackwell Encyclopedia of Writing Systems' (Blackwell, 1996), pp. 51–53.

[10] Cristian Violatti, 'Brahmi Script', *Ancient History Encyclopedia*, 2016 <https://www.ancient.eu/Brahmi_Script/> [accessed 30 April 2019].

[11] Florian Coulmas, *The Writing Systems of the World* (Blackwell, 1989).

[12] Bright William, 'A Matter of Typology: Alphasyllabaries and Abugidas', *Studies in the Linguistic Sciences*, 30 (2000), 63–71.

[13] Peter T. Daniels, 'Fundamentals of Grammatology', *Journal of the American Oriental Society*, 110 (1990), 727–31 <http://www.jstor.org/stable/602899 .>.

consonant-vowel sequence are represented as units. As Indic scripts have shared features of alphabetical writing system (vowels have equal status as consonants) and syllabary writing system (character cannot be split into separate consonant or vowel), they are classified as Abugida. Coulmas, lists the following as the characteristics of Brahmi script, which is common for all Indic scripts:

> Brahmi script has graphemes[14] for syllabic and every grapheme has a consonant and inherent vowel as its value
>
> Other vowels are represented by modifying the respective consonant + *a* grapheme in a like manner for all basic consonant graphemes
>
> Consonant clusters are represented by ligatures of which all, but the last consonant grapheme lose their inherent vowel
>
> Inherent vowel can be muted by a special diacritic [they are vowel that appear as a syllable weight above, below, left, right and around consonants to change the inherent vowel], which is typically used with the consonant [above the consonant in the case of Tamil][15]

Brahmi scripts are divided into Northern Brahmi and Southern Brahmi scripts. Derived from Grantha, which is under Southern Brahmi script, is Tamil. It is one of the longest surviving classical language in the world that originated around sixth century.

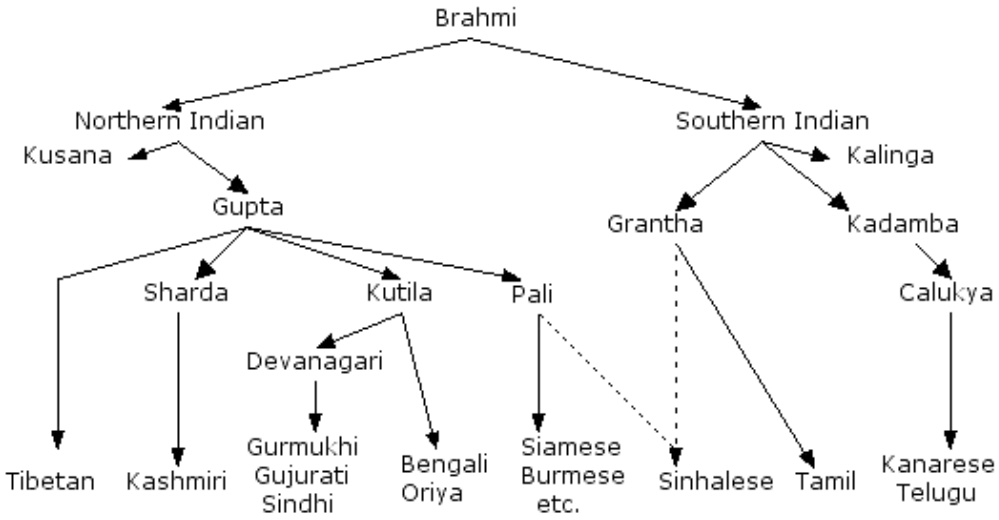


Figure 1: Classification of Indic Scripts by Dr. C. George Boeree, from his article, The Evolution of Alphabets

[14] Grapheme is the smallest unit of a writing system. With the focus on Indic script, a grapheme can be a consonant or a vowel or a combination of consonant and vowel. For example, 'கி' (ki) is represented as a single grapheme, which is the combination of a diacritic vowel 'ி' with consonant 'க்' (k).

[15] Coulmas, 'The Blackwell Encyclopedia of Writing Systems'.

Tamil Brahmi was the version of Tamil which was originally written based on Brahmi. Tamil Brahmi script became more rounded over the fifth century AD. This further developed into Vatteluttu (round) letters. During the sixth century, a new Tamil script called Chola-Pallava script was conceived. The difference between Tamil Brahmi, Vatteluttu and Chola-Pallava script is illustrated below.[16]

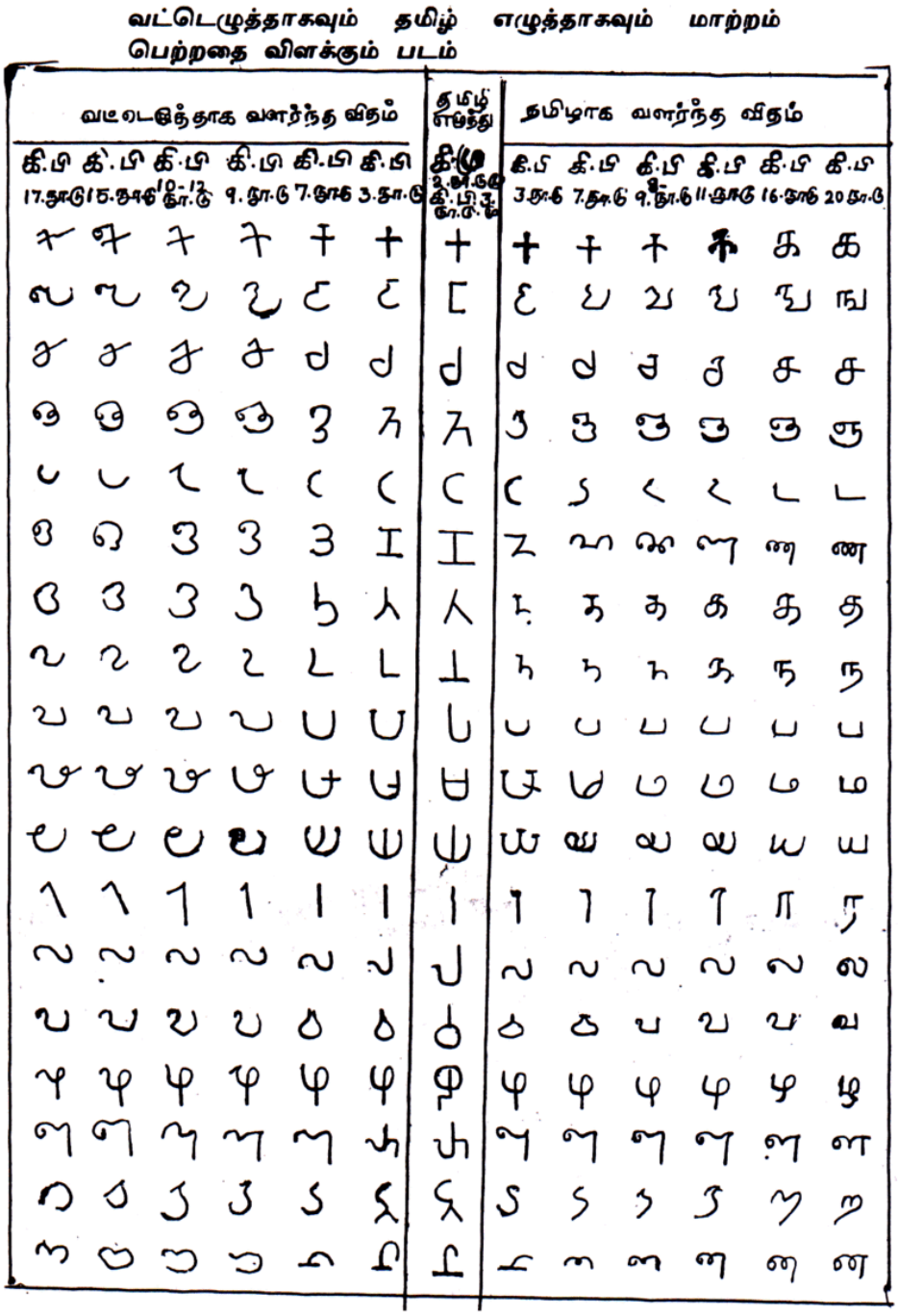


Figure 2: Evolution of Tamil script. In the centre table is Tamil Brahmi, on the left is Vatteluttu and on the right is evolution of Tamil characters from Chola-Pallava script

[16] 'Characters of Tamil', *Tamil Virtual Academy* <http://www.tamilvu.org/courses/degree/a051/a0514/html/a051414.htm> [accessed 8 May 2019].

