

# Malayalam Orthographic Reforms: Impact on Language and Popular Culture

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June 8, 2018

## Abstract

Malayalam is a language spoken in India, predominantly in the state of Kerala with about 38 million native speakers. The Malayalam script evolved from Brahmi through Grantha alphabet and Vattezhuthu writing systems. The script orthography has acquired its uniqueness with its complex shaped ligatures formed by the combination of consonants and vowel sign forms. The number of unique graphemes in this system exceeds 1200. The orthographic styles were constantly evolving. In 1971 there was a Governmental intervention in the orthography, to reduce its complexity to address the difficulties in typesetting and printing. This paper is an attempt to explore the impact of this orthographic reforms on various aspects of script usage including popular culture, media, textbooks, graffiti and handwriting. We will also analyse the impact of Unicode and the advancement in digital typography on the orthographic diversity of Malayalam script.

Keywords: Malayalam Script, Orthography Reforms, Unicode, Graphemes, Media and Communication, Digital Typography

## 1 Introduction

With 38 million native speakers Malayalam is the official language of Kerala, in southern India. Malayalam used to be written in Vattezhuthu, the earliest known sample dating back to 830 AD. The modern Malayalam script evolved from Grantha

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\*<https://smc.org.in>

alphabet which was a script for Sanskrit. Both Vattezhuthu and Grantha have their roots in the Brahmi script<sup>1</sup>. Unicode has encoded 18 vowels and 37 consonants as of today, some of them are archaic. The Figure 1 illustrates the Malayalam code block as per Unicode 10.0<sup>2</sup>.

◌̣	◌̣̣	◌̣̣̣	◌̣̣̣̣	അ	ആ	ഇ	ഈ	ഉ	ഊ	ഋ	ൠ	എ
ഏ	ഐ	ഒ	ഓ	ഔ	ക	ഖ	ഗ	ഘ	ങ	ച	ഛ	ജ
ട	ത	ട	ഠ	ഡ	ഢ	ണ	ത	ഥ	ദ	ധ	ന	ന്
പ	ഫ	ബ	ഭ	മ	യ	ര	റ	ല	ള	ഴ	വ	ശ
ഷ	സ	ഹ	ഴ	വ	ശ	ഷ	ഹ	ഺ	഻	഼	ഽ	ാ
ി	െ	േ	ൈ	ഌ	഍	ഞ	ി	ൠ	ൡ	ൢ	ൣ	൤
൥	൦	ൠ	ൡ	ൢ	ൣ	൤	൥	൦	ൡ	ൢ	ൣ	൤
൦	൧	൨	൩	൪	൫	൬	൭	൮	൯	ൺ	ൻ	ർ
ൽ	ൾ	ൿ	ൺ	ൻ	ർ	ൽ	ൾ	ൿ	ൺ	ൻ	ർ	ൽ

Figure 1: Unicode 10.0 Malayalam Code block

Malayalam script is abugida, or alphasyllabary. That is, consonant–vowel sequences are written as a unit: each unit is based on a consonant or conjunct letter, and vowel notation is secondary. Vowel notations that modify the consonants is in the form of diacritics or vowel signs. Vowels have independent existence only at word beginnings. This is the common characteristic of Brahmic family of scripts from South and Southeast Asia.

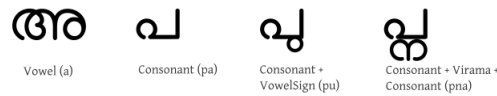


Figure 2: Few samples of graphemes in Malayalam

The script has acquired its uniqueness with its complex shaped ligatures formed by the consonants and conjuncts with signed vowel forms. Conjuncts are formed

<sup>1</sup>Malayalam Script in English Wikipedia: [https://en.wikipedia.org/wiki/Malayalam\\_script](https://en.wikipedia.org/wiki/Malayalam_script)

<sup>2</sup>Malayalam Unicode block: <https://unicode.org/charts/PDF/U0D00.pdf>

by a sequence of two more consonants. The conjunct grapheme usually has a shape smoothly blend from the constituent consonants. Figure 2 illustrates some samples.

## 2 Nature of Malayalam Script

Malayalam script as known today has 18 vowels, 39 consonants apart from various numerals, measuring units etc. Some are archaic in nature. The general nature of the script since its early days of evolution can be consolidated as below [1].

1. Vowels and consonants are the basic building blocks of Malayalam script.
2. Vowels have stand alone existence in their pure form. Vowels in Malayalam are അ (a), ഇ (i), എ (e) etc. See Figure 3.
3. Vowels also appear as signed form modifying a consonant sound. Vowel signs have no existence without a consonant. Vowel signs in Malayalam are ി (i), ി (i:), ൈ (e), ൈ (o) etc. See Figure 3.
4. Consonants in Malayalam always have the inherent vowel /a/, also known as *schwa* present in them. Consonants in Malayalam are ക (ka), ത (ta), ഗ (ga), ള (da), ഡ (d<sup>h</sup>a) etc.

