

## The Choice of Devanāgarī\*

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More profound than all knowledge of hermeneutical rules is the application to oneself: “above all apply the rules to yourself and then you will have the key to understanding Solomon’s proverbs.”

Gadamer 2004: 26.

### 1. Introduction

In the rendition of Sanskrit texts, what drives the scholars’ selection of either Devanāgarī<sup>1</sup> or Roman characters? This is a crucial decision, bound up with cognitive, editorial, typographical, social and sometimes even ideological premises and consequences. In South Asia, the overwhelming majority of Sanskrit editions has been typeset in some sort of Devanāgarī typeface.<sup>2</sup> In the rest of the world, by contrast, there are printed and digital editions in either or both scripts, with an increasing revival of Devanāgarī in the recent past.

Historical examples of Devanāgarī editions are the pioneering Bibliotheca Indica series in Kolkata, the massive production of the Nirnaya Sagar Press in Mumbai, the Chowkhamba Sanskrit Series in Varanasi, and the Pune critical edition of the *Mahābhārata*, but also early European editions such as *Śatapathabrāhmaṇa*. Among the more recent critical editions in Devanāgarī characters, examples are Torella 1994, Goodall 1998, P. Olivelle & S. Olivelle 2005,

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- 1 On the Nāgarī-Devanāgarī nomenclature, see Maurer (1976: 103), who argues that the first attestation of the term “Devanāgarī” (“Diewnāgur”) occurs in Nathaniel Halhed’s *A Code of Gentoo Laws*, published in London in 1776, while “Nāgarī” is the older term. I tend to use “Devanāgarī” when referring to the printed character, while “Nāgarī” may be better serving as an umbrella term covering regional evolutions of the character (Jainā Nāgarī, Kāśmirikā Nāgarī, and Devanāgarī).
- 2 Sanskrit has historically been printed in a variety of regional scripts as well – Bengali, Gujarātī, varieties of Grantha, Kannāḍa, etc.

Steinkellner, Krasser, & Lasic 2005, and Kataoka 2011. The Murty Classical Library of India (<https://www.murtylibrary.com>) is a present project of Devanāgarī editions with translations on facing pages. A digital repository that offers Sanskrit texts both in Devanāgarī and Roman is SARIT (<https://sarit.indology.info/>).

Instances of editions in Roman are Whitney's edition of the *Taittirīyasamhitā*,<sup>3</sup> Gnoli 1960, Preisendanz 1994, Wezler & Motegi 1998, and Maas 2006. A peculiar transliteration experiment has been the editions and translations of the Clay Sanskrit Library (<https://claysanskritlibrary.org/>). GRETIL (<http://tinyurl.com/5n88v3fz>), a repository that offers a large amount of machine-readable Sanskrit texts in a variety of formats, deserves a special mention here.

Cogent arguments in favor of either Devanāgarī and Roman can be advanced. In the following pages, I will present some plausible viewpoints, prefacing it with the disclaimer that they are unavoidably presented from the “distorting mirror” of my own subjectivity. The attempt is not to shed all prejudices and find the ultimate truth, but rather to sort out “prejudices that enable understanding from the prejudices that hinder it and lead to misunderstandings.”<sup>4</sup>

My main concern is the impact of typographical choices on textual criticism, where methodological reflections are mostly devoted to retrieval and analysis of data such as collation and selection of variants, stemmatics, and reconstruction of ideal texts. The typographical decisions needed for the presentation of one's research, by contrast, are rarely addressed and discussed, so this discussion about the choice of the script aims at filling a part of this gap.

## 2. Hermeneutics and typography

### 2.1. Typography as interpretation

The choice between Devanāgarī or Roman script is a typographical decision. I understand “typography” as an hermeneutic operation: “Typography is to literature as musical performance is to composition: an essential act of interpretation.”<sup>5</sup> It is “the craft of endowing human language with a durable visual form, and thus with any independent existence.”<sup>6</sup> Therefore, the first task of a typographer is “to read and understand the text; the second task is to analyze and map it. Only then can [the] typographic interpretation begin.” “Interpretation,” according to Bringhurst, means “to analyze and reveal the inner order of the text, as a musician must

3 Weber's early editions, in the forties and fifties, are in Devanāgarī, while later ones are in Roman. The shift coincides with his increasing interest in Jaina material and Prākṛta language, but the actual reasons need to be further researched. For a biographical sketch and his massive bibliography, see Parpola 2003.

4 Gadamer 2004: 295.

5 Bringhurst 2004: 19.

6 Bringhurst 2004: 11.

reveal the inner order of the music he performs ... The typographic performance must reveal, not replace, the inner composition.”<sup>7</sup>

This hermeneutic dimension of typography certainly concerns Sanskrit editors who are engaged in the reconstruction of a work of the past. Such “reconstruction” is an actualization of the work: “Hegel states a definite truth, inasmuch as the essential nature of the historical spirit consists not in the restoration of the past but in *thoughtful mediation with contemporary life*.”<sup>8</sup> In this sense, Bringhurst’s ideal interpreter-typographer matches the interpreter-philologist cherished by Gadamer. Both roles entail some degree of awareness of one’s subjectivity.

Hermeneutics in the sphere of philology and the historical sciences is not “knowledge as domination” – i.e., an appropriation as taking possession; rather, it consists in subordinating ourselves to the text’s claim to dominate our minds.<sup>9</sup>

The ultimate purpose is to “explicitly and consciously” bridge “the temporal distance that separates the interpreter from the text” and overcome “the alienation of meaning that the text has undergone.” In this light, the choice of the script is another aspect of what Gadamer considers “the central problem of hermeneutics,” “the problem of application” of hermeneutic rules.<sup>10</sup>

Now, what are the typographical rules that we need to follow when choosing a script? A good place to start is this list of five functions of the art of typography:<sup>11</sup>

1. Inviting the reader into the text.
2. Revealing the tenor and meaning of the text.
3. Clarifying the structure and the order of the text.
4. Linking the text with other existing elements.
5. Inducing a state of energetic repose, which is the ideal condition for reading.

The selection of a specific script and font is a functional decision that should answer to these expectations. (1) Relates to the choice of the script in view of an intended audience; (2), (3) and (4) concern the historicity of the new edition in its hermeneutic application; (5) involves the problem of readability.

7 Bringhurst 2004: 20.

8 Gadamer 2004: 157.

9 Gadamer 2004: 310.

10 Gadamer 2004: 304.

11 Bringhurst 2004: 24.

## 2.2. The nature of types

Before the digital age, printing types were definable as “three-dimensional representations of letters of the alphabet . . . cast in an alloy of lead, antimony, and tin . . .,”<sup>12</sup> a typeface as “a group of characters whose forms are shaped in accordance with a particular set of design principles which share certain design features,”<sup>13</sup> a font (fount) as “a set of letters and other symbols in which each sort was supplied in approximate proportion to its frequency of use, all being of one body-size and design,”<sup>14</sup> or as “a concrete rendering of a typeface in a particular character set for a particular size-range for a particular imaging system.”<sup>15</sup> In the world of digital type, the font is “the glyph palette itself or the digital information encoding it.”<sup>16</sup>

As for their typographical function, faithful to the very etymology of “type” from the Latin *typus* (Greek τύπος, “mark, model, image”), “letterforms have tone, timbre, character, just as words and sentences do.”<sup>17</sup> Bringhurst calls them “subsemantic particles . . . letters cast on standardized bodies of metal, waiting to be assembled into meaningful combinations.”

Digital types, as digital typography, have been developed on the template of metal types. Most nomenclature, principles, and optics remains the same, so the following reflections should be applicable to the digital craft as well.<sup>18</sup>

## 2.3. Readability and legibility of fonts

When assessing the quality of a given typeface, learned typographers like to distinguish readability from legibility, the “key elements that help readers more readily comprehend the meaning of text placed on paper and the screen.”<sup>19</sup> Although the two terms may appear to be synonyms to the uninitiated, we actually speak of legibility of types and readability of texts, respectively:

Let’s distinguish between legibility and readability. Legibility is an optical measure of the visual clarity of a character and the efficiency with which it can be recognized. Readability is a subjective measure of the ease and comfort with which a typeface is read, and may have as much to do with habit and custom as with

12 Gaskell 1972: 10.

13 Ross 1999: 237, quoting Charles Bigelow, *Principles of Type Design for the Personal Workstation*, p. 2 (unpublished).

14 Gaskell 1972: 33.

15 Ross 1999: 236, again quoting Bigelow.

16 Bringhurst 2004: 325f.

17 Bringhurst 2004: 22.

18 For a compelling narrative about the continuity and innovations of digital typography, see Bringhurst 2004, ch. 9: 179–197. More specifically, on the technical aspects of digital typography, one may start from the insightful Bigelow & Day 2014, and <https://bigelowandholmes.typepad.com/>.

