DEVANAGARI: A HISTORICAL OVERVIEW AND A STUDY OF WRITING STYLE IN AGA KHAN PALACE PHOTO GALLERY

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Introduction

Devanagari [देवनागरी] a compound of *"devə"* and *"nagərī''*, also called Nagari नागरी, is an abugida alphabet of India. It is written from left to right, it writes each consonant-vowel sequence as a unit, called *əkshər*, in which the vowel symbol functions as an obligatory diacritic to the consonant. Historically, like other native scripts of South Asia, it derives from the Brahmi alphabet of the Ashokan inscriptions (Daniels and Bright 1996:384). It is the standardized script for Hindi, Nepali, Marathi, Konkani and Bodo languages. Devanagari is one of the most used and adopted writing systems in the world.

This paper aims to deal with 1) Historical overview of the development of Devanagari; its origin and reforms made by vaious script reformers like Sawarkar, Tilak and many more. 2) The text representation in Aga Khan Palace, Pune. Vowels are written in Devanagari, which is Vaidya type recommended by Barrister Savarkar in 1927.

Objectives

The objectives of this paper are as follows:

1. Overview of the Devanagari development in script reform movement for Hindi and Marathi Language codification and standardization.
2. Study the changes in script writing with the use of typewriter.
3. Study of the Devanagari text of the photo gallery of Aga Khan Palace, Pune.

Origin of Devanagari

Devanagari is a part of Brahmic family of scripts. It is used in India, Nepal, Tibet, and South-East Asia. It is a descendant of the Gupta script, along with Siddham and Sharada. Eastern variants of Gupta script called *nagərī* and are first attested from the 7th century CE; from c. 1200 CE. This gradually replaced Siddham, which survived as a vehicle for Tantric Buddhism in East Asia, and Sharada, which remained in parallel use in Kashmir. An early version of Devanagari is visible in the Kutila inscription of Bareilly dated to Vikram Samvat 1049 (i.e. 992 CE), which demonstrates the emergence of the horizontal bar to group letters belonging to a word (Fishcher 2001: 111). Sanskrit *nagərī* is the feminine of *nagərə* "relating or belonging to a town or city''. It is feminine from its original phrase

with *lipi* ("script") as *nagərī lipi* "script relating to a city", that is, probably from its having originated in some city.

Major Characteristics

Vowels

1. As a Brahmic abugida, the fundamental feature of Devanagari is that each letter represents a consonant, which carries an inherent *schwə* vowel. example क = क् '*k*' + अ '*ə*'.

2. A final consonant is marked with the diacritic mark ‚ ੍ called *hələnt* in Hindi क्नय् *knay*.

3. Vowels are independent syllable and other than the inherent अ are written with diacritics (termed *matras*). For example, क, का, के, कु, की, etc.

4. Arranged with the vowels are two consonantal diacritics, the final nasal *ənusvar* ं *m̐* and the final fricative *visərgə* ः *ḥ* (called अं *əm* and अः *aḥ*). These are not independent vowels in Devanagari

5. Another diacritic is the *tʃəndrəbindu/ ənunasik* ँ अँ. In a New Indo-Aryan

language such as Hindi, the distinction is formal: the *tʃəndrəbindu* indicates vowel nasalization while the *ənuswar* indicates a homorganic nasal preceding another consonant e.g. हँसी. These are not independent vowels in Devanagari.

6. The *əwəgrəhə* ऽ अऽ (usually transliterated with an apostrophe) is a Sanskrit punctuation mark for the elision of a vowel in sandhi: एकोऽयम. Sometimes it used in Hindi for a very long vowel.

7. The syllabic consonants ऋ, ऌ, and ॡ are specific to Sanskrit and are not included in the *vərṇəmala* of other languages. The sound represented by ऋ has also been lost in the modern languages and its pronunciation now ranges from [ɾi] (Hindi) to [ɾu] (Marathi).

8. Foreign borrowing new diacritic is introduced in Devanagari through *tʃəndrə* on top of the consonants or vowel for English words written in Devanagari.

    Eg. डॉक्टर 'Doctor'.

    Vowels: अ, आ, इ, ई, उ, ऊ, ऋ, ए, ऐ, ओ, औ, अं, अः, for foreign words ऑ.