Independent Vowels in Malayalam Script																	
അ	ആ	ഇ	ഈ	ഉ	ഊ	ഋ	ൠ	ഌ	ൡ	എ	ഏ	ഐ	ഒ	ഓ	ഔ	അം	അഃ
a	a:	i	i:	u	u:	ri	ri:	li	li:	e	e:	aɪ	o	o:	au	am	ah

Dependant Vowel signs in Malayalam Script																	
	ഌ	഍	ഐ	ഓ	ഔ	ഏ	ഐ	ഏ	ഐ	ഏ	ഐ	ഏ	ഐ	ഏ	ഐ	ഏ	ഐ
a	a:	i	i:	u	u:	ri	ri:	li	li:	e	e:	aɪ	o	o:	au	am	ah

Figure 3: The vowels in Malayalam. There are independent vowels and dependent vowel sign forms.

5. Any other vowels sound, other than /a/ associated with a consonant is written as a signed form of the consonant. The vowel signs can appear left, right or both with respect to a consonant. Some signs modify the shape of base grapheme. Examples for consonants with vowel signs: കി (ki), ഗു (gu), ഏ (d<sup>h</sup>e), ഡ (do). See Figure 4.

Consonant ക(ka) with various vowel signs																	
ക	കാ	കി	കീ	കു	കൂ	കൃ	ക്യ	ക്ക	ക്കി	കെ	കേ	കൈ	കൊ	കോ	കൗ	കം	കഃ
ka	ka:	ki	ki:	ku	ku:	kri	kri:	kli	kli:	ke	ke:	kaj	ko	ko:	kaṁ	kam	kah

Figure 4: The consonant (ka) is shown with all possible associated vowel signs.

- The removal of inherent /a/ in a consonant is marked in the script by a special character *virama*. Example for consonant with *virama* (ഃ) sign: ക് (k). *Virama* after a consonant not only removes inherent /a/ but also indicate no vowel sound follows it.

$$ക (ka) + ഃ (virama) \rightarrow ക് (k)$$

- A conjunct is formed by a sequence of consonants connected using *virama*. Examples:

$$ക (ka) + ഃ (virama) + ത (ta) \rightarrow കത (kta)$$

$$ഗ (ga) + ഃ (virama) + ദ (da) \rightarrow ഗദ (gda)$$

A conjunct can again connect to another consonant using *virama* and form a longer conjunct as in:

$$ഗദ (gda) + ഃ (virama) + ള (ḍa) \rightarrow ഗദḍ (gḍḍa)$$

- Every conjunct can be modified by a vowel sign forming a new ligature.

$$ഗദ (gda) + ഃ (virama) + ള (ḍa) + ു (u) \rightarrow ഗദു (gḍḍu)$$

- Some consonants involved in the formation of conjuncts have signed forms.

Example:

$$ക (ka) + ഃ (virama) + ര (ra) \rightarrow ക്ര (kra)$$

$$ക (ka) + ഃ (virama) + ല (la) \rightarrow ക്ല (kla)$$

$$ക (ka) + ഃ (virama) + യ (ja) \rightarrow ക്യ (kja)$$

$$ക (ka) + ഃ (virama) + വ (va) \rightarrow ക്വ (kva)$$

$$ര (ra) + ഃ (virama) + ക (ka) \rightarrow ക്ക (rka) : \text{This special sign is named } \textit{dot reph}.$$

- Certain consonants have a unique grapheme representation in their pure form named *chillu*. ക് (k), ശ് (l), ണ് (ṇ) , റ് (ṙ), ൽ (l), റ് (r)

The above nature of the script makes the number of unique graphemes to exceed 1200[2]. Attempts of script reformation which happened during the later half of 20th century was aimed at simplifying the script to bring down the number of graphemes. Detailed discussion on script reformation will follow in a later section.

### 3 Script in Early Printing Era

The shapes of conjuncts, relative positioning of signs and their sizes have changed over time to match the needs of writing methods.

The first ever book in Malayalam script was printed in Rome, in 1772. Printing in Malayalam started natively during 1820s[3]. When printing technology started getting popular there was a requirement to cast movable types in huge numbers. Even though there were less than a hundred basic characters, the orthographic style demanded separate types for conjuncts, and their signed vowel forms. Apart from vowels, some consonants too have signed notations, further increasing the number of types needed in the foundry.

