



**Gurmukhi printing types: an historical analysis  
of British design, development, and distribution in  
the nineteenth and twentieth centuries**

Thesis submitted for the degree of Doctor of Philosophy  
Faculty of Arts, Design & Media, Birmingham City University

**Sahar Afshar | April 2022**



## **Declaration**

I confirm that this is my own work and the use of all material from other sources has been properly and fully acknowledged.

Sahar Afshar





## Abstract

This thesis focuses on the role of British entities involved in the founding and development of printing in the Gurmukhi script, from the inception of printing in this writing system with movable type in 1800, until the beginnings of the digital era in the twentieth century. It traces the material production of Gurmukhi printing types under the changing technologies during this time frame and considers the impacts of various technological limitations on the appearance of the script when printed. Furthermore, it identifies the intent and objectives of those producing founts in a script foreign to them, and considers their approaches for overcoming various cultural, social, and economic obstacles, to determine how successful they were in realising their aims for printing in this writing system. Finally, it presents a comparative analysis of the founts developed during this period to highlight key typographic developments in the printing of Gurmukhi by the individuals and companies under consideration, and determines significant design decisions that influenced and informed subsequent developments.

The research draws on largely unexplored primary resources housed in various archives across Britain, that provide a window into the practises and networks for the British type founders under consideration, shedding light on the establishment, organisation, and development of these actors' operations, the modus operandi, and the networks that enabled and sustained it. This work aims to document a substantial gap in the history of Gurmukhi typographic development and printing, and serve as a contribution to the interrelated fields of typography, printing history, and culture alike.



# Contents

Acknowledgements

Initial notes

## **1. Introduction — 19**

### **1.1 Scope and positioning of this thesis — 23**

1.1.1 The synchronic digraphia of Panjabi — 23

1.1.2 Two centuries of printing in the Gurmukhi script — 27

1.1.3 The role of the British in Gurmukhi printing history — 27

### **1.2 Archival research and critical data analysis as a methodology — 29**

1.2.1 Identifying primary resources and analysis of the information — 37

1.2.2 The challenges and limitations of archival research — 41

### **1.3 A review of relevant literature — 47**

1.3.1 Gurmukhi type and printing history as a focal point — 51

### **1.4 A roadmap of this thesis — 53**

## **2. Specificities of the Gurmukhi script — 57**

### **2.1 Main character set: structure and proportions — 59**

### **2.2 Vowels — 65**

### **2.3 Consonant conjuncts and subscript characters — 67**

### **2.4 Numerals — 69**

### **2.5 Supplementary diacritic marks — 71**

### **2.6 Punctuation marks — 71**

### **2.7 Additional religious characters and symbols — 73**

### **2.8 Conclusion — 75**

## **3. The handwritten traditions of Gurmukhi — 79**

### **3.1 The benefits and disadvantages of using manuscripts as primary resources — 81**

### **3.2 Sacred Sikh scripture — 93**

### **3.3 Panjabi literature — 99**

### **3.4 A visual assessment of Gurmukhi manuscripts — 101**

### **3.5 Conclusion — 111**



#### **4. The onset of Gurmukhi printing in India – 115**

- 4.1 Production of the earliest known Gurmukhi fount – 117
- 4.2 Arrival of the earliest printing press to the Panjab – 135
- 4.3 Conclusion – 153

#### **5. Gurmukhi printing in Britain – 155**

- 5.1 Watts and Austin, printers to the East India Company – 159
- 5.2 The printing legacy of Richard Watts – 165
- 5.3 Vincent Figgins and Steven Shanks & Company – 171
- 5.4 The Gurmukhi type of Oxford University Press – 177
- 5.5 Conclusion – 197

#### **6. International collaborative practices in the development of Gurmukhi type – 201**

- 6.1 Type as an industry – 203
- 6.2 Monotype Gurmukhi Series 601 and 604 – 211
- 6.3 Linotype Gurmukhi Light and Bold – 233
- 6.4 Conclusion – 253

#### **7. A visual analysis of Gurmukhi printing types – 257**

- 7.1 A framework for objective analysis – 259
- 7.2 A timeline of the printing types considered in this research – 263
- 7.3 Typeface nomenclature for analysis – 265
- 7.4 Approaches to Gurmukhi type composition – 267
- 7.5 Assessment of the Gurmukhi type considered in this research – 269
- 7.6 Conclusion – 333

#### **8. Concluding thoughts – 339**

#### **9. Bibliography – 345**

- 9.1 Printed sources – 345
- 9.2 Online sources – 363
- 9.3 Consulted specimens and manuscripts – 365



## Acknowledgements

This doctoral research was supported by a STEAM scholarship from Birmingham City University, which I gratefully acknowledge. I would like to express my most sincere gratitude and appreciation to my supervisors, Dr Caroline Archer Parré and Dr Fiona Ross, who I am forever indebted to for their unwavering kindness, mentorship, expert guidance, and encouragement. I would also like to extend my thanks to Dr Christopher Hill, who although was only part of this research for the first two years, fostered immense growth within me by urging me to critically think about the social, political, and ethical aspects of my research and work. This thesis would not be what it is without all of their tremendous support and guidance.

I wish to sincerely thank my friends and colleagues at the Centre for Printing History and Culture in Birmingham, who generously shared their own research and expertise with me during my PhD studies, and helped create various opportunities to promote my work and encourage my research interests through different events, publications, and workshops. I am grateful for the scholarly exchanges, and incredibly appreciative of their friendship. I am also grateful to the Faculty of Arts, Design & Media at Birmingham City University, particularly Dr Sian Vaughan for her continued support, and Dr Oliver Carter, Dr Kirsten Forkert, and Dr Jacqueline Taylor for their invaluable research methodology guidance through my entire Postgraduate training course.

This research would not have been possible without access to archival material and primary sources, and I was continuously amazed by the enthusiasm and kindness of archivists, librarians, and curators who spared no effort to help me with my requests for material. I would therefore like to express my sincere gratitude to all the staff at the British Library, and in particular to Dr Marina Chellini—curator of the British Library’s North Indian language collections; Dr Sallie Morris and Kumar Rajput at the Type Archive in London; Dr Emma Minns at the archives of the Department of Typography and Graphic Communication, University of Reading; Bennie Crockett, Co-director of the Centre for Study of the Life and Works of William Carey D. D. in Mississippi; Dr Martin Maw, archivist at the Oxford University Press; Martin Killeen, rare books librarian at the Cadbury Research Library in Birmingham; Laura Serra, volunteer at the Type Archive in San Francisco; the staff at St Bride Library in London, particularly Sophie Hawkey and Bob Richardson; Dr Onesimus Ngundu at the Cambridge University Library; Robert Witts at the Herbert Art Gallery and Museum in Coventry; the staff at the Smithsonian National Museum of American History in Washington D. C.; and





finally all the staff at Birmingham City University's Curzon library, particularly Emma Fitzgibbon, Kanchan Sharma, and Kip Darling, for the speed with which they sourced the many inter-library loans I requested for my research.

For their help with various aspects of this thesis such as providing images, feedback, or expert knowledge, and for their professional or moral support, I am indebted to a number of wonderful individuals, including Parmjit Singh from the UK Punjab Heritage Centre; Dr Rajinder Dudrah from Birmingham City University; Dr Vaibhav Singh; Dr Alice Savoie; Graham Sheppard; Kalapi Gajjar; Dr John Hinks; Alessia Mazzarella; Martin Killeen; Dr Robin Jeffrey; Ron Carpenter; and my colleagues who offered support and kindness where they could, particularly Damien Collot and Rafael Saraiva.

Throughout my life, I have been immeasurably fortunate to have had the unfaltering support and care of my mother, Sousan Ziaee, my father, Mahmoud Afshar, and my sister, Sareh Afshar—my triad of good thoughts, good words, and good deeds, who have always inspired these virtues in me by example. I love you, thank you for giving me everything I need and so much more. I withheld the biggest thanks for last; to my husband, confidante, second self, heart, and home: thanks to José Miguel Solé Bruning, for keeping me laughing through it all.



# Initial notes

## Writing, translation, and typography

This thesis is typeset in Source Serif 4 by Frank Grießhammer and Source Sans by Paul Hunt. Source Serif is loosely based on the work of Pierre Simon Fournier, but rather than being a pure historical revival, takes cues from Fournier and reworks them for a modern age. Both fonts are licensed under the Open Font License. The Gurmukhi texts are set in Murty Gurmukhi, co-designed by Fiona Ross and John Hudson (Tiro Typeworks), who were specially commissioned by the Harvard University Press to provide high-quality readable type for use in text. Harvard grants, free of charge, a non-exclusive, non-assignable license to use, copy and embed unmodified copies of the Murty fonts for non-commercial purposes.

British spelling and typographic conventions have been used throughout this thesis; this includes quotation styles, abbreviation method, and capitalisation. For the transliteration of Gurmukhi, the latest version of the Library of Congress Panjabi Romanisation table has been used. All foreign terms are italicised the first time they appear, and will be defined either through context, in a footnote, or in parenthesis immediately after the word or phrase in question. In secondary scholarship, *Panjab* and *Panjabi* can often be written with the alternate spelling *Punjab* or *Punjabi*. In this thesis, the former spelling has been used to align with contemporary academic standards throughout, unless referencing literature which uses the latter. Finally, this thesis assumes differentiation between the use of ‘fount’ when referring to metal type, and ‘font’ for film and digital type.

## Abbreviations

**BFBS:** British & Foreign Bible Society

**BL:** British Library

**DTGC:** Department of Typography & Graphic Communication, University of Reading, U.K.

**EIC:** East India Company

**EICC:** East India Company College

**MA:** Monotype archives, Redhill, Surrey, U.K.

**OUP:** Oxford University Press, Oxford, U.K.

**OUPA:** Oxford University Press archives, Oxford, U.K.

**PDL:** Panjab Digital Library

**TRDD:** Typographic Research and Design Department, Linotype, Cheltenham, U.K.



## **Bibliographic references and archival material**

This thesis uses the Modern Language Association (MLA) style of citation in the footnotes, with some references appearing in text where applicable. Full details of source material and references are provided when first used, and thereafter, abridged titles will be used with only last name, shortened reference title, year, and where appropriate, page numbers:

Tosh, John. *The pursuit of history: aims, methods and new directions in the study of history*. Routledge, 2013.

Tosh, *The pursuit of history*, 2013, p.26.

*Prayer book of Rani Jindan. 1828-30*. BL, shelfmark: MS Panj D4.

*Prayer book of Rani Jindan*, MS Panj D4.



# 1 Introduction

The first contact with printing using movable metal type came to the cultures and writing systems of India as an imported technology which was transported to the subcontinent through colonial contact, and as a means of disseminating religious scripture and texts by European and American missionaries.<sup>1</sup> Thus began a long and prevailing history of said writing systems undergoing changes in structure and composition in order to adapt to methods of type production not suited to their unique specificities.<sup>2</sup> Such changes were often applied at the hands of those with limited familiarity and understanding of the intricacies of the scripts they were producing printing types for, and who were more concerned with matters such as proselytisation, text circulation, or commercial profit, rather than the appearance of a given letterform when realised in type, or the aesthetic preferences of a native readership. The often unsatisfactory outcome of these circumstances, which British author and biographer Robert Fraser frames as ‘the problematic position occupied by the technology of print in the deep history of post-colonial cultures’ though currently somewhat addressed in practical applications of text composition, has remained a relatively unresolved issue through various technological advances in the type industry.<sup>3</sup> The complications of typesetting in scripts like Arabic and Devanagari, for example, extend beyond much of twentieth century technological progresses that have been proclaimed by some as answers to the needs of scripts with more complex shaping requirements than that of Latin.<sup>4</sup>

This thesis provides a comprehensive overview of nineteenth and twentieth century British involvement in the printing of one such script: Gurmukhi. Predominantly regarded as the script of the Sikh faith, Gurmukhi is used in the Panjab region of North India as the official writing system of the Panjabi language, but has also been used for transcribing Sindhi and Western Hindi.<sup>5</sup> The aim of

---

1 This is true for a number of regions of the Asian continent. See for example De Baerdemaeker, Jo. *Tibetan typeforms—an historical and visual analysis of Tibetan typefaces*. De Buitenkant, 2020; Browne, George. *The history of the British and Foreign Bible Society: from its institution in 1804, to the close of its jubilee in 1854*. Vol. 2, London, Bagster and Sons, 1859; Lim, Wei Jin Darryl. *Networks, artefacts, and technology: nineteenth-century Muslim lithographers, missionaries, and colonialism in the Malay archipelago*. University of Reading, 2021, PhD dissertation.

2 See for example Ross, Fiona. *The printed Bengali character and its evolution*. Curzon, 1999; Singh, Vaibhav. *Devanagari type in the twentieth century: motivations, imperatives, technology and the design process*. University of Reading, 2017, PhD dissertation.

3 Fraser, Robert. *Book history through postcolonial eyes: rewriting the script*. Routledge, 2008, p. 7.

4 OpenType is a format for fonts that allows greater typographic flexibility, with layout tables that contain information on glyph substitution, glyph positioning, justification, and baseline positioning, enabling text-processing applications to improve text layout. For more, see *OpenType® specification*. Microsoft Typography, version 1.9, Sep. 2021, docs.microsoft.com/en-us/typography/opentype/spec/. Accessed 2 Oct. 2021.

5 Grierson, George. *A linguistic survey of India*. Vol 6. Office of the Superintendent of Government Printing, 1904.





this research is to identify the backgrounds of British type founders, printers, designers, and various individuals and companies involved in the production of Gurmukhi type for different type-casting and text composition machinery and technologies in the considered time scope. It investigates the reasons that brought these players to print in this script in the first place, their solutions for adapting the writing system to technologies devised for the needs of the Latin script and therefore, unfit to realise the requirements of Gurmukhi, the subsequent outcome of their type production efforts, and any lasting impact on Gurmukhi letterform shaping in type through their work. By connecting and comparing the seemingly isolated and independent endeavours of these peoples and their processes (while remaining mindful of the context underlying each) and tracing the evolution and change in the creation of Gurmukhi printing types through different technological advances, this research attempts to fill a gap in the history of typography and printing history. The outcome of this historical inquiry contributes to knowledge by providing a previously undocumented portion of British and Panjabi cultural heritage that is in itself valuable. Furthermore, it highlights significant aspects of the historical continuum of Gurmukhi type-making and printing that have practical implications; why such work was undertaken historically, what shaped the decision-making of those involved in type manufacturing, the creative solutions utilised as a response to limitations, and the final outcomes conditioned by different variables—all of these work to inform the present. As historian Edward Hallett Carr stated, ‘the function of history is to promote a profounder understanding of both past and present through the interrelation between them’.<sup>6</sup> A historical reconstruction of this nature can help to provide practical insight on changes to type-making processes through time, highlight precedence in letterform shaping, and put forward possibilities for future exploration in design and development, and thus contribute to the dynamic sequence of typographic evolution.

Finally, it is noteworthy that issues of colonialist interference and imposition on Indian printing culture and the questions of power and representation in the subcontinent have been increasingly considered by scholars from various sociocultural, political, and literary backgrounds.<sup>7</sup> While aware of the importance of such considerations and benefiting from this turn in scholarship through historical context, the study at hand focuses on the typographic impact and printed legacy of the letterforms rather than socio-political issues of printing; as previously pointed out, placing the primary focus on the development of Gurmukhi type is a deliberate attempt to fill in a gap in the history of the typographic realisation of the writing system.

---

<sup>6</sup> Carr, Edward Hallett. *What is history?* Penguin, 2018, p. 62.

<sup>7</sup> See for example Ghosh, Anindita. *Power in print: Popular publishing and the politics of language and culture in a colonial society*. Oxford University Press, 2006; and Brass, Paul Richard. *Language, religion and politics in North India*. Cambridge University Press, 1974; and Fraser. *Book history through postcolonial eyes*. 2008.

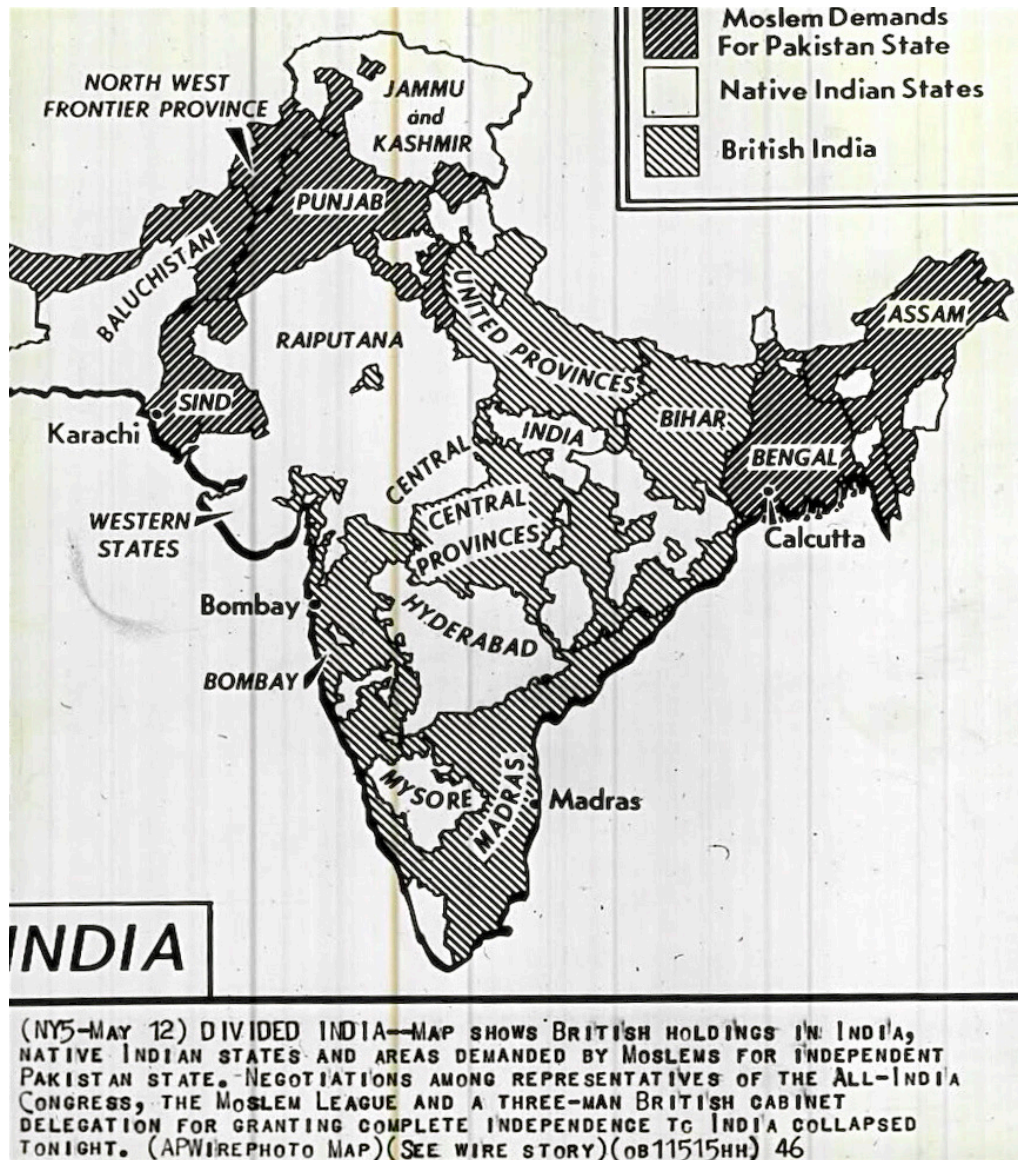


Figure 1.1. Map of India prior to the partition of 1947, dated 12 May 1946, showing the complexity of the task of division of a British-occupied India. Image in public domain.

The timeline and scope of this study, the reasoning for choosing to focus specifically on the efforts of the British, the methodology used for accessing and assessing the printing types and primary resources under consideration, the archives consulted, the limitations and challenges that this research was faced with, and the secondary sources and literature that were referred to as helpful sources of information will all be explained in greater detail in the following pages. These points will be concluded with an outline of the chapters and structure of the thesis for the reader's benefit, and ease of navigating this text.

### **1.1 Scope, and positioning of this thesis**

The boundaries within which this research was carried out were determined by multiple factors; the time available to complete this thesis, monetary and travel restrictions, and most importantly, the character and extent of the primary resources that were identified in various archives.<sup>8</sup> At the onset, the scope of this thesis was much wider both with regard to scripts considered, and the various individuals and institutes involved in the type development and printing process. Through time and consultation of various archives and available resources, the scope was adjusted to focus on the available material discovered in early library and archival visits, whilst remaining mindful of the time available to carry out an analysis of the discovered sources, given the various limitations associated with archive-based research. This section clarifies the scope of the thesis with regard to the choice of script for historical analysis, the reasoning for focusing specifically on British efforts in realising this script in movable type, and the timeline of the study.

#### **1.1.1 The synchronic digraphia of Panjabi**

The Panjabi language is officially written in two distinct writing systems; Gurmukhi and Shahmukhi. Following the partition of India in 1947 and, in particular, the division of the Panjab region into Eastern Panjab in the north of India and Western Panjab in Pakistan, use of the Gurmukhi script was maintained in the Indian Panjab, while the Muslim communities in the Pakistani Panjab preserved use of a variant of the Perso-Arabic writing system, the Shahmukhi script (figure 1.1).<sup>9</sup> This coexistence of writing systems is what socio-linguist Ian R. H. Dale has termed as a digraphia, 'the use of two (or more) writing systems

<sup>8</sup> Historian John Tosh notes the final point as the foremost requirement for well-founded research. Tosh, John. *The pursuit of history: aims, methods and new directions in the study of history*. Routledge, 2013, p. 57.

<sup>9</sup> The events that led to the partition of India and the tragedy and violence that ensued from this separation are outside the scope of this thesis. For more on this matter and its far-reaching effects, see Talbot, Ian, and Gurharpal Singh. *The partition of India*. Cambridge University Press, 2009; Aiyar, Swarna. "August anarchy": the partition massacres in Punjab, 1947.' *South Asia: Journal of South Asian Studies*, vol. 18, no. S1, 1995, pp. 13-36.



for representing a single language (or varieties thereof)', and more specifically a concurrent or synchronic digraphia, where more than a single script is used, contemporaneously, for the same language.<sup>10</sup> This is not to say that either of these two scripts can only be used for writing Panjabi, indeed Gurmukhi has been historically used for transcribing other languages such as Sindhi, and Shahmukhi only differs from the character set used for writing another language of Pakistan, Urdu, through the inclusion of two additional consonants.<sup>11</sup>

In the early days of this research, the intention was to study the printing history of both scripts used for writing Panjabi. For myself, as a native user of the Perso-Arabic script, it was a compelling route of inquiry to look into the entirely undocumented history of Shahmukhi printing. This was the main incentive for undertaking research on printing in the two major scripts used for writing Panjabi. However, after a string of archival visits and attempts to locate primary sources (necessitated by a lack of secondary scholarship, particularly on the topic of Shahmukhi), two points were clarified. The first was a severe lack of archival source material on printing with movable type specific to the Shahmukhi script. As mentioned before, primary resources are essential when writing on a topic where there is no literature to draw upon, and in this case, the absence of information on Shahmukhi rendered an historical enquiry of the printing of this script a very complicated task (particularly within the given time frame of this research). The second point was a near opposite of the first; there exists a great deal of primary sources and material artefacts of Gurmukhi type dating back to the beginning of letterpress printing of this script in the early nineteenth century. Much of these resources had remained entirely untapped, and, like all material of this nature, were subject to damage, loss, deterioration, and displacement. Consequently, it was the primary resources housed in libraries and archives consulted at the onset of this research that, in large part, defined and determined a focus on the Gurmukhi script for this thesis; the ample data, documents, and material objects on Gurmukhi (and lack of historical evidence for Shahmukhi), the reality that said sources were prone to becoming inaccessible to researchers (thus creating a sense of urgency and timeliness to document such data), and the time available to comprehensively assess, analyse, and record any findings narrowed the focus of this research to the Gurmukhi writing system.

### 1.1.2 Two centuries of printing in the Gurmukhi script

The timeline of this thesis spans from the very start of the nineteenth century with the establishment of the Serampore Missionary Press in the Danish ruled Indian territory of West Bengal, and their initiation of printing Gurmukhi using

<sup>10</sup> Dale, Ian R. H. 'Digraphia.' *International Journal of the Sociology of Language*, 1980, pp. 5-14.

<sup>11</sup> These two consonants are the Arabic letter lam (ل) and noon (ن) with a superscript tah (ّ). Both of these are rarely used.





movable metal type, and terminates at the release of Linotype's digital Gurmukhi fonts in the late twentieth century. The interval between these dates is pursued through a chronological thread that explores the various manufacturing methods used for producing Gurmukhi types (both material and digital), and those involved in the development process. This inquiry is done with a constant eye to the appropriate contextual settings in which the work was being carried out; both with regard to geography (where the work was being done) and socio-cultural circumstances (why was the type manufactured, what was being printed, and for whom). Accordingly, the starting point of the research logically corresponds to the beginning of printing in the Gurmukhi script using movable type by British missionaries, and ends just before the start of the twenty-first century. The end point was chosen as defined in the scope because the start of the current century marked the rise of the commercial popularity of personal computers and readily available font development software, and a period in which there was a proliferation of type design and font production that would not have been feasible to attempt to write about within the timescale of this research. It is worth noting, however, that some of the works discussed in this thesis have brought about long lasting influence in Gurmukhi type design, impacts that extend well beyond the twentieth century; and it is, in part, these enduring impressions that the study is concerned with.

### 1.1.3 The role of the British in Gurmukhi printing history

The reasoning for focusing exclusively on the work of British type founders, printers, and companies that developed or acquired Gurmukhi printing types was three-fold; the first reason has to do with the reality of the influence of the British with regard to this writing system, and how their work impacted those elsewhere; British missionaries were the first to design and develop metal Gurmukhi types and print with them, and the same applies to subsequent type technologies. The presence of the British in India through the involvement of the East India Company (and later the 'British Raj') and related establishments justified a need for continued printing in the various scripts of India for non-native and native consumption alike, and the financial and technological positioning of Britain since the industrial revolution meant the type founding companies in this country were well positioned to take on the task of adapting the script to mechanical (and later, digital) type production, albeit through collaboration with international associates.

The second reason has to do with my personal linguistic limitations. Lack of familiarity with the Panjabi language means that any literature (and more importantly, primary resources such as correspondence) in this language could not be consulted, as such I made the decision to focus on areas of the history of printing in this script where the source material and references could be done

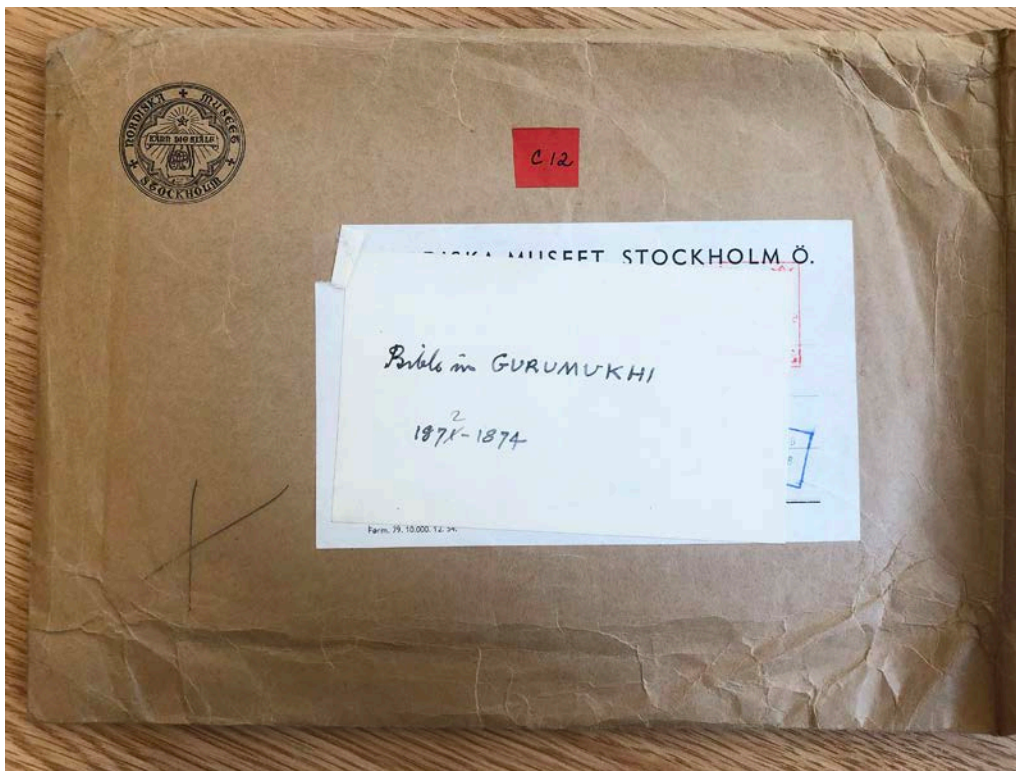


Figure 1.2. Sample archival sources from the Oxford University Press archives (OUPA). This includes an envelope containing sixty-five pages of handwritten correspondence between the individuals involved in the font development process (top), and two cases of metal sorts that were used for printing (bottom). From the OUPA, Aug. 2018.



justice. Finally, this research relied on unique archival material, and required extensive consultation of primary resources that were usually only accessible in person and on-site, and with Covid-19 related travel restrictions that were put in place halfway into the start of this thesis, the research was necessarily and practically limited to material held in the archives of Britain (or anything that could be digitally obtained through archivists abroad). As such, almost the entirety of this research was done from within Britain (with the exception of one archive in the United States of America), situating me best for reflecting on the material available within the libraries and archives of this country.

### **1.2 Archival research and critical data analysis as a methodology**

The essence of this thesis was tied to historical evidence in the form of primary resources housed in various archives. This meant that as a first step, it was essential to identify potential archives that would yield primary resources relevant to this study. Some of the necessary material was located in more general and major research libraries, such as the British Library in London that houses collections of documents and items in a vast range of topics (and in a number of formats, languages, and writing systems). As an example, the collection of Panjabi manuscripts and early printed volumes housed in the Asian and African Studies' repositories of the British Library yielded essential references for handwritten examples of the Gurmukhi script. Other sources were procurable online through digital archives, such as annual reports and records of missionary societies. In a few cases, however, more privately held archives with a special dedication to the preservation of material and literature related to printing history and type manufacturing practices were required. These specialised collections include the following:

#### **Oxford University Press Archives**

Oxford University Press (OUP) is the largest university publishing establishment in the world, with a history of involvement in the printing trade that dates back to the fifteenth century, and the archives of the press houses records of the OUP's printing and publishing activities from the seventeenth century to the current date. This includes various material; paper records of the establishment's printing activities, artefacts used in the printing process, and specimens from the printing library. The primary resources available at this archive that are relevant to this research—the Gurmukhi type of OUP—consists of two cases of metal *sorts* (a piece of movable type used for printing), printed specimen sheets showing use of the type in question, and sixty-five pages of handwritten correspondence that reveal



Figure 1.3. Two cases containing the copper type patterns of Monotype Gurmukhi 601 in 12 point (as can be seen engraved on the lower right side of each pattern). From the Type Archive in London, Jan. 2022.

the identities of those involved in the design and development of OUP Gurmukhi (figure 1.2).

Dr Martin Maw, an archivist at OUP commented that to his knowledge (and that of his colleagues), these primary resources had not been previously consulted for any research, and that unfortunately, no matrices used for creating the sorts had been preserved at OUPA. Access to this material was promptly granted, and no restrictions were placed on the time available for reviewing the material, or on photographic duplication and handling of the metal type.

### **The Monotype Archives**

Prior to 2019, records of the Type Drawing Office of the Monotype Corporation (henceforth simply referred to as Monotype), were housed in Salfords—near Redhill, Surrey. The repository was privately maintained on the previous site of the Monotype factory (which was established in 1899), and access was kindly granted for this research. A vast amount of material used to be kept in this location, ranging from countless original type drawings, correspondence, trial proofs, metal type, production records, and memorandums regarding the types produced in this company since the early twentieth century. While these collections were never (to my knowledge) catalogued, a majority of the material related to the Gurmukhi type produced by this company were filed into a single folder, simplifying the task of locating pertinent documents and data.

While original drawings of the Gurmukhi type were not accessible, the folder contained a number of trial proofs, correspondence between clients and the members of the company's type drawing team, records of conversion of the metal type to newer printing technologies, matrix layout information, and examples of designs used as a reference at the onset of the design process for Monotype's Gurmukhi faces.

### **The Type Archive**

In addition to the material (previously) held at the Monotype archives in Salfords, a number of critical resources on the development and sales of Monotype's Gurmukhi type are held at The Type Archive in Stockwell, London. This archive is known for housing the National Typefounding Collection, a vast assortment of type founding materials from various British printers and type founders. According to the archive's website, in 1992, the complete archive and plant of the hot-metal division of Monotype was purchased with a National Heritage Memorial

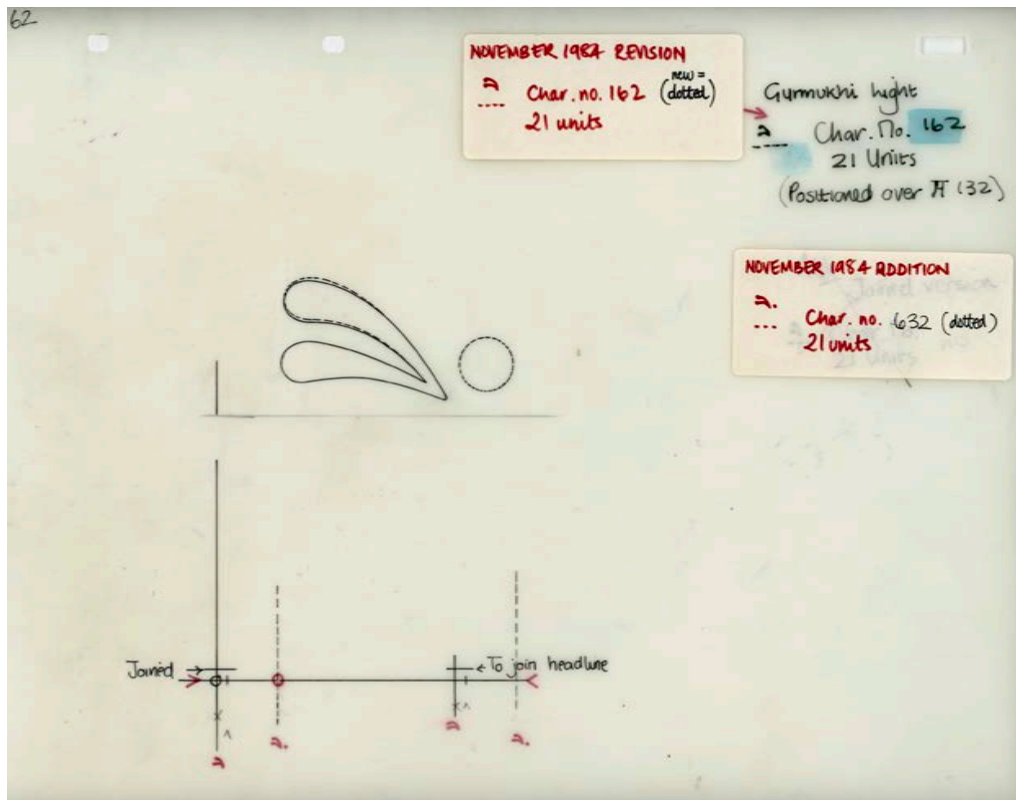


Figure 1.4. Drawing of a dulāvā next to a bindī (circa 1984) for digital type. From the Department of Typography & Graphic Communication, University of Reading (DTGC), July 2017.

Fund grant.<sup>12</sup> The material is technically owned by the Science Museum in London (which offers high-resolution images of some of the material, and a catalogue of the available resources), however the care and maintenance of the collection is entrusted to the staff at the Type Archive.

With regard to Monotype's Gurmukhi founts, the collection consists of multiple cases containing various sizes of copper patterns, the composition punches that were made using these patterns, trial proofs, and sales records. A combination of the artefacts and records held in the Type Archive and a cross reference of these findings against the correspondence and information preserved from the company's Type Drawing Office in the Monotype archives yielded substantial insight into the individuals involved in the development process of this company's Gurmukhi type, and the outcome of their efforts in terms of sales and use of the metal type following production.

### The Linotype Archives

Housed in the Department of Typography and Graphic Communication (DTGC) of the University of Reading is a large collection of original drawings, correspondence, memorandum, office documents, and typesetting proofs of an extensive number of scripts which the Linotype Company (henceforth referred to simply as Linotype) produced types for. The collection spans many years and writing systems, and consists of a mix of documents and material artefacts. Although a catalogue with a clear description and location for each item was not available at the time research was carried out for this thesis, the familiarity of the staff at the Department with the archive and the organisation of the material held within it, the ample amount of time available for the research, and the granting of access for browsing the collections meant that following a full week of looking through various files, folders, and drawers, a substantial amount of primary resources centred around Linotype's Gurmukhi type was uncovered. Unlike the Monotype collections, all original drawings of Linotype Gurmukhi are preserved in large hanging folders in this archive, and the entirety of the resources were available for scanning and photographic reproduction. Alongside other records, documents, and data, these resources made it possible to recreate the history of the development of this company's Gurmukhi faces. Any gaps presented by the material was helpfully covered by the knowledge of Fiona Ross, who was instrumental in the design and production of Linotype Gurmukhi.

It is noteworthy that similar to Monotype, the material from Linotype is not exclusively deposited at the DTGC. Part of the collection is currently stored

---

<sup>12</sup> *The Type Archive*. National Typefounding Collection, [www.typearchive.org/collections.htm](http://www.typearchive.org/collections.htm). Accessed 14 Feb. 2022.





in the Type Vault of the Museum of Printing in Haverhill, Massachusetts, and a considerable amount of data and documents are housed in the Mergenthaler Linotype collection at the Archives Centre of the National Museum of American History in Washington D. C. The former of these two archives seems to not have any material related to the Gurmukhi script, and the latter (through limited browsing) did not produce relevant information either, although some contextual information on the workings of this company's phototypesetting technologies were gleaned from this archive. This is not entirely surprising; the American branch of Linotype was not involved in the production of the digital fonts. Another unexplored resource for material related to Linotype's Gurmukhi fonts are the archives of Linotype India, as they were full collaborators on the project. However, it is not clear if any documentation from the office in India has been preserved, and access to the material was not possible at the time of carrying out this research (see section on limitations below).

#### **St Bride Library (formerly St Bride Printing Library)**

Established in 1895, this archive is a substantial resource for researchers, historians, and practitioners in the fields of typography, print, paper making, and design; it boasts a huge collection consisting of thousands of volumes on the history of printing and typography, as well as physical objects such as metal punches, matrices, presses, and type-casting equipment. Finally, the library has accumulated a considerable assortment of ephemera and type specimens since its establishment, many of which were pertinent to this research. One of the major collections of this archive is the punches and matrices from the type foundry of Vincent Figgins (1766–1844) that were acquired by type historian James Moseley during his time as a librarian at St Bride. This collection consists mainly of material from the Figgins foundry, but also the foundry of Stevens, Shanks & Son Limited (which took over Figgins' foundry in 1907); it includes sixty-one boxes of punches, chiefly from the nineteenth century, stored in packets inscribed with the dates the punches were cut, as well as the names of the punchcutters—comprising about 450 founts in total. Furthermore, some business records, specimen volumes, individual specimen synopsis sheets, and matrices were also obtained from the aforementioned foundries by the St Bride Library.<sup>13</sup> The archive also houses packets of Gurmukhi type from OUP, brought over to the archive by Nigel Roche and Fiona Ross over the course of two weeks in the early 1980s as OUP transferred to digital composition. However, due to the ongoing financial limitations of the archives, these types were not accessible at the time of this research.

---

<sup>13</sup> Mosley, James. *The materials of typefounding*. *Typefounding: Documents for the History of Type and Letterforms*, 6 Jan. 2006, [typefounding.blogspot.com/2006/01/materials-of-typefounding.html](http://typefounding.blogspot.com/2006/01/materials-of-typefounding.html). Accessed 14 Feb. 2022.





### 1.2.1 Identifying primary resources and analysis of the information

When archival visits were being carried out, the main focus was an attempt to find material directly relevant to the Gurmukhi script. Sometimes, particularly in dedicated foundry archives (see above), this was an achievable task, although the nature of the available resources and the scope and range of information varied considerably between different collections. Other times, and where such dedicated collections or archives did not exist, general archives with a wider scope of material were consulted. Ultimately, the primary sources drawn upon for this research ended up consisting of a wide range of material; manuscripts and codices, missionary diaries, newspapers, journals, meeting proceedings and minutes, office records, annual reports of the Boards of missionary societies, correspondence (both handwritten and typed), office memorandums, telexes, brochures, census records, financial records and sales ledgers, extant metal type, punches, copper patterns, and finally, printed examples showing the types under examination in use. The printed examples themselves exist in various formats, including but not limited to dictionaries and grammars, a variety of printed religious scripture, type specimens, synopsis sheets showing character sets of a given design, and trial proofs. The material most commonly referred throughout this thesis are as follows:

**Printing types (sorts):** In some cases (particularly that of the Gurmukhi types of Oxford University Press and the foundry of Stephen Austin & Sons) the metal types cast many years ago are still in existence in the archives of OUP and the British Library, respectively. Access to the printing types themselves can be highly advantageous during the assessment process, as the quality and care in the design of letterforms can be determined directly (albeit not if the sorts have seen ample use, which can cause them to deteriorate and even break), without having to rely on printed examples that sometimes are not entirely helpful in reaching a conclusive analysis on their own. This is due to factors such as the spread of ink when printing, the low quality of printing papers or environmental conditions such as climatic circumstances and their impact on the viscosity of printing inks, which in turn could result in the muddling of the outlines of the printed type.

Finally, the passage of time and sub-par preservation of printed outputs can render existing documents unreliable. However it remains important to cross reference against printed outputs, because ultimately that is how the type was seen by readers (the impact of time notwithstanding). More importantly, however, is that the sorts can be a clear indication of the composition methods used (particularly with regard to the systems used for composition of Indian scripts), and the character set of a given design.

**Type Specimens:** for many centuries, type foundries have used printed specimens to show their various typefaces to clients. Because of the nature of



their use as a tool of commerce, great care was taken in the printing of these specimens, as the desired outcome was to display their typefaces in an optimal setting to attract customers. Considering this, aspects that contributed to distorted printed texts (mentioned above) are not highly noticeable in surviving specimens, appointing them as a useful reference.

**Other printed examples:** Setting aside (as much as possible) the effects of time, and the role it plays in the gradual degradation of documents and books dating back to the early nineteenth century, printed examples that were made using the sorts under consideration are important for cross referencing. Even if the quality of the outlines are substandard due to printing conditions and materials used, volumes produced under unideal circumstances can still prove useful; they show what was being consumed by readers contemporary to the date of publication. As such, they can be indicative of the level of success printers were able to achieve in their undertaking. While not always reliable, printed examples also often mark the time of printing, however these must always be compared with other sources for accuracy; sometimes (such as in the case of the Serampore Mission Press) title pages that exhibit the date of printing were printed first, while the actual bound volume would be circulated many months after.

**Correspondence, both private and official:** Written communication in the form of letters exchanged between the individuals involved in the creation of the Gurmukhi type under consideration was key to the advancement of this research. When carrying out historical research often it can be difficult to determine the dates in which certain events occurred, who was involved, or where said event took place. Correspondence can be very useful in these instances, as often they are signed, dated, and geographically placed by the author. Beyond this, correspondence can also provide significant insight into the mindset of the writers, supplying necessary context and reasoning for some of the author's actions or decisions.

**Newspapers and journals:** Similar to correspondence, both newspapers and journals are highly useful not only for documenting events, but also in determining the precise dates of said events, while in some instances, they can also function as printed examples of type in use (though no such example could be found for this research). For instance, a number of the activities of the missionary printers were documented in daily newspapers and journals of their time. However, these reports demand a critical approach; any event documented in a newspaper is subject to alterations in the reporting to suite the desire of editors, or is perhaps skewed by the bias of the journalist, or even changed according to what was considered appropriate for the general public by the government and members of parliament at the time of publication.

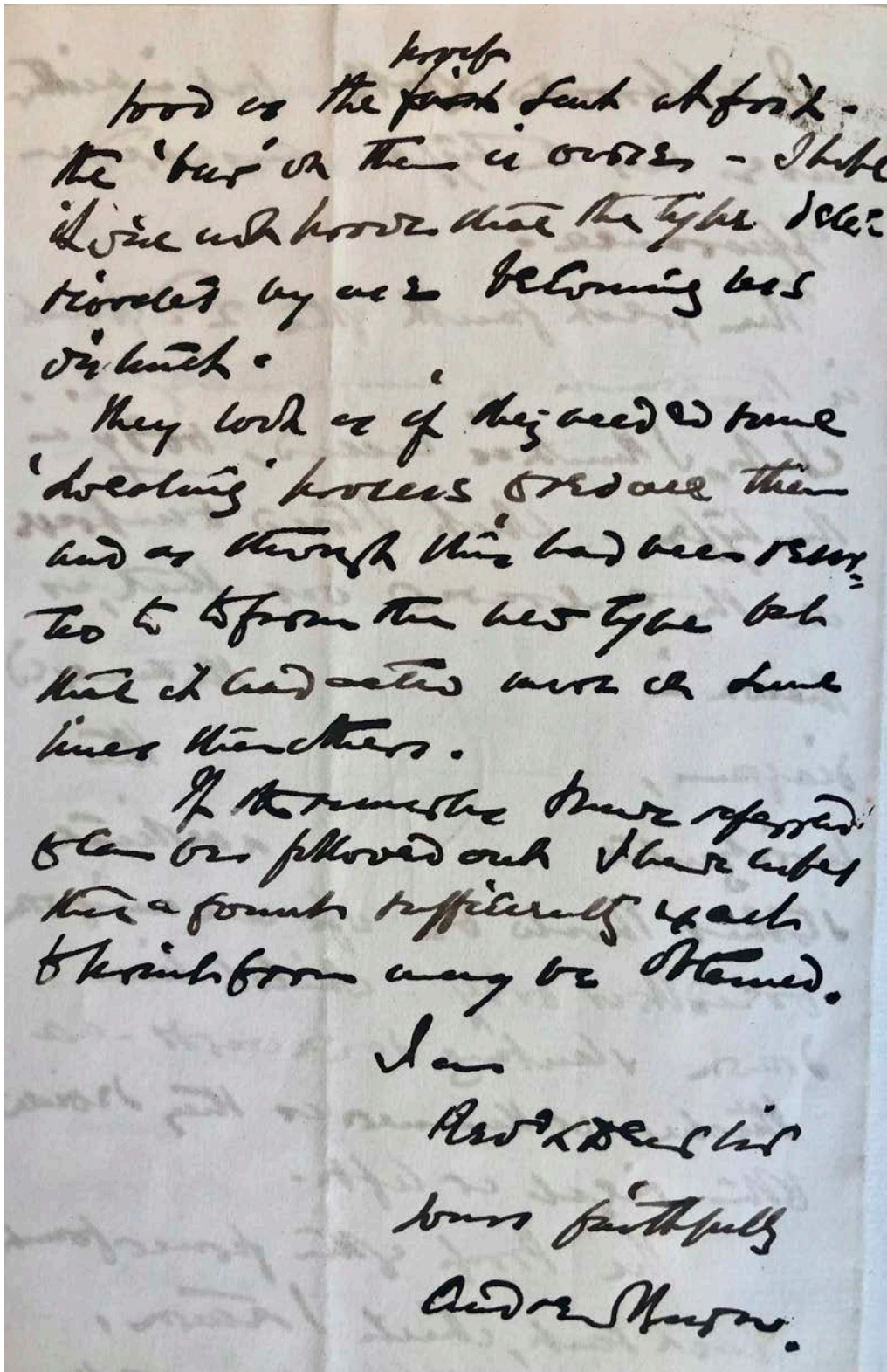


Figure 1.5. Sample handwritten correspondence from the OUP Gurmukhi collection to illustrate the challenges of deciphering such penmanship. Andrew Burn to Rev. Professor Price, correspondence dated 8 Sept. 1874. From Gurmukhi envelope, OUPA, Aug. 2018.

**Meeting minutes:** While not applicable as primary resources for a majority of printers and foundries considered in this research, the meticulous minutes of meetings of the Presbyterian Mission Press and accounts from their foreign missions proved very useful when attempting to trace the activities of the Ludhiana Missionary Press; whether in terms of their *modus operandi*, what they were printing, when they were printing, how many volumes they would produce of a given title, their distribution networks and dispensation methods, and their means for acquiring printing types. Not unlike with newspapers and journals, meeting minutes also required a critical approach. They represent the thoroughly edited voice of an organization, and all matters discussed in meetings are not necessarily documented in the minutes; as such, they provide a partial recreation of past events at best, and require cross-referencing with other material (when such material is available) for an informed view of events and facts.

**Original drawings and outlines:** As with the minutes, there was only one instance in which original drawings of typefaces later developed into working fonts were available for this research, and that is in the case of Linotype Gurmukhi Light and Bold, the original drawings of which are housed at the DTGC. Much like printing types, these drawings are very helpful when evaluating the typefaces under consideration as they are drawn with precision, and most bear the size of the character, date of drawing, and notes regarding some design decisions on the page (figure 1.4).

These primary resources were complemented by secondary literature and publications on the history of the foundries and companies under consideration (as well as that of their clients), literature on printing presses and typesetting machinery, printing methods, type history, and studies on postcolonial printing culture, all of which were paramount to a comprehensive study of the subject at hand.

### 1.2.2 The challenges and limitations of archival research

As with most research, this thesis has not been immune to limitations and constraints. The primary difficulty facing this inquiry into Gurmukhi printing types was a near complete lack of prior literature to use as a foundation to build the current study upon. The literature review will discuss this in more detail, suffice to say that this disadvantage levied heavy reliance on finding and using primary resources in various archives and libraries. Accordingly, the extent of any information uncovered by this research was determined by the relevant material that was preserved in archives, and by the restrictions to access of said material.





Figure 1.6. A box containing files on fonts for Linotype's Linotron digital photocomposition machine, as well as histories of typesetting in the company. While the material was not directly relevant to this research, it did help shed light on aspects of the context in which the company developed its Gurmukhi fonts. From the National Museum of American History, Washington D.C., Jan. 2018.

A detailed explanation of the material consulted for this research is provided in the previous pages. Naturally, some of this material was easier to assess, while others proved difficult to sometimes even read, depending on the state of preservation or, in the case of handwritten sources, the writer's penmanship. A considerable portion of the history of the Gurmukhi types of OUP, for example, exists solely as handwritten correspondence between the individuals involved in the fount development process, and necessitated time to decipher the writing habits of the authors, which were sometimes highly illegible and difficult to construe (figure 1.5, page 40). The inherent spreading or fading of the ink held in the writer's pen often further hindered the deciphering of such texts. Furthermore, some resources were helpfully signed with a date and place, however this was not always the case. At times, guess work and cross-referencing was used to estimate the year of creation, where no indication of date was documented (any instances of which is acknowledged in the thesis). For some periods of time under consideration in this study, there are almost no primary resources on the process of the development of Gurmukhi types (this applies especially to the foundries discussed in chapter 5), or at least none that could be found through this research. In such cases, there was a need to rely on contextual literature and secondary resources, and to accede to documenting what information could be sourced.

Part of the scarceness of resources on development processes of nineteenth-century British type foundries under consideration in this thesis is due to the fact that no diaries, journals, or correspondence seems to have been preserved from this time. This is not entirely surprising in research projects, as such material do not always arrive at an archive for preservation. It is equally possible that such documents were not maintained by the foundries and printers at all to begin with. A third possibility also exists that aligns with a larger issue that this research was faced with, and this is the difficulties of access to archival material; the material could very well exist, but not be catalogued and discoverable, or, access to the material may not be possible through other restrictions. Different archives have varying levels of ease of access, and this can change depending on the individual attempting to retrieve documents from a given archive. In 2017, a travel ban was imposed on Muslims travelling to the United States of America from a number of countries, including Iran. This meant that, as an Iranian, I could not gain access to materials held at the Smithsonian archives in Washington D. C. for an extended amount of time. When I was finally able to travel to the United States despite the complexities involved in gaining an entry visa, the off-site archives needed for consultation were closed. As a compromise, only a few boxes could be pre-ordered to the reading rooms of the National Museum of American History. However, this particular archive also presented the difficulty of undocumented material; there was no way of being sure which boxes may hold relevant material for this research





(figure 1.6).<sup>14</sup> Other archives presented alternative challenges; throughout the timeline of this thesis, material housed in the St Bride Library in London could only be requested for viewing twice a month, due to the financial constraints of the institute. The same economic hardships have meant that a lot of resources which were previously relatively easy to access at St Bride Library now lie beyond the reach of archivists—who cannot retrieve some material despite their best efforts. The (privately held) Monotype archives in Redhill, Surrey that contained records of the Type Drawing Office of this company for many years was closed down in 2019, rendering it impossible to revisit at a later date for additional research and photography of the material, therefore in this research, only resources that were provisionally photographed in early 2017 could be drawn upon for analysis.<sup>15</sup>

Since March 2020, Covid lockdown restrictions exacerbated any pre-existing difficulties with regard to archival access. While many restrictions were gradually lifted (and sometimes re-introduced), access to primary resources in libraries and archives was, for the most part, not at all possible for over a year. During this time, online resources and specimens, and appeals to librarians for scanned material became the essential driving force behind the continuation of this research. The only material available online that was relevant to the current thesis that could be found during this time were the type specimens and printed outputs of foundries such as William Clowes & Sons and Stephen Austin of Hertford. Also accessible were the dictionaries and grammars of the missionary printers, along with some journals and published correspondence. While these documents were certainly helpful for the analysis of the letterforms, it is undeniable that the actual image used for evaluating the types was at least once removed from the original source; an image (or scan) of the original uploaded to a screen can lose details of the authentic document, particularly when research is concerned with the shaping of smaller, text size letterforms. High quality reproductions were not always available, so in these instances compromises were also necessarily made.

Finally, under the best of circumstances, where access to a given archive is readily and kindly provided, permissions for taking pictures of the material for reproduction are granted, limitations on time spent with the material are not enforced, and the requested source material is clearly catalogued, available, and accessible, there always remains a great probability that archival documents alone are not enough to construct a clear narrative of historic events. Gaps in the history can exist in the form of documents not deemed significant enough for

---

<sup>14</sup> The material held in the archives of the Smithsonian National Museum of American History may prove fruitful for further research on the Gurmukhi types of the Linotype company, though this is not likely. A more likely source that may prove useful for research on this topic are the documents potentially preserved from the archives of Linotype India.

<sup>15</sup> The current location of this material is not publicly known, but suspected to be held in storage close to Heathrow airport in London.



preservation, sources being lost over the years, and sources that, on their own, do not seem credible, or require further corroboration. As stated before, in some cases archives may not yield any helpful information at all. In these cases, the disparity of primary resources was accounted for with use of secondary literature and existing publications, where possible.

### 1.3 A review of relevant literature

Research on the typographic evolution of the writing systems of the Global South is a relatively nascent field of investigation in academia.<sup>16</sup> Prior literature that take a similar approach to the current study in terms of structure and research methodology includes the seminal work of Fiona Ross, *The printed Bengali character and its evolution*,<sup>17</sup> Jo De Baerdemaeker's *Tibetan typeforms—an historical and visual analysis of Tibetan typefaces*,<sup>18</sup> and Titus Nemeth's *Arabic type-making in the machine age: the influence of technology on the form of Arabic type, 1908–1993*.<sup>19</sup> The likeness of this research to such work lies in the technologically centred line of enquiry into the printing history of a given script, in this case Bengali, Tibetan, Arabic, or, Gurmukhi. This prior work has shown to be helpful by establishing research methodologies that prioritise and focus on sound archival-based research to record under-documented typographic histories for future scholars and researchers, and also for practitioners in the field of type design whose practises have been informed by, and developed out of the theories offered by such works. For this study in particular, such works provide a theoretical and methodological framework that can be used as a foundation to build a study of the history of Gurmukhi printing types upon. Ross in particular has made a significant contribution to the field of typography with articles that are focused on the challenges of printing in Arabic and the various writing systems of India. In *The printed Bengali character and its evolution*, she 'considers each significant development in Bengali type design within its historical context and attempts to identify the influences behind the styling of Bengali typefaces, appreciating the constraints imposed by technical or artistic limitations, typographic fashions, and even linguistic ignorance and misinformation'.<sup>20</sup>

In some respects, the current research follows a similar approach of looking at the changes of Gurmukhi letterforms in the transition from handwritten to printed forms by following Ross's methodology of discerning historical reasons for the discordance between typeforms and their calligraphic precedents. In her

16 The term 'Global South' refers broadly to the regions of Latin America, Africa, Asia, and Oceania.

17 Ross. *Printed Bengali character*, 1999.

18 Baerdemaeker. *Tibetan Typeforms*, 2020.

19 Nemeth, Titus. *Arabic type-making in the machine age: the influence of technology on the form of Arabic type, 1908–1993*. Brill, 2017.

20 Ross. *Printed Bengali character*, 1999, p.1.



analysis, Ross considers the evolution of Bengali type by acknowledging various strands that influenced their production; technological constraints, linguistic or artistic shortcomings of those involved in the development process, and even stylistic conventions of a given era. This research attempts a similar process for the Gurmukhi writing system. Furthermore, the publication by Ross lends a framework and crucial investigation leads that are helpful to this research; this includes the names of foundries and individuals that were active in the field of printing Indian scripts, and archives and literature that may contain, in addition to Bengali, information on the printing of Gurmukhi.

Considering the novelty of this field of study, it is not surprising that only two prior works that focus on aspects of Gurmukhi type-production history could be uncovered by this research, limiting the scope of this review.<sup>21</sup> However, beyond the sparse subject specific literature, this thesis had recourse to a great deal of publications that addressed contextual facets of the subject matter, all of which are referenced throughout this thesis within the chapters they pertain to. These works can be largely categorised into four groups:

- Literature on the socio-political and economic circumstances in time periods under consideration in this thesis, both in Britain and where applicable, abroad.
- Manuals, handbooks, and other printed matter that provided insight on the function of various typesetting technology and machinery, and books on printing history.
- Histories of the foundries, companies, and missionary societies who undertook Gurmukhi type manufacturing or printing at their establishments.
- Publications pertaining to the Panjabi language and orthography, as well as works on the structure and specificities of the Gurmukhi writing system.

This thesis benefited considerably from such broader literature that informed the context and backdrop against which Gurmukhi type production and the resulting outputs were being considered, how the type was being produced, who was manufacturing the printing types or typesetting with them, and the structure of the writing system they were creating punches and sorts for, and subsequently printing with.

---

<sup>21</sup> Specifically, this was the only research that could be found in the English language. Having only native readership capabilities in English and Persian, it is not possible for me to say with absolute certainty that this is also the case for other languages. However, inquiries from colleagues who speak and read in Panjabi, German, and French did not lead to the discovery of any additional sources beyond those mentioned in the text.



### 1.3.1 Gurmukhi type and printing history as a focal point

As previously discussed, two titles that align with the current thesis through a focus on Gurmukhi printing history and culture could be found through this research. The first of the two is a general overview of the evolution of Gurmukhi letterforms from handwritten manuscripts through various typesetting and typesetting technologies, which concludes with an examination of digital typefaces up to the year 2008. The work in question is an unpublished Masters dissertation by Emma Williams, titled *A comparative study of the development of the Gurmukhi script*.<sup>22</sup> This crucial contribution to an otherwise non-existent (to this author's knowledge) field of research on Gurmukhi type history offered a helpful starting point by providing a list of individuals and foundries inside Britain, India, Germany, and Austria that developed Gurmukhi types in the period under consideration, albeit in a very concise manner. As expected with a Masters thesis, it appears that (presumably) due to the constraints of time and word count, Williams was not able to carry out her analysis of the Gurmukhi types she highlights in her dissertation with great detail, nor attempt to provide relevant contextual information on the individuals, foundries, and printers involved in the development process, and the circumstances under which the type production work was being undertaken. Furthermore, an attempt to retrieve a number of archival material referenced in William's dissertation did not bear fruitful results, and as a result some of the steps taken in this earlier work could not be retraced and used for this current study.

An example of this is a reference to a sample of the Gurmukhi fount of Vincent Figgins, which Williams cites as being printed in a volume titled *Specimens of type-printing materials*, published in 1895.<sup>23</sup> A thorough review of this specimen in the British Library showed only examples of the foundry's work on the Latin script, and a few sample pages of Hebrew text, but no other scripts appear in the volume.<sup>24</sup> Finally, while the work from Williams considers hot-metal printing technologies (cast and set both by hand and machinery), and early digital production, no mention is made of the advent of phototypesetting, a technology that acted as an essential link between early type production methods and contemporary font development procedures for digital contexts.

The second work comes from Graham Shaw, one of the chief historians and bibliographers of printing culture and practice in South Asia. Shaw has authored numerous titles on the printing history of India in which he considers printing in various scripts and regions of the subcontinent, including (but not limited to)

---

<sup>22</sup> Williams, Emma. *A comparative study of the development of the Gurmukhi script*. University of Reading, 2008, MA dissertation.

<sup>23</sup> Ibid, p. 61.

<sup>24</sup> Figgins, Vincent. *Specimens of type-printing materials*. London, V. & J. Figgins, ca. 1897. BL shelfmark: general reference collection 2707.cs.15.





Bombay, Madras, Mangalore and Tellicherry, Calcutta, and Bangladesh.<sup>25</sup> His essay titled *The first printing press in the Panjab* is one such publication that is directly relevant to the focus of this thesis.<sup>26</sup> This essay provides a thorough historic outline of the efforts of the American Presbyterian Missionaries who set up, as evident from the title, the first printing press in the Indian Panjab, and proceeded to print Christian literature in a number of languages and scripts (including Gurmukhi) for dissemination in this region, and beyond.

While these missionaries' North American background technically places them outside the scope of this thesis, their lasting impact through introducing letterpress printing technology to the Panjab region, and their connection with the British evangelists at the Serampore Missionary Press designates them as an important and relevant addition to this study. Although Shaw's work is not concerned with the appearance of the Gurmukhi metal type that was used by the missionaries for the printing of their books, it offers a valuable viewpoint of the motivations of the Presbyterian Missionaries for setting up their operation in Ludhiana in the Indian State of Panjab, the context in which the missionaries established their printing press, their sources of financing for the operation, and what was being printed at the press (and in what languages). As such, the essay not only provided significant information that served as a backdrop against which an analysis of the work carried out by the American Presbyterian Missionaries could be attempted, but also pointed to a number of sources that were further consulted when writing the chapter on missionary involvement in the printing of Gurmukhi.

#### 1.4 A roadmap of this thesis

The findings of this research were structured in such a way as to benefit and prime the uninformed reader, while maintaining a logical thread for those with more expertise on the topic at hand. For those not proficient in the various linguistic and technical facets of this thesis, whether the familiarity they lack is with the Gurmukhi writing system itself, how the script is composed in handwriting, or an understanding of a given method of type manufacturing and printing technology, the first two chapters and the introductions of the subsequent chapters provide the required base information. Overall, the thesis was ordered so as to complement the knowledge of those with expertise in peripheral disciplines that may have an interest in the research presented here, while pursuing a methodical thread for anyone else reading or referring to this text. Thus the thesis begins with chapters

---

<sup>25</sup> An upcoming book collects these publications (currently available in different journals) in a single publication titled *Impressions of the past: print culture and typography in South Asia* (set for release in 2022). For more, see [www.contextualternate.com/grahamshaw01#gs01-about-book](http://www.contextualternate.com/grahamshaw01#gs01-about-book). Accessed 18 Feb. 2022.

<sup>26</sup> Shaw, Graham. 'The first printing press in the Panjab.' *The Library Chronicle*, vol. 4, Jan. 1979, pp. 159-179.



that focus on the structure and characteristics of the Gurmukhi script, and how the writing system looks when written by hand.

Once a general understanding of the particulars of the script is achieved, an overview of Gurmukhi manuscripts and the handwritten traditions of the writing system follows. Establishing the stylistic conventions that existed in written Gurmukhi helps the reader to then follow the evolution of how the letterforms of this script changed when transitioning from pen to print; beginning with the first example of Gurmukhi printed with movable metal type at the Serampore Missionary Press, and later with the efforts of the Presbyterian evangelists at the Ludhiana Mission Press. What follows is a survey of Gurmukhi printers and foundries working within various locations across Britain, including the type foundries of Vincent Figgins in London, Stephen Austin in Hertford, and the Oxford University Press, to name a few. The historical overview concludes with an inquiry into Gurmukhi printing types produced by the Linotype and Monotype companies, beginning with the design developed into metal founts for Monotype's type-casting and composition machine, and later, Linotype's original design for the company's phototypesetting machinery. This chapter also follows the transition of the original designs of these companies through their adaptation to new technologies and the eventual dematerialisation of type in the phototypesetting and early digital eras, and considers the international collaboration involved in achieving the design and production of their Gurmukhi typefaces in the twentieth century. The final chapter of this thesis will provide a comparative analysis of the Gurmukhi types of all aforementioned missionary presses, printers, foundries, and companies. This evaluation of the types under question will be accompanied with images highlighting key characteristics and important contributions to the changes in Gurmukhi letterforms over the two centuries under consideration in this thesis.

The thesis concludes with observations that bring together the findings of each chapter and assess these discoveries against the original research questions and aims of this thesis, contributing to the typographic past and future of Gurmukhi type alike.



## 2 Specificities of the Gurmukhi script

Like most writing systems of North India, the Gurmukhi script is considered to have evolved from the earliest known script of India, Brahmi, and the Gupta script—which itself evolved from Brahmi in the fourth century AD.<sup>1</sup> A traditionally accepted theory from historian Johann Georg Buhler regarding Brahmi is that it first appeared as inscriptions on pillars attributed to the Mauryan emperor Asoka, some time around the middle of the third century BC, however the precise origins of the script remain a point of dispute.<sup>2</sup> Regardless, this parent script branched out over many years and gave rise to a number of descendant scripts, one of which was called Landa, a writing system of South Asia that was used in the regions of Panjab and Sindh.

An offspring of the Gupta script, Landa itself means ‘clipped’, referring to features such as the lack of vowel marks, the absence of word-spacing and punctuation, and the use of a single letterform for representing both aspirated and unaspirated consonant pairs.<sup>3</sup> It appears that the Landa script was eventually adopted as the indigenous script of the Panjab, but due to the inadequacies of this writing system in representing the particular intricacies of the Panjabi language, eventually Gurmukhi (the only major surviving member of the North Western group of Indian scripts) was established as the main writing system to be used for writing Panjabi in Northern India.<sup>4</sup> While sharing many characteristics with other North Indian scripts like Devanagari (characteristics such as the connecting headline and similarity in the structure of certain letterforms), Gurmukhi developed unique features that distinguish it from other writing systems in use in the subcontinent. Part of this can be attributed to the Panjabi language itself, and the distinct inclusion of phonetic features—most prominently the use of pitch contours (tones) that can change the meaning of words depending on how they sound—from speech into the writing system.

Beyond this, the close relationship between Persian and Panjabi also played an influential part in certain characteristics of the Gurmukhi script. Persian was the official language of the courts prior to the British colonisation of India in the

1 Coulmas, Florian. *The writing systems of the world*. Basil Blackwell, 1989.

2 Coningham, Robin A. Evelyn, et al. ‘Passage to India? Anuradhapura and the early use of the Brahmi script.’ *Cambridge Archaeological Journal*, vol. 6, no. 1, 1996, pp. 73-97.