Consonants

Occlusives

| | Voiceless plosives | | Voiced plosives | | Nasals |
	unaspirated	aspirated	unaspirated	aspirated	
Velar	क ka	ख kha	ग ga	घ gha	ङ ṅa
Palatal	च ca	छ cha	ज ja	झ jha	ञ ña
Retroflex	ट ṭa	ठ ṭha	ड ḍa	ढ ḍha	ण ṇa
Dental	त ta	थ tha	द da	ध dha	न na
Labial	प pa	फ pha	ब ba	भ bha	म ma

Sonorants and fricatives

	Palatal		Retroflex		Dental		Labial	
Sonorants	य	ya	र	ra	ल	la	व	va
Sibilants	श	śa	ष	ṣa	स	sa		

Other letters

ह	ha	ळ	ḷa

1. *pənʧəməkʧərs* are nasals and it is written as half nasal with nasal signs but written as *bindu/ənuswar* with four others out of five.

2. Every second *əkʧər* is an aspirated part of the first character in *pənʧəwərgə* system.

3. ळ, the intervocalic lateral retroflex allophone of the voiced retroflex stop in Vedic Sanskrit, which is a phoneme in languages such as Marathi, Konkani, and Rajasthani but not used in Hindi.

4. Foreign borrowings and internal developments that occur in the New Indo-Aryan languages have been ignored in writing, or dealt through means such as diacritics and ligatures (ignored in recitation). The most prolific diacritic has been the subscript dot (*nukta*) . Hindi uses it for the Persian, Arabic and/or English sounds क़ /q/, ख़ / x/, ग़ /ɣ/, ज़ /z/, or झ़ /ʒ /, and फ़ /f/, and for the allophonic developments ड़ / ɽ/ and ढ़ /ɽʰ/.

Conjuncts

Consonants lacking a vowel in between them may physically be joined together as a *conjunct*. The government of these clusters ranges from widely to narrowly applicable rules, with special exceptions within. While standardized for the most part, there are certain variations in clustering, of which the Unicode used on this page is just one scheme. The following are a number of rules:

1) Consonants which contain a vertical right stroke (ख, घ, ण etc.). As first or middle fragments of a cluster, they lose that stroke. eg. त + व = त्व, ण + ढ = ण्ढ, स + थ = स्थ. These consonants without their vertical stems are called half forms. श appears as a different, simple ribbon-shaped fragment preceding व, न, च, ल and र, causing these second members to be shifted down and reduced in size. Thus श्व, श्न, श्च, श्ल and श्र.

2) र as a first member takes the form of a curved upward dash above the final character or its diacritic. eg. र्व and र्स्व, etc. As a final member with ट, ठ, ड, ढ, ड and छ it is two lines below the character, pointed downwards and apart. Thus ट्र, ठ्र, ड्र, ढ्र and छ्र.elsewhere as a final member it is a diagonal stroke extending leftwards and down. eg. क्र, ग्र, भ्र and त is shifted up to make त्र.

3) The conjunct क्ष (क् + ष) and ज्ञ (ज् + ञ) are not derived forms but complete characters.

4) Aspirated sonorant may be represented as conjuncts with म्ह, न्ह, ण्ह.

Hindi forms :

१	२	३	४	५	६	७	८	९	१०
1	2	3	4	5	6	7	8	9	10

Bombay forms :

१	२	३	४	५	६	७	८	९	१०
1	2	3	4	5	6	7	8	9	10

International forms:

1	2	3	4	5	6	7	8	9	10

Source: Lambert, H.M. 1953 : 32.

Numerals

Three types of numerals used in Devanagari, Hindi forms, Bombay forms and international forms.

Devanagari Script Reforms

Hindi in Devanagari script is accepted as an official language of India by the constitution of India under the article 348. Script reformers, who were working from a long time, came with the suggestions of the standardization of Devanagari script with the needs of reform. Government of India formed various committees for reforms of Devanagari script.

With the advent of composing machines developed in America and England, the speed of composing increased. Due to the large number of Devanagari signs and owing to the difficulty of adjusting the over-hangs of *matras* and *ukars*, Devanagari could not be adapted to the Roman machines. This was a challenge to the reformers: how Devanagari could be adopted in the Roman Machine and how could the characters be minimized.

Basic Principles of script reform

Broad Principles for script and spelling reform are the following (Naik, 1971):

1) Consistency of the plug in principle.