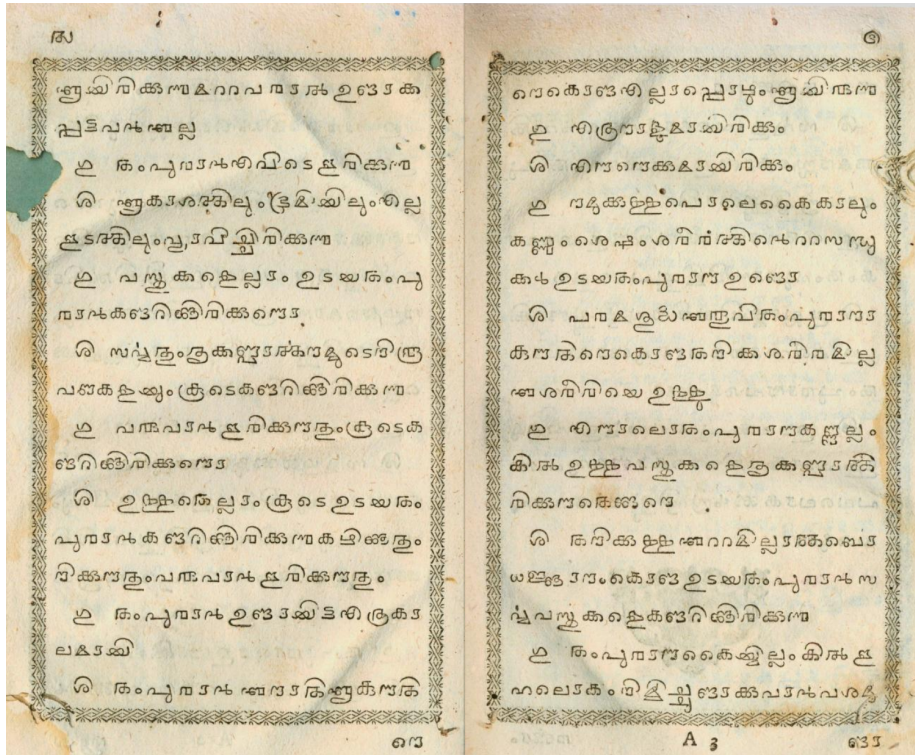


Figure 5: Samkshepavedartham - 1772

മരണാധി എഴുതിയ എവൻഗെലിയോസ്

Conjunct: consonant sequence as a single grapheme

൧ അജ്യായം

൧ ക്രിസ്തുവിന്റെ വംശപാരമ്പര്യം.—൧൧ അവന്റെ ഉരവവും  
ജനനവും. ൧൧ അവന്റെ നാമങ്ങൾ

Consonant with attached vowel sign

൧൧ വിവിധങ്ങളായ പൂത്രനായും അജ്യായന്റെ പൂത്രനായും ഇ  
രിക്കുന്ന യേശു ക്രിസ്തുവിന്റെ വംശ പാരമ്പര്യത്തിന്റെ വിവ  
രം\* അജ്യായം ഇസ്രാക്കീനെ ജനിച്ചു ഇസ്രാക്കീ യാക്കോബിനെ  
ജനിച്ചു യാക്കോബ യെശ്ശായെയും അവന്റെ സഹോദരന്മാ  
രായും ജനിച്ചു\* യെശ്ശായ ഫരസീനെയും സാരഫീനെയും  
താമര എന്നവളിൽ ജനിച്ചു\* ഫരസീ എശ്ശായിനെ ജനിച്ചു  
൧൧ എശ്ശായ ആറാമിനെ ജനിച്ചു\* ആറാം അമിനാദാബിനെ  
ജനിച്ചു അമിനാദാബ നെഹശോനെ ജനിച്ചു നെഹശോൻ  
൧൧ സല്ലോനെ ജനിച്ചു\* സല്ലോൻ ബൊവാസിനെ റാഹാബ എ