3 An absence of word spacing can also be seen in other scripts of North India such as Bengali and also, elsewhere, the Perso-Arabic script, as such it is possible that some of this approach was a result of the influence of such scripts. Pandey, Anshuman. *A roadmap for scripts of the Landa family*. Script Encoding Initiative (SEI) Online, Jan. 2010, [unicode.org/L2/L2010/10011-landa-roadmap.pdf](https://unicode.org/L2/L2010/10011-landa-roadmap.pdf). Accessed 10 Sept. 2020.

4 There are various schools of thought on this matter. For more, see Bhatia, Tej. *Punjabi*. Routledge, 2013; Jain, Danesh, and George Cardona, editors. *The Indo-Aryan languages*. Routledge, 2007.



northern regions of the country, and as such, it can be seen that distinct characters and diacritic marks were created in Gurmukhi to reflect the corresponding features that exist within the Perso-Arabic script, for example the use of gemination, or using diacritical dots to distinguish one consonant from the other.<sup>5</sup>

The Gurmukhi writing system is still used by millions today, and is said to be the twelfth most widely used script in the world.<sup>6</sup> It is noteworthy that the use of the script is not limited to transcribing the Panjabi language; Gurmukhi has also been used for writing Sindhi and Western Hindi.<sup>7</sup> There is a prevailing theory of the script being standardised by Sikh Guru Angad in the sixteenth century, although the etymology of the name Gurmukhi is disputed, with some scholars citing its origin as meaning *from the mouth of the Guru*, while others believe the word to be an indication of the Panjabi word for pious, or guru-oriented.<sup>8</sup> It is outside the scope of this thesis to dispute either view. However, it is indisputable that the writing system itself is closely tied to Sikhism and its canonical literature.<sup>9</sup> Gurmukhi has been historically used for writing sacred Sikh scripture such as the *Guru Granth Sahib*, but also secular texts and *qissa* (stories), poetry, and literary texts. In the twentieth century, Gurmukhi was designated as the official script of the Eastern Panjab region of North India, where it is still the dominant script today (it can be seen in use along with Devanagari, Shahmukhi, and Latin as secondary scripts).<sup>10</sup>

## 2.1 Main character set: structure and proportions

Gurmukhi is categorised as an alphasyllabary,<sup>11</sup> meaning almost all vowels are present in texts as consonant-vowel pairs, with the exception of the vowel /a/,

5 'Persian had been the official court language—and thus the language of administration—for pre-colonial regimes from the turn of the second millennium. Introduced as a court language by the Ghaznavids when they established control over the Panjab during the era of the Sikh kingdom of Lahore'. Mir, Farina. *The social space of language*. University of California Press, 2010, p. 35.

6 Kaur, Mandeep, and Kumar, Sanjeev. 'A recognition system for handwritten Gurmukhi characters.' *International Journal of Engineering Research and Technology (IJERT)*, vol. 1, iss. 6, 2012.

7 Grierson, George. *A linguistic survey of India*. Vol. 9. Office of the Superintendent of Government Printing, 1916.

8 Bhardwaj, Mangat. *Panjabi: a comprehensive grammar*. Routledge, 2016.

9 On the other hand *Shahmukhi* (said to mean from the mouth of the Shah), a stylised version of the Perso-Arabic script, is more closely associated with Islam, and the Western Panjab region located in Pakistan.

10 Goyal, Vishal and Gurpreet Lehal. 'Comparative study of Hindi and Punjabi language scripts.' *Journal of the Linguistics Society of Nepal*, vol. 23, 2008, pp. 67-82.

11 There are some disagreements on the definition of what an alphasyllabary is and whether or not it is the same as an abugida, for example in *A matter of typology: alphasyllabaries and abugidas*, author William Bright states that not all abugidas are alphasyllabary and vice versa. He argues that if all modifications to a consonant/vowel pairing are made by diacritics, and that these diacritics follow the direction of the writing of the letterforms, then the abugida is not an alphasyllabary. He does however agree that the basic rules of an abugida apply to words being made up of consonant-vowel syllables. Based on his description of each, Gurmukhi could be classified as both an alphasyllabary and abugida. Bright, William. 'A matter of typology: alphasyllabaries and abugidas.' *Studies in the Linguistic Sciences*, vol. 30, no. 1, 1991, pp. 63-71.

ਪ	The consonant ਪ read as pa (/p/ consonant + /a/ inherent vowel that is unwritten)
ਪਵ	The consonants ਪਵ read as pava (/p/ consonant + /a/ inherent vowel that is unwritten + /w/ consonant /a/ inherent vowel that is unwritten)
ਪ੍ਰ	The consonant conjunct ਪ੍ਰ read as pva (/p/ consonant + subscript form of ਵ read as /və/)
ਪੀ	The consonant and vowel pair ਪੀ read as pi (/p/ consonant + bihari vowel ੀ read like a long-e /i:/ as in litre)

Figure 2.1. An illustration of the properties within the Gurmukhi script that designate it as an alphasyllabary. Note that this is just an example to clarify the logic of the alphasyllabary in a string of consonants. In pronunciation, the inherent /a/ vowel is dropped at the end of words: for example, the word ਕਲ is read as *kal* (ਕ *ka* + ਲ *l*).



which is inherent to all consonants and thus, unwritten.<sup>12</sup> The script can not be categorised as syllabic because, as described by linguist Florian Coulmas, ‘the other vowels are indicated by systematically modifying the basic consonant sign with additional diacritical marks’.<sup>13</sup> Basically put, in an alphabet both consonants and vowels are present independent of each other, as in the case of Latin, whereas in a syllabary like Japanese Kanji, the consonants and vowels within a unit cannot be split. In an alphasyllabary such as Gurmukhi, the consonants are always accompanied by the inherent vowel, however this vowel *can* change with the addition of specific vowels, or be suppressed by creating consonant clusters, or using vowel suppressing marks. This is clearly illustrated in figure 2.1; the first row shows the consonant/vowel pairing that inherently exists in all the consonants in the script, the second row shows a string of two consonants with no alternative vowels, vowel suppressors, or subscript consonants; here again the inherent vowel /a/ is used to read the string. The third row illustrates the use of a subscript consonant that has resulted in the creation of what is referred to as a consonant cluster (more on this later), and consequently the removal of the inherent vowel of the first consonant (in modern texts, the dropping of the inherent vowel in pronunciation is not reflected in the writing in the form of consonant clusters). Finally, the last row shows the modification of a consonant with the use of another vowel, removing the /a/ sound and replacing it with the long-e /i:/ instead.<sup>14</sup>

Gurmukhi is written from left to right and maintains no case distinction. The script originally contained thirty-five letterforms, granting it the byname *paiṁtī*, which translates to ‘the thirty-five’.<sup>15</sup> As in other Indian scripts, these characters are arranged in a very precise manner; seven rows of five each, with the order of letterforms in each line reflecting the manner of articulation (such as aspirates or nasals), while the ordering of the rows themselves is based on the place of articulation, from the back of the mouth to the front—velar, palatal, retroflex, dental, and labial (figure 2.2, page 62).<sup>16</sup> The standard arrangement of the characters in Gurmukhi is, in some respects, a point of departure from other scripts of India that maintain a Sanskritized approach (as regards the rendition of Sanskrit for scripts like Devanagari).

12 Bashir, Elena and Thomas J. Connors. *A descriptive grammar of Hindko, Panjabi, and Saraiki*. De Gruyter Mouton, 2019.

13 Coulmas. *Writing systems*, 1989, p. 183.

14 Shackle, Christopher. ‘Panjabi.’ *The Indo-Aryan Languages*, edited by Jain Danesh and George Cardona, Routledge, 2007, pp. 582–622.

15 Ibid, p.651 (spelled as *pēṁtī*), and Daniels, Peter T., and William Bright, editors. *The world’s writing systems*. Oxford University Press on Demand, 1996, p. 395.

16 Within each row, voiceless sounds are ordered first (unaspirated and aspirated), then voiced sounds (historically unaspirated and aspirated, although this distinction has been lost in modern spoken Panjabi), and lastly nasals. Sonorants are ordered last. *Gurmukhi script description*. Scriptsource, [scriptsource.org/scr/Guru](http://scriptsource.org/scr/Guru). Accessed 15 Sept. 2020.

<b>Vowel bearers and fricatives</b> <i>Fricatives are in principal, the easiest sounds to produce</i>	ੳ — ūrā — -	ਅ — aiṛā — a	ੲ — īṛī — -	ਸ — sassā — sa	ਹ — hāhā — ha	
<b>Velars</b> <i>Articulated further back than palatals, with the back of the tongue approaching the soft palate (or the velum).</i>	ਕ — kakkā — ka	ਖ — khakkhā — kha	ਗ — gaggā — ga	ਘ — kaggā — gha	ਙ — ṅāṅṅā — ṅa	
<b>Palatals</b> <i>Articulated by bringing together the front of the tongue and the hard palate (the front part of the palate)</i>	ਚ — caccā — ca	ਛ — chacchā — cha	ਜ — jajjā — ja	ਝ — chājṅā — cā	ਞ — ṅāṅṅā — ṅa	
<b>Retroflexes</b> <i>Consonants articulated with the tip of the tongue curled back against the soft palate</i>	ਟ — ṭaiṅkā — ṭa	ਠ — ṭhatṭhā — ṭha	ਡ — ḍaḍḍā — ḍa	ਢ — ṭaḍḍā — ṭa	ਣ — ṇāṇā — ṇa	
<b>Dentals</b> <i>Articulated with the tongue at the front of the mouth, with the tip against the teeth</i>	ਤ — tattā — ta	ਥ — thatthā — tha	ਦ — daddā — da	ਧ — taddā — tā	ਨ — chacchā — na	
<b>Labials</b> <i>Consonants articulated using the lips, this is done by either narrowing or closing them</i>	ਪ — pappā — pa	ਫ — phapphā — pha	ਬ — babbā — ba	ਭ — pābbā — pā	ਮ — mammā — ma	
<b>Frictionless continuants</b> <i>Articulated using outgoing breath that does not create friction in the mouth</i>	ਯ — yayyā — ya	ਰ — rārā — ra	ਲ — lallā — la	ਵ — vāvā — va	ੜ — ṛārā — ṛa	
<b>Latest additions</b> <i>Pair bindī translates to 'with bindī', referring to the nukta at the foot of the letterform</i>	ਸ਼ — sasse pair bindī — sha	ਖ਼ — khakkhe pair bindī — kha	ਗ਼ — gagge pair bindī — ga	ਜ਼ — jajje pair bindī — za	ਫ਼ — phapphe pair bindī — fa	ਲ਼ — lalle pair bindī — la

Figure 2.2. Standard arrangement of Gurmukhi letterforms, as well as short explanations of the place of articulation, modern names, and sounds (International Phonetic Alphabet or IPA). The names of the vowel bearers as well as the sounds corresponding to each letterform are written underneath, and are written in compliance with the ALA-LC Romanization tables: transliteration schemes for non-Roman scripts, approved by the Library of Congress and the American Library Association.

In Sanskrit, a group of consonants known as the *vargīya* consonants are similarly ordered based on how they are pronounced, and in each row, two of the consonants are hard, two soft, and one nasal.<sup>17</sup> Like in Gurmukhi, these five groups consist of the ka, ca, ta, ṭa, and pa groups—the characters in these groups all represent the same phonetic class (see figure 2.2 for reference). However, there are notable points of departure in Gurmukhi outside of these twenty-five consonants; the first row of letterforms consists of three vowel bearers and two fricatives, a feature that was inherited from the Landa script, and today, is unique to Gurmukhi. Of the three vowel bearers, the ūṛā (ਊ) and īṛī (ਈ) are never used independently, and always appear combined with a superscript or subscript vowel, whereas the aiṛā (ਐ) can appear on its own to signify the /a/ vowel when starting a word (vowel bearers generally appear when a word group begins with a vowel). Aside from the vowel bearers there are also a total of seven diacritic marks that are considered as variants rather than independent letterforms, as in other scripts of India.<sup>18</sup> The use of the three vowel bearers is very similar to the case of writing of the Persian language and likely takes influence from it.<sup>19</sup> In Persian writing, the alef (ا), waw (و), and yeh (ي) are respectively used as both vowel bearers and, in the case of waw and yeh, as the long vowels /u:/ and /i:/, in the absence of other diacritic modifiers.<sup>20</sup> Another distinction of Gurmukhi from the Sanskrit naming of characters in Devanagari is in the modern names of the characters; they are referred to by reduplicative phonetic values, as such ka is called kakkā, for example.<sup>21</sup> The first row is completed with the only sibilant (sounded with a hissing effect) sassā (ਸ਼), and aspirate (with forceful expulsion of air), hāhā (ਹ਼); these two are fricatives—consonants produced by forcing air through a narrow channel made by placing two articulators (such as the tongue and the roof of the mouth, or the teeth) close together.

In addition to the base thirty-five characters, there are six other consonants that were added to the character set in the nineteenth century in response to the need for representation of foreign sounds, particularly those found in Persian loanwords. The base form of these newer additions borrows from letterforms that were already present in the original Gurmukhi character set. However the addition of a superscript *nukta* (dot) mark appoints them a unique phonetic value (see bottom row in figure 2.2). This differentiation method is another way in which the Perso-Arabic writing system influenced Gurmukhi; the use of diacritic dots to change the phonetic value of a given consonant is a fundamental feature in

17 These are also referred to as 'voiced' and 'unvoiced'.

18 Salomon, Richard. 'Writing systems of the Indo-Aryan languages.' *The Indo-Aryan languages*, edited by Jain Danesh and George Cardona, Routledge, 2007, pp. 75-114, p. 92.

19 The likely influence is also noted by Masica in his writing. For more see Masica, Colin P. *The Indo-Aryan languages*. Cambridge University Press, 1993.

20 The Alef can also be used as a long vowel /a:/ when written with a superscript madda diacritic (آ).

21 Shackle. *Panjabi*, 2007, pp. 582-622.




























Vowels that combine with vowel bearer ਉੜਾ ਊ	 <i>auṅkaṛ</i> <u>u</u>	 <hr/> Combined with vowel bearer	 <hr/> Combined with a consonant
	 <i>dulainkaṛ</i> <u>ū</u>	 <hr/> Combined with vowel bearer	 <hr/> Combined with a consonant
	 <i>hoṛā</i> <u>o</u>	 <hr/> Combined with vowel bearer	 <hr/> Combined with a consonant
Vowels that combine with vowel bearer ਅੜਾ ਅ	 <i>kannā</i> <u>ā</u>	 <hr/> Combined with vowel bearer	 <hr/> Combined with a consonant
	 <i>dulāvā</i> <u>ai</u>	 <hr/> Combined with vowel bearer	 <hr/> Combined with a consonant
	 <i>kanaurā</i> <u>au</u>	 <hr/> Combined with vowel bearer	 <hr/> Combined with a consonant
Vowels that combine with vowel bearer ੜਿ ੜਿ	 <i>lāvā</i> <u>e</u>	 <hr/> Combined with vowel bearer	 <hr/> Combined with a consonant
	 <i>siharī</i> <u>i</u>	 <hr/> Combined with vowel bearer	 <hr/> Combined with a consonant
	 <i>biharī</i> <u>ī</u>	 <hr/> Combined with vowel bearer	 <hr/> Combined with a consonant

Figure 2.3. Gurmukhi vowel bearers paired with their corresponding vowel marks, and the consonant *pappā* in the far right column to illustrate how the mark combines with its vowel bearer and also a given consonant.

the Perso-Arabic script.<sup>22</sup> From the transliterations given in figure 2.2 (page 62), it can be seen that for every given phoneme in the Panjabi language, there is a precise letterform assigned in the Gurmukhi writing system, largely eliminating complications with misspellings and mispronunciation.<sup>23</sup> This means that prior to the addition of the new letterforms to cover the sounds required for loanwords, the *jajje pair bindī* (ਜ) which represents the *za* sound used in the word *Kaghaz* (ਕਾਗਜ਼) in Gurmukhi, and translates to *paper* in Persian, where it is written as کاغذ would be transcribed as *Kagad*, *Kagal* or *Kagar*, where the *za* sound was replaced with substitutes.<sup>24</sup> The need for such substitutions and compromises was thus removed with the addition of the final six consonants in the main Gurmukhi character set.

## 2.2 Vowels

It was previously stated that in the Gurmukhi script, all consonants carry the inherent /a/ vowel. This vowel—the *mukatā*—is dropped (not pronounced) at the end of words, and, as explained, elsewhere in word groups it can be modified using vowel marks that may appear before (prescript), after (postscript), over (superscript), or under (subscript) the base consonant or vowel bearer: ਿ ਿ ੁ ੁ ੈ ੈ ੀ ੀ. <sup>25</sup> While these vowel marks can pair with any consonant, they each only combine with a specific vowel bearer (figure 2.3). The pairing of vowels with consonants generally does not result in a change to the shaping of either of the two, apart from the case of the *hoṛā* (ੳ) vowel when used over the *ūrā* (ੳ), which cuts the half-circle shape at the top of the consonant slightly short, as illustrated in figure 2.3. Finally, vowels are not restricted to use in the middle of words, but can also be used to start words.

So far the general structure of the main character set of Gurmukhi has been outlined. In terms of the proportions and typographic appearance, it can be observed that all thirty-five base letterforms of the script (along with the later additions), have a uniform height, and can fit neatly between two parallel horizontal lines. The only exception to this is the *ūrā* (ੳ), in which the top curve of the letterform sits just above the headline bar, to which all the letterforms connect (or rather the headline portion of all letterforms connect at the top to create the

<sup>22</sup> For more on the nineteenth century additions to the script, see Shackle. *Panjabi*, 2007, pp. 582–622.

<sup>23</sup> Bowden, Andrea L. *Punjabi tonemics and the Gurmukhi script: a preliminary study*. Brigham Young University, 2012.

<sup>24</sup> An example of this can be seen in ਕਾਗਰ ਨਾਵ ਲਘਿ ਕਿ ਤ ਸਾਗਰੁ ਬਿਰਥਾ ਕਥਤ ਹਮ ਤਰਤੇ II (How can they cross over the ocean in a paper boat? They meaninglessly proclaim, 'We are floating'! – *Guru Arjan Sahib, Guru Granth Sahib*, 1267) It is interesting to note that this word appears in three different forms in Gurbani: *Kagal* (ਕਾਗਲ), *Kagad* (ਕਾਗਦੁ) and *Kagar* (ਕਾਗਰ).

<sup>25</sup> The dotted circles (◌◌) represent the consonant that would bear the vowel mark.

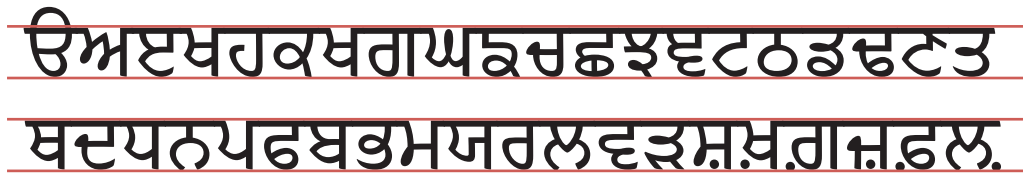


Figure 2.4. All forty-one Gurmukhi consonants and vowel bearers, written between two parallel horizontal lines.

ਪ੍ਰ	The consonant conjunct ਪ੍ਰ read as pra (/p/ consonant + subscript form of ਰ read as ra)
ਪ੍ਰੈ	The consonant conjunct ਪ੍ਰੈ read as pva (/p/ consonant + subscript form of ਵੈ read as /svə/)
ਪ੍ਰੁ	The tonal pair ਪ੍ਰੁ. Here the subscript form of ਰ indicates the tone, and works much the same as the regular hāhā (ਰ) which is used with vowels, where this form works with consonants. Pronounced as p <sup>hā</sup> in some Western dialects
ਪ੍ਰਯ	The consonant conjunct ਪ੍ਰਯ read as pya (/p/ consonant + subscript form of ਰ read as /ya/)

Figure 2.5. An illustration of the use of subscript letterforms and the half yayyā to create consonant clusters or indicate tone. The examples above are just for illustration; a consonant cluster is always found within a syllable. There are no syllable-final consonant clusters in Panjabi.

headline bar).<sup>26</sup> Furthermore, the characters generally do not have noticeably varying widths, with the exception of the *airā* (ਅ) and the *kāggā* (ਘ) that are more horizontally generous when compared to the rest of the set; while these two letterforms are inherently wider in structure, this is further exaggerated to the eye due to the large open counters at the top of both, that invite a larger white space, emphasising the overall size (figure 2.4).

It is noteworthy that in the context of type, these proportions can vary depending on the intention of a designer, particularly in typefaces created for use in display settings where proportions and structure can be exaggerated or dramatized to attract and entice the attentions of a potential reader. In a typeface envisaged for use in text and long reading. However, the evenness of texture, proportion, and size (and an eye to harmonious distribution of black and white in the letterforms), can help in increasing readability and legibility, which are key for a comfortable reading experience.<sup>27</sup>

### 2.3 Consonant conjuncts and subscript letterforms

In figure 2.1 (page 60), the third row illustrates the use of a subscript consonant to suppress the inherent /a/ vowel, resulting in the creation of what is referred to as a consonant cluster or conjunct. Put simply, in consonant clusters there is no vowel break between two consonants, as in *br* in the word *brick*. Unlike some other scripts of India such as Devanagari and Gujarati where a large number of consonant conjuncts can occur within the script, Gurmukhi (reflecting more so the shared Brahmi root) uses a limited number of conjuncts; three main conjoined subscript forms of the *hāhā* (ਹ), *rārā* (ਰ), and *vāvā* (ਵ) characters, and one half-form of *yayyā* (ਯ) create consonant pairings and other variations in pronunciation (figure 2.5). Of the three subscript forms, the appended *rārā* and *vāvā* are used to make consonant clusters and behave in a similar manner, while subscript *hāhā*

26 ‘... the various developments of the original head line or top serif, [...] originally arose from the small blot of ink left by a split-reed pen at the commencing point of a letterform. This incidental mark eventually came to be perceived as an inherent part of the letterform, and then was intentionally written with a separate stroke. This head stroke, in turn, gradually became more and more pronounced, and moreover took on distinctive shapes or styles in the different regional scripts. In northern scripts such as Nagari, Gurmukhi and Bangla, it became a long horizontal line across the entire width of most of the letterforms, while in the southern scripts (except Tamil) it tended to take various rounded shapes such as the “umbrella” of Oriya’. Salomon. *Indo-Aryan languages*, 2007, p. 106.

27 For more on legibility and readability studies and the impact of type on both, see Dyson, Mary C. ‘Where theory meets practice: a critical comparison of research into identifying letters and craft knowledge of type design.’ *The Design Journal*, vol. 16, iss. 3, 2013, pp. 271-294; Unger, Gerard. *While you’re reading*. Mark Batty Publisher, 2006.





is used to indicate tone (some consonants can be used for this purpose as well).<sup>28</sup> All three of these subscript forms are written or shaped similar to the larger base form, but they are considerably smaller in size and do not include the headline.

In addition to these three subscript letterforms, the half-form of *yayyā* (ਯ) is used for Sanskrit loanwords and is largely absent from modern texts. The most common of the three subscript consonants in modern use is the subscript *rārā*, and like the half *yayyā*, subscript *vāvā* is largely used for loanwords referred to as *tatsama*.<sup>29 30</sup> Beyond the three common subscript consonants and single half-form that are established elements of the Gurmukhi script, older texts in this script showed use of a number of other consonants being used as either subscript or half-forms to create consonant clusters as well. Additionally, sometimes the subscript or half-forms were applied to the first consonant in a pair rather than the second, which is the common modern practice.<sup>31</sup> As these approaches largely do not appear in printed Gurmukhi texts under consideration in this research nor extensively in current day practice, they will not be further investigated in this thesis.<sup>32</sup>

## 2.4 Numerals

Gurmukhi has its own unique set of numerals which, like the other characters, are written from left to right. The appearance of many numerals in this script is similar to that of Devanagari and Gujarati figures; this is especially evident in the case of the 0, 2, 3, 4, and 5 (albeit with some variation), and indicates the shared roots of these scripts. While the numerals of Gurmukhi appear extensively in older texts and sacred scripture to mark verses and pages, in modern contexts they are

28 Academic discourse on using tone in Panjabi is outside the scope of this research; however, Panjabi phonology researcher Andrea Bowden writes on this matter: 'Previous literature on the Punjabi language demonstrates a number of inconsistencies with regard to the number of tones found in the language with claims ranging from two (Gleason and Gill, 1972) to four tones (Malik, 1995). Tisdall (1888) and Ganathe (2009) do not discuss the presence or function of tones at all. Gleason and Gill (1972) argue for two tones - high and neutral. Most researchers and Punjabi grammars support the three-tone theory for Punjabi, with the tones classified as neutral, high or rising, and low or falling. The three-tone system is supported by Shackle (1972), Kalra and Purewal (2007), Bahri (1972, 1982), Tolstoya (1981), Arun (1997), Masica (1991), Campbell (1991), and Yip (2002). Only Malik (1995) argues for a gliding tone system with four distinct tones, which he claims include a rising glide, a rising-falling glide, and the level or neutral tone'. Bowden. *Punjabi tonemics*, 2012, p. 15.

29 Shackle, Christopher. *A Gurū Nānak Glossary*. Heritage Publication, 1981.

30 'The word *tatsama* is made by the combination of two Sanskrit words *tat* and *sama*. Literally, it means 'similar to that'. *Tatsama* words do not undergo any change in their forms or meaning, and enjoy a significant position by virtue of origin from Sanskrit. Article 351 of the Indian Constitution states that it is the duty of the Union to protect Hindi language and its vocabulary base, drawing wherever necessary or desirable primarily from Sanskrit. This has facilitated the promotion of use of *tatsama* and preserving it in its original form'. Jha, Bipin Kumar. 'Transformation and significance of Sanskrit (*tatsama*) words.' *Mahatma Gandhi Central University Journal of Social Sciences (MGCJSS)*, vol. 1, iss. 1, 2019, pp. 34-40.

31 *Gurmukhi*, range: 0A00–0A7F. Microsoft Typography OpenType® Standard. Version 13.0, 2020, [unicode.org/charts/PDF/U0A00.pdf](https://unicode.org/charts/PDF/U0A00.pdf). Accessed 29 June 2021.

32 Shackle. *Panjabi*, 2007, pp. 582–622.

੦	੧	੨	੩	੪	੫	੬	੭	੮	੯
0	1	2	3	4	5	6	7	8	9

Figure 2.6. Gurmukhi numerals and their Latin equivalents.

ਪੰ	ਪੁੰ	ਪੂੰ	ਪਿੰ
ਪਾਂ	ਪੇਂ	ਪੈਂ	ਪੌਂ

Figure 2.7. The ṭippī (top row) and bindī (bottom row) in combination with the pappā, and vowel marks each diacritic can appear with. The top row shows the pairing of the ṭippī with the a, i, u, and ū vowels (when it appears at then end of a word). Beyond these, everything else can be paired with a bindī, as exemplified in the bottom row.

increasingly being replaced by Latin figures—commonly referred to as Arabic numerals, and not to be mistaken with Roman numerals (figure 2.6).

## 2.5 Supplementary diacritic marks

Beyond the prescript, postscript, superscript, and subscript vowels, there are a number of additional diacritics that are commonly used in the Gurmukhi script. The most notable of these are the superscript *bindī* which resembles a small circle or nukta (◌◌), the downward facing half-moon form known as the *ṭippī* (◌◌), as well as the superscript *addhak* (◌◌) which looks like a vertically flipped *ṭippī*.<sup>33</sup>

The *bindī* and *ṭippī* are each combined with specific vowel marks and indicate nasalisation; the *ṭippī* is used with the *mukatā* (inherent /a/ vowel), *auṅkar* (◌◌), *dulainkar* (◌◌), and *siharī* (◌◌) when it appears at the end of a word, and the *bindī* is used in all other contexts (figure 2.7). Like some other diacritic marks in Gurmukhi, the *bindī* is often omitted from texts.<sup>34</sup>

The *addhak* mark (the word *addhak* translates to *excessive*) represents gemination, and is reminiscent of the *shadda* (◌◌) in the Perso-Arabic script, where it serves the same function of doubling a consonant. Thus instead of writing a consonant twice, the small crescent shaped *addhak* (◌◌) can be used above the consonant to show emphasis in the pronunciation of the marked letterform. It is important to note that the same consonant can appear twice in succession, but this means that there is an intervening vowel between the two, otherwise the doubling of the consonant will always be marked with the *addhak*.

## 2.6 Punctuation Marks

There are a few punctuation marks that have long been used in writing Gurmukhi. The single vertical stroke *danda* ( | ) is used in the writing system to mark the end of a sentence (as in other scripts of India), while the double *danda* ( || ) marks the end of a given verse. For both of these characters, often the height of the stroke will match the overall body size of the consonants. Like with figures, in modern typographic contexts, Latin punctuation is often used along with the Gurmukhi letterforms.

33 Different authors have used varying spelling for the transliteration of *addhak*. Here the most commonly found spelling as used by authors like Gurinder Singh Mann has been adhered to. Mann, Gurinder Singh, et al. *An introduction to Punjabi: grammar, conversation and literature*. Publication Bureau of Punjabi University, 2011; Bhardwaj. *Panjabi grammar*, 2016.

34 Beyond the simple explanation offered here, there is some extensive literature that discusses the specific uses of the *ṭippī* and *bindī* in a given context. For more, see Shackle, Christopher. *An Introduction to the sacred language of the Sikhs*. School of Oriental and African Studies, University of London, 1983; Bhardwaj. *Panjabi grammar*, 2016.



Figure 2.8. A page from an eighteenth century *Bhagavata Purana* in the Gurmukhi script. The text of the manuscript begins with the Ek Onkar, where the pronounced extension of the top stroke of the ūṙā letterform can clearly be seen. Image in the public domain, and courtesy of the PDL, [www.panjabdigilib.org/webuser/Download/](http://www.panjabdigilib.org/webuser/Download/). Accessed 2 Apr. 2022.

Finally, the only occasionally used *visarga* (ः) is used to indicate the separation of headings and text, or to mark a line break. It can also represent abbreviations, in the same way as periods are used to mark contractions and acronyms in Latin. In addition to these uses, there is precedence for the mark being used like a Sanskrit visarga (:), which was used to mark a voiceless (h) sound, pronounced following a vowel.

## 2.7 Additional religious characters and symbols

In addition to the letterforms and characters outlined thus far, the Gurmukhi script contains a few more unique characters. A majority of these characters are seldom used in modern day writing, but appear extensively in sacred texts and scripture. This group comprises the *Ek Onkar*, the *Khanda*, the *yakash* sign, the *halant*, and the *udaat*.

Ek Onkar (ੴ) is used in Sikh literature and literally translates to *One God*, or, *God is One*; the opening words of the Guru Granth Sahib, the most important and most sacred scripture in Sikhism. Not unlike the Christian Cross, the use of the symbol associated with this phrase is both visual and verbal, and can be seen in manuscripts, entrances to places of worship (*Gurdwaras*), walls, medallions, jewellery, and so on (figure 2.8). It forms the basis of the teachings of the Sikh Gurus, and is a central pillar of the Sikh faith. The symbol itself is a visual reflection of the meaning; the number one combined with an *urā* letterform that has an extended top stroke to represent a boundless and eternal God.<sup>35</sup> The overall shape of these two letterforms can vary in written form and sometimes appears highly stylised in handwritten manuscripts and even in typographic environments.<sup>36</sup>

The Khanda (⚔) is similarly a Sikh specific symbol; a reflection of the essence and ethos of the religion. The word *khanda* comes from the similarly named double edged sword that represents Divine Knowledge in Sikh symbology, which is represented in the centre of the symbol. Around the khanda sword there is a circle called the *chakar*. The chakar or chakram, a symbol of the eternal nature of God and equality of humanity, is also a weapon (a steel throwing ring) that has been described as being exclusively used by the Sikh military from the sixteenth century onwards.<sup>37</sup> Finally, the previous elements in the Khanda symbol are bordered to the sides by two crossed *kirpans*, symbols of spiritual power and worldly authority.

<sup>35</sup> McLeod, William Hewat. *Historical dictionary of Sikhism*. Vol. 59. Scarecrow Press, 2005.

<sup>36</sup> For examples, see *Gurmukhi Ek Onkar*. Fileformat, [www.fileformat.info/info/unicode/char/0a74/fontsupport.htm](http://www.fileformat.info/info/unicode/char/0a74/fontsupport.htm). Accessed 29 June 2021.

<sup>37</sup> Gilbert, Jerry. 'Thrown weapon types and thrown weapon use, 500 BCE to 1600 CE.' *Society for Creative Anachronism*, 2012.



Figure 2.9. The saffron coloured Nishan Sahib flag bearing the Khanda character. Image courtesy of Malhotra, Gayatri. [unsplash.com/photos/gi6qmAwjvPo](https://unsplash.com/photos/gi6qmAwjvPo). Accessed 4 July 2021.



These two concepts are known in Panjabi as *peeri* and *meeri*; how God should be remembered by Sikhs, and contribute to their society.<sup>38</sup> The *Nishan Sahib*, a saffron coloured flag of Sikhism always has a Khanda printed on it (figure 2.9).<sup>39</sup>

The yakash sign ( ੲ ) is used exclusively in the Guru Granth Sahib and related religious literature. The subscript mark is commonly said to be taken from the half yayyā ( ਯ ) character used to create consonant conjuncts (see section 1.3). While the yakash may take up to three various forms, it is most commonly shown in Sikh religious texts as a small hook below a consonant.<sup>40</sup>

The halant ( ੲ ) is a subscript mark that, when combined with a consonant, works to suppress the inherent vowel /a/. It is not a mark that is commonly used in Gurmukhi; the reader instead relies on context and knows when the vowel needs to be suppressed in pronunciation intuitively. The udaat ( ੲ ) is another subscript character that was initially thought to be a variant form of the subscript hāhā ( ਼ ). However, research has shown samples of texts where both diacritics are used within the same text.<sup>41</sup> While the udaat is similar to the halant in shape, the character has an entirely different purpose; it was, and is still used as a signifier for the high tone in Panjabi. When writing Gurmukhi, the udaat should be penned after the consonant whose tone is being changed, but before the vowel.<sup>42</sup>

## 2.8 Conclusion

The strong connection and association of Gurmukhi with Sikh religion and culture has resulted in the creation of unique features in this script that separate it from the Sanskritized approaches of other major scripts in Northern India such as Devanagari. Additionally, the geo-political placement of the Panjab and its connection with the Persian language further widened this divide by influencing the addition of features to this script that more closely resemble the logic of Perso-Arabic rather than Brahmi-derived writing systems. When attempting to analyse the typeforms that were developed for printing in the Gurmukhi script (as in the purpose of this research), it becomes essential to have a foundational understanding of such specific features.

38 Teece, Geoff. *Sikhism*. Black Rabbit Books, 2005.

39 For more on this, see Singh, Nikky-Guninder Kaur. *The birth of the Khalsa: a feminist re-memory of Sikh identity*. SUNY Press, 2005.

40 Sidhu, Sukhjinder. *Proposal to encode Gurmukhi Sign Yakash*. Unicode, Jan. 2006, [unicode.org/L2/L2006/06037-yakash.pdf](https://unicode.org/L2/L2006/06037-yakash.pdf). Accessed 10 Sept. 2020.

41 In his proposal to include this character in the Unicode block for Gurmukhi, Sukhjinder Sidhu of the Punjabi Computing Resource Centre states that his research found this to not be true, as there are examples of the subscript hāhā and the udaat present within the same text. Ibid.

42 Ibid, pp. 7-8.





The base character set, consonant conjuncts, special marks, numerals, punctuation, the skeletal structure of the letterforms and diacritics, and other characteristics unique to the writing system all create a base of principles upon which a reference framework for determining typographic quality can be built. Through an understanding of the specificities of the script and the function of the characters that are used when writing Gurmukhi, as well as a set of objective parameters, a point of reference can be established for a comparative analysis of the typefaces under review in the following chapters. However, before this can happen, it is also important to gain an understanding of the handwritten heritage of Gurmukhi; what the script looked like prior to the introduction of printing with movable type, and what notable structural patterns existed in the writing system that may or may not have transitioned from pen to print. These topics will be examined more closely in the following chapter.



### 3 The handwritten traditions of Gurmukhi

Manuscripts can be a significant resource of information for historians, regardless of their field of study; not only do they serve as a vehicle for the transmission of knowledge in a variety of subjects and disciplines, but they offer insights to historical and cultural changes in society through different eras. Prior to the invention of printing, manuscripts were the main form of documentation in a book format, and the necessary human agency involved in their writing and binding rendered each a unique representation of the specific historical context in which it was created. The use of the word *specific* in this context is intended to emphasise the importance of the particular conditions and processes in which a given manuscript may have been produced: while periodically (and geographically) established aesthetics throughout history have influenced various visual aspects of codices (this includes format, script, mise-en-page, and textual content), the distinct circumstances and personal preferences of scribes and those commissioning the writing of manuscripts must also be taken into account as decisive factors of the final outcome when assessing historical manuscripts.

Certainly the impact of periodical and geographical preferences on writing conventions is undeniable; in the absence of a documented date, the analysis of visual facets such as letterform and punctuation shaping, and tracing their changes through time is what enables palaeographers to determine—if roughly—the place and time in which a manuscript was written.<sup>1</sup> However, equally important to these visually prevalent features are the instances in which scribes and calligraphers introduced stylistic changes to the written forms and their arrangement on the page; innovations which, through repetition, could lead to evolution in handwritten—and subsequently, printed—letterforms. These changes were not necessarily due to the aesthetic preferences of the writer, but rather, they were most likely the result of multiple social, economic, and cultural factors that affected the *mise-en-texte*. In *A guide to early printed books and manuscripts*, author Mark Bland describes this simply by stating that: ‘repetition reveals process, identity, and expectation; difference describes history’.<sup>2</sup> He continues by using the example of the shift from the black-letter (Gothic) to the Roman style in manuscripts written in the Latin script, and the transition from side-notes to footnotes as defining moments in the evolution of early books, but notes that they are only recognised as such for diverging from past practice, and concludes by

---

1 Siddiqi, Imran, Florence Cloppet, and Nicole Vincent. ‘Contour based features for the classification of ancient manuscripts.’ *Conference of the International Graphonomics Society*, 2009, pp. 226-229.

2 Bland, Mark. *A guide to early printed books and manuscripts*. John Wiley & Sons, 2013, p. 5.



stating that ‘individual traits should equally be recognized’.<sup>3</sup> This highlights the importance of innovative choices, and places them on a similar level to social conventions when studying stylistic changes in manuscripts. While Bland’s examples are mainly concerned with the Latin script, the same logic equally applies to other writing systems. For example, historians have made great efforts to determine a rationale for the appearance of various styles of Arabic calligraphy, and to establish a timeline for each of these styles from emergence, evolution, and changes in use, to—in some cases—replacement with an entirely different style.<sup>4</sup>

The current chapter investigates inherent features of the Gurmukhi writing system and the arrangement of texts set in this script as they appear in manuscripts, to determine inherent structural patterns in the shaping of the script. This will be done by dividing the manuscripts under consideration into two major literary categories of the Panjab region; poetry and sacred texts—an approach that will both contextualise the written texts, and help to manage the extensive amounts of available resources. Additionally, unique manuscripts—those with notably distinct orthographic or stylistic features—will be included to construct a general overview of the visual heritage of this script. However, before any of this can be discussed, it is important to acknowledge the advantages and the inevitable pitfalls of using manuscripts in historical research, and to propose strategies to avoid any anticipated difficulties in consulting these resources.

### **3.1 The benefits and disadvantages of using manuscripts as primary resources**

It is indisputable that manuscripts serve as a significant resource for historical research. However, it is often the case that they are exclusively used for their evidential and textual content; to the philologist or etymologist, for example, the primary concern when studying a manuscript is what the written text communicates, and not the visual and aesthetic facets of the document. This textual-centric approach is also determined by the content of a given manuscript; in the case of a richly illustrated codex, there are images that often reinforce what the text is communicating, and therefore urge the attentions of the researcher or reader to the provided illustrations and illuminations. In the instance of diaries or personal letters, however, it is likely that the point of interest is predominantly the transmitted information, and perhaps the physical properties of the document such as the paper or ink that was used. This approach of drawing intellectual boundaries is one that has been challenged by bibliographers like Donald F.

---

<sup>3</sup> Ibid.

<sup>4</sup> For more on the various Arabic calligraphic styles, see Blair, Sheila S. *Islamic calligraphy*. Edinburgh University Press, 2020.



McKenzie, who argues ‘the art of reading well’, by which he means ‘the art of reading all the circumstances of a text and its history, including all the ways in which it has been designed, documented, preserved, and used’.<sup>5</sup> This theory recognizes that ‘unravelling what a text might be, and how it has changed in time, requires an engagement with all the facets of its representation’.<sup>6</sup> Facets, such as the various visual and physical attributes in manuscripts like size, binding, paper, ink, illustrations, illuminations, marginal notations, page formats and layouts, headers and footers, epigraphs, notes, prefaces, and the script and letterforms—all elements that French literary theorist Gérard Genette frames as *paratexts*.<sup>7</sup> In the current chapter, the foremost of these elements that will be considered is script and—more specifically—the graphic forms of letterforms and their arrangement as they appear in handwriting.

The reason for focusing on letterforms in this research is in line with one hypothesis of this study: that the majority of Western typesetting technologies through time have not been able to appropriately render the Gurmukhi writing system due to their limitations, or, that changes were made to the shaping of letterforms due to unfamiliarity of those developing printing types for this script with the writing system’s specificities. Because of the high speed of printing and availability of reproductions made with movable type (after all, faster publication speed was one of the principal benefits of the invention of printing with movable type), it is probable that whatever the quality of the printed examples, the shapes of letterforms as they appeared in newspapers, magazines, and books—all of which were being read repeatedly by an increasingly larger population over the years—were gradually established as the norm, and that in turn, this impacted the handwriting of those consuming these texts.

Even now, when analysing letterforms as they appear in manuscripts, investigation does not happen without a predisposition to ‘modern’ forms, meaning the common and standard shapes of letters as they are widely used today. Exposure to typefaces as they are seen in various online platforms and printed media creates a point of reference in the visual memory that is difficult to disregard, and often judgement of what came before will be coloured by what commonly exists today. An example of this is how the Naskh style of Arabic calligraphy is often cited as the most legible style for writing and reading in Arabic, and therefore more widely used for setting long texts intended for extended

---

<sup>5</sup> Bland. *A guide to early manuscripts*, 2013, p.5. For more, see McKenzie, Donald Francis. *Bibliography and the sociology of texts*. Cambridge University Press, 1999.

<sup>6</sup> Ibid.

<sup>7</sup> Genette, Gérard. *Paratexts: thresholds of interpretation*. Cambridge University Press, 1997.





reading.<sup>8</sup> The validity of this remark can be countered with reference to how, for many years and across different geographical locations, other styles of writing were used for long reading in the various languages that use the Arabic script. In all likelihood, the above comment is only valid when reversed: Naskh is the style of Arabic generally used for setting long texts (as it was the style most suitable for adaptation to Western typesetting technologies), therefore it is perceived as the most legible; the letterforms are more familiar to a wider readership in this particular style.

To be able to effectively counter this bias, it is necessary to visually immerse oneself in the study of scripts and how letterforms were written in each writing system by calligraphers and scribes, and to carry out an analysis of orthographic variables to determine periodic writing conventions. The term ‘orthographic variables’ is borrowed here from Imre Galambos, a Sinologist and Tangutologist specialised in the study of mediaeval Chinese and Tangut manuscripts. In his study *Orthography of early Chinese writing: evidence from newly excavated manuscripts*, he writes of the challenges when attempting to trace the evolution of letterforms in manuscripts, and the importance of large-scale data collection:

One must study ancient character forms on the basis of a statistically significant amount of data, because individual character forms by themselves are only examples of possible configurations. Finding solitary instances of certain orthographic variants is not sufficient for making general assumptions about the way scribes wrote that character, it only shows that a scribe could also have written it that way. Therefore, one cannot get an accurate and comprehensive image of the orthography of a character in Warring States China without considering multiple examples of that character.<sup>9</sup>

The geographical location of ‘Warring States China’ used above is easily interchangeable with ‘the Indian Panjab’, as the same applies to the Gurmukhi writing system. Whereas in Gurmukhi manuscript tradition specific styles and regulations in calligraphic practice have not been documented (or at least none that this research could find), the distinction between calligraphy and palaeography must also be recognised; in calligraphy, the value of a script is assessed by the aesthetic qualities of the writing, whereas palaeography is concerned with the study of the historical development of various handwritten

---

<sup>8</sup> Naskh is a style of Arabic calligraphy that was developed in the cities of Mecca of Medina around the seventh century, but the style truly became refined in the early tenth century as an elegant cursive script through the endeavours of calligrapher Ibn Muqlah.

<sup>9</sup> Galambos, Imre. *Orthography of early Chinese writing: evidence from newly excavated manuscripts*. Department of East Asian Studies, Eötvös Loránd University, Budapest, 2006, p. 5.



forms.<sup>10</sup> For the purpose of this thesis, the features of handwritten Gurmukhi that are relevant to the research questions are of importance; chiefly, what was the impact of Western typesetting technologies on the appearance of Gurmukhi in printed text, and how did the letterforms and the arrangement of text on the page appear before the introduction of printing with movable type in this script?

Reflecting further on the quote from Galambos, there is an important point that warrants further consideration. First, he suggests that a ‘statistically significant amount of data’ must be reviewed to study ancient characters. Further on, this is repeated in equally vague wording; ‘multiple examples’. In the absence of any context, there is an uncertainty in this language which leaves it open to interpretation: what qualifies as statistically significant? There is no simple answer to this; to suggest there exists an exact number of sample material from which to draw sound conclusions is a dangerous inductive generalisation. Admittedly it is important to not settle for a single instance of an orthographic feature as it may appear in a specific volume, but to compare multiple manuscripts and evaluate whether the particular way in which any aspect of a writing system appears is repeated, and if so, over what amount of time and geographical scope. The particular research questions on the handwritten traditions of the Gurmukhi script that this chapter aims to answer are as follows:

- Are word spaces used in the text? How does the character spacing look?
- How do diacritics align to base letterforms? How are subscript and superscript diacritics shaped?
- How do subscript consonants align to the base forms in conjuncts?
- How do the proportions of the letterforms relate to each other?
- How is contrast applied?

To answer these questions, features such as the proportions of the letterforms (both in relation to each other and independently), the contrast in the strokes of the characters and the placement of this contrast (or, conversely, a lack of stroke modulation), conjuncts, the positioning of dots and diacritics, punctuation marks, word spacing, and character spacing will all be assessed across various manuscripts. These features were particularly chosen as they are the ones most likely to be impacted by technological restrictions of typesetting methods and machinery. However, questions like these are not always easy to answer, and—as with most research of a palaeographic nature—any conclusions based on the study of a script are constrained in designated research time and accessibility to material. The latter point on accessibility in itself was a hindrance to this research,

---

<sup>10</sup> Gallop, Annabel Teh, et al. ‘A Jawi sourcebook for the study of Malay palaeography and orthography.’ *Indonesia and the Malay World*, vol. 43, iss. 125, 2015, pp. 13-171.



as a majority of historic manuscripts are highly fragile and subject to perishing if mishandled, as such archives either do not allow for their handling at all, or if they do, they do not permit photography of this material so as to preserve them. As such, continuous referral to original material of this nature was often not a possibility.

To systematically answer the questions outlined above, it was necessary to categorise the vast quantity of available manuscripts in order to achieve a manageable process for analysing and ordering the findings of this study outside of a simple chronological approach, bearing in mind that ultimately, the focus of this thesis is not on palaeography, but rather typography, and the appearance of letterforms when printed.<sup>11</sup> To achieve this, a method of grouping manuscripts by their literary genres was chosen as a means to contextualise what was being written, but more importantly, this method acknowledges the more careful consideration applied to the writing of some manuscripts over others. For example, because of the high reverence for sacred Sikh texts like the *Adi Granth*, such religious manuscripts are often written in what looks to be the hands of skilled, careful, and considerate calligraphers, the likes of which are not as frequent in secular texts such as poetry. Undoubtedly, what was being written, and also who it was being written for were important factors that contributed to the quality of the final manuscript as a product. The more attentive writing of religious texts positions them as better references for the requirements of this study, because they are not likely to be written in haste or with little consideration for the legibility of the letterforms. However, while sacred texts were considered as the primary reference point for this visual analysis, any findings from these manuscripts still needed to be checked against examples of other genres of writing to ensure that any findings were not strictly unique to the writing of religious manuscripts.

Beyond this, another concern in the decision of which manuscripts to assess more closely to answer the questions of this chapter was that of timeline; while the main attempt was to discover the handwritten conventions of Gurmukhi prior to the introduction of printing in this script in the early nineteenth century, it was also important to consult manuscripts from the nineteenth and even twentieth centuries, for two reasons. The first reason is that printed Gurmukhi texts did not reach the hand of every writer and reader of this script at the instant printing with movable type in this writing system was initiated, rather it is likely that the circulation of printed texts happened over an extended period of time, as such examples from early to mid-nineteenth century are still applicable to a study of

---

<sup>11</sup> This approach follows to some extent an explanation of palaeographic methodology outlined in Déroche, François, and Annie Berthier. *Islamic codicology: an introduction to the study of manuscripts in Arabic script*. No. 102, Al-Furqān Islamic Heritage Foundation, 2006.

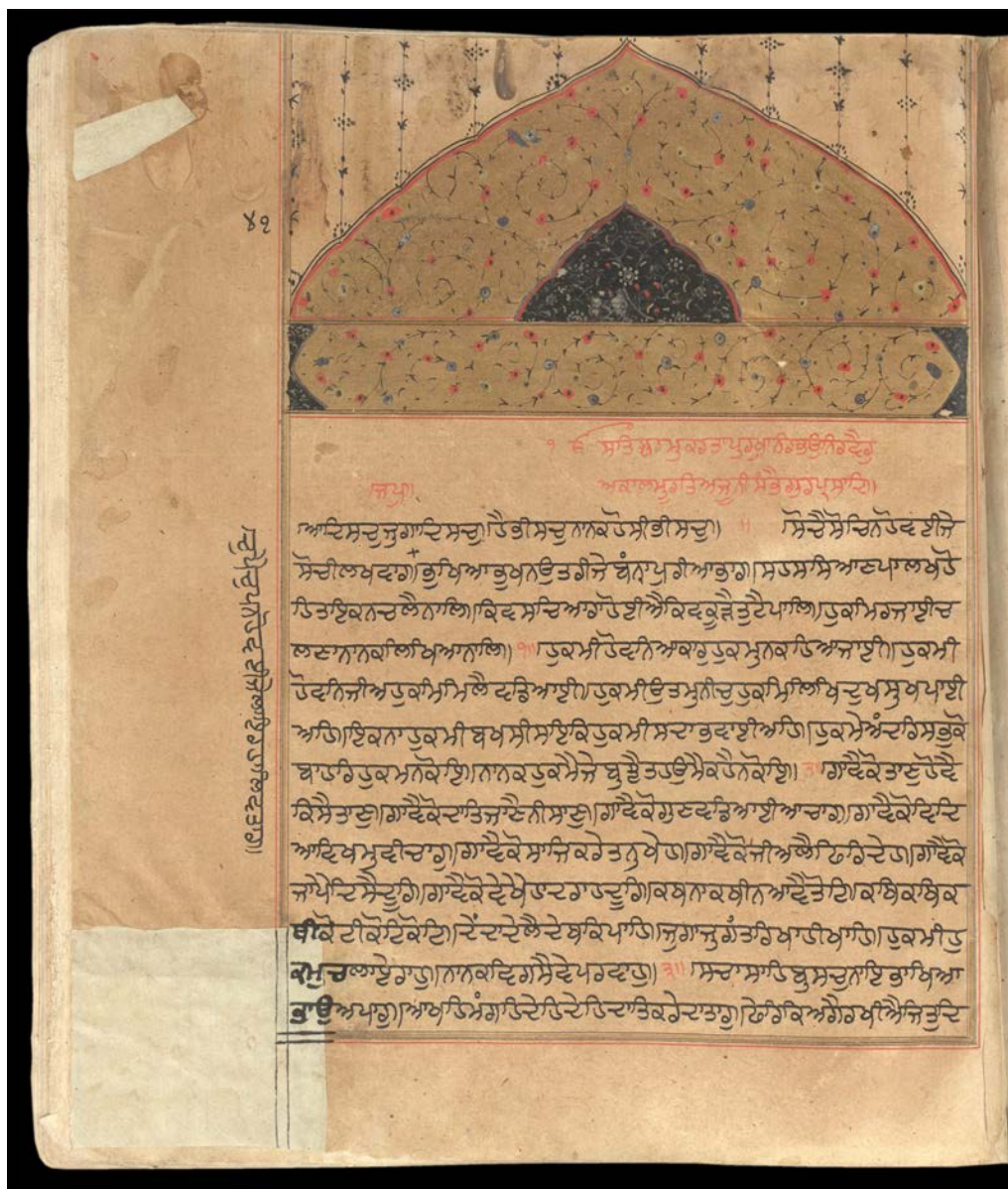


Figure 3.1. The oldest known copy of the Adi Granth (Guru Granth Sahib) outside India. This manuscript dates (in part) from the middle of the seventeenth century (c. 1660–75), and is thus one of the twenty oldest known copies in existence. It was purchased by the British Museum in 1884 from the Rev. A Fischer, who had been the principal of a missionary school in Amritsar, Panjab. Image in the public domain and courtesy of the BL. *Adi Granth (Guru Granth Sahib)*, [www.bl.uk/collection-items/adi-granth-guru-granth-sahib](http://www.bl.uk/collection-items/adi-granth-guru-granth-sahib). Accessed 24 Mar. 2022.



letterforms prior to the introduction and influence of printing. Furthermore, printing did not replace handwriting and manuscripts for a long time in many parts of the world, including the Panjab region.

The examples used in this chapter were selected from dozens of digitised manuscripts available online through the British Library (henceforth referred to as BL), which houses the biggest collection of Gurmukhi manuscripts outside of the Indian subcontinent, alongside the digitised manuscripts available at the Punjab Digital Library (henceforth referred to as PDL).<sup>12</sup> However, the BL maintains strict policies against the photography of sensitive manuscripts. Because of this, manuscripts from their collections which are already available as digital scans on the Library's website or in the form of microfilms in the institute's Reading Rooms were prioritised for this study.<sup>13</sup> In the case of digitised manuscripts from the PDL, not all material from the digital archive is downloadable, and while the collection is noteworthy for its richness and variety of material, the quality of the scans are often inadequate for letterform analysis. As such, an effort was made to reference material that was either in the public domain, or manuscripts from years not included in the examples from the BL. Finally, as it was not feasible to attempt to consider every available manuscript to answer the research questions of this chapter, (and considering the reasons discussed above) a priority was given to the digitised, early (pre-1800) religious texts, while other examples were used for cross referencing and to support the findings of the chiefly considered manuscripts. The main sources used in this chapter thus consists of the following:

- Adi Granth manuscript from 1660-75. BL, shelfmark: Or 2748. Digital copy consulted (figure 3.1).
- Adi Granth manuscript from 1727. BL, shelfmark: MS Panj C5. Both original and microfilms consulted.
- Page from an eighteenth century Bhagavata Purana. PDL, digital copy consulted.<sup>14</sup>
- Prayer book of Rani Jindan. from 1828-30. BL, shelfmark: MS Panj D4. Both original and digital copy consulted (figure 3.4, page 104).
- Dasam Granth manuscript from 1859. BL, shelfmark: MS Panj E1 (microfilms consulted).
- Adi Granth manuscript from 1859. BL, shelfmark: MS Panj E2. (microfilms consulted).
- Heer Ranjha manuscript from 1878. PDL, accession no. MN-000767 (digital

<sup>12</sup> 'The Panjab Digital Library is a voluntary organization digitizing and preserving the cultural heritage of Panjab since 2003. With over 38 million digitized pages, it is the biggest resource of digital material on Panjab.' *Panjab Digital Library*, [www.panjabdigilib.org/webuser/searches/mainpage.jsp](http://www.panjabdigilib.org/webuser/searches/mainpage.jsp). Accessed 9 Aug. 2018.

<sup>13</sup> Any reference to other material from the BL collections that was not available for photography will be accompanied by shelfmarks which can be used to access the original volumes in question.

<sup>14</sup> *Panjab Digital Library downloads*, [www.panjabdigilib.org/webuser/Download/](http://www.panjabdigilib.org/webuser/Download/). Accessed 2 Apr. 2022.





copy consulted).

- Bulleh Shah's siḥarfi from 1885. Lithography. PDL, accession no. MN-000544 (digital copy consulted).
- Ram Dutt Pyara siḥarfi from 1888. Lithography. PDL, accession no. BK-007309 (digital copy consulted).
- Heer Varis Shah manuscript from 1910. PDL, accession no. MN-001036 (digital copy consulted).

This list of primary sources offers a timeline that spans from the seventeenth to the twentieth centuries, and considers a range of both religious and secular texts. In addition to the main sources above, other manuscripts were continuously used throughout this chapter for cross-referencing against the principal examples to achieve as much clarity as was possible given the constraints of this research.<sup>15</sup> As previously discussed, the primary references used are categorised into two main groups; religious texts such as the *Adi Granth* and the *Dasam Granth*, and literature such as poetry and qissas, for example *Heer Ranjha* and *siḥarfi* poetry. Prior to proceeding with the analysis of these manuscripts, a brief overview of each of these two categories of texts will be provided to contextualise and illustrate the prevalence of each, and demonstrate their importance as sources for answering the research questions of this chapter.

### 3.2 Sacred Sikh scripture

The first major category of Panjabi literature considered for this research consists of religious and devotional texts that are central to the daily practice and beliefs of many Panjabi natives, namely the sacred scripture of the Sikhs, as well as hagiography (biographies of venerated persons) and prayer books. The most noteworthy of these texts is the *Adi Granth*, or *Guru Granth Sahib*; the religious scripture of Sikhism. This sacred text is believed to be the collective teachings of the ten Sikh Gurus from Guru Nanak to Guru Gobind Singh, spanning from the years 1469 to 1708.<sup>16</sup>

The devotional practice of inscribing sacred texts was one that was commended by the Gurus. In *The Guru Granth Sahib: canon, meaning and authority*, religious studies scholar Pashaura Singh cites Nanak as the originator of this composing tradition, quoting the Guru himself praising the act of writing the divine name, 'Blessed is the paper, blessed the pen. Blessed is the pot which contains the blessed ink. The scribe is blessed, O Nanak, who writes the true

<sup>15</sup> These sources are all referenced as they appear throughout the text.

<sup>16</sup> Shackle, Christopher, and Arvind Mandair. *Teachings of the Sikh Gurus: selections from the Sikh Scriptures*. Routledge, 2013.



divine name'.<sup>17</sup> What follows this passage is another quote from the Guru, in which he condemns the act of copying the sacred words and selling them for a profit.<sup>18</sup>

Unlike many religious figures of his time, Guru Nanak was not illiterate, and it is said that he always carried a *pothi* (literally, *book*) of compositions containing the divine message with him. Upon his ascendancy, the second Sikh Guru, Guru Angad, received a volume of Nanak's teachings compiled during the Kartarpur period (hence the name *Kartarpur pothi*), and thus began the tradition of preserving the hymns of previous Gurus by successors, who would then add their own divine words to be passed on to future holders of the office of Guruship.<sup>19</sup>

The first recognised act of documenting a validated compilation of the texts by Sikh Gurus was undertaken in the sixteenth century by Guru Amar Das. It is likely that this effort was primarily a response to the demands of a growing Sikh community that required access to the sacred texts of their faith, but also to confront the rising number of spurious renditions of Guru Nanak's compositions, circulated in an attempt to rally followers by various separatist groups.<sup>20</sup> It was the fifth Guru—Guru Arjan—however, who made great efforts to confront these issues by initiating the collection of the verses of his predecessors, and to study, verify, and systematically collect all this gathered information into a single volume. He entrusted a writer named Bhāi Gur-dās to attentively transcribe all his findings, and in 1604, the compilation of this material along with writings of Arjan himself was complete, and the result—the *Adi Granth*—was ceremonially installed at the *Sri Harmandir Sahib*, the Golden Temple of Amritsar.<sup>21</sup>

Texts of the *Adi Granth* are conventionally considered to descend from three original recensions; firstly, the *Kartarpur* version, in possession of the Sodhi family of Kartarpur, which is traditionally regarded as the original copy dictated by Guru Arjan to his amanuensis, Bhai Gurdas; secondly, the *Banno* version, closely related to the first, but containing material either absent or only represented by fragments in the *Kartarpur* version; and finally, the *Damdama* version, compiled in 1705 by the tenth Guru Gobind Singh, which follows the *Kartarpur* version, but also includes the hymns and couplets of Guru Tegh Bahadur.<sup>22</sup>

17 Verse from M1, *Var Malhar* 1 (28), AG, p. 1291. Singh, Pashaura. *The Guru Granth Sahib: canon, meaning and authority*. Oxford University Press, 2003, p. 17.

18 Ibid.

19 Mann, Gurinder Singh. *The making of Sikh scripture*. Oxford University Press on Demand, 2001.

20 These are referred to as *Goindval pothis*, two of which are said to still be in existence and in the private collections of descendants of the third Sikh Guru. Pashaura, *The Guru Granth Sahib*, 2003.

21 Trumpp, Ernst, editor. *The Ādi-Granth, or: the Holy Scriptures of the Sikhs*. London, WH Allen, 1877.

22 Shackle, Christopher. *Catalogue of the Panjabi and Sindhi manuscripts in the India Office Library*. India Office Library and Records, 1977, p. 1.

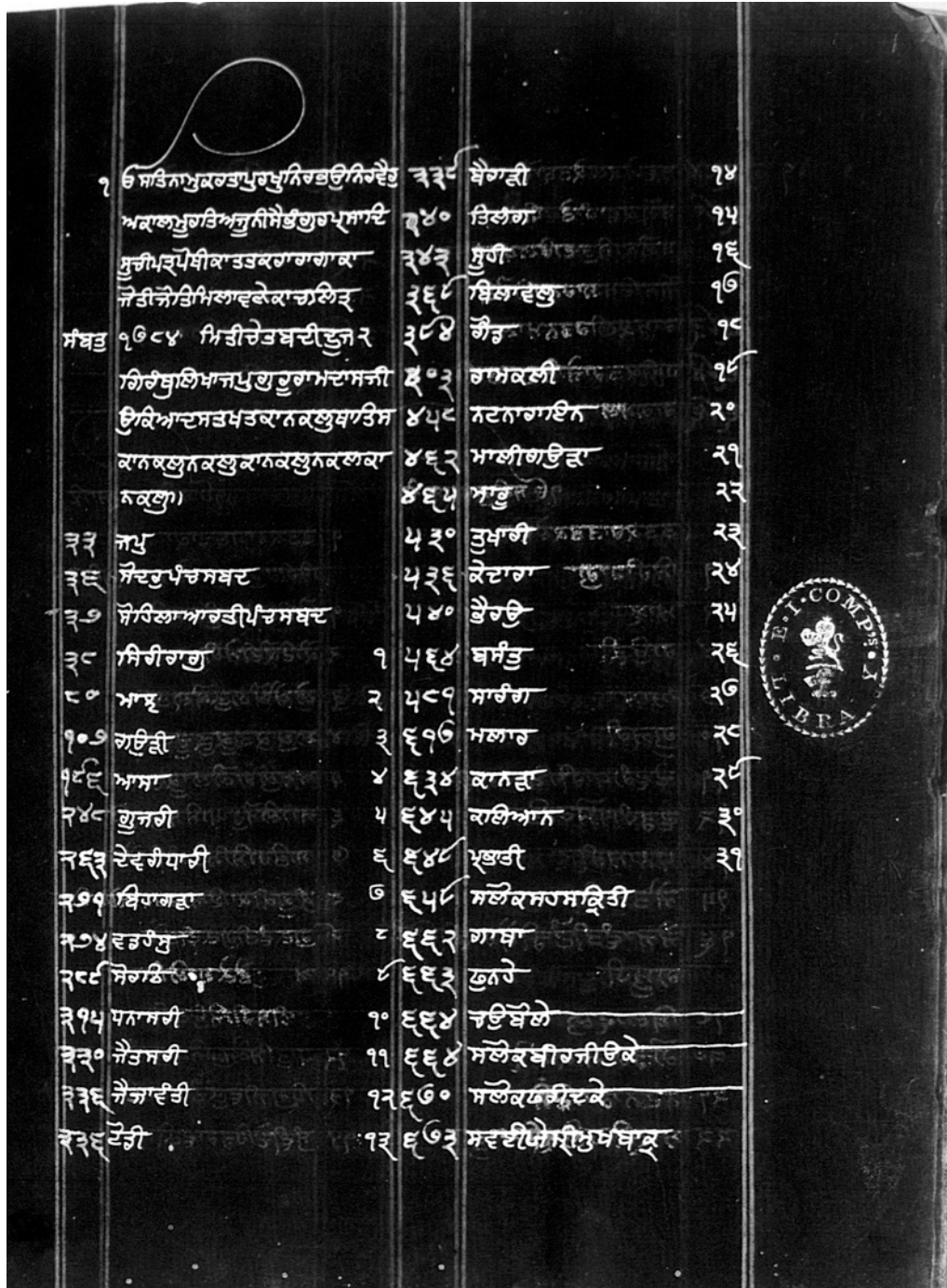


Figure 3.2. Microfilm of an Adi Granth manuscript from 1727. From the BL, shelfmark: MS Panj C5.

The Adi Granth (literally, first book) became the most important reference for those of the Sikh faith, who referred to the holy scripture in their daily lives for guidance during the following century, until the ascension of the tenth and final Guru—Guru Gobind Singh—in the seventeenth century.<sup>23</sup> Guru Singh added the hymns of his father to the Adi Granth, as well as his own teachings. The final result was the combined wisdom of all ten Sikh Gurus, spanning the twelfth to seventeenth centuries, as well as the utterances of 36 Hindu and Muslim saints who had lived during this time. Upon his deathbed and when urged to name his successor, Guru Gobind Singh is quoted to have responded:

As the nine Kings before me were at the time of their death seating another guru on their throne, so shall I now not do; I have entrusted the whole society (of the disciples) to the bosom of the timeless, divine male. After me you shall everywhere mind the book of the Granth Sahib as your guru; whatever you shall ask it, it will show to you. Whoever be my disciple, he shall consider the Granth as the form of the Guru.<sup>24</sup>

The completed canon was thus hereafter referred to as the Guru Granth Sahib; a holy scripture granted with the status of the eternal living Guru. Considered as the highest authority within Sikh communities, this book is an essential part of the rituals and lives of its believers. Sikhs implement the Guru Granth Sahib throughout their lives and in various ceremonies: from the naming of children, initiations into the religion, weddings, and funerals—the scripture is always essential. Perhaps the most important of these however, is how the sacred text is the central point of every congregational worship. It is said that should someone really want to understand the reverence bestowed upon the scripture in the Sikh tradition, they should visit the Golden Temple at Amritsar early in the morning around three. This is the time when thousands of devotees participate in the procession in which the sacred volume is carried in a golden palanquin. The procession starts from the *Akal Takhat* and ends at the Golden Temple where the daily *parkash karna* (installation) of the Guru Granth Sahib takes place every morning. The volume is ceremonially closed in the late evening, wrapped in *rumalas* (clothes, normally ornate) and then transported back in procession to the *sukh asan* (resting-place) at the Akal Takhat.<sup>25</sup>

<sup>23</sup> Nesbit, Eleanor. *Origins and development of Sikh faith: the Gurus*. Discovering sacred texts, BL, Sept. 2019, [www.bl.uk/sacred-texts/articles/origins-and-development-of-sikh-faith-the-gurus](http://www.bl.uk/sacred-texts/articles/origins-and-development-of-sikh-faith-the-gurus). Accessed 20 Nov. 2020.