19 Hall 2003: 274.



the inherent characteristics of a typeface. Legibility can be quantified, whereas readability cannot. Legibility is often applied to letters in isolation, whereas readability applies to the act of reading a body of type.<sup>20</sup>

The legibility of type is thought to be objectively measurable. In a seminal psychological study, Burt (1959) experimented legibility and readability on a sample of readers. The test was then done on full pages, read both silently and loudly, and other factors such as fatiguability were taken into consideration. The children participating in the experiment were tested both in class and individually, in order to assess the weight of social factors. Four observable behaviors in readers were tracked:

1. Ease of reading letters, words, or sentences, judged by the distance at which they can be read.
2. Accuracy of reading letters or words with brief tachistoscopic exposures.
3. Speed of reading passages of prose, when the reader's aim is to grasp the content of the passages.
4. The observation of the eye movements, eye blinking, and other objective symptoms.

While this method proved to be effective for isolated letters or words, it was soon appearing inadequate to assess the legibility of longer texts, thus vindicating the need of a different term, namely readability, to express this more subjective aspects.

The graphemes of classical and, lesser so, neoclassical type-faces proved more recognizable than the modern ones, showing how the reciprocal distinction among glyphs is a crucial criterion for the legibility of a type-face.

Caslon for instance, fared better than Bodoni (see Figure 11.1 and Figure 11.2, below), one of the reason being the hypermodulation of the latter type-face, particularly the disparity of thickness of vertical strokes.<sup>21</sup>

The quick brown fox jumps over the lazy dog

Figure 11.1: Adobe Caslon Pro Regular

The quick brown fox jumps over the lazy dog

Figure 11.2: LTC Bodoni 175 Pro Regular

The desirable degree of thickness proved to be related to its balance with the counters, i.e., “the white space enclosed in a letterspace.”<sup>22</sup>

20 Moye 1995: 208.

21 Burt 1959: 7f.

22 Bringhurst 2004: 324.

For readers who are hypermetropic or astigmatic, legibility is improved by increasing the heaviness of the type. But the optimal thickening is severely limited ... excessive thickening tends to reduce the size of counters [i.e., the white inner spaces] ... .<sup>23</sup>

The size is also an important criterion for legibility, since children needed bigger sizes in comparison to adults.<sup>24</sup> Since this principle is caused by the increased proficiency in adults, it may be applicable also to the case of new scripts learned by adults as it is the case for many non-Indian Sanskrit students:

With adults our experiments were in the main restricted to reading matter set in 10–point Times Roman. With this type, measure shorter than 20 ems or longer than 33 ems diminished speed and ease of reading ... For literary material the narrower measure is desirable ... for scientific the wider ... With long lines of solid type the eye finds it difficult to pick up the right line in turning from the end of a given line to the beginning of the next; and large pages filled with solid-looking panels of printed matter are apt to repel all but the hardened scholar. On the other hand, short measures, particularly when the type is big, prevent the eye of the trained reader from taking in large phrases with a single fixation and from making the most of the subsidiary help given in the horizontal direction by peripheral vision. Moreover, they necessarily entail widely varying spaces between the words, and increase the number of broken words at the end of lines – features ... which can greatly hinder comfortable reading ... Where the reading matter requires to be read mentally word by word (as in poetry), small measures, wide interlinear spacing, and even small type with fairly broad spaces between the words, are an advantage.<sup>25</sup>

The size is directly related to the leading, i.e., the vertical space within lines, which proved to be another crucial determinant of legibility: “We found that the introduction of one or two points of leading would appreciably increase the ease of reading ... little seems to be gained by 3-point leading; 4-point leading usually diminished legibility.”<sup>26</sup> The Devanāgarī

23 Burt 1959: 10.

24 See Burt 1959: 11–14.

25 Burt 1959: 13f. No sanserif type-faces were used in the study. Their lesser legibility, in print, is a widely accepted fact. On screen, however, they are often recommended as the better choice. Bringhurst (2004: 193) recommends “blunt simplicity” for the sake of legibility on the screen, where type-faces should have “low contrast, a large torso, open counters, sturdy terminals, and slab serifs or no serifs at all.”

26 Burt 1959: 13.

typesetter needs to pay particular importance to this aspect, due to the cumbersome ascenders and descenders typical of the script.<sup>27</sup>

In contrast to these aspects that he deemed to some extent measurable, Burt noticed the impact of subjective factors:

Nearly all tended to read with greater facility the kind of types that they preferred, and were inclined to confuse intrinsic legibility with private aesthetic preferences ... it seemed evident that *almost everyone reads most easily matter set up in the style and size to which he has become habituated.*<sup>28</sup>

While acknowledging the limitations of his study and the urgency for further research, Burt concludes that “the introspective data obtained during our experiments on typographical preferences disclose a highly complex motivation – the customary reading and the cultural interests of the reader playing an unexpectedly important role.”<sup>29</sup>

### 3. In defense of Roman script

#### 3.1. A short history of Roman transliteration

The “Latin alphabet,” in European history, was named as such in opposition to the “Greek alphabet.” In typography “Latin Roman” is ambiguously used on the one hand to distinguish Renaissance type faces such as Aldus, Jenson, Garamond, etc., from Gothic forms (black letter) and their sub-varieties, and on the other hand to differentiate Roman typefaces from Italic or cursive ones, within this very set of Renaissance faces (see Figure 11.3).<sup>30</sup> In the present context “Roman script” helps us avoiding the language-script conflation in the “Latin alphabet” terminology, for in the last millennium the alphabet has obviously been used to write countless languages, other than Latin.

In its adaptation to Sanskrit, “Roman script” refers here to the IAST scheme of transliteration or transcription.<sup>31</sup> Before the development of an efficient printing technology in Devanāgarī, William Jones (1746–1794) had already proposed a system to transcribe Asian languages

27 Relatedly, this is one of the reason for the use of the *pr̥ṣṭhamātra* in some manuscripts, for instance BORI 390/1875-76, wherever extenders – i.e., descender and ascenders such as vowel signs below the baseline or above the headline – are not usable for want of interlinear space.

28 Burt 1959: 17f.

29 Burt 1959: 30.

30 For an historical and typographical introduction on the history of Roman types, see Gaskell 1972: 26–39 and Bringhurst 2004: 119–142.

31 In relation to IAST and Sanskrit language, the distinction between “transliteration” and “transcription” does not seem relevant to me. While discussing Old Javanese sources, for instance, Aciri and Griffiths (2014: 367) use “Romanisation” as an umbrella term, and insist on the necessity of distinguishing transcription from transliteration, citing Wellisch 1978: 17f. Wellisch (1978: 18) defines “transcription” as either a paedography or a technography, while the latter as a technogra-

in Roman script,<sup>32</sup> one of the first steps in the evolution of the present-day International Phonetic Alphabet (IPA) and International Alphabet of Sanskrit Transliteration (IAST).<sup>33</sup> Jones's system was gradually improved and standardized through milestones such as Monier-Williams 1890, and through the proposals of Committee 1895 and Burgess 1897 during the Tenth Congress of Orientalists in Geneva, along with the growth of knowledge in the fields of phonetics and phonology.<sup>34</sup> The IAST is the outcome of this gradual evolution and has become the academic standard for rendering the Sanskrit language.

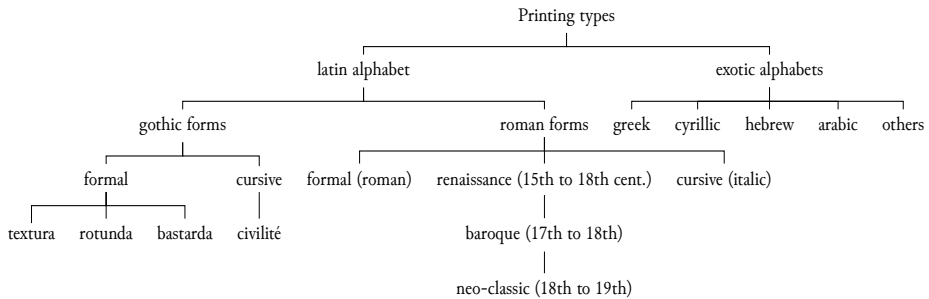


Figure 11.3: Synopsis of historical Roman typefaces, based on Gaskell 1972: 9

Even before the advent of the press, the surge of Devanāgarī as a panIndian Sanskrit script remains a modern event, so the claims in support of an ancient tradition of Devanāgarī are rather shallow. What is the rationale of using Devanāgarī to transliterate works that were originally composed in Śāradā, Banglā, Grantha, or any other indic script? Why not using the original script, according to the regional provenance of the work? And if a wider audience is aimed at, isn't it more reasonable to adopt the Roman script?

phy only. A technography is “a convenient and highly effective means of graphic communication between experts,” while a paedography has the main purpose of teaching “persons who are unfamiliar with the sounds of a language.” IAST may certainly be used to serve either or both purposes. This is in part a consequence of the quasi-phonological nature of Devanāgarī itself. Cf. Wellisch (1978: 313), who argues that “any transliteration mixed with phonological elements ... ceases to be transliteration and becomes, by definition, a transcription.”