(a) New Testament - 1829

പണ്ടും തിരിയെ എടുത്തു. നമ്പിയാരുടെ തുളൽക്കമകൾ ഒട്ടേ  
ക്കാലം വായിച്ചുതീർന്നപ്പോൾ ഭൂമി കഥകളിലായി. നമ്പിയാ  
രിലുള്ള പ്രതിപത്തി കൊട്ടാരക്കരത്തമ്പുരാനിലേയ്ക്കും പകർന്നു. ആടി  
ക്കാണുന്നതിലും വലിയ ഭൂമിമാണ്. ഒരു ശിവരാത്രിയ്ക്കു വീട്ടിൽ ഒരു  
കഥകളി വേണമെന്നു നിശ്ചയിച്ചു. ഞാൻതന്നെ കൂട്ടുകാരമായി  
ആലോചിച്ചു കളിക്കോപ്പകൾ ഉണ്ടാക്കാൻ തുടങ്ങി. 'ദുര്യോധന  
വധം' എന്ന കഥയും തീച്ചയാക്കി. കളിക്കോപ്പകൾ നിർമ്മിക്കുന്ന  
തിനു, വേലകളിക്കാരോടു പരിച സമ്പാദിച്ചു; ചാലയിൽ നിന്നു  
പലതരത്തിലുള്ള വണ്ണത്തുകടുകുടലാസ്സുകൾ വിലയ്ക്കു വാങ്ങി പല്ലാക്കു  
ഴിയിൽ വച്ചു കമിളകൾ തയ്യാറാക്കി; ചങ്ങമ്പുറത്തു വാങ്ങി മഷി  
പിരിച്ചു തലമുടിയുണ്ടാക്കി; ചെമ്പിച്ചു തലമുടിക്കുവേണ്ടി ചങ്ങമ്പിൽ  
ചെമ്മന്ന ചായം മുക്കി; കൊല്ലാരം മുതലായവ സ്വന്തപണിയിൽ  
തീർത്തു. നിശ്ചയിച്ച ദിവസം കഥകളിക്കു കേളിക്കെട്ടുകഴിഞ്ഞ  
പ്പോൾ എല്ലാവരും അറിഞ്ഞു. എനിക്ക് അന്നു ഭീമന്റെ വേഷ  
മായിരുന്നു. നാണം ഇന്നതെന്ന് അറിഞ്ഞുകൂടാത്ത പ്രായമായിരുന്ന  
തിനാൽ കാണിച്ചു ഗോഷ്ടിയോർത്തിട്ട് ഇപ്പോൾ ചിരിവരുന്നു. രാത്രി  
ഏഴു മണിയായപ്പോൾ ചുട്ടികത്തുന്നതിനു പൊടുന്നനെ പ്രസിദ്ധ  
നായ ആട്ടക്കാരൻ തകഴിയിൽ കൊച്ചുനീലകണ്ണപ്പിള്ള അവർകൾ  
വന്നുവേണം. അദ്ദേഹം ചുട്ടികൾ കത്തിത്തന്നതു കൂടാതെ പ്രധാന  
വേഷങ്ങൾ മുദ്രക്കൈകളും ആവശ്യത്തിനു പറഞ്ഞുതന്നു. പുറ  
പ്പാടിനു ഞാൻതന്നെ ചെണ്ട കൊട്ടി. 'ഞാൻ ഭീമനാവുമ്പോൾ

(b) Sabdatharavali - 1930

Figure 6: Samples of print documents. Complex graphemes formed by consonant sequences and signed conjuncts can be seen.

The first printed book in Malayalam using movable types, സംക്ഷേപവെദാർത്ഥം (Samshepavedartham) in 1772 had more than thousand unique types[3]. The manual labor on typesetting and lay outting were high for the same reason. Figure 5 shows pages from the catechism book Samshepavedartham. The script is mostly rectangular. The types were made and printing was done in Rome.

The first native type casting and printing was done by Benjamin Bailey, an Anglican missionary in 1829[3]. His contributions as a typographer made the curvy style of the Malayalam orthography popular[4]. Figure 6a, shows pages from The New Testament printed using the types designed by Benjamin Bailey, imprinted in 1829[3]. The script continued to evolve by separating some vowel sign types ( ി, ീ ) from the consonant or conjunct grapheme. Still the richness of conjuncts and their signed forms were largely retained. It can be seen from Figure 6b.

## 4 Script Reformation

Typewriters became very popular around 1960s in Kerala. These typewriters followed the same design of English typewriters with the keys re-purposed for Malayalam. Obviously the keys were not enough to support all complex ligatures. The end result was Malayalam with all ligatures split up. It was a painful experience for reading and did not do any justice to the beauty of script as we can see from Figure 7.

To solve this either the typewriter or language had to be redesigned. There were demands from newspaper and publishing industries to reduce the script complexity so that Malayalam is better suited for typewriters and printing. Based on this, in 1967 Kerala government appointed a committee to study script reformation. The committee submitted their report and in 1971 Kerala government published an order to reduce the complexity of the script[5].

The order was to discard the usage of complex conjuncts and to detach the vowel notations from the consonants and conjuncts. Being a forced intervention, this was a major event to be marked in the history of orthographic evolution.

The script variant of Malayalam that came into existence after the reformation order will henceforth be referred as *reformed orthography*. Reformed orthography consists only of a smaller set of graphemes than in the exhaustive set described in section 2.