<sup>24</sup> Singh, Ganda. *Guru Gobind Singh's death at Nanded: an examination of succession theories*. Guru Nanak Foundation, 1972, p. 48.

<sup>25</sup> For more on this, see McLeod, William H. *The evolution of the Sikh community: five essays*. Clarendon Press, 1976; Singh, Patwant. *The Golden Temple*. South Asia Books, 1999.





### 3.3 Panjabi literature

The history of Panjabi literature is extensive; many scholars trace its origins back to the eleventh and twelfth centuries, and the writings of Gorakhnāth, founder of the Nath Hindu monastic movement in India, who insisted on the practice of yoga, and finding one's own spirituality through self-discipline.<sup>26,27</sup> However, it was through the compositions of his contemporary, Sufi poet Farīduddīn Mas'ūd Ganjshakar (commonly referred to as Baba Farīd), that the Panjabi language was first given prominence in the literature of a region where before, Persian and Sanskrit had long been in use.<sup>28</sup>

The considerable influence of Baba Farīd and his successors, poets like Hazrat Sultan Bahu, (1631-1691), Bulleh Shah (1680-1758), and Waris Shah (1699-1772), solidified Sufi poetry as one of the staple traditions of Panjabi literature, and along with poems from Sikhs as well as more 'secular' compositions, these works of poetry resulted in the production of numerous manuscripts and printed volumes.<sup>29</sup> One such manuscript is Bulleh Shah's *siḥarfī*; A *siḥarfī* (literally, *thirty letters*) is a form of poetry specific to the Panjab that is written on the basis of letters of the Arabic alphabet, in which each letter becomes the starting point of a stanza. Sufi poets like Bulleh Shah made use of this format to convey messages relating to mysticism and ethics.<sup>30</sup>

The second category of Panjabi poetry that stems from oral storytelling traditions, culture, and folklore is the *qissa*. Literally meaning *fable* in its Arabic roots, the *qissa* came to the Panjab from its western neighbours in Persia and Central Asia through various individuals—most notably traders and merchants. The genre, now deeply ingrained in the history of the region, shares many similarities with the Persian *qissa* from which it is derived; romantic tragedies written in the form of *masnavi* poetry.<sup>31, 32</sup>

26 It is important to note that there is much dispute regarding the history of Panjabi literature, but it is outside the scope of this thesis to examine the matter in more detail. For further reading, refer to Sekhon, Sant Singh, and Kartar Singh Duggal. *A history of Punjabi literature*. Sahitya Akademi, 1992; Dewana, Mohan Singh. *A history of Punjabi literature*. Bharat Prakashan, 1933.

27 Many works have been attributed to Gorakhnāth, including Goraksha Samhita, Goraksha Gitā, Siddha Siddhānta Paddhati, Yoga Mārtanada, Yoga Siddhānta Paddhati, Yoga-Bija, and Yoga Chintāmaṇi. Briggs, George Weston. *Gorakhnāth and the Kānpaṭa Yogīs*. Motilal Banarsidass Publications, 1998.

28 Uberoi, Mohan Singh. *A history of Panjabi literature: 1100-1932*. Sadasiva Prakashan, 1971.

29 Singh, Inder Jit. *The Sikh way: a pilgrim's progress*. Centennial Foundation, 2001.

30 Datta, Amaresh, editor. *Encyclopaedia of Indian Literature*. Sahitya Akademi, 1987-1994.

31 The *masnavi* is a form of poetry in which each *beit* (verse) is normally a self-contained whole, grammatically complete and with the two *miṣrā's* (hemistichs) rhyming with one another and not—except accidentally—with the verses that follow. In Persian, Turkish, Turkī and Urdu, poetic compositions of any length dealing with epic, romantic, ethical or didactic themes are of the *masnavi* form, which probably originated in Persia. Houtsma, Martin Theodoor. *First encyclopaedia of Islam: 1913-1936*. Vol. 4. Brill, 1993.

32 Mir, Farina. 'Genre and devotion in Punjabi popular narratives: rethinking cultural and religious syncretism.' *Comparative Studies in Society and History*, vol. 48, no. 3, 2006, pp. 727-758.





The earliest known Panjabi qissa, titled *Hir Ranjha* (a story of tragic love between a woman, *Hir Sial*, and a man from a different caste, *Dhido Ranjha*), is a composition from *Damodar Das Aror*; a seventeenth century poet from the *Jhang* district in current day Pakistan. *Damodar's Hir Ranjha* (sometimes written as *Heer Ranjha*) was completed in 1605, however, it was not original in terms of content. The story is said to have existed for at least 400 years and among a wide variety of groups regardless of region, caste, and religion before *Damodar's* rendition.<sup>33</sup> The originality here was in the adaptation of this story to a qissa—a new format, one that was further repeated by other poets following *Damodar*, which is in all likelihood due to the large-scale familiarity of natives with the content of the story through oral storytelling traditions and performances.<sup>34</sup> Qissa poems reached their highest point of development with *Waris Shah's* adaptation of *Hir Ranjha*. Written in 1766, his work is even today regarded as the greatest achievement of Panjabi literature.<sup>35</sup> Despite being written during the decline of the Mughal Empire in the Panjab and a period of political turmoil, the epic was still well received and highly circulated in the region, a fact that is evident through the numerous manuscripts of the *Hir* in both the Gurmukhi and Shahmukhi scripts.<sup>36</sup> The *Waris Hir* was first published as a book in 1851, and is now one of the most widely printed and sold works of literature in both Pakistan and the Indian Panjab.<sup>37</sup>

### 3.4 A visual assessment of Gurmukhi manuscripts

Having gained a frame of reference for the textual contents of the manuscripts that will be assessed to address the research questions outlined in the previous pages, the current section will focus on assessing word spacing and character spacing, contrast, proportions, diacritic alignment and shaping, subscript consonant alignment and shaping, and recurrent features in characters shaping across the identified sources.

Cropping images or the enlargement of specific letterforms from sacred Sikh scripture cannot be done as it is disrespectful to the sacred texts, which hold great significance to the followers of the Sikh faith. As such, references have necessarily been made to general features which can be found in the full size images featured throughout this chapter.

33 Mir. *Social space of language*, 2010.

34 Ibid, p. 8.

35 Nazir, Pervaiz. 'Modernity, re-Islamization and Waris Shah's Heer.' *ISIM Newsletter*, no.8, iss. 1, 2001, p.1.

36 The earliest surviving example of these manuscripts was written in the Gurmukhi script in 1821, with its Shahmukhi counterpart being dated 1834. Both copies are now kept in the archives of Bhasha Vibhag, Patiala. Mir. *Social space of language*, 2010, p. 259.

37 Ibid, p. 51. The *Kartarpur bir* thus became the touchstone for correcting the copies of the original bir.

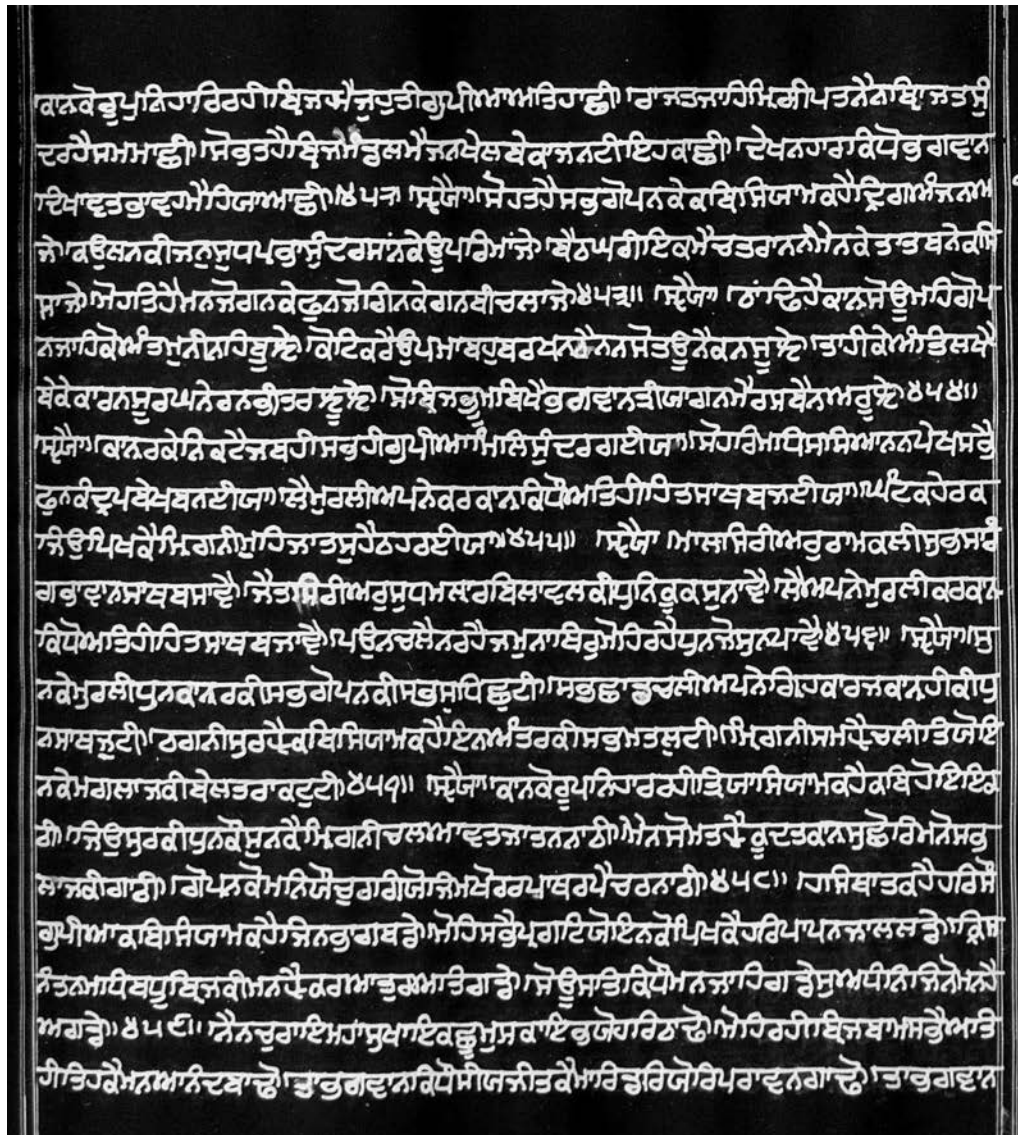


Figure 3.3. Image from the microfilm of a Dasam Granth manuscript from 1859. Use of the continuous style of writing (Larrivar) is evident in this example, where the only breaks in the headline occur at the end of sentences. From the BL, shelfmark: MS Panj E1.

### Word and character spacing

In all primary manuscript examples considered in this chapter (from 1660 to 1910), without exception, the Gurmukhi letterforms are written with continuous, connected strokes, and no breaks can be seen between words, except when a sentence is ended, marked by the use of a danda or double danda (figure 3.3). This is the only instance of any disconnect between letterforms, indicated by the single or parallel lines used for Gurmukhi punctuation. This style of continuous writing is known as *Larrivar* (also referred to as *Lareevar*). The use of character spacing (referred to as *Padchhed*), therefore, appears to entirely have been introduced to the script through the publications of the Serampore Missionary Press, and the Ludhiana Missionary Press. It is a matter of interest to observe that despite the continued use of word spaces by the missionary printers and later, type founders in Britain and elsewhere, that in handwriting, scribes and copyists continued to use the *Larrivar* style past the twentieth century, over a hundred years after the earliest attempts at printing in Gurmukhi by the missionaries at Serampore. The reasons why the missionaries required character spacing is very likely connected to what they were printing; certainly they were not concerned with printing sacred Sikh texts, nor with the documentation, printing, and circulating of folk stories and classical Panjabi literature. Rather, their concerns were that of the evangelist; to circulate Christian religious texts such as the Bible and Psalms, and later, grammar books and dictionaries (see chapter 4). For the English or American translator, not having word separations likely proved challenging and unmanageable, therefore they defaulted to use of what was familiar in the Latin script—word spacing.<sup>38</sup>

Today, there seems to be a divide in the acceptance of the separation of words in Gurmukhi, particularly in the writing of sacred texts. While there are arguments for the usefulness of separating words which ensures ease and speed of reading and correct pronunciation (*Uchaaran*), there are also strict arguments against the practice; the major concern for writing sacred texts such as the Guru Granth Sahib in the *Padchhed* format is a disagreement over where the breaks in the words occur. The text of the Guru Granth Sahib traditionally always appears in the *Larrivar* format, and it was upon the reader to separate the words as they read the text. This resulted in divided schools of thought on where the separations of words occur in the text. The concern over separating word-groups is that while an individual's mispronunciation is a personal matter, the printing of a potentially incorrect break in words establishes the error. This is unacceptable, considering

---

<sup>38</sup> This is discussed in further detail in chapter 7.



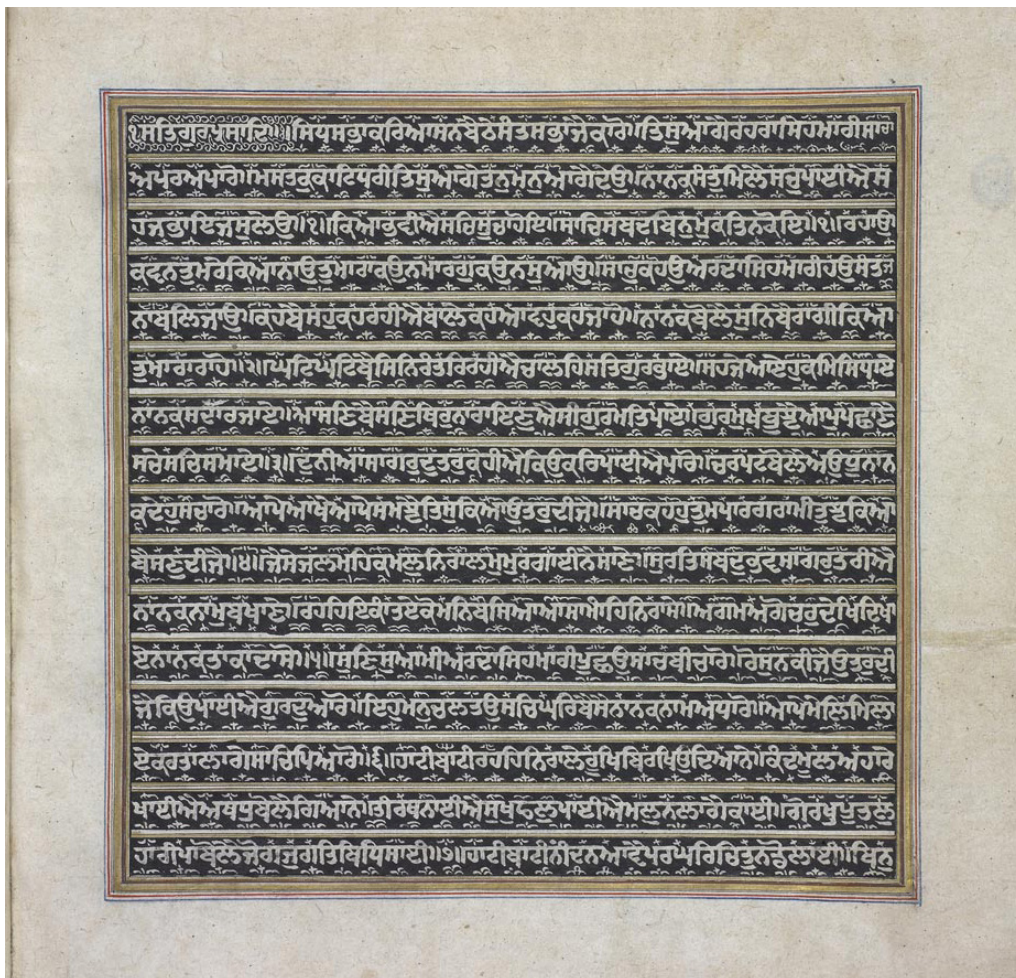


Figure 3.4. Image of a page from the *Prayer book of Rani Jindan*. ‘This *gutka* (anthology) was prepared between 1828–1830 for Maharani Jind Kaur, popularly known as *Rani Jindan* (1817–1863). It consists of three compositions from the *Guru Granth Sahib*, beginning with *Guru Nanak’s Sidh Gosti*, followed by *Bavan Akhari* and *Sukhmani*, two compositions by the fifth spiritual master of the Sikhs, *Guru Arjan*. Described as ‘a jewel of a prayer book’, this manuscript was lavishly produced for Maharani Jind Kaur, wife of Maharaja Ranjit Singh and mother of Dalip Singh’. Image in the public domain and courtesy of the BL, [www.bl.uk/collection-items/rani-jindan-prayer-book](http://www.bl.uk/collection-items/rani-jindan-prayer-book). Accessed 22 Apr. 2020.

the fact that Sikhs regard the Guru Granth Sahib as their living Guru.<sup>39</sup>

In the absence of any word spacing, judging the character spacing as seen in printed examples is a complicated task, as the two are closely related in modern practice.<sup>40</sup> Furthermore, handwritten examples can display varying levels of consistency in character spacing. In this instance, the Rani Jindan prayer book (figure 3.4) is a better reference compared to most other Gurmukhi manuscripts that were consulted for this research, because of the level of precision and attentiveness that is evident in the writing of this manuscript. In this example, the Larrivar style of continuous writing is used, and considering the larger size of the pen—and therefore, letterforms—the character spacing which might otherwise be considered as tight is actually balanced so that characters with apertures and counters have slightly less space (which visually compensates for the white space inside the character), while straight stems and less complex characters are more generously spaced. The result is an overall even, harmonious balance between black and white in a block of text, and a uniform colour and texture on the page. In addition to this prayer book, the BL also houses a manuscript containing a set of texts that once belonged to Rani Jindan—an anthology of fourteen texts principally concerned with medical preparations and remedies, spells and formulas, cookery, astrology, and sexual intercourse.<sup>41</sup> In this example also, the Larrivar style is used, and in the absence of word spacing, the character spacing is balanced against the internal white space of the characters.

### Contrast

Across the various manuscripts that were consulted for this research, a majority showed a tendency for writing the letterforms in a monolinear style; this indicates the use of a round nibbed writing tool (like a stylus) which would not have produced contrasted strokes, where a variation between heavier parts of the letterform and lighter strokes are evident. Many examples also yielded instances of collisions of certain letterforms throughout the texts, suggesting the prioritization

---

39 There have been some efforts to use a variety of methods to overcome the difficulty of reading the connecting style for younger members of the Sikh community, or those not familiar with the Larrivar format; one such effort is that of the website *discoversikhism.com*, in which the hymns of the sacred text appear in the connected style, but when the cursor is hovered over the text, single word groups can be highlighted to ease reading. Similar to this, the website *panthkhalsa.org* displays the connected text of the Guru Granth Sahib in alternating colours of light and dark blue to mark the separation of words. However, while efforts like this encourage the reading of the sacred texts in their original format, there are still marked word separations in both approaches.

40 In the context of type, word spacing and character spacing are both also dependent on the internal white space of a given character, and the intended use and size of the typeface; bigger type sizes, for example, require less character and word spacing than smaller point sizes.

41 This manuscript is not dated—nor is the place of writing recorded anywhere—but considering the ownership, it is probable that this was also written for the Maharani in the second half of the nineteenth century. BL, shelfmark: Or. 13231.

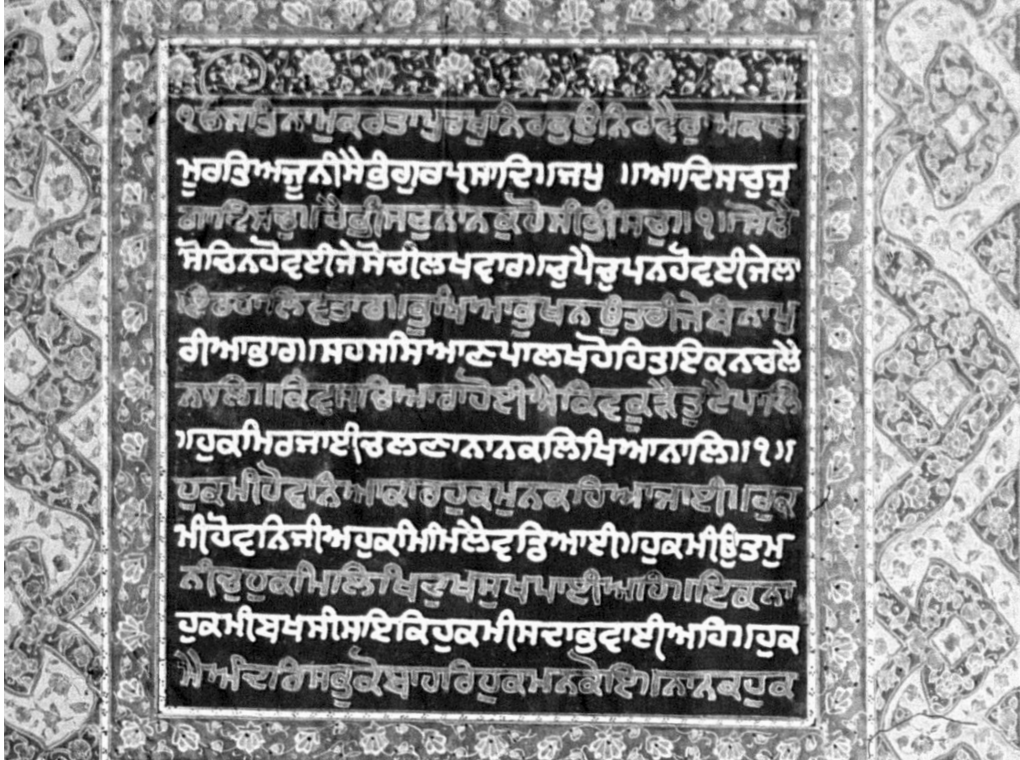


Figure 3.5. Image from microfilm of Adi Granth manuscript, presented to Queen Victoria in 1859. From the BL, shelfmark: MS Panj E2.



of writing speed over concerns for aesthetics and legibility. The speed of writing itself may in turn have resulted in varying degrees and amount of applied pressure when writing or copying the characters, which would explain any detectable contrast in the stroke widths. These monolinear letterforms are a common aspect of Gurmukhi manuscripts, with only few examples diverging from this practice.

Examples of high contrast design can be seen in both the Rani Jindan prayer book and her anthology of fourteen texts. The most notable aspect of the prayer book is, perhaps, this departure from using monolinear letterforms, which in this manuscript are replaced instead by visible contrast in the curves and the setting of heavier knots against lighter connections, and the flaring out of outstrokes in certain letterforms. The contrast is also evident in the vowel marks, where even the shortest strokes display some level of modulation (see figure 3.4, page 104). In the anthology, as with the Prayer Book, even diacritic marks have a distinct contrast in the stroke width (the subscript diacritics, the *aunkar* and *dulainkar*, for example, are heavier on the left side, then taper to a thin terminal on the right). The placement of contrast in these examples shows use of a flat nib pen with a right-oblique cut, similar to what was used when practicing calligraphy in other scripts of North India such as Devanagari or Bengali. This means that the inherent contrast of Gurmukhi, like the aforementioned scripts, is the opposite of what is expected in the Latin script.

### Proportions

One of the most prominent features of the Gurmukhi writing system is the use of the headline where a majority of the letterforms overlap and connect to create a horizontal bar, from which said letterforms ‘hang’. The weight of this headline is directly related to the cut and size of the pen being used for writing, which also determines many aspects of the rest of the characters in the script; for example the weight of the stems, curves, knots, diagonals, horizontals, and vertical strokes. In manuscripts of longer texts, such as a majority of those considered for this chapter, there is always a relative correlation between this headline bar and the base of the characters that connect to create it. While there is no precise ratio or number one could suggest for the space between the headline and the notional baseline, the writing of the letterforms is done in such a way so as to prevent them from looking cramped within this space, but also to achieve balance between the amount of white space inside the character without it looking distanced from the headline. The ratio of this boundary between the base of the characters and the headline—the body of the characters—remains fairly consistent across most manuscripts, regardless of the style they are written in, and the size of the pen (and therefore, the letterforms). The relative width of the letterforms are then determined by the amount of horizontal space they occupy within this boundary.





The extent of the width of a given letterform is primarily decided by its complexity and inherent structure and form, but also, the intended appearance of an overall text; if it is intended for narrow columns and the letterforms must thus be written in a more condensed style, or conversely, written with relatively generous horizontal space to fill a wider line of text. Across all examples examined for this research, no instances of condensed and narrow, or noticeably extended letterforms could be found. Instead, the effort of the scribes seems to always have been to achieve balance between the amount of vertical space from the headline to the base of characters, and the width of the characters and the white space contained within the overall structure (including counters and apertures) of each. This endeavour to achieve balance in the distribution of white and black also works to ensure that relative to each other, the letterforms are generally balanced, despite some instances of irregularity that are to be expected in handwriting. Finally, there are a number of vowel signs and vowel bearers in the Gurmukhi script that have curves which extend beyond, and rest over the headline. Relative to the size of the body of the characters, these ‘ascending’ curves are relatively small, and generally they do not extend beyond any superscript marks that appear in adjacent letterforms.

#### **Diacritic alignment and shaping**

A notable aspect of diacritic alignment in handwritten Gurmukhi examples is the consistent attachment of the superscript vowel marks to the headline. This feature is a constant in all the manuscripts consulted for this research; while in some instances, due to speed of writing, a separation of these diacritics from their intended position on the headline is visible, this is entirely due to the nature of handwriting, particularly if a faster pace was used. In the case of the subscript consonants, a necessary separation from the base consonant or vowel bearer they are applied to is evident.

While in the earliest manuscript considered in this research (from 1660-75), the subscript diacritics are written at an angle diagonal to the base characters (see figure 3.1, page 90), the more usual approach for these vowels is for them to be horizontally positioned below and centred to the character to which they are applied. The unchanging aspect of these subscript diacritics is that they are always written with a downwards curve which is sometimes more subtle and in other instances drawn with more flair, and—in the case of calligraphic models—with much modulation in the transition of the curve.

Relative to subscript diacritics, the shaping of the superscript diacritics is more varied in manuscript examples; the angle at which these vowels are drawn compared to the headline can change drastically between various examples, where



Figure 3.6. A page from an eighteenth Century *Bhagavata Purana* in the Gurmukhi Script. Image is in the public domain and courtesy of the PDL, [www.panjabdigilib.org/webuser/Download/](http://www.panjabdigilib.org/webuser/Download/). Accessed 2 Apr. 2022.

in some manuscripts these marks are relatively close to the headline, and in others they are written at a near perpendicular angle. The flexible nature of handwriting does, however, generally lend itself to superscript marks that are usually broad and not only expand over the character they are paired with, but at times also encroaching on the space of adjacent characters.

### Subscript consonant alignment and shaping

In general, subscript consonants do not frequently appear in Gurmukhi manuscripts. This can be an indication that native readers of the script would know when to suppress the inherent /a/ vowel when reading texts, rather than making extensive use of, and relying on subscript consonants. However, the subscript forms of the rārā (ੳ) and the hāhā (ੲ) both appear in the earliest manuscript considered in this chapter (the 1660-75 *Adi Granth*), and both can also be seen used in nearly all subsequent manuscript examples. In all instances of their use, the appearance of these subscript consonants are simplified to single strokes that are elongated, and span the width of the base consonant that they are applied to—particularly in the case of consonant conjuncts with the subscript hāhā which indicates tone.

The subscript consonants are almost always connected to the body of the base consonant they are applied to. One exception to this can be seen in figure 3.6, where the subscript rārā (ੳ) sits at a distance below the bowl of the daddā (ੲ). It is not entirely clear if this was just the preference of the scribe or the result of fast writing, or due to the shaping of the base consonant that does not easily lend to an attachment out the upward-curving outstroke of the letterform. Regardless, the general approach does show a preference for an overlapping connection in consonant conjuncts whenever they appear.

### 3.5 Conclusion

It is essential to have an understanding of the structure and arrangement of letterforms and the writing conventions of a given script to identify modifications in the writing system's transition from handwritten texts to typographic reproductions through various typesetting and typesetting technologies. For this, manuscripts are an essential primary resource as they can provide samples of handwritten texts from various years, regions, and contexts—a combination of which is essential when attempting to conclude what specific structural patterns are essential components of a writing system, and which are unique examples of the stylistic preference of an individual scribe. Both of these variables can be useful in separate ways; while the former helps to signify fundamental aspects



of a script that are essential to rendering a text legible and readable (in other words, how a particular feature should look), visually unique compositions can demonstrate possibilities of how the letterforms of a writing system can look. In the case of Gurmukhi, the practice of attaching superscript vowels to the top bar is a feature present in all the manuscripts analysed in this chapter; as such, it is an example of an inherent aspect of the writing system. Conversely, the use of contrast and a more calligraphic style in certain manuscripts is an instance of an approach that diverges from common methods of writing, yet can inspire new designs and conventions by showing precedence for a different style in the depiction of letterforms.

When looking at the shaping of Gurmukhi letterforms as they were written in manuscripts from the eighteenth and nineteenth centuries, it is possible to detect areas where there is a clear distinction in the overall structure of the letterforms, compared to their typographic renditions in fonts that are used today. In the following chapters, the gradual shift in the appearance of letterforms through their adaptation to various technologies will be assessed in an effort to trace the timeline of their evolution from pen to printed form, and to determine reasons for the various modifications; this will be done to evaluate how much of the changes were due to the limitations of the technology, and what other factors determined the appearance of types of Gurmukhi. Finally, it must be acknowledged that any assertions made on the basis of the manuscripts that were analysed in this chapter are vulnerable to new findings, and subsequent research on the history of Gurmukhi printing.



## 4 The onset of Gurmukhi printing in India

In the preceding chapters, the intricacies of the Gurmukhi script and the inherent features and characteristics of this writing system were examined to determine key components that define the visual identity of the script. The current chapter aims to take a closer look at the earliest attempts at printing Gurmukhi using movable type, and contextualises the efforts of those undertaking the task of producing, (and printing with) the first founts of Gurmukhi—the Serampore Mission Press in West Bengal, and the Ludhiana Mission Press in the Panjab—in an attempt to answer questions regarding why these missionaries were printing in this script, what they were printing and for whom, and how the earliest known Gurmukhi founts were produced—all of which are important factors when assessing the Gurmukhi types they developed. To achieve this, a historic review of the individual efforts of the Serampore Mission Press and the Ludhiana Mission Press (particularly as they are relevant to the Gurmukhi script), will be undertaken. However, first a brief look into early printing with metal type in India is necessary to provide a more extensive analysis of the motivations, intentions, and methods of evangelists—the first to bring printing with movable type to India.

The first printing press in India was established in the southern city of Goa in 1556. While the machinery was not intended for use in India and had only arrived there by way of accident, there was already an appreciation for the potential value of the new technology being introduced to the country, and it was received favourably.<sup>1</sup> In the following years, additional presses were set up in Cochin, Quilon, Calicut, Pudikail (near Cape Comorin), Vaipicotta and Ambalacata, and from there, printing spread to cities on the eastern coast of the country.<sup>2</sup> However, despite the increasing interest and dissemination of the technology, printing with Gurmukhi metal types would not emerge for another 250 years.

The reason for the relatively late development of printing technology in Northern India was, in part, due to the East India Company's strict policies in the

---

1 In a letter from the year 1545, Joannes de Beira—a Jesuit priest with ties to a proselytization institute in Goa for Christian converts—writes to his superiors: 'In this College, known as the House of Holy Faith, live sixty young men of various nationalities and they are of nine different languages, very much distinct one from the other; most of them read and write our language, and also know how to read and write their own. Some understand Latin reasonably well and study poetry. Due to the absence of books and a teacher they cannot derive as much profit as they need. The Christian doctrine could be published here in all these languages, if your Reverence feels that it may be printed.' For more, see Priolkar, Anant Kakba, and Joaquim Heliodoro da Cunha Rivara. *The printing press in India: its beginnings and early development, being a quatercentenary commemoration study of the advent of printing in India in 1556*. Marathi Samshodhana Mandala, 1958.

2 Naik, Bapurao S. *Typography of Devanagari*. Vol. 2, Directorate of Languages, 1971.





region.<sup>3</sup> Under the original title of *The London Company*, the East India Company (henceforth referred to as EIC) was a British joint-stock company founded for trading in Southeast Asia, and was incorporated and founded through a charter granted by Queen Elizabeth on 30 December 1600.<sup>4</sup> Not wishing to repeat the perceived mistakes of the Portuguese East India Company in the sixteenth century—chiefly proselytising zeal—the British EIC set in place a strict religious policy of ‘non-interference’.<sup>5</sup> Based on this, the initiation of missionary activities within the British territories of India was firmly prohibited, as it was considered a potential cause for animosity and mutiny amongst conservatives of the Muslim and Hindu faiths.<sup>6</sup>

As a consequence of these restrictions, despite his arrival in India in 1793, William Carey (1761–1834), a British Christian Missionary and one of the founders of the Baptist Missionary Society, started work not as an evangelist of the Christian faith, but as the superintendent of an indigo factory. It was not until six years later, in 1800, that he joined two fellow Baptist Missionaries, Joshua Marshman and William Ward, in a Danish settlement about fifteen miles north of Calcutta, that the Serampore Mission Press was established as an auxiliary to the Baptist Missionary Society in England.<sup>7</sup> Much has been written on the extensive influence and accomplishments of the Serampore Mission, as such only matters of pertinence to the current research will be further discussed in this chapter.<sup>8</sup>

#### 4.1 Production of the earliest known Gurmukhi fount

The objective of the Serampore Mission Press was primarily, as with all missionary printers, to propagate the Christian Gospel throughout the world, which aligned with Carey’s personal ambitions of translating the Bible into as many languages as possible. Something of a polyglot, Carey was said to already have been versed in Hebrew, Greek, Latin, and French before setting out for India, where he continued his study of a number of Indian languages. In *The*

3 Stark, Ulrike. *An empire of books. Delhi: the Naval Kishore Press and the diffusion of the printed word in colonial India*. Permanent Black, 2007.

4 The name of the EIC would undergo a number of changes through the years as the charter granted to it needed to be renewed from time to time, redefining the Company’s status in relation to the monarchy and the parliament. This includes *The English Company* and *The United Company of Merchants of England Trading to the East-Indies*, amongst others. East India Company. *Memoir of the affairs of the East-India Company*. London, J. L. Cox, 1830.

5 Wickremeratne, Upali C. ‘The English East India Company and society in the maritime provinces of Ceylon 1796–1802.’ *Journal of the Royal Asiatic Society*, vol. 103, no. 2, 1971, pp. 139–155.

6 This policy was upheld for many years, until the Charter Act of 1813 opened India to missionary activity.

7 Smith, George. *The life of William Carey, D. D.: shoemaker and missionary, professor of Sanskrit, Bengali, and Marathi in the College of Fort William, Calcutta*. London, J. Murray, 1885.

8 For more, see Marshman, John Clark. *The life and times of Carey, Marshman, and Ward: embracing the history of the Serampore Mission*. London, Longman, Brown, Green, Longmans, & Roberts, 1859.



*centenary volume of the Baptist Missionary Society, 1792-1892*, British Missionary secretary, biographer, and historian Edward Bean Underhill is documented to have confirmed Carey's commitment to his studies, and his viewpoints on the possibilities of learning new languages.<sup>9</sup> Moreover, Carey was not alone in his convictions. In a letter to Rev. Daniel Sharp of Boston, William Ward reiterated the importance of a missionary's job to propagate Christianity, and cited six additional merits of the Serampore Mission's work; meeting natives on their own ground and bestowing the *true Shastra* on to them in place of the false, the respect and reverence for missionaries with which they were received when holding sacred texts, the replacement of the missionary with the sacred volume which worked to convert—in Ward's words—'heathens', and to help the newly converted build up on their new-found faith and show the foundations of this faith to other natives.<sup>10</sup> Finally, Ward concluded that 'among other collateral advantages arising out of these translations, it may be observed, that they will fix and enrich the languages of India, since each word here receives a recognised meaning, and many words are transplanted from the Sungskrit [sic], and thus brought into familiar use. To embody thus into a dialect all the words which convey the peculiar properties of Christian truth, is surely enriching it to a degree beyond all calculation.'<sup>11</sup>

Ward's account of the advantageous presence of the Serampore trio in the region is not far from the common missionary frame of mind; what appears to be a genuine concern for the prosperity of the locals in the region to which he is assigned, and a strong ideological aspiration underpinned with the self-assurance that his religion and customs are morally superior to that of the natives. In the same letter, Ward laments the rituals he has observed Hindus carry out, and insists on the importance of their mission to 'emancipate' the indigenous people from their 'misguided' way of life. He proclaims the enrichment of the languages of India with the addition of Christian vocabulary, designating several languages traceable to the second millennium BCE as requiring improvement for lack of inclusion of Western socio-religious terminology. Returning to the above quote, however, it is evident that this assignment of otherness works in two ways, and that often people have practical reasons for their actions that escape ideology; the indigenous people and their culture are belittled by Ward, yet the missionary

---

9 'Carey's own acquisitions were a living commentary on his words: "It is well known," he says, "to require no very extraordinary talents to learn in the space of a year or two at most the language of any people on earth, so much of it, at least, as to be able to convey any sentiments we wish to their understanding"'. Myers, John Brown. *The centenary volume of the Baptist Missionary Society, 1792-1892*. London, Baptist Missionary Society, 1892.

10 *Shastra* refers to the sacred scriptures of Hinduism consisting of four categories of text, the *sruti*, *smriti*, *purana*, and *tantra*. *Shastra*. Merriam-Webster Dictionary, [www.merriam-webster.com/dictionary/shastra](http://www.merriam-webster.com/dictionary/shastra). Accessed 12 Apr. 2022.

11 Ward, William. 'Letter XIII to Rev. Daniel Sharp, On the progress of the translation in India.' *Farewell Letters to a Few Friends in Britain and America, on Returning to Bengal in 1821*. Kentucky, Thomas T. Skillman, 1822, pp. 141-149.



recounts feeling distrusted and disrespected (despite a self-perceived elevated background). However, missionaries felt that the possession of the scriptures and translations would work to lessen any disdain towards them. While attempts at the psychoanalysis of the Serampore Missionary trio falls outside the scope of this thesis, nonetheless, it is important to look beyond an oversimplified explanation of their motives and intentions for printing in various regional languages and scripts. The simple explanation is that it was their vision to spread Christianity effectively and comprehensively. The more detailed review of their perceived intentions helps to construct a thorough context of their efforts in printing in a number of scripts, and whether the quality of their printed books and volumes aligns with their zealous intentions.

The first printed volume the Serampore Trio produced in line with this vision was a copy of St Matthew in Bengali, printed at the Serampore Mission in 1800, the year of the initiation of the press.<sup>12</sup> Indeed the majority of works published by the Serampore Mission Press were Bengali texts, a logical output considering their geographical location based in the state of West Bengal, and the scrutiny which missionary activities were placed under in British territories. Nevertheless, Bengali was only the first of many languages to be printed by the Serampore Press. By 1806, they had already translated and published the New Testament in Bengali, Marathi, and Oriya. In May of the same year, they began work on a number of additional languages, including Panjabi.<sup>13</sup> It was another two years before any reports on the state of the Mission's work on the Panjabi language would be communicated, when Carey wrote to John Sutcliff, Baptist Minister at Olney, to inform him on the state of the translations of the Bible. In his letter, he stated that the Bible had, at the time of his writing on 18 January 1808, been translated into and printed in 'Sunscrip, Bengali, Mahratta, Orissa, Hindusthani, Guzeratti, Chinese, Seek, Telinga, Kurnata, Burman, and Persian [sic]'.<sup>14</sup> The following year, in a joint letter published in *The Panoplist*, the Serampore Trio outlined their progress in translating the Scriptures into the languages of Asia.<sup>15</sup> In reference to new developments of their work on the Gurmukhi script (which they often referred to as *Seek*), they stated:

12 Carey had started learning the Bengali language from an Indian army surgeon named John Thomas (1757-1801) during his voyage to India. By his own account, Thomas could 'converse freely' in the Bengali language. For more, see Ross, *The printed Bengali character*, 1999, p.103.

13 Potts, Eli Daniel. 'The Baptist Missionaries of Serampore and the government of India, 1792-1813.' *The Journal of Ecclesiastical History*, vol. 15, no. 2, 1964, pp. 229-246.

14 Carey, Eustace. *Memoir of William Carey, D. D., late missionary to Bengal, professor of Oriental languages in the College of Fort William, Calcutta*. London, Jackson and Walford, 1837, p. 499.

15 In the early nineteenth century, missionaries from across the United States travelled to mission fields around the world, and many of their letters and reports were collected and re-published for the edification of those back home. One such publication in New England was *The Panoplist*, which later merged with the *Massachusetts Missionary magazine* and eventually became the *Missionary Herald*. For more, see online archive of the Congregational Christian Historical Society. [archive.org/details/panoplistorchr02unkngoog](https://archive.org/details/panoplistorchr02unkngoog). Accessed 1 Nov. 2019.



In the language of the Seekers [sic] the whole New Testament now waits for revision; and we have not only completed a fount of types in their peculiar character, but have made a commencement in printing. We hope therefore that divine goodness will, at no very distant period, enable us to present the Sacred Oracles to this singular people, in their own language and character.<sup>16 17</sup>

A slight discrepancy is evident between the statements made in these two letters, written one year apart. The second correspondence states that work on the first Panjabi volume printed in Gurmukhi characters with movable type began as early as 1809, and indeed perhaps earlier, considering a fount of Gurmukhi had already been cast at the time in which the letter was composed. In the letter to his friend, however, Carey had stated that the Bible had *already been printed* in Panjabi in 1808. This could be a matter of William Carey optimistically writing to a friend, sanguine about the progression of the printing work in various scripts, while the second correspondence—written to update the Baptist Mission Society in Britain—is likely to be a more exact and official report on the advancement made with the printed outputs. There is no way to know which of these two statements more closely reflects reality, regardless, from the two of these letters, it can clearly be seen that by 1808, a type of Gurmukhi had already been cast at the Serampore Mission Press. No indications are given of who may have been involved in the design or production of these types, or what references may have been used in the shaping of the letterforms. Other historians have acknowledged that the Serampore trio did not give credit to native pundits for their work on any portion of the translation and printing work at the Mission Press, while much of what was attributed to the trio of Carey, Marshman, and Ward was (at least) in part carried out by native craftsmen.<sup>18</sup>

It is known, however, that shortly after the first publication of the Serampore Trio, a blacksmith by the name of Pañcānana Karmakāra was employed by the missionaries to work at the station press.<sup>19</sup> Pañcānana had acquired punch-cutting skills from Charles Wilkins (1749–1836) who was printer to the EIC, and the

16 Carey, William, Joshua Marshman, William Ward, and J. Rowe. 'Religious Intelligence'. *The Panoplist and Missionary Magazine United*, vol. 3, no. 1, 1810, p.37.

17 The term *Seek* undoubtedly refers to those of the Sikh faith. The Serampore Mission used the word 'Seek' interchangeably with the language, Panjabi, when indicating that a text was printed in Gurmukhi—this despite the fact that the language was also recorded in Devanagari and the Perso-Arabic Shahmukhi, as evident in manuscripts of this period. Indeed the Serampore Mission never published any Panjabi language works in any script other than Gurmukhi. In the preface to *A grammar of the Punjabi language*, William Carey refers to Panjabi as 'spoken by the Shikhs, that singular people who inhabit the Punjab, or the country lying between the Sutledge and the Indus'. To read more on the socio-lingual impacts of this inconsistent terminology, see Mir, *Social space of language*, 2010.

18 For more on this, see Potts. 'The Baptist Missionaries of Serampore', 1964; Khan, Mofakkkhar H. *History of printing in Bengali characters up to 1866*. University of London, School of Oriental and African Studies, 1976, PhD dissertation.

19 Ross. *The printed Bengali character*, 1999.





addition of his expertise resulted in the erection of a type foundry at Serampore Mission Press. It was there that Pañcānana started work on the engraving of Devanagari characters for the printing of Carey's Sanskrit grammar, along with the help of a young man named Monohur, who was of the same caste as Pañcānana and who worked to supply the press with founts in the Bengali, Persian, Arabic, and other characters for about forty years.<sup>20</sup> Pañcānana died shortly after commencing work at the Mission Press (circa 1804), but he had instructed a sufficient number of his own countrymen in the art, who, in the course of eighteen years:

Had prepared founts of types in fourteen Indian alphabets, a number capable of printing the Scriptures in nearly every dialect spoken from China to the Persian gulf [sic].<sup>21</sup> Given this statement, it is likely that the first known Gurmukhi metal types were cut by Monohur or unknown Indian assistants with the supervision of William Ward, who was responsible for the press.<sup>22</sup>

Furthermore, the Mission Press employed native pundits to help with the various stages of translating, punchcutting, and printing. In the case of Panjabi, this was clearly stated by the missionaries as a necessity in their memoirs, that 'The language of the Seeks is a modification of the Hindee, and has nearly the same affinity with the Sungskrit. Although so nearly allied to the Hindee, however, its grammatical terminations are different, and it has a different character, to which the Seeks are so much attached, that the mere circumstance of a book being written in it, recommends it strongly to their notice. These considerations have determined us to attempt alluring this nation to the perusal of the sacred word by presenting it to them in their vernacular language and character. A learned Seek, eminently skilled in Sungskrit has been for some time retained for this purpose, and the translation has advanced to the Gospel by John [sic].'<sup>23</sup> As previously stated, no credit is known to have ever been given to any native craftsmen for this language, apart from the brief mention of a man named Ajnaram, a Sikh who had previously helped Carey in the translation of the first ninety-two hymns of the Adi Granth.<sup>24</sup> Ajnaram is merely alluded to in a reference made by Carey in a correspondence, in which he requests a sum of five gold *mohurs* (a coin formerly minted by several

20 Ibid. While cutting the Devanagari punches, Pañcānana is also said to have been working on a smaller fount of Bengali characters.

21 *The friend of India*. Vol. 1, Serampore, Serampore Mission Press, 31 Dec. 1818, p. 64.

22 Potts, Eli Daniel. 'British Baptist Missionaries in India: 1793-1837; the history of Serampore and its missions.' *Church History*, vol. 38, no. 1, 1969, p. 124.

23 *First Serampore memoir relative to the translations of the sacred Scriptures to the Baptist Missionary Society in England*. J. W. Morris, Dunstable, 1808.

24 Das, Sisir Kumar. *Sahibs and munshis: an account of the College of Fort William*. New Delhi, Orion Publications, 1978.

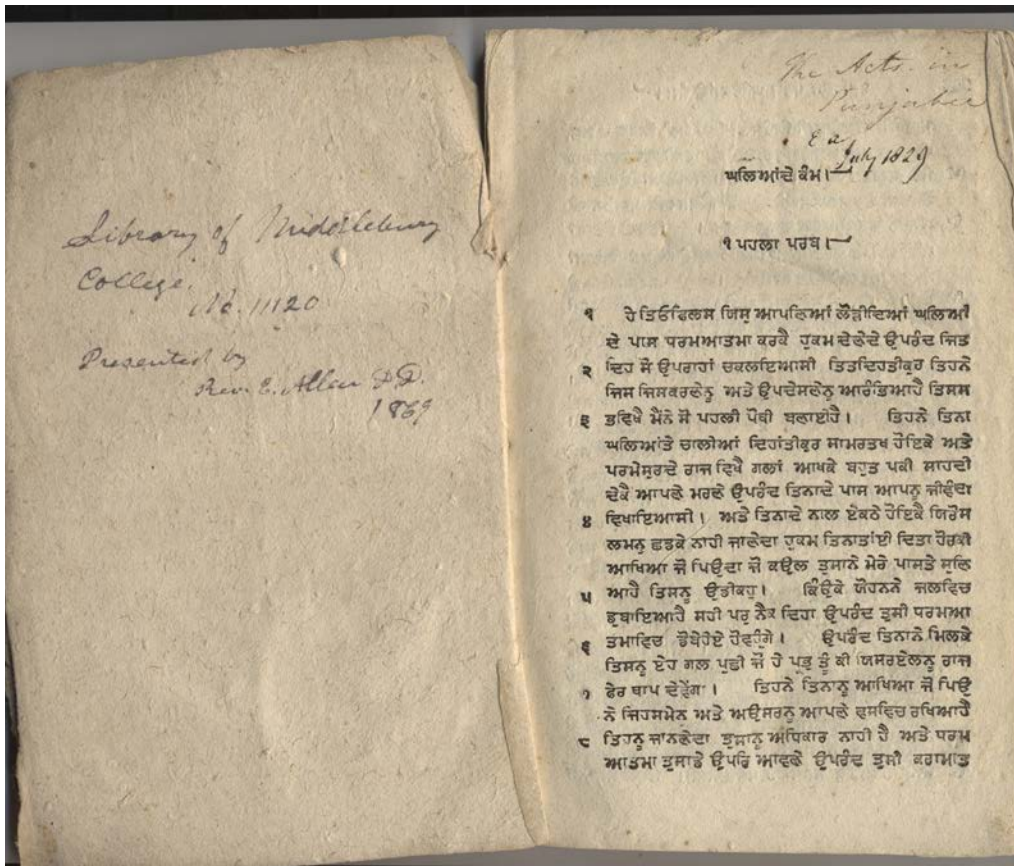


Figure 4.1. Opening page from the Acts of the Apostles, printed at the Serampore Mission Press, 1811. Image courtesy of William Carey University library, Hattiesburg, USA.

governments including British India) for the translator.<sup>25</sup> It can be deduced that the learned Sikh would have provided further assistance to the press with the translation of other texts to Panjabi, and perhaps even in the development of the printing types, however no definite evidence of this was found.<sup>26</sup>

Nevertheless, by November 1809, the New Testament (in its entirety), and Genesis (from the Old Testament) had been translated. As stated by Carey, at this time, the first sheet of the New Testament was composed and prepared for print, while the translation of the Old Testament in its entirety had not yet begun.<sup>27</sup> It is not clear if the printed New Testament was bound and distributed as a separate volume as no evidence of this could be found through this research, however, the earliest works printed at the Serampore Mission Press in the Gurmukhi script (that are currently available) consist of The Holy Bible, containing the Old and New Testaments, translated from the originals into the Punjabee language, vol. V, containing the New Testament (published in 1811), and The Acts of the Apostles, published in the same year (figure 4.1).<sup>28</sup> In the *Historical catalogue of printed Christian scriptures in the languages of the Indian sub-continent*, a volume compiled and edited under the auspices of the BFBS, it is said of the New Testament that the volume was “Translated by a “learned Sikh” eminently skilled in Sanskrit” under the direction of the Serampore missionaries. The work started in 1807. Composition began in 1811, but the type prepared for printing this version was destroyed by the fire at Serampore in 1812. This was replaced, and, according to the Tenth Serampore Memoir, the printing of the NT [sic] was finished in 1815’.<sup>29</sup>

The fire mentioned in this statement had broken out in early March, and four months later, on 30 July 1812, Carey wrote to Rev. Andrew Fuller D.D (an English Particular Baptist minister and theologian) that recuperation had begun the day after the fire, and that they had ‘immediately set the letter-founders to work to re-cast the types, and have ever since kept them at work’.<sup>30</sup> He concluded that the consequence of this measure was that they were once again able to print in a number of languages, including Panjabi.<sup>31</sup> It was a year later, in 1813, that the Mission Press published a new book in Panjabi, a volume that was—for the first time—a non-religious text set in Gurmukhi type; a grammar book. Carey had

25 *Proceedings of the Council of the College of Fort William*. Delhi, Indian archives. Home Miscellaneous File 569, p. 193.

26

27 Letter signed by William Carey, Joshua Marshman, William Ward, and J. Rowe. ‘Religious Intelligence’. *The Panoplist and Missionary Magazine United*, vol. 3, no. 1, 1810, p. 44.

28 Carey, William, et al. *The Holy Bible, containing the Old and New Testaments, translated from the originals into the Punjabee language, vol. V, containing the New Testament*. Serampore Mission Press, Serampore, 1811, and Carey, William, et al. *The Acts of the Apostles in Punjabi*. Serampore, Serampore Mission Press, 1811.

29 Bradnock, Wilfred J. and Darlow, Thomas Herbert. *Historical catalogue of printed Christian scriptures in the languages of the Indian sub-continent*. British & Foreign Bible Society, London, 1977, p. 312.

30 Carey. *Memoir of William Carey*, 1837, p. 530.

31 *Ibid.*

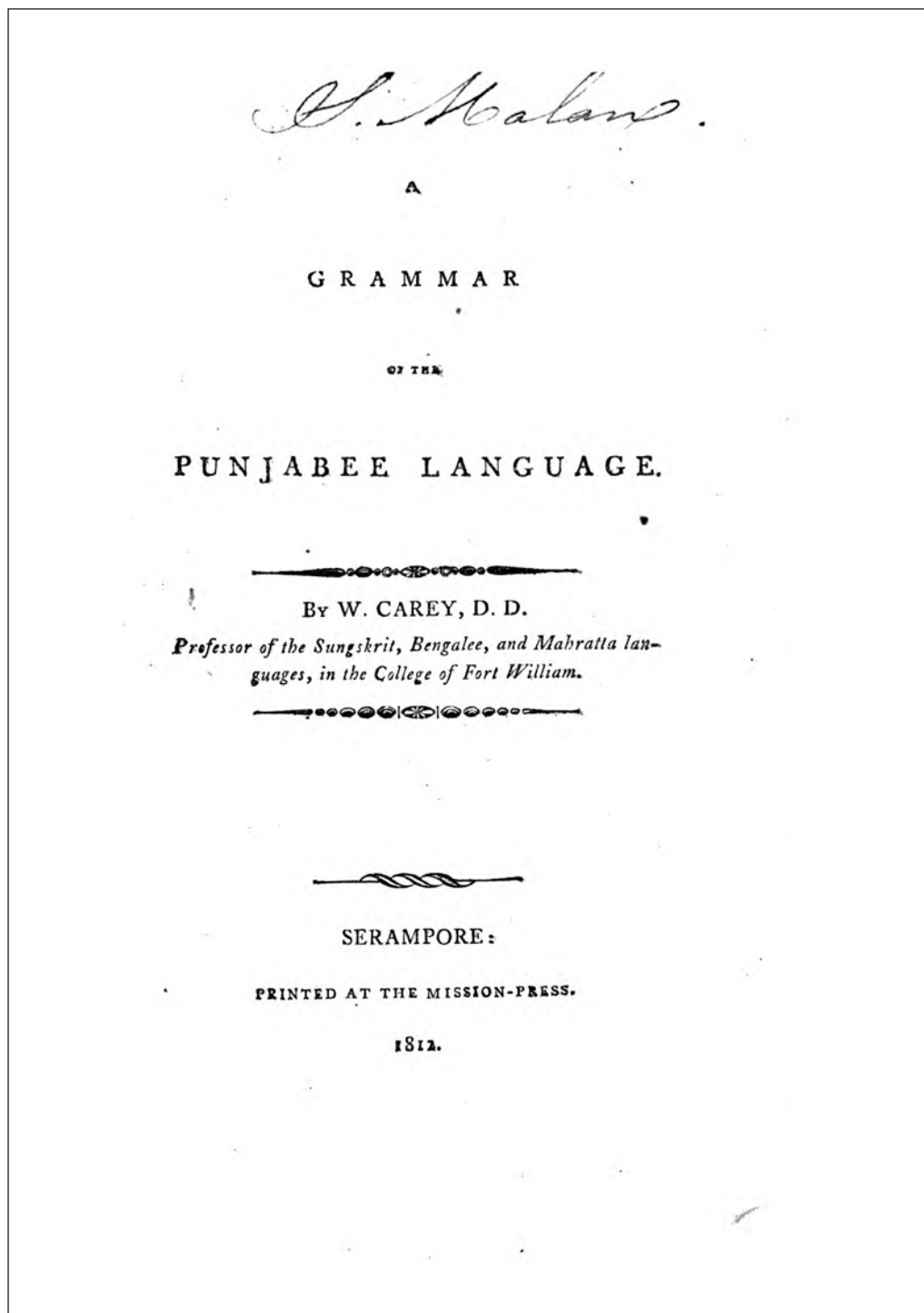


Figure 4.2. Title page of *A grammar of the Punjabee language*, printed at the Serampore Mission Press, 1812. From the digital edition, [archive.org/details/agrammarpunjabe00caregoog/page/n3/mode/2up](https://archive.org/details/agrammarpunjabe00caregoog/page/n3/mode/2up). Accessed 12 Feb. 2020.

begun the printing of this title two years earlier; he related the commencement of the printing of this book to Dr Ryland of the British Missionary Society in a letter on 10 December 1811.<sup>32</sup> However, the fire partly destroyed the work that had been previously done, as such, there was a lengthy delay in the publication of the book, which had to be re-translated by pundits.<sup>33</sup>

As stated previously, the intentions of missionary printers was ultimately the dissemination of Christianity, which resulted in the production of vital tools of proselytizing; books. However, missionaries also played a crucial part in the foundation of Western educational systems in India; the Serampore Mission was particularly active in the establishment of schools and educational institutes such as Serampore College, founded in 1818. Additionally, the Serampore Mission had strong ties to the College of Fort William, where William Carey was a teacher of the Bengali, Sanskrit, and Marathi languages. While the original intention of opening schools was in line with the EIC's objections of using these as centres for propagating Christianity, the missionaries at Serampore soon discovered the value of education in the wider sciences as a means of intellectually preparing students for a deeper appreciation of future theological studies.<sup>34</sup> The involvement of Serampore Missionaries with the education of natives brought with it a commitment to the printing of various dictionaries, grammars, and scholastic textbooks, the most relevant to this research of which is William Carey's *A Grammar of the Punjabee Language*, printed in 1812 (figure 4.2).<sup>35</sup> In the preface, Carey states that the purpose of the volume is to teach the language spoken by Sikhs, and continues:

The following sheets are intended to furnish short and appropriate rules for acquisition of this language, without attempting any remarks upon the nature of grammar in general. Conscious that long disquisitions respecting minute circumstances only serve to deter a student from the study of a language, the writer of this work has endeavoured to give a sufficient number of rules in as simple a manner and as few words as possible. The Shikhs [sic] follow the religion founded by Nanuka, the precepts of which are contained in a large volume, called, emphatically, the Gruntha, or *The Writing*, which is written in a peculiar character called Gooroo-Mokhee Naguree; on which account they have a peculiar veneration for that character, and, with few exceptions, use it in all their transactions. That character is therefore used in the following work, as that which properly

<sup>32</sup> Ibid, p. 519.

<sup>33</sup> Smith. *The life of William Carey*, 1885.

<sup>34</sup> A full account of the pursuits of the Serampore Missionaries in the field of education can be read in Laird, Michael Andrew. 'The contribution of the Serampore Missionaries to education in Bengal, 1793-1837.' *Bulletin of the School of Oriental and African Studies*, vol. 31, no. 1, 1968, pp. 92-112.

<sup>35</sup> Carey, William. *A grammar of the Punjabee language*. Serampore, Serampore Mission Press, 1812. (The actual date of publication is actually early 1813).



belong to the language.<sup>36</sup>

The passage is continued with a brief description of the origins of Panjabi and the other languages it derives from, followed by seven sections on the various components of the script and its grammatical features: letterforms, compounding letterforms, words, adjectives, pronouns, verbs, and syntax. The volume makes no reference to the use of Shahmukhi in the writing of Panjabi, and the language is only associated with the sacred scripture of the Sikhs. Furthermore, in the preface it is clearly stated that the book was published in 1812. However, it was common practice for the Serampore Missionaries to print title pages first and then proceed to print the remainder of the edition, which would sometimes not be in the same year as that stated in the preface.<sup>37</sup> In another letter to Rev. Fuller dated 25 March 1813, Carey gives an account of being extremely preoccupied with his work at the press, and that he had ‘the last sheet of the Punjabi grammar is in the press’, which shows that this was indeed the case for the Panjabi Grammar, the publication of which, in all actuality and by Carey’s own account, was completed in 1813.<sup>38</sup>

These early publications were followed by further religious texts and scripture in Panjabi, such as the Pentateuch in 1818, the Joshua-Esther in Panjabi in 1819, and the Historical Books of the Bible in the same year.<sup>39</sup> On Saturday, 8 December 1821, the *Boston Recorder* newspaper published an article on the Serampore Mission on its front page, titled *Translations of the scriptures*.<sup>40</sup> Reprinted for an American audience, this article—originally printed by the London Missionary Register—details the translation and publication work of the Serampore Trio and their pundits. With regard to their work on their latest publications in ‘the language of the Sikhs’, they state:

Besides the New Testament, the Pentateuch, and the historical Books [sic] are printed off; and the Hagiographa is advanced as far as the middle of the Book of Job. So Strong, however, has been the desire of the Nation for the New Testament, that the whole edition is nearly distributed, and the second edition will probably be called for before the Old Testament is wholly published. Besides the Muds, on the borders of Arracan, no one of the Nations of India has discovered a stronger desire for the Scriptures than this hardy race; and the distribution of almost every copy has been accompanied with the pleasing hope of its being read and valued.<sup>41</sup>

---

36 Ibid, p. 4.

37 For more see Khan. *History of printing in Bengali characters*. School of Oriental and African Studies, 1976.

38 Carey. *Memoir of William Carey*, 1837, p. 531.

39 *Tenth memoir respecting the translations of the Sacred Scriptures into the oriental languages by the Serampore brethren*. London, Parbury, Allen, and Co., 1834.

40 ‘Translations of the scriptures’. *Boston Recorder*, vol. VI, no. 50, 8 Dec. 1821.

41 Ibid.



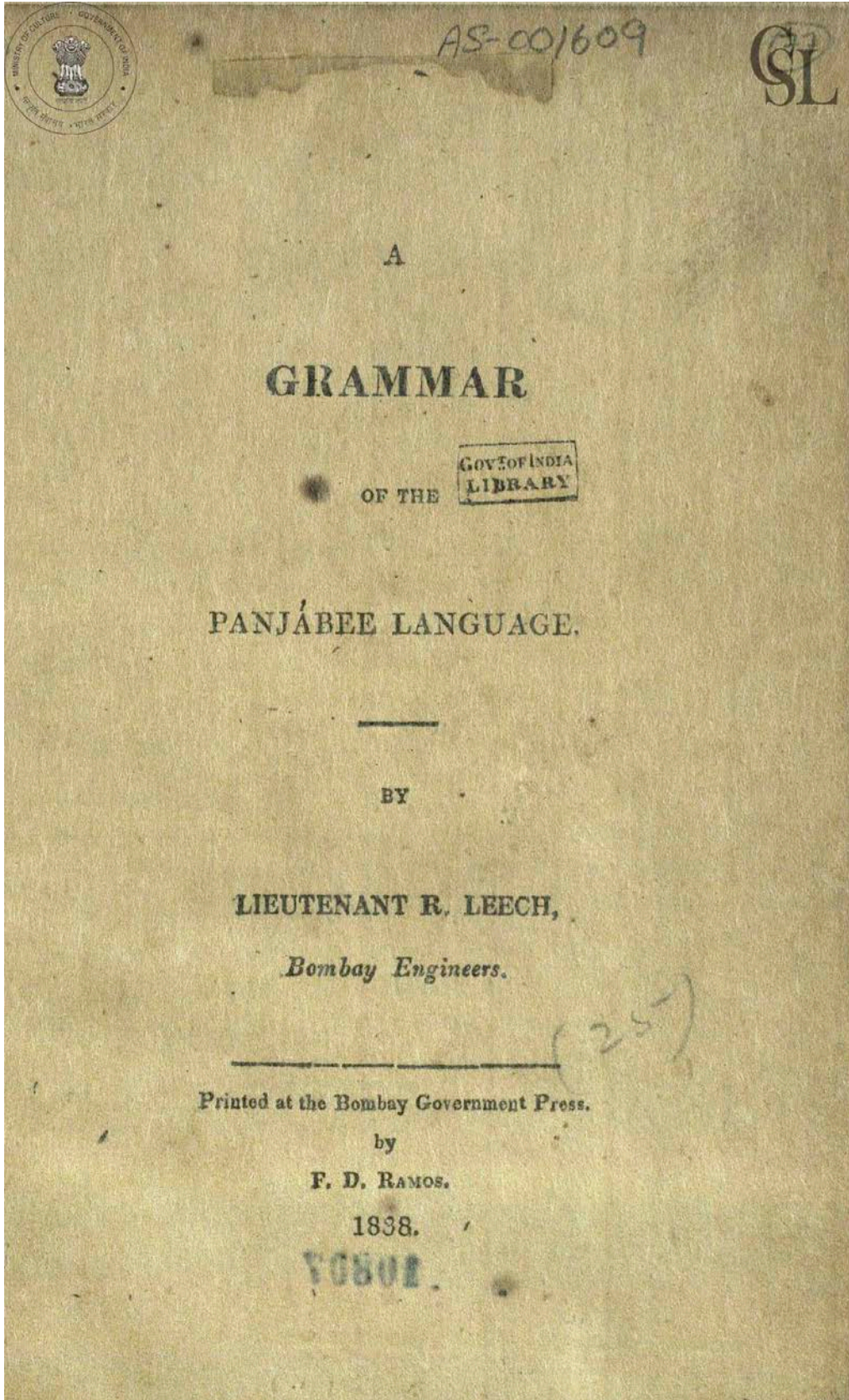


Figure 4.3. Title page of *A grammar of the Panjabee language*, printed at the Bombay Government Press, 1838. From the digital edition, [archive.org/details/dli.cs1.8227](https://archive.org/details/dli.cs1.8227). Accessed 10 Feb. 2020.



This statement raises the question of the impact of Serampore Missionary printers on native readers of Panjabi. This ostentatious account above is perhaps contentious when considering that in 1838, Lieutenant John Leech of the Bombay Engineers compiled a new *Grammar of the Punjabee language*, with no knowledge of the previous work done by Carey (figure 4.3).<sup>42</sup> His obliviousness to the existence of the publication by the Serampore Mission is stated in a letter accompanying the transmission of Leech's grammar book to the Secretary to the Governor General of India, in which British diplomat Captain Sir Alexander Burnes notes that Leech had no prior knowledge of the Serampore grammar, and goes on to commend the Lieutenant's enquiries into Pashto, and other languages of Central and South Asia.<sup>43</sup> In addition to this work from Leech, another grammar of Panjabi was also compiled in 1849 by Captain Samuel Cross Starkey, a British Colonial Officer in India; while this work only makes use of Latin type and does not show any text in Panjabi, it displays that (not unlike the missionaries) there was a military impuse for printing and communicating between European offices and Indian troops.<sup>44</sup>

In any case, while Leech indeed worked on a new grammar rather than religious texts, the fact that he was (seemingly) entirely unaware of any efforts on behalf of William Carey shows that despite the influence of the Serampore Mission on many languages of India, it appears that this impact may not have been as significant in their printing of Gurmukhi.<sup>45</sup> In *British History 1815-1914*, historians McCord and Purdue credit Leech to have 'produced the first printed grammar of the Punjab's principal language in 1838', while indeed the grammar published by the Serampore Mission preceded the work from Leech by twenty-six years.<sup>46</sup> This could also be in part due to the fire of Serampore in 1812, during which many of the manuscripts and founts of this mission (including the Gurmukhi) was lost. Furthermore, this lack of awareness of the prior work from Serampore Press may have to do with Leech being based in British India (as opposed to Danish India), and the earlier grammar book not having travelled the distance between the two. Regardless, one of the main objectives for the American Presbyterian Missionaries who would set up a base in the Panjab region (roughly thirty years after the Serampore Missionaries started their work) was the 'almost total lack of a Christian presence' in the north west of India, specifically the Panjab region.<sup>47</sup>

42 Major Robert Leech C. B. (1813–1845) was an Oriental scholar and an officer of the Bombay Engineers, on behalf of which he was stationed in Kabul for many years. Leech, Robert. *A grammar of the Panjabee language*. Bombay, Bombay Government Press, 1838.