- 32 In Jones 1807, discussed in Trautmann 2006: 66–72. Cf. Robins 1967: 227: “Sir William Jones ... praised the phonological appropriateness of the Devanagari syllabary and of the Arabic script to the disadvantage of English alphabetic spelling. Unlike most of his contemporaries he clearly distinguished between letter and sound, and he vigorously protested against the paedagogical reference to ‘five vowels’ in English.”
- 33 I am here focusing on the IAST as the most widely used system in academic works, despite the existence of other useful methods such as the Harvard-Kyoto.
- 34 Other transliteration schemes were in use after Jones's seminal paper, notably the one used in Böhrling and Roth 1852–1875, but the deliberation of Committee 1895 was going to stand the test of time.

### 3.2. Roman script is more accurate

The IAST transliteration has long been used in academic publications all over the world, and as such it is the accepted Sanskrit script. With the assistance of minimal additional marks, it uses the universally known Roman alphabet, with the obvious advantage of accessibility. It is an unambiguous script that has proven to be well-suited to the sophisticated phonology of Sanskrit, whose study has contributed to the very modern concept of phoneme through the work of fathers of modern linguistics such as Saussure and Bloomfield.<sup>35</sup>

Jones (1807: 253) was aiming at a transliteration that could apply to any “Asiatick Literature, or to translate from the Asiatick Languages . . . to express Arabian, Indian, and Persian words . . . in the characters generally used among Europeans.” His system was clearly inspired by the Sanskrit alphabet and ultimately rooted in ancient Sanskrit phonetics. In this sense, therefore, even the IAST is an evolution from Sanskrit language and form the Sanskritic tradition, just like Devanāgarī.

From the philologist’s view, moreover, there is a compelling argument in favor of IAST. This analytical script, in fact, offers undisputable advantages. The transliteration forces the editor to disclose his understanding of the text by means of word separations, which in many cases can be omitted in editions based on the model of alphasyllabic scripts. Editors of Sanskrit texts composed in an Indic script can easily save themselves a number of difficult editorial decisions.

Devanāgarī does not allow an equal depth of textual analysis, due to the lack of graphical division of vowels and because even word separations are often graphically indistinct. How much more readable is this grammatical sūtra, *sanval lagbuni caṅpare ’naḡlope* (A, 7.4.63), in respect to सन्वल्लुगुनि चङ्गेऽनग्लोपे, or even worse, सन्वल्लुगुनि चङ्गेऽनग्लोपे, without the *avagraba*, as found in some manuscripts:<sup>36</sup> In the *Vyākaraṇamahābhāṣya*, p. 15–16, यत्तर्हि तदिङ्गितं . . . यत्तर्हि तच्छुक्लो . . . यत्तर्हि तद्भिन्नेषु are these *tad iṅgitam*, *tac chuklaḥ*, *tad bbinneṣu*, or rather *tadiṅgitam*, *tacchuklaḥ*, *tadbbinneṣu*? In NV, ad NS 1.1.1, पदानामर्थाः प्रमाणादयः षोडशात्मानः ॥ तच्छास्त्रं पुरुषश्रेयोऽभिधत्ते (p. 1,14), is तच्छास्त्रं “that discipline” or “the discipline of those [sixteen categories]”? Possible ambiguities that prove the analytical superiority of IAST abound in any Sanskrit genre.

35 On Bloomfield’s study of Pāṇini and on its impact on linguistics, see Emeneau 1988. The phonological nature of the Sanskrit *varṇamālā*, however, needs to be qualified. “Phoneme,” as a translation of *varṇa*, presents some problems, some of them shared by the very “phoneme” category in phonology (see note 41 below). Some authors have refrained from using this term. Brough (1953) has “speech-entity” or “sound”, and only occasionally “phoneme.” Cardona (1997) often uses “sound,” but also speaks of “morphophonemic” rules dictating changes of *varṇa*. The hypostatization of *varṇas* done in Mīmāṃsā and Nyāya was fiercely disputed by several Sanskrit authors, for reasons not so distant from those who have questioned the phonemic phonology of modern linguistics (see Lyons 1962). For instance, is the phoneme a segmental or suprasegmental entity?

36 *sanvat*, “[the operation is] like *saN*” is an indeclinable. It is not in compound with *lagbuni*.

Besides, as reported by Naik,<sup>37</sup> despite all the efforts to standardize Devanāgarī its limits have been exposed by M. M. Gogate in 1964. Gogate advocated the use of Roman script to write Marathi language, because Devanāgarī “is not logical, is inconvenient for printing and indexing, and is inferior to the Roman script.” The confusion between *anusvāra* and class nasals, the different ways of writing the *r*, the diverse ways of writing conjunct consonants, and the typographic challenges posited by the presence of the cumbersome ascenders and descenders are all complications that affect Sanskrit texts as well.

### 3.3. Roman script is ideologically neutral

While the IAST has a long-established scientific status, the adoption of Devanāgarī in academic works may send wrong or unintended signals, since Devanāgarī has long been transformed into an essential character of Hindu identity:

The Hindi-Nagari movement in the sense of organized groups seeking change through political action began in the late 1860s and continued with varying intensity well into the twentieth century. The supporters of Hindi and the Nagari script did not achieve final success until shortly after independence in 1947.<sup>38</sup>

During the course of the 19th century, Urdu language, written in a Perso-Arabic script, increasingly became a symbol of Islamic identity, while Devanāgarī triumphed as the Hindi script<sup>39</sup> and was eventually identified with Hinduism, to the extent that Devanāgarī, the script, has often been conflated with Sanskrit and Hindi, the languages.<sup>40</sup>

### 3.4. Roman script has a wider audience

The IAST is a readily learnable system. It adds a few standard diacritics – macron, upper dot, lower dot, acute accent – to the universally known English alphabet. Beginner students of Sanskrit and occasional readers can read the language with minimal effort. This is not the case with Devanāgarī, which can be mastered only through a dedicated endeavor and a prolonged exposure. The IAST can even be used to communicate Sanskrit words to students who do not know the language, as often needed during undergraduate and graduate courses of

37 Naik 1971: 555f.

38 King 1994: 126.

39 As described in King 1989 and Ahmad 2008.

40 The confusion was often instrumentalized during the Hindi–Urdu controversy in the nineteenth century, “From the very beginning the different parties to the debate consistently confused the names for the language and script. ‘Hindi’, ‘Hindi character’, ‘Nagari’, and ‘Nagari character’ seemed interchangeable, as did ‘Persian’, ‘Persian character’, and ‘Urdu’” (King 1989: 188).

South Asian philosophy, history, religion, and so forth. It unambiguously captures the quasi-phonemic spirit of Sanskrit language,<sup>41</sup> and it should therefore be considered the standard way of writing Sanskrit by students, teachers, philologists, philosophers, linguists, etc.

### 3.5. Roman script offers technical advantages

Roman characters make the scholars' life much easier, because of its straight-forward machine readability. Tasks such as typing, editing, typesetting, creating and searching through databases, etc., are readily available through dedicated softwares, without complications. Sharing texts with colleagues becomes simpler. In the new millenium, after the popularization of the Unicode standard and its recognition by any operative system, the IAST encoding has now become seamlessly portable throughout any operative system, device and website.<sup>42</sup>

## 4. In defense of Devanāgarī

### 4.1. A short history of Devanāgarī

South-Indian scripts appeared in print as early as in 1577.<sup>43</sup> North-Indian scripts, however, at first presented insurmountable technical difficulties, due to their alphasyllabic nature and to the amount of possible ligatures. The astonishing consequence, in comparison to the typographical achievements accomplished elsewhere, is that an efficient printing technology was devised only at the end of the eighteenth century, more than three centuries after Gutenberg's earliest successful effort.<sup>44</sup> The 42-lines Bible was printed in 1456,<sup>45</sup> while the first Devanāgarī print with movable characters appeared only at the end of the eighteenth century. "The earliest book issued in Europe containing a substantial amount of Hindi printed in Devanagari movable metal types was the *Alphabetum Brammbanicum seu Indostanum* from the Propaganda Fide Press, Rome, 1771."<sup>46</sup> In India, the earliest typeset Devanāgarī is found in *The New Asiatic Miscellany. Consisting of Original Essays, Translations, and Fugitive Pieces*

41 The phonemic value of the length and pitch of vowels is recognized already in Pāṇini's grammar, but the Sanskrit alphabet also lists some cases that do not meet the criterion of minimal pair, notably the nasal consonants (Emeneau 1946). These, however, are sporadic exceptions of what can otherwise be considered as quasiphonemic system.