As seen from the image, the characters of the script seems to take up their shapes, which looks like a child-scribble of the present characters, between ninth and eleventh century. This proves that modern Tamil script evolved from the Chola-Pallava script. During the 19th century, after the European establishment of printing in India, the Tamil script was simplified to make it easier to typeset by Italian Jesuit Constantine Joseph Beschi, who is more popularly known as Veeramanunivar.[17] Beschi, who was fascinated by Tamil, travelled across Tamil Nadu to learn the language. Very soon he not only mastered the language but also started contributing to the language. He compiled the first Tamil lexicon, a Tamil-Latin dictionary. He also compiled the comprehensive Chaturakarati, a quadruple lexicon containing words, synonyms, and categories of words and rhymes. Apart from this, he has also translated some Tamil classics like Thirukkural, Devaaram, Thiruppugazh, Nannool and Aaththichoodi to European languages. Beschi built a church in 1760 A.D. and spend most of his missionary life there. Some of his other works include Thembavani , an epic on St.Joseph; Thirukavalur Kalambagam, a bouquet of poems on our Lady of Refuge and more. Some of his revisions of the Tamil script includes the diacritic dot for consonants (க், ங், ச், etc,.) and writing the long vowels as n instead of கர.[18] While many scholars praise him for his contributions to the Tamil script by calling him the father of modern Tamil script, the truth is that the Tamil script was reformed to adjust the characters for typeset. This would ensure that the missionaries can continue with their conversion measures.

Further simplifications were done by Periyar E. V. Ramasamy, in twentieth century.[19] In 1978, Tamil Nadu government ordered script reform measure, under E.V.R's leadership to eliminate thirteen graphemes and replace them with reformed graphemes, which were combinations of existing characters. An illustration of these changes as displayed in Varagas' dissertation, *Evolution of Tamil typedesign: Origins and development*, is detailed in figure3. A couple of changes, ஐ (ai) to அய் (ai) and ஔ (au) to அவ் (av) were not observed. It is obvious that this reform was done to fit the characters for print, because, in the proposed changes, eleven of them (the eleven non-highlighted characters from the figure) have diacritic marks different from other consonants. This change was done to make the diacritic

[17] Dr. N. Kalaivani, 'Veeramamuni's Writing Reform' <http://www.tamilvu.org/ta/courses-degree-a051-a0513-html-a051353-9965> [accessed 2 May 2019].
[18] Dr S Ve Subramanian, *Thonnool Vilakkam* (Chennai: Tamil Pathippagam, 1978).
[19] S.V. Shanmugam, *Aspects of Language Development in Tamil* (All India Tamil Linguistics Association, 1983).

marks of those eleven characters uniform with other consonants, so it would be easy to type and print. It worth noting that the amendments to the Tamil script were predominantly from non-native users of the script. Ross, expresses her views on script reform as follows:

> Script was made to meet the needs of technology; technology was not made to meet the needs of scripts. Often in the name of script 'reform', 'simplification' or 'rationalization', the design of a font was reduced to minimum, debasing the essence and aesthetics of the script in the process. This was the nadir of Non-Latin typography.[20]

Existing letters	Reformed letters
ஐ	அய்
ஔ	அவ்
னா	னா
றா	றா
ணா	ணா
ணை	ணை
லை	லை
னை	னை
ளை	ளை
ணொ	ணொ
ணோ	ணோ
றோ	றோ
னோ	னோ

Figure 3: Script reform of 1978. The highlighted changes were not followed.

1.1 Modern Tamil script

Tamil script has 12 independent vowels and 18 consonants. As mentioned in Tolkappiyam, a work on grammar of Tamil script, the vowels are called 'uyir' (soul) letters and consonants are called 'mei' (body) letters. They combine to form 216 graphemes which are called 'uyirmei' (living/life-body) letters. In combination, one consonant combines with one vowel

[20] Ross and Shaw.

to form a new character. A consonant cannot combine with more than one vowel at any given time. While a vowel cannot combine with another vowel, under special circumstances, a consonant can combine with another consonant, which is called consonant ligature. But this combination of two consonants is very rare, as those characters would generally be replaced by life-body characters (a vowel, a consonant or a combination of one consonat with one vowel) having similar phenome. To explain better with an example, ஸ்ரீ (sri) is the combination of two consonants ஸ் (s) and ர் (ri). But it is often written as ஸ்ரீ (si). Dr. Gift Siromoney explains about the 'uyirmei' as follows:

> The same soul could enter different bodies and form uyir mey or body with soul. A single soul or uyir could exist by itself but a body or pure consonant could not. Thus a theory for the letters of the Tamil alphabet existed at the time of Tolkappiyar and it reflected the contemporary metaphysical system which included the belief in the transmigration of souls.[21]

Apart from the 12 independent vowels mentioned above, there is a special sign called ஃ (akh). Therefore, the independent 31(12+1+18) graphemes (vowels and consonants) with addition to the 216 grapheme combination constitute to 247 characters. Apart from these, Tamil script has five consonants called Grantha letters borrowed from Sanskrit (represented in below illustration). In Tamil script, positionally derived allophones[22] have to share one and the same graph with base consonant. For example, 'ka' and 'ga' sounds are both represented with same grapheme 'க.' Also, the script has no graphemes for aspirated stops or spirants. Coulman refers to Tamil script as more economical and easier to read than most Indian scripts.[23] He also mentions in *The Writing Systems of the World* that Tamil script has no consonant ligatures. This is contradictory because, as sated above, Tamil script does have consonant ligatures for special cases such as sri and om, but they are rarely used. There are no further details available on whether the consonant ligatures were ignored because it would make printing complicated or if it was added in the later years.

[21] Gift Siromoney, 'The Origin of the Tamil Script', *Tamil Studies*, 2 (1982), 8–23 <https://www.cmi.ac.in/gift/Epigraphy/epig_tamilorigin.htm>.
[22] In phonology, an allophone is one of a set of multiple possible spoken sounds, or phones, or signs used to pronounce a single phoneme in a particular language.
[23] Coulmas, *The Writing Systems of the World*.