43 'Extract from Fort William Political Consultancy'. *British Library India Office Records and Private Papers, Records of the Board of Commissioners for the Affairs of India (1620-1859)*, shelfmark IOR/F/4/1781/73262.

44 Starkey, Samuel Cross. *A dictionary, English and Punjabee: outlines of grammar*. D'Rozario and Co., 1849.

45 The Panjabi grammar authored by Leech is almost entirely Romanised apart from some Devanagari and Perso-Arabic characters, as such it is outside the scope of this research and will not be further assessed.

46 McCord, Norman, and Bill Purdue. *British History 1815-1914*. Oxford University Press, 2007.

47 Shaw. *The first printing press in the Panjab*, 1979, p. 159.



The Serampore Mission Press did, however, set up the groundwork for the American Presbyterian Missionaries, who would go on to establish the Ludhiana Mission Press in the Panjab region. While the missionary printers at this station were not British and as such, their work should remain outside the scope of this research, it will be seen that their work on printed Gurmukhi texts was a continuation of that of the Serampore Trio. Furthermore, they were the first printers to focus on the Panjabi language on a considerable scale and as such, their influence on future developments of printing in the Gurmukhi script renders them an important part of this historic inquiry.

#### 4.2 Arrival of the earliest printing press to the Panjab

The first missionary from the Presbyterian Church in the United States of America to be assigned to India, John Cameron Lowrie, reached Ludhiana in 1834. Along with William Reed, the other missionary to be appointed to India, they had arrived in Calcutta a year prior on 15 October 1833, and were greeted by the Rev. William H. Pearce of the Baptist Mission, where the work of the Serampore Mission Press had been moved to, following the death of William Ward.<sup>48</sup> The pair had instruction to set up a mission in the northern provinces of India. However, they were also authorised to alter the location upon arrival in India, should their assessment of the field and conferring with friends of the mission in Calcutta reveal a more ideal setting for their work. Ultimately, Reed and Lowrie concluded that the original location as set by the Presbyterian Church Committee was the most desirable for their purposes, and they arrived at the choice of the Panjab province as their base. This decision was due to several reasons; natives who appeared less biased in their attachment to what the missionaries perceived to be ‘paganist ways’; an eagerness amongst natives to become acquainted with the English language; a comparatively healthy population; a destitution of missionary instruction, and the proximity of the region to countries such as Afghanistan, Tibet, and Kashmir, with which established trades were already in place. Finally, the city of Ludhiana (to which they referred as *Lodiana*) was chosen for its potential in becoming even more easily accessible than Calcutta, as plans were being set up for steamship routes between Bombay and England. Due to the Panjab’s unique location by the waters of the Sutlej river, this would mean the region would be well positioned for convenient access to missionaries and all

---

<sup>48</sup> In 1818, William H. Pearce, (son of Rev. Samuel Pearce), a printer trained at the Clarendon Press in Oxford, founded the Baptist Mission Press in Calcutta. Following the death of William Ward in 1823, the Serampore Printing Office closed in 1837. Subsequently, the printing work was moved to the Baptist Mission Press, where Ward’s work was continued until the early 1970s. Christian Ministers of various denominations. ‘Account by R. Morris.’ *The Calcutta Christian Observer*, vol. 1, new series, Calcutta, Baptist Mission Press, Jan.–Dec. 1840.



travellers alike.<sup>49</sup>

Unlike the Serampore Missionaries, Lowrie and Reed were promptly permitted to reside in the region of their choosing by the Governor General of India. At the time, however, the trip north to the Panjab—possible only by boat on the Ganges river—was not an easy journey during particular seasons, and the missionaries decided to stay in Calcutta and enhance their knowledge of the Panjabi language before travelling north. It was during this time, however, that William Reed's health took a sharp turn for the worst, and he was advised to return to the United States at once to see to his health.<sup>50</sup> Because of this, John Lowrie commenced his journey north with no companions, and after nearly eighteen months of solo travel, reached Ludhiana on 5 November 1834.<sup>51</sup> Lowrie immediately set to work to establish a missionary presence in the Panjab, however, it was not long before he began his work that he contacted Malaria, and was advised to spend some time in an area that was referred to as 'the hills', (a phrase used to refer to the city of Simla), a mountainous region some 7000 feet above sea levels with an ideal climate. He would remain there until the arrival of more missionaries to India that would return him to the station in Ludhiana, however, Lowrie had not regained his health during his time away, and like Reed, he too was sent back to the United States to seek treatment. Lowrie would never return to India; nevertheless, despite the short amount of time spent in Ludhiana, he was an important figure for the Presbyterian Foreign Mission; during the time he spent in the subcontinent, he founded the mission station, the first missionary school in the Panjab, and the first Presbyterian church in the region, on 12 May 1837. Upon returning to the United States, he continued to serve on the Board of the Presbyterian Mission for over fifty years.<sup>52</sup>

Lowrie's pioneering work in Ludhiana was not done in vain, and was soon continued by the new Presbyterian Missionaries to India, Rev. John Newton and Rev. James Wilson. The two arrived in Calcutta in the summer of 1835, and it was following their arrival that the first steps were taken towards setting up the printing works of the Ludhiana Mission Press.<sup>53</sup> On this matter, Newton wrote:

---

49 Green, Ashbel D. D. *A historical sketch or compendious view of domestic and foreign missions in the Presbyterian Church of the United States of America*. Philadelphia, William S. Martien, 1838, pp. 126-127.

50 Reed would not survive this journey, and died on 12 Aug. 1834. Wherry, Elwood Morris. *Our missions in India 1834-1924*. The Stratford Company, 1926, p. 5.

51 Lowrie was warmly received by the political agent stationed at Ludhiana, Sir Claude Wade, who had established an English school in anticipation of Lowrie's arrival. Lowrie, John Cameron. *Two years in Upper India*. New York, Robert Carter and Brothers, 1850.

52 Lowrie, John Cameron. *A manual of the foreign missions of the Presbyterian Church in the United States of America*. New York, William Rankin, 1868.

53 Newton, John. *Historical sketches of the India missions of the Presbyterian Church in the United States of America: known as the Lodiana, the Farrukhabad and the Kolhapur Missions*. Allahabad, Allahabad Mission Press, 1886.



When Mr. Wilson and I were first in Calcutta, on our way to Lodiana, we were advised to take with us a printing press. We accordingly bought an old-fashioned wooden press, (such as were still sometimes used in those days), together with a font or two of types, paper, and printing ink. These we got from the Baptist Mission Press, then working under the superintendence of the Rev. Wm. H. Pierce, a gentleman of most lovely character, who greatly befriended our predecessors as well as ourselves. We had, neither of us, any knowledge of press work, but Mr. Pierce gave us one of his own native compositors, to assist in inaugurating the work. In the course of the next year after our arrival, that is, in 1836, a small house was built, with three apartments, one for the types and press, another for blank paper and printed matter, and the third for a Book Bindery [sic].<sup>54</sup>

This account reveals an early enthusiasm on the part of the missionary men to set up printing works. Newton soon reported an enlargement of the printing office, and that it had been additionally furnished with iron and lithographic presses. Furthermore, the missionaries had also brought with them from Calcutta founts of Persian, Gurmukhi, Devanagari, and Latin, so as to be able to print in all the diverse languages of the Panjab.<sup>55</sup> As it does not seem that the Baptist Mission Press itself had ever printed in the Panjabi language, the Gurmukhi founts that were obtained for the Ludhiana Mission Press must have been the same as what had previously been cast and in use by the Serampore trio.

Before his departure, Lowrie had divided the work of the mission between the two newly arrived evangelists, and had appointed Newton as the superintendent of the press.<sup>56</sup> The native compositor that had come to Ludhiana from the Baptist Mission in Calcutta taught Newton how to work the press, and then together, they began the task of teaching native apprentices.<sup>57</sup> Not unlike the Serampore Missionaries, no mention is made of the names of any of these native craftsmen in the correspondence, reports, or minutes of the Presbyterian Foreign Mission's meetings. Newton does, however, at one point report on one of the natives who worked at the station and eventually was promoted to foreman and general manager of the press. This man who had started his work at the press at the age of fourteen, would continue to work at the Ludhiana Mission Press until he was a 'grey-headed man', yet no record could be found of references to his name, nor any details of the work he did.<sup>58</sup>

The early printing efforts of the Ludhiana Mission Press saw outputs in

---

<sup>54</sup> Ibid, p. 46.

<sup>55</sup> Shaw. *The first printing press in the Panjab*, 1979, p. 161.

<sup>56</sup> Rev. Wilson was put in charge of the school.

<sup>57</sup> Newton. *Historical sketches*, 1886.

<sup>58</sup> Ibid, p. 46-7.





Persian and Roman characters, rather than Gurmukhi. In the *First annual report of the Board of Foreign Missions of the Presbyterian Church* in 1838, Newton reported that their press was a novelty in the region, drawing the attentions of many, including Shiyah ul-Mulk, one of the ex-kings of Afghanistan, who had gone to witness the performance of the press in person. On the matter of the printing and the Gurmukhi type, he states:

With the limited means in the hands of the missionaries for this object, and the great press of their other engagements, the amount of printing for the last year was necessarily small. The number of pages was 227,780 printed in Hindustani, Persian, English, and Indo-Roman. A supply of paper, and a quantity of Persian, Gurmukhi, and Indo Roman type, had been ordered from Serampore and Calcutta, and were soon expected. Until more force would reach the station, especially the printer, so as to enable them to use it to advantage the large printing press, the amount printed will be comparatively small. But a beginning had been made, and the books and tracts printed have been of great service.<sup>59</sup>

It is unclear why more founts of Gurmukhi were required by the Ludhiana Mission (seeing as they had earlier reported on bringing some with them from the Baptist Mission Press). It is possible this was due to either discovering the founts in their possession to be incomplete or not in satisfactory printing conditions (the Ludhiana Mission reported various disappointments as to the receipt of paper and suitable type to the Board).<sup>60</sup> Whatever the hindrance, the work of the press slowly progressed, and in December of 1837, the first part of the requested founts had arrived at Ludhiana— while the rest would arrive in January.<sup>61</sup> The following year, a trained printer, Mr. Reese Morris, arrived at the station to run the existing press. Soon after, the newly acquired founts of Gurmukhi and Devanagari were employed at the press for the first time.<sup>62</sup> The titles of the publications these types were used for are unclear, however, it is stated in the *Second annual report of the Board of Foreign Missions of the Presbyterian Church* that in Gurmukhi, a number of six works were published.<sup>63</sup> This was followed by four further publications in 1839, all of which are untitled in the report, apart from a brief description of them being scripture and religious tracts. As the small printing press was found to be inefficient, an additional press was sent out to this station during this

<sup>59</sup> Board of Missions. *Report of the Board of the Foreign Mission of the Presbyterian Church in the United States of America*. Annual report no. 1, New York, 1838. p.8.

<sup>60</sup> Board of Missions. *Report of the Board of the Foreign Mission of the Presbyterian Church in the United States of America*. Annual report no. 2, New York, 1839.

<sup>61</sup> *The Foreign Missionary Chronicle, containing a particular account of the proceedings of the Board of Foreign Missions of the Presbyterian Church and a general view of the transactions of other similar institutions*. Vol. 7, New York, 1839, p. 180.

<sup>62</sup> Shaw. *The first printing press in the Panjab*, 1979.

<sup>63</sup> *Report of the Board of the Foreign Mission*. No. 2, 1839.



year, and thus the printing office was enlarged to accommodate the new press.<sup>64</sup> However, while the press did arrive in India some months later, the loss of one the springs meant that it was not of use to the missionaries, who instead procured a lithographic press which was put to work for printing in Persian, Kashmiri, and Tibetan.<sup>65</sup> It was thus in 1840 that the Ludhiana Mission Press printed its first book set in Gurmukhi type; the Gospel According to Matthew, translated by the missionaries from the original Greek, at the mission station.<sup>66</sup> This was followed in 1841 by further works in Gurmukhi, including Newton's version of the St John's Gospel (which he has translated from the original Greek) and five other works.<sup>67</sup> He would complete the translation and publish the whole of the New Testament twenty-seven years later, in 1868.

In 1842, the most notable increase in printing at the Ludhiana Missionary Press was reported; the amount of printing in this year alone had exceeded the previous years combined. While this was an important achievement for the press, the printed outputs were mostly in other languages, with only a little over 15,000 copies (out of a near total of 223,500) being in Panjabi.<sup>68</sup> More importantly, however, it was in this year that Rev. Levi Janvier and his wife were appointed to the Ludhiana Mission. The couple embarked at Philadelphia on 13 September 1841, and arrived at Calcutta on 13 January 1842.<sup>69</sup> Janvier would prove to be an important figure for the Ludhiana Mission Press, as he aided Newton greatly in the translation of many texts, and in 1854, he would take charge of the entirety of the press. Around the time of Janvier's arrival, Newton had started the work of translating the four Gospels in Panjabi, as well as a Panjabi dictionary, though the latter had proved to be a tedious task, with only very slow progress made by the missionary who had other duties to see to at the station beyond his translation work.<sup>70</sup>

The printing of Newton's dictionary would thus be delayed by a further twelve years. Any printing work was, in fact, set back in the final months of 1845, and early 1846. The first hindrance to the work was the loss of Reese Morris, who was forced to leave India due to health issues, after retiring to the hills

---

64 Board of Missions. *Report of the Board of the Foreign Mission of the Presbyterian Church in the United States of America*. Annual report no. 3, New York, 1840.

65 Board of Missions. *Report of the Board of the Foreign Mission of the Presbyterian Church in the United States of America*. Annual report no. 4, New York, 1841.

66 Christian Ministers. 'Account by R. Morris.' 1840.

67 Board of Missions. *Report of the Board of the Foreign Mission of the Presbyterian Church in the United States of America*. Annual report no. 4, New York, 1841.

68 Board of Missions. *Report of the Board of the Foreign Mission of the Presbyterian Church in the United States of America*. Annual report no. 6, New York, 1843.

69 Ibid.

70 Board of Missions. *Report of the Board of the Foreign Mission of the Presbyterian Church in the United States of America*. Annual report no. 8, New York, 1845.



proved unfruitful to any hopes of recovery from an ailment.<sup>71</sup> His departure from Ludhiana was followed by a disastrous fire that, by the missionary's report, had reduced the establishment to a heap of ruins. This resulted in the press standing idle for five months, and the downcast missionaries reported the loss of the largest part of the works they had on hand that, 'The loss of so many excellent publications is most deeply felt, and even with the greatest exertion, time will be required to replace them'.<sup>72</sup> Nonetheless, this tragic incident was an opportunity for the friends of the Ludhiana Mission in India, who came to the aid of the missionaries not only by helping to restore the burned building on an improved plan, but also to completely repair the presses. Through this help, a return to working conditions was made possible well before funds from the United States reached the missionaries in Ludhiana. The most relevant of these aids (to this research) is the help that was given to the recovering Mission Press by Mr. John Marshman, who set to work casting 'an improved fount of Gurmukhi', which with 'much liberality' he presented to the mission upon completion (see chapter 7 for a comparison of the typeface against the previous example from the Serampore Mission Press).<sup>73</sup>

Evidently, Marshman's new fount of Gurmukhi was soon in the hands of the printers at Ludhiana; the following year, they published the St Matthew's Gospel (14,000 copies), the St Mark's Gospel (10,000 copies), and *Alphabetical cards* (200 copies) in Panjabi.<sup>74</sup> Also published in this year was a bilingual book containing idiomatic sentences, of which 2,000 copies were printed and distributed.<sup>75</sup> A few years later, in 1849, a fount of Latin type was procured by the Ludhiana Missionaries, as well as what they described as a 'neat' Devanagari fount, that was smaller in size than those commonly in use at the time, which they obtained from Serampore. They also reported that another fount of what they referred to as the 'usual size' was being made for them at Allahabad, and that they had ordered Gurmukhi type of larger size from Serampore as well, all of which were expressed as being highly necessary for their printing needs.<sup>76</sup> With the recovery from the fire underway at an appreciable pace, (decelerated printing owing to difficulties in obtaining regular supplies of paper notwithstanding), Newton resumed the task of working on the preparation of his dictionary, and in the *Twelfth annual report of the Board of Foreign Missions of the Presbyterian Church*, the missionaries heartily reported that nearly 20,000 words had been collected and arranged, the definitions

71 Board of Missions. *Report of the Board of the Foreign Mission of the Presbyterian Church in the United States of America*. Annual report no. 9, New York, 1846.

72 Ibid, p. 19.

73 Ibid.

74 Board of Missions. *Report of the Board of the Foreign Mission of the Presbyterian Church in the United States of America*. Annual report no. 10, New York, 1847.

75 Ibid.

76 Board of Missions. *Report of the Board of the Foreign Mission of the Presbyterian Church in the United States of America*. Annual report no. 12, New York, 1849.



of about 8000 having been written in full, and about 6,000 more which at the time of writing the report were partially defined:

The labour involved in this work is exceedingly arduous. Mr Newton has been engaged in it, more or less, for several years, and is, no doubt, better qualified than any other person, to do justice to such an undertaking. It will form a valuable contribution to the general literature of the Hindus, and an indispensable auxiliary to all foreigners, whether missionaries or others, with that portion of the people of the Punjab who speak the Sikh language. In the meantime, Mr Newton has nearly ready for the press a Grammar and a Vocabulary of the same language [sic].<sup>77</sup>

Newton's work was again briefly disrupted in 1850, as this year saw the establishment of the Lahore Mission, and subsequently Revs. Newton and Forman were transferred to the new station, where the former would stay for another five years. The work at the press thus continued with work on Gurmukhi versions of the Genesis and Exodus (until the twentieth chapter), both of which were printed using the new, large Gurmukhi type, which the missionaries had spoken of in the last report as having been ordered from Serampore. A new Iron Press had also been received from the United States, bringing the total number of the machinery in the establishment to three presses (besides the wooden press, which at this point was only being used for proofs).<sup>78</sup> It was a year after his arrival in Lahore, in 1851, that Newton was finally able to complete the work on his *Grammar of the Panjabi language*, a book he had started with the aim of helping those delegated to the Ludhiana Mission and arriving in the Panjab while not being familiar with the language. On the publication of the grammar book, Newton stated that nothing but the urgent request of his friends had been cause for the publication; likely referring to the situation caused by annexation of the Panjab, which resulted in an influx of British officials only familiar with the Urdu language.<sup>79</sup> The 'urgent request' itself was probably from British officials, who had expanded their rule throughout most of Northern India starting in early 1849 following the capture of Panjab. This had resulted in many questions of language policy; colonials had a desire to replace Persian which had long been the language of administration with vernaculars, so it follows that mission presses would be asked to help with this, particularly with the addition of dictionaries and grammar books.<sup>80</sup> As mentioned earlier, in 1846, during battles between Sikh rulers and British colonials, the

<sup>77</sup> Ibid, p. 22.

<sup>78</sup> Board of Missions. *Report of the Board of the Foreign Mission of the Presbyterian Church in the United States of America*. Annual report no. 13, New York, 1850.

<sup>79</sup> Diamond, Jeffrey M. 'A "vernacular" for a "new generation"? Historical perspectives about Urdu and Punjabi, and the formation of language policy in Colonial Northwest India.' *Language Policy and Language Conflict in Afghanistan and its Neighbors*, edited by Harold Schiffman, Brill, 2012, pp. 282-318.

<sup>80</sup> Ibid.





Ludhiana Mission had printed *Idiomatic sentences in English and Panjabi*. This work focused on military concerns, judicial situation, and medical information, and the missionaries had found it challenging to publish on these matters in the absence of an established translating scheme between English and Panjabi. While at the time Carey's dictionary and grammar of Panjabi had both already been printed, these volumes were either not available, or, the contents did not match the needs of the Ludhiana missionaries, who instead set out to print linguistic books for the Panjab.<sup>81</sup>

The relationship between Urdu and Panjabi was important to Newton's grammar; he begins the book by stating that it was not his intention to record a comprehensive grammar of Panjabi, but rather the ways in which the language differs from Urdu. He continues to outline the difficulties he had faced with this undertaking; certain forms of speech and nomenclature being his main concerns—an understandable dilemma when considering a lack of previous methodical standards for such work. Newton does make reference to Carey's Panjabi grammar, making it clear that he had already studied and made use of prior efforts in compiling a grammar book for Panjabi, but notes that he is sympathetic to the inaccuracies in Carey's approach, as he himself was faced with the challenge of accurate translation and adaptation. For writing this grammar, Newton used Gurmukhi and Latin characters, and decided on using European and American grammatical terms to separate the volume; *orthography* and *orthoepy* along with *syntax* are used as the two main categories, with each being broken down into further subcategories—adjectives, nouns, adverbs, pronouns, interjections, conjunctions, verbs, etc.<sup>82</sup> Through this, the new grammar, fully published in 1851 under the supervision of Rev. James Porter, greatly influenced future works on Panjabi by starting a process of standardizing the language by promoting explicit grammatical structures.<sup>83</sup> The grammar would be one of the first in a series of linguistic books published by the Ludhiana Mission Press in the Gurmukhi script, no doubt somewhat encouraged by the establishment of a 'Gurmukhi school' with fourteen scholars in 1853.<sup>84</sup> As previously stated, however, the work of composing the dictionary had begun long ago; in the annual meeting of the Ludhiana Mission in 1841, approval was given for Newton—who had already begun to gather materials for a Panjabi dictionary—to proceed with a book to help those wanting to learn the language. The undertaking of such a substantial assignment itself would mean it would be many years before the dictionary would be in the hands of readers, however a shortage of funds, difficulties acquiring printing paper, and

---

81 Ibid.

82 Newton, John. *A grammar of the Panjabi language: with appendices*. Ludhiana, American Presbyterian Mission Press, 1851.

83 Diamond. 'Formation of language policy in Colonial Northwest India', 2012, p. 300.

84 *Board of Missions. Report of the Board of the Foreign Mission of the Presbyterian Church in the United States of America. Annual report no. 16, New York, 1853.*



some hardships on the Ludhiana Mission previously outlined in this chapter all meant that the book was finally completed and printed many years later in 1854, under the superintendence of Levi Janvier.<sup>85</sup>

With regard to the dictionary, Newton offers four noteworthy remarks in the preface to his work; that undoubtedly some words will be missing in his work, that the volume might contain words not in common use, that the style of the Romanization is (similar to the grammar before it) what he describes as ‘Shakespearean modified to suit the peculiarities of the Panjábí language’.<sup>86</sup> Finally, with regard to the script used in the book, Newton explains:

The character here adopted, and ordinarily used in writing Panjábí, is that known as the Gurmukhí. The alphabet consists of thirty five letters, hence called the Paintí. The same order has been observed as that used by natives, except that, as in the Grammar, ਅ (áirá,) and ਉ (urá,) are made to change places [sic].<sup>87</sup>

Upon the finalization of the work, the Ludhiana Mission noted with satisfaction the completion of the Panjabi dictionary; they commended the hard work of Newton and Janvier to complete the work, and estimated that the cost of printing the book would be almost entirely repaid by its sales, as it would no doubt prove to be a valuable auxiliary to missionaries and others in studying the Panjabi language. A year later in 1855, Newton returned to Ludhiana and continued his missionary work there.<sup>88</sup> Despite suffering a second fire that devastated the mission press in 1857, the men stationed at Ludhiana would once again resume their work in a matter of months, and their work would continue for many years to come. Certainly, the linguistic titles published at this station had a wider impact on the literature of the Panjab region. Newton’s contributions to the Panjabi language (through a standardisation of grammatical structures) were not only limited to his own efforts, but he also encouraged native authors to do the same; on the work of Shardha Ram Phillauri—a prominent literary figure of the nineteenth century, known as the ‘father of modern Panjabi prose’—Dr Harcharan Singh, dramatist and writer in the Panjabi language, has stated that had it not been for the guidance of Newton, Phillauri could not have written his best book, *Panjabi Bat Cheet* (which translates to *Panjabi conversation*).<sup>89</sup> In fact, in the preface to this work, Phillauri regards Newton as one of his closest friends who has a great command of the Panjabi language, and reveals that it was Newton who advised him to write a book

<sup>85</sup> Newton, John. *A dictionary of the Panjábí language*. Ludhiana, American Presbyterian Mission Press, 1854.

<sup>86</sup> *Ibid.*, p. 4.

<sup>87</sup> *Ibid.* For more on the term *painti*, see chapter 2.

<sup>88</sup> *Board of Missions. Report of the Board of the Foreign Mission of the Presbyterian Church in the United States of America. Annual report no. 18, New York, 1855.*

<sup>89</sup> Massey, James. ‘Presbyterian Missionaries and the development of Punjabi language and literature, 1834-1984.’ *Journal of Presbyterian History*, vol. 62, no. 3, 1984, pp. 258-261.



in Panjabi that contained all the idioms of this language.<sup>90</sup> A second edition of Newton's Panjabi grammar was republished in 1866.<sup>91</sup> The reproduction of this title is a likely indication of support for the initial book, and a request from the wider public. The influence of the grammar also continued far beyond the original publication date in 1851; in his classic book *A comparative grammar of the modern Aryan languages of India*, linguist John Beames refers to the volume favourably as a 'meritorious and accurate performance', but does not reserve his criticism by admitting that to him, the work scarcely could be referred to as a dictionary, without a clear indication of the reasons behind this evaluation.<sup>92</sup>

### 4.3 Conclusion

This chapter investigates the efforts of the missionaries at the Serampore Mission Press in initiating printing Gurmukhi using movable metal type, and the introduction of the first printing press to the Panjab region by the Ludhiana Mission Press. It provides details on the endeavours of the missionaries at both Serampore and Ludhiana with regard to why they were printing in Gurmukhi, what they were printing, and their intentions for doing so. The majority of printed material in the Gurmukhi script from both of these missions focused on religious texts, as it was their intent to convert the native readers of this writing system to Christianity through proselytization. Over time and through their association with education and newly erected schools and colleges in the subcontinent (that the missionaries themselves would help to establish), they also extended their printing efforts to include educational volumes such as grammars and dictionaries.

It is not entirely clear who cut and cast the first Gurmukhi movable type; the Serampore Missionaries rarely credited the work of native pundits, and on the rare occasion that they did make mention of any employees at their Mission Press, the details of their work and the extent of it was not documented. The same largely applies to the missionaries at Ludhiana, however, the latter credited Joshua Marshman from the Serampore Trio with the cutting of the Gurmukhi type that they used, though it was unlikely that he was alone in this undertaking. Regardless, the (primarily evangelical) intentions of these missionaries for printing, combined with the limitations of Western typesetting technology in realising the requirements of the Gurmukhi script, unsatisfactory climatic printing conditions, and the likely involvement of unpractised individuals in the punchcutting and production processes of types for scripts they were not entirely

---

<sup>90</sup> Ibid. This book would go on to receive an award from the government.

<sup>91</sup> Newton. *A grammar of the Panjabi language*, 1866.

<sup>92</sup> Beames, John. *A comparative grammar of the modern Aryan languages of India: to wit, Hindi, Panjabi, Sindhi, Gujarati, Marathi, Oriya, and Bangali. On sounds*. Vol. 1, London, Trübner, 1872, p. 28.



## 5 Gurmukhi printing in Britain

The current chapter shifts its focus from the efforts of the missionaries in India to the type foundries and printing offices where Gurmukhi type was being produced and used in Britain instead. As with the previous chapter, the aim of this chapter is to contextualise the efforts of the British in the development of Gurmukhi type, and to determine the reasoning behind their decision to print in this script, what they were printing, and for whom. This historical investigation will also attempt to ascertain those involved in the design and development process, and the sources for the design of their Gurmukhi typefaces. By doing so, the various aspects that contributed to the results of their efforts in the design and development of Gurmukhi type can be established and considered prior to the analysis of the type in the final chapter of this thesis.

Towards the end of the nineteenth century, a number of British type foundries and printers started producing Gurmukhi founts, or acquired founts in this script to typeset and print texts for their clients, marking them as early examples of commercial printers of this script in Britain. The most notable of these customers to the foundries and printing establishments under consideration in this chapter were the East India Company (EIC) and their affiliated institutions, and the British & Foreign Bible Society (BFBS). As discussed in the previous chapter, the EIC was a trading corporation that eventually assumed a Company-as-State status in the Indian subcontinent. The structure, objectives, colonial footprint, and impact of the Company rule until it was finally formally dissolved are outside the focus of this thesis.<sup>1</sup> However, one consequence of the long presence of the EIC in India (and its linked overseas establishments such as the India Office in Britain, the EIC college, and later, the Haileybury college) was their requirement for printing in the scripts of regions which EIC cadets (also referred to as servants of the EIC) would be assigned to; a measure carried out to train these personnel in the languages they would need to be able to speak and communicate in, upon their arrival at their posts. As a result, the EIC needed foundries that would be able to firstly produce founts for a variety of scripts, and printing establishments to set texts and produce reading material with the foreign types. Interestingly, this means that unlike the previously discussed missionary printers, the resulting printed materials for the EIC were not (primarily) intended for native readers, but rather those unfamiliar with the scripts of India.

---

<sup>1</sup> For more on this, see Dalrymple, William. *The anarchy: the relentless rise of the East India Company*. Bloomsbury Publishing, 2019; Stern, Philip J. *The company-state: corporate sovereignty and the early modern foundations of the British Empire in India*. Oxford University Press, 2011.





The BFBS, on the other hand, was a society that formed as a result of the scarcity of Christian scripture in Welsh, complaints of which are documented at the end of the eighteenth century.<sup>2</sup> Through discussions of this shortage between the British Religious Tract Society and members of the clergy from Wales, it was put forward that this under-supply of Christian sacred texts likely extended to many regions of the world. As a response to this, the decision was made to form a society that not only supplied these religious texts in Britain and Wales, but rather one that met demand from all over the world. Thus, with the objective to ‘make these Holy Writings known, in every nation and in every tongue, and, as far as may be, to render them the actual possession of every individual on the face of the whole earth’, the BFBS was established in January 1804.<sup>3</sup> Considering their objectives, the work of the BFBS was not too dissimilar to that of the Serampore and Ludhiana Missionaries; their aim was an evangelical one. However, rather than set up their own foundries for undertaking the task of casting type and producing volumes with the resulting type, they instead commissioned existing foundries within Britain for this task. Furthermore, the BFBS is also known to have supported Baptist Missionary Presses abroad, including the Ludhiana Mission Press.<sup>4</sup> Contemporary to the needs of the EIC and BFBS for printing in foreign scripts (and presumably not entirely coincidentally), was the emergence of a number of printers and foundries within Britain that specialised in ‘Oriental’ types in the eighteenth to early twentieth centuries. Notable among such printers and foundries (for including Gurmukhi founts in their collections), are the following printers and type founders whose work will be examined more closely in the current chapter:

- **Richard Watts of the Oriental Type Foundry and Stephen Austin & Sons** of Hertford, both of which were known as printers to the EIC.
- The printing offices of **William Clowes & Sons** and **Gilbert & Rivington**, which were not type foundries—and therefore producers of types—themselves, yet both were known for printing in many scripts of the world, including Gurmukhi, and both were inheritors of the printing material of Richard Watts. As such, their work is of relevance to this research as successors of the legacy of Watts.
- The type foundry of **V. and J. Figgins** (eventually merged with the foundry of **P. M. Shanks**, to form the R. H. Stevens & Co foundry).
- The **Oxford University Press** and their unique Gurmukhi type for the BFBS.

The printed Gurmukhi volumes from these foundries and printers spans

---

<sup>2</sup> Brown, George. *The history of the British and Foreign Bible Society: from its institution in 1804, to the close of its jubilee in 1854*. Vol. 1, London, Bagster and Sons, 1859.

<sup>3</sup> *Ibid.*, p. 3.

<sup>4</sup> *Fifty-eighth report of the British and Foreign Bible Society*. London, Spottiswoode & Company, 1862.



# The Mirror

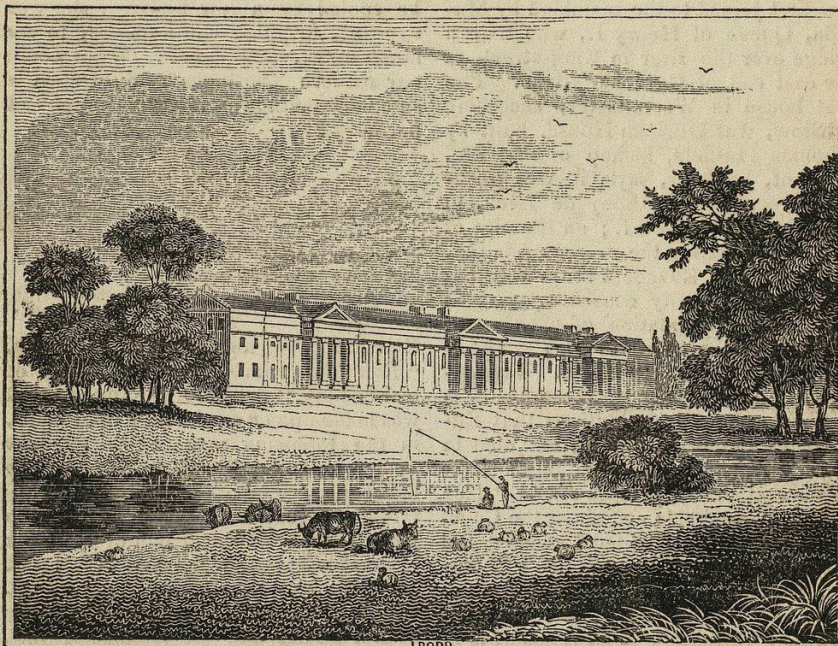
OF  
LITERATURE, AMUSEMENT, AND INSTRUCTION.

No. 418.]

SATURDAY, MARCH 6, 1830.

[PRICE 2d.]

## East India College, Haileybury.



(From a Correspondent.)

THIS College was instituted about two-and-twenty years since, by the Honourable East India Company for the education of young men, destined for the civil service in British India. It is pleasantly situated on a rising ground at Haileybury, between the towns of Hertford and Hoddesdon, and is about twenty miles from London. The building itself is not handsome, with the exception of the front, which our Engraving represents. It is faced with Portland stone, and certainly has a beautiful appearance. The view from this front, called also the Terrace, is extensive and varied. The College affords accommodation for 100 students. It is conducted nearly on the same principles as the Universities, and about 60 young men leave annually for their several destinations in India. Sixteen is the age at which they are first admitted, and at eighteen they leave the College as writers.

VOL. xv.

M

No civil servant can quit England before eighteen, or after two-and-twenty. Examinations take place twice in the year, when medals and other honourable distinctions are distributed on a more liberal scale than at any other college in England; the spirit of emulation produced by the prizes, &c. is indeed surprising.

There is an excellent library belonging to the college, which is open for the use of the students, and towards which each of whom subscribes ten guineas, on his leaving England. The Oriental Languages are studied with great success; difficult and indeed almost incomprehensible as they appear at first, it is astonishing how comparatively easy they may be rendered by diligence and application. The professors, six in number, besides the principal, have houses within the college walls; they are all men of great ability, and well known in the literary world.

C. W.  
418

Figure 5.1. Illustration of the EICC in Haileybury, near Hertfordshire. Engraving from *The Mirror*, no. 418, 6 Mar. 1830. Image courtesy of the Royal Collection Trust, © Her Majesty Queen Elizabeth II, 2022.



from the years between 1870 to 1958. This chapter will trace the developments of each with regard to their Gurmukhi type, and highlight relevant aspects that impacted the production and use of each of their founts.

### 5.1 Watts and Austin, printers to the East India Company

The continued acquisition of territory by the British in North India during the nineteenth century was a direct result of the EIC's policies in the region, and with the expansion of their reach, the EIC had a need for a new place to train cadets that would go on to serve its purposes in India upon completing their studies. The college of Fort William in Calcutta already served a similar purpose for the EIC. However, as previously mentioned, concern for the young trainees that were not acclimating to the new environment suggested the need for sending them to India at an older age, and training them within Britain in the meantime.<sup>5</sup> The committee tasked with putting together a curriculum for the students that would attend this new college suggested introductory courses on Persian and Hindustani, as well as Indian history, culture, law, mathematics, philosophy, political economy and literature—and determined that no such institute that encompassed this envisioned syllabus already existed within Britain.<sup>6</sup> British historian Callie Wilkinson notes that 'Having acquired this general knowledge, recruits would then be trained in relevant local languages with the aid of presidency colleges in Calcutta, Bombay, and Madras. The court of directors accepted this proposal'.<sup>7</sup>

Consequently, in 1806, the EIC established the East India Company College (EICC) in Hertford castle (East Hertfordshire, England); three years later a mansion close to Hertford was purchased and the school was moved to the new location (figure 5.1).<sup>8</sup> Upon its inception, the Rev. M. H. Luscombe, who had graduated from the University of Cambridge the year before, was appointed as Head Master.<sup>9</sup> It was perhaps this connection to the University of Cambridge that resulted in the immediate appointment of Richard Watts as printer to the college.

Watts was an English printer who held the office of printer to the University of Cambridge from 1802, until his resignation in 1809.<sup>10</sup> This overlap in the time

5 Farrington, Anthony. *The records of the East India College, Haileybury, and other institutions*. HM Stationery Office, 1976.

6 *A preliminary view of the establishment of the honourable East-India Company in Hertfordshire for the education of young persons appointed to the civil service in India*, London, 1806. BL, India Office Records and Private Papers (IOR), J/1/21/fos. 514–21, p. 11.

7 Wilkinson, Callie. 'The East India College debate and the fashioning of imperial officials, 1806–1858.' *The Historical Journal*, vol. 60, no. 4, 2017, pp. 943–969.

8 *A preliminary view of the establishment of the East-India Company in Hertfordshire*, 1806.

9 *Ibid.*

10 Moran, James. *Stephen Austin of Hertford: two hundred years of print*. Stephen Austin & Sons, 1968.

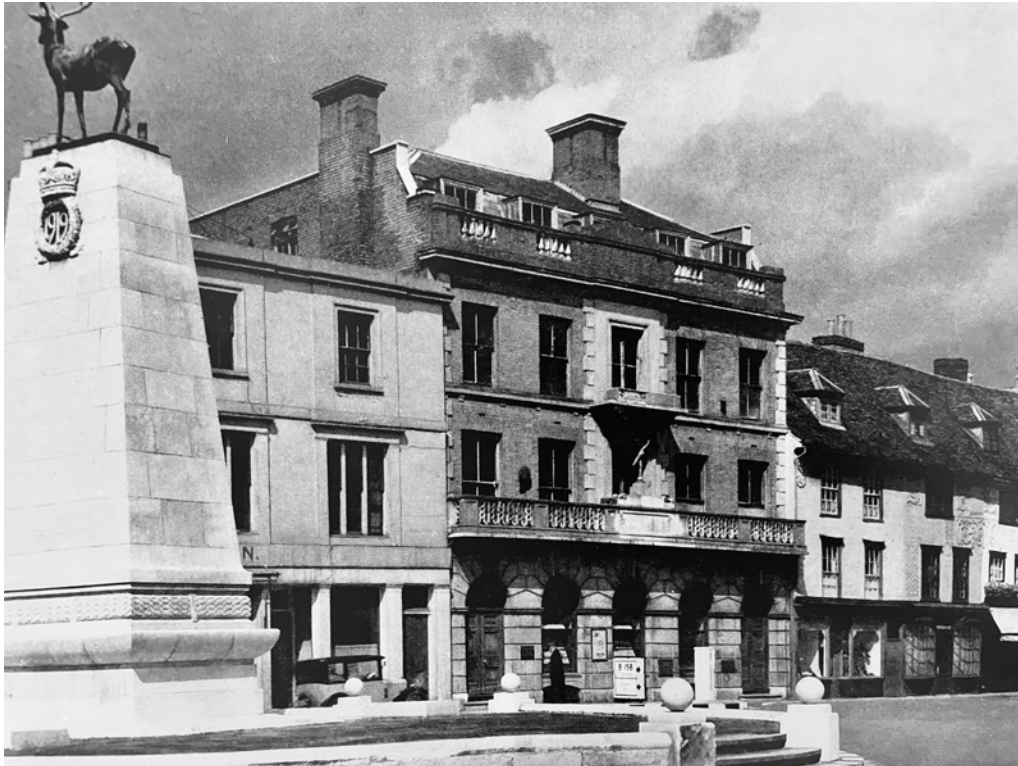


Figure 5.2. The premises which housed the firm of Stephen Austin & Sons for many years on Fore Street, Hertford. From author's personal copy of *The story of the opening of the new factory at Caxton Hill*, Stephen Austin & Sons, 1954.

periods during which Watts and Luscombe were both at Cambridge suggests a familiarity that would have resulted in employing Watts as printer to the EICC following his resignation from his position at the University. Upon leaving Cambridge University, Watts first went to Broxbourne, and it was there that he began his work for the EIC. His work for the university continued for many years and through his relocation to London, where he set up his foundry—the Oriental Type Foundry—in Crown Court, Temple Bar in 1816.<sup>11</sup> Through his work for these institutions as well as other missionary societies, the number of scripts in Watts' collection increased, and he benefited from receiving assistance and advice on his work from a number of, in the words of historian Talbot Baines Reed, 'celebrated scholars' of the time, some of whom supervised the development process of his founts.<sup>12</sup> As part of his role as printer to the EIC, Watts was said to have reproduced classic and foreign examination papers for James Amiraux Jérémié, Professor of Classical Literature as well as others, and that he 'paid special attention in printing, in Oriental and other foreign languages, Bibles, Testaments, and other works for the British and Foreign Bible Society'.<sup>13</sup>

It was the death of Richard Watts in 1844, rather than the low quality of printing in foreign scripts (as maintained in Austin's obituary notice in the *Hertfordshire Mercury* on 28 May 1892), which placed Stephen Austin at the forefront of foreign printing, and printer to the EIC.<sup>14</sup> The printing office of Stephen Austin & Sons was established in 1768.<sup>15</sup> It is not exactly known when the firm was appointed as one of the booksellers to the EIC. However, it was probably soon after the establishment of the EICC in Hertford, not far from where the firm of Stephen Austin was located (figure 5.2). By 1804, the EIC had, as previously discussed, assumed the position that recruits should be educated not in India but in England, before going overseas. It was therefore agreed by the Court of the Company to find a suitable house within a reasonable distance of London and to appoint an educational staff for this purpose. It was this declaration which ultimately led to the emergence of Stephen Austin's as leading printers of foreign scripts. Stephen Austin II must have been appointed a bookseller to the college almost immediately after it was opened, apparent from a note left by his son stating this was the case, and that his father had been printer to the EIC college for 60 years.<sup>16</sup> Considering the official closure of the college in 1857, the number of years is a clear over-estimation, however, this was not the end of his association with the EIC; as print

---

11 Ibid.

12 Reed, Talbot Baines. *A history of the old English letter foundries*. London, Elliot Stock, 1887, p. 363.

13 Bowes, Robert. 'Biographical notes on the university printers from the commencement of printing in Cambridge to the present time.' *Cambridge Antiquarian Society*, 1886, p. 323.

14 *The Hertfordshire Mercury*. Vol. LVII. Hertford, 28 May 1892.

15 Moran. *Stephen Austin of Hertford*, 1968.

16 Danvers, Frederick Charles, et al. *Memorials of old Haileybury College*. Westminster, Archibald Constable and Company, 1894.



historian James Moran puts it, ‘Stephen Austin III continued to look after the Library after the closure. On 7 October 1861 he received a cheque for £150 for this service’.<sup>17</sup>

Two distinct Gurmukhi typefaces can be seen in the specimens and printed outputs of Stephen Austin & Sons that include their foreign printing types. A list of these specimens consulted for this research are as follows:

- *Specimens of Oriental and other types in use at the office of Stephen Austin & Sons.* Hertford, Stephen Austin & Sons, 1870(?).<sup>18</sup>
- *Specimens of various types in Oriental and other foreign languages.* Hertford, Stephen Austin & Sons, 1885.<sup>19</sup>
- *Specimen founts of Oriental and foreign languages.* Stephen Austin & Sons, 1916.<sup>20</sup>
- *Oriental and foreign types used by Stephen Austin & Sons, Oriental and general printers, Hertford, England.* Stephen Austin & Sons, 1932.<sup>21</sup>
- *The story of the opening of the new factory at Caxton Hill.* Stephen Austin & Sons, 1954.
- *A simplified grammar and reading book of the Panjabi language* by William St Clair Tisdall, Frederick Ungar Publishing Co, 1961.
- *Continental and Oriental type list.* Stephen Austin & Sons, 1958 (?).<sup>22</sup>
- *Foreign language type list.* Stephen Austin & Sons, 1972 (?).<sup>23</sup>

Of their two Gurmukhi founts, the first can be seen in use in type specimens from the years 1870, 1885, 1916, and 1932 and the grammar book of Tisdall; this means the printing types were not designed, cut, and cast by Stephen Austin nor any of his sons or employees, as the firm only entered the type founding business in 1941. Prior to the early 1940s, the firm was mostly focused on printing, and

<sup>17</sup> Moran. *Stephen Austin of Hertford*, 1968, p. 23.

<sup>18</sup> *Specimens of Oriental and other types in use at the office of Stephen Austin & Sons.* Hertford, Stephen Austin & Sons, 187(?). BL shelfmark: Asia, Pacific & Africa V 3646. This specimen book is undated, and listed as [187-] on the BL catalogue and website. However, a paper placed inside the physical copy held at the BL dates it as being from the year 1870.

<sup>19</sup> *Specimens of various types in Oriental and other foreign languages.* Hertford, Stephen Austin & Sons, 1885. BL shelfmark: general reference collection 11899.ff.33.

<sup>20</sup> *Specimen founts of Oriental and foreign languages.* Stephen Austin & Sons, 1916. BL shelfmark: Asia, Pacific & Africa YD.2004.b.92.

<sup>21</sup> *Oriental and foreign types used by Stephen Austin & Sons, Oriental and general printers, Hertford, England.* Stephen Austin & Sons, 1932. BL shelfmark: Asia, Pacific & Africa V 25269.

<sup>22</sup> *Continental and Oriental type list.* Stephen Austin & Sons, 1958. BL shelfmark(s): Asia, Pacific & Africa ORW.1989.a.2413; Asia, Pacific & Africa ORW.1993.a.938. This specimen book is undated. In the introduction page, however, a statement is made about the experience accumulated at the establishment in ‘the past 190 years’. Considering the printing office was established in 1768, this places the copy at being produced around roughly 1958.

<sup>23</sup> *Foreign language type list.* Stephen Austin & Sons, 1972. BL shelfmark(s): Asia, Pacific & Africa ORW.1989.a.2412; Asia, Pacific & Africa ORW.1993.a.1615. This specimen book is undated, and listed as [188-?] on the BL catalogue and website. The archivists at St Bride printing library in London list the year of publication for this document as 1972 in their catalogue.





Figure 5.3. The composing department, comprising the 'Oriental', magazine, book, and jobbing sections of the type foundry of Stephen Austin & Sons. From author's personal copy of *The story of the opening of the new factory at Caxton Hill*, Stephen Austin & Sons, 1954.



foreign types were often bought from foundries in other countries, such as the firm of Schelter and Giesecke in Leipzig, Tetterode in Rotterdam, Enschedé en Zonen of Haarlem, and Commercial Press Limited of Shanghai, China.<sup>24</sup> This research could not ascertain whether any of these foundries were suppliers for the Gurmukhi printing types initially used by Stephen Austin & Sons, and a quick comparison of this design against previous Gurmukhi types does not provide an indication of where these founts were obtained to print in this writing system.

Around 1941 and with the start of the second World War, a challenge in purchasing founts from abroad (evidently more so in the case of founts previously obtained from German foundries) gradually made itself apparent. As such, a new department was initiated and Stephen Austin & Sons began a new phase of the establishment as a type foundry with composing and matrix-making departments (figure 5.3). By the mid 1950s, six people were employed to create matrices for the company's foreign types, which were used for casting on the Monotype machine.<sup>25</sup> This research was unable to find any traces of the individuals who were involved in the creation of the new Gurmukhi fount for Stephen Austin & Sons that was unique to this foundry.

## 5.2 The printing legacy of Richard Watts

After the death of Richard Watts in 1844, his foundry (and the entirety of his printing material, which is reported to have contained every script the Bible had been printed in at that time) was succeeded by his son, William Mavor Watts, who subsequently moved the business to Gray's Inn Road in 1870, where he erected a new foundry. Shortly thereafter, a fire broke out at the premises that destroyed all of the types held there. However, the punches and the matrices were preserved in another building and were saved from destruction. Some time later in the same year (and not long after the fire), the entire collection from the younger Watts was passed to the Gilbert & Rivington printing office, where the types were recast.<sup>26</sup> It is not clear whether the fire destroyed any existing Gurmukhi type in the collection. Nevertheless, this collection included numerous founts in various scripts, and was described as comprising over 200 languages, and a variety of different dialects, making it an assortment that embraced nearly all written languages in the world.<sup>27</sup>

As stated previously, the type foundry of Richard Watts was initially purchased

<sup>24</sup> Moran. *Stephen Austin of Hertford*, 1968.

<sup>25</sup> Ibid. The next chapter will discuss the advantages and limitations of the Monotype machine in detail.

<sup>26</sup> Reed. *A history of the old English letter foundries*, 1887.

<sup>27</sup> Bigmore, Edward Clements, and Charles William Henry Wyman, editors. *A bibliography of printing*. Vol. 1, Cambridge University Press, 2014.



by the publishing office of Gilbert & Rivington, which was in turn acquired by William Clowes & Sons, the final inheritors of the types originally cast and produced by Watts at his foundry. The first of the two, the firm of Gilbert & Rivington, was established in 1830, when printer Richard Gilbert partnered with William Rivington—the great-grandson of British publisher Charles Rivington—and subsequently the name of their establishment was changed to reflect the partnership.<sup>28</sup> The publishing house would go on to become known as one of the leading printers of various scripts of the world; in an article from the *British Printer* magazine titled *Gilbert & Rivington, the famous Oriental printers*, the firm is described as possessing a pre-eminence in the printing of foreign works:

As Orientalist advertising agents the house enjoys a unique reputation; and to show somewhat the extent of the work usually in hand, it may be mentioned that they are Oriental printers to the British Museum, the India Office, British and Foreign Bible Society, S. P. C. K., Church Missionary Society, Church of England Zenana Missionary Society, Egypt Exploration fund; and, in short, they are prepared to print anything from a visiting card to a ten volume history in any ancient or modern language of the world.<sup>29</sup>

The writer of the above (whose name does not appear to have been documented anywhere in the issue) continues with a description of the printing facilities at Gilbert & Rivington, making comments on the large number of staff occupied in the composing rooms for ‘Oriental’ setting, as well a number of the scripts including the Chinese, Arabic, Syriac, and Sanskrit—about which he notes that the need for accents and kerned sections ‘render justification quite a fine art, accents on varying bodies needing to be utilised’.<sup>30</sup> He makes no mention of the Gurmukhi type of Gilbert & Rivington, yet he does remark that the firm seemed to have a significant output of ‘Hindustani’ work, and that they possessed seven sizes of type in this language.<sup>31</sup>

The number of Gurmukhi founts in the collection of Gilbert & Rivington, however, seems to have been limited to two. The earliest of these can be seen printed for the first time in 1872, and then repeated again in the foundry’s specimen from 1875, in which the same sample text from the third chapter, verse 16, of *The Gospel of St John in a variety of languages and dialects* is set in this typeface (figure 5.4). Both of these specimens were printed for the BFBS.<sup>32 33</sup> The later

<sup>28</sup> Bigmore and Wyman, eds. *A bibliography of printing*. Vol. 2, Cambridge University Press, 2014, p. 263.

<sup>29</sup> ‘Gilbert and Rivington, the famous Oriental printers.’ *British Printer*, Mar.-Apr. 1895, pp. 80-81.

<sup>30</sup> *Ibid.*

<sup>31</sup> *Ibid.*

<sup>32</sup> *Specimens of some of the Oriental and foreign type now in use in Gilbert & Rivington’s printing offices*. London, Gilbert & Rivington, 1872. The Library of Congress, call number: 8320491.

<sup>33</sup> *St John III. 16, in some of the languages and dialects in which the British & Foreign Bible Society has printed the Holy Scriptures*. London, Gilbert & Rivington, 1875. BL shelfmark: general reference collection 11902.aa.45.

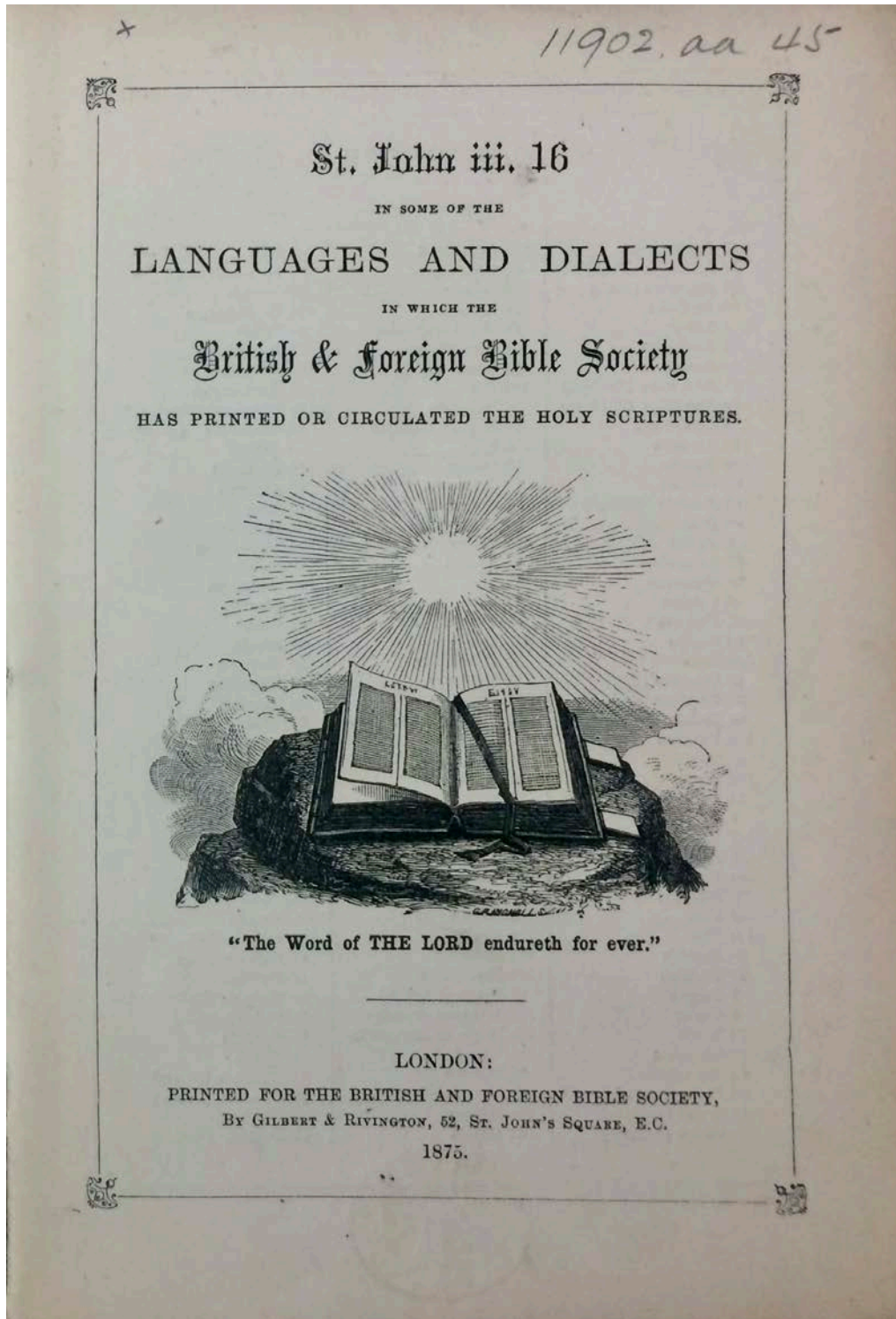


Figure 5.4. Cover page of *St John III. 16*, in some of the languages and dialects in which the British & Foreign Bible Society has printed the Holy Scriptures. London, Gilbert & Rivington, 1875. From the BL, shelfmark: general reference collection 11902.aa.45.

design would first be used for printing in 1891, in *The Lord's Prayer in three hundred languages* (1891), and *The Lord's Prayer in five hundred languages* (1905).<sup>34 35</sup>

The successors of Gilbert & Rivington, William Clowes & Sons, absorbed the former printers' firm to equip themselves with materials required to print in other languages and scripts. With the augmented stock, William Clowes & Sons became a member of the limited number of printers and foundries associated with printing in foreign writing systems. The exact date of their acquisition of the firm of Gilbert & Rivington is unknown. However, an announcement in the *British Printer* dating August–September 1907, states that ‘The famous firm of Gilbert & Rivington, which has been absorbed by Messrs. Clowes & Sons, of Blackfriars, enjoyed for half a century or so a high reputation for the scholarly production of “foreign work” of very special character. Its plant contains some of the most outlandish founts ever cast, the very names of many of the languages and dialects represented being entirely unfamiliar to the average linguist, whose experience of the weirdly uncouth in typography does not extend much beyond Esperanto’.<sup>36</sup> No doubt the remark on ‘outlandish’ founts refers to some of the scripts less familiar in name and appearance to a British individual, regardless, this shows that in late 1907, the purchase of Gilbert & Rivington was complete. In two separate copies of *The Lord's prayer in five hundred languages* consulted for this research, a paper inserted over the first sheet in the book reads:

The Lord's Prayer in Five Hundred Languages, originally issued by Messrs. Gilbert and Rivington, is now published by us at our Office, at 23, Cockspur Street, Charing Cross, as we have taken over the business of Messrs. Gilbert and Rivington, Ltd., with all their Oriental, Foreign and peculiar types, together with their trained staff. The Oriental and Classical Printing Department, now the most complete, and one of the largest, if not the largest, in the world, is installed at our principal London works, at Duke Street, Stamford Street, S. E., where we undertake Translating and Printing in all the living and dead languages [sic].<sup>37</sup>

The volume displays the Gurmukhi exactly as it appears in the earlier version of the book (*The Lord's Prayer in three hundred languages*). However, an added section for the Sindhi translation in the Gurmukhi script shows extended use of the Gurmukhi fount, and other letterforms not found elsewhere in prior examples (see chapter 7 for more on the designs).

<sup>34</sup> *The Lord's Prayer in three hundred languages*. London, Gilbert & Rivington, 1891. BL shelfmark: general reference collection 4406.g.6.

<sup>35</sup> *The Lord's Prayer in five hundred languages*. London, Gilbert & Rivington, 1905. BL shelfmark: general reference collection 2272.g.3.

<sup>36</sup> Clowes, William Beaufoy. *Family Business, 1803-1953*. William Clowes & Sons, 1953.

<sup>37</sup> *Lord's Prayer in five hundred languages*. 1905, cover page.

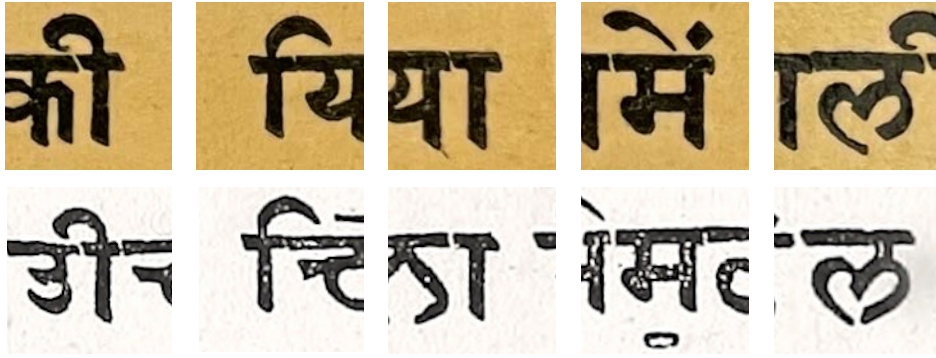


Figure 5.5. A comparison of the shaping similarities between the Gurmukhi letterforms from Gilbert & Rivington's 1872 Gurmukhi (bottom row), and the Devanagari fount of Richard Watts (top row). Images cropped from *Oriental and other types in ninety-seven languages or dialects, principally prepared by the late Mr R. Watts*. London, 1859. BL shelfmark: general reference collection 1856.g.7.(10.), and *Specimens of some of the Oriental and foreign type now in use in Gilbert & Rivington's printing offices*. London, Gilbert & Rivington, 1872. The Library of Congress, call number: 8320491.

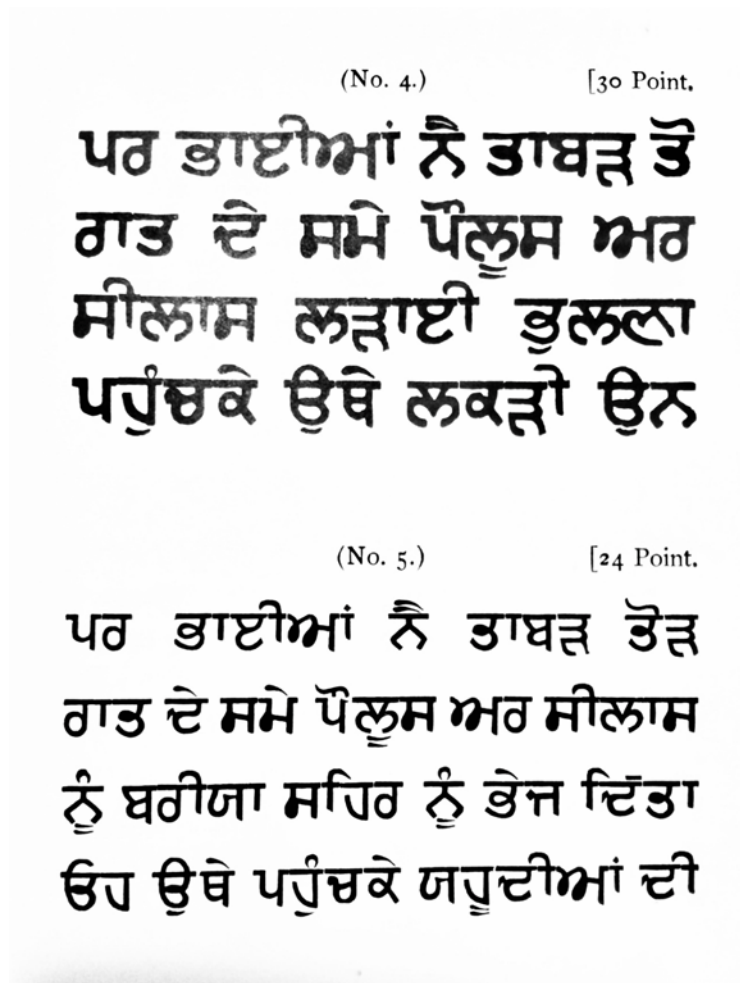


Figure 5.6. The Gurmukhi fount of William Clowes & Sons enlarged to 24 and 30 point. From *Some Specimens of the Roman, Oriental, and foreign types now in use in the offices of William Clowes & Sons, etc.* William Clowes & Sons, 1908. BL shelfmark: general reference collection 11916.1.22.



When attempting to ascertain the origins of Gilbert & Rivington's first fount of Gurmukhi, the obvious answer is that it must have come from the sorts and matrices acquired from Watts' foundry. While no evidence could be found that Richard Watts or his son William ever printed in the Gurmukhi script, they boasted the ability to print in all languages. It was not uncommon for printers to use exaggerations like this when advertising their work, however it would be curious that they would not have cut and cast a fount for such a widely used writing system. A comparison of Gilbert & Rivington's earlier Gurmukhi fount against the founts used in Watt's foundry to set Hindi and Mahratta texts (found in a large specimen sheet displaying '*Oriental and other types' in ninety-seven languages and dialects issued from the foundry*) shows several characters that have almost the exact same outline and structure, with any dissimilarities visible between these printed outputs likely being a result of printing conditions, or erosion of the metal sorts (figure 5.5).<sup>38</sup>

None of the characters used for comparison in figure 5.5 are unique to Gurmukhi (but rather shared between a number of North Indian writing systems), so it remains an uncertainty whether Watts ever cast Gurmukhi type, but it can be said with certainty that the British typefounder's work was at the very least a starting point for what was to become Gilbert & Rivington's first Gurmukhi fount. Regardless, the name of the individuals involved in the design and cutting of these punches and their potential sources of inspiration for the shaping of the characters is unknown. Also unknown is the exact date in which the type was produced; as stated previously, the earliest date in which the fount can be seen in use is 1872, but a more exact estimation of the production date was not possible.

Similar to their predecessors, William Clowes & Sons issued their own specimen of printing types, titled *Some specimens of the Roman, Oriental, and foreign types now in use in the offices of William Clowes & Sons, etc.*<sup>39</sup> A total of eight sizes of their Gurmukhi fount is shown in this specimen. It is clear upon inspection that these founts are from Gilbert & Rivington's 1891 Gurmukhi typeface (figure 5.6), with any variations likely resulting from the crude enlargement process.

### 5.3 Vincent Figgins and Steven Shanks & Company

Former apprentice to printer and type founder Joseph Jackson (himself an apprentice to renowned printer William Caxton), Vincent Figgins set up his

<sup>38</sup> *Oriental and other types in ninety-seven languages or dialects, principally prepared by the late Mr R. Watts.* London, 1859. BL shelfmark: general reference collection 1856.g.7.(10.).

<sup>39</sup> *Some Specimens of the Roman, Oriental, and foreign types now in use in the offices of William Clowes & Sons, etc.* William Clowes & Sons, 1908. BL shelfmark: general reference collection 11916.l.22.





own foundry upon the death of Jackson in 1792.<sup>40</sup> He initiated his printing efforts in his new establishment by continuing the work started by Jackson's punch-cutter (under Figgins' management), to create a double-pica Greek type for the Oxford University Press.<sup>41</sup> A year after, in 1793, the foundry published its first type specimen, already presenting itself as a developer and printer of founts for various writing systems. In his review of early type specimens, printer William Blades described the Figgins specimen as only having seven founts of Roman, and thirty-one founts of Hebrew, Greek, Ethiopic, Samaritan, and Saxon.<sup>42</sup> By 1826, Figgins had gained experience in the production of founts for many of the scripts of India with his Telugu, Devanagari, and Bengali founts.<sup>43</sup> It appears that he often enlisted the help of manuscripts and handwritten examples in addition to that of Orientalists and evangelicals to create his printing types. For example, he was known to make use of the supervision of William Ousley and Claudius Buchanan in the cutting of his Persian and Syriac types, or a Telugu manuscript to create his fount for this writing system in 1802, the moulds and matrices of which were given to the Library of the EIC, for which the fount had been created.<sup>44</sup> Upon his death, the foundry was carried on by his sons, James Figgins and Vincent Figgins, who renamed the company to V. & J. Figgins upon their takeover of the responsibilities of overseeing the printing and developing of new founts.