2) Fewest changes so that those brought up in the old systems can learn the new one with ease and those brought up in the new system learn the old one with ease so as to cope with the old material; continuity of communication.

3) Economy and ease of strokes.

4) The shapes are sufficiently distinctive.

5) Consistency of shape and value correlations.

The progressive Marathi pundits, foreseeing the need of a rational script for Marathi, adopted Devanagari at the beginning of the nineteenth century, in preference to their traditional Modi script. Justice Sharadacharan Mitra founded an institution for the spread of One Script (*ek lipi witsar pəriʃəd*) and started a magazine 'Dev Nagər' in 1908.The normal font for hand composing in Devanagari, in this style consists of about 400 type sorts. Attempts have been made by the Devanagari punch-cutters to do away with three-step setting by casting the *velanti*, *matra* and *ukar* signs on their body with over-hangings. This system is known as *əkhənd* in which the font is made of over 600 types. In the pamphlet Reform of the Nagari Script published by the Language Department of the Governement of Madhya Pradesh, it is stated that 'it was the Nagari Pracharini Sabha which for the first time made some suggestions for the reform of Nagari'. This statement is not based on facts as the history of script reforms can be traced back to some sixty years. Ramchandra Bhikaji Gunjikar was probably the first scholar to advocate the necessity of reforms in the Devanagari Script (Naik 1971 : 341-42)

In 1904, Lokamanya Tilak took up the improvement in type casting, so as to facilitate the adaptation of the Devanagari script to the composing machines. Since then several scholars have contributed to script reform of Devanagari such as K.K. Gokhale, style published in *Dainik Dnyanprakash* of Poona. Bhau Shastri Lele, Vaidya brothers of the Hindu Missionary Society, Br. Savarkar, S. D. Nadkarni, Y. M. Nanal, N. B. Huparikar, S.S. Pandit, G.S.Bhagawat, V.D. Gurjar and others. Marathi Sahitya Sammelan 1927, 1932 and Hindi Sahitya Sammelan 1934 and The Maharashtra Printers' Conference 1941 suggested changes in the script to facilitate printing.

The U.P. Government appointed a committee under the chairmanship of Achayra Narendra Deo, in 1947 reported in 1949, Bombay Government appointed a committee under the chairmanship of Kakasaheb Kalelkar and reported in 1949, The Uttar Pradesh Government convened a conference in 1953 at Lucknow to examine the decision of the Narendra Deo committee, in which the Chief Ministers of many states participated.

The problem of setting the large number of the Devanagari types has thus been engaging the attention of the type-founders and scholars in the standardization and reform of Devanagari script from centuries. Ministry of Education, Government of India accepted the Hindi alphabet with some revision and took a decision for standardizing Devanagari, Government of Maharastra accepted this decision with some modification in 1962.

Timeline

Bhrahmi, etc.

|

Handwritten Devanagari

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1904 Lokamanya Tilak, adaptation of the Devanagari script to the composing machines.

|

1908, A magazine 'Dev Nagǝr'.

|

1927, 1932, Marathi Sahitya Sammelan,

|

1934, Hindi Sahitya Sammelan.

|

1941,The Maharashtra Printers' Conference

|

1949, Narendra Deo committee report & Kakasaheb Kalelkar committee report.

|

1953, Lucknow conference.

|

1960, Report of Government of India.

|

1962, Report of the Government of Maharashtra.

|

Source: Naik, 1971: 341-607

Old vs. reformed Devanagari:

Devanagari in reform movement was accepted and standardized with some changes. Following are the characters which were changed under the reform movement.

Old Devanagari

Source: Lambert, H.M. 1953 : 32.

Reformed Devanagari

देवनागरी वर्णमाला

स्वर   : अ आ इ ई उ ऊ ऋ ॠ ए ऐ ओ औ

मात्राएँ   : ा ि ी ु ू ृ े ै ो ौ

अनुस्वार   : (अं)

विसर्ग   : (अः)

अनुनासिकता चिह्नः ँ

व्यंजन   : क ख ग घ ङ

        च छ ज झ ञ

        ट ठ ड ढ ण ड़ ढ़

        त थ द ध न

        प फ ब भ म

        य र ल व

        श ष स ह

        ळ

संयुक्त व्यंजन   : क्ष त्र ज्ञ श्र

हस् चिह्न   : ्

Source: Manak Hindi Vartani Published by Kendriya Hindi Nideshalaya in 1980.