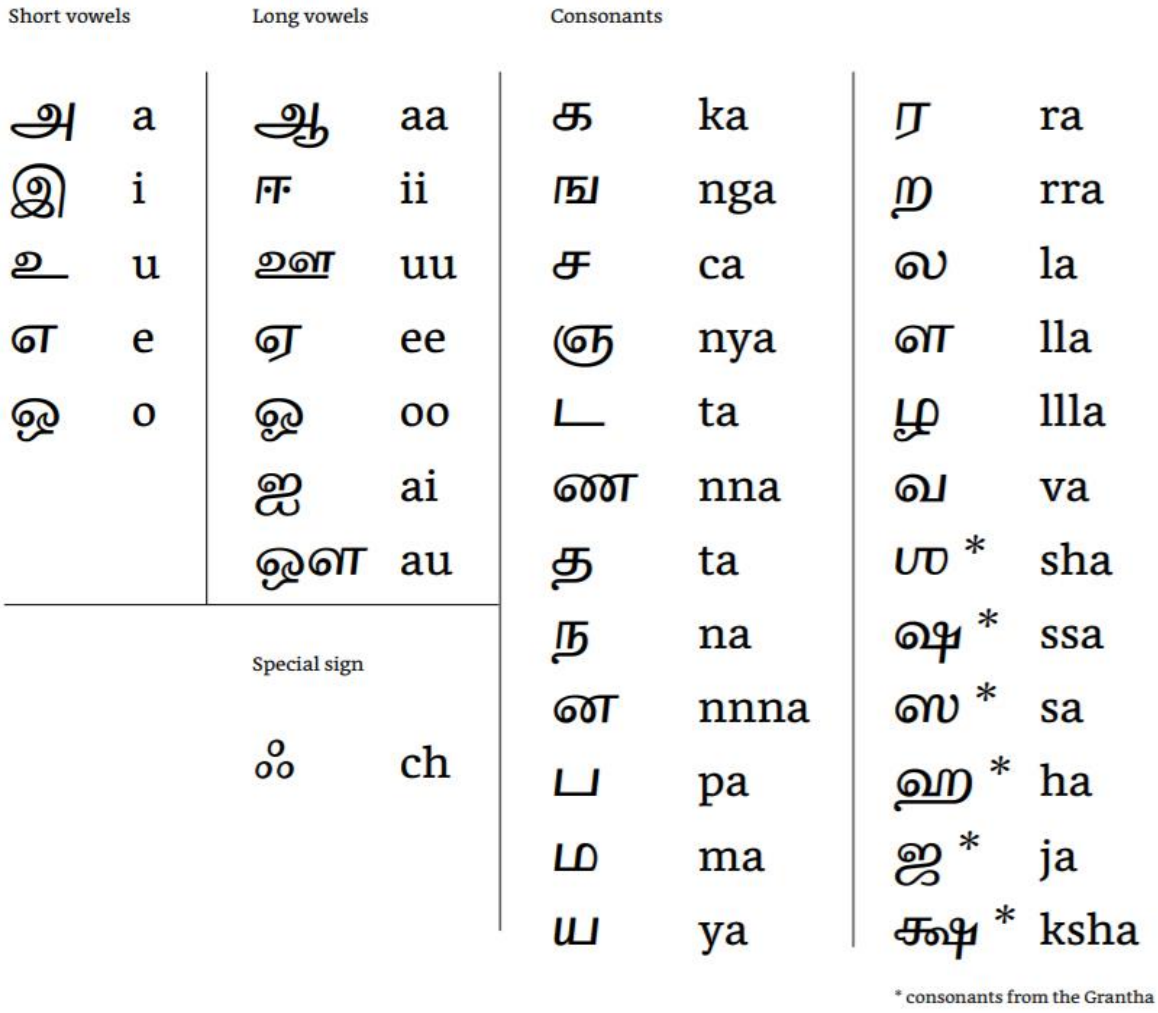


Figure 4: Tamil Script Syllabary

Another distinct feature that distinguishes Tamil from the likes of Sinhalese and Telugu is the convention that the classic form (centamil) of the language must be used for writing and formal speech and is therefore less fossilized than the classical varieties of Sinhalese and Telugu which exists only in writing. Britto, speculates that 'the ancient writers…probably…considered "writing to be sacred" and did not want to adjust it to colloquial speech'.[24] There has been speculations on creating a written version for colloquially spoken language, but no such official orders were passed as of now.

[24] Annamalai,(1986).

2. Transition from Scriptures to Screen

To understand the current state of Tamil script in this digital world, it is essential to explore its colonial past and its transition. While the previous chapter explains about the writing systems and the reforms that the script went through, this chapter aims to explore the journey of Tamil script to digital screens.

Brahmi inscriptions that were discovered in South India, particularly in Tamil-Nadu, are found to contain characters from Tamil script.[25] An interesting fact is that, this script which belongs to the Dravidian language family, has no linguistic affiliation with Indo-Aryan languages such as Sanskrit or Prakrit.[26] These inscriptions are generally on palm leaf, tree bark or stones. In South Asia, it was an ancient widespread practice to use those materials as medium for writing. During the beginning of sixteenth century, when Vijayanagar Empire King Sriranga Rayar, Mysore ruler Raja Woodayar, Madurai's Veerappa Nayakar and Thanjavur's Achuthappa Nayakar were still using copper plates and stones to circulate information. Incidentally, in 1556, Portuguese Jesuits who were carrying a printing press, were on their expedition from Belem to Abyssinia. As the route was long, they took a temporary halt at Goa. Due to political reasons, they did not continue their journey to Ethiopia and thus the printing press stayed in Goa. A synopsis of the letter as given by Fr. C. G. Rodeles is as follows:

> The first batch of Jesuit Missionaries embarked at Belem on the Tagus, and left for Ethiopia on March 29, 1556, four months before the death of St. Ignatius of Loyola. It consisted of Fr. John Nunes, Patriarch of Ethiopia, Fr. Andrew de Oviedo, Bishop of Hieropolis, and appointed as successor to the Patriarch ; Fr. John Gualdames, three Brothers of the Society, and some young men who were soliciting admission into it. One of the Brothers was Juan de Bustamante, who knew the art of printing. King D. Joao, the royal family and other friends had been munificent towards the members of the expedition. The King adjoined to the Patriarch an Indian of good character, an able and experienced printer, to help Brother Bustamante, who was taking with him a printing press to Goa. An eye-witness gives us this information.[27]

Soon the missionary was aware about the potential of printing Christian literatures, which would help them with their conversion purposes. Typographic beginnings of non-

[25] Violatti.
[26] Violatti.
[27] C. G. Rodeles, 'Early Jesuit Printing in India', *The Journal of the Asiatic Society of Bengal*, IX (1913), 154–55.

Latin fonts were dominated from outside by Europeans owing to their religious and secular interests.[28] Ross explains in her book on Non-Latin scripts, that the main purpose of European colonization was 'to convert the heathen and impose foreign rule'.[29] On October 20, 1578, Portuguese missionary Henrique Henriques published 'Thambiraan Vanakkam' which was the translation of Portuguese 'Doctrina Christam,' written by Francis Xavier. For this work, Tamil typefaces were locally cast. While this was officially the first book to be printed in India using an Indian script, Graham Shaw in his article marking the triple century of first bible printed in Tamil, speculates that the first work ever printed in an Indian language in Europe was in Tamil. Portuguese catechism and prayers were published at Lisbon in the year 1554.[30] As there were no Tamil types at that point of time, Roman letters were used to print Tamil script. Whether they transliterated to Roman or modified Roman characters to represent Tamil characters remain unclear. It was after three decades in 1577 that Tamil type were cast in Goa and Coulam in 1577 and 1578 respectively.[31]

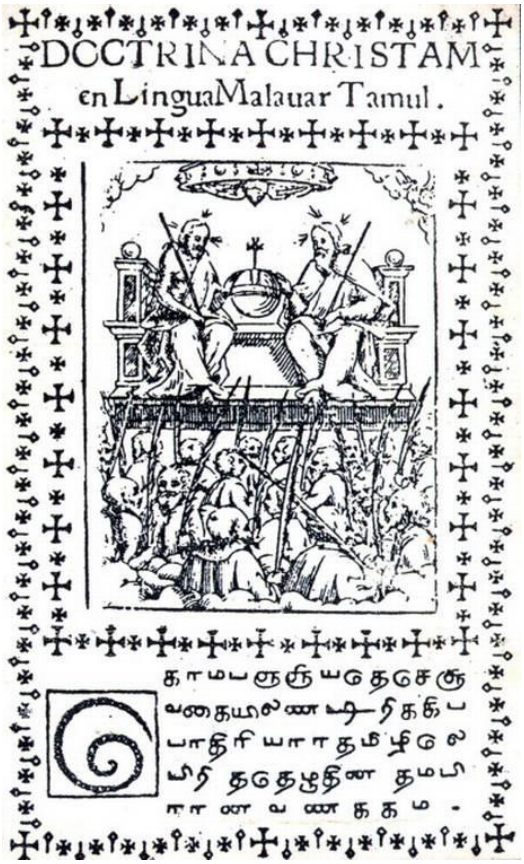


Figure 5: Front page of the book 'Thambiraan Vanakkam' that appeared in 'The Hindu' dated June 2010

[28] Ross and Shaw.
[29] Ross and Shaw.
[30] Shaw.
[31] Ross and Shaw.

When typographical development of Indian scripts began in the 18th century, the British East India Company encouraged its employees to learn local languages. They anticipated that by learning the language, they can better understand the customs and beliefs of the local people, which in turn will be helpful for them to rule these people.[32] This scenario eventually led to type founders like Joseph Jackson producing Bengali and Devanagari fonts. But the fonts produced by them were, to sum up with the words used by Ross, 'inferior'[33] to the designs produced in India. Although Indians had less expertise in type production, they had a much greater understanding of the forms of the script as they were its native users. On the other hand, the British had little to no understanding of the Indian writing system. As a result, there was a competition between the Britain professionalism and the quality of work produced in India.

2.1 History of Tamil Typography

In 1678, Tamil typefaces have been cut in Amsterdam by printing plants such as Horti Indici and Malabarici.[34] In his book *Gramatica Damulica,* Ziegenbalg explains that the Tamil typefaces were so bad that even the native speakers could not understand them. In 1710 another attempt was made in Halle which were sent to Tranquebar, present Tarangambadi, a town in Nagapattinam. These types were called elephant-footed by missionaries, which is recalled by Devanesan Rajarigam, who exclaims that these fonts resemble the fifteenth and sixteenth century inscriptions.[35] Unexpectedly, due to scarcity of paper and also as these fonts were quite huge, smaller types were cast in Tranquebar.[36] The New Testament was printed in 1715. An illustrated example that compares both the types appeared in Bartholomäus Ziegenbalg's *Biblia Tamulica.*

[32] 'The English East India Company's Language Policy and the Encounter with Persian'.
[33] Ross and Shaw.
[34] John Murdoch, 'Tamil Printed Books', 1865 <https://ia601601.us.archive.org/25/items/in.ernet.dli.2015.106253/2015.106253.Classified-Catalogue-Of-Tamil-Printed-Books.pdf>.
[35] Devanesan Rajarigam, *The History of Tamil Christian Literature*, 1958.
[36] Anant Kakba Priolkar, *Printing Press In India*, 1958 <https://archive.org/details/PrintingPressInIndia/page/n13>.