The foundry of V. & J. Figgins quickly became known for their high quality founts in various writing systems, as well as their range in supplying everything from newspaper and text type, to designs intended for use in display (large) sizes. About the scope of their supplies, James Figgins commented in an essay that the foundry supplied a variety of styles in Latin, and that 'the type in which the languages of the world are expressed has not been neglected—Greek, Hebrew, Arabic, Hindustani, Malayan, Sindhi, Persian, Pushtu, Turkish, Punjabi, Tamil, Siamese, and Gaelic, have all claimed a considerable share of attention, and classical, Oriental, and national printing of all kinds can now be undertaken without difficulty. The founts are up to date, and meet with the hearty approval of the best and most critical scholars'.<sup>45</sup>

This statement from James Figgins seems like a bold proclamation of the foundry's capabilities and outputs. However, it is not uncommon to come across praise for the founder and his work; it was said by Mr. John Nichols (a close friend

40 Mosley, James. 'The typefoundry of Vincent Figgins 1792-1836.' *Motif*, iss. 1, Nov. 1958, pp. 29-36.

41 Figgins, Vincent II. *The game of the chesse*. London, V. & J. Figgins, 1855.

42 Blades, William. *Some early type specimen books of England, Holland, France, Italy and Germany*. London, Reprinted from the 'Printers' register.' 1875.

43 Ross, Fiona. 'Historical technological impacts on the visual representation of language with reference to South-Asian typeforms.' *Philological Encounters*, vol. 3, no. 4, 2018, pp. 441-468.

44 'Messrs. Figgins's typefoundry.' *The Printer's Journal and Typographical Magazine*, vol. 1, no. 33, May 1866, pp. 99-100.

45 Figgins, James. *Type founding and printing during the 19th century*. V. & J. Figgins, 1900, p. 13.

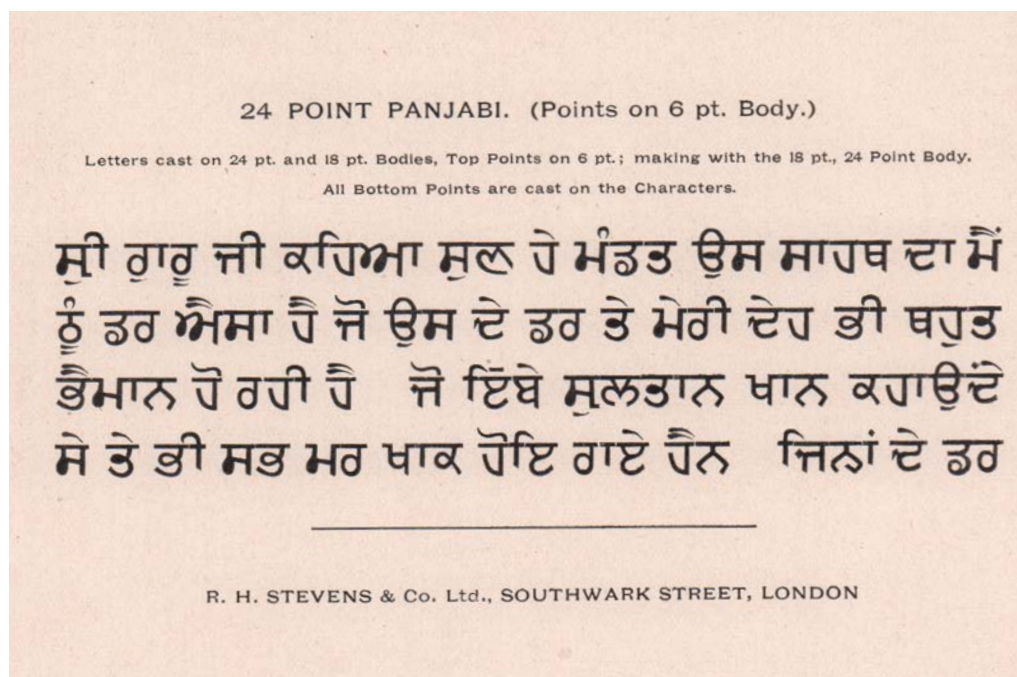


Figure 5.7. The Gurmukhi fount of R. H. Stevens & Company, a re-casting of the 1891 design from Gilbert & Rivington, enlarged to 24 point. From undated folio housed at the St Bride Library in London, shelfmark unknown.

of Joseph Jackson) that ‘with an ample portion of his kind instructor’s reputation, he inherits a considerable share of his talents and industry; and has distinguished himself by the many beautiful specimens he has produced; and particularly of Oriental types’.<sup>46</sup> As historian Talbot Baines Reed points out, Vincent Figgins’s Hebrew type exceeded in beauty the best of those that came before, and that his work on ‘masterpieces of typographic art’ positioned him as an established type founder.<sup>47</sup> Type historian Ross remarks on the good standing of Figgins as well, also pointing out his experience with regard to the writing systems of India, for which he had the experience of working on a few, including his Telugu for the EIC, as well as accomplished founts of Bengali and Devanagari. In an analysis of the synopsis of characters he cast for these scripts, she notes:

These synopses, possibly issued posthumously by Vincent Figgins’s son, reveal the systematic determination of each character repertoire in concert with what Figgins had identified as the appropriate methods for composing the complex joining scripts of north India.<sup>48</sup>

There appears to be only one Gurmukhi fount in the repertoire of V. & J. Figgins; a pica (12 point) Panjabi. It is not at all clear when this was designed, cut, and cast, or first used. However, the specimen (a synopsis sheet showing all the characters in the fount) was possibly published by his son after his death, around the 1880s. This undated character synopsis sheet is housed at the archives of St Bride printing library in London, and shows an extensive set of 149 characters in the Gurmukhi fount.

The last of the Figgins—James—died in June 1907. Upon his death, his nephew, R. H. Stevens, established a new foundry in his own name, R. H. Stevens & Company Ltd, and moved the foundry to London’s Southwark Street. By 1933, the merger of this foundry and the Patent Type Foundry (belonging to M. Shanks) resulted in the creation of the firm of Stevens, Shanks & Company Limited, the last of the old London type foundries.<sup>49</sup> The Gurmukhi fount of R. H. Stevens is an outlier from the previous examples in that it is cast on a 24 point type size, marking it as something intended for use in large sizes, perhaps for educational purposes of the untrained reader, or for displays and titles. The fount is, as in the case of William Clowes & Sons, the same Gurmukhi design from Gilbert & Rivington first seen in use in 1891. However the process of enlarging the letterforms is more refined in the version from R. H. Stevens (figure 5.7).

<sup>46</sup> Nichols, John. *Literary anecdotes of the eighteenth century*. Vol. 7, Cambridge University Press, 2014.

<sup>47</sup> Reed. *History of the old English letter foundries*, 1887.

<sup>48</sup> Ross. ‘*South-Asian typeforms*.’ 2018, p. 452.

<sup>49</sup> Mosley, James. ‘Memories of an apprentice typefounder.’ *Matrix*, no. 21, 2001, pp. 1–13.



#### 5.4 The Gurmukhi type of Oxford University Press<sup>50</sup>

With a long and rich history of printing dating back to the fifteenth century, Oxford University Press (OUP) is the largest university press in the world and for over 500 years printing, this establishment in Oxford has contributed to the dissemination of knowledge in Britain. OUP has also had a major impact on global readerships and, as a major printer of academic works, Bibles and prayer books, it has made a noteworthy contribution to international scholarly communication.<sup>51</sup> It was Archbishop Laud, Chancellor of the University, who first obtained the ‘privilege’ from the Crown to print the King James Bible at Oxford. From 1629, as a result of the efforts of Laud and his successors, OUP began printing in local vernaculars, producing books—including the Bible—in a variety of scripts, particularly those of the Indian subcontinent. The activities of OUP in British India are complicated and the impact of its publishing on the native readership is outside the scope of this article. However, OUP’s presence in India resulted in Indo-Iranian becoming the largest group of scripts printed by the press. One such script was Gurmukhi.<sup>52</sup>

As discussed at the beginning of this chapter, the first known attempt to develop (and print with) a fount of Gurmukhi dates back to 1809, when the Serampore Mission Press commenced printing the New Testament with their newly cast type. It was sixty-eight years later, in 1877, that OUP produced a fount of Gurmukhi—hereafter referred to as OUP Gurmukhi—which was designed and cast specifically to print the St John’s Gospel in the Sindhi language. Although Gilbert & Rivington had earlier used the Gurmukhi script for printing a Sindhi text in 1873, the OUP St John’s Gospel is one of the earliest and most notable examples of Gurmukhi movable type being used for printing Sindhi, which has historically been set using a variety of scripts including Arabic, Devanagari, Gujarati, and Khojki.

This adoption of the Gurmukhi writing system was not a simple process and the script had to undergo some changes before it could be used for Sindhi. The major alteration was the addition of base letterforms, and subscript and superscript marks to accommodate phonemes not originally present in the Gurmukhi script but which were necessary for Sindhi. The main point of differentiation between OUP Gurmukhi and the fount used by Gilbert & Rivington is the amount of contrast in the strokes of the letterforms. While Gilbert & Rivington’s design followed a mono-linear structure, in OUP Gurmukhi there is a

<sup>50</sup> A version of this history on the Gurmukhi fount of Oxford University Press (with some minor changes) was previously published in an article from the author. See Afshar, Sahar. ‘The Gurmukhi type of Oxford University Press.’ *Midland History*, vol. 45, no. 2, 2020, pp. 161-175.

<sup>51</sup> Oxford University Press. *Some account of the Oxford University Press, 1468–1921*. Clarendon Press, 1922.

<sup>52</sup> Chatterjee, Rimi B. *Empires of the mind: a history of the Oxford University Press in India under the Raj*. Oxford University Press, 2006.



distinct variation in the width of the strokes, an approach that mimics the effect of a writing tool with a slanted broad nib.

The effort and strategies taken by those involved in the development of this unique design marks a significant stage in the evolution of Gurmukhi type and printing history. However, the process of developing this fount has, to my knowledge, never been discussed. The only documentation of the events that led to the development of the fount are twenty-four letters of correspondence (a total of sixty-five pages) exchanged between some of those involved in the production process, including:

- Reverend Andrew Burn, the chief editor of the Gospel;
- Edward Pickard Hall (1808–86), partner and chief manager of the University Bible Press, and eventually the senior managing partner of the Clarendon Press;<sup>53</sup>
- Thomas Combe (1796–1872), superintendent of the learned, or classical, side of OUP and later on, senior partner of the Press;
- Professor Bartholomew Price, secretary to the press, whom upon the death of Combe assumed the role of general manager of the press on 1 November 1872;
- James Franklin, the main contact between OUP and the BFBS;
- P. M. Shanks, manager of the Patent Type Founding Company, which was tasked with manufacturing the Gurmukhi fount for OUP (prior to their merger with the Figgins foundry).

The correspondence can be found in a bundled envelope labelled ‘*Bible in Gurumukhi, 1872–74*’, which is housed in the OUPA along with two type cases containing the remaining sorts,<sup>54</sup> of OUP Gurmukhi, and a specimen book titled *Anglo-Saxon, German, Gothic, Oriental, Russian and other types (not being Roman, italic, or jobbing types) in use at the Oxford University Press*.<sup>55</sup> Written in varying degrees of legibility, some of the correspondence, such as that composed by Shanks, are in a clear cursive hand while others appear in a scrawled hand—letters from Burn are particularly difficult to read. While the ink has generally remained intact, parts of the correspondence indicate the writer ran short of ink on their pen as the writing fades before giving way to words written with a freshly inked nib, as evident from the bleed of the ink onto the page—another hindrance to deciphering the contents. Regardless, the correspondence is a notable primary resource that provides insight into the process behind the development of OUP

<sup>53</sup> Edward Pickard Hall. Friends of St Sepulchre’s Cemetery, [www.stsepulchres.org.uk/burials/hall\\_edward.html](http://www.stsepulchres.org.uk/burials/hall_edward.html). Accessed 2 Sept. 2019.

<sup>54</sup> In hand composition, a ‘sort’ is a piece of metal type representing a particular letterform, punctuation mark or symbol.

<sup>55</sup> Hart, Horice. *Anglo-Saxon, German, Gothic, Oriental, Russian and other types (not being Roman, italic, or jobbing types) in use at the Oxford University Press*. Oxford University Press, 1901.





Gurmukhi. The sorts in the two type-cases in the OUPA comprise nearly all the characters that make up OUP Gurmukhi as indicated by the *List of ancient and modern Greek and Oriental founts at the University Press Oxford* which describes OUP Gurmukhi thus:

The punch-struck matrices for this fount are numbered from 1 to 157, with the exception of numbers 59 and 140 for which no matrices exist. The type was cast at Oxford about 1876, and used for *The Gospel according to St John* (in Sindhi), edited by the Rev.-Burns [sic], Missionary, and printed for the B. & F. B. S., in 1877. There are duplicate matrices for numbers 141–2 and 143–4. Numbers 49–54, 56–58, 132, and 135–139 are cast on a Pearl body. Weight of fount December 1956: 350 lb.<sup>56</sup>

The type was generally found to be in a good condition, with no visible signs of wear or corrosion, an indication that it did not see much use beyond the printing of the *St John's Gospel*. This was verified by the current OUP archivist, Dr Martin Maw, who confirmed that, to his knowledge, the types were never used to print anything other than the *St John's Gospel*. The material in the OUPA helped create a timeline for the production of the types, provided explanations for the design decisions behind the unique shaping of the letterforms, and revealed the names of the individuals involved in their manufacture. Cross-referencing this material with primary resources such as type specimens and the final printed edition of the *St John's Gospel* (BL), alongside comparing OUP Gurmukhi with other OUP types used for printing in Sanskrit helped eliminate gaps in the history. This methodology also enabled an assessment of the impact of technical constraints on the production of a script for which of letterpress printing was not well suited. The undertaking of printing the *St John's Gospel* in Sindhi began in 1858, when the BFBS formed a translation committee with Rev. Andrew Burn of Karachi as the chief translator. The Reports of the BFBS of 1871 state:

In addition to the Four Gospels and Acts, which have already left the press, translations of the Book of Genesis and the Epistle to the Romans and Corinthians have been sent over by the Missionaries of the Church Missionary Society. They are being printed under the editorship of the Rev. A. Burn, who has kindly given his services gratuitously. Mr. Burn has also taken great pains to get patterns for the cutting of type in the Gurumukhi [sic] character, in which the Committee have undertaken to print *St John's Gospel* as a first experiment. Satisfactory patterns have now been received, and the work is about to be printed at the Oxford University Press.<sup>57</sup>

<sup>56</sup> Oxford University Press. *List of ancient and modern Greek and Oriental founts at the University Press*. Oxford University Press, 1959, p. 42.

<sup>57</sup> British and Foreign Bible Society. *The sixty-seventh report of the British and Foreign Bible Society, M.DCCCLXXI: with an appendix and a list of subscribers and benefactors*. London, BFBS, 1871, p. 368.

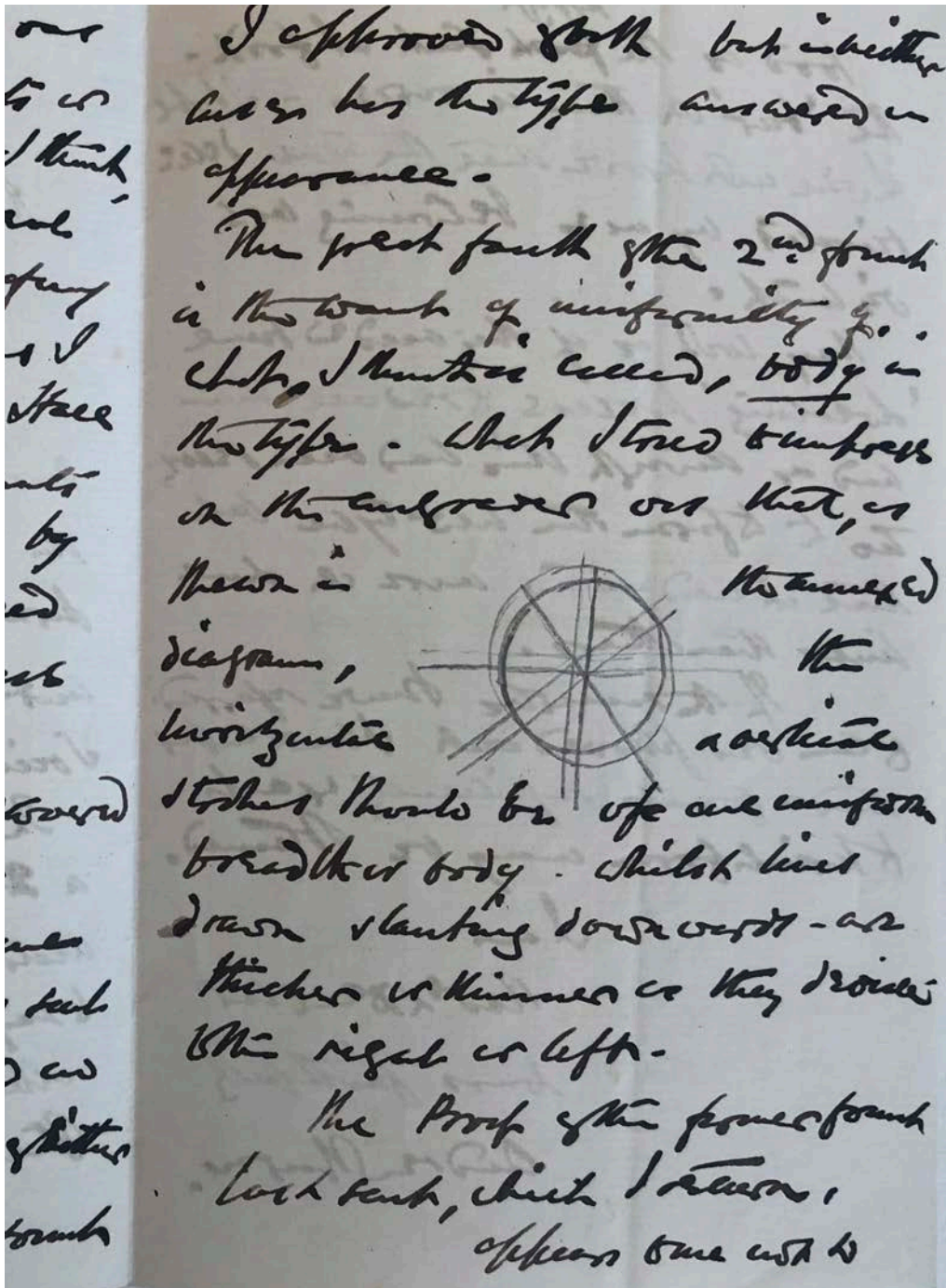


Figure 5.8. Correspondence between Andrew Burn of the BFBS and Professor Bartholomew Price of OUP dated 9 Sept. 1874, in which Burn shared a diagram showing the thickness of the strokes a slanted nib would create when drawn vertically, horizontally, and diagonal angles. From the OUPA.

Beyond this, not much is known of Burn; no mention is made of his activities nor achievements in Canton's *A History of the British and Foreign Bible Society*, apart from a passing reference to the formation of the translation committee under his supervision.<sup>58</sup> Nevertheless, Burn played an important part as editor of this particular volume. More importantly, he was behind many decisions that determined the appearance of OUP Gurmukhi, and the number of sorts required. In correspondence relating to OUP Gurmukhi, James Franklin notes Burn's desire to make the printed book as much like manuscripts as possible, and that 'the type patterns which Mr. Burn gave are to be strictly adhered to'.<sup>59</sup>

Burn made great efforts to ensure consistency between the logic of calligraphic Gurmukhi and the types manufactured for the BFBS. Writing to Professor Bartholomew Price, Burn explained the rationale for the shaping of the letterforms in a calligraphic model: that a pen cut at a forty-five degree angle with the slope on the right side (the opposite of the Latin calligraphy nib) will create uniform strokes on a horizontal and vertical axis, while lines being drawn diagonally will be thicker or thinner depending on the direction the pen is drawn.

His demand for this calligraphic approach was effective (figure 5.8). OUP Gurmukhi is the first known example of movable type manufactured for the Gurmukhi script that shows distinct contrast between the thin and thick strokes of the letterforms. Previous works such as the Gurmukhi type of the Serampore Missionary Press and Ludhiana Mission Press in India, or the works of British printers like Stephen Austin and Gilbert & Rivington all follow a similar design in the construction of the characters: strokes that do not show any intentional and consistent application of contrast. However, despite being correct in his logic of the pen movement and the lines the particular nib would create, it remains peculiar that Burn would refer to his preferred shaping as visually similar to handwritten Gurmukhi manuscripts. A survey of available samples of nineteenth century Gurmukhi handwriting quickly reveals this is not the case, as they are almost always written with uniform, mono-linear strokes. This suggests that rather than a pen nib with a calligraphic cut (a broad nib pen), the tip of the writing tool was probably a stylus with a blunt point.<sup>60</sup> While not always the case, it appears that the general preference of Gurmukhi scribes was to use a blunt or stub nib. However, as previously discussed (see chapter 3), examples of high-contrast calligraphic forms also appeared in Gurmukhi manuscripts, for example in the *Prayer book of Rani Jindan* and the anthology of 14 texts that was prepared for Rani Jindan (see chapter 3). While there are no direct and obvious parallels between

<sup>58</sup> Canton, William. *A history of the British and Foreign Bible Society*. Vol. 5, J. Murray, 1910.

<sup>59</sup> J. Franklin of the BFBS to undisclosed recipients. Correspondence dated 10 June 1872, Oxford, Oxford University Press archives (OUPA).

<sup>60</sup> The practice of using a stylus can also be seen in South Indian scripts such as Tamil and Kannada.



with a slant. This slant in the ordinary way of forming the type is given to each separate letter, and in the case of two letters adjoining these slants overlap & form a continuous line.

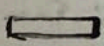
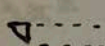
When the method adopted by Mr. Shanker both he & the workman (engraver), employed by him told me that letters could only be made to end 'square' -  and the only way in their opinion to preserve the initial & final slant in letters or words would be to have separate type for the purpose . This led to introduction of initial & final pieces.

Figure 5.9. Correspondence between Andrew Burn of the BFBS and Professor Bartholomew Price of OUP dated 9 Sept. 1874, in which Burn explains the requirement for including slanted in-stroke and out-stroke sorts to attain a calligraphic appearance in the OUP Gurmukhi typeface. From the OUPA.

the shaping of the letterforms seen in Rani Jindan's manuscripts and that of OUP Gurmukhi, it can be concluded that the manuscripts studied by Burn were written with a right-canted nib, and this is the appearance he spared no effort to achieve in the type prepared for the BFBS.

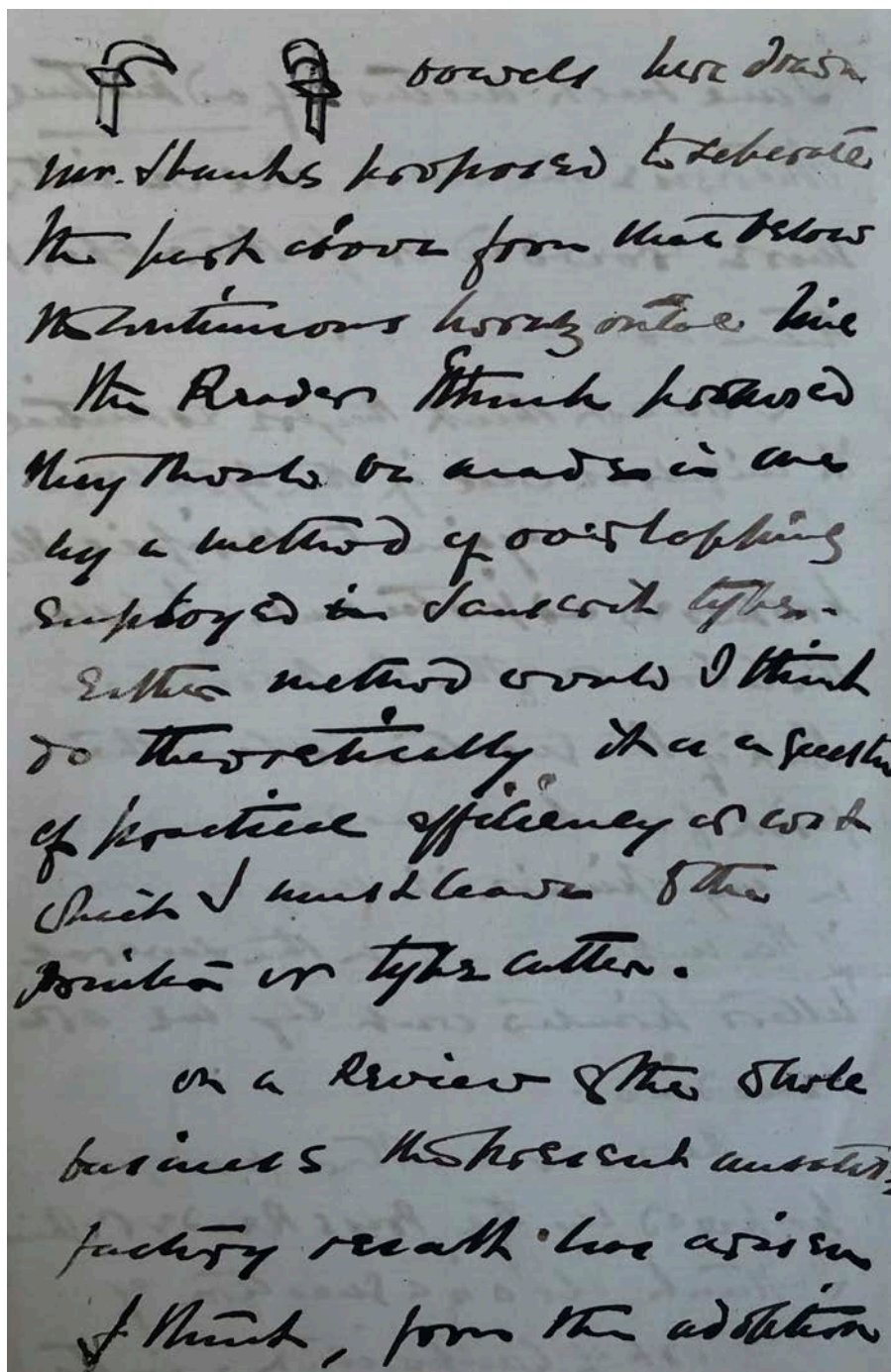
Burn was attentive to the smallest of calligraphic details; his insistence on the use of 'initial and final pieces' for diagonal instrokes and outstrokes is a clear example of this.<sup>61</sup> In another correspondence to Professor Price, he wrote that every letterform drawn in Sanskrit (it can be assumed he means the Devanagari script) or Gurmukhi must begin or end with a slant. When this slant overlaps in a pair of letterforms, he explained, the continuous top bar (headline) is created. However, it appears this was not feasible for either the manager or the engraver of the type foundry tasked with manufacturing OUP Gurmukhi. This was because a diagonal cut necessitated inter-character spacing within a word, a cumbersome process dependent on the skills of an experienced typesetter and compositor. Instead, their suggestion was to proceed with square-shaped connections and add separate initial and final pieces in the shape of a triangle to achieve the desired calligraphic effect of angled instrokes and outstrokes in the final printed outputs (figure 5.9).

When considering the angle of the initial and final pieces, if a steep cut was added to the beginning and end of each character, a considerable amount of white space would occur between all character pairs, which is not ideal. It was perhaps a similar line of thinking that resulted in another addition to the character set of OUP Gurmukhi: space-pieces. Burn continued the explanation of the initial and final pieces with a description of these space-pieces, stating that 'the adoption of the space-pieces was an extension of the same expedient' as the initial and final pieces. He continued his explanation with the inclusion of some drawings which demonstrated how some characters in Devanagari or Gurmukhi may be written closer to each other. This difference in the required spacing called for the inclusion of 'space-pieces' to better manage the amount of space in between characters, 'otherwise the letterforms will be either more crowded or further apart than as written'.<sup>62</sup> There was no evidence of these space-pieces in the OUP Gurmukhi type-cases in the archives, but it can be seen from the correspondence, and the printed volume, that these were definitely included in the fount. Furthermore, in correspondence with Price, Burn mentioned two Gurmukhi founts (it is likely that at some stage production work on one of the founts was halted), and states:

---

61 The terms 'instroke' and 'outstroke' originate from calligraphy, and refer to the initial inwards movement when the pen is placed on paper to start writing a character (instroke) and the final movement of the pen that is followed by lifting the pen off the paper to complete the character shape (outstroke).

62 A. Burn to Prof B. Price. Correspondence dated 9 Sept. 1874, OUPA.



bowels here drawn  
 Mr. Shanks proposed to separate  
 the just above from that below  
 the continuous horizontal line  
 The Reader I think perceived  
 they thought or made in one  
 by a method of oval toppling  
 employed in Sanscrit types.  
 Either method would I think  
 do theoretically, it is a question  
 of practical efficiency or cost  
 which I must leave to the  
 printer or type cutter.

On a review of the whole  
 business the present method  
 factory reach has arisen  
 I think, from the adoption

Figure 5.10. Correspondence between Andrew Burn of the BFBS and Professor Bartholomew Price of OUP dated 9 Sept. 1874, in which Burn explains the different composition methods suggested by Shanks for the OUP Gurmukhi fount. From the OUPA.

In the first found, the space-pieces were not well formed in that in print the letters were not properly joined. To this I objected, and recommended their new space-pieces should be formed of uniform 'body' with the rest of the types, or joining without 'seam' if possible, with the type on either side.<sup>63</sup>

The mention of 'seam' in this context refers to the white space that can often be seen where two characters are expected to join. In letterpress printing, white gaps could often be seen in these connections. The skills of the type-founder and justification of the types, combined with the printing conditions, could lessen the frequency or size of these gaps. In the case of OUP Gurmukhi, it is apparent from the sorts in the OUP archives that the space-pieces were not added to the main 'body' of the characters, but when aligning some of the letterforms it can be seen that such an addition would have been necessary to avoid tight letter spacing, which renders the addition of the spacing pieces vital, especially with the addition of diacritic marks.

Burn's final consideration for the design of OUP Gurmukhi was that of the vowel signs. In correspondence with Price, Burn states that two different approaches had been suggested for the manufacture of the vowel signs, namely the *sihārī* (ਿ) and the *bihārī* (ੀ). One approach was to separate the top curve at the headline level, while the other was to use an approach of 'overlapping', a method similar to the 'method of overlapping employed in the Sanscrit [sic] types'.<sup>64</sup> What was explained to Burn as two separate routes to pursue on the matter of the vowel signs was, in fact, the difference between the two methods of type assembly used at the time for hand-setting scripts such as Devanagari and Gurmukhi: the *Degree* system and the *Akhand* system.<sup>65</sup> In the end, the Akhand system was used for OUP Gurmukhi, which was against the recommendation of the manufacturer of the type, P. M. Shanks, manager of the Patent Type Foundry in London (figure 5.10).<sup>66</sup> While it appears that other printers like Stephen Austin were consulted on the matter of pricing and manufacturing of OUP Gurmukhi, ultimately the task was given to the Patent Type Foundry, which specialized in newspaper types.<sup>67</sup>

This was, perhaps, an odd decision. It would have made more sense to give the job to a foundry with experience in the production of North Indian scripts such as the foundries of Vincent Figgins or Stephen Austin & Sons. The Patent

---

63 Ibid.

64 Ibid.

65 An explanation and illustration showing the differences between the two systems can be found in the final chapter of this thesis.

66 A. Burn of the BFBS to Prof B. Price of OUP. Correspondence dated 9 Sep. 1874, OUPA.

67 Carter, John, and Graham Pollard. *An enquiry into the nature of certain nineteenth century pamphlets*. Ardent Media, 1971, p. 61.





Type Foundry was therefore probably chosen because of its competitive pricing. In correspondence dated 22 April 1872, Shanks wrote to OUP supplying a quote ‘at which we would agree to cut steel punches and supply you with justified matrices of a complete fount of Gurumukhi [sic] character, after the size of Double Pica as shown to us’.<sup>68</sup> The amount quoted by Shanks was £42 for seventy-six punches and matrices, with an estimated ten alterations to the punches and matrices. Evidently, this was a satisfactory price for OUP, and the production of the types began. Eight months later, on 13 November, Shanks wrote to OUP yet again, this time to Edward Pickard Hall, managing partner at the Clarendon Press (the name given to OUP after printing moved to the Clarendon Building in Broad Street in 1713). In his letter, Shanks discussed a new proposition to ‘re-cut the whole of the Gourumuchi [sic] characters’, and continued that they would probably cut these on metal from which they would take electrotype matrices.<sup>69</sup> He gave a short explanation of how the new fount, made with the electrotype approach, would, in almost every way, be practically the same as those made from steel punches, the only drawback being that ‘The prototypes are usually damaged in withdrawing them from the copper, but both them and the justified matrices would be of course your property’.<sup>70</sup>

Edward Pickard Hall, the man responsible for printing Bibles at OUP, also played a role in the decision-making process for OUP Gurmukhi. Born in 1808, Hall became a partner of the Clarendon Press in 1853, where he spent much of his life. He wrote extensively about his time there in *Printing, its parentage, progress, and practice: with some account of the ‘authorized version of the Bible’ providing a clear description of the Clarendon Press quarters, and the section designated for the Bible Press*, where OUP Gurmukhi was used for printing the Gospel:

In 1830 the Press underwent another migration, its business having altogether outgrown its conveniences in Broad Street, to the palatial buildings erected in Jericho, under the superintendence of Mr. Blore. These comprise a central portion devoted to a Delegates’ Room, Porter’s Lodge, and Warehouses, and two wings, each 300 ft. in length; one of which is devoted to the printing of Bibles and Prayer Books, and is called the Bible Press; the other to educational, classical, scientific, Oriental, and miscellaneous works, and is called the Learned Press.<sup>71</sup>

<sup>68</sup> P. M. Shanks of the Patent Type Foundry to Mr Gunn of OUP. Correspondence dated 22 Apr. 1872, OUPA.

<sup>69</sup> *Electrotyping* is a process of using electricity to produce an exact metal copy of an object. This reproduction method was invented in 1840, and the following year, A. Parkes took out a patent for growing matrices by electro-deposition. Legros, Lucien Alphonse, and John Cameron Grant. *Typographical printing-surfaces: the technology and mechanism of their production*. Longmans, Green, 1916, p. 484; ‘Electrotype Matrices’. *Typo: A Monthly Newspaper and Literary Review*, vol. 2, R. Coupland Harding, 1888, p. 22.

<sup>70</sup> P. M. Shanks to E. P. Hall. Correspondence dated 22 Apr. 1872, OUPA.

<sup>71</sup> Hall, Edward Pickard. *Printing, its parentage, progress, and practice: with some account of the ‘authorized version of the Bible’ and of the Clarendon Press*. Clarendon Press, 1876, p. 43.



He continued by praising the Clarendon Press for possessing equipment to print in over 150 different languages and dialects; equipment that includes founts, compositors capable of setting type in different languages, and proofreaders conversant with a variety of languages as well as different fields such as sciences, literature, and music.<sup>72</sup> While Hall was responsible for the Bible Press in 1880, the level of his involvement in the production of OUP Gurmukhi is not entirely clear. From correspondence, it can be assumed that he was a link between the Press and the BFBS. On 29 November 1872, James Franklin of the BFBS wrote to Hall to discuss the number of required matrices:

At a meeting of our Depository Sub-Committee here this day your letter of the 14th was read (re types of the Gurumukhi St John). I am directed to inform you that it is the wish of the Committee that the preparation of the types is proceeded with, but as there appears to be a difference between your statement to Mr Burn as to the number of additional characters which will be required to be cut – you having stated that the new list contains about 160 in number – which brings 77 additions to the 83 which were on the first list, Mr Burn reporting the total to be 106, being 25 only in addition to the number as first proposed. Will you kindly explain this & send for the information of the Committee a list of the 160 required if must really be so many.<sup>73</sup>

Hall responded to this the very next day, on 3 November. To an undisclosed recipient, presumed to be Franklin, Hall confirmed that he was in possession of an authorization for the depository subcommittee to proceed with the Gurmukhi matrices. In answer to the question on the number of matrices required, he responded with ‘an extract from M. Shanks’ letter of Oct 28’. In the letter, Shanks stated that he did not know how many characters would be needed, but estimated that there would be no fewer than 160 matrices.<sup>74</sup> There is no further extant communication on the number of matrices finally agreed upon. However, when comparing this to the character synopsis for OUP Gurmukhi in *List of ancient and modern Greek and Oriental founts at the University Press Oxford*, it can be seen that the number of characters is extensive, which signifies that probably a larger number were required than Burn predicted (figure 5.11). Not every character needed an independent punch. Character number 9, the *k̄*ha (ਖ̄) for example, is identical to character number 8, the *k*ha (ਖ) consonant, with the addition of a small dot on the bottom left-hand side of the former. The dots represent sounds not inherent to the Panjabi language, and are necessary for sounding loanwords from other languages like Persian. One possible approach to casting characters like this was to use the

<sup>72</sup> Ibid, pp 44-45.

<sup>73</sup> J. Franklin of the BFBS to E. P. Hall of OUP. Correspondence dated 29 Nov. 1872. OUPA.

<sup>74</sup> E. P. Hall to undisclosed recipients. Correspondence dated 30 Nov. 1872. OUPA.

**Gurumukhi**  
**Paragon 1-nk.**  
 The punch-struck matrices for this fount are numbered from 1-157, with the exception of numbers 59 and 140 for which no matrices exist. The type was cast at Oxford about 1876, and used for 'The Gospel according to St. John' (in Sindhi), edited by the Rev.—Burns, Missionary, and printed for the B. & F. B. S., in 1877.  
 There are duplicate matrices for numbers 141-2 and 143-4.  
 Numbers 49-54, 56-8, 132, and 135-9 are cast on a Pearl body.  
 Weight of fount December 1956: 350 lb.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21										
22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43									
44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74
75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94											
95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111														
112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131											
133	134	140	141-2	143-4	145	146	147	148	149	150	151	152	153	154	155	156	157													
49	50	51	52	53	54	56	57	58	132	135	136	137	138	139																

Figure 5.11. The character synopsis for OUP Gurumukhi as seen in *List of ancient and modern Greek and Oriental founts at the University Press Oxford*, Oxford, Oxford University Press, 1959, p. 42. The character set is extensive when compared to other founts of Gurumukhi. From specimen held in the Library of St Bride Foundation, London, shelf reference TS2:8X.

character with the additional dot as a starting point, and then filing down the dot to create the type without any marks. There are no indications that this was done for OUP Gurmukhi; however, it would not be surprising to find that this method was used to reduce time and costs in casting the characters, as it was a standard practice for Indian script composition such as that used by typographer Charles Wilkins.<sup>75</sup>

Characters 141–2 and 143–4 show the small triangles that were used as diagonal instroke and outstrokes (or the initial and final pieces), and characters 138 and 139 are probably the ‘space-pieces’ used for adjusting the spacing of the letterforms. The characters also include Gurmukhi numerals, consonants, vowel bearers, vowel signs, punctuation, conjuncts, nasalization marks, and tone markers. Noticeably absent from the synopsis is the halant mark (◌̣), while included in the set are a number of characters that normally do not appear in Gurmukhi, such as various base consonants with added subscript consonants (character 78–82 and 91–115) and some flipped vowel signs (characters 49–50). These were probably added to address the specificities of the Sindhi language, and to represent sounds and letterforms that do not exist in Panjabi orthography.

The Sindhi St John’s Gospel was published in 1877, but two matters regarding the people involved in the production of the final book are unclear.<sup>76</sup> Firstly, who was the binder responsible for the volume; secondly, who was the proof-reader? As regards the binder, in correspondence dated 4 April 1872, James Franklin asks of an unknown recipient whether materials have been submitted to someone by the name of Watkins, and explains that this individual is to provide them with the final book.<sup>77</sup> This is undoubtedly Lorina Watkins (d. 1852), famous for her London-based bookbinding factory. Lorina had taken over the bookbinding business from her father, Thomas Watkins, and had grown the company until it employed almost 300 staff. It was awarded a sole binding contract by the BFBS in 1845.<sup>78</sup> Thus, it can be concluded that the binding of the final volume was carried out in the Watkins factory. With regard to the proof-reader, no mention is ever made of who was tasked with the job of checking the work of Burn and the compositors for the St John’s Gospel in Sindhi. The only account of a proof-reader at the Press is that of John Cripps Pembrey (1831–1918). A ‘remarkable corrector of Oriental texts’, Pembrey had been bound apprentice in 1846. When the university awarded him an honorary MA in 1902 after fifty years at the press, the public orator observed that authors would ‘acknowledge with one voice how much of the perfection of their

<sup>75</sup> See Ross. *The printed Bengali character*, 1999.

<sup>76</sup> Burn, Andrew, editor. *St John’s Gospel in Gurumukhi Sindhi*. Oxford, British & Foreign Bible Society. 1877. BL shelfmark: Asia, Pacific & Africa 14164.aa.42.

<sup>77</sup> J. Franklin to undisclosed recipients. Letter dated 4 Apr. 1872. OUPA.

<sup>78</sup> Tidcombe, Marianne. *Women bookbinders, 1880–1920*. Oak Knoll Press, 1996, pp. 18–19.



works was due to the keen eye, the unfailing attention, and the unique experience of Mr. Pembrey'.<sup>79</sup>

In his article title *Exotics at OUP*, typographic historian David Wishart also mentions John Paul Nash, a 'specialist reader'.<sup>80</sup> Wishart quotes a note from the Press archive that reveals Nash to have been a known scholar of Hebrew, as well as Sanskrit, Persian, and 'the Indian languages'. While Nash did not work at OUP full time, on occasions when his expertise was required a car was sent to bring him to the premises.<sup>81</sup> While both men are likely candidates to have assisted in the publication of the St John's Gospel, it is not clear if that was, in reality, the case.

As for the number of copies printed and bound of the Gospel, according to correspondence between James Franklin and Thomas Combe, 'the number to be printed of the Gurmukhi St John is to be 1,500, not 1,000 as was first proposed. If you have not made an entry in your book of this change, will you kindly do so'.<sup>82</sup> There is no follow-up correspondence to indicate why the number of copies in the edition to be printed was increased by a third. It can be assumed that the BFBS was, perhaps, responding to a higher than anticipated demand from Gurmukhi readers, and that increasing the print run would have lowered the unit price, which would accord with BFBS's known preference for making low-cost bibles available to those with little to no income.<sup>83</sup>

From the inception of the translation committee in 1858, to the production of the final volume in 1877, the entire process of designing and manufacturing OUP Gurmukhi, translating, and editing the text of the Gospel according to St John into Sindhi, and printing the volume with OUP Gurmukhi took almost twenty years. This process engaged a number of individuals, institutions and societies; noteworthy among them was Rev. Andrew Burn of the Church Missionary Society, who not only carried out his duty as editor of the sacred text, but had an immense influence on the overall appearance of the fount through his insistence on a design that honoured the calligraphic traditions of written Gurmukhi, rather than replicating the appearance of Gurmukhi founts that had come before. Burn was, however, not alone in the process of creating this fount. He was greatly aided by the efforts of multiple employees of the OUP such as Edward Pickard Hall and Professor Bartholomew Price, who took measures to understand Burn's vision and interpret it in metal type.

<sup>79</sup> Louis, Wm Roger, et al. *History of Oxford University Press: volume III: 1896 to 1970*. Oxford University Press, 2013.

<sup>80</sup> Wishart, David. 'Exotics at OUP,' *Matrix*, no. 21, 2001, pp. 66–67.

<sup>81</sup> *Ibid.*

<sup>82</sup> J. Franklin to T. Combe of the OUP. Correspondence dated 3 June 1872, OUPA.

<sup>83</sup> Howsam, Leslie. *Cheap Bibles: nineteenth-century publishing and the British and Foreign Bible Society*. Cambridge University Press, 2002.





It is unclear whether the limited use of this type for the Sindhi dialect was due to the decline of using Gurmukhi for reading in Sindhi, or whether the type was not well received by a readership unaccustomed to the contrasted shapes and calligraphic appearance of the letterforms. Nevertheless, the production of OUP Gurmukhi marks a significant development in the history of Gurmukhi type; the introduction of space-pieces as a means of managing the administration of white space between characters, as well as initial and final pieces to replicate the effect of a broad-nib pen, are innovations that could have been used as a model or inspiration for expanding the potential of the Gurmukhi script in the following years. While the shaping of the letterforms leaves something to be desired when compared to manuscripts such as the Rani Jindan Prayer Book, it is clear from correspondence between the people involved that they took steps to ensure that OUP Gurmukhi was reflective of a rare handwriting tradition of contrasted characters. The resulting fount is therefore noteworthy for the inventive methods involved in its production; a development worthy of attention that has been overlooked in the history of the typographic development of Gurmukhi.

### 5.5 Conclusion

From the start of the seventeenth century until the late nineteenth century, the EIC had a need to educate cadets using textbooks printed in the writing systems of the regions these trainees would be assigned to. Furthermore, the BFBS was pursuing its aims of printing the Bible in all scripts of the world, and required printers for this ambitious goal. By the late eighteenth century, a number of printers in England began casting type in foreign scripts, or undertook the task of printing for clients such as the EIC and BFBS. Subsequently, some became known as printers to the EIC, namely Richard Watts and Stephen Austin of Hertford. The foundry and material of Watts was later acquired by the firm of Gilbert & Rivington, which itself was, in turn, absorbed by the printing establishment of William Clowes & Sons. Considering this transference of types from one business to another, it is not surprising to find that the earlier Gurmukhi type of Gilbert & Rivington from 1872 (used by the firm to print Christian scripture for the BFBS), strongly resembles aspects of Watts' Devanagari type, and that the Gurmukhi type of William Clowes & Sons is a crude enlargement of the later (1891) Gurmukhi fount of Gilbert & Rivington. What remains mysterious is that in later years, the same design emerged yet again, this time in a specimen from P. M. Shanks & Company, the peculiarity being a lack of any literature pointing to a connection between Gilbert & Rivington or William Clowes & Sons, and the firm of Shanks. Finally, towards the end of the nineteenth century, famed printer Vincent Figgins also cast a number of North Indian founts—including Gurmukhi—though it is not known if this was done for any specific client; Figgins is known to have undertaken work for both



the EIC and the BFBS. Around the same time, however, OUP also began work on the design and development of a new Gurmukhi fount, though their client was, specifically, the BFBS, which required a Gurmukhi fount for printing the St John in Sindhi. While each of these printers and typefounders had somewhat different circumstances in terms of fount production and the continuation of their work by foundries that acquired their printing types, they shared the similarity of not being intimately familiar with all the scripts they were acquiring or producing founts for. When considering the production of Gurmukhi founts by these firms and individuals based on the clients commissioning the founts or volumes, and their intended readers, the situation with printers working for colonial officials is not too far removed from missionary and evangelical printers. While the intended readers in each case are different in terms of familiarity with the script, it seems that in both instances, there was not a great appreciation or consideration for the quality of the printing types by those casting them, but rather the necessity of having a fount to quickly and repeatedly set texts and print with was prioritised. That said, there are instances of innovation in the work of British typefounders in their Gurmukhi type, such as the case of OUP Gurmukhi with their high-contrast design, and the unique proportions and appearance of the Gurmukhi type from Vincent Figgins, likely inspired by manuscript examples.

Very little is known of the individuals involved in creating Gurmukhi founts for the chief printers to the EIC and BFBS in England. One similarity all foundries (and the printing establishments that inherited their printing materials) had was the use of scholars as consultants when designing founts for scripts they could not read themselves, though judging from their printed examples, they had varying degrees of success with this method. One hypothesis for what was lacking in the work of these printers may have been the absence of input from native readers of the script, and collaboration not only with scholars, but those more familiar with the intricacies and specificities of the Gurmukhi script. The next chapter of this thesis will consider the impact of such collaboration on the work of two renowned British type foundries; Monotype and Linotype.



## 6 International collaborative practices in the development of Gurmukhi type

While the previous chapters of this thesis have focused on Gurmukhi types that were (mostly) developed for hand composition, this chapter studies mechanised manufacturing methods that were used in the mid and late twentieth century instead. In particular, it investigates the type-casting machines of two corporations, Linotype and Monotype, and considers the work of those employed by each of the two in the development of Gurmukhi faces to be composed on their equipment.<sup>1</sup> It does so by drawing significantly on primary archival resources to discover the sequence of events that led to the design and development of Gurmukhi fonts, and to determine the individuals that were involved in this process; from type drawers and sales managers, to the clients and those involved in the technical production.

As the aim of this thesis has been to trace letterform evolution in response to new technologies and their particular limitations, the chapter is thus structured to first consider the work undertaken at Monotype to manufacture hot-metal Gurmukhi founts, and how they adapted the original designs for subsequent technologies. It then proceeds to examine Linotype's work on a Gurmukhi design of their own in the following years, particularly for adaptation of the script to digital photocomposition. Both of these companies are examined separately from the foundries discussed in the previous chapter, because the work that was done at the Monotype and Linotype companies involved a great deal of international cross collaboration through the various development stages, and was not limited to the borders of Britain—from the commission and design direction influenced by clients based in India, to the design process taking place in drawing offices in Britain, and the technical assistance of partner companies in Germany (in the case of Linotype), all of which will be discussed in more detail in the chapter. The result of these collaborative efforts—the Gurmukhi fonts of these two companies, were significant not only for marking a beginning in collaboration in the development of fonts for this script, but also for the influence they had on future technological developments of digital fonts for Gurmukhi (as well as other scripts), and as such merit a documentation of the history of their production, which has not been comprehensively brought to light prior to this thesis.<sup>2</sup>

---

<sup>1</sup> Both companies underwent a number of name changes through the years with various mergers and acquisitions, as such the general names associated with each company, Monotype and Linotype, are used in this thesis.

<sup>2</sup> A brief overview of this history can be found in Williams. *Comparative study of the development of the Gurmukhi script*, 2008.



### 6.1 Type as an industry

With the gradual replacement of hand-production methods with mechanisation through the use of steam power, a shift occurred in Western methods of type manufacturing that had remained largely unchanged for 400 years.<sup>3</sup> With the invention of hot-metal type-casting and composition machines, slower, labour intensive processes could be substituted by faster mechanised type production.<sup>4</sup> Furthermore, costs of printing had decreased with the introduction of paper-making machines, lower freight charges, and—particularly in Britain—the ‘abolition of taxes on knowledge’; that is, advertisement duty (repealed in 1853), newspaper stamp duty (repealed 1855), and paper duty (repealed 1861).<sup>5</sup> This reduction of production costs also meant that the products of print were more affordable for the masses, and these factors combined with improved methods of distribution contributed to new consuming habits for readers. In turn, a profusion of readership amongst the masses with newly increased income itself fed back to the industry a demand for increased production and circulation of texts. Furthermore, the socio-political climate and wars of this period saw a rise in interest on matters of politics and economics, fueling the circulation of a greater number of newspapers and periodicals.<sup>6</sup> It was against this backdrop that printers were faced with greater demand, and were aided in responding to this need with the arrival of the new type-casting and composing technologies.<sup>7</sup>

With the new machinery for creating punches, the craftsmanship and skill required to cut punches by hand was not required for producing metal types; the outlines of letterforms could be drawn on paper, and then scaled down to a desired size with the use of a pantographic machine.<sup>8</sup> The metal types cast during

---

3 It is noteworthy that this shift was not immediate, and that hand composition and letterpress printing both persisted well into the late twentieth century. For a comprehensive description of the punch cutting process and the history of hand composition techniques, see Smeijers, Fred. *Counterpunch: making type in the sixteenth century, designing typefaces now*. Hyphen Press, 1996; Carter, Harry. *A view of early typography: up to about 1600*. Hyphen Press, 2002

4 Prior to these machines, other innovations such as the Koenig cylinder press (1814), Applegath and Cowper’s rotary presses (1848), and the Walter press (1868) had all made substantial contributions to lowering the cost of printing texts. For more, see Bowers, Fredson. ‘Printing in London from 1476 to modern times: competitive practice and technical invention in the trade of book and Bible printing, periodical production, jobbing.’ *Modern Language Quarterly*, vol. 22, no. 2, 1961, pp. 214-214.

5 For more on this, see Oats, Lynne, and Pauline Sadler. ‘The abolition of taxes on knowledge.’ *Studies in the History of Tax Law*. Hart Publishing, 2007, pp. 287-306.

6 Steinberg, Sigfrid Henry. *Five hundred years of printing*. Courier Dover Publications, 2017.

7 It is noteworthy that this is a Eurocentric view of the impact that the arrival of new hot-metal print technology had on society and culture. However, the politics of geographic influence are outside the scope of this research. For more on this, see Singh, Vaibhav. ‘The machine in the colony: technology, politics, and the typography of Devanagari in the early years of mechanization.’ *Philological Encounters*, vol. 3, no. 4, 2018, pp. 469-495.

8 A pantograph is a machine that uses a mechanical link between two arms, so that when an image is drawn with a pen on one arm, the second arm moves in parallel and creates the exact same image on a reduced or enlarged scale.





Figure 6.1. A vertical punch cutting machine with a copper pattern of the letter ä positioned and prepared for creating a smaller sized metal punch. Image taken from the Monotype machinery housed at the Type Archive, London.



typesetting were returned to the molten metal pot to be liquified and recast, eliminating the need for having a large area dedicated to storing metal types, or the tedious task of distributing types to the correct boxes in the typecases one by one post-printing.<sup>9</sup> With mechanisation, the type design process would take place in drawing studios or type drawing offices, where a drawing of each character (sometimes referred to as a 10-inch drawing) would be produced by a group of employees, whose job would be to recreate existing designs (for example typefaces that needed to now be adapted to the new technology), which would then be projected on type-proofing sheets to be traced.<sup>10</sup>

Alternatively, sometimes this work involved creating technical drawings of a designer's original drawing, or to extend the character set, weights, or styles of a given typeface. It is perhaps more accurate to say then, that designers would plan and draw the typeface, but the execution of the design in a usable format for the technology was carried out by a group of type-clerks, an occupation that previously did not exist.<sup>11</sup> In the days of hot-metal mechanical typesetting, the designs that emerged from drawing studios would be converted to copper patterns, which were then traced with a pantograph punch-cutting device, and the resulting punch was used for creating the matrices which would be installed in the hot-metal machines—all of which was done in-house (figure 6.1).

The first such apparatus was the Linotype 'linecasting' machine. It was developed by the Mergenthaler Linotype Company, which was established in 1886 to support the Blower Linotype machine, installed at the New York Tribune in the same year. As evident from its name, the linecaster was a machine that could produce entire lines of type for printing (referred to as slugs).<sup>12</sup> Following the success of the Linotype machine, a number of competitors emerged with hot-metal type-casting machinery of their own, one commercially successful example of which was the Monotype System.<sup>13</sup> This new addition to the market was invented at the Lanston Monotype Machine Company (established in 1887 by Tolbert Lanston), and could cast individual types in composed lines. Although both machines were operable through a keyboard, the Monotype system had a keyboard that was separate from the type caster. Subsequent to the keyboard operator typing

9 Despite this agency of the machines, it was not entirely uncommon for the composition process to still be done by hand in some regions when using the Monotype hot-metal casters. For more, see Ross. *The printed Bengali character*, 1999.

10 This size (10 inch) can vary across different companies.

11 For more on this, and an account of the difficulties associated with this distribution of responsibilities by type designer Frederic Goudy, see Tracy, Walter. *Letters of credit: a view of type design*. David R. Godine Publisher, 2003. For a study on the women that were employed in such drawing studios, see Savoie, Alice. 'The women behind Times New Roman: the contribution of type drawing offices to twentieth century type-making.' *Journal of Design History*, vol. 33, no. 3, 2020, pp. 209-224.

12 For more on the history Linotype, see Romano, Frank. *History of the Linotype company*. RIT Press, 2014.

13 Other noteworthy hot-metal type casters include the Ludlow, Intertype, Linograph, and Typograph.



in the text, a tape (a paper with holes punched according to the characters that were typed) would be generated, which was fed to the casting machine to begin the type-casting and printing process.<sup>14 15</sup>

In the 1950s, the arrival of an even newer technology, phototypesetting, marked the beginning of the end of an era of wide-spread use of metal type.<sup>16</sup> Phototypesetting was a method of setting type by the exposure of a letterform outline to photographic light or film. The fonts developed using these machines were still produced directly from original type drawings, which utilised a set of lenses to produce type at different sizes. Advantages of the phototypesetting machine included increased speed, the saving of space, flexibility in layout, and using various type sizes and styles, but very importantly, it allowed for seamless joining of letterforms in connecting scripts and styles, such as the Arabic script, or scripts of northern India like Devanagari and Gurmukhi. Before phototypesetting, the line separating one piece of metal type from the next was often (though not always) visible.<sup>17</sup> With the newer technology, the use of overlapping (covering one part of a connecting letterform such as a headline with part of the next character) became much simpler, and this combined with the unit system of photocomposition meant a guaranteed positioning of joints that ensured smooth connections, improving the reading experience for users of such scripts.<sup>18</sup> This is not to say the the new technology was not without its drawbacks. The practice of casting type specific to a given point size and its requirements for optimal legibility and performance in that size was well established in foundry and (to a lesser extent) hot-metal type-casting, yet phototypesetting abandoned the inclusion of optical sizing. This meant that a single design was adapted to use in various sizes, discarding the benefits of refining the proportions of letterforms based on their body size.<sup>19</sup>

---

14 While both machines came with certain advantages and disadvantages, this will not be further discussed in this thesis, as the Linotype hot-metal machine was never used for the development of a Gurmukhi fount as is therefore not of direct relevance to this research.

15 For more on the history of the Monotype corporation and their machinery, see Slinn, Judy, Sebastian Carter, and Richard Southall. *History of the Monotype Corporation*. Printing Historical Society/Vanbrugh Press, 2014.

16 The rollout of newer print technologies did not happen with the same speed worldwide, as some regions were slower to adapt newer methods of reproducing type for a variety of reasons that are outside the scope of this thesis.

17 It is worth noting that the Monotype hot-metal typesetting machines were able to print these overlapping connections with some level of success. However this was mostly unique to the capabilities of the Monotype machine.

18 Historians have written extensively on the history of the development of phototypesetting, as such it will not be covered further in this text. For more, see Savoie, Alice. *International cross-currents in typeface design: France, Britain and the USA in the phototypesetting era*. University of Reading, 2014, PhD dissertation; Seybold, John W. *Fundamentals of modern photo-composition*. Seybold Publication, 1979; Wallis, Lawrence William. *Type design developments, 1970 to 1985*. National Composition Association, 1985.

19 For more on the drawbacks of phototypesetting technology, see Savoie. *International cross-currents in typeface design*, 2014.



Both of the companies, Linotype and Monotype, developed two founts for Gurmukhi each; a Light and a Bold version of a single design. While Linotype Gurmukhi seems to have been designed and developed solely for digital photocomposition and later adapted to later digital typesetting development, Monotype began with hot-metal production of their Gurmukhi design, transitioned to photocomposition, and finally, adapted the fount for use in digital contexts. This marks Monotype's Gurmukhi as (in the context of this thesis) a unique example of a typeface that transitioned through three distinct typesetting technologies.<sup>20</sup> Another unique aspect of these two companies was the process through which the fonts were designed, produced, and distributed; the type development departments of both Monotype and Linotype worked closely with colleagues based not only in their respective India Offices, but also in other countries such as Germany, where the Stempel AG type founding company was located, and was contracted through Linotype for font manufacturing.

This joint effort during the development of their Gurmukhi founts marks their final outputs as the result of international collaboration between those working in offices in Britain, and colleagues with script-expertise and native familiarity working in the India Offices (who also sometimes worked as intermediaries between the type drawing offices of these companies and the clients commissioning or requesting the founts based in the Panjab), and technical partners of the two companies, such as Stempel AG.

This cross-collaboration between different cultures and skill sets (design, technologies, culture and aesthetics, readership familiarity, language comprehension, etc) did not previously exist regarding Gurmukhi on such a considerable scale, and certainly not with the involvement of specific native clients for which the founts which were being produced.<sup>21</sup> This novel approach and the communication process throughout the projects would, however, go on to become an industry standard, marking the documentation of early examples such as the cases of Monotype and Linotype's Gurmukhi founts as critical points in the history of typemaking and print culture.

---

20 Unfortunately the three various use cases could not be found. However this presents a fascinating avenue for further exploration in future research.

21 This was not the case for all Indian scripts, such as Bengali and Devanagari. For more see Ross. *The printed Bengali character*, 1999.

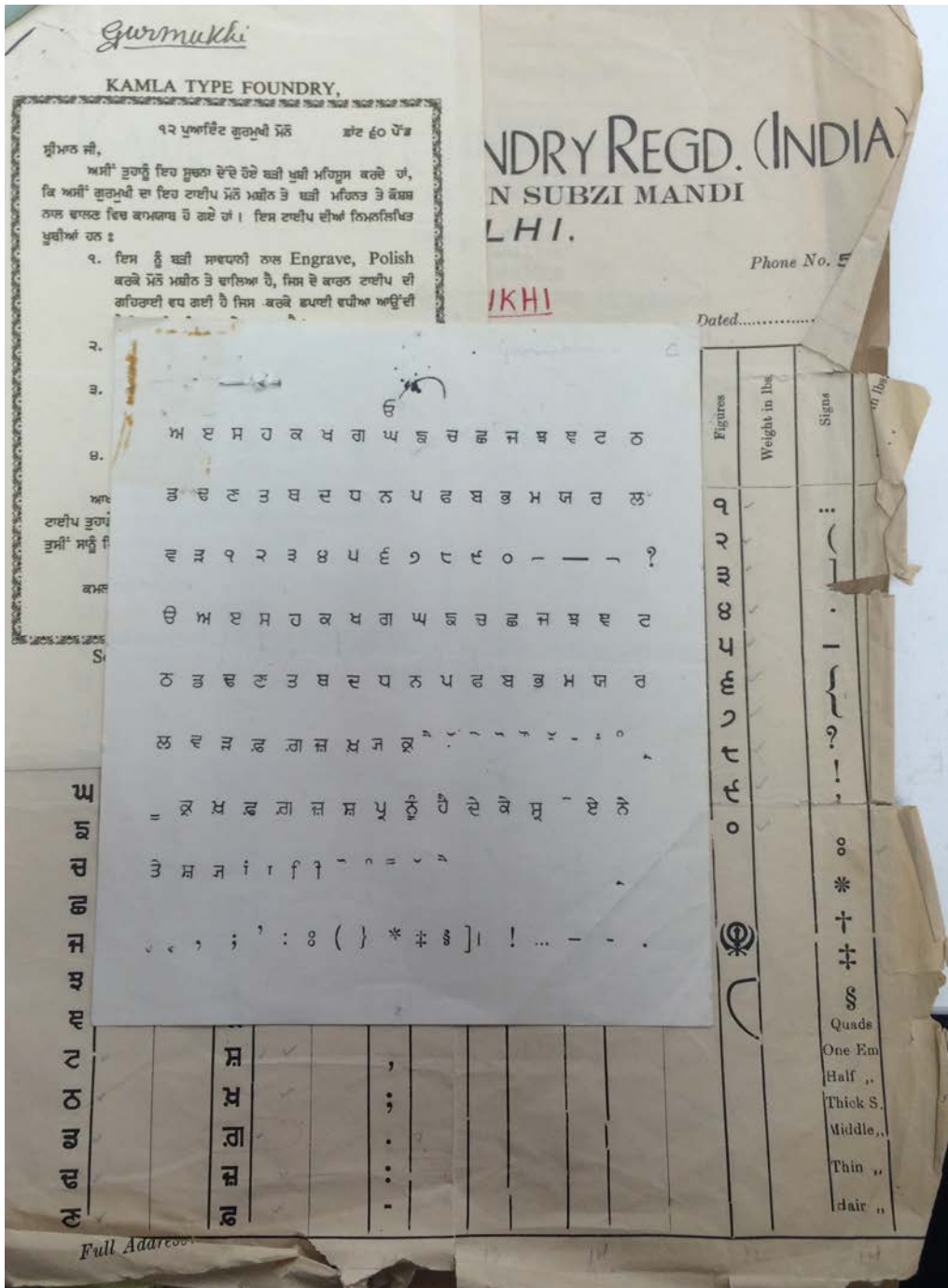


Figure 6.2. Sample Gurmukhi specimen sheets from foundries based in India, including Kamla Type Foundry, located in Subzi Mandi, Delhi. From the Monotype archives, Redhill, Surrey, U.K. (MA).

## 6.2 Monotype Gurmukhi Series 601 and 604

The earliest documentation discovered by this research relating to Monotype's Gurmukhi founts dates back to 12 November 1954. At this point in time, phototypesetting technology was on the commercial rise. However both Monotype and Linotype seemed to take a cautious approach towards introducing this new technology and realising the advantages it offered (particularly for scripts of North India).<sup>22</sup> As such, it is not surprising that Monotype's Gurmukhi types would first be realised in metal, despite the existence of newer technology.

A memorandum from the company's Overseas Manager Percy Goodall to John Goulding (Head of the Monotype Type Drawing Office) indicates the starting point of someone at the company taking interest in adding a Gurmukhi to the Monotype library. In the document, Goodall included two examples of Gurmukhi type produced from matrices made by Monotype customers—one from Kamla Type Foundry, and one sample from an undisclosed foundry—alongside a synopsis of characters deemed necessary for a fount of this writing system, sent to Goulding 'in the hope that you can hold them in your records as the information might be of assistance to you when it is decided that we produce a fount of Gurmukhi'.<sup>23</sup>

Though no further information could be found on the Kamla Type Foundry (or why this particular foundry's work was indicated as a good reference) through this research, these were in all likelihood samples of Gurmukhi that were commercially successful inside India, and a quick visual assessment marks the appearance of the letterforms in these synopsis sheets as notably different from their counterparts that were being produced in Britain around the same time, particularly with regard to proportions and stroke modulation—with the examples from the Indian foundries showing a preference for decidedly low contrast designs, achieving a more even texture and darker colour on the page (figure 6.2).<sup>24</sup>

It appears that Goodall's recommendation to add a Gurmukhi to the Monotype catalogue was initially deemed as commercially viable, because less than two weeks later, on 25 November 1954, the Secretary of the Typographical Committee had prepared a list of suggested characters for a Gurmukhi Bold face, and forwarded the list in a memo to Mr. C. A. Poore, Manager of the Works (a

22 In 1955, a Devanagari font was developed for the Intertype Fotosetter, which was the first phototypesetting machine, invented in 1946. This development was in itself 'nothing short of astonishing', so it is not entirely surprising that the same was not done for Gurmukhi, a script with considerably fewer readers and thus, a smaller market. Singh, Vaibhav. "New horizons": the beginnings of Devanagari photocomposition.' University of Reading, 2015. Unpublished article.

23 P. Goodall to J. Goulding. Memorandum dated 12 Nov. 1954, Gurmukhi Folder, Monotype archives, Redhill, Surrey, U.K (MA).