Old/lost   Reformed

ऋ   अ

ऋ, ऌ, ॡ   ---

भ्र   झ

ग्।   प्।

ल   द

Borrowed or added sign

Vowels   : ॲ, ऑ for English words.
          Eg. ऑगस्ट

Consonants : ख़ ग़ ज़ फ़

Conjunct : श्र त्र

h?/h?nt : ॖ for half consonants.
          Eg. पद्‌य

rafari   : = for Marathi र conjunct.
          Eg. पायऱ्या

ənuswar conjuct in old Devanagari

11 characters of each vərgəh joined with a preceding or following ənunasika character of the same vərgəh.

a.1) ənunasikə character preceding.

कॅ	कॅ	ह	ह	ञ	ञ्छ	ञ	ञ्झ
-ŋkə	-ŋkhə	-ŋgə	-ŋghə	-ɲcə	-ɲchə	-ɲɟə	-ɲɟhə
एट	एठ	एड	एढ	न्त	न्य	न्द	न्ध
-ɳʈə	-ɳʈhə	-ɳɖə	-ɳɖhə	-ntə	-nthə	-ndə	-ndhə
म्प	म्फ	म्ब	म्भ				
-mpə	-mphə	-mbə	-mbhə				

Alternative forms

ञ्झ	ण्ट	ण्ठ	ण्ड	ण्ढ
-ɲjhə	-ɳʈə	-ɳʈhə	-ɳɖə	-ɳɖhə

These characters, representing a preceding homorganic nassal consonant, are usually written in preference to the ənusvarəh placed on the preceding

character, of which examples have been given above[1]. The following examples illustrate the contexts in which the ənusvarəh may be written, and in which it is not written :

a.2)

पत्नि	बिनंतिः	बिनन्तिः	लम्न्ते	ऋंते ऋन्ते
patənti[2]	vinəntih or vinəntih[3]		ləbhənte[2]	əmte or ənte[3]

b) ənunasikə character following.

ख	ह	ढ	ब	ल	म	ढ	ध	प्म	भ्म
-cnə	-ɟnə	-ʈhnə	-ɖhnə	-tnə	-thnə	-dnə[4]	-dhnə	-pnə	-bhnə

The character ठ is not calligraphically a conjunct character and is round, from an early date, included in the syllabic series of characters.

Source: Lambert, H. M. 1953 : 40.

1. *ənuswar* conjuct is formed as characters with all consonants and nasals.

   ənuswar conjuct in Reformed Devanagari

   According to Kendriya Hindi Nideshalaya, Government of India *ənuswar* conjuct should be written as following in Devanagari.

2. in conjunct *ənuswar* should be written as dot in four of *panchamwarg* except nasal sounds.

3. *ənunasik* or *chandrabindu* can be used with condition. If the *matra* is above the *shirorekha* then *ənunasik* can be written as *ənuswar*.

4. अनुस्वार तथा अनुनासिकता-चिह्न (चंद्रबिंदु) अनुस्वार (̇) और अनुनासिकता चिह्न (̐) दोनों प्रचलित रहेंगे।

(क) संयुक्त व्यंजन के रूप में जहाँ पंचमाक्षर के बाद सवर्गीय शेष चार वर्णों में से कोई वर्ण हो तो एकरूपता और मुद्रण/लेखन की सुविधा के लिए अनुस्वार का ही प्रयोग करना चाहिए, जैसे - गंगा, चंचल, ठंडा, संध्या, संपादक आदि में पंचमाक्षर के बाद उसी वर्ग का वर्ण आगे आता है, अतः पंचमाक्षर के स्थान पर अनुस्वार का प्रयोग होगा (गङ्गा, चञ्चल, ठण्डा, सन्ध्या, सम्पादक का नहीं)। यदि पंचमाक्षर के बाद किसी अन्य वर्ग का कोई वर्ण आए अथवा वही पंचमाक्षर दुबारा आए तो पंचमाक्षर अनुस्वार के रूप में परिवर्तित नहीं होगा, जैसे - वाङ्मय, अन्य, अन्न, सम्मेलन, सम्मति, चिन्मय, उन्मुख आदि। अतः वांमय, अंय, अंन, संमेलन, संमति, चिंमय, उंमुख आदि रूप ग्राह्य नहीं हैं।