(a) Godrej typewriter

നമ്പൂതിരിമാരുടെ ജനസംഖ്യ വളരെ കുറവ്. ഇതരജനങ്ങളുടെ സംഖ്യ  
 ലോകജനസംഖ്യയുടെ വർദ്ധനവ് കമ്പ്യൂട്ടറാക്കിത്തന്നെ വർദ്ധിക്കുകയും ചെയ്തു.  
 അവിടെ സാമാന്യമായിട്ടുള്ള നമ്പൂതിരിമാർ ഒഴികെയുള്ള  
 വർഷം സംവത്സരം നമ്പൂതിരിമാരുടെയുള്ള അത്രയും അതീതമായിട്ടു മറ്റു വിഭാ  
 ഗങ്ങളിലായിട്ടുണ്ട്. ക്രമേണ "നൈവർത്തിക" ഭാഷയുടെ സവി  
 ശേഷതകളായ ഭാഷാ മിശ്രണ പ്രവൃത്തി, സവിശേഷമായ ഭാഷാസരീരി തുടങ്ങിയവ  
 നമ്പൂതിരിമാരിൽ കൂടുതലായി കാണപ്പെടുകയും മറ്റുള്ളവരിൽ കുറ  
 യായിട്ടുണ്ടായിട്ടുണ്ട്. തുടർച്ചയായിട്ടുണ്ട്, അതരമേന്മ അറിവുമായ  
 ഒരു പേരു മാത്രമാണ് "നമ്പൂതിരിഭാഷ" എന്ന്. ഈ ഭാഷാമേഖലയുടെ  
 കേന്ദ്രീകരണമാണ് നമ്പൂതിരിമാരെ ചരിത്ര പശ്ചാത്തലവും ഈ നാമ  
 കരണത്തിനു പിൻബലമായിട്ടുണ്ടാവാം.

(b) Malayalam script typed by a typewriter

Figure 7: A typewriter and a sample of Malayalam document prepared using typewriter. No complex graphemes are used. Consonant sequences remain separated with *virama* (്) in between.

Figure 9 shows the front page of government order proposing the new orthography style. The proposal aimed at reducing the grapheme usage in Malayalam by 75%. The major proposals in the order are following: [5]

- Detach the signs of vowels ഉ (u), ഊ (u:) and ഊ (ri) from the base grapheme.  
 ക → കൂ , കൂ → കൂ , കൂ → കൂ .
- Detach the consonant sign of ര, that is (്ര) from the base grapheme  
 ക്ര → ക്ര



ൻ	ൽ	ൾ	ർ	കു	കൃ	കൃ	കൃ	കൃ	കൃ	കൃ	കൃ	കൃ
n1cl	l3cl	lhcl	r3cl	k1u	k1u2	k1r	t1r	k1k1	k1k1u1	k1k1u2	k1k1r1	k1k1r3
കൃ	കൃ	കൃ	കൃ	കൃ	കൃ	കൃ	കൃ	കൃ	കൃ	കൃ	കൃ	കൃ
k1th1u2	k1th1r1	k1r3	k1r3u1	k1r3u2	k1r3	k1r3u1	k1r3u2	k1sh	k1shu1	k1shu2	k2u1	k2u2
ഗൃ	ഗൃ	ഗൃ	ഗൃ	ഗൃ	ഗൃ	ഗൃ	ഗൃ	ഗൃ	ഗൃ	ഗൃ	ഗൃ	ഗൃ
k3k3r1	k3th3	k3th3u1	k3th3u2	k3th3r1	k3th3th4	k3th3th...	k3th3th...	k3n1	k3n1u1	k3n1u2	k3m1	k3m1u1
ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ
k4u1	k4u2	k4r1	k4r3	k4r3u1	k4r3u2	ngu1	ngu2	ngk1	ngk1u1	ngk1u2	ngk1r1	ngng
ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ
ch1r3	ch2u1	ch2u2	ch2r1	ch3u1	ch3u2	ch3r1	ch3ch3	ch3ch3u1	ch3ch3u2	ch3ch3r1	ch3nj	ch3r3
ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ
njch1u1	njch1u2	njch1r1	njch3	njch3u1	njch3u2	njr	njrj	njrj1	njrj2	t1u1	t1u2	t1r1
ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ
t3u1	t3u2	t3r1	t3r3	t3r3u1	t3r3u2	t3r4	t3r4u1	t3r4u2	t3r3	t3r3u1	t3r3u2	t4u1
ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ
nht2	nht3	nht3u1	nht3u2	nht3	nht3u1	nht3u2	nht3	nht3u1	nht3u2	th1u1	th1u2	th1r1
ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ
th1th2	th1th2u1	th1th2u2	th1th2r1	th1n1	th1p4	th1p4u1	th1p4u2	th1m1	th1m1u1	th1m1u2	th1m1r1	th1r3
ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ
th1s1u2	th1s1r1	th2u1	th2u2	th3u1	th3u2	th3r1	th3th3	th3th3u1	th3th3u2	th3th4	th3th4u1	th3th4u2
ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ
th4r3u1	th4r3u2	n1u1	n1u2	n1r1	n1th1	n1th1u1	n1th1u2	n1th1r1	n1th1r3	n1th1r...	n1th1r...	n1th2
ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ	ഘൃ
th4r3u1	th4r3u2	n1u1	n1u2	n1r1	n1th1	n1th1u1	n1th1u2	n1th1r1	n1th1r3	n1th1r...	n1th1r...	n1th2

Figure 8: Examples of complex graphemes in Malayalam script



GOVERNMENT OF KERALA  
Abstract

MALAYALAM SCRIPT-ADOPTION OF NEW SCRIPT FOR USE-ORDERS ISSUED

EDUCATION 'P' DEPARTMENT

G. O. (P) 37/71/Edn.

Dated, Trivandrum, 23<sup>rd</sup> March 1971.