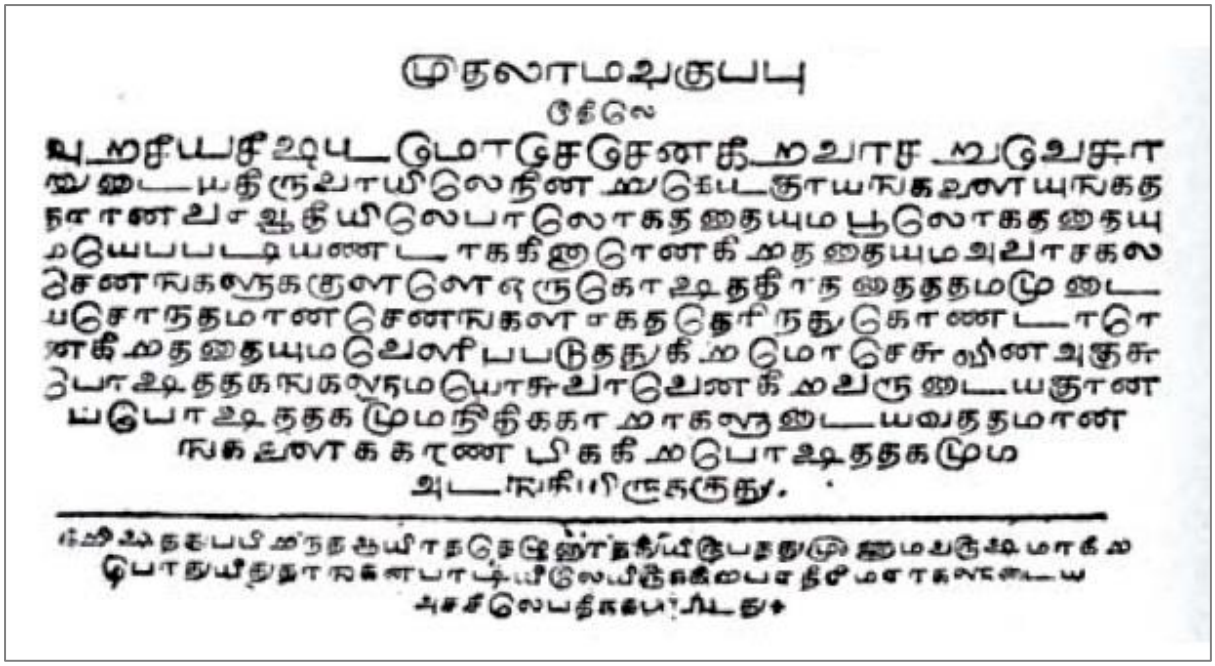
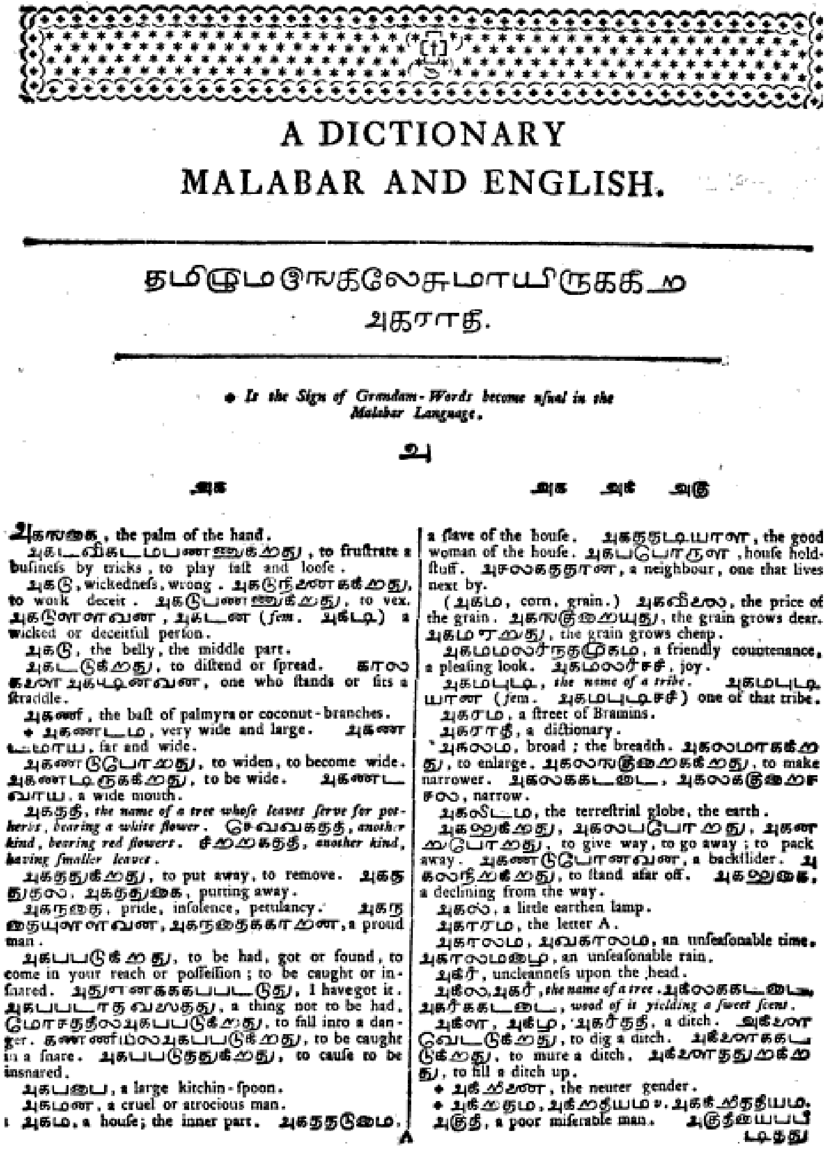


Figure 6: An example from Ziegenbalg's Biblia Tamulica, 1973

The Vepery Missionaries were granted permission by Madras Government in 1761 to use a press taken from Pondicherry. Some books such as a dictionary of Tamil English, a grammar and Tamil translation to John Bunyan's Pilgrims Progress uses types similar to the ones found in Tranquebar.[37]

Figure 7: First page from Ziegenbalg's the New Testament which was translated

[37] Vargas.



A DICTIONARY
MALABAR AND ENGLISH.

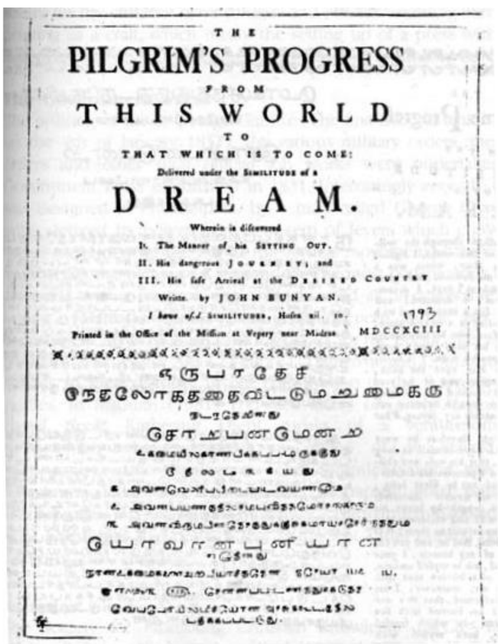
அகராதி.

* In the Sign of Grandam-Words become usual in the Malabar Language.

அ

அகங்கை, the palm of the hand.

Figure 8: A page from A Malabar and English dictionary, by the English missionaries of Madras, by J.P. Fabricius and J.C. Breithaupt, 1779



THE
PILGRIM'S PROGRESS
FROM
THIS WORLD
TO
THAT WHICH IS TO COME:
Delivered under the Similitude of a
DREAM.
Wherein is discovered
I. The Manner of his Setting Out,
II. His dangerous Journey; and
III. His safe Arrival at the Desired Country
Wrote by JOHN BUNYAN.
I have used Similitudes, Hosea xii. 10.
Printed in the Office of the Mission at Vepery near Madras MDCCXCIII

Figure 9: First page from Bunyan's Pilgrim's Progress, Vepery, 1973

2.11 Improvements in Typography

Murdoch states that improvements in Tamil typography is the resultant of the efforts by Mr. P. R. Hunt from American Mission Press. He also states that The American Mission Press raised the standard of printing in the country thereafter.[38] Below is an illustration detailing the works from the American Mission Press.