42 On the revolutionary significance of the Unicode standard on digital typography, see Bringhurst 2004: 181.

43 For details see Naik 1971, vol. 1: 228 and Kesavan 1985: 26ff.

44 Bringhurst (2004: 119) adds that "movable type was first invented not in Germany in the 1450s, as Europeans often claim, but in China in the 1040s."

45 Febvre & Martin 1977: 53.

46 Shaw 1981: 32. On the *Alphabetum Brammbanicum seu Indostanum* see also Naik 1971, vol. 1: 239–244.

from 1789. A history of Devanāgarī fonts is still a desideratum, so some of its milestones are retraced in the next pages (my own synopsis is shown in Figure 11.4).

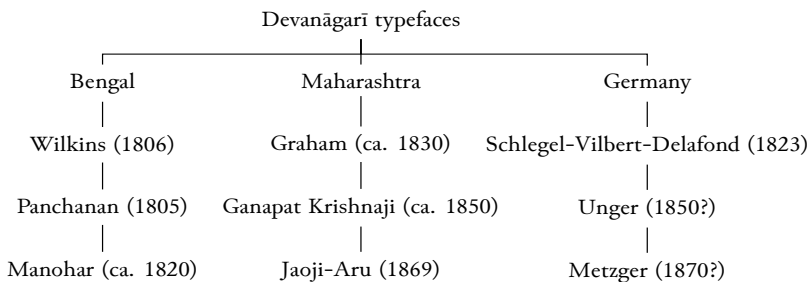


Figure 11.4: Synopsis of historical Devanāgarī typefaces

Even though fonts ought to be named after their creators, it is clear that tasks such as designing, engraving, casting, and typesetting are complex operations that are hardly achievable by a single individual. For quality results specialists are required, so the pioneers of Devanāgarī foundry mentioned below – Wilkins, Panchanan, Manohar, Graham, etc. – could have never achieved success unassisted, and in fact the amazing typefaces cut by Vibert and Metzger were done by specialized typefounders. Besides, theirs were enterprises that needed considerable funding.

Two crucial problems related to funds and skills, that beset printers both in Europe and in India, were the difficulties of procuring printing-worthy paper and to import antimony, the metal used in the alloy for casting types.<sup>47</sup> Indian hand-made paper, “a dingy, porous, rough substance” was considered at that time inferior to European paper, which was in contrast “higher in quality but also in price.”<sup>48</sup> This problem of costs led to the early establishment of paper mills, notably the Serampore mill, set up by William Carey. As for antimony, it needed to be shipped “from Europe and Arabia,”<sup>49</sup> thus being quite expensive and yet a necessary ingredient: “Printing types ... were cast in an alloy of lead, antimony, and tin called type-metal; it was hard enough to wear well yet had a low melting point, and it neither shrank nor expanded when it cooled.”<sup>50</sup> In Europe antimony was employed by the beginning of the sixteenth century, but the quality of the alloy kept improving until the end of the eighteenth

47 On the paucity of good paper and antimony in India, see Shaw 1981: 34ff.

48 Shaw 1981: 35, quoting William Carey’s biographer George Smith. The quality of paper should here be understood in terms of aspects such as polish, brightness, weight, which are functional to better printing results. In terms of durability, some hand-made paper could actually be considered superior.

49 Shaw 1981: 34.

50 Gaskell 1972: 9.



century. This shows how delicate and specialized the operations of casting types were.<sup>51</sup> In any case, unlike in the history of European typography, generally Devanāgarī typefaces are not linked to the original typographers or engravers, so I'll indulge in a digression on the achievements of these pioneers.

#### 4.1.1. Wilkins's early efforts

The history of the Devanāgarī press begins in Bengal. The earliest attempts, in fact, were in Bengali script, and only later in Devanāgarī.<sup>52</sup> A key factor was the entrepreneurship of Nathaniel Halhed (1751–1830) and Charles Wilkins (1749–1836), both servants in the East India Company.<sup>53</sup> Halhed, in 1778, published a Bengali grammar adopting the first Bengali font where he mentioned some of the obstacles encountered in the process:

That the Bengal letter is very difficult to be imitated in steel will readily be allowed by every person who shall examine the intricacies of the strokes, the unequal length and size of the characters, and the variety of their positions and combinations.<sup>54</sup>

Wilkins was reportedly responsible for cutting the punches and, most importantly, for devising a new technique to accommodate the complex patterns of ascenders, descenders, i.e., vowel-extenders of consonants, and ligatures:

The advice and even solicitation of the Governor General prevailed upon Mr. Wilkins, a gentleman who has been some years in the India Company's civil service in Bengal, to undertake a set of Bengal types. He did, and his success has exceeded every expectation. In a country so remote from all connexion with European artists, he has been obliged to charge himself with all the various occupations of the Metallurgist, the Engraver, the Founder and the Printer.<sup>55</sup>

Once a viable solution for the problems of the Bengali script was found, the creation of a Devanāgarī font was only a matter of time. Unlike Halhed, Wilkins was invested in Sanskrit and soon began working at a Devanāgarī font, which was ready by 1795.

51 See Febvre & Martin 1977: 57.

52 See Naik 1971, vol. 1: 242–261, Kesavan 1985: 181–184.

53 Further details about Halhed's printing mission and his activities in Bengal can be found in Priolkar 1958: 51ff., Kesavan 1985: 181ff., and Rocher 1983.

54 Halhed 1778: xxiii.

55 Halhed 1778: xxiv.

Stimulated and encouraged by the example of Mr. Halhed, also a Bengal civilian, the first Englishman who directed his attention to Sanskrit, although better known by his grammar of the Bengali language, Mr. Wilkins engaged about the year 1778 with ardour in the study [...] An undeniable proof of the success which had rewarded his diligence was manifested in 1784 by the publication of [...] the 'Bhagavad Gita', which was printed in London [...]. Upon the return of Mr. Wilkins to England, he brought with him translations of three popular native grammars, and from these, and other original authorities, he compiled a grammar, of which the first pages were printed in 1795.<sup>56</sup>

As soon as he was ready to print, however, calamity struck. Wilkins himself wrote:

At the commencement of the year 1795, residing in the country, and having much leisure, I began to arrange my materials, and prepare them for publication. I cut letters in steel, made matrices and moulds, and cast from them a fount of types of the Devanāgarī character, all with my own hands; and with the assistance of such mechanics as a country village could afford, I very speedily prepared all the other implements of printing in my own dwelling-house; for by the second of May of the same year, I had taken proofs of sixteen pages, differing but little from those now exhibited in the first two sheets [...] when alas! The premises were discovered to be in flames [...] the whole building was presently burnt to the ground. Greatest part of the punches and matrices was saved but types were ruined.<sup>57</sup>

After the fire, at first Wilkins abandoned the idea of printing his grammar. In 1808, however, after the foundation of the East India College at Hertford, he eventually found the motivation to use his own font in the edition of his *Grammar of Sanskrit Language*:

The study of the Oriental languages was one of the principal objects of this munificent institution, and that of the *Sanskrit* a desideratum. But as there was not any grammar of this to be procured, I was called upon, and highly encouraged to bring forward that which I had been so many years preparing, I accordingly had other letters cast from my matrices, and sent it immediately to press [...].<sup>58</sup>

Even before 1808, Wilkins's font had appeared in some Tanjore publications at the press set up under the patronage of King Serfoji II Bhonsle. The first book, the *Bālabodhamuktāvalī* (a

56 Wilson 1843: 273f.

57 Wilkins 1808: xii.

58 Wilkins 1808: xiii.

translation of Aesop fables in Marathi), was printed in śaka 1728 *ṣṣayanāma saṃvatsarī kārtika śuddha 2,*” which corresponds to November 1806 (see Figure 11.5 below).<sup>59</sup>

Wilkins is thus acknowledged as the inventor of the new technology and even “the father of Bengali printing”,<sup>60</sup> as well as “the father of Devanagari typography.”<sup>61</sup> He was likely assisted, however, by other less known and yet indispensable specialists, such as the engraver Joseph Shepherd, who may have actually cut the original punches, and the local Panchanan Karmakar (“blacksmith”), who may have contributed to the punches and may have helped to find the proper balance in the types’ alloy.<sup>62</sup>