Read: G.O. (P) 329/68/Edn.dated 11-7-1968

**ORDER**

The question of reducing the unwieldy number of alphabets and signs in Malayalam which consume much time and labour in the process of printing and typewriting, has been under consideration of Government for some time. In 1967 Government appointed a Committee with Shri Soomad P. N. Kunjan pillai, Editor, Malayalam Lexicon as convener to advise them on the question of reformation of Malayalam script. The committee in its report has made recommendations to reduce 75% of the total number of existing characters in printing and typewriting. The reformed Malayalam script recommended by the above Committee was revised with slight modifications by another committee appointed in 1969 to expedite the adoption of the new script for use. The recommendations of the above two committees in the matter of reformation of the Malayalam script are in brief as follows:

- i. ഉ, ഊ, ഋ, റ എന്നിവയുടെ മാത്രകൾ വ്യഞ്ജനങ്ങളിൽ നിന്നും വിട്ടുവീക്കുക
- ii. പ്രചാരം കുറഞ്ഞ കൂട്ടക്ഷരങ്ങൾ ചുരുക്കല ഉപയോഗിച്ച് പിരിച്ച് എഴുതുക.

Figure 9: The Government Order on Malayalam Script Reform in 1971

No	Characters	IPA	Traditional Orthography	Reformed Orthography
1	ക, ാ	ka:	കാ	കാ
2	ദ, െ	d̥e	ദെ	ദെ
3	ക, ്, യ	kja	ക്യ	ക്യ
4	ക, ്, ക	kka	കൈ	കൈ
5	ക, ു	ku	കു	കു
6	ഗ, ു	gu	ഗു	ഗു
7	ഗ, ്, ദ	gd̥a	ഗദ	ഗദ്ദ
8	ഗ, ്, ദ, ു	gd̥u	ഗദു	ഗദ്ദു
9	ഷ, ്, ട	ʃt̥a	ഷ്ട	ഷ്ട
10	ക, ്, ര	kra	കര	കര
11	സ, ്, ത, ്, ര	st̥ra	സ്ര	സ്ര
12	ക, ്, ര, ു	kru	കരു	കരു

Table 1: Illustrating traditional and reformed orthography differences

- Discard the usage of ് in the consonant sequence in the form of dot reph sign . Instead use the alternate form of െ . അക്കൻ → അരക്കൻ .
- Discard the use of rare conjuncts by splitting them down into constituent consonant sequence separated by the *virama* sign. Those retained are: ക്ക, ക്ക, ണ്ണ, ച്ച, ബ്ബ, ത്ത, ണ്ണ, ത്ത, ന്ന, ഷ്ശ, ന്ന, മ്മ, യ്യ, ല്ല, വ്വ . Others are split down as: ഗദ → ഗദ്ദ .
- The signed form of consonants are to be separated from the base grapheme as in ക്യ, ക്വ, ക്ര .
- The signed *below base modifiers* of ്ല ( ് ) may be retained as such ക്ല or split using *virama* sign as ക്ല .

As per the government order the reformed orthography would retain only 90 unique graphemes.

Table 1 compares the graphemes formed by sequence of basic characters in traditional and reformed orthography. As can be seen from the first four rows, the detached sign forms in traditional orthography are retained as such in the reformed one. Also some commonly used conjuncts are retained as such. The difference between two orthography variants becomes spectacular in the forthcoming rows. Complex ligatures formed by sequence of consonants gets split up by placing *virama* sign in be-

tween. Joined signed forms in traditional orthography get detached in the reformed variant.

It is important to note that the reformation order introduce the detached form of vowel signs for ഉ and ഉൗ as ു and ുൗ respectively. In the exhaustive set of traditional orthography u and u: had very diverse sign forms [6]. Their usage is evident from rows 5, 6, 8 and 12 in Table 1.

#### 4.1 Adoption of Reformed Orthography

The print media switched to the reformed orthography to varying extends. The official prints of the government almost completely switched to the reformed style. Some publishers retained the graphemes for signed form of consonants but detached the signed vowel forms. Publishers adopted a set of conjuncts as per their choice and split down the others using *virama* sign.

Students started to learn reformed orthographic style from the textbooks. But they continue to watch and learn the usage of traditional complex orthography widely seen in wall graffiti, poster designs and handwriting. Figure 10a and 10b illustrates the co-existence of both orthography - One in textbook and other in a movie poster.

## 5 Script in Digital Era

The digitization of printing by early 1990s was yet another remarkable event. The pre-Unicode digital fonts in Malayalam were Malayalam letters mapped to the ASCII character space. Such fonts retained only a limited repertoire of conjuncts, because ASCII had the limitation of 256 code points. Also the signed notations of vowels and consonants were detached from the base grapheme. Digital fonts before the Unicode era embraced the reformed orthography more closely. The publishing industry largely depended on these fonts for decades.

