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# 印刷文化 (中英文)

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邮编 102600  
电话 86-10-83138431 81282738  
电子邮箱 printculture@163.com  
投稿网址 <http://tougao.printingmuseum.cn/>  
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# Research and Practice in Designing Type for Diverse Writing Systems: Some Case Studies of Typeface Designs for South Asian Scripts

Fiona Ross<sup>①</sup>

**Abstract:** This essay considers research methods that underpin and document the design process for the development of types in diverse scripts, particularly those of South Asia, to answer specific typographic needs. This is conducted through illustrated case studies. The first case study relates to designing harmonious typefaces for multi-script texts for the Murty Classical Library of India project. It focuses on issues concerning the design of Devanagari and Gurmukhi typefaces optimized for sustained reading. The second study discusses typeface designs and their requirements for the transmission of news, initially regarding Bengali-script newspaper composition and subsequently considering the design of logos, taglines, and typefaces for broadcast-news channels and websites in six Indian scripts. The third case study concerns the very recent design of an original OpenType Nasta'liq typeface for Urdu textual composition. All the above practical projects represent collaborative design work that is founded upon a research-based design methodology to foster the optimal typographic representation of South Asian languages.

**Keywords:** Type, typeface, South Asian scripts, research

This essay originated as an invited talk for the conference “The Way of Type—An exhibition of the Modernisation Road of Chinese Type design”;<sup>②</sup> a talk which focussed on the development of type for diverse writing-systems.<sup>③</sup> These research areas involve three principal fields of enquiry: investigating design approaches to multi-script type-design; analysing the relationship between type-making methods and their visible impact on typeforms; and documenting type design as a collaborative process. The concomitant activities as described

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① Fiona Ross, specializing in South Asian type design and typography, is a designer, author, lecturer and professor of Type Design at the University of Reading.

② The Central Academy of Fine Arts (Beijing) invited the author, Fiona Ross, to present a talk for the conference.

③ Inevitably, there is some overlap with other articles and presentations made by the author.

below can therefore be described as research-informed practice. This essay highlights three specific projects to illustrate how scrutinizing archival resources, comprehending past typefounding and typesetting processes, and recognizing collaborative practices are vital to informing and developing contemporary designs for effective textual communication.

### Context

In order to establish the context of this discussion, it is important to recognise that textual communication depends on a diverse range of writing systems to render the world's languages in visible form. It should be noted that printing in some scripts predates that of the Latin script, not only by means of xylography but also by movable type in East Asia, where even metal type is known to have been successfully produced in the thirteenth century.<sup>①</sup> Despite this, the majority of typeface designs so far have been created for the Latin script, although the majority of the world's population uses other writing systems. Indeed, some scripts still only take the form of an image when reproduced in print (fig.1),<sup>②</sup> while others utilize lithography in many contexts (fig.2). However, this essay focuses on typographic communication, so textual communication by prefabricated letter-forms, and specifically the representation of languages that employ Arabic, South Asian and Thai writing systems.