एक्यापर्वताबहूनएकनिर्मलपाण्याचाओ  
हलयेनहोतातेथेथेक्याउष्णकांनीएकदि  
वसीएकलाउगावएकयेउकाउभयसांही  
एक्याचमुहूर्त्तपाणीप्यावयासआलेलाउ  
गाउन्ननप्रदेशीउभा राहिलाहोतावयेउ  
काखालपटप्रदेशीकाहीदूरअनरानेउभा  
होतालाउग्यासेमनीकोण्याप्रकारेहीयेउ  
क्यासीदाटबलेभाउणेकरावयावेहोनेनद  
नुसारयेउक्यासविचारूलागलाजेअरेयेउ  
क्यानिर्मलआहेनेपाणीउहुलूनमलाप्याव

Figure 11.5: Wilkins’s font, Balbodha Muktāvali, 1806 (Naik 1971, vol. 1: 263)

#### 4.1.2. Panchanan’s and Manohar’s fonts at the Baptist Mission

By the time Wilkins had left India, some of his know-how was left in Karmakar Panchanan’s hands. Panchanan was soon employed at William Carey’s Baptist Mission in Serampore, where more massive Devanāgarī printing eventually took off. William Carey, who had come to India as a missionary and was searching for printing solutions with proselytistic intentions, managed to acquire a printing press in 1798. Two years later, along with William Ward and Joshua Marshman, he established the Baptist Mission.<sup>63</sup> In addition,

59 Naik 1971, vol. 3: 15. Naik dates the book as 1809, but this cannot be right. The date is correctly interpreted as 1806 in Blumhardt 1892: 2. Serfoji’s press is discussed in Naik 1971, vol. 1: 262ff. It is not clear how and when exactly Wilkins’s types made their way to Tanjore.

60 Another less known pioneer of Bengali printing was Willem Bolts. See Kesavan 1985: 201–205.

61 Naik 1971: 261.

62 On a variety of views on the key roles of Shepherd and Panchanan, see Naik 1971, vol. 1, ch. 9, Shaw 1981: 69–71, Kesavan 1985: 206f., Ogborn 2007: 242f., and especially Ross 1999: 10ff.

63 Kesavan 1985: 189f.

[o]ne of the very happy features of Carey’s initiative was the training of a fine Indian punch-cutter and type caster, Panchanan Karmakar ... Panchanan was employed by the famous Sanskrit scholar Colebrooke, along with his son-in-law Manohar, who was also trained in the art of punch cutting. Carey enticed Panchanan out of Colebrooke’s service ...<sup>64</sup>

The first book containing Panchanan’s Devanāgarī types is probably William Carey’s Marathi grammar, printed in 1805.<sup>65</sup> In these years Panchanan employed his “nephew and son-in-law,”<sup>66</sup> Karmakar Manohar as assistant, “an expert and elegant workman, who was subsequently employed for forty years at the Serampore press.”<sup>67</sup>

श्रीमन्तास् म्हाटली तदनन्तर श्रीमन्त काय  
बोललेत श्रीमन्ताचा मनोदय काय आहे ?  
जे श्रीमन्ताचा मनोदय असेल त्याच प्रमाणे  
वर्तणुक करू ।

अहो एक गेष्म कानांत आयकूं जा  
साहेबांचे कानांत म्हणून जे आज्ञा करीत ते  
सत्वर येऊन अम्हास सांगा तदनन्तर आप  
ले विचारांत जे गोष्म दृष्ट येइल ते करू ।

Figure 11.6: Panchanan’s font, *A Grammar of the Mabratra Language*, 1805 (Naik 1971, vol. 3, fig. 54a)

Some of the fonts of the Baptist Mission Press, first in Serampore and then in Kolkata, were destined to be widely used throughout the nineteenth century and beyond in historical projects such as the Bibliotheca Indica Series in Kolkata and the Vizianagaram Sanskrit Series in Varanasi.<sup>68</sup>

64 Kesavan 1985: 191. Ross (1999: 44), however, closely compares the respective quality of Wilkins and Panchanan productions, and notes that “in comparison to the earlier founts of Wilkins ... the fount of Bengali types first used by the Baptist missionaries has to be regarded the inferior, both in relation to the design of its letterforms and to its poor alignment.”

65 Naik 1971, vol. 1: 274, and vol. 3, fig. 54a; see figure 11.8 below.

66 Naik 1971, vol. 1: 277, and vol. 3, fig. 54a.

67 Marshman 1859: 179.

68 See Marshman 1859: 179: “[Manohar] was subsequently employed for forty years at the Serampore press, ... whose exertions and instructions Bengal is indebted for the various beautiful founts of the Bengalee, Nagree, Persian, Arabic, and other characters which have been gradually introduced into the different printing establishments.”

### 4.1.3. Graham's font at the American Mission in Bombay

With preaching purposes akin to Carey's in Bengal, the American (protestant) Mission Press was established in 1816 by Gordon Hall and fellow missionaries. The first publication, a pamphlet in Marathi language, was printed in 1817 using a press and types acquired in Kolkata.<sup>69</sup> The New Testament printed and reprinted at the American Mission Press in 1826 and 1830 still feature the Baptist Mission's Devanāgarī.<sup>70</sup>

An apprentice of Gordon Hall at the American Mission Press, Thomas Graham, began working at new fonts of his own. His pioneering work culminated in an improved design, reduction of sizes, and most importantly in a new technique of splitting conjunct consonants and thus reducing the amount of characters, the "Bombay (or degree) Type" system (see Figures 11.7–10).<sup>71</sup>

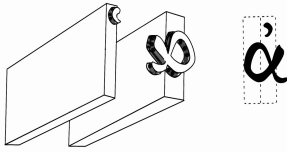


Figure 11.7: Overhanging Greek breathing, based on Gaskell 1972: 32

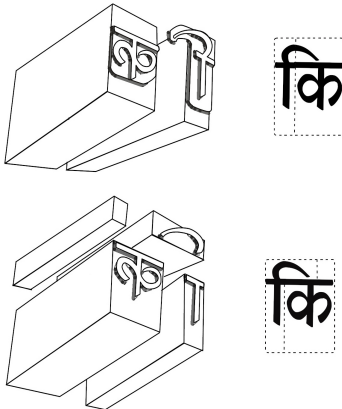


Figure 11.8: Akṣhaṇḍa and degree systems with overhanging mark, based on Naik 1971, vol. 2: 328

69 Naik 1971, vol. 1: 288.

70 Naik 1971, vol. 1: 289, and vol. 3, fig. 77.

71 On the akṣhaṇḍa and degree systems see Naik 1971, vol. 1: 297ff., and, more clearly explained, Ross 1999: 135ff.

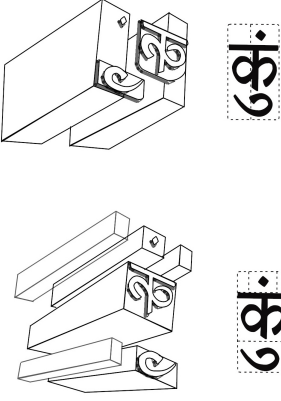


Figure 11.9: *Akbaṇḍa* and degree systems with hanging and overhanging mark, based on Naik 1971, vol. 2: 328

तें झालेले वर्तमान मडमीने आपल्या खोर्लीतून पाहिले, आणि चाकराकडून त्या हातारीला खाया ला व पांघरायाला पाठवून दिले. मग जेव्हां शेरिबाईची मडमीशीं गांठ पडली, तेव्हां दोघींची संभाषणे याप्रकारे झालीं; मडमीने तिला विचारिले, अगे तूं जेवीत असतां कोण तुझ्याजवळ आली होती बरे?

Figure 11.10: Graham's font, *Chamatkarik Gosti*, 1838 (Naik 1971, vol. 1: 298)

Among the collaborators of Graham there was Ganapat Krishnaji (ca. 1800–1861), who established the first printing press and foundry run by non-foreigners in Maharashtra.<sup>72</sup>

72 Naik 1971: 308; see Figure 11.11 below.

श्रीगणेशायनमः ॥ ॥ वर्गाइति । इहवक्ष्यमाणेऽस्मिन्काडेअगैष्टच्छाखानगरादिभिरुपागैष्टसाभेशादिभिःसाहितैःपृथ्वीपुरादिशब्दैर्वर्गाउदिताः ।  
 वक्तुमारब्धाइत्यर्थः । तत्रक्षमाभृच्छेलः । ऋगादिभिरित्यादिशब्देनपक्षिणांगदः । “यद्वाचगानत्तिपुनःपुनःसच्छगादीसिंहः” १ ॥ भूः । भूमिः । अ  
 चला । अनता । रसा । विश्वभरा । स्थिरा । धरा । धरित्री । धरणिः । क्षौणिः । क्षौणीः । ज्या । काश्यपी । क्षितिः ॥ २ ॥ सर्वसहा ।