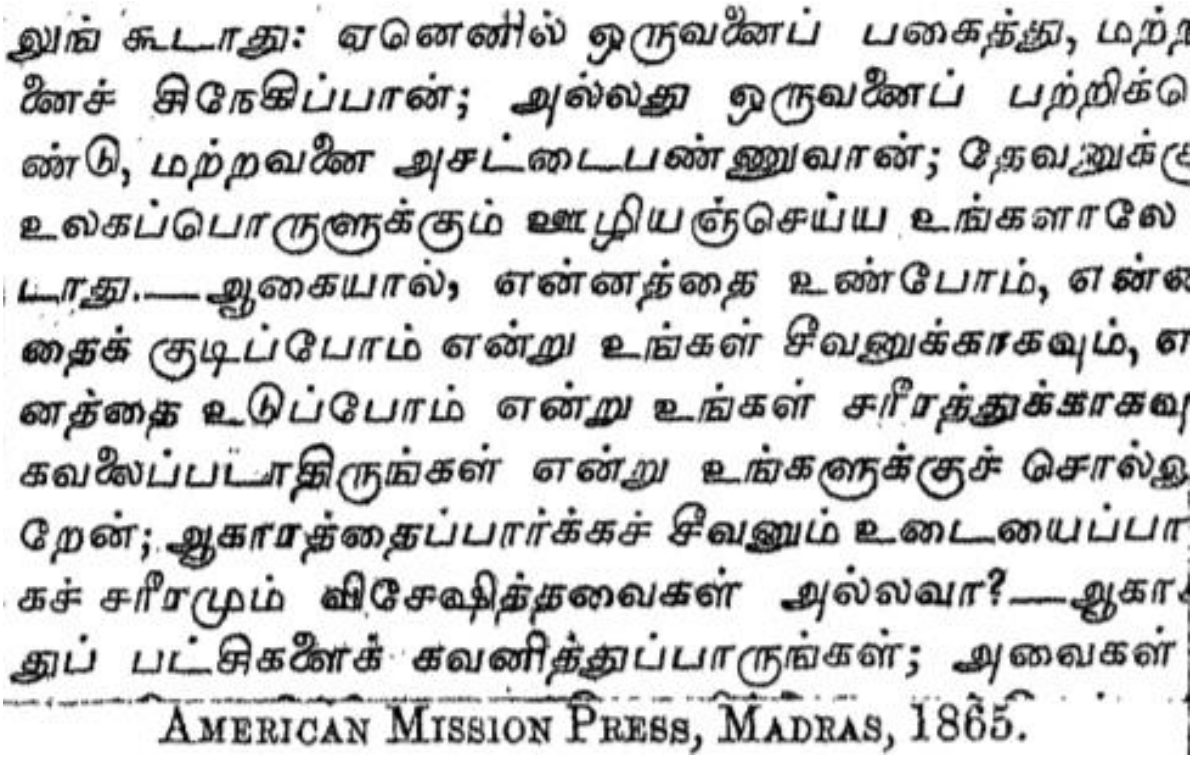

லங் கூடாது: ஏனெனில் ஒருவனைப் பகைத்து, மற்
னைச் சிநேகிப்பான்; அல்லது ஒருவனைப் பற்றிக்
ண்டு, மற்றவனை அசட்டைபண்ணுவான்; தேவனுக்கு
உலகப்பொருளுக்கும் ஊழியஞ்செய்ய உங்களாலே
டாது.—ஆகையால், என்னத்தை உண்போம், என்ன
தைக் குடிப்போம் என்று உங்கள் சீவனுக்காகவும், எ
னத்தை உடுப்போம் என்று உங்கள் சரீரத்துக்காகவு
கவலைப்படாதிருங்கள் என்று உங்களுக்குச் சொல்லு
றேன்; ஆகாரத்தைப்பார்க்கச் சீவனும் உடையைப்பா
கச் சரீரமும் விசேஷித்தவைகள் அல்லவா?—ஆகா
தப் பட்சிகளைக் கவனித்துப்பாருங்கள்; அவைகள்
AMERICAN MISSION PRESS, MADRAS, 1865.

Figure 10: Mr. Hunt's works illustrated in the Catalogue compiled by Murdoch

These new types are more small and narrow than their previous versions. Many researchers states that the typography shows significant improvement. What they miss to notice is the refinement that the characters of the script undergoes in the name of reforming the script for print. This will be discussed in detail later in the next chapter.

In 1835, Sir Charles Metcalf removed restrictions on printing and soon many local presses were established. Initially the printing press were run by family members and they printed and sold their own stories. Murdoch also illustrates comparison between good, medium and bad type. When comparing these fonts to the ones mentioned to be printed by American Mission Press, there is very little change. On the contrary, The American Mission Press did not do well. Instead, the presses and foundries established in Madras, the present

[38] Murdoch.

Chennai, flourished and produced types for twentieth century.[39] Vargas illustrates various examples of Tamil foundry type catalogues from twentieth century. Those examples includes details from Nelson Typefoundry, the Swadesi Typefoundry and Norton and Co. Typefoundry.[40] These illustrations provide an insight into the various styles of the typeface like inline types, thin types, condensed and upright text.

Figure 11: Condensed and upright type

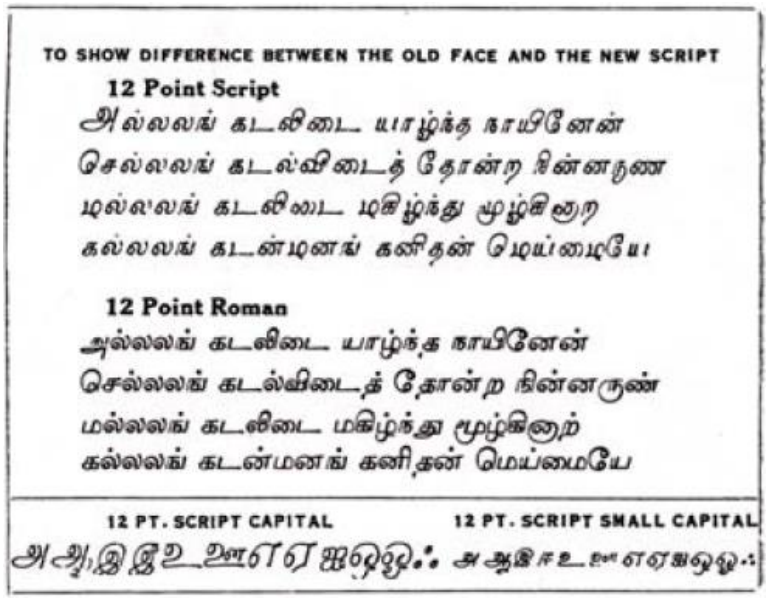


Figure 12: Comparison between capital and small capital versions

Figure 13: Old Tamil type from Norton and Co.

[39] B. S. Kesavan, *South Indian Origins of Printing and Its Efflorescence in Bengal*.
[40] Vargas.

2.12 Modern Tamil Typography

Before explaining about how Tamil script entered into the digital screen, I would like to explain about PostScript and True Type. John Warnock, founder of Adobe, developed PostScript, which is a programming language for describing the entire printed page using mathematical constructs. The program is an organised collection of procedures describing character shapes, and it consists of a clear text (ASCII) portion, and an encoded and encrypted portion. True Type on the other hand was Apple and Microsoft's response to adobe's font monopoly. A TrueType font file is made up of a sequence of concatenated tables. The first of these tables is known as the font directory, which provides all the information needed to access the data in the other tables. The typeface was called Monotype Tamil and it had four styles namely, Light, Bold and two Medium fonts (with different styles). These fonts were later converted to PostScript and TrueType digital formats in the 1990s. *Monotype Library of Non-Latin Typefaces* have exhibited these fonts in their catalogue, which is illustrated below.

Figure 14: Digital Version of Monotype Tamil, 1994

On the other hand, Linotype began creating their typeface in PostScript format around 1987. Unfortunately Linotype-Paul closed in 1997. Drawing collections and archives along with Linotype Samanti master font was transferred to Linotype GmbH in Germany. Soon, the company stopped offering the font and the typeface was never issued again. Vargas remarks that Linotype-Paul is a remarkable step in adopting Indian typefaces to digital format.[41]

[41] Vargas.