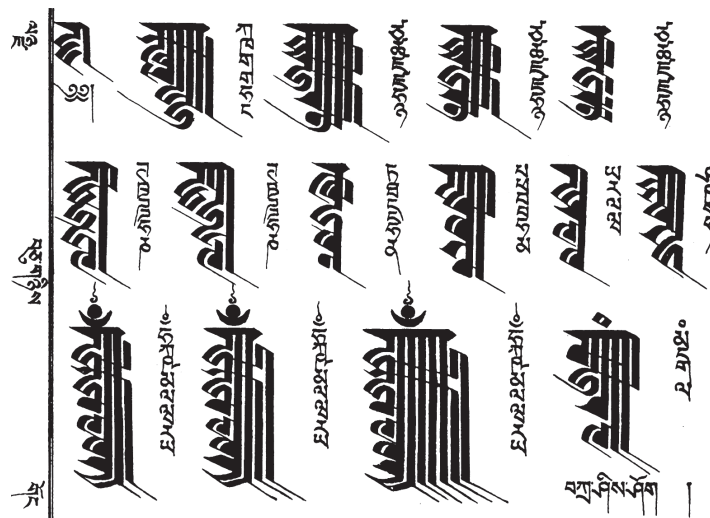


Fig.1 Rañjana and Tibetan scripts<sup>③</sup>

- ① *The Diamond Sutra*, the world's earliest known complete and dated printed book: <https://www.bl.uk/onlinegallery/ttp/sutra/accessible/introduction.html>.
- ② M. Everson's comment regarding Rañjana-script conjuncts typically being hand-drawn in "Roadmapping the Scripts of Nepal", *UC Berkeley Script Encoding Initiative*, 2009, p.2. <https://www.unicode.org/L2/L2009/09325-n3692-nepal-scripts.pdf>, (Last visited on November 96, 2022).
- ③ Cited by M. Everson from Gu Wenyi & Shi Xueli, 1995, in "Roadmapping the Scripts of Nepal", *UC Berkeley Script Encoding Initiative*, 2009, p. 12, figure 18.

# اشعار

رات یوں دل میں تری کھوئی ہوئی یاد آئی  
جیسے ویرانے میں پھچکے سے بہار آجائے  
جیسے صحراؤں میں ہولے سے چلے باونسیم  
جیسے بیمار کو بے وجہ قرار آجائے

Fig.2 Lithography in Urdu language<sup>①</sup>

The scripts of South Asia, most of which are known to originate from the ancient Brahmi script,<sup>②</sup> show great visual diversity (fig. 3) and provide a visible voice to over one-fifth of the world's population. Narrowing the focus further, it has been noted that the People's Linguistic Survey of India in 2013 recorded 780 languages and 68 scripts in the Indian sub-continent alone, alongside the regrettable loss of 220 languages in the previous 50 years.<sup>③</sup> The issue of language loss has been a concern for UNESCO, of which China is one of the founding members. Furthermore, UNESCO has proclaimed 2022–2032 to be the international decade for the “usage, preservation, revitalization, and promotion of indigenous languages around the world”.<sup>④</sup> The design of type to provide accurate representation of languages in visible form is one important means of supporting such an initiative.

क ख क ङ ङ ङ ङ ङ ङ ङ ङ

Fig.3 The character “Ka” in ten Brahmi-derived scripts<sup>⑤</sup>

In the twenty-first century, it is hard to believe that many global linguistic communities

① *Poems by Faiz*, Trans. by V.G. Kiernan (Oxford University Press, 2011), calligrapher Syed Saqlain Zaidi, p. 48.

② For an example of a Brahmi-script inscription, see [https://commons.wikimedia.org/wiki/File:Brahmi\\_script\\_inscription\\_at\\_Kanheri\\_Caves\\_2.jpg](https://commons.wikimedia.org/wiki/File:Brahmi_script_inscription_at_Kanheri_Caves_2.jpg).

③ <https://indiantribalheritage.org/?p=18564> (Last visited on October 27, 2022).

④ <https://en.unesco.org/idi12022-2032> (Last visited on October 27, 2022).

⑤ Pared down for a Nirmala UI font for Microsoft, illustrating some of the diversity of South Asian scripts as well as their affinity to each other due to their common derivation.

still lack sufficient typographic support to fulfil their needs. Furthermore, some communities are still in want of typographic representation. However, digital technology, especially current digital technology, seems to offer the best means of representing different writing systems typographically. With rigorous research and a collaborative approach, it is possible to achieve a wide range of original, high-quality type designs on a par with those available in the Latin script.

Clearly, when undertaking a new design for whichever script, it is crucial to have a full comprehension of the writing system. Additionally, an understanding of past practices, typographic conventions, script requirements, and cultural traditions can assist type designers in making intelligent, informed decisions and contribute to best practices in textual communication (see fig.4). In the field of Asian scripts, published type histories as distinct from printed histories are often unreliable, incomplete, or simply lacking.<sup>①</sup> Historical resources can therefore constitute a vital source of information. They are able to help counter prevailing myths and disinformation. For instance, early nineteenth-century manuscripts (amongst others) provide evidence that slanted styles are not a colonial imposition on, for example, Tamil typography. Furthermore, the mono-linear letterforms evident in such manuscripts are the natural form for Tamil and other scripts traditionally written with a stylus. Therefore, low-contrast typefaces in, say, Thai or Telugu can hardly be called a modern stylistic treatment to accompany a Latin sans-serif typeface, as has been stated.<sup>②</sup> Scrutinizing imprints from different periods can yield information and can help construct a more accurate and nuanced record of how languages acquired their visible forms that continue to shape readers' experiences today, either in print or on screen.<sup>③</sup>