वर्गाःपृथ्वीपुरक्षमाभृदनौपधिच्छगादिभिः ॥ नृद्वहसक्षत्रविट्शूद्रैःसांगोपांगैरिहोदिताः ॥ १ ॥ भूर्भूमिरचलाःनंतरा  
 साविश्वभरस्थिरा ॥ धराधरित्रीधरणिःक्षौणिर्ज्याकाश्यपीक्षितिः ॥ २ ॥ सर्वसहावसुमतीवसुवोर्वीवसुंधरा ॥  
 गोत्राक्ःपृथिवीपृथ्वीक्षमाःवर्निर्मदिनीमही ॥ ३ ॥

वसुमती । वसुधा । उर्वी । वसुंधरा । गोत्रा । कुः । पृथि  
 वी । “पृथवी । पृथ्वीपृथिवीपृथ्वीतिशब्दाणवः ।” पृथ्वी । क्षमा । अवनिः । “अवनी” मेदिनी । मही । “महिः” इति सप्तविंशतिनामि  
 भूमः । अत्रभूमौधरणीत्यादयोऽङोपताअपि । कदिकारादिकिनइतिगणस्यत्र ॥ ३ ॥

Figure 11.11: Ganapat Krishnaji’s font, *Amarakoṣa*, 1862

#### 4.1.4. The Nirnaya Sagar font

The renowned Nirnaya Sagar Press was founded by Jaoji (or Javaji) Dadaji Chaudhary (1839–1892) in 1869.<sup>73</sup> Jaoji and his colleague Ranoji Raoji Aru (1848–1922) had acquired their skills at punch-cutting, type-casting, etc., under Graham at the American Mission Press. Later, they both worked at the Times of India newspaper, when in 1859 it had acquired the Mission Press. Ranoji then joined the Education Society Press, where Graham was the “Foundry Superintendent,” while Jaoji was employed at the Indu-Prakash Press. After Jaoji had established his own foundry, Ranoji eventually joined him. An outcome of their collaboration was the production of “several elegant Devanagari type founts which still remain unsurpassed.”<sup>74</sup>

॥ श्रीगणेशायनमः ॥ ॥ श्रीगुरुभ्योनमः ॥ श्रीसांबसदाशिवायनमोनमः ॥  
 लक्ष्मीन्दसिंहचरणद्वयमादरेणनलाचतुर्विधपुमर्थनिदानभूतम् ॥ भद्रोजिदीक्षित  
 कृतिकृतिभिर्विभाव्यामालोक्यबालमतयेवितनोमिटीकाम् ॥ १ ॥ अथेति ॥ नि  
 त्यानित्यवस्तुविवेकइहामुत्रार्थफलभोगविरागः शमादिषट् मुमुक्षुत्वचेति साधनं  
 संपन्नाएतेमांपृच्छंतीतिनिर्णयानंतरं यतएतेऽल्पश्रवणमात्रेणकृतार्थोभविष्यत्ये  
 ॥ श्रीगणेशायनमः ॥ सूतउवाच ॥ अथातःसंप्रवक्ष्यामिशुद्धं  
 कैवल्यमुक्तिदम् ॥ अनुग्रहान्महेशस्यभवदुःखस्यभेषजम् ॥१॥  
 वतथापिछरुमुखादेतच्छास्त्रस्याध्येतारोऽन्येऽपिमुक्ताभविष्यति । अतःकारणाद्धि  
 दंक्ष्यमाणगीताशास्त्रार्थयुष्मान्प्रतिवक्ष्यामि । एतच्छास्त्रस्यवक्तृत्वेश्रोतृत्वेमहेश्वरानुग्रहएवकारणमित्याह ॥ अनुग्रहादिति ॥ तदुक्तम् । “ईश्वरानुग्रहादेवपुं  
 सामद्वैतवासना । महाभयकृतत्राणपराणामेवजायते” इति ॥ कीदृशगीताशास्त्र

Figure 11.12: Nirnaya Sagar font, *Śivagītā*, 1886

73 Naik 1971, vol. 1: 308–314.

74 Naik 1971, vol. 1: 314; see figures 11.12f. below.

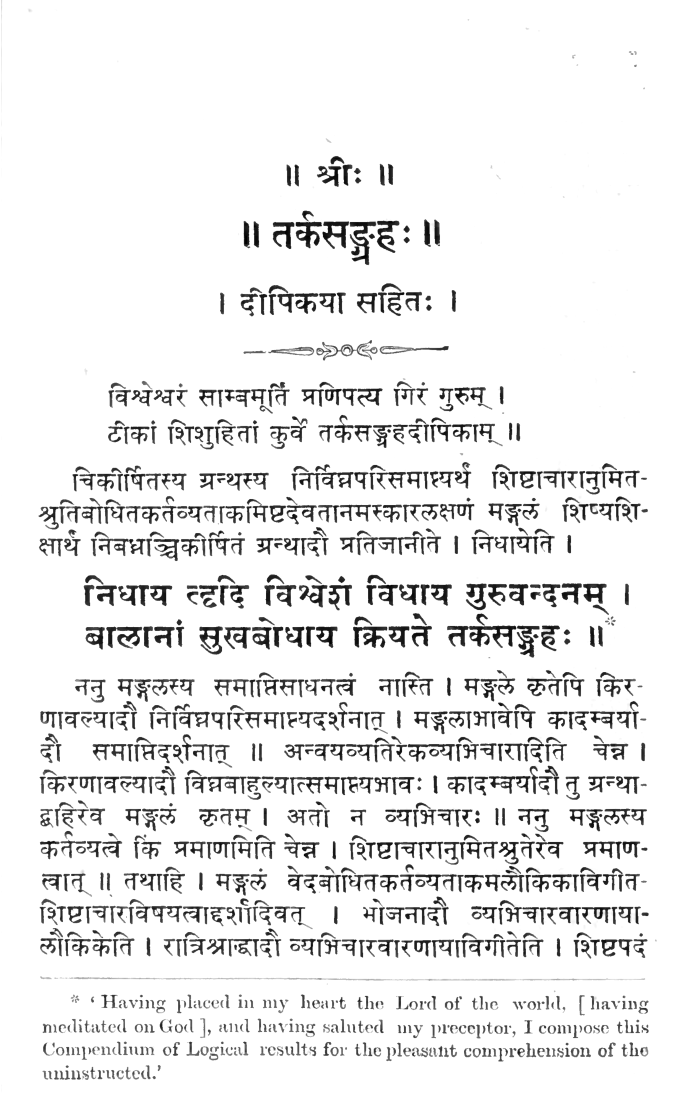


Figure 11.13: Nirnaya Sagar font, *Tarkasamgraha*, 1876

#### 4.1.5. Vibert's and Delafond's fonts

Wilkins's font was the only available Devanāgarī font in Europe, until August Wilhelm von Schlegel (1772–1829), professor of Sanskrit at Bonn, in 1821 commissioned a new typeface to the French typographer Vibert (ca. 1775–?), the Didot family's punchcutter. The first printed



work, Schlegel's edition of the *Bhavavadgītā*, is dated 1823 (figure 11.14). This is the Jainā-styled Nāgarī that will later be used in many European publications.<sup>75</sup> A smaller size, with the same design, was prepared in 1825 by Delafond in Paris.<sup>76</sup> Under the aegis of Franz Bopp, the Akademie der Wissenschaft in Berlin acquired Schlegel's matrices and equipment in 1821. Later, the fonts were purchased by Brill in Leiden.<sup>77</sup> It is the typeface used in many European publications such as Böhntlingk & Roth 1852–1875 and Speijer 1886.

पश्याम देवांस्तव देव देहं सर्वांस्तथा भूतावशेषसंघान् । ब्रह्मणा  
मीशं कमलासनस्थमृषींश्च सर्वानुरगांश्च दिव्यान् ॥ अनेकबाहूद्रवक्रनेत्रं  
वक्रनेत्रं पश्यामि त्वां सर्वतो ऽनन्तत्रयं । नान्तं न मध्यं न पुनस्तवा  
अनादिमध्यान्तमनन्तवीर्यमनन्तबाहू शशिसर्पनेत्रं ।

Figure 11.14: Schlegel's font, *Bhagavadgītā*, 1823 (Faulmann 1882: 733)

Later nineteenth-century Devanāgarī typefaces produced by German foundries, according to Faulmann, are ascribed to Unger<sup>78</sup> and Friedrich Ludwig Metzger, who cut the elegant “Garmond-Devanagari” (figures 11.15f.).