Another remarkable contribution to Tamil typography was by Adrian Frutiger, who was a Swiss typeface designer. He had influenced the direction of type design in the twentieth century. He was commissioned by the National Institute of Design, Ahmedabad, India. He, along with Mahendra Patel studied on Devanagari and Tamil script to adjust them to modern printing. As the result of their studies, they created one design for both the languages. In his book *Type, Sign, Symbol*, author mentions that the Tamil script, originally written in palm leaves is more round. Contrasting to this, in his final designs, the characters are more condensed and squared. Overall design follows a linear and geometric principle. The light weight font however looks a little similar to the early inscriptions found. As the font weight increases, the bold typeface appears to be in a square shape and also gets difficult to interpret when the font size is reduced. An illustration from the initial conception of Tamil script by Frutiger is detailed below. It took almost four centuries for Tamil script to see its first modern typeface. RK Joshi, an academic type designer and professor at IIT Mumbai, designed two fonts that supported two scripts. They were the first known modern Indian fonts, Mangal (Hindi) and Latha (Tamil), which were released in 2001 by Microsoft to support the Windows 2000 operating system.[42] The necessity for more modern digital typefaces is explained in the following chapter.

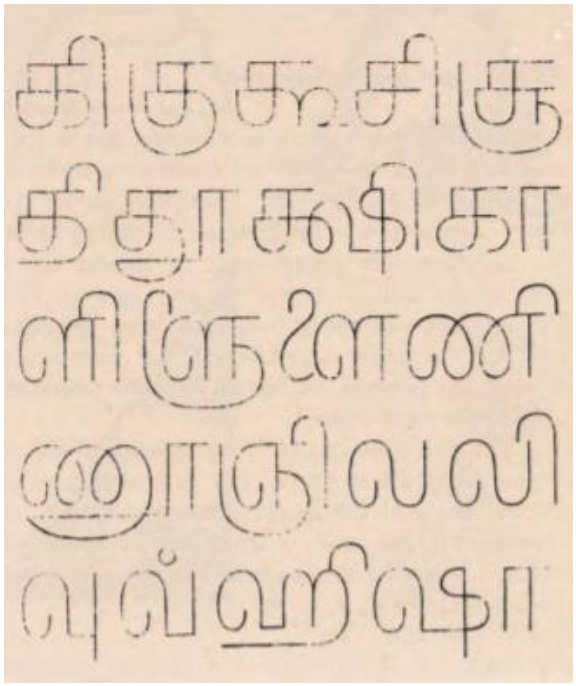


Figure 15: Typography conception of Tamil script by Frutiger

[42] Prachi Sibal, 'How the World of Fonts Is Making Room for Indian Languages', *Quartz India*, 2019 <https://qz.com/india/1609407/how-the-world-of-fonts-is-making-room-for-indian-languages/> [accessed 7 May 2019].

3. Need for more Digital Typefaces

As mentioned in the earlier chapters, Tamil script is one of the oldest surviving Indian language in the world. It was earlier written on palm leaves using sharp objects to scratch characters onto the leaves and later dusted with black powder to reveal the letters. In the later periods, kings inscribed onto the walls of the temples they build about their valour and contribution to the societies. Evidence for these scriptures are still found in the walls of ancient temples. This remains a great source of information as it not only provides details about which king built the temple, what the place was called, and so on, but also about the transformation of the script. Tamil script has gone a long way from these scriptures to the digital screens, the journey of which were explained in previous chapter.

English language had been dominating the internet in the late nighties where it constituted about 80% of the content. But the scenario has changed. A paper presented at a social media conference in Barcelona in 2011 found that 49% of all tweets were in languages other than English. In fact, internetworldstats.com has conducted a survey on this and concluded that there has been a 30% decrease in the dominance of English language.[43] At present, when considering the print industry, almost 60% of the world's population receive education, conduct business and gain insight through non-Latin scripts. Although there are possibilities that there might be a decline in the number of hard copy newspapers, owing to the rise in digital technologies, the same technology also ensures that there will be an increase in internet access. This will ensure that non-Latin fonts will continue to maintain global superiority in number of daily users. The present communication spectrum is filled with so many social media applications which enables people to converse in the language of their choice. When considering India, the rise in number of smartphones and Internet Service Providers (ISPs) competition to provide unlimited data at a lower cost has made it possible for people in rural parts of India to access smartphones. These people would want to access technology via smartphones in their regional language due to their lack of proficiency in other languages, like English (roman). A NASSCOM-Akmai Technologies report released last August said that by 2020, there will be an estimated 730 million Internet users

[43] 'Internet World Users By Language', *Internet World Stats*, 2019 <https://www.internetworldstats.com/stats7.htm> [accessed 7 May 2019].

in India — and of the new users, 75% will access it from rural India, and a similar number will engage using local languages.[44] Communicating via regional language across different systems like computer and smartphone have been simplified thanks to Unicode. Before this, Indic characters would be displayed only on the systems that supported that script's type. If the system did not have the type, then they would be displayed as rectangle boxes (unidentified objects). Unicode attaches a unique number to every written character irrespective of the language or the platform it is used. This made it possible for type designers to create Indic fonts that would be used across all platforms. This gives rise to the question, do we have enough digital fonts to cater to the needs of these people?

Print was a technology that was devised to serve a script that has alphabetical systems in which one letter is placed after another to form a word. Tamil script on the other hand has over 200 characters which is either a vowel or consonant or a combination of consonant and vowel, in which case the consonant represented with a diacritic that serves as vowel. Or to put in other words, vowels are written as diacritic mark, attached to the consonant to represent combination of a vowel with base consonant. Thus metal printers were inadequate when it came to representing Indic scripts. However, as detailed in previous chapters, the scripts were modified to adjust them to print by western scholars and type designers. Subsequent developments in twentieth century in mechanical typesetting enlarged the restrictions on how printed text were rendered. This was done by reducing the number of characters that could be used for text composition. As text in scripts required several hundred to 1000 metal pieces where the keyboard could afford only around 90, many writing systems were simplified to allow technological adaptations. This explains the 1978 script reform measure that the Tamil Nadu Government ordered.

Even now, transliteration of Tamil script is done using roman letters (English). According to Dinesh Kumar Prabhakar and Sukomal Pal, free availability and familiarity with the Roman script makes it a very powerful transliteration tool.[45] I personally agree to this statement because, I use Google Indic keyboard in my smartphone that allows me to type in

[44] Moulishree Srivastava, 'India to Have 730 Million Internet Users by 2020: Report', *Business Standard* (Mumbai, 17 August 2016) <https://www.business-standard.com/article/current-affairs/india-to-have-730-million-internet-users-by-2020-report-116081700872_1.html>.
[45] Dinesh Kumar Prabhakar and Sukomal Pal, 'Machine Transliteration and Transliterated Text Retrieval: A Survey', 43.6 (2018), 93 <https://doi.org/10.1007/s12046-018-0828-8>.

roman (English) character and the character is automatically transliterated to Tamil. Whenever there is a need to type something in Tami, my instinctive behaviour is to take my smart phone and type using Indic keyboard. It is convenient for me only because I can understand and use both the scripts. For a person from rural part, who does not know to interpret roman characters, it is very difficult to use. Another issue with the transliteration is that the 26 or so characters of English script cannot be used effectively to represent the 247 or so characters. However, transliteration using Roman scripts is a broad topic that diverts to a different branch of studies, but it is worth mentioning about how non-Latin scripts across the globe are still approached with Roman script. For now, let us consider typographical aspects of Tamil script.

3.1 Digital Fonts

It has been over 3 centuries, since Tamil script has transformed from palm leaves to inked metal to digital screen. On one hand, there has been discussions of how the current typographic styles available do not do justice to the script. On the other, tech giants like Google and Adobe are trying their best to include more Indic fonts to their font libraries.

Why do we need more typefaces?