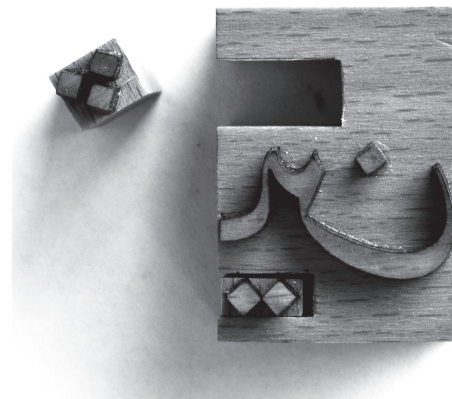


Fig.4 Replica of an early twentieth-century Arabic-script wood type by Roman Scherer<sup>④</sup>

① Although this situation is slowly improving, as demonstrated by Jo De Baerdemaeker in *Tibetan typeforms: an historical and visual analysis of Tibetan typefaces*, Uitgeverij De Buitenkant, Amsterdam, 2020.

② Tamil manuscript, [https://commons.wikimedia.org/wiki/File:Palm-leaf\\_manuscript.jpg](https://commons.wikimedia.org/wiki/File:Palm-leaf_manuscript.jpg) and Thai manuscript on message, [https://www.bl.uk/manuscripts/Viewer.aspx?ref=OR\\_13922\\_f001r](https://www.bl.uk/manuscripts/Viewer.aspx?ref=OR_13922_f001r).

③ F. Ross, *Two Bengali grammars – a typographic perspective*, <https://www.bl.uk/early-indian-printed-books/articles/two-bengali-grammars-a-typographic-perspective>.

④ Made by Dafi Kühne, courtesy of Rudolf Barmettler.



### Case Studies Illustrating Research-informed Practice

Reviewing design approaches related to a selection of real projects supports the contention that sound research underpins best practice in vernacular type design to help deliver efficient means of typographic communication.<sup>①</sup> These illustrate how research has informed design decisions; the collaborative nature of the design process; and the reach of these projects.

The first project under consideration is the Murty Classical Library of India (MCLI) commission from Harvard University Press in 2012. The objective of this commission was to design Indian-script typefaces for volumes of facing-page translations of classical Indian literature.<sup>②</sup> Originally, the commission was to create original typefaces for 6 languages in 5 scripts: Bengali(Bangla), Hindi, Sanskrit, Panjabi, Tamil and Telugu languages in the Bengali, Devanagari was Gurmukhi, Tamil, and Telugu scripts. These were to be designed by Fiona Ross and John Hudson of Tiro Typeworks.<sup>③</sup> As stated elsewhere, “the brief was to undertake a contemporary approach to traditional typeforms. Bearing in mind that the typefaces were to represent classical Indian texts, they needed to be appropriate in style for approval by literary scholars and yet appeal to the modern young Indian reader”.<sup>④</sup> In the interests of concision, just a few of the design issues that arose will be highlighted here.

The MCLI commission, as with other type-design projects, became a research-driven undertaking which utilised archives and collections in its initial phase and during the iterative design process. Amongst the resources consulted were those that had previously informed designs, such as Linotype Devanagari and Adobe Devanagari (see fig. 5). Linotype Devanagari, initiated by the renowned type-designer Matthew Carter and completed by Ross and her team at Linotype in the 1980s. The relatively more recent Adobe Devanagari typeface, co-designed with Timothy Holloway, an experienced type-designer and former Linotype employee, contained around 800 characters. Fonts of this typeface have been embedded in Apple’s operating systems since *circa* 2009, and it is now widely used in a variety of genres.<sup>⑤</sup>

However, it soon became evident that a typeface like Adobe Devanagari would not be

① Paul Luna, “Introduction: The Non-Latin Type Collection”, *Non-Latin scripts: From hot-metal to digital type*, ed. Fiona Ross & Vaibhav Singh (London: St Bride Library, 2012), p. 7.

② F. Ross, “The Murty Classical Library of India – a collaborative design project for Harvard University Press”, in L. Kudrnovska, (ed), *365Typo: 365 stories on type, typography and graphic design*; (étapes: editions, Paris, 2015), pp. 258–259, <https://www.murtylibrary.com/about/design-and-typography>.