At the same time, writing Malayalam in non-digital, non-printing contexts continue to use traditional orthography. Wall paintings, artistic lettering used in magazines, movie titles continued using it as illustrated above.

*Rachana Aksharavedi*, an organization formed 1998 was successful in bringing back the exhaustive traditional orthography set with the help of then existing technology.



(a) Reformed Orthography in a Malayalam text-book -1988 (b) A Malayalam movie poster from 1986 with everything written in traditional orthography.

Figure 10: Co-existence of both orthographic styles in 1980s

At that time, Malayalam was not encoded in Unicode. Rachana Aksharavedi developed a font named *Rachana* with about 1200 glyphs. Since there is no Unicode or opentype technology, it was a set of 6 fonts, each covering about 200 glyphs mapped to ASCII codepoints. A special editor known as *Rachana Editor* was required to automatically switch between these fonts and display Malayalam with data being English. This brave attempt was widely appreciated. A couple of years later, in 2001 Unicode encoding for Malayalam happened.

### 5.1 Unicode and Advanced Digital Typography

Unicode did not differentiate between the traditional and reformed orthography. Orthography style was left to the typography and fonts layers. The ISO 639-1 also does not differentiate between the traditional and reformed orthography [7]. As per ISO 639-1 the language code for Malayalam is ml. That means, the digital representation using unicode code points remains same, the readers see that data using a font following traditional or reformed orthography as per their choice. Because of this abstraction, the reformation had no impact on the processing of textual data.

No.	Font	Orthography style	Vendor	Remarks
1.	Rachana	Traditional	SMC	Available in Ubuntu and other Linux distros
2.	Meera	Traditional	SMC	”
3.	Manjari	Traditional	SMC	”
4.	AnjaliOldLipi	Traditional	SMC	”
5.	Chilanka	Traditional	SMC	”
6.	Dyuthi	Traditional	SMC	”
7.	Keraleeyam	Traditional	SMC	”
8.	Uroob	Traditional	SMC	”
9.	Manjari	Traditional	SMC	”
10.	Karumbi	Traditional	SMC	”
11.	RaghuMalayalam	Reformed	SMC	”
12.	NotoSans Malayalam	Reformed	Google	Default in Android OS
13.	Nirmala	Reformed	Microsoft	Default in Windows OS
14.	Sangam	Reformed	Apple	Default in Apple products

Table 2: List of popular unicode fonts in Malayalam

With the advent of Unicode based digital typography, complex conjunct formations and their rendering were no longer an impossibility. With only the basic graphemes encoded in Unicode, any long sequence of consonants and signs could be mapped to a single conjunct grapheme in signed or unsigned form. Complex rendering rules of the script can easily be handled by modern rendering engines. With these technical advancements, fonts which could very well support the traditional orthographic scheme of the Malayalam script emerged.

The Rachana font was ported to Unicode. Parallel to that, more unicode fonts emerged, notably AnjaliOldLipi. In 2006, Swathanthra Malayalam Computing (SMC), a free software developer community became active in Malayalam computing. Along with various language processing tools and technology improvements, SMC released a dozen of Malayalam fonts. With one exception, all fonts followed traditional orthography and embraced the opentype technology.

GNU/Linux systems came with these traditional orthography fonts by default. Schools and government institutions were using GNU/Linux systems because of Kerala government policy to use Free Software. The userbase of traditional orthography started to expand among digital Malayalam users. The IT education curriculum in schools also widely used these fonts.

Table 2 lists the Malayalam unicode fonts available by default in various operating systems. Availability of good quality traditional orthography fonts accelerated the usage of traditional orthography in digital space.

## ഇവൾക്കു മാത്രമായ്

### സുഗതകുമാരി

ഇവൾക്കുമാത്രമായ്, കടലോളം കണ്ണിർ  
കുടിച്ചവൾ, ചിങ്ങവെയിലൊളി പോലെ  
ചിരിപ്പവൾ, ഉള്ളിൽ കൊടും തിയാളിടും  
ധരിത്രിയെപ്പോലെ തണുത്തിരുണ്ടവൾ.  
ചവിട്ടാൻ, നിങ്ങൾക്കു ചിലപ്പോൾ പുജിക്കാൻ,  
പരക്കെപ്പുച്ഛിക്കാൻ, പരിത്യജിക്കുവാൻ,  
തുണയ്ക്കു കൈകോർത്തു നടക്കാൻ, മക്കളെ  
പിടയ്ക്കും നെഞ്ഞത്തു കിടത്തിപ്പോറ്റുവാൻ  
ഇവൾക്കുമാത്രമായ് ഒരു ജന്മം; നെറ്റി  
ത്തടത്തിലുണ്ടിവൾക്കൊരിറ്റു കൃങ്കമം,

വിളർത്ത ചുണ്ടത്തു നിലാച്ചിരി, ഹൃത്തിൻ  
വിളക്കുമാടത്തിലൊരു കെടാത്തിരി.  
ഇവൾ ദൈവത്തിനും മുകളിൽ സ്നേഹത്തെ  
ഇരുത്തിപ്പുജിപ്പോൾ, ഇവൾ കാലത്തിന്റെ  
കരങ്ങളിൽ മാത്രം സമാശ്വസിക്കുവോൾ.  
ഇവൾക്കുമാത്രമായൊരു ഗാനം പാടാ-  
നെന്നിക്കു നിഷ്ഫലമൊരു മോഹം, സഖി...!