24 For a more detailed analysis, see chapter 7.

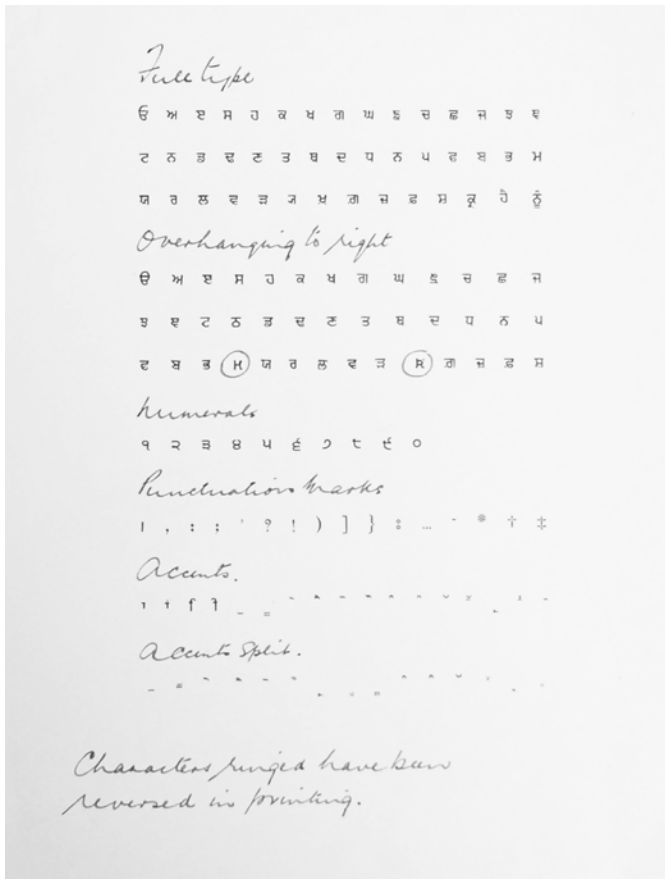


Figure 6.3. Foundry type supplied to Monotype as a basis for a new Gurmukhi fount by the Punjab Government Press in Chandigarh. From the MA, Gurmukhi folder.

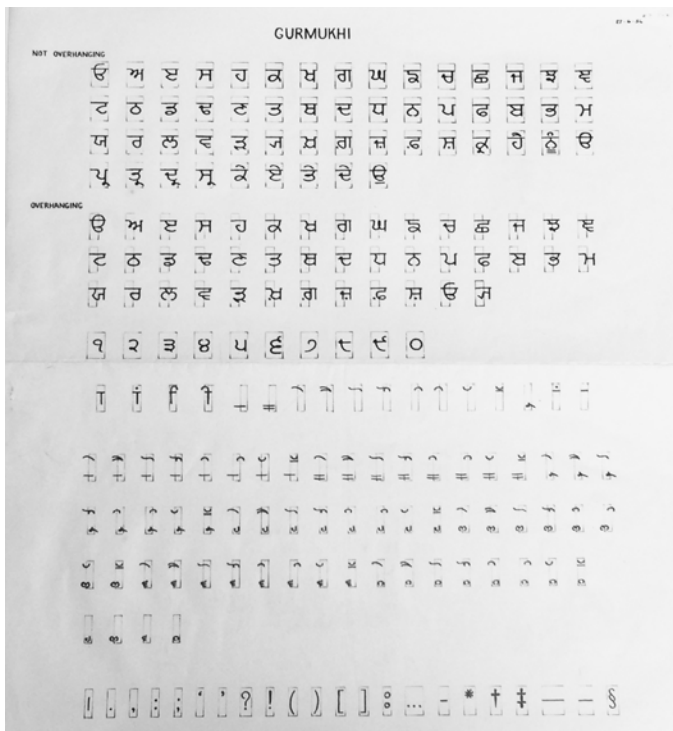


Figure 6.4. Initial draft for Monotype Gurmukhi typeface. From the MA, Gurmukhi folder.



phrase used to refer to the type drawing and matrix manufacturing offices), for a review.<sup>25</sup> At this point, however, some delay is evident; no further developments on the production of this fount could be found until two years later, with the absence of a sense of urgency in further development of the fount from the company's side likely being due to a lack of financial incentive to proceed.<sup>26</sup> However, in 1956, an enquiry from the Punjab Government Press in Chandigarh seems to have revived the production of the Gurmukhi fount.<sup>27</sup>

In the month of April of this year, a 16 point fount of Gurmukhi had been obtained from the Printing & Stationery Department of the Government Press, and then passed on to the Monotype Type Drawing Office for review.<sup>28</sup> Though it is never stated as such in any correspondence, the impression from a memorandum discussing the procurement of the sample fount is that the type obtained from the Government Press in Chandigarh was used as a starting point for the design and development of Monotype Gurmukhi. This is verifiable by comparing the similarities in the designs of the two founts; the reference and the final design (figure 6.3).<sup>29</sup>

Correspondence shortly thereafter from Poore to the Works Manager asking for an investigation of the obtained 16 point Gurmukhi fount reinforces this theory. In the same document, Poore also requested an urgent review of the fount, and underpinned the urgency to proceed with the fact that they had received 'several enquiries' regarding a fount of Gurmukhi. Finally, he asked for recommendations of which size of the new fount to cut first.<sup>30</sup> Poore's requested report was completed two months later; the Type Drawing Office of Monotype—having reached an agreement with Goodall to proceed with the manufacturing of a Gurmukhi fount—placed the project on the schedule for production without any

---

25 The Secretary, Typographical Committee to C. A. Poore. Memorandum dated 25 Nov. 1954, Gurmukhi Folder, MA.

26 It is also noteworthy that delays of this nature were not entirely unusual during the period under consideration, given the longer time required for communication and correspondence, and the fact that fount development entailed numerous cumbersome processes that required more development time.

27 According to the website of the Printing & Stationery Department, it was established in the same year (in 1956), in a seventy-two room building which was handed over to Printing & Stationery Department of the UT Administration equipped with machines imported from Germany; [chandigarh.gov.in/printing-stationary](http://chandigarh.gov.in/printing-stationary). Accessed online 29 Jan. 2022.

28 E. A. Firmage to The Secretary, Typographical Committee. Memorandum dated 17 Apr. 1956, Gurmukhi Folder, MA.

29 See chapter 7.

30 C. A. Poore to The Secretary, Typographical Committee. Correspondence dated 18 Apr. 1956, Gurmukhi Folder, MA.

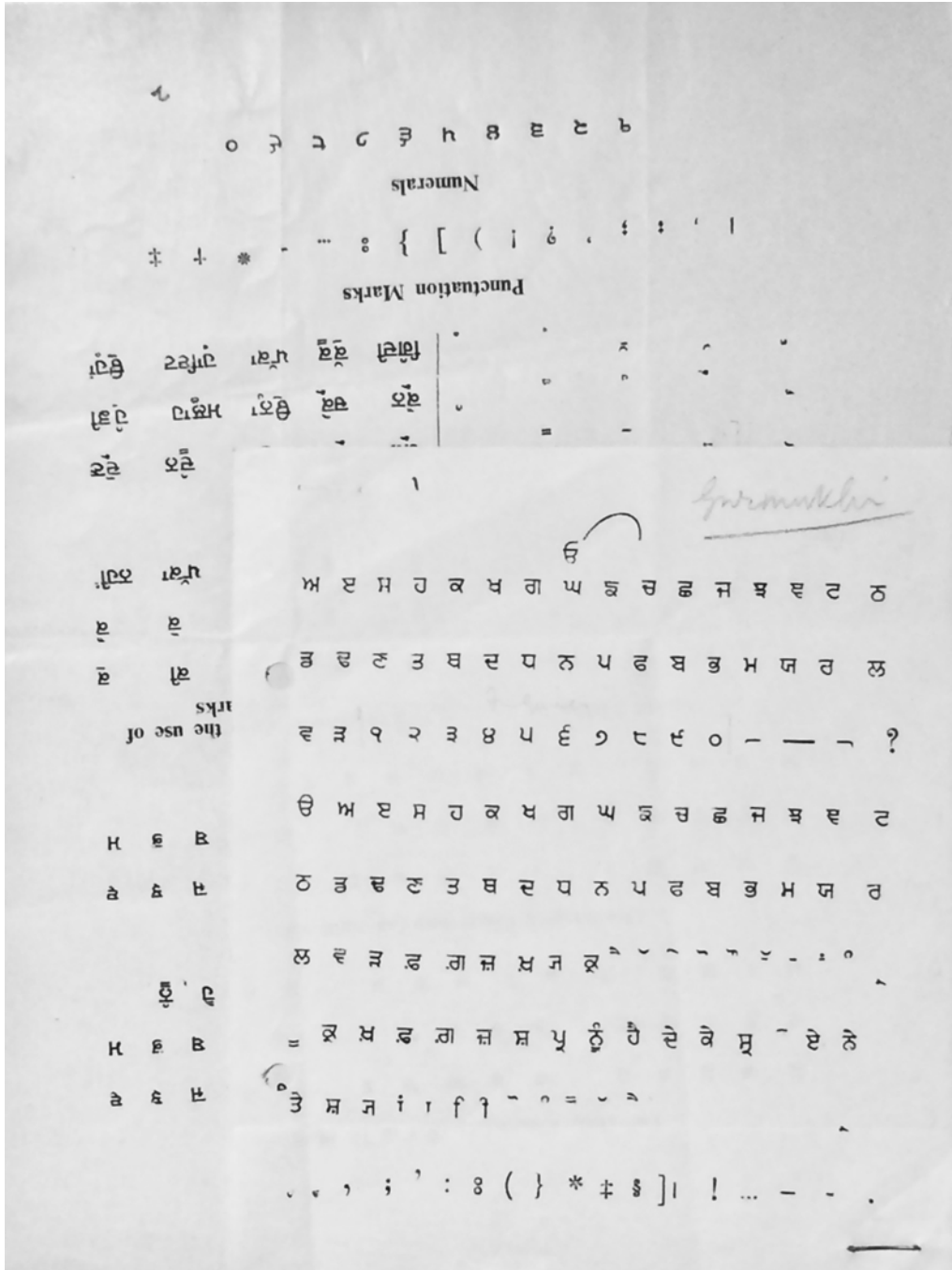


Figure 6.5. Chandigarh Government Press reference for amendments to Monotype's initial draft for their Gurmukhi font, including the arch shape used in the Ek Onkar combination, previously absent from the company's character set. From the MA, Gurmukhi folder.

preliminary trials.<sup>31 32</sup>

Evidently, at this point of the project, multiple inquiries were put to the Government Press in the Punjab, with questions regarding the structure of the Gurmukhi script itself, and solicitations for an assessment of the characters required for printing in this writing system; meanwhile the technical drawing of the letterforms was started in the Works.<sup>33</sup> Within the space of a month, the Printing & Stationery Department of the Government of Punjab sent a reply to the enquiries from Monotype, making suggestions for the design of their Gurmukhi fount based on the draft they had received for consultation (figure 6.4, page 212).

The clients at the Government Press replied with two lists; one consisting of characters to be added, and one of the characters to be removed from the fount, as well as characters requiring alterations in the design of the outlines, and proposals of which characters to exclude from those categorised as having overhang (as opposed to those cast with no kerning elements).<sup>34</sup> In their response, the Government Press insisted on the inclusion of four more characters as non-hanging sorts; ਨਾਂ (nāṁ), ਨੇ (nē), ਸ੍ਰਾ (sra), and what appears to be a swash that could be used to print Ek Onkar (ੴ), an example of which they mentioned having attached to their response, as a reference (figure 6.5). Considering the importance of this phrase (One God, or, God is One; the opening words of the Guru Granth Sahib, the most important and sacred scripture in Sikhism), it is not surprising that the client demanded this. Interestingly though, a lack of this character in previous British-made Gurmukhi founts shows that the most sacred of Sikh texts was not ever considered as a primary printed output for the founts that were being developed. The consultants at the Government Press also advised on adding ਕ੍ਰਾ (kra) to the list of overhanging characters, while (curiously) opting to remove the half-form of yāyā (ਯ) from the fount altogether. With regard to the vowels, the proposed character set from Monotype included all possible pairings of the superscript and subscript diacritics and consonants used in the Gurmukhi script (figure 6.4, page 212, rows 10, 11, and 12). The Government press deemed a majority of these unnecessary, and recommended to only keep particular pairs: the ṭippī combined with the subscript auṅkaṛ (◌ṁ) and dulaṅkaṛ (◌ṁ), as well as the subscript form of rārā (ੳ); the addhak mark combined with the auṅkaṛ and dulaṅkaṛ; and finally the hoṛā (◌ṁ), lāvā (◌ṁ), and dulāvā (◌ṁ) combined with

31 Type Drawing Office (Works) to The Secretary, Typographical Committee. Correspondence dated 29 June 1956, Gurmukhi Folder, MA.

32 It is also likely that the initial drawing of the characters required in the set were done by an English couple by the name of Wilson, who travelled the Indian subcontinent, studying the printing industry and in particular, the scripts and locally cast types and designs, though no documents supporting this theory could be found. Graham Sheppard in an email to the author, 9 Jan. 2022.

33 Ibid.

34 The Printing & Stationery Department of the Government of Punjab, Chandigarh, to Monotype Corporation office in Calcutta. Correspondence dated 27 July 1956, Gurmukhi Folder, MA.





Figure 6.6. Case containing Gurmukhi 10 point copper patterns used for cutting punches, and sample pattern of Gurmukhi vowel  $\text{U}$  in 12 point. From The Type Archive, London.

subscript forms of the hāhā (ਹ) and vāvā (ਵ). The list of suggestions also includes the request to add a (strangely absent) bindī mark, and the combination of this mark with all superscript diacritics, as well as the biharī and Latin figures. Finally, they requested an addition of the Latin punctuation marks, something that had already become commonplace in Gurmukhi type since the era of evangelistic printing in the Panjab (see chapter 4).

In addition to these suggestions, the aforementioned reference attached to the reply (containing the sample for the Ek Onkar), was also pointed to as a reference for the redrawing of characters the Government Press deemed problematic in design; the kággā (ਕ), chacchā (ਚ), ḍaḍḍā (ਙ), tattā (ਤ), babbā (ਬ), mammā (ਮ), vāvā (ਵ), khakkhā (ਖ), sassā (ਸ), ūṛā (ੳ), sra (ਸ਼), tē (ਤੇ), the auṅkar, dulaīṅkar, ṭippī, and the addhak mark. Finally, the clients advised on shortening the kannā vowel (ਕਾ), stating that it should be half in length, unlike in Devanagari.<sup>35</sup>

Comparing the drawings from Monotype against the reference documents from the Government press, a majority of these design suggestions seem to be related to the width and proportions of the letterforms, where the native client shows a preference for narrower characters, and more evenly distributed white space. Regarding the vowels, the comments seemed to be directed at the amount of curve applied to the outlines, suggesting this should be increased, to, for example, make the addhak and the ṭippī ‘more horseshoe like’.<sup>36</sup>

The first size of Monotype Gurmukhi type to be cut was decided as the 16 point (0.2 inch composition punches),<sup>37</sup> with duplex moulds to be used for mechanical composition, and was first manufactured in 1957.<sup>38</sup> Additional sizes of 12 and 14 point followed in 1958 and 1959 respectively—in accordance with a similar approach for the company’s Devanagari Series 155, ‘as the fount bears many similarities to Devanagari’.<sup>39</sup> Features such as the weight and overall construction of similar characters were evidently also borrowed from a mix of the existing Devanagari founts, and the foundry type sent from the Government press. This was all likely done with the aim of efficiency in time and money, as some characters between the two scripts share similar shaping, removing the need to re-draw, cut, and cast such characters from scratch. In addition to the above weights, cases of Gurmukhi 601 and 604 punches and copper patterns in a 10 point

35 Ibid.

36 Ibid.

37 If 1 point is 1/72 of an inch, then 16 point is 16/72, which equals 0.2", the body size of the sort, specified above.

38 Years of production taken from the Monotype Corporation Matrix sales record folder, housed in the Type Archive, London.

39 Type Drawing Office (Works) to The Secretary, Typographical Committee. Correspondence dated 29 June 1956, Gurmukhi Folder, MA.



Trial No. 1

22-4-58

‘MONOTYPE’

Gurmukhi Bold

Series No. 601—12 point

9 Set Composition

Order No. E447

ਕਿਆ ਤੁਸੀਂ ਪੁੱਛਦੇ ਹੋ ਭਈ ਮੈਂ ਕਿਸ ਤਰਾਂ ਨਾਲ ਪਰਮੇਸਰ ਅੱਗੇ  
 ਬੇਨਤੀ ਕਰਾਂ। ਸੱਚੇ ਪਰਮੇਸਰ ਅੱਗੇ ਬੇਨਤੀ ਕਰਨ ਦਾ ਨਿਰਾ ਇਕੋ ਹੀ  
 ਸੱਚਾ ਰਸਤਾ ਹੈ ਅਰ ਉਹ ਇਹ ਹੈ ਉਸਦੇ ਪੁੱਤ੍ਰ ਪ੍ਰਭੂ ਯਿਸੂ ਮਸੀਹ ਦੇ ਨਾਉਂ  
 ਦੀ ਖਾਤਰ। ਇਸ ਤਰਾਂ ਨਾਲ ਆਖੋ ਹੋ ਪਰਮੇਸਰ ਮੇਰੇ ਸਭੇ ਪਾਪ ਤੇ ਕਸੂਰ  
 ਛਿਮਾਂ ਕਰ ਦਿਹ। ਮੈਨੂੰ ਇੱਕ ਨਵਾਂ ਦਿਲ ਬਖਸ਼ ਦਿਹ ਅਰ ਮੈਨੂੰ ਆਪਣਾ  
 ਪਵਿੱਤ੍ਰ ਆਤਮਾ ਦਿਹ ਅਰ ਏਹ ਮੈਂ ਆਪਣੀ ਬੇਨਤੀ ਤੇਰੇ ਪੁੱਤ੍ਰ ਪ੍ਰਭੂ ਯਿਸੂ  
 ਮਸੀਹ ਦਾ ਨਾਉਂ ਲੈਕੇ ਜਿਸਨੇ ਆਪਣੀ ਜਾਨ ਮੇਰੇ ਲਈ ਦਿੱਤੀ ਕਰਦਾ ਹਾਂ  
 ਇਹ ਮੇਰੇ ਦਿਲ ਦੀ ਚਾਹ ਹੈ ॥

ੳ ਅ ਏ ਸ ਹ ਕ ਖ ਗ ਘ ਙ ਚ ਛ ਜ ਝ ਵ ਟ ਠ  
 ਡ ਢ ਠ ਤ ਥ ਦ ਧ ਨ ਪ ਫ ਬ ਭ ਮ ਯ ਰ ਲ ਵ  
 ਝ ਖ ਗ ਜ ਛ ਸ ਕ੍ਰ ਹੈ ਨੂੰ ਓ ਪ੍ਰ ਤ੍ਰ ਦ੍ਰ ਸ੍ਰ ਕੇ ਏ ਤੇ  
 ਦੇ ਉ ਨਾਂ ਨੇ ਸ੍ਰ ਿ ਓ ਅ ਏ ਸ ਹ ਕ ਖ ਗ ਘ ਙ  
 ਚ ਛ ਜ ਝ ਵ ਟ ਠ ਡ ਢ ਠ ਤ ਥ ਦ ਧ ਨ ਪ ਫ  
 ਬ ਭ ਮ ਯ ਰ ਲ ਵ ਝ ਖ ਗ ਜ ਛ ਸ ਓ ਕ੍ਰ ੴ  
 ੨ ੩ ੪ ੫ ੬ ੭ ੮ ੯ ੦ ਾ ਿ ਿ ਿ \_ = ~ ^  
 ~  
 ~  
 ( ) [ ] ... \* † ‡ — — §

+ 81340    - 81341    × 81342    ÷ 81343

1234567890 F1071     $\frac{113}{424}$  F1296

Figure 6.7. Monotype Gurmukhi 601 trial synopsis in 12 point, 9 set composition, dated 22 Apr. 1985. From The Type Archive, London.

size—housed in the Type Archive in London—also revealed the manufacture of the hot-metal types in this smaller size, with sales records from the company showing the design being manufactured in 10 point only once, in 1970 (figure 6.6).<sup>40</sup>

A trial synopsis sheet from 1958 (figure 6.7) reveals that the Monotype type drawing office abided by and applied many of the suggestion from the Government Press; the previously absent Latin numerals, Latin punctuation, and the swash required for the Ek Onkar were added to the character set along with the bindī, and the combination of this mark with the biharī vowel. Undoubtedly, it was deemed that the combination of the bindī with other superscript marks could be cast without worry of collisions while typing, doing away with the need for pre-composed combinations that would increase the number of characters in the set, as the client had requested.

A majority of the characters advised as unnecessary were also ultimately removed, although unsurprisingly (considering its widespread use) the half-form of the yayyā can still be seen in the final character set. The three typical subscript consonants are all also present, cast individually and, following the client's instructions, some also cast alongside select superscript diacritics, covering the most common combinations. A total of seven more common consonant and subscript consonant pairings also appear as precast in the character set (likely for ideal placement and alignment of the subscript character), and combined with all the base consonants, vowels, marks, and punctuation, the total number of characters in Monotype Gurmukhi amounted to 183 required sorts. The Monotype machines sometimes proved problematic with scripts like Arabic and Devanagari due to the lack of space on the matrix case and the keyboard that proved too small for larger character sets. However, this was not an issue in the case of Gurmukhi; the 183 character count was a number entirely manageable for the Monotype machine's matrix case and keyboard, which could respectively accommodate 255 characters, and 304 keys in total.<sup>41</sup>

In addition to the size of the fount which was 12 point, the trial synopsis also shows that the fount was of 9 set composition; this refers to the system used on Monotype machines to classify each size of a typeface in set points, in addition to general size points (figure 6.8). Accordingly, each fount was given a categorical size which generally matched the width of the largest characters of the fount, such as the capital M or W in a Latin fount, or the aiṛā (ਮ) and kággā (ਯ) in the case of Gurmukhi. These widths ranged from 5 set up to 16 in quarter increments, and

40 Monotype Corporation Matrix sales record folder, housed in the Type Archive, London.

41 *Trial No. 1, Gurmukhi Series No. 601*. Monotype, Apr. 1958. Gurmukhi Folder, MA.

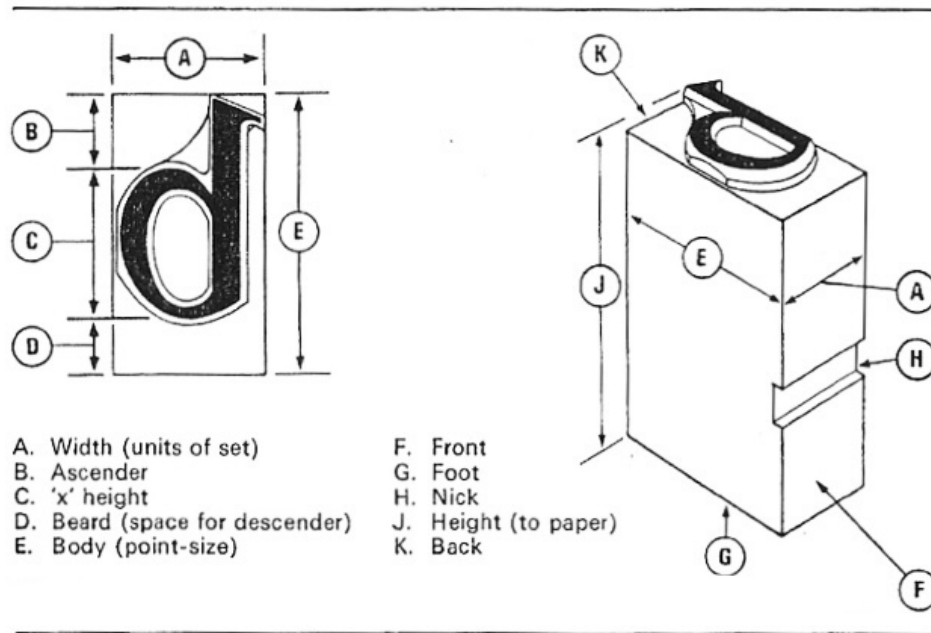


Figure 6.8. Illustration of a piece of type (sort) that shows the principal measurements including point size (E) and set size (A). From The Monotype Corporation. *Programming notes for 'Monotype' composing machines*, p. 5.

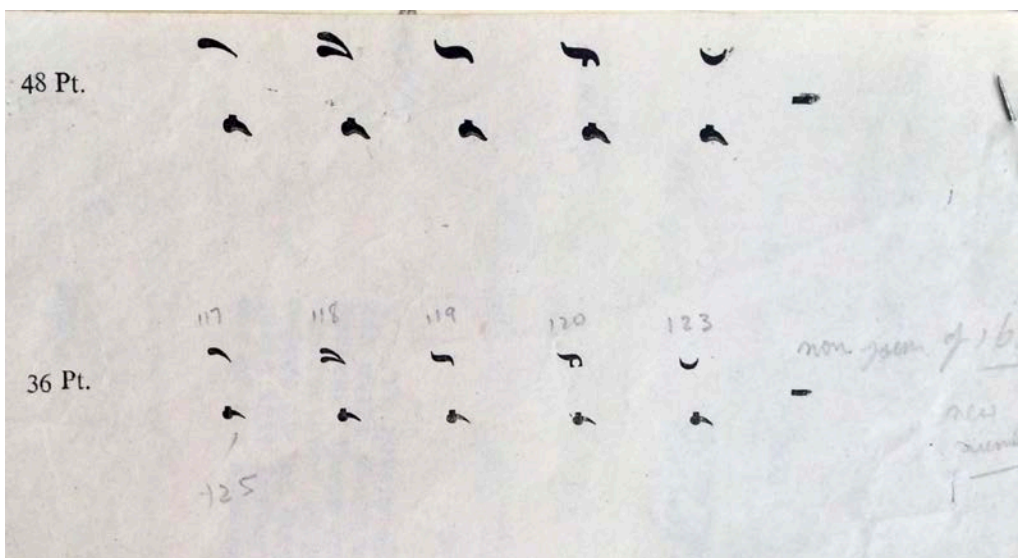


Figure 6.9 Later additions to the Monotype Gurmukhi character set in 48 and 36 point from a memorandum dated 15 Dec. 1959. Image from MA, Gurmukhi folder.



16½ set to 26 in half-point increments.<sup>42</sup> The importance of this detail lies in how the set number helped to determine the spacing and justification of characters, where a chosen width for a given character would then determine the space between it, and the following or preceding characters. A set point of 9 for a fount with a body size of 12-16 point meant that the intention was to have a relatively narrow design, with the ability to set more words within a line of text as a result.<sup>43</sup> Other trial prints show a method of maintaining this across different sizes, with a 12 set composition used for the 16 point, a 10½ set composition for the 14 point, and 7½ set composition for the 10 point, in both the bold and light weights.<sup>44</sup>

In early 1958, plans were put in place to manufacture Monotype Gurmukhi Light (Series No. 604).<sup>45</sup> The same number of characters and point sizes were used for the lighter version of the typeface, making it possible to use a duplex mould (double letter matrices) for setting the bold and light variations for casting Gurmukhi.<sup>46</sup> According to Ross, while duplexing was not a requirement for the Monotype machines (unlike the Linotype machines), duplexing was still used so matrix-case arrangements, key-bar frames, and the layout of keyboards could be used for both styles or weights interchangeably. This was often detrimental to the design of letterforms in Arabic and Indic scripts, as it meant less space for the bold weight, creating a need to make some characters somewhat compressed, decreasing white space and, subsequently, legibility and proportional harmonisation with the remainder of the characters in the set.<sup>47</sup> Furthermore, the Monotype machines were constrained by limitations of the matrix size, a property that was an inevitable aspect of the machine's ability to justify texts.

The justification relied on the set sizes (widths) of characters and a unit system to achieve justification by counting logic, and this impacted the matrix case arrangement, in which each row of matrices was assigned a unit value. As a result, the width of some letterforms was necessarily modified in order to work in this system, resulting in some disproportional letterforms.<sup>48</sup> This can clearly be seen in the case of Monotype Gurmukhi; while the bold weight was manufactured first, the design was done based on the existing Devanagari, and despite the fact that none of the characters themselves appear to have been drawn with compromises

42 The Monotype Corporation. *Programming notes for 'Monotype' composing machines*. Redhill, unknown publication date.

43 Conversely, an extended typeface would have a set-size larger than its body size.

44 Various trial print sheets for Monotype Gurmukhi 601 and 604, from Trial Print folders and *The Monotype Corporation matrix fount record*, no. 580-683 folder, housed at the Type Archive, London.

45 Monotype pre-planning investigation sheet for the development of Gurmukhi Series No. 604, 24 Mar. 1958, Gurmukhi Folder, MA.

46 *Monotype Recorder*. Vol. 42, no. 4, summer 1963.

47 For more on this, see Ross, Fiona. 'From metal type to digital letterforms – a straightforward transition for Indian scripts?' *Matrix*, no. 9, Whittington Press, 1989, pp.128–136.

48 The Monotype Corporation. *The Monotype System: a book for owners & operators of Monotypes*. Lanston Monotype Machine, 1916.

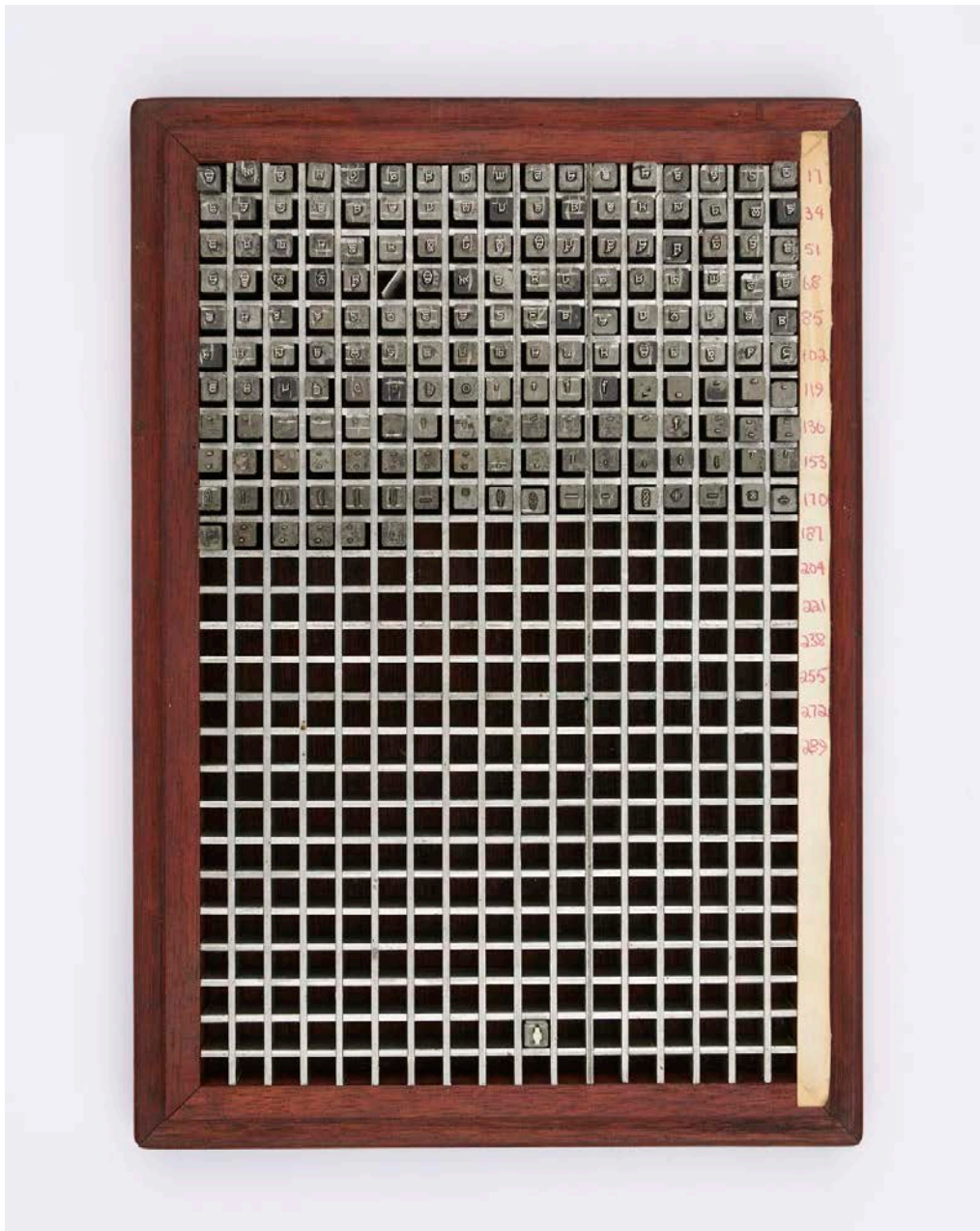


Figure 6.10.0.2 inch composition punches for Gurmukhi Series No. 604, in 10 point. Image © The Board of Trustees of the Science Museum, London.

due to lack of space, the overall spacing is narrow when comparing the white space inside letterforms with the white space between them, giving a generally compact and cramped appearance to the type in a line of text. This in part has to do with the short connections in the top bar of the base characters, but also to do with the set size discussed above.

With the addition of the new weight of the Gurmukhi typeface and following the request of the Monotype Calcutta Office, five additional pre-composed marks were also added to the set—this comprised of the accent combination of all superscript vowel marks with the subscript rārā (ੴ), which previously had only been cast individually. This was likely a result of clients reporting undesirable alignments when these combinations were created ‘on the fly’. Furthermore, a single spacing character was also added, probably for use in instances where a solution was required for spacing out colliding marks (figure 6.9, page 220).<sup>49</sup> The first size of the lighter Gurmukhi 604 to be cast was the 12 point in 1958, followed by the 16 point in the following year, the 14 point in 1961, and finally a 10 point in 1970, cast at the same time this point size was manufactured for the bold weight, indicating these may have been cast due to a specific client request. (figure 6.10).<sup>50</sup>

In the early 1950s and around the same time as the hot-metal Gurmukhi founts were being designed and developed, the Monotype corporation had started selling and promoting its new phototypesetting machines—the Monophoto—with sample printed output examples already in circulation since the mid-twentieth century.<sup>51</sup> Unsurprisingly (considering the place of production and primarily Western market), the technology was first and foremost considered and used for Latin founts; Monotype’s highest selling typefaces such as Times New Roman, Gill Sans, Bembo, and Baskerville were all amongst the first to be adapted for the newer technology, as a means to satisfy the existing Monotype hot-metal machine clientele.<sup>52</sup> There was some delay in the scheduling of the manufacture of Monotype Gurmukhi 601 and 604 for the Monophoto, a hint that there likely was no demand for a Gurmukhi fount adapted to this new technology.

As previously explained, the newer fount manufacturing method was well

49 ‘Combination of Accents, Gurmukhi Series’, correspondence from the Monotype Corporation Office in Calcutta, dated 15 Dec. 1959. Gurmukhi Folder, MA.

50 Monotype Corporation Matrix sales record folder, housed in the Type Archive, London.

51 In 1952, the General Manager of the Monotype Corporation wrote in *Penrose Annual* that the Monophoto machine had ‘emerged from years of testing and development to the level where it can now be placed into commercial operation’. Wallis, Lawrence William. *A concise chronology of typesetting developments, 1886-1986*. 1988. For a comprehensive overview of the Monophoto machines, see Savoie. *International cross-currents in typeface design*, 2014.

52 The machines were also made in a way that was similar to the previous hot-metal machines, as a means of maintaining client familiarity and satisfaction. Silcock, Elfrid. ‘The Monotype machine’. *Penrose Annual*, no. 48, Lund Humphries, 1954, pp. 104-105.



suited to resolve some issues of previous technologies. It could more easily achieve connection overlap and accurate mark positioning, and did away with the issues of breakage of the printing types which was a known issue of Monotype sorts (due to the overhanging characters), and the use of the Akhand system as a typesetting method. In the case of the Series No. 601 and 604, the sorts were indeed prone to bending and breakage, as evident from customer complaints that the superscript marks and the right-hanging characters frequently broke under pressure during printing and the preparation of stereoplates. The Monotype Calcutta Office is documented to have, at least on one occasion, responded to dissatisfied clients using the company's Gurmukhi founts that nothing could be done regarding this drawback.<sup>53</sup> This was not an unusual thing to happen when printing the more delicate characters or those with kerning on the Monotype machines; conversely the Linotype machines could create solid lines of text with no breakage of the sorts, but this was due to the machine's inability to kern, which created its own issues with regard to alignment, spacing, and the even distribution of white and black on the page.

The Typographic Committee at Monotype had decided that the Gurmukhi intended for production for the Monophoto would be entirely derived from the pre-existing hot-metal drawings, a practice Monotype had repeated with its Bengali, Devanagari, Gujarati, Sinhalese, Tamil, and Arabic typefaces as well as the Latin, where the 10 inch letter drawings produced for the Monotype Caster machine were reused to manufacture fonts with the Monophoto.<sup>54</sup> This was also the case with the Gurmukhi designs. However, it appears that the advantages offered by the newer technology were somewhat taken into account in the case of this script; in December 1969, following an enquiry from the Thompson Press Limited in Faridabad, Monotype Overseas Manager E. A. Vesey confirmed the possibility of manufacturing the Series 601 and 604 for the Monophoto, with a delivery period of twelve months from receipt of order. In a correspondence between Vesey and the Typographic Committee, the latter clearly also saw an advantage to adapting the founts to the new technology, explaining:

We propose making both founts to take advantage of the facilities of the Filmsetter. Characters can be accented by double exposure thereby reducing the total as the overhung versions will not be required. Under these circumstances we would not anticipate any difficulties with the layout.<sup>55</sup>

The phrase 'both' here refers to both weights of the Gurmukhi fount, 601

<sup>53</sup> Controller of Printing & Stationery, Punjab, to the Monotype Corporation. Correspondence dated 6 July 1962. Gurmukhi Folder, MA.

<sup>54</sup> Savoie. *International cross-currents in typeface design*, 2014.

<sup>55</sup> Type Drawing Office (Works) to The Secretary, Typographical Committee. Memorandum dated 3 Dec. 1969, Gurmukhi Folder, MA.



and 604. This method of reduction of the number of characters in the set by converting superscript and subscript characters to ‘floating’ marks (as opposed to pre-composed with other forms or cast with overhang) meant that the typesetting process could be simplified; the double-exposure signal was incorporated on the machine’s keybars, thus making the job of the keyboard operator easier.<sup>56</sup> Despite these advantages, however, it appears there was no incentive from the original enquiring client, and the project remained dormant for another two years. When the project was revisited in 1971, a list of characters that were deemed necessary for a Gurmukhi font for the Monophoto was compiled by the staff of the Monotype Offices in Bangalore; the number of these characters totalled 100, confirming the previous estimation of advantages offered by the newer technology, with a reduction of nearly half the previous character set.<sup>57</sup> Despite this, another decade would pass with no production of Gurmukhi fonts for phototypesetting technology by the Monotype corporation. It appears that ultimately, plans for developing the Series 601 and 604 for the Monophoto were delayed until 1980, when both weights of the Gurmukhi were made available for typesetting on this machine.<sup>58</sup> Evidence formerly stored at the archives of Monotype in Redhill, Surrey shows a client order from the Diamond Calendar MFG Company & Punjabi Press in New Delhi in this year. The client purchased a set of Monophoto 400 film matrices in 20 rows of 20 for Gurmukhi Series 601 and 604, along with the Monotype System 1000 phototypesetter (a name used to brand the Monophoto 400/8 machine) and its recommended spare parts and software package, alongside required hardware for the machine such as compressed air units and an LD perforator (large display with key-button arrangement for the Gurmukhi founts).<sup>59</sup>

While no further client orders for the 601 and 604 Monophoto fonts could be found, records reflect a combined purchase of 9 sets of the Gurmukhi Monophoto fonts up to the year 1981, a number that—although not a complete financial loss for the company—was somewhat unenviable, particularly when compared to previous sales of the hot-metal founts: between 1957 and 1982, the company had sold a total of 93 Gurmukhi Series 601 hot-metal founts, and 237 of the Series 604—the sales of the latter continued until 1991, with twenty-seven additional purchases.<sup>60</sup> As evident through the recorded sales of hot-metal founts up to the

56 Typographical Committee to H. Thum. Correspondence dated 1 June 1968, Gujerathi Folder, MA.

57 Monotype Bangalore to E. A. Vesey. Correspondence dated 27 Dec. 1971, Gurmukhi Folder, MA.

58 Monotype Corporation *Matrix sales record* folder, housed in the Type Archive, London.

59 D. Corkett, General Sales Manager to R. Duggan-Palmer. Memorandum dated 8 Feb. 1980, Gurmukhi Folder, MA.

60 Monotype Corporation *Matrix sales record* folder, housed in the Type Archive, London. The Monotype company also maintained country specific ledgers which contained all sales made to clients in great detail and accuracy. However no such information could be found for the Gurmukhi script at the time of this research, particularly when considering the challenges of archival access during Covid-19 lockdowns. However, further investigation of this could present a line of investigation into the use and popularity of Monotype’s Gurmukhi fonts for future research.



simplified tabbing capability with automatic tab proportion; automatic justification and automatic line ending with discretionary hyphenation; stored format capability; and kerning.

**Contact:** Itek Graphic Products, 811 Jefferson Road, PO Box 1970, Rochester, NY 14692.

### Monotype "Lasercomp" System 3000 Can Produce 1440 Lines Per Minute

The Monotype Corp. has three typesetting systems, the 1000, 2000, and 3000 series. The newest, the 3000, can produce paper and film positives and negatives up to 58 picas wide (though a 100 pica machine is also available).

Speed on the 58 pica machine ranges from 144 12 point 11-pica lines per minute to 288 six point 11 pica lines per minute. The 58 pica width of the machine makes it possible to produce up to five columns of type at the same speed as that of a single column.

Input is 8 channel ISO coded tape, unjustified or justified, 6 channel TTS, wire service tapes, floppy discs, and other narrow tape codes. Point size is from four to 256 points, or Didot in ¼ point increments.

**Contact:** Monotype Corp. Ltd., Salfords, Redhill, RH1 5JP, Surrey, UK.

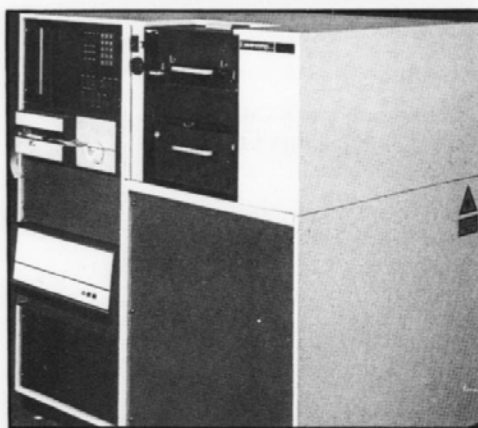


Figure 6.11 Advertisement of the capabilities of the Monotype Lasercomp series machines in *World-wide printer*. Vol. 2, iss. 3, May-June 1979, p. 38.



early 1990s, there was a reluctance to spend money on new machinery for setting texts in the Gurmukhi script, which could in part have been due to the speed limits of the Monophoto series of machines, which by the 1970s had already proved a liability compared to faster technologies available in the market by the company's competitors.<sup>61</sup> As a means of overcoming its delay in adaptation of new technologies, In 1976, Monotype's Lasercomp machine for digital photocomposition was introduced, which according to type historian Alice Savoie, 'used a raster image processor and high-resolution helium-neon laser-beam imaging to output entire pages containing both text and graphics'.<sup>62</sup> The machine indeed replaced the output of a single character with an entire page as its output, making it the fastest machine the company had introduced to the market (despite some initial drawbacks with speed, which were resolved with future improvements in the machine's graphic capabilities), with the option to input information from a floppy disk, a paper tape, or magnetic tape (which eventually replaced punched paper, as it carried out the same function).<sup>63</sup> Fonts with varying information for different sizes and styles could be input on disks that could hold multiple sizes of a particular type style, all of which could be loaded onto the typesetter for future use with no intervention or input required from the operator. Finally, the machine offered various options for typesetting, including printing white on black, text setting from right to left or left to right, front or back slanted letterforms, and type set with up to 35% lighter or heavier density (figure 6.11).<sup>64</sup>

The approach of adapting the original Gurmukhi design from the late 1950s was repeated once more with the arrival of this newer digital technology, an indication of the company executives' priorities with regard to this script as being one of technological capitalization, rather than improved and superior design, or to offer alternative designs to diversify the Monotype catalogue offerings. In 1974, Dr. Peter Karow had developed the Ikarus software for the URW company in Hamburg, Germany. The software enabled the conversion of scanned digital images to vector outlines, and of analogue artwork to digital data. Finally, it made the interpolation of basic letterforms to expand type families by adding variants such as additional weights.<sup>65</sup> This meant the software was a convenient method for companies such as Monotype to use existing type drawings or artwork to achieve a digital output. The software itself was used by many phototypesetting machine manufacturers, in addition to being used for the design and manufacture of early digital fonts.

61 Seybold, John W. *The world of digital typesetting*. Seybold Publications, 1984.

62 Savoie. *International cross-currents in typeface design*, 2014, p. 103.

63 Boag, Andrew. 'Monotype and phototypesetting.' *Journal of the Printing Historical Society*, no. 2, 2000, pp. 57-77.

64 *Graphic Arts Monthly and the Printing Industry 1981-6*, vol. 53, iss. 6, pp. 104-107.

65 Wallis. *Chronology of typesetting developments*, 1988, p. 50.



In 1988, permission was granted to the Monotype Typographical Design Department to provide Lasercomp data of the Gurmukhi Series 601 and 604 to their technical partners Signus Limited in London, who were to convert the fonts to formats required to make them (presumably) available for PC or Macintosh systems for an undisclosed university in Calcutta.<sup>66</sup> Correspondence between the Studio Manager of Signus Ltd John Clements, and Monotype's Graham Sheppard, who was the Manager of the Typographical Department at the time (and was also involved in early digital type developments at the company), shows that by March of this year, the conversions had been completed, with some minor issues regarding baseline positions of some characters. No further communication could be found on this, which presumes that the matter was resolved.<sup>67</sup> Despite extensive searches and reaching out to former Monotype employees who worked at the company during the late twentieth century, no evidence regarding the process or people involved in adapting the fonts to future digital technologies and screen fonts could be found. Further exploration of archival material on this matter was also made impossible by the closure of the Monotype archives at Redhill in 2019. At the moment, a font listed under the name Gurmukhi OTS ESQ exists in the Monotype library that bears strong similarities to Monotype Gurmukhi 601 and 604, and is available for purchase through the company website. However, differences can clearly be seen in some aspects of the design, such as the tapering of the outstrokes and slightly wider proportions.<sup>68</sup>

Development of the Monotype corporation's Gurmukhi typeface spanned a little over thirty years, from the initial design and development of their hot-metal fount in 1957, to the digitisation of the design for use on personal computers or Macintosh devices in 1988. During this time, the design was also adapted for use on both manual and digital photocomposition machines, the Monophoto and the Lasercomp. Despite this, no considerable design revisions can be seen in the three decades of the realisation of this design in type. Considering the particular limitations of the hot-metal Monotype casters with regard to character width, this regrettably meant that aspects of the shaping of the letterforms that were imposed by technical restraints were not reconsidered once such barriers had been removed with newer advances. From consultation of sales ledgers it is evident that the Series 601 and 604 were both well in demand, meaning the design was likely being used for setting a great number of texts and thus, influencing reader habits in the three decades of its use. This is also evident from the fact that the overall design of this font would go on to influence Linotype's adaptation of the Gurmukhi script to a font of their own, as will be discussed in the next section.

---

66 Graham Sheppard in an email to the author, 4 Jan. 2022.

67 J. Clements to G. Sheppard. Correspondence dated 21 Mar. 1988, Gurmukhi Folder, MA.

68 *Gurmukhi OTS ESQ*. Monotype, [catalog.monotype.com/font/oem-monotype/gurmukhi-ots/esq](https://catalog.monotype.com/font/oem-monotype/gurmukhi-ots/esq). Accessed 10 Dec. 2021.

Language Distribution in India  
Percentages.

<u>Languages</u>	<u>% speakers</u>	<u>script</u>	<u>States</u>
Assamese : 1.63		Bengali ✓	Assam, West Bengal
Bengali : 8.17		Bengali ✓	West Bengal, Assam, Bihar
Gujarati : 4.72		Gujarati ✓	Gujarat, Maharashtra, Rajasthan
Hindi : 29.67		Devanagari ✓	Uttar Prad., Madhya P., Bihar
Kannada : 3.96		Kannada	Mysore, Madras, Maha.
Kashmiri : 0.44		Devanagari ✓	Himachal Pradesh
Malayalam : 4.00		Malayalam	Kerala, Madras, Mysore
Marathi : 7.71		Devanagari	Maha. H.P. Assam etc.
Oriya : 3.62		✗ Oriya	Orissa, H.P., Bihar
Punjabi : 3.00		✗ Gurmukhi	Punj. Raj. U.P.
Sindhi : 0.31		Devanagari ✓	Maha. H.P. Punjab.
Tamil : 6.88		Tamil	Madras, Mysore, Kerala
Telegu : 8.17		Telegu	H.P. Madras, Mysore
Urdu : 5.22		Arabic ✗	U.P., Bihar, Maharashtra
Others : 12.50		—	

Figure 6.12 Handwritten list from Fiona Ross, showing research on language distribution in India, with scripts already available in the Linotype library indicated with a check mark. Undated document (est 1978-79). From the DTGC, Gurmukhi Correspondence folder.

### 6.3 Linotype Gurmukhi Light and Bold

Unlike its main competitor Monotype, Linotype never produced hot-metal types for the Gurmukhi script. The first consideration of designing and developing a font for this writing system was brought to the attention of the manager of the Graphic Systems Department, Edward S. Emery, by the Head of the Typographic Research & Development Department (henceforth referred to as TRDD), Walter Tracy.<sup>69</sup> In 1971, Tracy's proposal on behalf of a potential client—Sahni Publications Ltd<sup>70</sup>—to consider production of a Gurmukhi fount for the Linotype V. I. P. phototypesetter (launched in 1970) was turned down, with Emery noting:

As you know there are no Punjabi script matrices in the Linotype range so obviously we have never had a demand for these matrices. To produce Punjabi for V. I. P. the fount requires design drawings etc. from scratch and would require considerable sales of Punjabi founts to justify such development. Certainly the possibility of a 1-off order in this country does not justify making grids for Punjabi scripts.<sup>71</sup>

As with Monotype, there clearly did not seem to be a great financial incentive for the Linotype company to create a Gurmukhi fount for analogue filmsetting technology. This is perhaps unsurprising in the case of Linotype, where, as mentioned above, previous Gurmukhi designs could not be drawn upon and adapted for the newer technology. Instead, scripts like Devanagari, Bengali, and Gujarati were prioritised at the Mergenthaler Linotype company, all of which were surveyed as having a higher language distribution rate in India (figure 6.12).

Less than a decade later, Nataraja Balasubramaniam, manager of Linotype's Bombay Office (known as Bala)<sup>72</sup> briefly resurfaced the idea of adding a Gurmukhi font to the Linotype repertoire. In 1979, Fiona Ross, who had joined the company the previous year as Research Assistant to the TRDD, contacted E. A. Vesey (who was previously employed at Monotype, but working at Linotype at this point), in response to Balasubramaniam's proposal for a Gurmukhi addition. She assessed that this would be a relatively uncomplicated endeavour, considering the closeness of Gurmukhi to other North Indian scripts, and barring the need for a universally

<sup>69</sup> Tracy had established the department in the early 1970s in London. Even at its inception, the company focused on the design and development of fonts for various writing systems. Ross, Fiona. *Non-Latin type design at Linotype*. St Bride Foundation, 2002, [stbride.org/friends/conference/twentiethcenturygraphiccommunication/NonLatin.html](http://stbride.org/friends/conference/twentiethcenturygraphiccommunication/NonLatin.html). Accessed 4 Aug. 2019.

<sup>70</sup> Sahni Publications & Distributions was established in 1987 in Roshanara Road, Delhi. Nothing more could be found on this company in the Linotype archives of DTGC. Gupta, Kulwant Rai. *Directory of publishers and booksellers in India*. Atlantic Publishers & Distributors, 3rd edition, 2009.

<sup>71</sup> E. S. Emery to W. Tracy. Memorandum dated 10 Aug. 1971, NLTC Walter Tracy files, unmarked folder.

<sup>72</sup> Bala was also heavily involved in the typographic development of Devanagari at Linotype. For more on his efforts, see Ross, Fiona. 'Invisible hands: tracing the origins and development of the Linotype Devanagari digital fonts'. *Journal of the Printing Historical Society*, series 3, no. 2, 2021, pp. 111-153.



acceptable Gurmukhi keyboard layout.<sup>73</sup> What followed was another half-decade with no documented developments. However, in 1984, the project was once again revisited, this time spearheaded by a client who had contacted the Head of Overseas Sales at the time, John M. Tonks.

Ultimately, it was the emergence of this significant client that paved the way for the development of Linotype's Gurmukhi fonts: the Tribune Trust newspaper of Chandigarh. Founded in 1881 by philanthropist Sardar Dyal Singh Majithia (1849-1898) the Tribune started as a twelve-page English weekly paper, and would go on to establish two sister publications, the Hindi Tribune and the Punjabi Tribune in 1978.<sup>74</sup> The English version of the Tribune was already the most widely circulated English language weekly in the Panjab, and the addition of the Panjabi and Hindi language editions were quick to be favoured by their readers as well; according to the National Readership Survey (NRS) conducted by the Operational Research Group (ORG), there was an increase of average daily circulation from around 70,000, to over 77,000 of the two vernacular sister publications in just four years (from 1979 to 1983).<sup>75</sup> Considering the overall estimated Panjabi daily circulations of 231,000 newspapers in 1981, this suggests that the Punjabi Tribune was holding a noteworthy share of the market, and thus positioning itself as a significant client for the Linotype company.<sup>76</sup>

In 1984, Tonks informed his colleagues at Linotype-Paul,<sup>77</sup> programmer Mike Fellows and Fiona Ross, that the Tribune had commissioned a Gurmukhi font for the Linotron 202 machine.<sup>78</sup> Fellows had joined Linotype-Paul in 1976 as a programmer, developing software for a number of scripts, particularly Arabic and the writing systems of India, and also for photocomposition and digital systems. Prior to this and between the years 1978 and 1982, he and Ross had collaborated to devise a phonetic keyboard for Indian writing systems for the aforementioned Linotron 202.<sup>79</sup> Upon receiving the tentative authorization to proceed, Fellows put in place provisional development plans for the production of the Gurmukhi font within eight months—subject to the approval of the Linotype Overseas Sales Office—with an anticipated delivery date of the fonts by August of the same year.<sup>80</sup> Within a month and by February 1984, Ross had delivered sample Gurmukhi

73 F. Ross to E. A. Vessey. Memorandum dated 24 Jan. 1979, Gurmukhi Correspondence folder, DTGC.

74 Ananda, Prakash. *A history of the Tribune*. Tribune Trust, 1986.

75 Deol, Harnik. *Religion and nationalism in India: The case of the Punjab, 1960-1995*. London School of Economics and Political Science, 1996, PhD dissertation.

76 Panjabi daily circulation from *Registrar for Newspapers of India* (RNI). Jeffrey, Robin. 'Punjabi: The "subliminal charge"?' *Economic and Political Weekly*, 1997, pp. 443-445.

77 Linotype-Paul was the result of a merger of the Linotype company with K. S. Paul Limited in 1967.

78 J. M. Tonks to M. Fellow and F. Ross. Memorandum dated 3 Jan. 1984, Gurmukhi Correspondence folder, DTGC.

79 Savoie. *International cross-currents in typeface design*, 2014.

80 M. Fellows to J. Tonks. Correspondence dated 4 Jan. 1984, Gurmukhi Correspondence folder, DTGC.



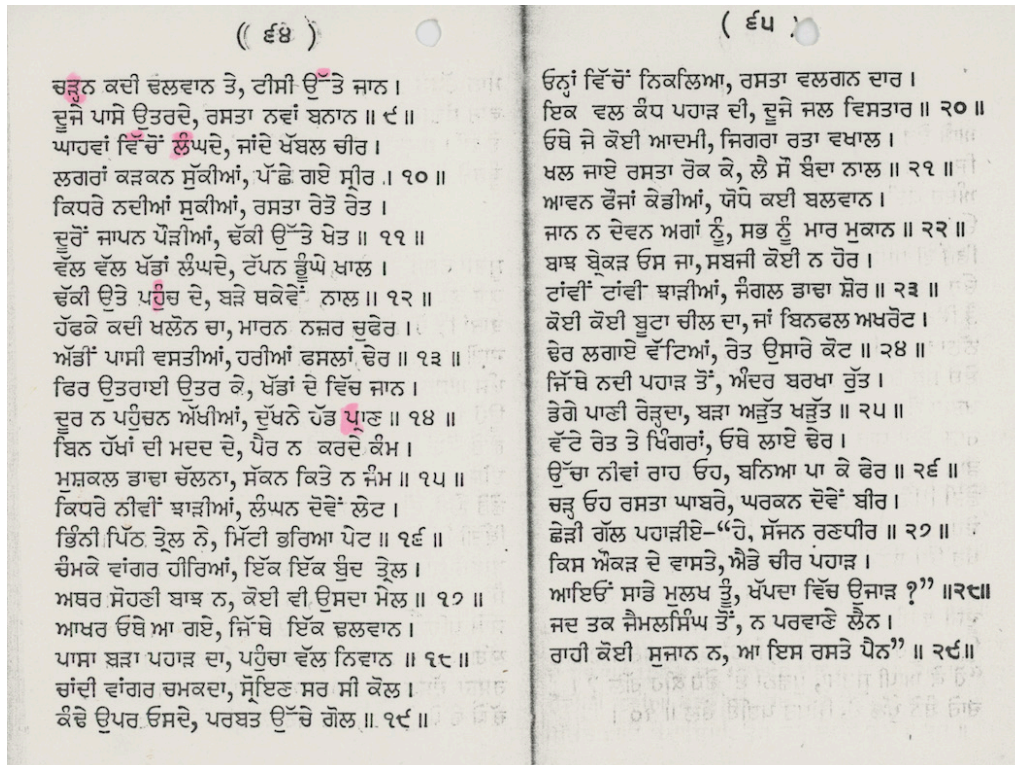


Figure 6.13 The Tribune Trust's reference of the Gurmukhi design to be replicated by Linotype. From the DTGC, Gurmukhi Correspondence folder.



outlines to the client for review. The consensus prior to the submission of the samples had been that these would likely not be well received by the team at the Tribune, and that their preference would be for a low-contrast approach in the structure of the letterforms.<sup>81</sup> This expectation was confirmed in a correspondence from Krishna Singh, the Systems Manager at Linotype Associates India Private Limited.<sup>82</sup> Further communication and submission of a second proof of designs on 21 February to the General Manager of the Tribune Trust, Mr S. D. Bhambri, revealed that the client was entirely decided on a particular appearance for the commissioned Gurmukhi face, and was inclined for the new design to be based on their existing hot-metal founts, and drawn to resemble their preferred design in all respects (figure 6.13).<sup>83</sup>

The samples sent by the client were quickly identified by the TDRR at Linotype as being Monotype's hot-metal Gurmukhi founts. Tonks conveyed this discovery to Ross, along with the fact that Balasubramaniam's research had found that Monotype's own design was based on out-of-copyright foundry type.<sup>84</sup> This discovery of the origin of the design of Monotype Gurmukhi technically meant there were no legal restrictions binding Linotype in replicating the design, however, Tonks communicated to the client that the Typography Team at Linotype could not copy the Monotype design exactly as they believed this to be unethical, but assured a near reproduction based on the original foundry type.<sup>85</sup> Following this, he requested that Ross direct the preparation of documents regarding an interim Linokey 3 English/Panjabi keyboard layout, subsequently the task of designing the new typeface was taken on by Ross and her colleagues in the TRDD, Donna Yandle and Georgina Surman.<sup>86</sup> In the following days and having reached an understanding with the client with regard to the design approach, a contract was signed with Mr. Bhambri for a three month delivery upon receipt of 15% of the down payment, of a phototypesetting system comprising Linotron 202 machines, and a second delivery eight months following the first, of the Gurmukhi fonts and the Linokey3 Gurmukhi programs.<sup>87</sup> With the contract signed, Ross immediately issued a font development order for the production of Linotype's Gurmukhi Light and Bold on the 202 machine, listing 116 characters required per weight (some of which she noted could be borrowed from the Kesari [Kannada]) for the fonts.<sup>88</sup>

81 No images of these initial samples could be found, however the approach taken by the TRDD was likely one based on a more humanist (calligraphic) approach.

82 K. K. Singh to F. Ross. Correspondence dated 22 Feb. 1984, Gurmukhi Correspondence folder, DTGC.

83 Tribune Trust Press Manager to Linotype Associates India Private Limited. Correspondence dated 3 Mar. 1984; K. K. Singh to F. Ross. Correspondence dated 8 Mar. 1984, Gurmukhi Correspondence folder, DTGC.

84 This is verifiable by primary resources from the Monotype archives. See section 6.1 for more.

85 J. M. Tonks to F. Ross. Memorandum dated 14 Apr. 1984, Gurmukhi Correspondence folder, DTGC.

86 Ibid.

87 J. M. Tonks to J. Dixon. Memorandum dated 17 Apr. 1984, Gurmukhi Correspondence folder, DTGC.

88 Development font order no. D49401, *Gurmukhi Script*, signed and authorized by F. Ross, 18 Apr. 1984, Gurmukhi Correspondence folder, DTGC.

## Until now, all digital CRT typesetters were fast, complex, and expensive. Introducing Linotron 202. It's just fast.

Our new Linotron 202 runs at 450 lines per minute. Now, there are faster CRT typesetters. In fact, we manufacture two of them ourselves. But 90 years of making typesetters for newspapers has convinced us that the profitable newspaper looks for more than speed.

So we followed all new priorities in developing Linotron 202. We insisted that *price* is as important as *speed*. We decided to do something about the high cost of digitized fonts. And most important of all, we kept Linotron 202 *simple*. Because we've learned that simple operation and simple maintenance are critical to a newspaper's bottom line.

**The lowest price.**

Linotron 202 will sell for far less than other digital CRT typesetters. To keep its price low — and at the same time cut font costs — Linotron 202 loads and stores fonts on inexpensive floppy disks.

Because we think you should buy a typeface only once, Linotron 202 sets its 137 point

sizes from 4½ to 72 points all from one master digitization.

And since diskettes are so inexpensive and easy to use, you can load one with typefaces for your editorial pages, another for classified, and one for each major advertiser.

**Simple is better.**

All great designs are simple. So Linotron 202 has no lenses. In fact, there are no moving parts in the entire character generating system.

We designed fail-safe features into Linotron 202 that make it impossible to install a circuit board incorrectly or press the wrong button. We put the parts and controls you *must* reach *within* reach. And we color coded subassemblies for simple, foolproof replacement.

**Simple service.**

Linotron 202 also simplifies service. Everything is modular. If a circuit board fails, it is quickly and easily replaced. Even the critical CRT assembly is pre-aligned at our factory and packaged so one person can replace it single-handedly.

**1,000 Mergenthaler typefaces.**

All 1,000 designs in the ever-growing Mergenthaler typeface library will be made available for Linotron 202. No other typesetter — at any price — can offer a larger, more respected selection of authentic typefaces.

**Learn more.**

Linotron 202 is the simple, affordable alternative in high speed composition. For complete specifications or a thorough demonstration, contact

Mergenthaler Linotype Company,  
Mergenthaler Drive,  
Plainview, New York  
11803. Or call  
(516) 752-4197.

**Mergenthaler  
Linotype**



Figure 6.14 The Tribune Trust's reference of the Gurmukhi design to be replicated by Linotype. Image from the Gurmukhi Correspondence folder, DTGC. Advertisement of Linotype's Linotron 202 machine in which the new machinery is hailed as fast, affordable, easy to use, and benefitting from simple service and a large number of Mergenthaler types to choose from for typesetting. From *Web newspapers and magazine production*. Vol. 8, no. 1, Jan.-Feb. 1979.

The machine in question—the Linotron 202—had been introduced to the market in 1975, with a speed of setting newspaper lines of 450 lines per minute. Similar to the Lasercomp, the digital photocomposition machinery came with floppy disks that could store about sixty fonts of about 100 characters each.<sup>89</sup> The storage of fonts on these floppy disks meant an important advantage for the Linotron 202 machines; it made the machines considerably cheaper—around \$40,000—something the company made clear in all advertisements of the machine.<sup>90</sup> The machine was able to set 137 point sizes from 4½ to 72 points in various widths and slant angles all from one master digitization, and was advertised as being efficient and simple to use (figure 6.14).<sup>91</sup>

A combination of these features evidently proved appealing for the Tribune Trust, and by late May 1984, the TRDD had completed friskets for Gurmukhi Light and Bold 12 point,<sup>92</sup> and prepared them for digitisation by their partner in West Germany, Stempel AG.<sup>93</sup> The German type foundry (founded in 1895 by David Stempel) had an exclusive partnership with Linotype from 1900, with a contract that stipulated they would make matrices for Linotype. Along with the friskets that were sent to Stempel AG, the TRDD included a list of characters (consisting generally of symbols such as the dagger, leading dots, and percent sign), to be borrowed from existing fonts in the Mergenthaler library, namely the Tamara Light and Bold, the Sa'amanti Light and Bold, the Kesari Light and Bold, and the Malayalam Light and Bold fonts.<sup>94</sup> Once initial drafts were completed, photographic reductions of the artwork were taken directly from the proofs and dispatched to the client, along with a proposed Gurmukhi keyboard layout.<sup>95</sup>

As before with the sign-off requirement of overall letterform structures, the clients were not immediately in agreement with the decisions of the TRDD, and requested some modifications to the design of the typeface and to the layout of the keyboard.<sup>96</sup> It appears the client was not satisfied with the seemingly light weight of the letterforms, a remark surprising to Ross, who was aware of the client's concerns that the typeface should not appear 'anaemic', and because of this, had ensured 'for this reason that the middle protrusions had been given some colour'.<sup>97</sup>

89 Wallis. *Chronology of typesetting developments*, 1988.

90 *World-wide printer*. Vol. 3, iss. 1, Jan.–Feb. 1980, p. 27.

91 A frisket is a masking device used especially in printing. In the context of phototypesetting, it refers to letterforms cut out of rubylith film (a brand of masking film) prior to being exposed to light.

92 G. Robertson to J. Eger. Correspondence dated 30 May 1984, Gurmukhi Correspondence folder, DTGC.

93 Wallis. *Chronology of typesetting developments*, 1988.

94 G. Robertson to J. Eger. Correspondence dated 29 May 1984, Gurmukhi Correspondence folder, DTGC.

95 Proposed Gurmukhi LK3 layout from the Typographic Department at Linotype-Paul, 18 Apr. and 19 June 1984, Gurmukhi Correspondence folder, DTGC.

96 F. Ross to K. K. Singh. Correspondence dated 19 June 1984, Gurmukhi Correspondence folder, DTGC.

97 *Ibid.*

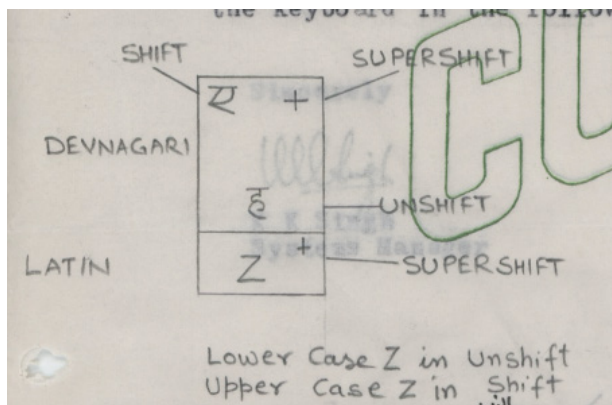


Figure 6.15 An illustration of the schematics of keyboard layouts for the Linotron 202. Symbols were available in all languages in the supershift position, while the base consonants were assigned the unshift position on the same key. From correspondence between K. K. Singh and S. D. Bhambri, dated 19 July 1984, DTGC, Gurmukhi Correspondence folder.