(ख) चंद्रबिंदु के बिना प्रायः अर्थ में भ्रम गुंजाइश रहती है, जैसे - हंस : हँस, अंगना : अँगना आदि में। अतएव ऐसे भ्रम को दूर करने के लिए चंद्रबिंदू का प्रयोग अवश्य किया जाना चाहिए। किंतु जहाँ (विशेषकर शिरोरेखा के ऊपर जुड़ने वाली मात्रा के साथ) चंद्रबिंदु के प्रयोग से छपाई आदि में बहुत कठिनाई हो और चंद्रबिंदु के स्थान पर बिंदु (अनुस्वार चिह्न) का प्रयोग किसी प्रकार का भ्रम उत्पन्न न करे, वहाँ चंद्रबिंदु के स्थान पर बिंदु के प्रयोग की छूट दी जा सकती है, जैसे - नहीं, में, मैं। कविता आदि के प्रसंग में छंद की दृष्टि से चंद्रबिंदु का यथास्थान अवश्य प्रयोग किया जाए।

इसी प्रकार छोटे बच्चों की प्रवेशिकाओं में जहाँ चंद्रबिंदु का उच्चारण सिखाना अभीष्ट हो, वहाँ उसका यथास्थान सर्वत्र प्रयोग किया जाए, जैस - कहाँ, हँसना, आँगन, सँवारना, मैं, मैँ, नहीँ आदि।

Source: Manak Hindi Vartani Published by Kendriya Hindi Nideshalaya in 1980.

Devanagari on Typewriter

The idea of typing characters mechanically was patented on 1714 by Henry Mill, the first workable gadget was made only in 1833 by Xavier Progin, a Frenchman. By 1950 more than 18 different Devanagari Keyboards were on the market for typing Devanagari. Dr. Prasad formed committee for standard Devanagari Keyboard for administrative purposes on behalf of the Constituent Assembly of India and report published on 1951. The ministry of Education, Government of India then appointed an Expert-committee to design the Hindi Typewriter and Teleprinter keyboard. The experts committee brought out its first report in May 1952 and the improved design of the standard keyboard was finalized in 1962. The Government of Maharashtra felt that the problem required further study and Ad-Hoc committee of the Maharashtra Government reported some suggestions in the same year. The ministry of Education, Government of India was apprised of the work done by the Maharashtra Committee and after studying the finalized keyboard for Hindi and Marathi in 1965.
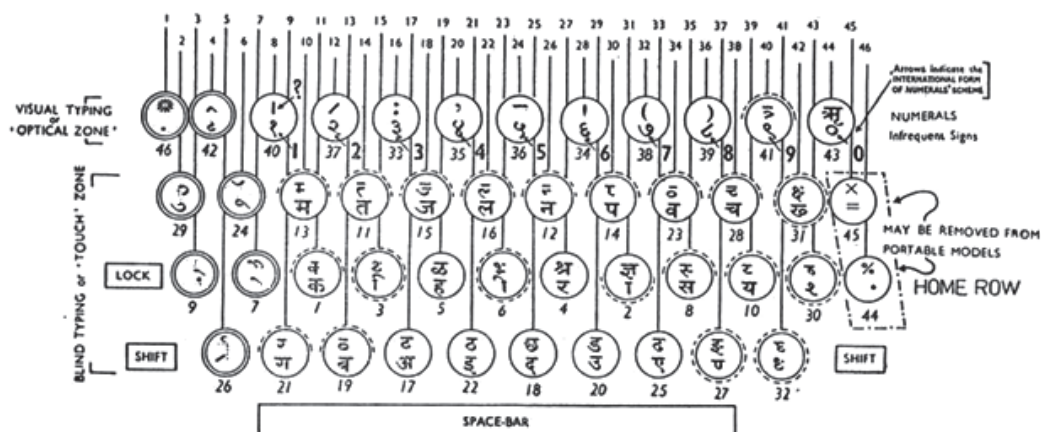
Source : Naik, 1971: 646.