Perhaps the best answer to this question, according to a blog post on Type Together is a counter question, “Do we have enough music, or clothes, or art?”[46]

With the increase in self-expression over the communication mediums like social media applications, type matters more now than ever. If the typography is unclear for the native user, then it tarnishes the very purpose it was created for. We live in an information bombardment era where everything we look at provides some details. The language and the appearance of the information decides how we interpret the information. Most of us do not give it a second look unless the content is of any importance to us, but again I would like to stress that the content was interpreted by the visual presentation of the information. People often missed to notice how a font serves its purpose everyday reaching so many people, trying to convey what it was intended for. But the times have changed now. There is

[46] ‘Why Do We Need More Typefaces?’, *Type Together*, 2012 <https://www.type-together.com/why-do-we-need-more-typefaces> [accessed 7 May 2019].

a general awareness on how to design, for example a simple poster, by smartphone users, thanks to the various editing applications. Considering one such application for example is Pixlr.[47] It is a free photo editing application available for both desktop and mobile. One of the feature of this editing application is that it allows the user to insert text onto the background. The application even includes different styles for the text, namely retro, handwritten, novelty, dotted, grunge, serif and sans serif. Consider a scenario of wanting to send a personalised message placed over an image to a friend in Tamil. If you have the Pixlr app installed in your smartphone, then it would not take more than a couple of minutes to get the work done. You can type the message in Tamil using Indic keyboard. But if you want to go a step further and apply styles to your text, it cannot be done as the styles have been intended for Roman Script. It is not enough to have just one typeface to represent a script. End users would like to choose between the styles of a typeface for expressive reasons. We would not prefer to have same style of letter on a confectionary packaging (like chocolate box for example) as we do in the text of a novel. Stylistic diversity is essential in providing script equality.

Indian writing systems are so complex unlike Latin scripts which contain fewer characters written in linear direction, one after another letter. Hence Indic scripts require time and attention to detail while creating typefaces. Each script has its own structure and aesthetic appeal that has little to no connection with another Indic script. This is the biggest challenge that the type designers face.

In 2009, Ek Type launched the first open source font family, called Mukta. The font family supported Devanagari, Gujarati, Gurmukhi, Bengali, Tamil, and Latin. Prachi Sibal states that several independent Indian designers and studios were commissioned around the same time. They were assigned to create open source fonts to populate the Google Fonts library. Soon, a flurry of aspiring Indian typeface designers took the lead. To name a few, Satya Rajpurohit cofounded Indian Type Foundry in 2011; Ishan Khosla launched The Typecraft Initiative in 2012 to collaborate with traditional artists and transform their art into functional digital fonts; Pooja Saxena, a Delhi-based freelance type designer, conducts Typewalks to introduce people to the world of fonts around them; Hanif Kureshi, who also

[47] https://pixlr.com/

runs a self-funded collaborative project called HandpaintedType that digitises typography of street painters; Kimya Gandhi, cofounder of the Mumbai-based Mota Italic.[48]

This was an initiative that fed back into the trend by creating a resource of base fonts, resultant of which would be the development of more popular Indic type families.[49] Google has collaborated with type designers to fill the vacuum. Google plans on creating a robust directory of open-source fonts that catalogues over 135 languages. Microsoft on the other hand is creating Indic language keyboards and is also conceiving a speech mechanism and other such interfaces that would allow recording and annotating regional languages. Adobe offers a family of Tamil font called Adobe Tamil. It has two styles namely Adobe Tamil Regular and Adobe Tamil Bold. It was designed in 2012 by Brazilian typeface designer Vargas, a graduate from University of Reading. During his time at Reading, Vargas had created a typeface that supported Latin and Tamil family and the name was Frida. The typeface won an award at Tipos Latinos 2008 for extensive text family and another award at Tokyo TDC in 2008. QuarkXPress, a desktop publishing software for creating and editing complex page layouts in a WYSIWYG environment, has released a press statement stating that their 2018 December update adds full support for Indic scripts. Quark mentions that as a global leader in graphic design and page layout software, they recognize the need for full Indic language support. They are positive that this initiative would create a significant potential to attract a new customer base in addition to their existing customer base. Ramesh Yella, senior product manager for QuarkXPress, explains as follows:

> We see a trend worldwide, and of course in India, where customers prefer our perpetual – no-subscription – licensing model for QuarkXPress. Together with our partners 4C Plus, Clavis Technologies, Modular Infotech and Summit, we are excited to be able to serve the Indian market even better now with full Indic language support. Our partners are also offering professional OpenType fonts and additional software and services that are needed to publish in India, which will help customers get even more value from QuarkXPress.[50]

[48] Divya Shekhar, 'How Digital Typography Is Reinventing Regional Languages', *The Economic Times*, 2018 <https://economictimes.indiatimes.com/tech/internet/how-digital-typography-is-reinventing-regional-languages/articleshow/64237970.cms?from=mdr>.
[49] Sibal.
[50] 'QuarkXPress 2018 December Update Adds Full Support for Indic Languages', *Quark Express*, 2019 <http://www.quark.com/About_Quark/Press/PressDetail.aspx?ncid=2431> [accessed 7 May 2019].

It is a welcoming change that a lot of non-Latin designers are blooming and adding to the collections of non-Latin foundries in the recent days. These typeface designers are not just the native users of the language but also from outside. This has given rise to another discussion on whether non-native users can design typefaces. In my personal opinion, it does not matter as long as the person designing a type has understood the script completely and the combinations of the characters. It is not important if they can speak the language or not. Tamil script (also all Indic scripts for that matter) has lost its 'spirit' under the various refinements it underwent to adjust it for the printing process. They are further being pushed to their limits by trying to match the scripts with existing Latin font families. Purohit says, 'Even in Indic fonts that are not developed in conjunction with existing Latin ones, the Latin metric weighs down on them considerably.'[51] Indian type designer and co-founder of Ek Type, Girish Dalvi, believes that the graphic design industry is burdened with a cultural hegemony in which even a popular script like Devanagari is marginalised.[52] This being the situation, it is essential that whatever is remaining of the Indic scripts are not lost further in the process of digitalising the fonts. Erin Mclaughlin, a non-native non-Latin type designer, expresses her opinion that people can design very competent things even if they can't speak the language. Had she thought otherwise, she wouldn't be doing what she is doing, because she thinks she would feel too ashamed or embarrassed. She says,

> I don't speak any of these languages that I'm designing for. I can phonetically read them, but I don't know what each of the words means, you know. That's kind of the difference. If you work with a few consultants that are native speakers and can keep checking on your work, I don't see why there's an issue at all.[53]

She adds that spending considerable amount of time and attention to detail of the writing system, once can figure out the rules to design a typeface. The ultimate thing that would make a typeface a success according to her is that, it is legible and understandable to native readers/users. This eliminates the question of non-native users designing Indic typefaces.

[51] Sibal.
[52] Sibal.
[53] TypeThursday, 'People Need to Use Typography: An Interview with Non-Latin Type Designer Erin McLaughlin', *Medium Corporation*, 2015 <https://medium.com/type-thursday/people-need-to-use-typography-an-interview-with-non-latin-type-designer-erin-mclaughlin-43b541f2e82e> [accessed 7 May 2019].

Although the rising new trend is welcoming, I would like to bring to the attention that south Indian scripts, especially Tamil receives little to no attention. Most of the contribution by the type designers, mentioned in the previous pages, have been predominantly on north Indian scripts. Google acknowledges this by stating that it is quite difficult to maintain pace with Indian subcontinent's linguistic diversity. Relatively small number of digital fonts available for Indic languages reveals a striking disparity.[54] According to Google fonts, even the most widely used Indian script, Devanagari, has far fewer typographic options compared to the superabundance of Latin fonts and other Indic scripts like Bengali and Tamil have even fewer options available. Indian type designers attribute this to the demand for Devanagari compared to other Indian languages. 'Nearly 50% of my business in Indic fonts comes from Devanagari,' says Rajpurohit.[55] Given that there are quite a prominent number of people who have contributed/still contributing to Devanagari script, the focus can be shifted towards other Indic scripts like Tamil. Tamil is used most next to Devanagari and Bengali. There might not be an urgent need for Tamil fonts but the situation is definitely going to change in the coming years when a larger population invests in smartphones, expecting to use it in their native language. While Google Fonts library has quite some collections of Tamil font families with various styles, Adobe has just one. My fonts offers font families, of which two are designed for Devanagari and supports Tamil. Of the other two Tamil family fonts, one is Neue Frutiger Tamil. I was created based on Frutiger's work with Tamil script, by Pria Ravichandran along with a team of designers and font engineers from the Monotype Studio. This font comes in four styles namely Neue Frutiger Tamil Light, Neue Frutiger Tamil Book, Neue Frutiger Tamil Medium, Neue Frutiger Tamil Bold. As a native user of Tamil script, I feel that this font does not best represent Tamil script. This is because the diacritic marks are placed towards the right side. However, one such diacritic mark, the dot, which is the Devanagari equivalent virama, is places at right extreme, almost after the character, which makes is visually unpleasant to a native user like me. An example using Neue Frutiger Tamil font family is illustrated below.

[54] Google Fonts, 'The New Wave of Indian Type', *Google Design* <https://design.google/library/new-wave-indian-type-design/> [accessed 7 May 2019].
[55] Sibal.