③ And with Fernando Mello for the Tamil that is yet to be published as the project continues.

④ Fiona Ross, *The Murty Classical Library of India*, (étapes: editions, Paris, 2015), p. 258.

⑤ For information about the project brief for Adobe Devanagari, <https://centaur.reading.ac.uk/18185/>. In this development, the Latin accompaniment by Robert Slimbach was re-scaled to work with the Devanagari, which was a welcome reversal of customary practice.



Fig.5 Hindi (Devanagari script) types held at the British Library.

suitable for the Murty project. It could be considered too modern and cursive, perhaps too characterful to represent classical Hindi and Sanskrit literature. On the other hand, a font like Linotype Devanagari, having been designed primarily for newspaper composition, would be too condensed for extensive texts. The new Murty designs needed to be compatible with the chosen Latin typeface (Antwerp by Henrik Kubel) in terms of texture. According to the design methodology developed for previous projects, it was important to create a coherent and cohesive design approach for all scripts while remaining true to their inherent and individual character traits.<sup>①</sup> Consequently, the Murty Hindi typeface, and the subsequent Sanskrit typeface, is a modern typeface that echoes some of the traditional proportions and styling of the Devanagari types produced by the Jawaji Dadaji typefoundry during the twentieth century for its renowned Nirnaya Sagar Press. However, the Murty typefaces have relatively less contrast and larger counters (fig.6). The Hindi type design also needed to anticipate the subsequent Sanskrit texts that were to be published, which would possess more intricate character shapes<sup>②</sup> and fewer word breaks, resulting in denser texts. For its development, therefore, a wide range of printed material and manuscripts were consulted to consider character relationships, and to review the positioning of vowel signs and other marks. As can be seen from the notes' section pages, it was essential to marry the different scripts harmoniously, including the punctuation and the numerals.

① The designs were vetted by the MCLI editorial board before use by Rathna Ramanathan, the books' interior designer.

② Sanskrit texts utilised more consonantal clusters that formed ligatures (conjuncts) and preferred the vertically stacked design of these rather than the horizontal joining more favoured in Hindi and Marathi compositions.



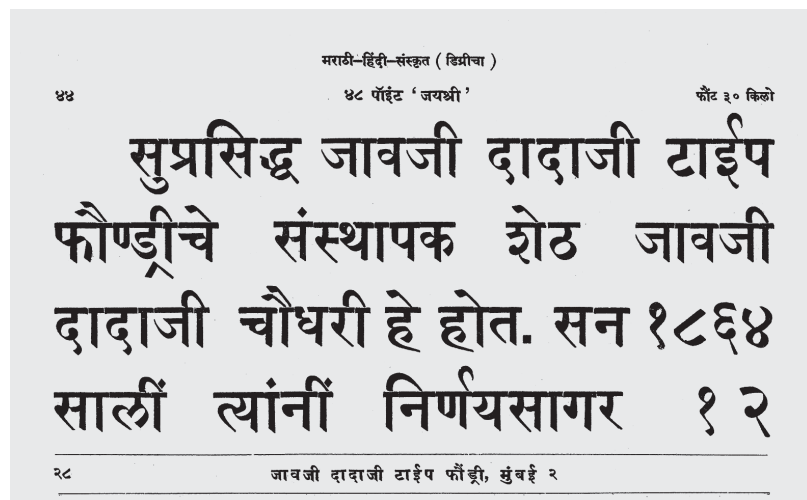


Fig.6 Specimen of a typeface produced for Nirnaya Sagar Press<sup>①</sup>

With reference to just one of the other scripts, the Gurmukhi design for the Panjabi language, even though it required fewer characters, was more challenging than the Devanagari with regard to its styling. Conventional Panjabi typography to-date favours low-contrast typefaces. However, to create a suitable design for continuous text setting in the Panjabi language, and to harmonize with the facing-page English translation, the new design required the reintroduction of stroke contrast apparent in some manuscript forms. Alongside consultations with Marina Chellini, the British Library curator and Christopher Shackle, the translator of the Panjabi volume, it was *The Prayer Book of Rani Jindan* (British Library MS D4) that informed the stroke modulation and construction of the typeforms.<sup>②</sup> Again, this cannot be considered a revival of earlier Gurmukhi letterforms, rather it is a contemporary design which respects the high-quality lettering tradition as exemplified in a revered manuscript.