Final layout of the Typewriter Keyboard for Devanagari Hindi and Marathi (Final 1965)

full letter keys	29
half letter keys	24
numbers	10
matras, *ikars*, *ukars* and diacritic	13
other signs	16
	–––
	92

Devanagari transliteration

Transliteration is a conversion of text/alphabet from one script to another. It is usually based on Roman phonetic keyboard equivalencies. Invention of computer which is modelled by roman script / typing, it is simple to type. It is one of the motivations of popularity and reason behind the development of transliteration for many other scripts. These days google IME is facilitating the free service of transliteration for many scripts including Devanagari.

D-DAC, NCST and Indictrans have developed some transliteration tools for Indian scripts. C-DAC has also provided their technology based on ISCII in 1980 in the form of Hardware based card called GIST. NCST developed a system in 2003. There various software and technologies developed for transliteration of roman into Devenagari by combined affords of C-DAC, TDIL, ITRANS, Google and many others from 1994 to 2015. Unicode is unique tool which is common typing and transliteration tools for many scripts. Latest in 2013 Google IME has many advantages to web users and transliteration tool users. Indic Inscript is also very useful grapheme transliteration tool for Devenagari.

Devanagari in Aga Khan Palace, Pune

This palace was built in 1892 by Imam Sultan Muhammad Shah Agakhan III. The palace was later donated to India by Aga Khan IV in 1969 as a mark of respect to Gandhi and his philosophy.

The Aga Khan Palace is a national monument of India's freedom movement. The palace is closely linked to the Indian freedom movement as it served as a prison for Mahatma Gandhi, his wife Kasturba Gandhi, his secretary Mahadev Desai and Sarojini Naidu. Mahadevbhai and Kasturba passed away while in captivity at the Aga Khan palace and their *səmadhi* are located in the area. The palace is a simple memorial to Gandhi and his life. The photo gallery and representative text is portrayed in the main building in the memory of Mahatma Gandhi and freedom movement.

Text is written in Devanagari and Roman. Vowel writing in Devanagari text is written in Vaidya type recommended by Br. Savarkar which is first suggested by script reformer Sundararao Bhaskar Vaidya with Dattatrya Krishna Devdhar in 1919 for Examples.
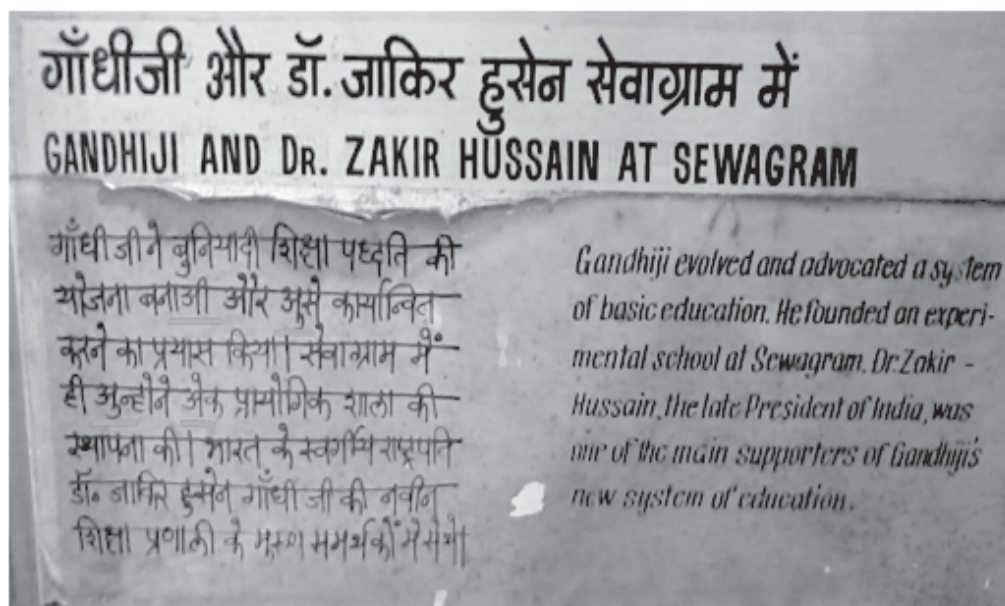
the introduction of *Swərakhədi* and the removal of verti-bar for constructing conjuncts for Marathi later accepted and modified by Br. Vinayak Savarkar in 1927 for Marathi typing and Kamata Prasad Sagariya for Hindi typing in 1947 and some other reformer such as Dr. M. D. Manohar and Prof. H.K. Sherwani (1949) and changed later by the Government of India for writing Devanagari for Hindi.
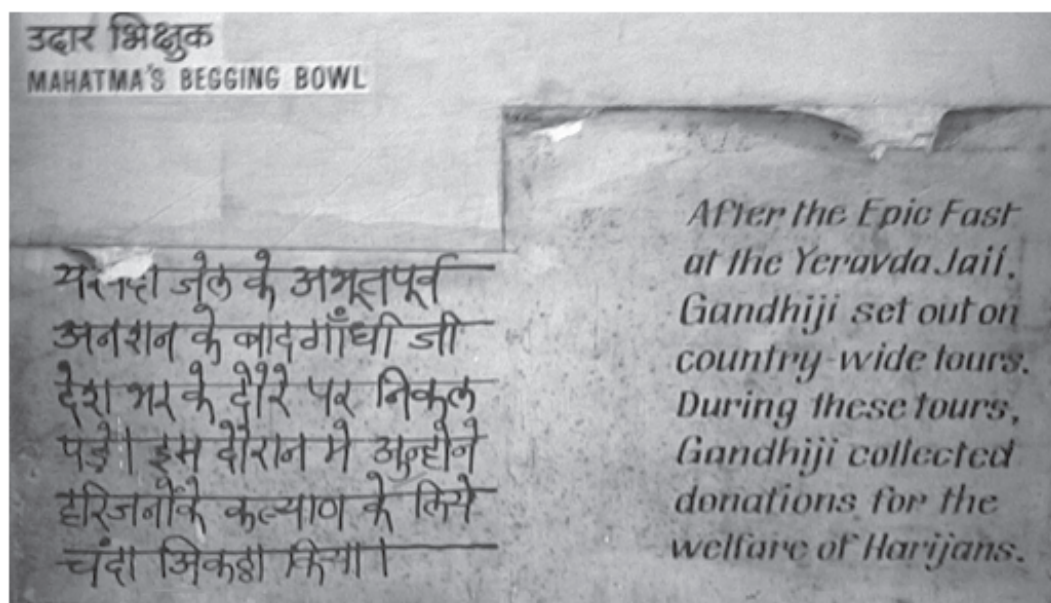
Vowel system recommended by Br. Savarkar (1927)