पश्यामि देवांस्तव देव देहं सर्वांस्तथा भूतविशेषसंघान् । ब्रह्मणामीशं  
कमलासनस्थमृषींश्च सर्वानुरगांश्च दिव्यान् ॥ अनेकबाहूद्रवक्रनेत्रं प  
श्यामि त्वां सर्वतो ऽनन्तत्रयं । नान्तं न मध्यं न पुनस्तवादिं पश्यामि  
अनादिमध्यान्तमनन्तवीर्यमनन्तबाहू शशिसर्पनेत्रं ।

Figure 11.15: Unger's font, *Bhagavadgītā* (Faulmann 1882: 733)

१ आरंभ में बचन था और वुह बचन परमेश्वर के संग था और वुह बचन २  
परमेश्वर था । वुही आरंभ में परमेश्वर के संग था । ३ सब कुछ उस्से रचा गया  
था और उस बिना कुछ न रचा गया जी रचा गया । ४ उस में जीवन था और वुह  
जीवन मनुष्यन का उंजियाला था । ५ और वुह उंजियाला अंधियारे में चमकता है

Figure 11.16: Metzger's font (Faulmann 1882: 734)

75 Naik (1971, vol. 1: 301) claims that the font was cut in Germany and appeared in print in 1811, but this information does not match Naik's very source, namely Faulmann 1882: 733–734.

76 Glaister 1979: 136.

77 Glaister 1979: 136.

78 The renowned Johann Friedrich Unger, however, died in 1804, and these seem to be a much later product.

## 4.2. Devanāgarī is not intrinsically inaccurate

The claim that Devanāgarī is a less analytic script relates to its usage. In fact, if one desires to split words and even phonemes, Devanāgarī is as flexible as Roman script. For instance, in the examples cited, one could as well write सन्त्ल् लघुनि चहरे अनग्लोपे (A, 7.4.63), and यत् तर्हि तद् इक्षितं ... यत् तर्हि तच्च छुक्को ... यत् तर्हि तद् भिन्नेष्वभिन्नम् (*Vyākaraṇamahābhāṣya*, p. 15–16), and तस्य शास्त्रस्य ... तच्छास्त्रम् ...<sup>79</sup> This is open to the editor's wish. The strategy of breaking a sandhi for the sake of disambiguation has been long applied in the Sanskrit tradition, and any scholar is free to adopt it too, whenever needed.<sup>80</sup> This practice is supported in grammatical treatises. For instance, in the fifteenth century Puruṣottama wrote that in slow-paced utterances, for teaching purposes, there may be no sandhi and that this is supported by the learned,<sup>81</sup> and in the sixteenth century Jivagosvāmin stated that sandhi is mandatory within a word, between preverb and verb, but optional in *sūtras* and elsewhere.<sup>82</sup> And when a clarification on the interpretation of compounds and the like is needed, an editor can always supply it by means of commentaries, notes, and translations.

Besides, Devanāgarī better represents the phonetic fact, reflected in the grammatical and prosodical tradition, that most consonants require a vowel sound in order to be uttered. So it makes full sense to think of syllables – consonants followed by a vowel, or vowels at the beginning of words – as the actual elements of speech and therefore of written speech. Accordingly, traditionally trained Sanskrit scholars read Sanskrit by way of syllables, a habit that is particularly evident when scanning and editing the beginnings and ends of verse lines.

A reason for the bias in favor of Roman script may actually be this very peculiarity of Devanāgarī, which is hardly fitting in the available classifications. Nāgarī and similar scripts are “difficult to classify in terms of the traditional typology of writing systems which recognizes three main script types, namely, logographic, syllabic, and alphabetic.”<sup>83</sup> Pāṇini's metalan-

79 *Nyāyavarttika* ad NS 1.1.1, p. 1,14.

80 An astonishing example of this practice in a Devanāgarī edition, with copious word divisions by means of *virāmas*, is Hertel 1908. The then-editor of the Harvard Oriental Series, C. R. Lanman, offers a compelling scholarly justification of this unconventional choice in the introduction (Hertel:1908, xxviii–xxxix). I am grateful to Philipp Maas (personal communication) for raising my awareness about Lanman's introduction and Hertel's edition.

81 *vilambitocāraṇe tu sandhyabhāvaḥ kvacidbhavet. iti śiṣṭasampradāyasiddham* (*Prayogaratnamālā*, 1.155, p. 120). See Abhyankar 1961, s.v. *vilambitā vṛtti*, where the slow utterance is mentioned as a preceptor's pedagogical strategy in Prātiśākhya literature.

82 *sandhir ekapade nityaṃ nityaṃ dbātūpasargayoḥ | anityaṃ sūtranirdēse 'nyatra cānityaṃ iṣyate* (*Harināmāmrtaṭyākaraṇa*, p. 5).

83 Salomon 1998: 15. “The Indian system is syllabic in the sense that its basic graphic unit is the syllable (*akṣara*), but it differs from a pure syllabary in that the individual phonetic components of the syllable are separately indicated within the syllabic unit. It thus resembles an alphabet insofar as the vowels have a separate and independent notation but cannot be called a true alphabet in that the vowels do not have a fully independent status equal to that of the consonants ... Although the

guage also corroborates this advantage of Devanāgarī. In the *pratyahārasūtras* all the consonants are listed with an intrinsic *a* vowel, सङ्घवर्द्ध, झञ्ज, etc.<sup>84</sup> Indic scripts used to write Sanskrit, that is, Brāhmī-derived scripts, mirror this phonetic intuition.

The study of Sanskrit works via Roman characters removes the editor a step away from the linguistic universe of the original authors, who definitely wrote in some sort of Indic script, when not directly in Nāgarī. These authors thought and wrote in alphasyllabic scripts, never in Roman letters. By reading, thinking and writing in Devanāgarī the scholar is just closer to the actual tradition of the work he is investigating. The visual representation helps in the judgment of the weight of variants, on specific typologies of errors such as dittography and haplography, on the likelihood for errors to be genetically derived, and so on. Roman script, by contrast, does not offer the same hermeneutic advantages.

In short, the alphasyllabic character of the script is consistent with the very nature of the Sanskrit language, while the arbitrary division of syllables created by the Roman characters is just an unneeded distraction.

### 4.3. Roman script is not ideologically neutral

While there may be issues of concern with the ideology behind modern Devanāgarī, the Roman script has also been used as an ideological weapon, too. After all, it is a fruit and perhaps even a seed of the Orientalistic bias. Let's just look at its first propounder, Sir William Jones, both glorified and criticized as one of fathers of Orientalism. He has been described as the first scholar who studied Sanskrit “for a non-utilitarian standpoint,”<sup>85</sup> but has also been blamed as one of the early causes of the Orientalistic bias: “To rule and to learn, then to compare Orient with Occident: these were Jones goals [...]”<sup>86</sup>

Jones has been criticized from totally different angles and reasons, for instance by his contemporary James Mill (1773–1836), in *The History of British India*, because his “illusions about the Hindus” and for being worse than Rousseau in his “his rhapsodies on the happiness and virtues of savage lives.”<sup>87</sup> He was a complex figure who “wrote devotional hymns to Hindu

Indic scripts do have alphabetic symbols for the vowels in the ‘full’ or initial vowel characters, these were never extended beyond their restricted use for vowels not precede by a consonant, and thus did not attain full alphabetic status.” This peculiarity of the script is called *bārākhāḍī* or *svārākhāḍī* by Naik 1971, vol. 1: 178. Linguists use the term “abugida”, one of the two orders used to represent the alphasyllabic script used in Ethiopia and Eritrea (Falk 2010: 185).

84 Cardona (1997: 51) traces back this usage to the *Taittirīyaprātiśākhya* (Whitney 1973, 1.21), *akāro vyañjanānām*, “an *a* forms the names of consonants.” See also *Taittirīyaprātiśākhya* (ed. Whitney 1973), 1.17–18, *varṇaḥ kārottaro varṇākhyā, akāravyaveto vyañjanānām*.

85 Master 1946: 799.

86 Said 1979: 78.

87 Quoted in Mukherjee 1964: 37.

deities and launched modern linguistics by postulating the Indo-European link, yet he also judged in court that an Indian servant may be beaten to death with a cane [...]”<sup>88</sup>

From the point of view of a traditional South Asian scholar, a Sanskrit edition in Roman script may send the wrong message, because even unintentionally it will appear to be designed either to force traditional scholars into the acquaintance of Roman script, or to exclude them from the intended audience.

#### 4.4. The technical advantages of Roman script are a thing of the past

While Devanāgarī did present challenges in the past, the present technology and the Unicode standardization allow for a full portability of Devanāgarī. The script is now available on any device and operative system. Even Google Translate expects the input of Sanskrit in Devanāgarī, not in IAST or other transliteration systems.

#### 4.5. Devanāgarī has a wider audience

While it is true that IAST is internationally used and academically recognized, it alienates Indian scholars, who are seldom accustomed to read Sanskrit in Roman characters with diacritic marks. Conversely, most Sanskritists with academic training can read both scripts. If a wider and qualified readership is the desired goal, surely Devanāgarī must be the better option.