Clearly, the intended purpose of a typeface, its users and its readership are fundamental to finding the appropriate voice and therefore styling of a design. Whether it will be used for a specific genre, in an extensive or limited range of typestyles and sizes, for print and screen, or as a User-Interface, or even as a default font on a mobile device — is crucial to the design process for any script. For the MCLI project, it was important to do justice to the beauty of the literary content.<sup>③</sup>

① Javajī Dadajī, *Type Foundry, Marathi, Sanskrit, Hindi type catalogue*, (Mumbai, 1967). p. 44. 137 x 224 mm.

② See <https://www.bl.uk/collection-items/rani-jindan-prayer-book>.

③ In line with the project's objectives, the Murty fonts become available free of charge for non-commercial use after the publication of the first volume. More recently, the fonts have been updated to suit contemporary needs and under the designation Tiro Indic, a number of the fonts are embedded in Apple's Catalina operating system and are published by Google as Libre fonts. <https://design.google/library/new-Indic-fonts>.



The second research-led design project discussed here is one commissioned by the renowned Kolkata publishing house, Ananda Bazar Patrika (ABP), which relates to genres specific to news content delivery. The commission, received in 2021, was to design the Indian-script identity logos (and taglines) for ABP's newly acquired broadcast news channels. However, to understand the context, it is useful to first describe the background that prompted this commission and its consequent outcomes.

Archival research had underpinned Ross's first design project for ABP that began upon joining Linotype–Paul Ltd (later called Linotype Ltd) as a research assistant in 1978. This project resulted in the creation of the typeface Linotype Bengali — the first digital font in this script. ABP has had a long history of publishing and is currently celebrating the centenary of its eponymous daily newspaper, *Anandabazar Patrika*, which enjoys a print circulation of over 1 million copies. The newspaper's founding proprietor, Suresh Chandra Majumdar, was the principal instigator of implementing the Bengali script on the hot-metal Linotype machine that was the preferred method for newspaper composition in the first half of the twentieth century since it facilitated rotary printing. However, the Linotype machine had severe limitations when it came to rendering the Bengali script. For four decades, ABP's Bengali newspaper was constrained by the machine's reduced character set of about 100 characters, instead of the customary 510 required. Additionally, its readability was compromised by the machine's inability to kern and position vowel signs correctly. In the late 1970s, Ross, collaborating closely with Tim Holloway, in consultation with Tarapada Mukherjee,<sup>①</sup> and in connection with the editors of *Anandabazar Patrika*, developed a research-based design methodology to render a more accurate typographic representation of the Bengali language. This methodology was conceived to restore some of the former dynamic and yet graceful renditions of the Bengali script apparent in some manuscripts and early printed texts. Crucially, its realization was enabled by Linotype's in-house software development and support from software engineer Mike Fellows.

The digital Linotype Bengali fonts were first employed by ABP in 1982 and have continued to be used for composing *Anandabazar Patrika*. However, only two weights (Light and Bold) were available to answer all the newspaper's needs until an Extra Bold typestyle was produced thirty years later in 2015 — long after Linotype Ltd had closed its British and affiliated Indian offices. Linotype Bengali has also been used for all ABP's Bengali

① The late Dr Tarapada Mukherjee was Fiona Ross' PhD supervisor at the School of Oriental & African Studies, London University.





publications. Initially, the typeface (often referred to as ABP Bengali) received some criticism for being too calligraphic and therefore retrogressive. Unfortunately, rather than leading to new innovative designs, the typeface has been copied extensively. Cloned versions of it appear daily in various genres, from packaging to wayfinding.<sup>①</sup>

Further commissions from ABP have ensued, providing the publishing house with a wider typographic palette for Bengali-script publications. These include the low-contrast typeface Sarkar, designed for the launch of a new metro newspaper *Ebela* in 2012, which Ross and Holloway co-designed in collaboration with Neelakash Kshetrimayum, a graduate of University of Reading's MA Type Design (MATD).<sup>②</sup> Another new typeface, ABP2015, was co-designed with Kshetrimayum and is currently used for the cultural pages of *Anandabazar Patrika*. This more recent transnational collaboration, facilitated by the internet, has functioned with Kshetrimayum working in India, Ross in England, and with John Hudson of Tiro Typeworks undertaking the font production in Canada.