(സുഗതകുമാരിയുടെ കവിതകൾ)

Figure 11: Malayalam Textbook - 2011. ASCII based new orthography in print

The typesetting tools and software adapted to ASCII based fonts were the default in the publishing industry since 1990s. Even after the encoding of Malayalam in Unicode in 2001, the printing and publishing industry continued their practices. The Figure 11, shows the usage of ASCII based reformed orthography in school textbooks printed in 2011. This was largely due to lack of unicode and complex script rendering support in major typesetting systems like Adobe Indesign. But these typesetting systems started supporting complex scripts and now we are seeing a highly accelerated adoption of Unicode and traditional orthography in print.

## 6 Contemporary Script Usage

Currently everyone learns to read and write reformed orthography as part of school curriculum, but practically uses and are accustomed to the traditional orthographic style in everyday life. Non-digital media including wall writings, graffiti, bill-boards and handwriting were always sticking to the traditional orthographic set.



Figure 12: Samakalika Malayalam, a popular illustrated weekly announcing their re- turn to traditional orthography. 2017 October

Now that the technology has matured enough to support the traditional orthog- raphy, it is becoming more and more popular in the digital domain as well. There are newspapers and portals that switched to traditional orthography. Popular illus-

trated weeklies and science magazines switched to traditional orthography style in print. See Figures 12 and 13.



Figure 13: Eureka, a famous science magazine for childrens changed to traditional orthography printing in November 2017.

Kerala government is actively promoting Unicode usage in the official documents. Government orders are now mostly in Meera font, a traditional orthography font by SMC. Identity cards used for voting and public distribution system (See Figure 14) etc also uses traditional orthography.

The traditional orthography fonts by SMC are widely used in web content. See an example in Figure 15.



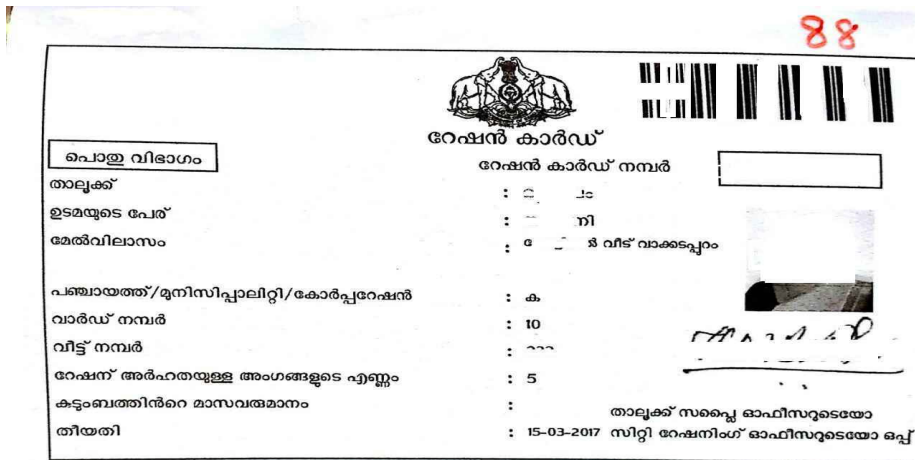


Figure 14: 2017 Identity card for public distribution system(Ration system)



Figure 15: Internet meme example in Malayalam. Uses traditional orthography font. 2017 November

Figures 16, 17 illustrates the adoption of traditional orthography in contemporary movie posters.



Figure 16: A Malayalam movie poster from 2017. Uses a mix of reformed and traditional orthography for title.



Figure 17: A Malayalam movie poster from 2016. Uses traditional orthography for title.

## 7 Conclusion

Technology played a crucial role in defining the orthography of Malayalam from printing to digital age. When technology, such as typewrites, had limitations, the Malayalam script went through a difficult reformation. But it flourished again with the help of digital technology. A single human generation is witnessing Malayalam's

transition from traditional orthography to reformed orthography and then again to traditional orthography. The fact has been explained through numerous examples in this paper.

Reformed orthography is sometimes referred as *modern* and traditional as *old*. But as traditional script is getting more popular in contemporary usage, calling it *old* may not be right. So we consciously avoided those phrases in this paper.

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