The major suggestion of Br. Savarkar was a sign अ without the end stroke should be used as the basic form for deriving the vowels by suffixing to it modified *matras*. Such as below;

अ आ अीं अी अु अू अृ ए ऐ ओ औ अं अः

Source: Naik, 1971: 517.

उदार भिक्षुक
MAHATMA'S BEGGING BOWL

यरवदा जेल के अग्रतपूर्त अनशन के बादगांधी जी देश भर के दौरे पर निकल पड़े। इस दौरान में अछूतीन हरिजनोंके कल्याण के लिऐ चंदा अिकड्डा किगा

After the Epic Fast at the Yeravda Jail. Gandhiji set out on country-wide tours. During these tours, Gandhiji collected donations for the welfare of Harijans.

Source: Photo gallery at Aga Khan Palace, Date 12 August 2014.

In above images marked vowels have written in Savarkar style where Matras, ु, े etc. are written as अु, अे etc. but not as उ, ए, ई etc. as written in modern writing of Devanagari.

Conclusion

Devanagari has changed over a period of time and the script reformers worked hard for codification and standardization of script. They have suggested various suggestions to minimize the Devanagari Character for maximizing the use of Devanagari in press, typewriting and books writing etc.

Script reformers have suggested various changes for codification and standardization of Devanagari but every suggestion is not implemented. Investigation of the photo gallery of Aga Khan Palace is reporting that the vowel writing of Devanagari text which is written in Vaidya type. It was first recommended by Br. Savarkar in 1927 which was first suggested by script reformer Sundararao Bhaskar Vaidya with Dattatrya Krishna Devdhar in 1919 for the introduction of *Swərakhədi*. It was implemented in writings of Aga Khan Palace.

Romanagari is widely used these days for writing Hindi/ Marathi by social media and internet users which may destructive for the development of Devanagari and other Indian scripts. Unicode and online transliteration such as Hindi Inscript keyboards and Google transliteration is facilitating the use of Devanagari.

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