Ross's longstanding association with ABP, whose editors have exhibited exceptional quality in their typography, led to the above-mentioned commission after the company expanded its publishing ventures into broadcast news. This project to design logotypes for the television channels needed to work with the new Latin-script logotype of ABP created by Saffron Consultants. The resulting designs, undertaken with Kshetrimayum, in which initially comprised seven logotypes in five scripts (including Latin) benefitted from the experience of earlier collaborative projects and were informed by historical design work, much of which is archived in the Type Design Collection at the Department of Typography & Graphic Communication (University of Reading). As expressed in a report documenting the design process, the response to the design brief considered three principal criteria: styling, readability and quality:

Styling: that is suitable for the context and coheres across all scripts, showcasing the character of each region.

Readability: that is optimal at all sizes and speaks to all generations of readers.

Quality: that accords with AB's high typographic standards and offers designs unique to ABP.<sup>③</sup>

① See Riccardo Olocco, "Linotype Bengali and the digital Bengali typefaces. With an enquiry into the current state of Bengali typesetting" (Master's Dissertation, University of Reading, 2014).

② One of the founders of Brand New Type, <https://www.brandnewtype.com/about>.

③ Internal communication: Kshetrimayum and Ross, "ABPN News Logotype Design Process", Brand New Type, 9 July 2020.



This research-infused, collaborative project, which later amounted to nine logos in seven scripts with accompanying taglines, celebrates the richness of Indian scripts and typography. It was publicly launched in December 2020 (fig.7a & 7b).



Fig.7a New logos for ABP Network channels launched on 16 December 2020



Fig.7b New logos for ABP Network channels launched on 16 December 2020

This work has led to a new commission to design accompanying Indian-script typefaces for seven languages in six scripts for ABP's broadcast news channels and websites. The typefaces, in Bengali, Devanagari, Gujarati, Gurmukhi, Tamil, and Telugu scripts, are being developed in three weights, comprising an average of 500 characters. The development is being carried out by a team that includes five Reading MATD alumni from around the world, with font production undertaken by Tiro Typeworks. These original designs are developed from about ten initial glyph sketches for each typeface created by Kshetrimayum and Ross,



the leaders and art directors of the project. The design process relies on regular design and font production meetings online, where electronic files including artwork, typeface samples, test fonts and final fonts are exchanged. Review meetings with the ABP news editorial team also take place. The availability of virtual face-to-face meetings and the rapid and secure electronic exchange of documents across different time zones have enabled a swift and responsive design process. This is in stark contrast to the early days of designing digital fonts, which relied on international airmail postage that could take two weeks for delivery, and subsequently depended on facsimile machine for discussing design issues across continents. Yet, the research-based design methodology initiated in 1978, which evolved with new designs, has remained crucial to underpinning this and other projects.

Indeed, this methodology was fundamental to the third research-based practical project, briefly mentioned here, which involved designing a new Nasta'liq typeface for Urdu for Google.<sup>①</sup> An initial heavy research component was required for this project, for which the artefacts held in the Reading Type Design Collection were indispensable. Furthermore, in order to inform other design practitioners as well as scholars of type history, it was considered an important part of the commission to document the design and production process of the typeface named Gulzar. As a result, documentation was published alongside the release of a Beta Libre font in October 2022 (e.g., fig.8). Gulzar is the first OpenType Urdu typeface that has an original Latin counterpart designed to cover all expected transliterations (see fig. 9).<sup>②</sup>