Regardless, assurances were made that additional weight would be applied to the lighter strokes, with an eye to the fact that the client's feedback was based on photographic reproductions; what this meant was that the type as seen by the clients for review would necessarily and to a degree appear lighter in colour from what would be achieved when typeset from the digital font. Ross also explained that the type would 'collect more colour through printing and become more "robust" and "muscular" than shown on the photographic samples'.<sup>98</sup> She concluded that it should be made known to the client that through the change from hot-metal to digital photocomposition, the possibility of producing exact replicas of their newspapers with a similar colour on the page would not be possible—alluding to the usual ink-bleed in hot-metal printing that would give the appearance of heavier weights to the letterforms and thus achieve an overall darker colour on the printed page.

Likewise, the client was dissatisfied with the proposed keyboard layout for Linotype Gurmukhi, putting forth their own proposed layout instead.<sup>99</sup> While no record of these proposed revisions could be found, they were deemed by Ross as clearly designed for metal type, with the number of keying positions increased to account for the inability of hot-metal machines to position accents in various positions. Ross maintained that a single keying position for these accents would be sufficient, ensuring the accent would 'automatically' fall in the correct position depending on the context. The one exception to this was key No. 111, assigned to two versions of the *ṭippī* (ṭ), one centred and the other ragged right (a text margin treatment in which all lines begin hard against the left-hand margin but are allowed to end short of the right-hand margin), which could be used interchangeably according to client preferences.<sup>100</sup> The removal of accents in multiple positions was a deliberate choice from the Linotype team to achieve the minimal number of keys, thus making the layout easy to memorise and simple and efficient to operate, making it possible to key characters at a faster rate. Linotype had applied a similar concept for other Indian scripts as well, where, according to Ross, all basic characters of the syllabary occupied unshift positions, therefore needing only a single keystroke—a principal of one sound per key—with characters arranged according to frequency of use (figure 6.15).<sup>101</sup>

Despite the disagreement on the layout and frequency of accents, both the client and the team at Linotype were in agreement over the absence of the conjunct key (dedicated to creating consonant clusters), owing to the very small number of the subscript consonants present in the Gurmukhi script. Ross

---

98 Ibid.

99 Gurmukhi Linokey3 layout proposal sheets, Gurmukhi Correspondence folder, DTGC.

100 F. Ross to K. K. Singh. Correspondence dated 19 June 1984, Gurmukhi Correspondence folder, DTGC.

101 Ibid.



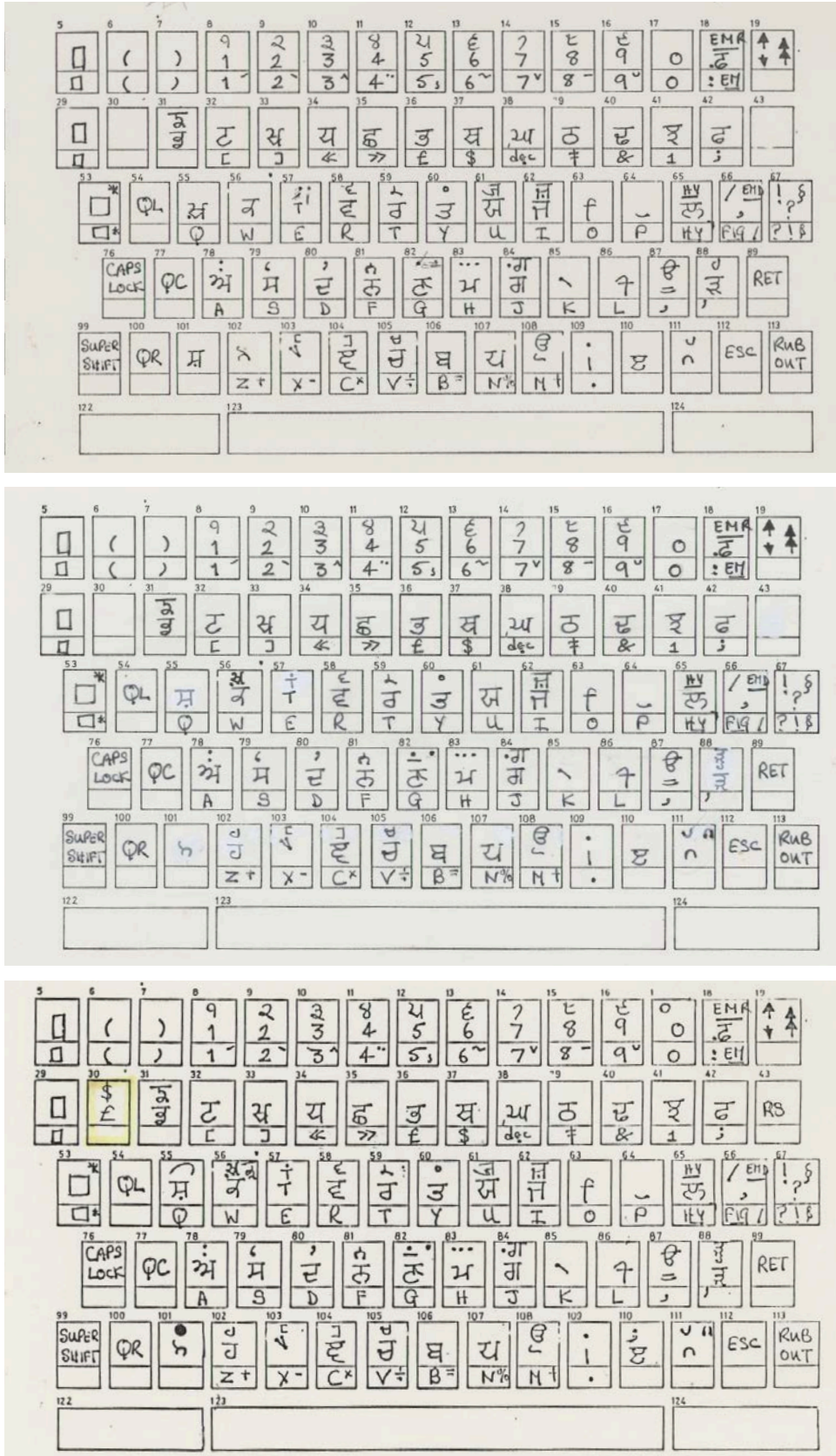


Figure 6.16 A comparison of the changes to the proposed Gurmukhi Linotron 202 keyboard layouts from 18 Apr. 1984 (above) to 19 June 1984 (middle and finalised version below). From the DTGC, Gurmukhi Correspondence folder.

clarified, however, that the presence of all fifteen conjuncts on the keyboard (as suggested by the client) was also unnecessary, and that these conjuncts could be generated automatically by keying the consonant, followed by the subscript modifier. Despite all these valid factors against significant modification of the proposed layout, an agreement was reached to consider changes, but with an eye to satisfactory performance, particularly considering the interdependence of the layout, artwork, and software.<sup>102</sup>

The lack of further communication indicates an agreement was reached and the matter of the keyboard layout was resolved with some further changes (figure 6.16). A number of modifications can be seen between the earlier proposed keyboard layout and the later version, where some characters were erased with white correction fluid and drawn over with replacements. The most notable of these changes is the reassignment of some base consonants to different keys, such as the sasse pair bindī (ਸ) which was moved from key No. 101 to No. 55, previously assigned to khakkhe pair bindī (ਖ), which itself was moved to the shifted position of key No. 56 (previously empty) instead—a change likely to allow for easier access to the more frequent characters in the unshift position. Additionally, some accent and punctuation marks in the shifted position were relocated, such as the accents of key No. 57, which were changed to a kannā combined with the bindī mark, an easier position for the keyboard operator to remember, considering the designated unshift character occupying that key being the kannā itself.

To address concerns regarding some aspects of the design and worries of the characters appearing light on the page, revised sample printouts (this time set on the 202 machine rather than photographic reproductions) were sent to the client for approval in August 1984 (figure 6.17, page 244).<sup>103</sup> This draft too was met with two requests for further reconsiderations, this time with more of a technical nature rather than being design-oriented; firstly the positioning of the superscript vowels lāvā, dulāvā, and hoṛā in relation to the nannā (ਨ), lallā (ਲ), and nāṇā (ਣ) were flagged as being incorrect; that these marks were not aligning to the extreme right corner of the base consonants. In the samples from Linotype, these superscript vowels were originally placed in a more centred position in relation to the base forms. Secondly, the client asked for the option to be able to pair accented characters such as ਏ (pronounced Tē) with an apostrophe, as in ਏ (short for ਅਏ *ate*, meaning *and*)—and requested a provision for the apostrophe to be keyed before any given character.<sup>104</sup> These revisions were met with acceptance from the team at Linotype and incorporated into the fonts, which, together with

<sup>102</sup> Ibid.

<sup>103</sup> F. Ross to S. D. Bhambri. Correspondence dated 17 Aug. 1984, Gurmukhi Correspondence folder, DTGC.

<sup>104</sup> S. D. Bhambri to F. Ross. Undated correspondence (with reference only as to being a response to previous correspondence of 17 Aug. 1984), Gurmukhi Correspondence folder, DTGC.



## ਫੇਰ ਚੋਣ ਸੁਧਾਰਾਂ ਦੀ ਗੱਲ

ਪਿਛਲੇ ਦਿਨੀਂ ਕੇਂਦਰੀ ਕਾਨੂੰਨ ਮੰਤਰੀ ਜਗਨ ਨਾਥ ਕੌਸ਼ਲ ਨੇ ਲੋਕ ਸਭਾ ਵਿਚ ਇਕ ਸਵਾਲ ਦਾ ਜਵਾਬ ਦਿੰਦਿਆਂ ਇਹ ਕਿਹਾ ਸੀ ਕਿ ਸਰਕਾਰ ਪੂਰੀ ਗੰਭੀਰਤਾ ਨਾਲ ਚੋਣਾਂ ਵਿਚ ਲੋੜੀਂਦੇ ਸੁਧਾਰ ਕਰਨ ਬਾਰੇ ਵਿਚਾਰ ਕਰ ਰਹੀ ਹੈ । ਉਨ੍ਹਾਂ ਕਿਹਾ ਕਿ ਇਸ ਦੇ ਸਾਰੇ ਪਹਿਲੂਆਂ ਤੇ ਵਿਚਾਰ ਕਰਨ ਲਈ ਜੇ ਸਬ-ਕਮੇਟੀ ਬਣਾਈ ਗਈ ਸੀ, ਉਸ ਦੇ ਸੁਝਾਵਾਂ ਤੇ ਵੀ ਨਜ਼ਰਸਾਨੀ ਕਰਨ ਲਈ ਅਤੇ ਉਸ ਦੀਆਂ ਨੀਤੀਆਂ ਅਨੁਸਾਰ ਪ੍ਰਭਾਵਤ ਕਦਮ ਉਠਾਉਣ ਲਈ ਸਰਕਾਰ ਜ਼ਰੂਰ ਤਿਆਰ ਹੋਵੇਗੀ । ਮੁਲਕ ਦੀਆਂ ਹੋਰ ਮਹੱਤਵਪੂਰਨ ਵਿਰੋਧੀ ਪਾਰਟੀਆਂ ਦੇ ਨੁਮਾਇੰਦਿਆਂ ਨਾਲ ਵਿਚਾਰ ਵਟਾਂਦਰਾ ਕਰਨ ਤੇ ਬਾਅਦ ਹੀ ਕਿਸੇ ਸਾਂਝੇ ਨਤੀਜੇ ਤੇ ਪੁੱਜਿਆ ਜਾ ਸਕਦਾ ਹੈ । ਇਸੇ ਸਾਲ ਜਨਵਰੀ ਦੇ ਮਹੀਨੇ ਵਿਚ ਮੁਖ ਚੋਣ ਕਮਿਸ਼ਨਰ ਨੇ ਵੀ ਚੋਣਾਂ ਵਿਚ ਸੁਧਾਰਾਂ ਲਈ ਸਾਰੀਆਂ ਰਾਜਨੀਤਕ ਪਾਰਟੀਆਂ ਦੀ ਮੀਟਿੰਗ ਬੁਲਾਉਣ ਦਾ ਸੁਝਾਅ ਦਿਤਾ ਸੀ ।

ਬਹੁਤ ਸਮੇਂ ਤੋਂ ਹੀ ਚੋਣਾਂ ਦੇ ਨਿਯਮਾਂ ਵਿਚ ਸੁਧਾਰਾਂ ਦੀ ਗੱਲ ਚਲ ਰਹੀ ਹੈ । ਜਨਤਾ ਸਰਕਾਰ ਦੇ ਸਮੇਂ ਵੀ ਇਸ ਵਿਸ਼ੇ ਤੇ ਨਾਟਕੀ ਬਹਿਸ ਹੋਈ ਸੀ । ਸ਼ਾਇਦ ਉਸ ਸਮੇਂ ਇਸ ਦਿਸ਼ਾ ਵਲ ਕੋਈ ਪ੍ਰਭਾਵੀ ਕਦਮ ਵੀ ਚੁੱਕੇ ਜਾਂਦੇ ਪਰ ਜਨਤਾ ਸਰਕਾਰ ਕੇਂਦਰ ਵਿਚ ਬਹੁਤ ਬੌਝੇ ਸਮੇਂ ਲਈ ਟਿਕੀ ਰਹਿਣ ਕਰਕੇ ਅਜਿਹਾ ਕਰਨਾ ਸੰਭਵ ਨਹੀਂ ਹੋ ਸਕਿਆ । ਪਰ ਇਸ ਗੱਲ ਤੇ ਲਗਭਗ ਸਾਰੀਆਂ ਹੀ ਰਾਜਨੀਤਕ ਪਾਰਟੀਆਂ ਦੀ ਰਾਏ ਇਕ ਹੈ ਕਿ ਸਾਡੀ ਚੋਣ ਪ੍ਰਣਾਲੀ ਕਾਫੀ ਸੁਧਾਰਾਂ ਦੀ ਮੰਗ ਕਰਦੀ ਹੈ । ਆਜ਼ਾਦੀ ਤੋਂ ਬਾਅਦ ਅਸੀਂ ਆਪਣੇ ਰਾਜਨੀਤਕ ਪ੍ਰਬੰਧ ਦੀ ਚੋਣ ਕਰਦੇ ਸਮੇਂ ਚੋਣਾਂ ਦੀ ਪ੍ਰਣਾਲੀ ਕਈ ਯੂਰਪੀ ਮੁਲਕਾਂ ਤੋਂ ਉਧਾਰੀ ਲਈ । ਇਸ ਦੇ ਅਮਲ ਵਿਚ ਆਉਣ ਅਤੇ ਬਹੁਤੀ ਵਾਰ ਵੱਖ ਵੱਖ ਵਰਗਾਂ ਵਲੋਂ ਇਸ ਨੂੰ ਕਿਸੇ ਵੀ ਰੂਪ ਵਿਚ ਆਪਣੀ ਸੋਚ ਅਤੇ ਚਾਲ ਅਨੁਸਾਰ ਤੋਰਨ ਦੇ ਯਤਨਾਂ ਕਰਕੇ ਇਸ ਵਿਚ ਕਈ ਅਜਿਹੇ ਨੁਕਸ ਪੈਦਾ ਹੋ ਰਾਏ ਜਿਨ੍ਹਾਂ ਵਿਚ ਤੁਰੰਤ ਸੁਧਾਰ ਕਰਨਾ ਜ਼ਰੂਰੀ ਸਮਝਿਆ ਜਾਣ ਲੱਗਾ ।

ਇਹ ਗੱਲ ਵਧੀਆ ਹੈ ਕਿ ਭਾਰਤ ਦੇ ਚੋਣ ਕਮਿਸ਼ਨ ਨੇ ਆਪਣੀ ਪ੍ਰਤਿਭਾ ਅਤੇ ਪੱਧਰ ਬਣਾਈ ਰੱਖੀ ਹੈ । ਆਮ ਲੋਕਾਂ ਨੂੰ ਇਸ ਦੀਆਂ ਕਾਰਵਾਈਆਂ ਨਿਰਪੱਖ ਅਤੇ ਬਹੁਤੇ ਵਾਦ ਵਿਵਾਦ ਤੋਂ ਉਪਰ ਮਹਿਸੂਸ ਹੁੰਦੀਆਂ ਹਨ । ਪਰ ਚੋਣਾਂ ਵਿਚ ਅਕਸਰ ਇਹ ਵਿਚਾਰ ਆਮ ਮਨਾਂ ਤੇ ਭਾਰੂ ਰਹਿੰਦਾ ਹੈ ਕਿ ਰਾਜ ਕਰਦੀ ਪਾਰਟੀ ਚੋਣਾਂ ਨੂੰ ਆਪਣੇ ਹੱਕ ਵਿਚ ਲਿਜਾਣ ਵਲ ਤੋਰਦੀ ਹੈ ਅਤੇ ਉਸ ਕੋਲ ਸਰਕਾਰੀ ਪੱਧਰ ਤੇ ਵੀ ਏਨੇ ਕੁ ਸਾਧਨ ਹੁੰਦੇ ਹਨ ਕਿ ਉਹ ਆਮ ਰਾਏ ਨੂੰ ਆਪਣੇ ਹੱਕ ਵਿਚ ਕਰਨ ਵਿਚ ਵਧੇਰੇ ਸਫਲ ਹੋ ਜਾਂਦੀ ਹੈ । ਇਸ ਤੋਂ ਇਲਾਵਾ ਚੋਣਾਂ ਵੀ ਬਹੁਤ ਖਰਚੀਲੀਆਂ ਹੋ ਰਾਈਆਂ ਹਨ । ਇਨ੍ਹਾਂ ਨੂੰ ਜਾਂ ਤਾਂ ਕੋਈ ਬਹੁਤ ਹੀ ਅਮੀਰ ਵਿਅਕਤੀ ਅਤੇ ਜਾਂ ਉਹ ਉਮੀਦਵਾਰ ਹੀ ਲੜ ਸਕਦਾ ਹੈ ਜਿਸ ਪਿਛੇ ਬਹੁਤ ਹੀ ਪੈਸੇ ਵਾਲੀ ਸ਼ਕਤੀਸ਼ਾਲੀ ਪਾਰਟੀ ਜਾਂ ਕੁਝ ਹੋਰ ਲੋਕ ਹੋਣ । ਇਸ ਦਾ ਭਾਵ ਇਹ ਹੋਇਆ ਕਿ ਰਾਜੀਬ ਅਤੇ ਆਮ ਸਾਧਨਾਂ ਵਾਲਾ ਵਿਅਕਤੀ ਬਹੁਤੀ ਵਾਰ ਤਾਂ ਚੋਣ ਮੈਦਾਨ ਵਿਚ ਨਿਤਰਨ ਦੀ ਹਿੰਮਤ ਹੀ ਨਹੀਂ ਕਰਦਾ ਪਰ ਜੇ ਉਹ ਚੋਣ ਲੜਨਾ ਵੀ ਚਾਹੇ ਤਾਂ ਉਸ ਦੇ ਜਿੱਤਣ ਦੇ ਅਧਾਰ ਜਾਂ ਚਾਂਸ ਬਹੁਤ ਬੌਝੇ ਰਹਿ ਜਾਂਦੇ ਹਨ । ਇਸ ਲਈ ਚੋਣ ਸੁਧਾਰਾਂ ਵਿਚ ਸੁਖ ਰੂਪ ਵਿਚ ਇਹ ਗੱਲ ਸੋਚਣੀ ਬਣਦੀ ਹੈ ਕਿ ਇਸ ਦੇ ਖਰਚੇ ਕਿਸੇ ਵੀ ਤਰ੍ਹਾਂ ਘਟਾਏ ਜਾਣ ਅਤੇ ਇਸ ਗੱਲ ਨੂੰ ਯਕੀਨੀ ਬਣਾਇਆ ਜਾਏ ਕਿ ਅਮਲੀ ਰੂਪ ਵਿਚ ਵੀ ਇਹ ਸੁਧਾਰ ਪ੍ਰਭਾਵਕਾਰੀ ਸਾਬਤ ਹੋ ਸਕਣ ।

ਸਾਡੇ ਮੁਲਕ ਵਿਚ ਰੇਡੀਓ ਤੇ ਟੈਲੀਵੀਜ਼ਨ ਆਦਿ ਸਰਕਾਰੀ ਪ੍ਰਬੰਧ ਹੋਣ ਚਲ ਰਹੇ ਹਨ । ਇਹ ਗੱਲ ਵੀ ਯਕੀਨੀ ਬਣਾਨੀ ਚਾਹੀਦੀ ਹੈ ਕਿ ਇਨ੍ਹਾਂ ਸਾਧਨਾਂ ਰਾਹੀਂ ਚੋਣ ਪ੍ਰਚਾਰ ਵਿਚ ਮੁਲਕ ਦੀ ਹਰ ਰਾਜਨੀਤਕ ਪਾਰਟੀ ਨੂੰ ਇਕੋ ਜਿਹਾ ਸਮਾਂ ਮਿਲੇ ਅਤੇ ਉਨ੍ਹਾਂ ਨਾਲ ਇਕੋ ਜਿਹਾ ਹੀ ਵਰਤਾਅ ਕੀਤਾ ਜਾਏ । ਇਹ ਵੀ ਯਤਨ ਹੋਣਾ ਚਾਹੀਦਾ ਹੈ ਕਿ ਵੋਟਾਂ ਗਿਣਨ ਆਦਿ ਲਈ ਤਕਨੀਕੀ ਸਾਧਨਾਂ ਭਾਵ ਕੰਪਿਊਟਰ ਆਦਿ ਦੀ ਵਰਤੋਂ ਵਿਚ ਲਿਆਉਣੇ ਚਾਹੀਦੇ ਹਨ । ਇਸ ਨਾਲ ਜਿਥੇ ਕਿਸੇ ਵੀ ਤਰ੍ਹਾਂ ਦੀ ਗਲਤੀ ਹੋਣ ਦੇ ਬਹੁਤੇ ਚਾਂਸ ਘਟ ਜਾਣਗੇ ਉਥੇ ਕੌਮ ਵੀ ਬੜੀ ਛੇਤੀ ਤੇ ਚਗ਼ੀ ਤਰ੍ਹਾਂ ਨਿਬੇੜਿਆ ਜਾ ਸਕਦਾ ਹੈ । ਅਸੀਂ ਮਹਿਸੂਸ ਕਰਦੇ ਹਾਂ ਕਿ ਜਿਥੇ ਚੋਣ ਪ੍ਰਣਾਲੀ ਵਿਚ ਅਨੇਕਾਂ ਹੀ ਸੁਧਾਰਾਂ ਦੀ ਜ਼ਰੂਰਤ ਹੈ ਉਥੇ ਜੇ ਨਿਯਮ ਪਹਿਲਾਂ ਹੀ ਬਣੇ ਹੋਏ ਹਨ ਉਨ੍ਹਾਂ ਤੇ ਵੀ ਸਖਤੀ ਨਾਲ ਅਮਲ ਕਰਨ ਦੀ ਜ਼ਰੂਰਤ ਹੈ । ਚੋਣਾਂ ਵਿਚ ਸੁਧਾਰਾਂ ਦੇ ਨਤੀਜੇ ਅੱਗੇ ਚਲ ਕੇ ਇਸ ਖੇਤਰ ਦੀਆਂ ਪ੍ਰੰਪਰਾਵਾਂ ਬਣ ਜਾਣਗੇ ਅਤੇ ਦੰਗੀਆਂ ਪ੍ਰੰਪਰਾਵਾਂ ਹੀ ਸਿਹਤਮੰਦ ਪ੍ਰਜਾਤੰਤਰ ਦੀਆਂ ਸ਼ਾਹਦੀ ਹੋ ਸਕਦੀਆਂ ਹਨ ।

Figure 6.17 Printed example of Linotype Gurmukhi on Linotron 202, 17 Aug. 1984. From the DTGC, Gurmukhi Correspondence folder.

the finalised Linokey3 keyboard layout and 202 typesetting program for Gurmukhi, were scheduled for a mid-February release.<sup>105</sup> The aforementioned materials were collectively dispatched (as planned) to the client on 15 February 1985.<sup>106</sup> Following the arrival of the software and hardware two months later, multiple rounds of technical challenges regarding the machinery, film, and programs were discussed between the client, the Linotype India Office, and the TRDD team in Britain, which was not unusual in these circumstances; machinery and software could be damaged in transport, and as with any new development, numerous rounds of testing was required to discover and resolve any outstanding issues. In the space of nearly a year, having rectified all identifiable issues with regard to the issued fonts and machinery, the Linokey 3 software for Gurmukhi/English was released in September 1986.<sup>107</sup>

In the following years, following an expression of interest from a client in India by the name of Type Printers,<sup>108</sup> it was decided that the existing Linotype Gurmukhi design was to be adapted to the newer Linotype CRTronic machine in 1987.<sup>109</sup> The machine had originally been introduced to the market in 1979, and as evident from its name, used a cathode ray tube to output digital forms. Fonts for the CRTronic were stored on floppy discs coded in outline by vectors, and could be used with a pair of disc drives on the machine for font and text storage.<sup>110</sup> The standalone unit was aimed at the small printers, quick-print shop markets, in-house graphics facilities, and educational markets rather than type houses, with a relatively inexpensive price of \$20,000 for the cheapest of the machines in the series, the CRTronic 100, in 1984.<sup>111</sup>

Judging from the documentation available from this period, it appears the transition was generally uncomplicated, apart from an issue with the connection on the right side of the airā (ਅ) in the light weight. This issue was communicated to the company partners at Stempel with a request to rectify the error by appending a similar connection as used in the sassā (ਸ) for the airā (figure 6.18, page 246).<sup>112</sup> With this matter resolved, CRTronic Gurmukhi Light and Bold were made available for release to customers on 21 December 1987.<sup>113</sup> It is noteworthy that at the inception of the design of Linotype Gurmukhi for the Tribune Trust, the client

105 F. Ross to K. K. Singh. Telex dated 29 Jan. 1985, Gurmukhi Correspondence folder, DTGC.

106 F. Ross to K. K. Singh. Telex dated 15 Feb. 1985, Gurmukhi Correspondence folder, DTGC.

107 G. Robertson to M. Fellows. Memorandum dated 15 Sept. 1986, Gurmukhi Correspondence folder, DTGC.

108 No further information on this company could be found, and the generic name makes further research on the matter difficult.

109 S. Cavill to J. Eger. Memorandum dated 8 Apr. 1987, Gurmukhi Correspondence folder, DTGC.

110 Wallis. *Chronology of typesetting developments*, 1988.

111 The Linotype Communications Interface (LCI) would have cost an additional \$4000 for the customer. Labuz, Ronald. *How to typeset from a word processor: an interfacing guide*. R. R. Bowker, 1984, p. 99.

112 D. Yandle to J. Eger. Memorandum dated 8 June 1987, Gurmukhi Correspondence folder, DTGC.

113 R. Coates to L. Minihan. Memorandum dated 21 Dec. 1987, Gurmukhi Correspondence folder, DTGC.

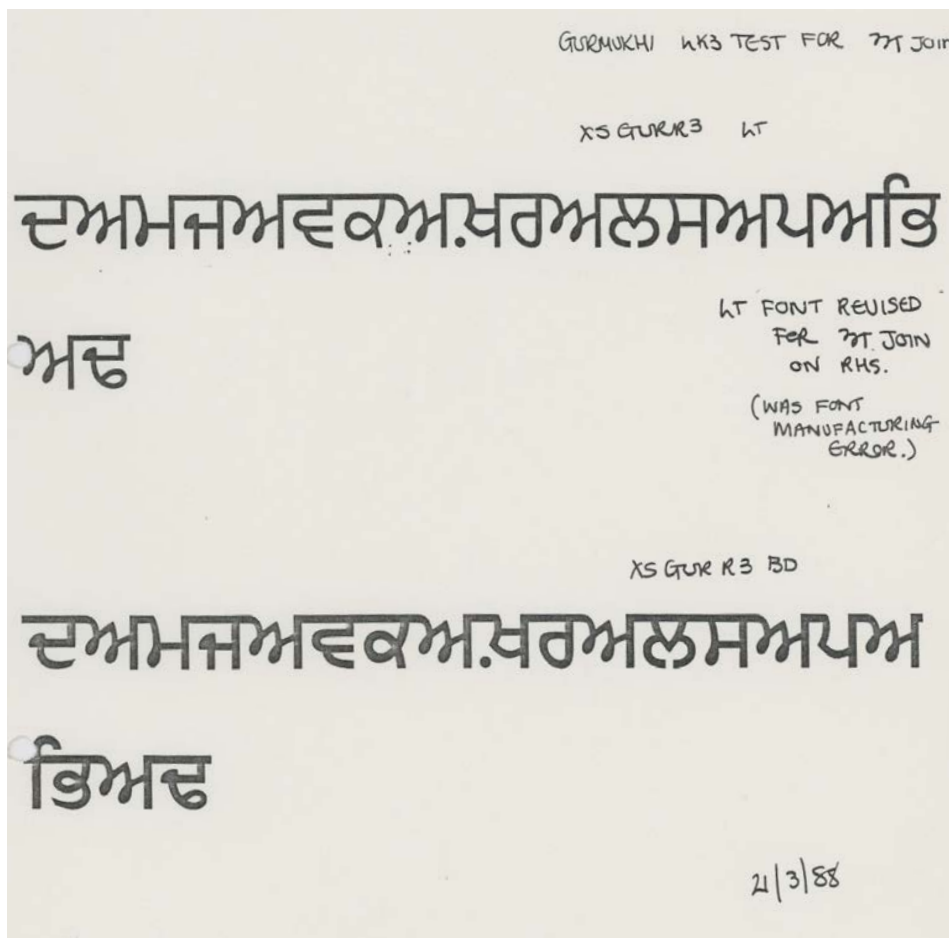


Figure 6.18 Linotype Gurmukhi Light and Bold outputs from CRTronic machine to test right side connection of the aiṛā character, showing the issue as being resolved. Trial proof dated 4 Mar. 1988. From the DTGC, Gurmukhi Correspondence folder.

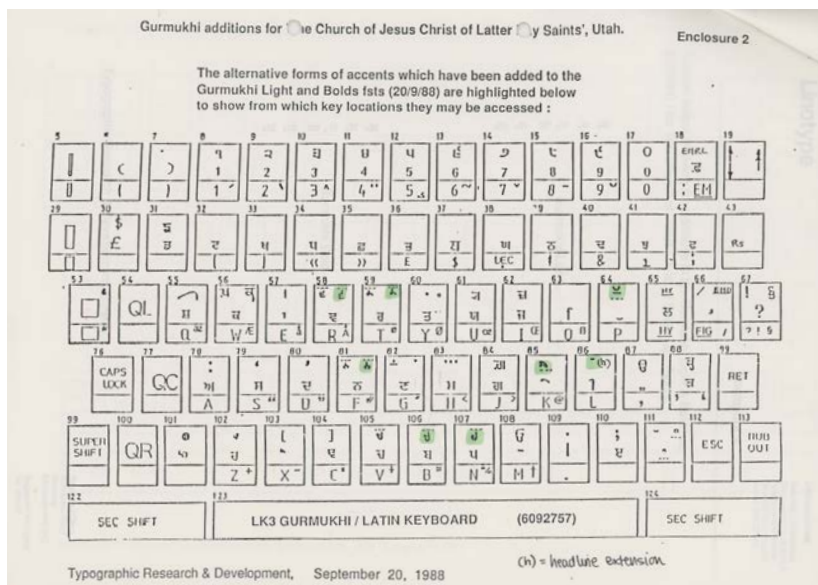


Figure 6.19 LK3 Gurmukhi/Latin keyboard layout for the Church of Jesus Christ of Latter Day Saints, showing the addition of five alternatively positioned subscript consonants, two entirely new characters, and a new design of the dulāvā vowel. From the DTGC, Gurmukhi Correspondence folder.

had reservations about the headline joining, due to readers of the newspapers being accustomed to seeing the white spaces between connecting letterforms when printing from metal types. As a solution for this, Linotype had supplied a software patch to introduce space (on the Font Selection Tables: FSTs) between such characters. The amount of this space was slowly reduced to eventually allow a seamless join, and gradually adapt the expectations of the newspaper's readership.<sup>114</sup> As such, it is possible that this joint issue was a remnant of this compromise.

The following year, a request from the Church of Jesus Christ of Latter Day Saints to Linotype for their Gurmukhi fonts saw the addition of two more characters, and slight positioning adjustments for some subscript consonants. The new characters requested by this client were the headline extension (a character intended for elongating the headline connection of a given base letterform), and a vowel mark typically only found in Devanagari for Avestan translation,<sup>115</sup> the candra long E (ँ).<sup>116</sup> Furthermore, alternative subscript joining forms of the caccā, nannā, hāhā, ñaññā, and rārā were included in the new fonts, along with a new flatter version of the dulāvā (ँ).<sup>117</sup> The changes made were also applied to the pre-existing keyboard, with shift positions dedicated to the newly incorporated characters in the set (figure 6.19).<sup>118</sup>

Between 1982 and 1984, details of a powerful raster image processor and page descriptor software package called PostScript were released by Adobe Systems. According to historian Lawrence W. Wallis, the page descriptor software 'was designed to accept text and graphics according to pre-arranged conventions for input to the raster image processor which generated a corresponding raster data stream'.<sup>119</sup> Basically, the software worked as a page-description language, designed to communicate the appearance of text, graphics, and images of a document from a computer-based composition system, to a printing system with a raster output. Around the same time, Apple CEO Steve Jobs had already achieved great success with his easy to use personal computers, and was working on the Macintosh, which was innovative in its display of graphics. Apple also had a 72-dpi dot-matrix printer, the ImageWriter, and was working to create an even cheaper printer with the Canon company. What Jobs required was a way of connecting the Macintosh machine and the laser printer together, which was precisely what PostScript

114 Fiona Ross in email to author, dated 28 Jan. 2022.

115 *Devanagari Unicode chart*. Unicode, [www.unicode.org/charts/nameslist/n\\_0900.html](http://www.unicode.org/charts/nameslist/n_0900.html). Accessed 19 Jan. 2022.

116 G. Barrett to G. A. Simper. Correspondence dated 6 Oct. 1988, Gurmukhi Correspondence folder, DTGC

117 Ibid.

118 LK3 Gurmukhi/Latin keyboard layout for the Church of Jesus Christ of Latter Day Saints, Gurmukhi Correspondence folder, DTGC.

119 Wallis. *Chronology of typesetting developments*, 1988, p. 64.



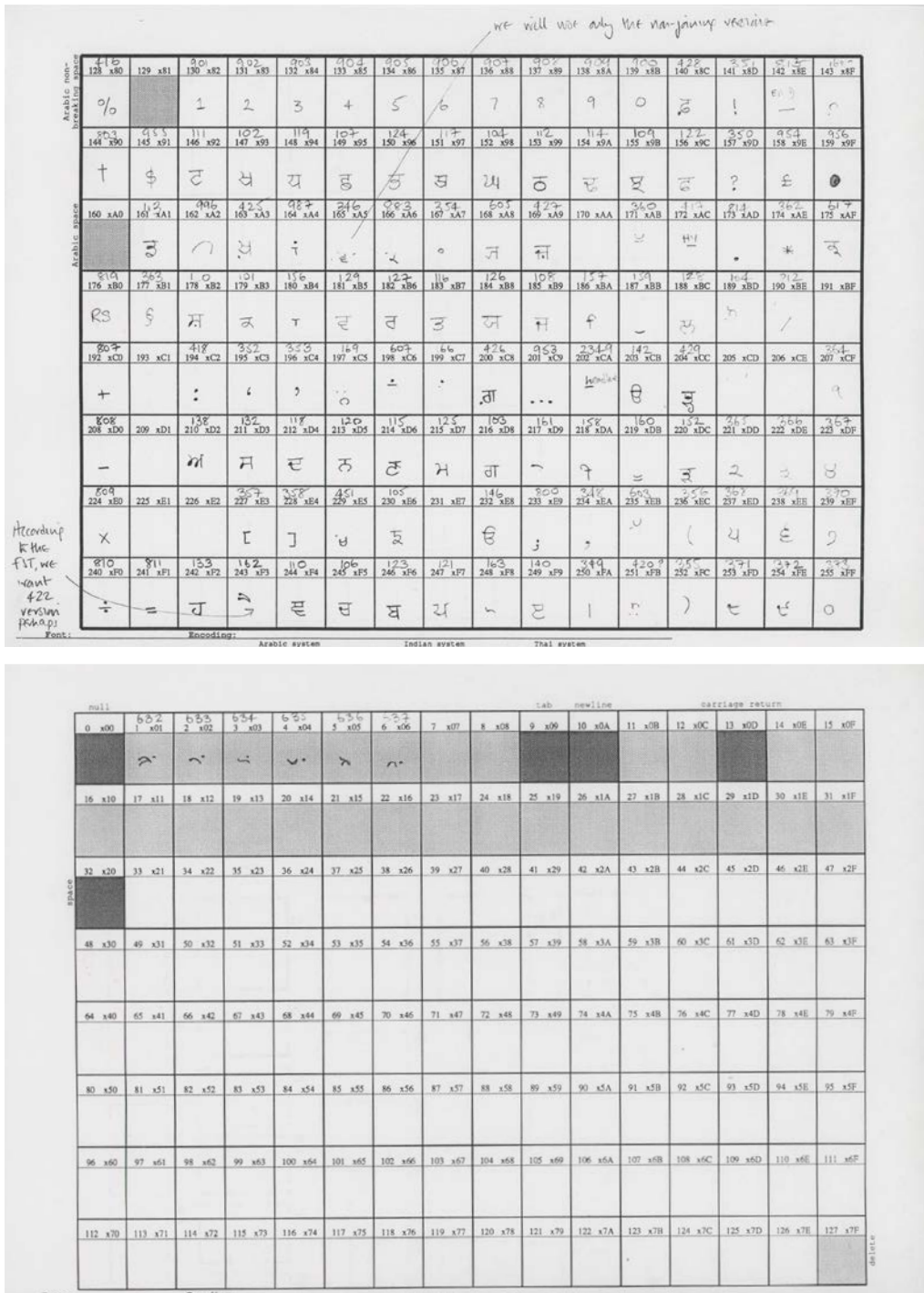


Figure 6.20 Proposed PostScript Macintosh Gurmukhi keyboard layout from 1991, by Fiona Ross. From the DTGC, Gurmukhi Tests & Attributes Box.

could achieve.<sup>120</sup> Subsequently, with a considerable investment and advance payment from Apple in the Adobe company, in December 1983, a contract was signed between the two, with an agreement for Adobe to streamline its PostScript software for use on the 300 dpi printer Apple was developing with Canon.<sup>121</sup> As neither of these two companies had any expertise in the design and development of fonts, they initially approached the US based company Compugraphic, but when an agreement could not be reached with them, they approached Linotype for a partnership instead.

According to tech journalist Pamela Pfiffner, Linotype enjoyed the reputation of being the most established and respected typesetting firm, and that ‘once they got Linotype, PostScript was destined for success’.<sup>122</sup> Linotype had started the partnership with developing the first PostScript high resolution type setters, and licensing its most valuable fonts, Helvetica and Times, for use in the venture from Apple and Adobe. Over the years, this expanded to include other fonts from various writing systems, including Gurmukhi. In 1991, new keyboard proposals for PostScript Macintosh Gurmukhi were drawn up by Ross, who sent the provisional layouts to Yandle for her and colleague Ros Coates to review, along with an encoding for the script that numerically followed that of the existing Devanagari font (figure 6.20).<sup>123 124</sup>

Unlike Monotype, the approach in Linotype regarding adapting the existing Gurmukhi design for use in digital screen and printer fonts was to use the opportunity to reassess the design of the letterforms, and aspects such as spacing, kerning, and mark positioning. In January 1992, the application of improvements to the existing outlines was started with the refinement of base characters, and the standardisation of sidebearings; the boundaries that define the spacing of a given glyph in a font (figure 6.21).<sup>125</sup> This was followed with more detailed adjustments, such as changing the *dulāvã* mark as existed in the fonts from the alteration previously applied for the Church of Jesus Christ of Latter Day Saints, where the angle of the mark was reduced to make the vowel flatter. With the shift to the newer technology, a decision was made to revert the design back to the original steep structure as existed in the Gurmukhi 202 fonts.<sup>126</sup>

120 Pfiffner, Pamela. *Inside the publishing revolution: the Adobe story*. Adobe Press, 2002.

121 *Ibid.*

122 *Ibid.*, p, 40.

123 F. Ross to D. Yandle. Note dated 16 Aug. 1991, Gurmukhi Tests and Attributes Box, DTGC.

124 Encodings are tables that include a digital representation of a character with numbers assigned to them, and allow for the characters to be stored and transmitted digitally. Macintosh used a uniquely modified version of the ASCII encoding from its release in 1984, which was incomplete at the time but eventually fleshed out. Haralambous, Yannis. *Fonts & encodings*. O’Reilly Media, 2007.

125 Record of process documentation ‘Red n’ Black’ notebook, DTGC.

126 D. Yandle to F. Ross. Correspondence dated 29 Jan. 1992, Gurmukhi correspondence folder, DTGC.

GURMUKHI - LIGHT	22.1.92	L+B BASECHARS REFINED LATFIGS + MATNS TAKEN FROM ROMINI, PUNCT TAKEN FROM TAMARA.
GURMUKHI - BOLD	22.1.92	SIDE BEARINGS STANDARDISED

Figure 6.21 Dated records showing the process of refining the existing Linotype Gurmukhi fonts for use on computer screens and printers. From the DTGC, record of process documentation 'Red n' Black' notebook.

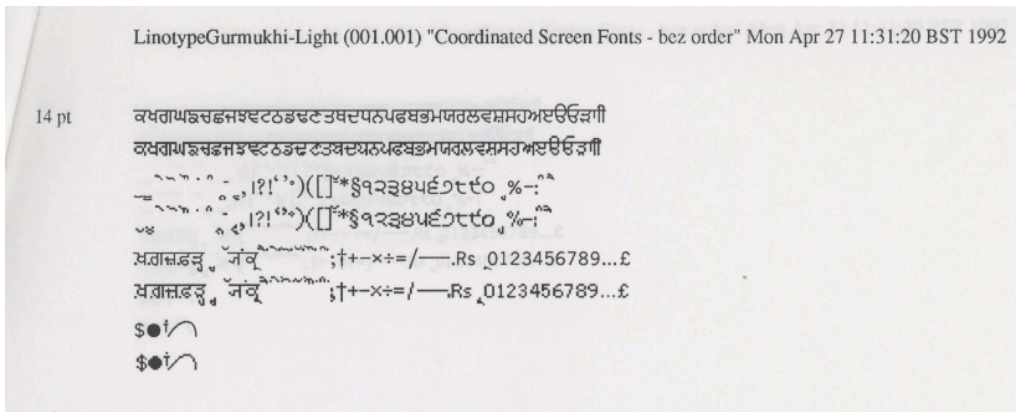
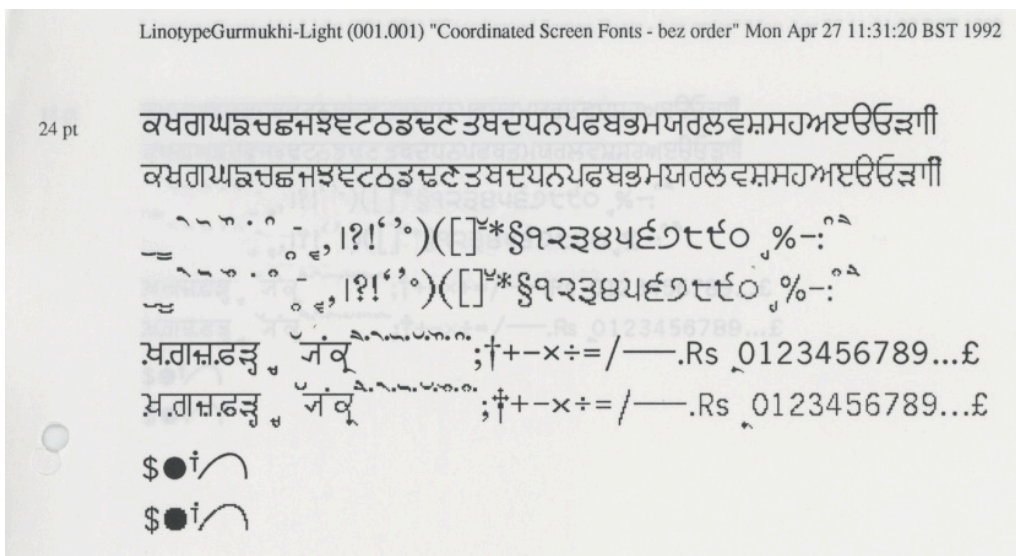


Figure 6.22 Linotype Gurmukhi Light Screenfont bitmap representation in 14 point and 24 point. Printouts dated 27 Apr. 1992. From the DTGC, Gurmukhi Tests & Attributes Box.



At the time, the company needed to develop and deliver two separate fonts—one for screens and one for printers—due to the differences in the requirements of each for reproducing an image of the fonts. While monitors would have required size-specific bitmap images designed to work on the screen, printer fonts were created as scalable outlines of each character using mathematical formulas. A change of this nature (regarding the *dulāvā* mark), though seemingly simple, would have meant that the modified mark would have to not only be changed in the screen and printer fonts, but in the encoding as well.<sup>127</sup> To create the screen fonts, a pixel design would be ‘drawn’ that best mirrored the design intention on a computer screen—which, in the 1990s, would have had significantly lower resolution than is currently available (figure 6.22).<sup>128</sup>

In tandem with the revisions necessary to make the font work on screens and printers, the designs also required resizing, and were upscaled to match the height of the other Indian fonts in Linotype’s PostScript library, in order to provide better quality output. When the initial enlargements were applied to the characters of the font, any discrepancies as a result of the resizing needed to be checked and fixed.<sup>129</sup> Accordingly, tests and proofs of the fonts were printed for assessments of the design through multiple rounds of reviews carried out by Ross. Through this process, a number of design considerations to improve the overall design were identified and applied; changes such as ensuring smooth curves and transitions, checking terminals for consistency and shaping, stroke weights, spacing, and kerning (figure 6.23, page 252).

With the adjustments done, a tentative release of the Gurmukhi printer fonts was planned in June 1992, pending checks of the parameters listed in the ‘fontinfo’ by Gillian Barrett, an employee of the TRDD.<sup>130</sup> In parallel to Barrett, her colleague Elaine Tarling was responsible for copying across the kerning revisions to the new fonts from the CRTronic floppy disks, and incorporating the updated information in the new font’s PostScript tables.<sup>131</sup> While an exact release date for the screen and printer fonts of Linotype Gurmukhi Light and Bold could not be found, printed specimen sheets from the end of September 1992 show a list of instructions for composing the fonts on the Macintosh, indicating that by this point, the fonts were

---

127 *Ibid.*

128 Nowadays, this process has mostly been replaced with what is referred to as ‘hinting’, which is similar to the process described in the text, in that optimal display of an outline on screens is achieved by defining the pixels at each size. Although bitmap images are much quicker to achieve, the advantage offered by hinting is that the resulting fonts are scalable, whereas with bitmap images, the fonts needed to be drawn at each size they were expected to be used in.

129 Record of process documentation ‘Red n’ Black’ notebook, DTGC.

130 The ‘fontinfo’ (still a part of all digital fonts developed today), consists of a list of attributes that describe the general parameters of a font, with information such as the name, version number, copyright information, glyph measurements, weights, and trademarks.

131 D. Yandle to G. Barrett. Memorandum dated 15 June 1992. Gurmukhi correspondence folder, DTGC.

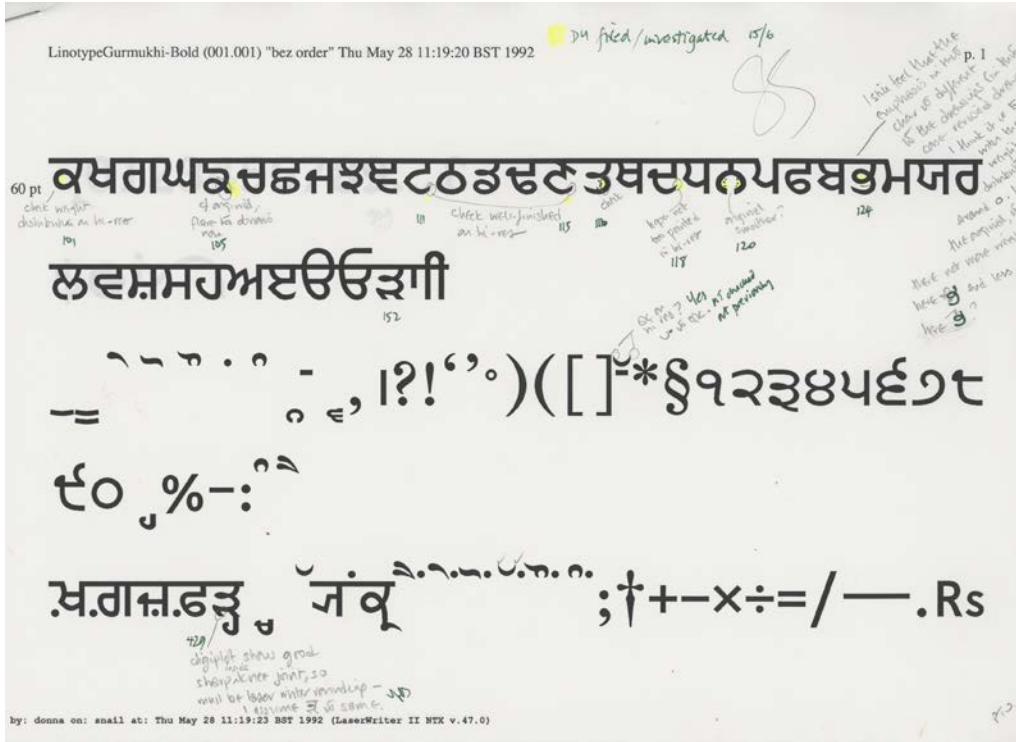


Figure 6.23 Linotype Gurmukhi Light printout with markups highlighting required fixes and adjustments. Printout dated 28 May 1992. From the DTGC, Gurmukhi Tests & Attributes Box.

available for use on computers (figure 6.24, page 254).<sup>132</sup> From this sheet, it can be seen that the original concept of the keyboard layout designed in the 1980s was maintained; almost all keys were assigned a unique phonemic value, a majority of characters were positioned in the unshift mode, frequent consonants occupied the centre of the easily accessible parts of the keyboard, and all superscripts and subscripts were to be keyed directly after the character they affected. Finally, the headline extension character that had been included when upgrading the font to work with the CRTronic machine was retained, and made available in shift mode should more space be required between two glyphs.<sup>133</sup>

Despite extensive searches, no evidence could be found of Linotype's Gurmukhi fonts being available for purchase on the foundry website, nor on the website of Monotype, which had acquired Linotype in 2006—thus obtaining their fonts as well. Considering the time, effort, consideration, and refinement that had contributed to the design and development of this font, it is unfortunate that ultimately it is no longer available for purchase and use. Regardless, facsimiles of the design achieved by Ross, Surman, and Yandle can still be widely seen in the Gurmukhi fonts of the last two decades.

#### 6.4 Conclusion

Following the industrialization of printing and with the rise of mass readership in the European and North American continents, the demand for printed texts saw a considerable increase. The Linotype and Monotype companies both introduced their new mechanised hot-metal type-casting and composing machines against such socio-economic contexts in the European and North American continents, enabling printers to respond to the need for rapid publishing of texts for consumers.

With growing markets, both corporations began expanding the founts in their respective repertoires by introducing new scripts to their library collections, and one such script was Gurmukhi. Monotype was the first of these two companies to grasp the potential for mechanical typesetting technology and founts that were compatible with such machines in the nascent Panjabi market, resulting in the design and development of their hot-metal Gurmukhi printing types, named Series No. 601 (Bold) and No. 604 (Light). Their design (which was based on foundry type that was seemingly popular in India) proved successful, and was later adapted to subsequent technologies, including phototypesetting and digital screen fonts. The

---

132 By this point the company had acquired the Hell organisation (established in Germany by Rudolph Hell, the inventor of the fax machine and colour scanner) and subsequent to the merger was renamed to Linotype Hell.

133 Linotype-Hell Gurmukhi composition on Macintosh specimen sheet, NLTC drawers, DTGC.

08.02.93 V31

# Linotype-Hell

Indian PostScript Faces

---

## The Linotype-Hell Scheme for Composing Gurmukhi on the Macintosh

The method of keying Linotype Gurmukhi on a Macintosh is compatible with the *Phonetic Keyboard* approach developed by Linotype-Hell for setting all the scripts of the Indian Subcontinent.

6. There are two versions of the accent, ˆ one centred on unshift of key 88, and one ranged right, on option of key 88, to be used according to the user's preference.

It should be noted that the PostScript Gurmukhi Light and Bold fonts have been rescaled upwards to be more in keeping with the height of other Indian fonts in Linotype-Hell's PostScript library, and to provide better quality output.

**Description**

1. With the exception of a small number of keys, each key has its own phonemic value.
2. The great majority of the characters of the syllabary are in the unshift mode.
3. The most frequent consonants occupy the centre of the keyboard and the left-hand keys; the most frequently used vowels being situated on the right.
4. The simple consonants have been placed in such a way that certain common sequences can be easily typed.
5. The aspirates have been placed along the top row in relation to their more common unaspirated counterparts.

**N.B.** All keys are explained in the Macintosh Operation Manual.

**Method of Operation**

1. All characters of the syllabary are keyed directly, usually in the unshift mode.
2. All superscripts and subscripts are keyed directly after the character they affect.
3. Punctuation and numerals are keyed directly.
4. Vowel signs (e.g. ˆ and ˘) are keyed directly from the keyboard where they are required.
5. In the event that a user may prefer slightly wider spacing, e.g. between superscribed vowel signs, a headline extension has been made available on shift of key 69.

Linotype Gurmukhi Light & Bold

### ਫੇਰ ਚੋਣ ਸੁਧਾਰਾਂ ਦੀ ਗੱਲ

ਪਿਛਲੇ ਦਿਨੀਂ ਕੇਂਦਰੀ ਕਾਨੂੰਨ ਮੰਤਰੀ ਜਗਨ ਨਾਥ ਕੌਸ਼ਲ ਨੇ ਲੋਕ ਸਭਾ ਵਿਚ ਇਕ ਸਵਾਲ ਦਾ ਜਵਾਬ ਦਿੰਦਿਆਂ ਇਹ ਕਿਹਾ ਸੀ ਕਿ ਸਰਕਾਰ ਪੂਰੀ ਗੰਭੀਰਤਾ ਨਾਲ ਚੋਣਾਂ ਵਿਚ ਲੋੜੀਂਦੇ ਸੁਧਾਰ ਕਰਨ ਬਾਰੇ ਵਿਚਾਰ ਕਰ ਰਹੀ ਹੈ। ਉਨ੍ਹਾਂ ਕਿਹਾ ਕਿ ਇਸ ਦੇ ਸਾਰੇ ਪਹਿਲੂਆਂ ਤੇ ਵਿਚਾਰ ਕਰਨ ਲਈ ਜੋ ਸਬ-ਕਮੇਟੀ ਬਣਾਈ ਗਈ ਸੀ, ਉਸ ਦੇ ਸੁਝਾਵਾਂ ਤੇ ਵੀ ਨਜ਼ਰਸਾਨੀ ਕਰਨ ਲਈ ਅਤੇ ਉਸ ਦੀਆਂ ਨੀਤੀਆਂ ਅਨੁਸਾਰ ਪ੍ਰਭਾਵਤ ਕਦਮ ਉਠਾਉਣ ਲਈ ਸਰਕਾਰ ਜ਼ਰੂਰ ਤਿਆਰ ਹੋਵੇਗੀ। ਮੁਲਕ ਦੀਆਂ ਹੋਰ ਮਹੱਤਵਪੂਰਨ ਵਿਰੋਧੀ ਪਾਰਟੀਆਂ ਦੇ ਨੁਮਾਇੰਦਿਆਂ ਨਾਲ ਵਿਚਾਰ ਵਟਾਂਦਰਾ ਕਰਨ ਤੋਂ ਬਾਅਦ ਹੀ ਕਿਸੇ ਸਾਂਝੇ ਨਤੀਜੇ ਤੇ ਪੁੱਜਿਆ ਜਾ ਸਕਦਾ ਹੈ। ਇਸੇ ਸਾਲ ਜਨਵਰੀ ਦੇ ਮਹੀਨੇ ਵਿਚ ਮੁਖ ਚੋਣ ਕਮਿਸ਼ਨਰ ਨੇ ਵੀ ਚੋਣਾਂ ਵਿਚ ਸੁਧਾਰਾਂ ਲਈ ਸਾਰੀਆਂ ਰਾਜਨੀਤਕ

Created on a Macintosh II using the Apple Macintosh System and Linotype-Hell System Installer software. The sample was created by using Indian Design Studio V2.13 and typeset on a Linotronic 300 imagesetter. (GMV2.0). Attributes date:27/01/93R Issue2.

Linotype, Hell, and Linotronic are registered trademarks of Linotype-Hell AG and/or its subsidiaries. Linotype Gurmukhi is a trademark of Linotype-Hell AG and/or its subsidiaries. PostScript, Macintosh and Indian Design Studio are registered trademarks of our licensors.

Figure 6.24 Specimen sheet showing instructions for composing Linotype Gurmukhi on the Macintosh. Printout dated 27 Jan. 1993. From the DTGC, Gurmukhi Tests & Attributes Box.

Linotype company, on the other hand, only began the production of their custom Gurmukhi design with the intention of using the technological advantages offered by photocomposition. However they would go on to adapt the fonts for use on screens and digital contexts. Unlike Monotype's approach however, at Linotype, the design was refined when it was being adapted to newer machinery, to better reflect the benefits of any technological advances.

In both cases, the development of the fonts was the direct result of clientele in the Panjab requesting original designs for the script in which they wished to set texts, with an eye to their perceived stylistic preferences of Gurmukhi readers. These clients successfully collaborated with employees of said companies to develop the fonts by conveying the aesthetics and regional predilections of their readers, and deferring the management of the design, development of the fonts, and the technical know-how to the experts in the typographic departments of each corporation. This sort of partnership in realising a font for native consumption was novel in the Panjabi context; a demonstration of cooperation between different skill sets and knowledge that resulted in the realisation of two distinct fonts of Gurmukhi for a native readership, both of which proved influential on future typefaces designed for the writing system.



## 7 A comparative analysis of Gurmukhi typefaces since 1800

This chapter provides an analysis of Gurmukhi typefaces developed or procured by the individuals discussed in the previous chapters of this thesis. The aim of this assessment is to document the changes in the design of the characters and letterforms used for setting texts in Gurmukhi (by the British) over time—with an eye to the technological, cultural, and economical contexts in which the design of typefaces for this script was being undertaken. Through conducting such an analysis, structural alterations in type forms, and features of Gurmukhi typefaces that, through re-use and repetition, have become accepted and customary over time can be identified, while also highlighting unique and imaginative efforts in design and development during the period under consideration.

Finally, through gauging these findings against the contexts of their development, the rationality for changes in the letterforms when translated from their handwritten precedents to type used for printing can be determined. This can help to clarify the reasoning behind current established typographic conventions in Gurmukhi type design, while presenting potential approaches for future endeavours to design typefaces for this writing system.

In order to do this, before anything else, it is important to set a framework for evaluation to minimise subjectivity in the assessment of the typefaces; a framework which will underscore the main parameters that will be used for the analysis. Once this guideline is achieved, every development will be measured against it, and also against contributing contextual technological, geographical, social, and cultural factors (these were addressed in the previous chapters). Finally, this chapter aims to produce a comparative study of Gurmukhi typefaces; not only by juxtaposing the designs under consideration against each other and assessing changes over time, but also contrasted against key examples of scribed Gurmukhi in manuscripts, from which Gurmukhi type evolved (see chapter 3). Each of these strands: the framework and the technological timeline and context will be explained in further detail in the subsequent pages.





### 7.1 A framework for objective analysis

To limit any personal biases and attempt to objectively compare the typefaces under discussion in this thesis, it was essential to establish a standard set of parameters to reference and use as a measure for all the characters under examination; parameters that rely not on subjective preferences and aesthetics, but rather a coherent typographic framework in which the evaluation of any given design is possible through a comparative analysis. Such an approach can be seen, for example, in the works of Ross and Baerdemaeker; both typographic historians use a predefined set of specifications in order to assess typefaces designed for the Bengali and Tibetan scripts, respectively.<sup>1</sup> They achieve this by considering a given design within its historical context, and the impact of factors such as technological restraints, calligraphic precedents, and the intent and purpose of those designing and manufacturing type on the shaping of the letterforms. Much of their methodology and approach can also be applied to this study; as such a list of parameters will be defined to use when gauging a design, keeping in mind the technological and historical contexts, but also remaining aware of the challenges that come from not being a native reader of Panjabi nor user of the Gurmukhi script; a lack of innate familiarity (and thus, ingrained knowledge of the writing system) can lead to an imprecise analysis, or an imposition of personal visual bias on the material being assessed; however, the use of a list of parameters as a tool for measurements can help limit this and introduce more objectivity.

As with any analytic work, the outcome of the assessment conducted in this chapter relied entirely upon the amount and quality of the data available for evaluation. During the analysis process, a number of challenges presented themselves; the first of these had to do with the availability of samples showing use of the type under valuation. In some instances, ample amounts of printed examples were obtainable for assessment, such as the work of the missionary printers in India. On the other hand, sometimes only scant paragraphs could be found, or, in the case of the Gurmukhi type of Vincent Figgins, only a list of the individual characters of the fount could be sourced. Not having lengthy texts meant that in such cases, a number of letterforms were not present in the available text and therefore, could not be assessed. In cases where the characters of a given typeface were only listed individually, measuring parameters such as spacing, kerning, colour, and texture was not possible. Shorter text samples also meant a number of diacritic and subscript consonant combinations were not available for review. Furthermore, not knowing the extent of the character set of a given typeface in itself hinders the task of determining whether it functioned satisfactorily; if some characters were borrowed from other scripts and appeared

---

<sup>1</sup> Ross. *The printed Bengali character*, 1999; De Baerdemaeker. *Tibetan typeforms*, 2020.



out of a place in the Gurmukhi typeface, if the character set was simplified in any way to save on time and resources, and if the absence of any required characters meant the type was not able to function as expected for setting a given text within Gurmukhi. Finally, while sometimes original printed examples were available for review, other times when the originals were not accessible, photographic reproductions, scans, and photocopies were necessarily consulted instead. In these instances, the quality of the photographic reproductions were not always ideal, especially with digital scans of text faces that lacked the definition required to assess smaller typographic details such as terminals and stroke transitions. To overcome these challenges, where it was not viable to apply one of the evaluation parameters to the available printed examples, other parameters were consulted instead, and the analysis was carried out as comprehensively as possible with the obtained and available samples, while stating clearly any aspects that were not assessed due to lack of extant printed evidence.

The general evaluation criteria follows standards for reviewing a typeface that can, for the most part, be applied universally to the assessment of any typeface in any given script, by focusing on the structural aspects of a typeface, and the intended use for which it was developed. This assessment approach is adopted by many practitioners in the field of typeface design, including myself—a typeface designer occupied in this line of work for the past decade—to evaluate the typefaces as a combination of elements that contribute to the ‘optimal delivery of texts’, both during the design phase and when providing feedback to others.<sup>2</sup> This includes consideration of internal consistency, overall character construction and proportions, alignment of letterforms in comparison to one and other and when combined with accents and diacritics, spacing and kerning, balance in colour and texture, and the size of the character set. Characteristics such as these can be judged irrespective of personal preferences and current trends, as they focus on internal logical consistency and uniformity of a typeface and reviewing the design as a system, rather than expressing personal opinions regarding specific design features, and whether such features are agreeable or not. In addition to these parameters, other script-specific characteristics such as the shaping and alignment of subscript consonants, tonal marks, and subscript and superscript diacritics will also be assessed, and careful consideration will be applied to the assessment of the connections between letterforms and the headline bar along which the letterforms align and attach in Gurmukhi. The order in which such criteria will be assessed first considers the more general aspects of a typeface, features that are evident in a line of text (such as colour and texture), then the particulars of word groups (alignment, spacing, and kerning), and finally, the details in—and between—individual characters (stylistic consistency, shaping,

---

2 Hochuli, Jost. *Detail in typography*. Hyphen Press, 2008, p. 7.



contrast amount and placement, and proportions). This order will be maintained to methodologically evaluate the typefaces in this chapter where possible (in the absence of text, for example, word groups will be considered as a starting point instead). It is noteworthy that these characteristics are all inter-related; a lack of stylistic consistency in character shaping, for example, can create spottiness that impacts the colour and texture of lines of text. However, possessing this initial framework can help to standardise the review approach and consistently assess the typefaces under consideration against the same factors, wherever possible.

Keeping these criteria in mind, different typesetting technologies can yield varying results with regard to any of the parameters stated above, as such each needs to be evaluated against its own historical context. When considering the overall structure of the characters, for example, consistency in the weight of the strokes is of great importance. In modern day practice, the expectation is that characters within the same typeface will be composed of strokes of a relatively equal weight value. This follows the rationale that all characters are created with the same writing tool or logic. Given this explanation, the task of a punchcutter producing hand-cut punches for small sizes and achieving consistency in stroke weights is a relatively bigger challenge when compared to a type drawer benefiting from the advantage of being able to draw the same letterform at a larger size, and then downscaling with the use of a pantograph. In the latter, the larger size and drawing tools—the mediums—facilitate the undertaking while in the former, continuous use of a magnifying glass and manual dexterity rendered the task of cutting punches strenuous and time consuming. This is one of the reasons why the work of master printers of the sixteenth and seventeenth century is, even now, held in very high regard; given their restrictions and the context in which they worked, they were able to achieve high quality in their outputs.

By making use of a combination of the specified factors, and comparing them against historical handwritten examples, and with a mind to typographic interpretation and context in comparison to calligraphic precedent, it will be possible to reduce evaluations based on personal preferences—as any researcher is susceptible to projecting some level of subjectivity to their analysis.