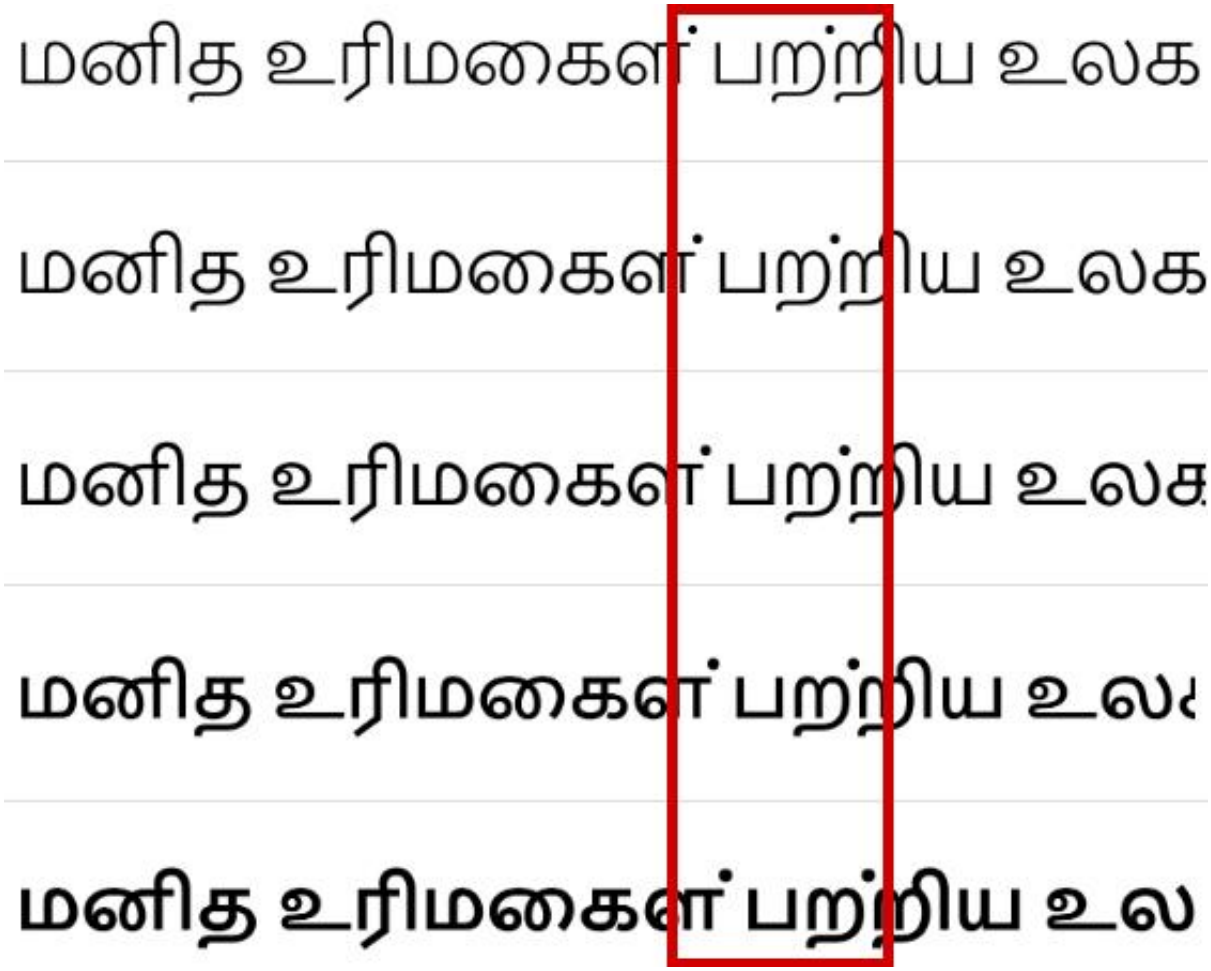


Figure 16: Various styles of Neue Frutiger Tamil font family, detailing the diacritic dot

3.2 Addressing the need for digital fonts

The situation of relatively fewer Tamil fonts available can be changed if designers release their fonts with open source licenses. This is due to the increase in number of Indian Type designers releasing their digital font designs with open source licenses. OpenType is an extension to TrueType and it includes support for PostScript font data. Open source license ensures the code is readily available for other native user to experiment and contribute to the digital font crisis. Designing a font from scratch is time consuming. Sharing of source code can help other type designers to create something entirely different and unique but with much ease. The general outline of each character is more or less same. Instead of starting from a point, it is much easy to use the basic outline available and build the font over that. This is the concept behind wanting more open source digital Indic types as the open code base can serve as available raw material for type designers to create their

original work. Creating Indian typefaces can require time and attention to detail, of course understanding of it and additional programming to convert letters and diacritic marks to user-friendly fonts. Thus open source license can improve quality and variety of typography across India's many systems.

The future looks more promising for type designers. In 2016, at the ATypI conference, which is the world's biggest type design conference, Microsoft, Google, Apple and Adobe announced that they have been working on a new version of the OpenType standard. This was called variable fonts. They believe that it would give a lot more control to the user, who is familiar with the script, to modify the typeface depending on the context and device. This initiative opens the door of opportunities for typeface designers. While open source licence would be a major boost to type designers as they can reduce the time required to design a typeface from scratch, variable fonts on the other hand would enable any native user of the language with a basic understanding of operating computers would be able to create various styles by modifying the existing typeface design. It would be a big boon to address the need for more digital typefaces. Unfortunately, like how every new initiative faces resistance, there have been remarks from few typeface designers who are not happy about releasing their font with open source licensing. Indian type designer Rajpurohit says,

> From (an) economic point of view, designers refrain from entering the open type system. The availability of free fonts keeps designers from being able to demand a fair price, something that isn't good for the industry.[56]

Typeface designers should consider the future of Indic scripts, as typefaces represent the culture and pride of a country/community. If the existing few font families of Tamil scripts and the ones that would be created in the future be released as Open Type Variable fonts, it would empower the aspiring type designers and native-users of the language to create their own typefaces out of the existing ones. Therefore, Open Type Variable fonts would be a fruitful solution to address the demand for more digital Tamil fonts in the coming years.

[56] Sibal.

Conclusion

The chapter on literature review discusses about how the typefaces are categorised based on Latin script. It elaborates on how Indian writings have been approached with the single intention of conversion by Jesuit missionaries. The viewpoints of researchers who disagreed to this statement were analysed. This chapter also explains the colonial history of Indian typefaces through the writing of Fiona Ross and Graham Shaw. The works of other researchers and typeface designers like Pijush Ghosh, Vaibhav Singh and Fernando de Mello are analysed to support the point that Tamil script had been 'westernized' to fit it to the typeset. The limitations in their research are identified to support that Tamil script is given less importance.

The subsequent chapter explains the origin of Tamil script and why it is an important Indian language. Although, Tamil has the same origin that the other 200 or so Indian languages have, what sets Tamil Brahmi apart from the rest and how the Characters of Tamil script evolved is discussed in details with proper illustrations where required. The writing system of Tamil script is detailed to emphasis why it is difficult for typedesigners to design for Indic scripts. This supports the point that it is not possible to do justice to a typeface without understanding its writing systems. This chapter also discusses about the 'script reform' that the characters of Tamil script underwent to adjust the script for typesetting. These facts are backed-up with research works done by Ross, N. Kalaivani and S.V. Shanmugam. Following this, second chapter summarizes the journey of Tamil script from palm leaves to hot metal to digital screen. Like noted above, Westerners were interested in printing Indic language because of the potential they saw in it for their conversion. This chapter explores how Tamil scripts were cast initially and the incompetent works produced in the early stages by printing plants such as Horti Indici and Malabarici. Early printed Tamil books and their limitations are also discussed. Evolution of modern Tamil typography after centuries of struggle at the hands of western typeface designers who misunderstood the writing systems are explained with examples.

The next chapter explains the current scenario of modern Tamil typefaces. While there is a push to create more non-Latin typefaces, this chapter points out the potential for typeface designers in designing for Indic scripts. There seems to be a general

acknowledgement on the scarcity of regional typefaces like Tamil and Bengali. The efforts taken by Google, Adobe and Microsoft to fill this void and their future interest to invest on Open Type variable fonts are analysed.

The aim of this thesis was to emphasise the necessity of more digital typefaces for Tamil script. While one technology transferred the script from leaves to paper, after four centuries, another technology is here to help the script reach the native users through their screen. Print technology might have refined and transformed the language, but design technology is going to make sure whatever is left of the print is not lost. If this technology could make it possible for the native-users of a script to customise it according to their need, then it makes sure the language lives for few more years until another new technology comes to save it.

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