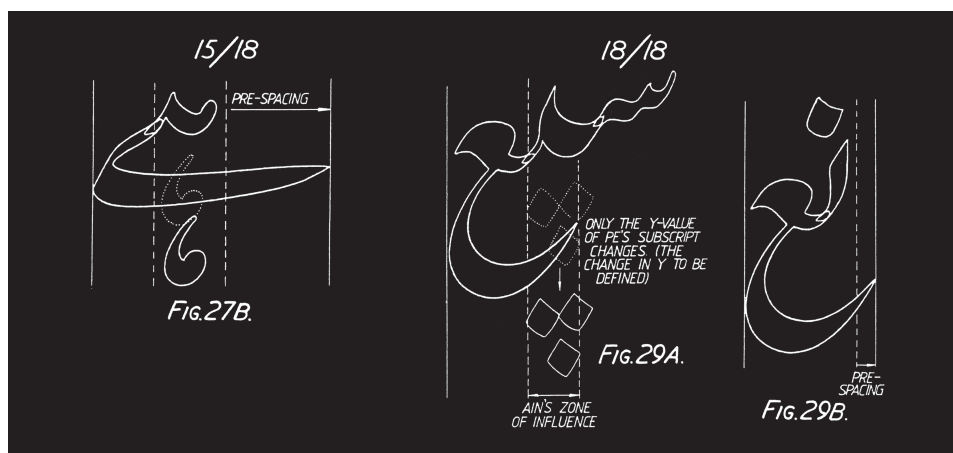
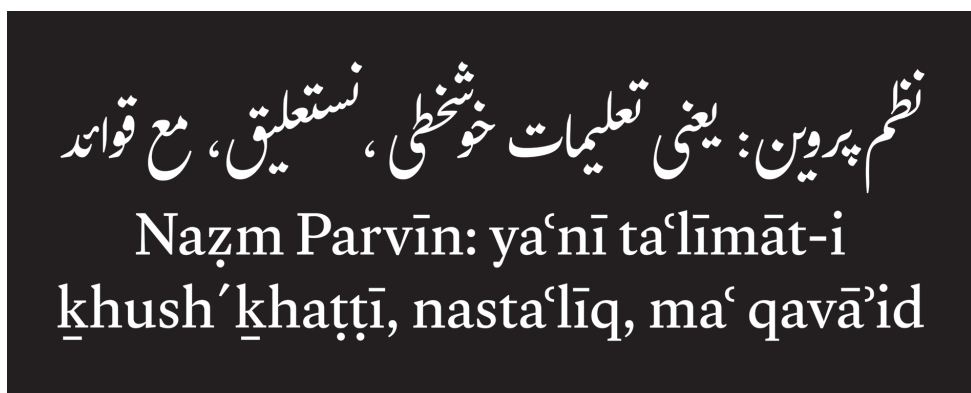


Fig.8 Figure showing the method of connecting characters and dot positioning in Sheeraz and Qalimi typefaces<sup>③</sup>

- ① Borna Izadpanah was the designer with Ross as art director/consultant.  
 ② The Latin typeface was designed by Alice Savoie, see <http://gulzarfont.org/>.  
 ③ See <http://gulzarfont.org> fig. 6.

Fig.9 Gulzar Urdu typeface with its Latin counterpart<sup>①</sup>

In terms of supporting typographic communication across the world, it is hoped that the above case studies highlight how the use of research, sharing of information, pooling of skills, and striving for excellence through new technologies in type-making can contribute to improved outcomes for millions who employ diverse scripts. Furthermore, this essay seeks to underline how a research-based methodology for type design may be utilised to serve those communities that still lack effective typographic means for textual communication.

## 多样书写系统字体设计的研究与实践

——南亚文字字体设计案例研究

菲奥娜·罗斯<sup>②</sup>

**摘 要:** 本文探讨了为满足特定文字设计需求而开发的多种文字(尤其是南亚文字体系)所依据和记录的研究方法。通过图解案例研究来进行阐述。第一个案例研究涉及为印度穆尔蒂古典图书馆项目中的多文种文本设计和谐字体。其重点关注与为持续阅读而优化的天城文和古木基文字体设计有关的问题。第二个案例研究讨论了新闻传播中的字体设计及其需求,首先是孟加拉文报纸排版,随后考虑了六种印度文字的广播新闻频道和网站的标识、口号和字体设计。第三个案例涉及最近为乌尔都文排版设计的原创OpenType特性 Nasta'liq字体。以上所有的实际项目都代表了基于研究的设计方法的协作设计工作,旨在促进对南亚语言的最佳文字设计呈现。

**关键词:** 字体 字型 南亚文字 研究

<sup>①</sup> See <http://gulzarfont.org> fig. 8.

<sup>②</sup> [英] 菲奥娜·罗斯, 南亚字体设计和文字设计专家, 设计师、作家, 雷丁大学字体设计专业教授。