### 5. Adjudicating the debate

#### 5.1. The historical and ideological reasons

That the early attempts at a Roman transliteration of Sanskrit pre-date the birth of Devanāgarī typography is quite surprising. Even the scribal use of Nāgarī as a *scripta franca* of Sanskrit is a rather recent development: “That a truly transregional form of writing, Devanagari, would not come into wide use until the fourteenth or fifteenth century, at the end of the cosmopolitan period, is only another of the wonderful incongruities of the Sanskrit cosmopolis.”<sup>89</sup> The truly

88 Hoerner 1995: 215.

89 Pollock 2006: 229. Pollock (2006: 273f.) writes of a “Sanskrit Graphic sign” in relation to the ancient Brāhmī script: “Perhaps a more suggestive index of Sanskrit’s relation to local styles of culture is the remarkable adaptability of the Sanskrit Graphic sign itself, a ‘substitutability’ that made it unique among the various ‘immense communities’ of premodernity. Latin carried the Roman script with it wherever it went and tolerated no fundamental deviation from the metropolitan style for centuries to follow ... In southern Asia, no writing system was ever so determinative of Sanskrit (until, ironically, Devanagari attained this status just as the cosmopolitan era was waning). Whereas early Brahmi script ultimately shaped all regional alphabets in South Asia and many in South-east Asia ... that script tolerated modification, often profound modification, wherever it traveled. Through this process, which appears to have occurred more or less synchronously across the Sanskrit world, scripts quickly began to assert a regional individuality in accordance with local aesthetic sensibilities, so much so that by the eighth century one self-same cosmopolitan language,

pan-Indian scope of Devanāgarī, in fact, may even be further postponed, even as late as the eighteenth century.<sup>90</sup>

A fully pan-Indian spread of Devanāgarī may be more or less contemporary to the advent of its printed form. One may even venture into the hypothesis that the advent of the Devanāgarī press was itself a cause behind the transregional diffusion of the script. This said, however, there is no compelling reason why the antiquity of the tradition should determine the present choice of either Devanāgarī or IAST in a Sanskrit edition.

Likewise, the two scripts may have been used to further their respective ideological agendas in the past, but their instrumentalization in other domains does not need to be a decisive factor in their usage for the sake of Sanskrit texts. Especially because the correlation with Sanskrit texts seems to be on the one hand overstated, and on the other hand immaterial. Jones's orientalist bias may be better qualified. His motives behind the judicial writings, in respect to the works on poetic or religious literature, might have been quite different, as argued by Rocher: while Jones's publications on law were commissioned by the Government, his religious and philosophical studies were "Literary delights [...] unrelated to governmental concerns and without governmental applications."<sup>91</sup>

As for the use of Devanāgarī to build an anti-Islamic, Hindu identity, the question of its present use may be raised in relation to works that can alternatively be read in a Perso-Arabic script. It should not concern the Roman-Devanāgarī dichotomy in relation to academic studies of Sanskrit language.

From a strictly philological viewpoint, the choice of Devanāgarī seems to be an arbitrary one in respect to other wide-spread Indic scripts such as Banglā, Grantha, Gujārātī, etc., especially when the original work was written and transmitted in those scripts. Roman script, however, is obviously not a solution to this problem.

undeviating in its literary incarnation, was being written in a range of alphabets a most totally distinct from each other and indecipherable without specialized study." If Pollock is right, there would have first be a unique way of writing Sanskrit, Brāhmī, that was later transformed in regional varieties, that were in turn later abandoned in favor of Devanāgarī.

90 This is my assessment within the limits of specific works and genres (Nyāya, Alaṃkāśāstra, Vaiṣṇava aesthetics). Most manuscripts of the transmissions I've studied more in depth – namely, Vātsyāyana's *Nyāyabhāṣya*, Bhaṭṭa Jayanta's *Nyāyamañjarī*, Mukula's *Abhidhāvṛttamātrkā*, Rūpagosvāmin's *Bhaktirasāmṛtasindhu* – are written in regional scripts such as Śāradā, Grantha or other Southern scripts, Bengali or other Eastern scripts. Insofar as these works are concerned, the Nāgarī manuscripts that I've seen were all produced after 1600 – with the exception of some older Jainā Nāgarī manuscripts – in the area of present-day UP, Rajesthan, Gujarat, Madhyapradesh, and Maharashtra. The use of Nāgarī to write and read the vernaculars, too, is a late phenomenon. In sixteenth-century Goa, missionaries did begin to prepare Devanāgarī to write Marathi, but their project was soon discontinued: "The need for Devanāgarī types was not felt with sufficient urgency" by these missionaries, because of "the meagre prospects of publicity of books" (Priolkar 1958: 12).

91 Rocher 1993: 241f.

## 5.2. The scientific reasons

The graphical adaptability of the Sanskrit language is largely a consequence of its phonological character and of the astonishing sophistication of its grammatical tradition. Throughout the course of history many different scripts have been used to represent Sanskrit in writing. Several of those scripts have produced an impressively stable transmission of Sanskrit texts, exactly because the stability is a feature of the language and not of the script.

Both Devanāgarī and Roman characters have virtues and shortcomings. The claim that one script is intrinsically more “scientific” seems questionable, and may be simply ascribed to habits and cultural influences.

## 5.3. The technical reasons

Here the advantages of Roman script are undeniable, from the viewpoint of the editor in the digital age. All the widely used macros and tags of LATEX and XML-TEI, for instance, are written in Roman characters.

The increasing use of the so-called “Romanagari” in social networks is also a consequence of the computer-friendliness of Roman script.

Romanagari is a portmanteau morph of “Roman” and “Devanagari.” It is a vernacular word coined and used by bloggers and internet users. It refers to Hindi, Marathi, etc. text written or typed in Roman script in opposed to the standard Devanagari script.<sup>92</sup>

The available technology, however, does permit the production of Devanāgarī editions, with additional efforts and labor that may be justified according to the goal. There is no insurmountable technical hindrance, one way or the other, so even the computer-friendliness of Roman script is not a decisive factor. When digital editions are concerned, some multi-script technology is increasingly available (e.g., as in <https://sarit.indology.info/>, <https://saktumiva.org/>), in which case the choice remains open to the reader.

## 5.4. The audience

Three possible audiences may be affected by the editor’s choice of the script:

- The traditional scholar, who is accustomed to read Sanskrit in Devanāgarī.
- The academic scholar, who is accustomed to read IAST.
- The occasional reader, who is acquainted with just one of the two scripts.

Ultimately, the selection of the audience is a prerogative of the author or editor. Quite obviously, with Devanāgarī one cannot reach a public that does not know the script, so if an international and non-specialized audience is desired, for instance for dissemination purposes,

92 Mhaiskar 2015: 196b. In his paper, Mhaiskar discusses social and cognitive advantages and disadvantages generated by the use of Romanagari. Its widespread popularity, however, is undeniable.

there is no debate: Roman script is the way to go, and even the diacritical marks of IAST may become an hindrance. Analogously, an edition may be aimed at a general audience accustomed to reading Hindi or other modern languages in Devanāgarī, in which case the use of IAST would introduce needless complications.

Thus the Devanāgarī-Roman contention concerns an edition aimed at the first two audiences. If we are considering specialists, by contrast, I would argue that the malady is the bias, not the chosen script. Once there is the prejudice that non-Indian scholars do not know Sanskrit properly, how likely is a Devanāgarī edition produced by them to be read by traditional Sanskrit scholars? Vice versa, if the assumption is that Indians are not sound philologists, how likely is a critical edition in IAST produced in India to be appreciated by scholars elsewhere? If an edition is respected and appreciated, instead, most scholars will make the effort to use that piece of scholarship, even if its form does not fully match their habit of reading Sanskrit.

In academic works both Roman and Devanāgarī must be acceptable choices. A functional assessment, rather than an aesthetic one, is the most convincing criterion in the choice of script.

The history of Devanāgarī fonts sketched in this paper needs further research. A study of the legibility of the available Devanāgarī fonts, in particular, is still a desideratum. In terms of legibility, for instance, the Nirnaya Sagar typefaces and their digital reproductions have stood the test of time, and most present-day fonts are directly or indirectly inspired by those faces. Whether this happened because of intrinsic qualities, political decisions, historical accidents, or other reasons, needs to be further assessed.

## Abbreviations

A	Pāṇini, <i>Aṣṭādhyāyī</i>
NS	Gautama, <i>Nyāyasūtra</i>
NV	Uddyotakara, <i>Nyāyavārttika</i>

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BORI 390/1875-76. The manuscript is presently constituted of 432 leaves (435 according to Bühler 1877: xxv). The original foliation runs up to *Nyāyamañjarī* (NM) 3 and restarts from NM 4: 3–149 (= NM 1–3) + 1–270 (= NM 4–12) + 282–286 (an unidentified work) + 7 (parts of *Raghuvaṃśa* 15.11–78).

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