## **7.2 A timeline of the printing types considered in this research**

Prior to proceeding with the assessment, it is worthwhile to once again review the timeline under consideration in this thesis by placing major developments in type manufacturing and typesetting technology (particularly those that are relevant to the scope of this research), and the Gurmukhi types being analysed on this timescale. To quote Tosh, the relationship between events over time ‘endows them

### A timeline of Gurmukhi type development since 1800

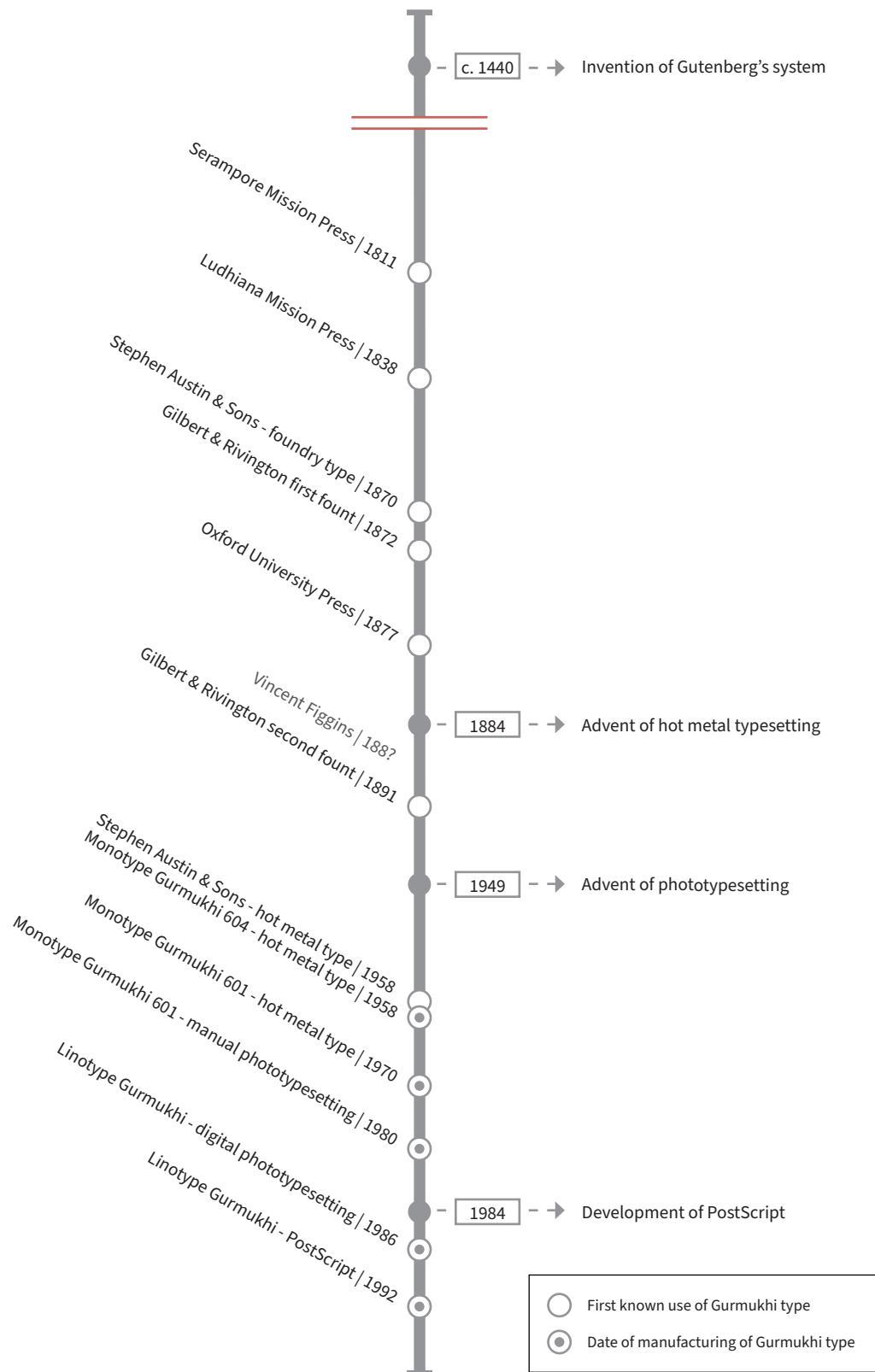


Figure 7.1. Timeline of typesetting technologies (right side) and the first known printing with, or manufacturing of Gurmukhi type within this period (that fit within the scope of this thesis).



with more significance than if they were viewed in isolation'.<sup>3</sup> The insight offered by the resulting sequential graphic representation of time, technology, and type will aid in the task of not only considering each development in isolation, but also within the larger confines of this thesis (figure 7.1).

The timeline in figure 7.1 does not feature Richard Watts, because—although highly likely—it is not a certainty that he developed Gurmukhi founts, and therefore his work cannot be considered in this chapter. The foundry that acquired Watts's printing material, Gilbert & Rivington, appears on the diagram, but foundries who essentially re-used the Gurmukhi type from this foundry, namely William Clowes & Sons and the foundry of P. M. Shanks have been omitted, as their work on this script does not technically count as significant developments; they did not manufacture unique Gurmukhi type.

The foundries and companies that are marked on the timeline are dated either according to when their Gurmukhi type was first developed and made available for use, or the first date in which a given foundry or press are documented as having printed with the fount for the first time, whether in a dated specimen, a book, or other reliable sources (these are differentiated in figure 7.1, with explanations in the diagram key).<sup>4</sup> Logically this corresponds to printed outputs when looking at foundry type, and manufacture and release for commercial use dates when considering the typefaces from Monotype and Linotype, whose Gurmukhi designs were ultimately not intended for a single and specific publication and client, but for wider distribution. In the case of the Gurmukhi type of Vincent Figgins, an exact date of development or use of this fount could not be found, although a very rough estimate places the production of this foundry's Gurmukhi type towards the end of the nineteenth century.

With this overall impression of the timeline of developments of the Gurmukhi type that will be analysed in this chapter, it is possible to gauge the result of dynamic processes over time, determine the existence of any lasting trends, highlight innovation, and identify gaps in the work that was undertaken, the final point of which can suggest options for future Gurmukhi typeface design.

### 7.3 Typeface nomenclature for analysis

This chapter makes extensive use of terminology that is specifically used to describe various components of type anatomy. As such, before proceeding with

<sup>3</sup> Tosh. *Pursuit of history*, 2013, p. 8.

<sup>4</sup> It is noteworthy that just because something is documented as having been printed on a specific date, this does not necessarily mean the date is entirely accurate, but for the purpose of the diagram such dates were assumed to be valid.

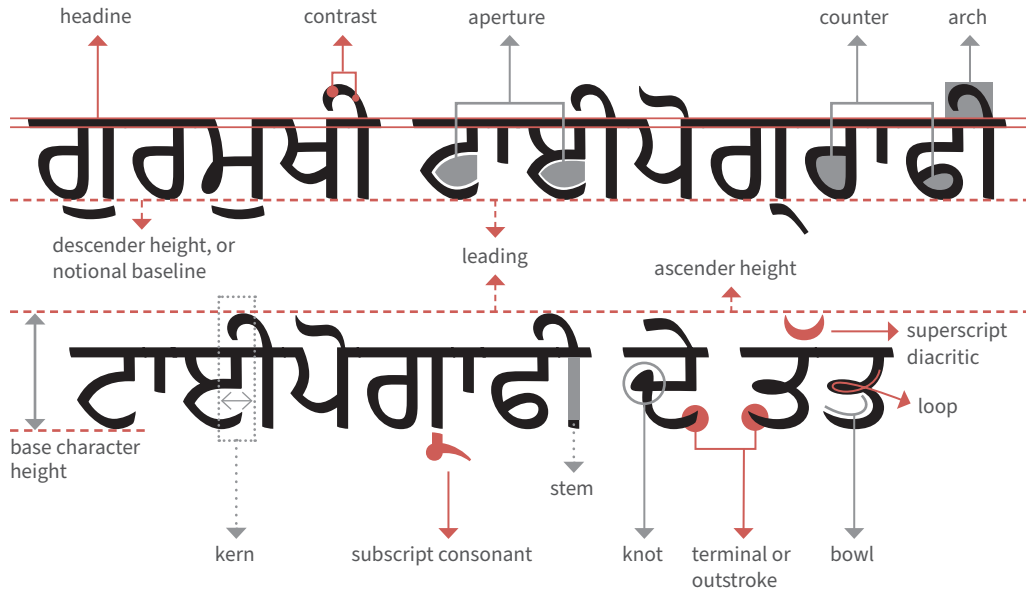


Figure 7.2. Gurmukhi type nomenclature, expanding on previously existing type anatomy terminology through adaptation to the specificities of Gurmukhi (see Ross, 1999 and Williams, 2008).

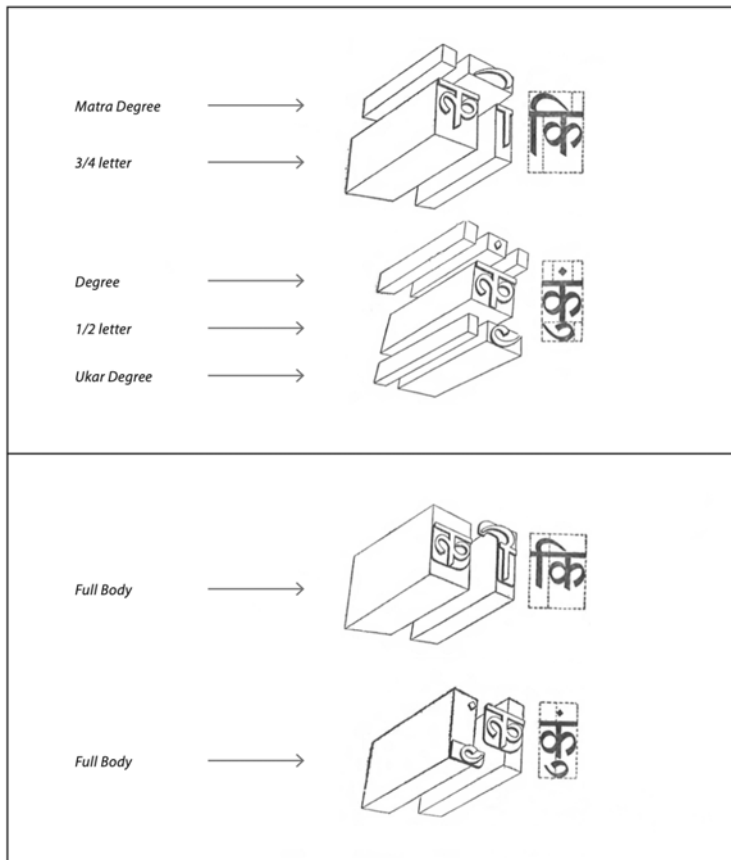


Figure 7.3. The Degree (top) and Akhand (bottom) systems (adapted from illustration in B. S. Naik, *Typography of Devanagari*. Vol. 2. Directorate of Languages, 1971, figure 19, and notes from F. Ross, *The Printed Bengali Character*, 1999, figure 70. Image reproduced with the kind permission of Dr Fiona Ross.

the analysis, the nomenclature that will be used needs to first be established. The standard terminology used in the English language in the field of typography is, predictably, focused mostly on the Latin script and its specificities and structure. Concepts such as a baseline (the imagined foundation line upon which the base of all Latin letterforms rest) or an x-height (the height of the lowercase x in a Latin typeface, and the distance of the baseline to this height) do not apply to many scripts of the world, including Gurmukhi. As such, here these terms are abandoned for those that more closely reflect and answer the specifics of the Gurmukhi writing system (figure 7.2).

#### 7.4 Approaches to Gurmukhi type composition

Beyond matters of form and function, a significant consideration when evaluating Gurmukhi metal type is determining which method of hand composition was used; the ‘Degree’ System or the ‘Akhand’ System (figure 7.3, page 268).<sup>5</sup> According to Ross, for many scripts of the world, this is a matter that ‘merits particular scrutiny in any typeface assessment as it determines the method of character formation and thus fundamentally affects the artwork.’<sup>6</sup>

With the Degree system, a tri-level approach was used to assemble type: one level for the main letterform, another one for subscript marks, and another for any superscript marks. Each of these parts was separately cast and composed for printing. With the Degree system, the arches at the top of vowel marks like the *siharī* or the *biharī* were therefore cast separately from the bottom or stem portion of the characters. However, in the Akhand system, subscript and superscript marks were usually cast on a single piece of type, and characters were kerned; for example, in this method the *siharī* vowel would be hollowed out underneath the protruding arch that required overlapping with adjacent characters for refined spacing, referred to in typesetting as ‘overhang’. This hollowed out segment would then be fitted on top of neighbouring consonants to achieve the desired kern effect. Use of the Akhand system resulted in a larger character set, however, because the types with overhang had the support of another piece of metal type underneath, they were less susceptible to breaking, when compared to the Degree system.<sup>7</sup>

<sup>5</sup> These methods were originally devised for Devanagari and later applied to other scripts like Gurmukhi. See Ross. *The printed Bengali character*, 1999.

<sup>6</sup> *Ibid*, p. 2.

<sup>7</sup> Naik. *Typography of Devanagari*, 1971, pp. 341–42; Ross. *The printed Bengali character*, 1999, pp. 134–7.



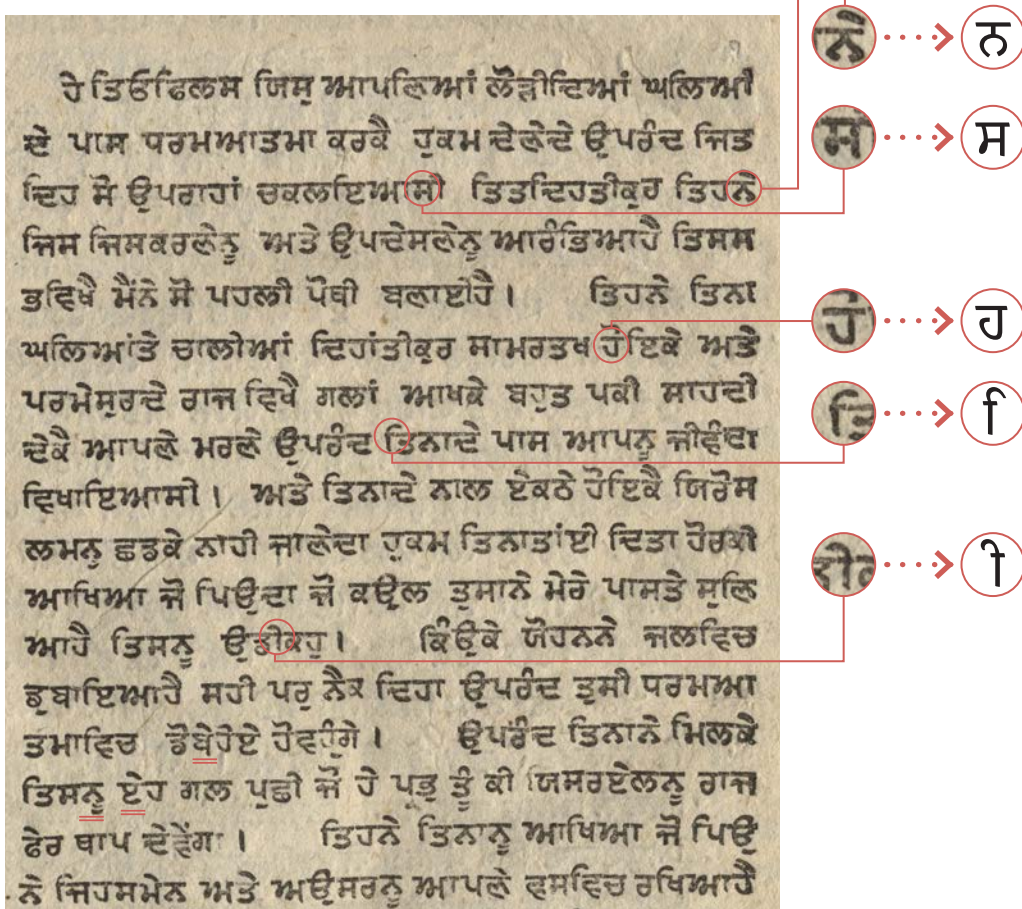
### 7.5 Assessment of the Gurmukhi type considered in this research

The analysis of the Gurmukhi typefaces in the following pages follows a sequential order. This approach aligns with the requirement of considering the work of each foundry in sequential order of the development of their Gurmukhi types, to assess changes in the script as it was adapted to various typesetting technologies over time, and against the appropriate contexts. The only exception to this Gurmukhi type of Stephen Austin & Sons, whose later hot-metal fount is discussed in the appropriate time (in 1958, for the Monotype machine), and set apart from their earlier acquired Gurmukhi fount (from 1870). The assessment of these two designs from this company (and later, foundry) was necessarily separated to achieve a cohesive narrative, tracing the evolution of the type forms through time. The analysis begins with the work of the Serampore Mission Press, and concludes with Linotype's Gurmukhi typefaces. The features of the letterforms under consideration are foremost considered, as previously discussed, against manuscript examples (see chapter 3), but for the purpose of illustration, in this chapter they are presented alongside the Murty Gurmukhi font of Harvard University Press. The reasoning for this is twofold: firstly, cropping and enlargement of sacred Sikh texts (which makes up nearly the entirety of manuscripts that were considered in the earlier chapters of this thesis), is considered discourteous and thus was abandoned out of courtesy and so as not to cause any offence. The second reason is that in handwriting, no matter the skills and mastery of the scribe or calligrapher, it is not possible to precisely draw the same letterform with the exact same dimensions, contrast, and proportions in every instance of its occurrence. These manuscript examples are highly valuable in that they show the inherent structure and shaping of letterforms as they existed prior to printing with movable type. However, in a typeface intended for setting texts, the structure and appearance of letterforms are relatively standardised according to the evaluation criteria outlined above, to match in contrast, proportions, colour and texture, spacing, and so on. Murty Gurmukhi was an ideal choice for the purposes of this chapter, as the design is based on revered manuscript examples, yet made consistent, uniform, and comparable for the purpose of this assessment:

This original design reintroduces traditional stroke modulation patterns that are apparent in manuscript letterforms but which have been lacking in conventional Panjabi typography to date. The design consciously recalls forms found in the manuscript Prayer Book of Rani Jindan (British Library Panjabi MS D4).<sup>8</sup>

---

<sup>8</sup> *Design and typography*. Murty Classical Library of India, [www.murtylibrary.com/about/design-and-typography](http://www.murtylibrary.com/about/design-and-typography). Accessed 23 Mar. 2022.



ਬੇ ਨੂ ਏ

Figure 7.4. Sample page from the Acts of the Apostles, printed at the Serampore Mission Press, 1811. The highlighted characters here show a lack of consistency in contrast placement and logic, and the weight and size and positioning discrepancy between base characters and diacritic marks. In the bottom row, each character and diacritic pairing can be seen as typed using the Murty Gurmukhi typeface. Image courtesy of William Carey University library, Hattiesburg, USA.

Considering the above, the design of this typeface makes it possible to use its letterforms as a point of reference for their likeness to a calligraphic model, without any fear for comparing against idiosyncratic instances of the letterform shaping of a particular manuscript.

### Serampore Mission Press (1811) and Ludhiana Mission Press (1838)

Following the timeline of the development of Gurmukhi types, this analysis begins with a look at the Gurmukhi type of the missionary presses. Obtaining original examples of the Ludhiana Gurmukhi typeface proved a difficult task with restricted access to archives, as such, lower quality scans of printed examples from the Ludhiana Missionary Press that could be sourced online were referenced for the purposes of this chapter, and when discussing features shared between the two typefaces from Serampore and Ludhiana, the higher quality images of the work of the Serampore Missionaries were consulted instead. The advantage with the work of both missionaries is that, despite the absence of high quality images of the Ludhiana typeface in use, the entire character set and extensive sample texts were available for analysis.

The most notable feature of the Gurmukhi typeface cast and cut into a font at Serampore is the spottiness of the colour and uneven grey texture of the lines of text. This is owed to a number of features; the irregular word and character spacing, the jagged headline as a result of misalignment of the base characters, and the imprecise and unsystematic application of contrast. In figure 7.4 (a high quality scan of the Serampore Gurmukhi typeface in use, provided by the William Carey University libraries), strokes of many letterforms such as the nannā (ਨ) and the sassā (ਸ) are monolinear—any detectable instances of contrast or modulation likely being the result of poor printing conditions or the quality of reproductions of the images. In some letterforms, on the other hand, notable contrast can be seen, such as the flaring of outstrokes on the hāhā (ਹ), or the tapering in the tail of the number 2 (੨). In the sihari vowel (ਿ), the lightest part of the stroke can be seen where the arch connects to the stem. However, following the logic of contrast in handwritten Gurmukhi, this should be reversed; the lightest part of the arch should be on the far right side, at the instroke of the vowel. This gives the impression of the Serampore Trio (or those employed to execute the design) following a Latin-based contrast in the design, rather than what exists in Gurmukhi manuscript tradition. While this is in itself a problematic approach (in that it shows the imposition of a foreign aesthetic on another writing system), it is also confusing in that this reverse contrast is not methodically applied to every letterform; the daddā (ਦ) is designed with a flaring outstroke and the arch of the bihari vowel (ੀ) becomes thinner before joining the stem, both correctly following handwritten examples. Considering this, it is very likely that inflicting



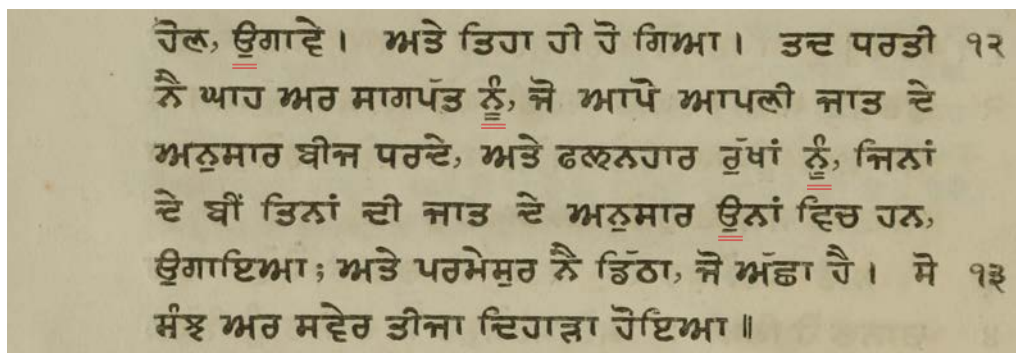


Figure 7.5. Sample page from Genesis showing the Gurmukhi type of the Ludhiana Mission Press. The highlighted characters show the lack of contrast and modulation to the subscript diacritic marks. Examples of these diacritics can be seen on the bottom in combination with the *urā* vowel bearer, set in the Murty Gurmukhi font. From *Genesis with the first twenty chapters of Exodus*, 1849, [archive.org/details/genesiswithfirst00janv](https://archive.org/details/genesiswithfirst00janv). Accessed Jan. 21, 2021.

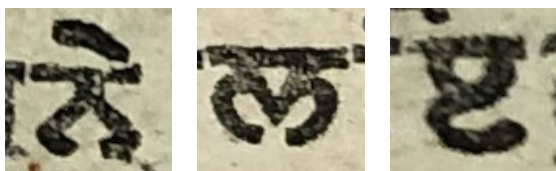
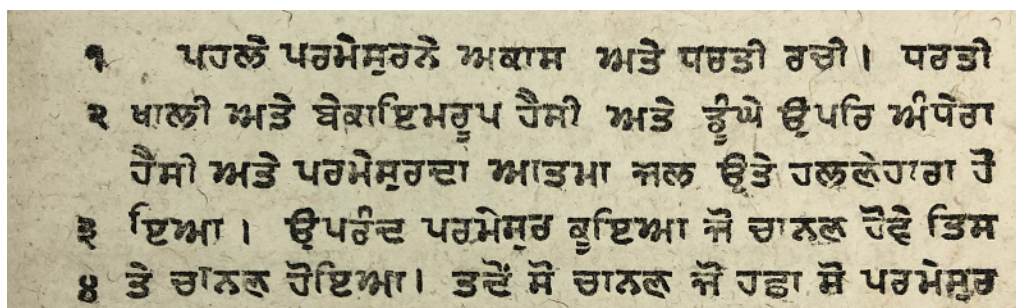


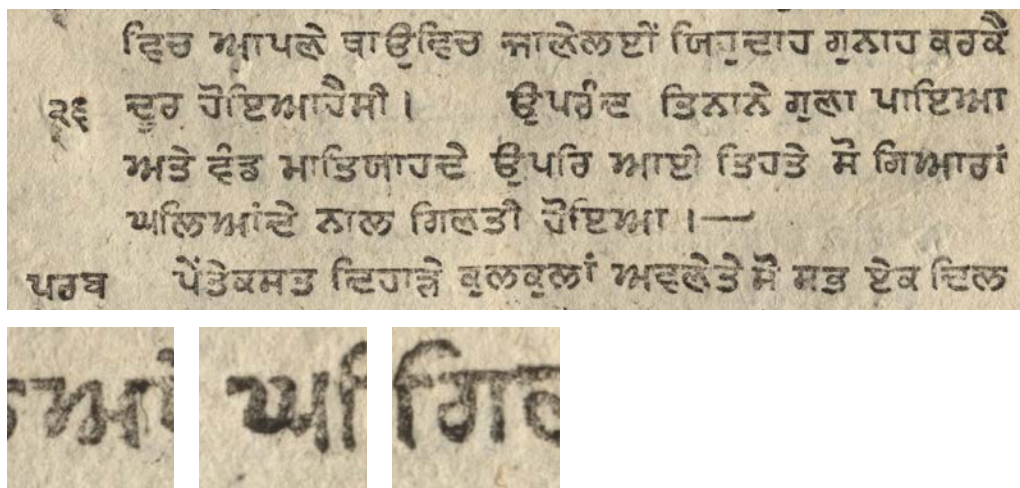
Figure 7.6. Sample text from Pentateuch, printed at the Serampore Mission Press, 1814. The enlarged characters show a lack of consistency in character structure—some consonants like the *nannā* (left) and *lallā* (centre) are very sharp and angular in their construction, while other like the *irī* (right) are overly soft and rounded. In the bottom row, each character can be seen as typed using the Murty Gurmukhi typeface. From the BL, shelfmark: Asia, Pacific & Africa 279.31D11.

the stylistic logic of Latin was not the intention at all (whether consciously or unconsciously), but rather, no importance was given to logical and consistent contrast placement, a fundamental element in the design of a typeface. As the Gurmukhi type of Ludhiana Mission Press was originally obtained from the Serampore Mission (and the later recasting of the type was still based on the original Serampore fount), it generally shares this feature with its originator.

The character set of both the Serampore and Ludhiana typefaces cover all vowel bearers, consonants, and vowel marks; however it is not clear how many of these were borrowed from founts of other scripts (such as Devanagari) that share the same forms, particularly the vowel marks, which all seem heavy and large compared to the base consonants and vowel bearers, and never quite align, especially in the Serampore fount, where all the vowel marks are shifted towards the right side of the base consonants rather than being centred below or above them (figure 7.4, page 270). In the Gurmukhi type of the Ludhiana Mission Press, the alignment of the marks is slightly improved; the shifting to the right as seen in Serampore's type is still apparent, but in some instances refinements can be seen with such diacritics being more centred, particularly in the subscript vowels *auṅkaṛ* (◌ṅ) and *dulaiṅkaṛ* (◌ṅ). Yet, the improvement in alignment pales when considering the loss of design details of these vowels in the Ludhiana typeface. In printed samples from Serampore, the design of these subscript diacritics shows modulation in the stroke and a slight downward curve in the centre as commonly seen in handwriting. In the Ludhiana typeface, these flaring curved segments have been replaced by short, straight lines that stand out on the page and draw attention because of their inorganic and rigid shaping (figure 7.5).

The overall design and structure of the character set of both typefaces shows a considerable degree of sharpness and angularity; this is particularly emphasised in some consonants such as the *nannā* (ṅ) in which the typically curved semi circles have been replaced with straight strokes, and also in the *lallā* (ṅ), where the pointed, triangular counter sits considerably low inside the parenthesis-shaped arms in the letterform. Here too, however, there is a lack of consistency; the *īrī* (ṅ) lacks the flatness on the right-hand side of the counter that is typical of handwritten examples, and is composed entirely of curved strokes, the result of this is typefaces that are not balanced in rhythm and speed nor in structure and design application (figure 7.6).

In both the Serampore and Ludhiana Gurmukhi founts, use of the Akhand system is evident; the arch and stem of the *biharī* (ṅ) and *siharī* (ṅ) are clearly connected in every instance in which either character appears. Considering the uneven arrangement of various characters along the headline and the resulting gaps in the connections as a direct result of this misalignment, it is not feasible



ਅ ਘ ਗ

Figure 7.7. Sample text from the Acts of the Apostles, printed at the Serampore Mission Press, 1811. The enlarged characters show a lack of consistency in character proportions; the *aiṙā* (left) is very wide when compared to other consonants that are inherently wider when compared to the rest of the character set, such as the *kággā* (centre) and the *gaggā* (right). In the bottom row, each character can be seen as typed using the Murty Gurmukhi typeface. Image courtesy of William Carey University library, Hattiesburg, USA.

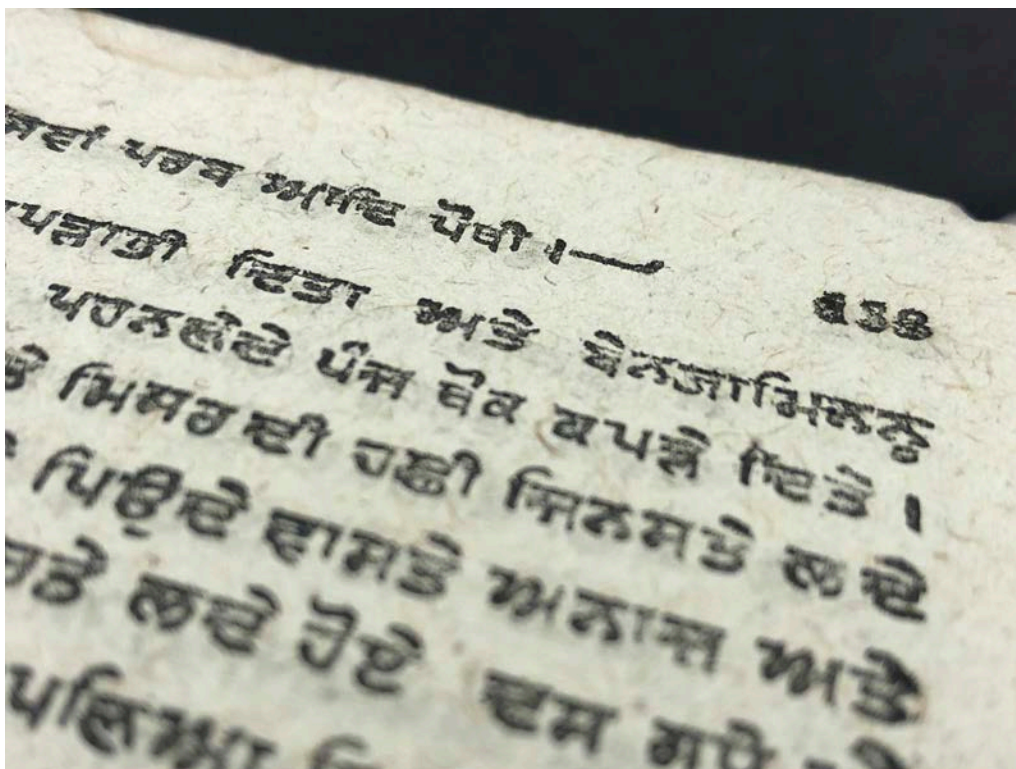


Figure 7.8. Sample text from Pentateuch, printed at the Serampore Mission Press, 1814. This image illustrates the ink spread and distortion of letterforms, and the hindrance cause by the texture of the paper used for printing. From the BL, shelfmark: Asia, Pacific & Africa 279.31D11.

that the printers suddenly achieved perfect alignment and overlapping connection in the joints of these particular vowels. On the matter of spacing, it is noteworthy that in Serampore's Gurmukhi type—for the first time in this script—the separation of words with a space can be seen, something that did not previously exist in Gurmukhi handwriting (see chapter 3), but was likely a European alteration introduced to the script by missionaries. Alternatively, it may have been influenced by Wilkins's introduction of these in Halhed's *Grammar* in 1778 (Pañcānana assisted Wilkins in this volume, and as discussed in chapter 4, went on to work at Serampore).<sup>9</sup> Regardless, this practice was later on repeated, and adopted even in handwriting. The separation of words from the continuously connecting style (referred to as *Larrivar*) can also be seen with the introduction of movable printing to other scripts of India such as Devanagari and Bengali.

The superscript vowels and subscript consonants of the Serampore typeface almost always sit at a distance from their base character, a departure from the handwritten model of the Gurmukhi writing system. This is not however, the case in the Ludhiana version where the *hoṛā* (ੌ) in particular is usually connected to the headline. Within samples texts set with the Ludhiana type, the *lāvā* (ੌ) can also generally be seen attached to the headline, indicating that wherever superscript vowel is not connecting to the headline, the particular metal sort used was likely broken from reuse.

The remainder of the vowel marks are almost entirely identical between the two founts; the *siharī* (ੌ) and *biharī* (ੌ) share a similar descender height with the *kannā* (ੌ), which is typically drawn with a shorter stem in manuscripts (and all three fall short of the descender height of the rest of the letterforms). On the other hand, the arch on the top of the *siharī* extends further out than the arch of the *biharī*, a distinction not generally made in type, but one that is evident in handwritten traditions (see highlighted *siharī* and *biharī* in figure 7.4, page 270). The three vowel bearers, the *ūṛā* (ੌ), *aiṛā* (ਅ), and *īṛī* (ੌ), are almost unchanged between the Serampore and Ludhiana Gurmukhi typefaces, with the only notable detail in the design of these being the generous width of the *aiṛā* letterform, which takes up considerable space along the notional baseline. Both the *ṭippī* (ੌ) and the *bindī* (ੌ) appear heavy and oversized in the Serampore typeface, but are somewhat improved in the Ludhiana example, where they are lighter in weight and have improved balance with the other marks and letterforms with regard to colour.

Another peculiar feature of both typefaces is the inconsistency in the proportions of letterforms; as previously mentioned the vowel bearer *aiṛā* (ਅ) is relatively wide, while other inherently wide characters like the *kāggā* (ਯ) and the

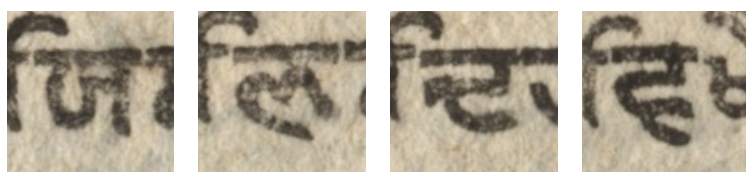
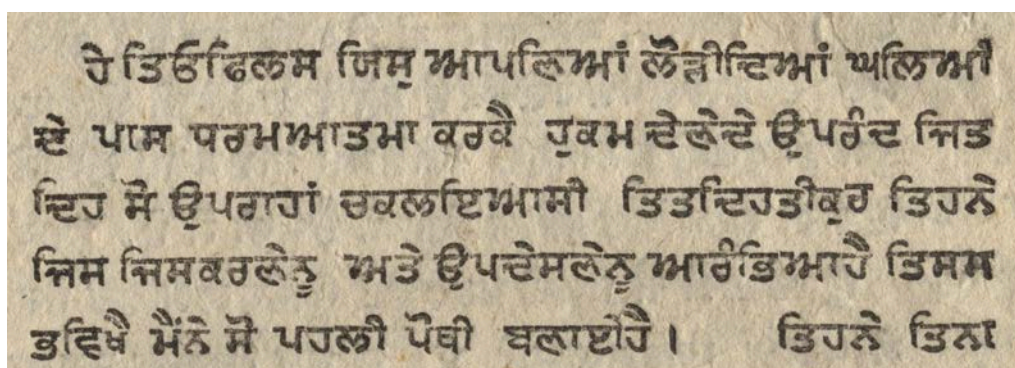
<sup>9</sup> For more on this, see Ross. *The printed Bengali character*, 1999.



1	ਅ	ੲ	ੳ	ਸ	ਹ	
2	ਕ	ਖ	ਗ	ਘ	ਙ	Gutturals.
3	ਚ	ਛ	ਜ	ਝ	ਞ	Palatals.
4	ਟ	ਠ	ਡ	ਢ	ਣ	Linguals.
5	ਤ	ਥ	ਦ	ਧ	ਨ	Dentals.
6	ਪ	ਫ	ਬ	ਭ	ਮ	Labials.
7	ਯ	ਰ	ਲ	ਵ	ੜ	

# ਕ ਗ

Figure 7.9. Sample text showing the Gurmukhi character set of the Ludhiana Mission Press. The kakkā and gaggā have relatively small counters, which were likely cause for legibility issues, especially when considering printing conditions and ink-spread. In the bottom row, each character can be seen as typed using the Murty Gurmukhi typeface. From *A dictionary of the Panjabi language*, Ludhiana Mission Press, 1854, [archive.org/details/dictionaryofpanj00pres/page/n5/mode/2up](http://archive.org/details/dictionaryofpanj00pres/page/n5/mode/2up). Accessed 27 Nov. 2018.



# ਯ ਠ ਦ ਵ

Figure 7.10. Sample text from the Acts of the Apostles, printed at the Serampore Mission Press, 1811 (above). The enlarged characters (middle row) show some odd character structures; from left to right the yāyā is has a swollen counter where a concave stroke would be expected, the nānā has a long diagonal arm on the left which is exaggerated in length, and the daddā knot looks forcibly attached rather than being a result of the turn of the pen. On the far right, the ñāñā appears closer to what could be seen in manuscript traditions than what would emerge in future Gurmukhi typefaces. In the bottom row, each character can be seen as typed using the Murty Gurmukhi typeface. Image cropped from figure 7.4.

gaggā (ਗ) are much more narrow in comparison (figure 7.7). This inconsistency in proportions is particularly noteworthy in the case of gaggā, which shares its base form with another letterform, the rārā (ਰ). While the former is usually drawn with a narrower counter so as to not be confused with a rārā followed by the kannā vowel (ਾ), the base forms of the two are entirely different in both the Serampore and the Ludhiana typefaces.<sup>10</sup> The same holds true for the tattā (ਤ), ḍaḍḍā (ਡ), and ṛāṛā (ੜ) consonants; while one would expect small variations in the overall shaping to accommodate the features unique to each letterform, in these founts the overall shaping of the letterforms vary considerably, with a noticeably heavier middle horizontal stroke in the tattā, an entirely monolinear and delicate ḍaḍḍā (that has a very short top aperture), and a ṛāṛā that appears vertically compressed. This last point is likely due to the additional ‘feet’—the small strokes on the bottom of the letterform—and an effort to align the consonant with other characters in the set at descender height. However this could have been better adjusted by shortening the length of the bottom segments that are elongated and oversized in comparison to the rest of the design.

Considering the poor printing conditions of the time and the inevitable spread of ink with letterpress printing (figure 7.8, page 274), one would expect that larger counter shapes would have been considered as a countermeasure in the design of letterforms with smaller counters such as the kakkā (ਕ), and gaggā (ਗ). Instead, these consonants are designed with small counters that appear dark on the page. In the kakkā in particular, the proximity of the closed looped counter to the headline means that often, the space between these two parts of the letterform is filled with ink, or appears dark on a page of text (figure 7.9).

As for the remainder of the consonants, the overall shaping of some is questionable with regard to legibility and accuracy, when compared to their handwritten counterparts. In Gurmukhi, the yayyā (ਯ) consonant is drawn with a sharp corner on the left side—the same feature can be seen in some other consonants like the tàddā (ਧ) and the pappā (ਪ). While in the tàddā and the pappā this sharpness has given way to a slightly softer transition in the typefaces from the Serampore and Ludhiana Missionaries, in the yayyā, the appearance of this portion of the letterform is oversized, making it very different from the other consonants one expects it to bear a resemblance to, particularly in a system of letterforms intended to function harmoniously (figure 7.10). The nāṇā (ਨ) has peculiar shaping when compared against handwritten examples as well; the diagonal arm on the right side of the consonant is highly exaggerated

<sup>10</sup> Ross makes a similar observation for the Bengali font of Serampore Mission Press: ‘It is curious to find inconsistencies in the design of letterforms which have the same basis. In the case of ক and ঞ, the inexplicably smaller counter of the latter indicates that these characters originate from two quite different sorts where one matrix for both forms would have been expected’. Ross. *The printed Bengali character*, 1999, p. 111.

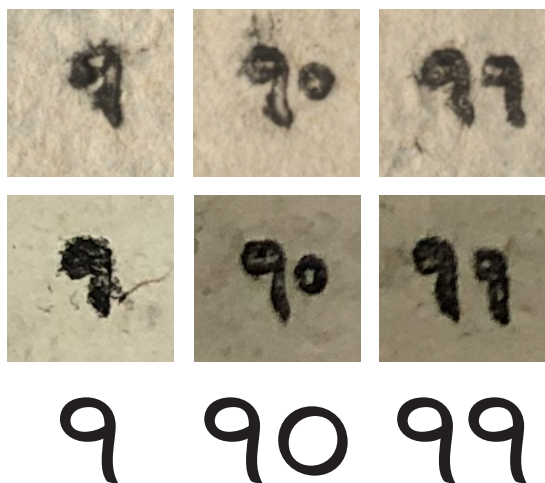


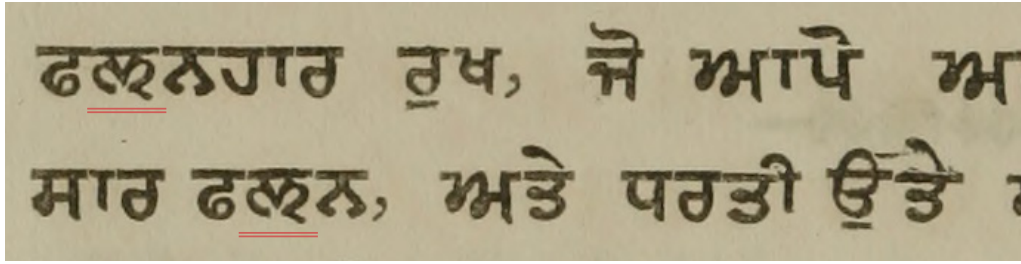
Figure 7.11. Comparison of the numbers 1 (far left), 10 (centre) and 11 (far right) between the Acts of the Apostles (1811) and Pentateuch (1814) from the Serampore Mission Press. In the bottom row, each numeral can be seen as typed using the Murty Gurmukhi typeface. Image courtesy of William Carey University library, Hattiesburg, USA.



in length, giving it an appearance that is not immediately reminiscent of its shaping in manuscripts (figure 7.10). Finally, the design of the *daddā* (ੳ) in these typefaces also shows a lack of familiarity with the structure of this letterform. In handwriting, the knot in this consonant is created as a direct result of the turn of the pen when transitioning from the top horizontal stroke to the bowl, a movement that is also repeated in other consonants like the *caccā* (ੲ) and the *ṭaddā* (ੳ). Curiously, the knot feature is correctly applied in the *caccā*, where the movement of the pen is apparent in the construction of the letterform. In the case of the other two consonants however, the knot (which is noticeably oversized in the *daddā*) looks forcibly affixed; a node bound to the characters in question as something of an afterthought. While these examples show a disregard for shaping precedents, the shaping of the *ñāññā* (ੳ) remains close to what existed in calligraphic examples. However, with time and as will be seen in future examples, the structure of this letterform was gradually changed through the work of other type founders (figure 7.10, page 276).

There is an interesting approach apparent in the figures of the Serampore Gurmukhi typeface. When looking at figures individually, such as the number 1 (ੴ) when paired in double digits such as 11, 12, etc., the shaping of the figure looks entirely different in each pair, and compared against the instance where the number appears independently. However, a cross examination of numbers 10 (ੴੴ) and 11 (ੴੴ) in *The Acts of the Apostles* (1811) and *Pentateuch* (1814) reveals that they look almost exactly the same, with any dissimilarities no doubt being due to printing conditions and properties of the paper used. Further examining this across other numbers such as an isolated 2 (ੴ) when compared to pairs like 24 (ੴੴ) reveals the same occurrence; on its own the number is shaped differently from how it appears in paired numerals. This shows that numerical pairs were not composed of individual pieces of type set next to each other, but rather they were precomposed as single pieces of type that could easily be set in the margins of the page, allowing for faster typesetting. The same does not hold true in the case of the Ludhiana typeface, where the figures share the same outlines regardless of whether they appear separately or not (figure 7.11). The relatively small size of the figure zero is also of some interest here. The round circle with a small aperture is more reminiscent of Perso-Arabic zero shaping than what was usual in Gurmukhi manuscript tradition, where the height of the zero was usually only fractionally smaller than that of the other numerals.

There is another noteworthy peculiarity unique to the design of the Ludhiana Gurmukhi typeface. In the design of the six later additions to the Gurmukhi character set (ੴ, ੴ, ੴ, ੴ, ੴ, ੴ), rather than making these characters distinct with the use of a dot beside base characters—as seen in modern practice—the distinction is instead made using a short, clipped superscript line that attaches



ਲ.

Figure 7.12. Sample page from Genesis, printed at the Ludhiana Mission Press, 1849. The highlighted characters show the peculiar appearance of the lallā pair bindī (ਲ), where the diacritic dot has been replaced with a short line instead. In the bottom row, this character can be seen as typed using the Murty Gurmukhi typeface. Image taken from online edition at the Internet Archive. *Genesis with the first twenty chapters of Exodus*, 1849, [archive.org/details/genesiswithfirst00janv](https://archive.org/details/genesiswithfirst00janv). Accessed Jan. 21, 2021.

to the far right bottom corner of the base consonants. These are not present in the Serampore typeface at all, likely because at the time the subscript paired letterforms were not in use, but a clear reference is made to the additions in *A grammar of the Panjabi language* published at the Ludhiana Mission Press in 1851, in which it is explained that some consonants ‘admit of diacritical marks to give them peculiar sounds’.<sup>11</sup> This raises a question of whether these letterforms were initially composed with the superscript diacritic and later replaced with a dot due to confusing similarity of the latter approach to a consonant with a halant attachment, or whether this was a mistake by the Ludhiana Missionaries who were not familiar with the dotted forms, or whether the use of dots in these letterforms was not yet an established practice at all (figure 7.12). The overall design of Serampore’s Gurmukhi type and later that of Ludhiana both lack typographic precision and proportional harmony between the letterforms. The connections and alignments are often misshapen and crude, and distinct features sometimes appear as an isolated instance within a single letterform and are not repeated elsewhere, an essential practice in the design of typefaces. The overall colour of the texts on the page may appear even at first, but further consideration reveals dark spots that attract the eye, which would very likely prove distracting when attempting a reading. Most importantly, there is almost no discernible connection between letterforms that share base forms, something that is inherent to the process of designing type for long reading.

It would not be surprising that when faced with these designs, native readers who had previously only seen handwritten texts or lithographed copies would not find them entirely agreeable or at all acceptable, however it is not possible to say this in the absence of testimony to this effect. It should also be pointed out that most readers have little awareness of the quality of the typefaces they view when reading, with any nuances of the design passing them by. All that is required for a majority of readers is to be able to make a distinction from one letterform to the next, so this estimation of the reaction of native readers to seeing their script in print from the first time is a speculation. Regardless, overall, the typefaces from the Serampore and Ludhiana evangelists lack consistency in proportions, spacing, contrast amount and placement, colour and texture, and appropriate sizing of diacritics compared to base letterforms. Some improvements are however evident in the Ludhiana design, which comes as no surprise; the Gurmukhi type of Serampore was cast in 1807, while the missionaries at Ludhiana began to print in this script in 1838.<sup>12</sup> The period of time between the two may have brought some refinement to the design following feedback from native readers and pundits, and it is very plausible that on a small level, some adjustments were made to

<sup>11</sup> Porter, James. *A grammar of the Panjabi language*. Ludhiana, American Presbyterian Mission Press, 1851, p. 5.

<sup>12</sup> Shaw. *First printing press in Punjab*, p. 164.

## PANJĀBĪ ALPHABET.

Form.	Power.	Name.	Form.	Power.	Name.	
ਅ	(a)	āīrā	ਫ	ph	phaphphā	
ੲ	(i)	īrī	ਬ	b	babbā	
ੳ	(u)	ūrā	ਭ	bh	bhabbhā	
ਸ	s	sassā	ਮ	m	mammā	
ਹ	h	hahā	ਯ	y	yayyā	
ਕ	k	kakkā	ਰ	r	rārā	
ਖ	kh	khakhkhā	ਲ	l	lallā	
ਗ	g	gaggā	ਵ	w, v	wawwā	
ਘ	gh	ghaghghā	ੜ	r	rārā	
ਙ	ng	ngangā	ੳ	ā	ā kannā	
ਚ	ch	chachchā	ੲ	i	ī siārī	
ਛ	chh	chhachhchā	ੳ	ī	ī biārī	
ਜ	j	jajjā	ੳ	u	u aukur	
ਝ	jh	jhajjhjā	ੳ	ū	ū dulainke	
ਞ	ny	nyanyā	ੳ	e	e laū	
ਟ	ṭ	ṭainkā	ੳ	ai	ai dulaiā	
ਠ	ṭh	ṭhathṭhā	ੳ	o	o hoṛā	
ਡ	ḍ	ḍaddā	ੳ	au*	au kanaurā	
ਢ	ḍh	ḍhadḍhā	ੳ	n or ~	bindī	
ਲ	ñ	ñāñā	ੳ	n or ~	tippī	
ਤ	t	tattā	ਗ	gy	ਸ਼	sh
ਥ	th	thaththā	ਨ	nh	ਸ਼	sr
ਦ	d	daddā	ਖ	mh	ਤ	tr
ਢ	dh	dhadhdhā	ੜ	rḥ	ਪ	pr
ਨ	n	nannā	ਲ	l	ਲ	lh
ਪ	p	pappā				

*Note.*—This alphabet consists of the Devanāgarī or Sanskrit letters in a slightly modified form. The equivalents given in this Table are the letters used in Roman Urdū (as far as possible) to represent the same sounds. The aspirates, *e.g.* bh, gh, are not pronounced exactly as Urdū, but with a peculiar sound, while ng is a sound which does not occur in Urdū, but is similar to the first ng in 'singing,' if pronounced 'si-ning.' To prevent confusion, I have used ñ to represent the palatal n which does not occur in Urdū, and ~ above a vowel to denote the final nasal n.

The letters, as in Hindī, are written from left to right.

The Numerical figures are:—

੧ ੨ ੩ ੪ ੫ ੬ ੭ ੮ ੯ ੧੦  
1 2 3 4 5 6 7 8 9 10

*Adhik* (˘) written over the line between two letters doubles the latter of them.

\* Initial vowels:—ਅ = a: ਆ = ā: ਏ = i: ਈ = ī: ਊ = u: ਊ = ū: ਏ = e: ਐ = ai: ਐ = au: ਓ = o.

Figure 7.13. Stephen Austin & Sons 1870 Gurmukhi typeface character synopsis, from *A simplified grammar and reading book of the Panjabi language* by William St Clair Tisdall, Frederick Ungar Publishing Co, New York, 1961, p. 4. [archive.org/details/simplifiedgramma00tisd](https://archive.org/details/simplifiedgramma00tisd). Accessed 20 Dec. 2021.

accommodate such feedback, the most noteworthy of these refinements being the improved diacritic sizing and positioning.

### Stephen Austin & Sons (1870)

Like the works of the Serampore Mission Press, a number of original examples of texts set in the 1870 Gurmukhi typeface procured for use by the office of Stephen Austin & Sons were available for reference, including the company's specimens from 1870 (*Specimens of Oriental and other types in use at the office of Stephen Austin & Sons*. Hertford, Stephen Austin & Sons), 1885 (*Specimens of various types in Oriental and other foreign languages*. Hertford, Stephen Austin & Sons) and 1916 (*Specimen founts of Oriental and foreign languages*. Stephen Austin & Sons).<sup>13</sup> In addition to these specimens, an edition of William St Clair Tisdall's *A simplified grammar and reading book of the Panjabi language*, printed in 1961, was procurable online; while the images of this grammar book were not available in a higher quality ideal for assessment, the digital sources were useful for providing a page showing the entire character synopsis of this fount (figure 7.13).<sup>14</sup>

A review of these examples reveals much about the earliest Gurmukhi type used for printing in this script at the office of Stephen Austin & Sons. The typeface is, like its predecessors from the missionary presses, wanting for consistency in colour and texture, proportions, and contrast application. In fact, when considering the shaping of many letterforms, it is evident that the work of the missionaries very likely served as a model when designing some aspects of this typeface. The particular shaping of a number of characters such as the vāvā (ਵ), gaggā (ਗ), nāṇā (ਨ), and nannā (ਨ)—all of which were notably distinctive in the missionaries examples—are repeated here; the highly calligraphic shaping of the vāvā, the overly round and small left side portion of the gaggā which does not match the basic shaping of the rārā—rather the design brings to mind the Devanagari letterform ga (ग), the elongated diagonal arm on the right side of the nāṇā, and the sharp, angled arms of the nannā (in an otherwise relatively round design) can all be seen in this typeface as well (figure 7.14). Also like the Gurmukhi typefaces from the missionaries, the 1870 Stephen Austin & Sons Gurmukhi lacks consistent spacing application; the word spacing is very generous when considering the character spacing, and the amount of white space in the design of individual characters. However, the alignment of the superscript and subscript diacritics is improved when compared to the previous typefaces, and while the superscript diacritics are oversized and disconnected from the headline,

<sup>13</sup> *Oriental and other types in use at the office of Stephen Austin & Sons*. 187(?); *Specimens of types in Oriental and foreign languages*. 1885; *Specimen founts of Oriental and foreign languages*. 1916.

<sup>14</sup> Tisdall, William St Clair. *A simplified grammar and reading book of the Panjabi language*. New York, Frederick Ungar, 1961. [archive.org/details/simplifiedgramma00tisd](https://archive.org/details/simplifiedgramma00tisd). Accessed 20 Dec. 2021.



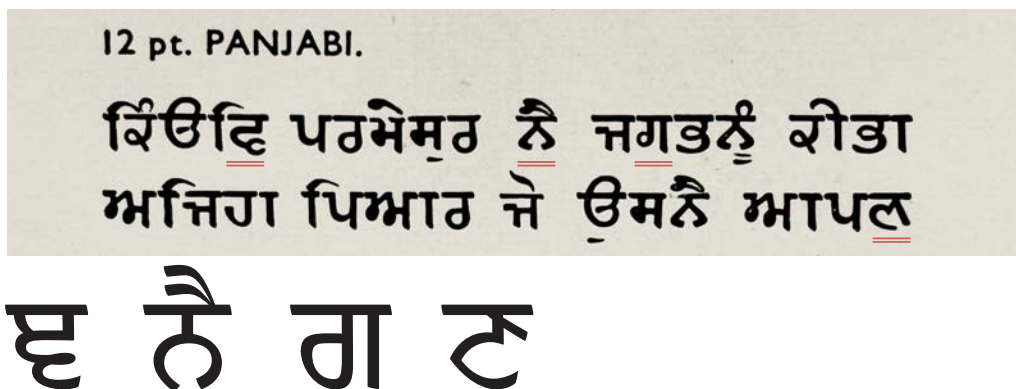


Figure 7.14. Gurmukhi sample text from *Specimens of Oriental and other types in use at the office of Stephen Austin & Sons*. Hertford. Stephen Austin & Sons, 1870. Letterforms with particular shaping are underlined in image. The same typeface can also be seen in the foundry's specimens from 1885 and 1916, and their booklet, *The story of the opening of the new factory at Caxton Hill*, Stephen Austin & Sons, Hertford, 1954. In the bottom row, each character can be seen as typed using the Murty Gurmukhi typeface. Image from author's personal copy of *The story of the opening of the new factory at Caxton Hill*.

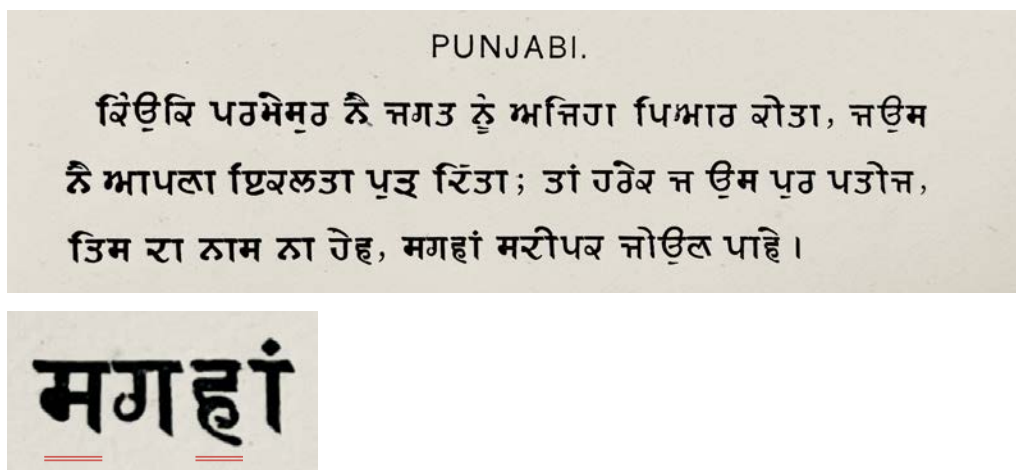


Figure 7.15. Sample text from *Specimens of Oriental and other types in use at the office of Stephen Austin & Sons*. Hertford, 1870. Cropped image below demonstrates use of the Devanagari ha (ह) and the likely borrowed (due to its heavy weight) sassā (ऌ), which represents ma (म) in Devanagari. From the BL, shelfmark: Asia, Pacific & Africa V 3646.

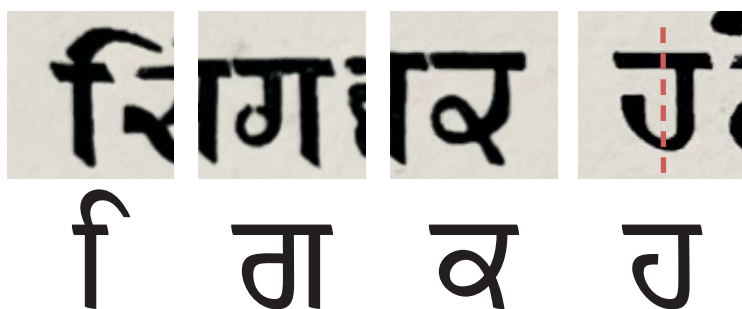


Figure 7.16. Sample characters to illustrate contrast application, from *Specimens of Oriental and other types in use at the office of Stephen Austin & Sons*, Hertford, 1870. In the bottom row, each character can be seen as typed using the Murty Gurmukhi typeface. Images cropped from figure 7.15.

the subscript diacritics (that had become flat, monolinear lines in the Ludhiana typeface) show the curvature and contrast observed in the structure of these diacritics in manuscript examples.

Upon inspection of sample texts, it is evident that the sorts used for printing belong to a variety of scripts and have been re-used for printing in Gurmukhi. This can be observed in the use of the Devanagari ha (ह) which is generally not used when writing in Gurmukhi, and other letterforms like the sassā (ਸ)—a letterform that is shared between the two scripts, albeit for representing different phonemes—yet in the Panjabi text, this single character looks relatively dark in the weight of the strokes when compared to adjacent letterforms (figure 7.15). If this hypothesis is *incorrect*, then the dark colour of the sassā in the example is indicative of uneven weight application to different characters in the typeface, and poor distribution of the black and white spaces in the design, particularly with regard to the knot on the left side of the letterform which is considerably dark on the page. This is also the case in the design of the airā (ਅ), in which the loops are relatively heavy, and distract and draw the eye. In contrast, the knots and loops in letterforms like the jajā (ਜ) and daddā (ਦ) are small; an overall imbalance that causes spottiness in the overall texture and colour of the text.

Unlike the Gurmukhi type of the missionary printers where an absence of clear intention regarding whether or not to apply contrast to the design was evident, in the case of the 1870 Gurmukhi type used at the foundry of Stephen Austin & Sons, the application of contrast is a prominent feature of the design. This can most clearly be seen in the siharī (ਸਿਹਾਰੀ) vowel, where a considerable difference in stroke weight can be seen in the transition of the arch. In some characters, contrast has been applied as a measure to combat heaviness in details, such as the circular counter in the gaggā (ਗ) and the loop of the kakkā (ਕ). Beyond this method for increasing legibility, variation in stroke widths can also be seen in a number of consonants, as well as nearly all the diacritic marks. However, as mentioned before, the amount of contrast and the positioning of the heavy strokes in comparison to the lighter segments is not applied in a consistent manner, resulting in an uneven grey colour in the block of text, with dark and light spots on the page. Furthermore, while the logic of the stroke modulation is generally correct in this typeface, the axis on which the contrast is applied sometimes varies with no logical cause; an example of this is in the bowl of the hāhā (ਹ) where the contrast axis is clearly vertical (suggesting a flat nib), rather than the diagonal axis that is used elsewhere (figure 7.16).

In the Stephen Austin & Sons specimen from 1932, it is evident that despite the passage of time, not many changes were applied to the character shapes. However, additional text examples show letterforms that could previously not be seen in the specimen from 1916. The one clear change in the founts is in the



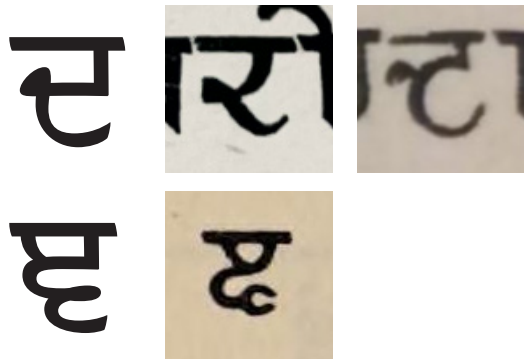


Figure 7.17. Comparison of the form of the daddā and the vāvā in (from left to right) the Murty Gurmukhi typeface, the first fount used at the office of Stephen Austin & Sons (middle), and the refined version of the first fount as seen in a specimen from 1932 (on the far left of each row). The replacement of the highly calligraphic form in favor of the rounded substitute that does not follow the inherent letterform structure is evident.

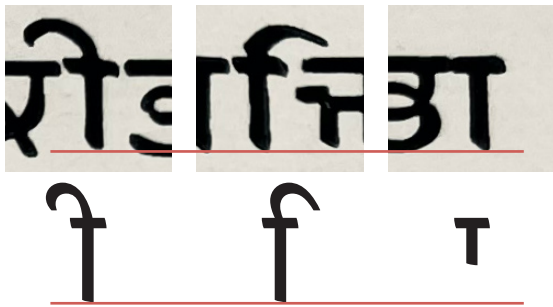


Figure 7.18. Vowel characters cropped from *Specimens of Oriental and other types in use at the office of Stephen Austin & Sons, Hertford, 1877*. Enlarged images show (from left to right) the biharī, siharī, and kannā vowels, all with the same descender height. In the bottom row, the same vowels can be seen as typed using the Murty Gurmukhi font. Images cropped from figure 7.15.

structure of the daddā (ੲ), which was previously designed with considerable calligraphic flare. In the 1932 specimen, this flamboyant design has been substituted with a large spherical form that is atypical for this letterform when compared to manuscripts. As in the design of the daddā in the Gurmukhi typefaces of the missionary printers, here the knot placement and shaping also does not follow the logical structure of this letterform; the knot looks forcibly attached to the bowl. Another peculiarity of the 1932 version is observable in the structure of the vāvā (ੳ). Previously, the missionary typefaces had designed this consonant to resemble what can be seen in manuscript examples. In this typeface, however, that calligraphic approach has been abandoned for a geometric structure that, like the daddā, appears forced (figure 7.17).

The structures of the siharī (ਿ) and biharī (ੀ) vowels are indicative of the use of the Akhand system in the fount; this is particularly of interest when considering the length of the kannā (ੌ) vowel stem, which matches the descender height of the other two aforementioned vowels, making it longer than what is common in handwritten traditions. When founts were developed for composition using the Degree system, the stem lengths of these three characters always matched, because the arched segment was later added on to the siharī and biharī vowels during composition, eliminating the need to have a separate sort for each of the three vowels. In the Akhand system, all three of these characters would be cast as one sort, as such it would have been perfectly possible to assign a shorter descender height to the kannā, particularly considering how the design of this typeface invokes calligraphy in the structure of other letterforms. As in the missionary typefaces, the arches of the siharī and biharī remain different in this typeface as well, another indication of adherence to calligraphic precedents in the design direction of this typeface.

In the character synopsis page of Tisdall's *Simplified grammar of Panjabi language*, it can be seen that the character set of this typeface covers all the base characters, vowels, and diacritics that are required for setting texts in Gurmukhi. The set also includes numerals, the bindī and ṭippī (which are sized to match the base characters), and some consonant conjuncts and additional characters used for Persian loanwords. Like in the Ludhiana typeface, the subscript nukta in the lallā pair bindī (ੲ) appears as a connected horizontal line on the right side of the character instead of a nukta. No logical reasoning for the choice of which consonant conjuncts to feature as precomposed characters in this typeface could be reached from this analysis; the half-form of the yayyā (used in Sanskrit loanwords) is present, along with the subscript rārā and hāhā. However, the subscript vāvā consonant is entirely absent from the set (figure 7.13).

Regarding proportions, little improvement can be seen from the work of the

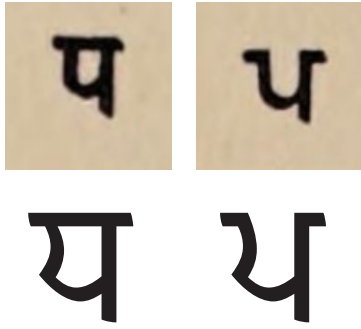


Figure 7.19. An illustration of the discrepancies in the shaping of the taddā and pappā in (top) the first fount used at the office of Stephen Austin & Sons (1870), and the Murty Gurmukhi typeface (bottom row). Images cropped from figure 7.13.

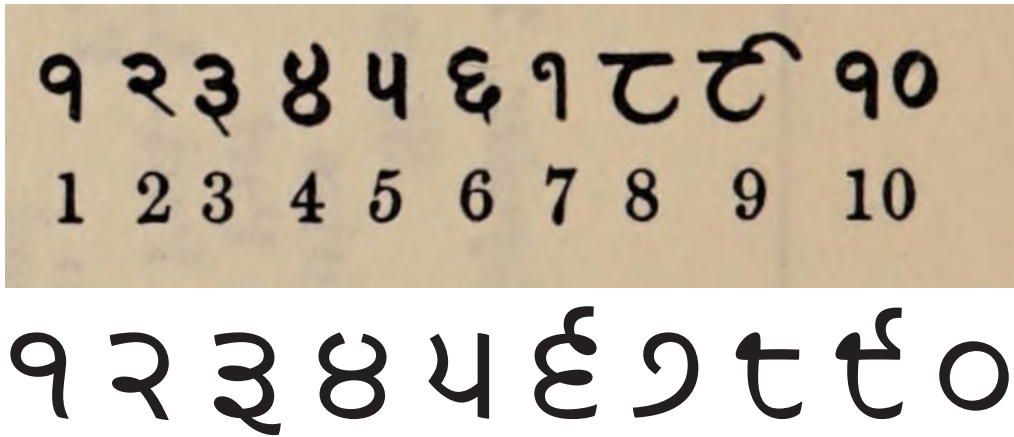


Figure 7.20. Comparison of the form of the figures in (top) the first fount used at the office of Stephen Austin & Sons (1870), and the Murty Gurmukhi typeface (bottom row). Image cropped from figure 7.13.

missionaries in the 1870 Gurmukhi fount used at the company of Stephen Austin & Sons. The aiṛā (ਅ) remains relatively wide, and the counter of the gaggā (ਗ) is still small, and does not reflect the structure of the consonant when written by scribes. The same is true for the sharp design of the nannā (ਨ) and the lack of consistency between letterforms that share similar base forms, such as the pappā (ਪ) and the tàddā (ਟ); the latter is much smaller, despite the fact that the base form of the two letterforms is exactly the same, save for the continuous headline stroke in tàddā. One could argue that due to the amount of white space in the pappā from the absence of the headline, the tàddā could be drawn smaller to compensate for this optical difference in overall colour. However, in this typeface the difference between the two is noticeable, not only with regard to size, but also when considering features such as the weight and contrast (figure 7.19).

The numerals are also inconsistent in their proportions and alignment; the 5 (੫), 7 (੭), and zero (੦) are all relatively narrow, while the 8 (੮) and 9 (੯) are, in comparison, wide. The design of the 7 is also very close to that of the 1 (੧), and could be cause for legibility issues; in handwriting, the top of the 7 is usually noticeably open (rather than a closed circle), eliminating any possibility of it being mistaken for another figure, and the spine of the figure is curved. In addition to this, the design of the 8 and 9 lack a resemblance to the shaping of these figures in handwriting, with the knots on the top being completely absent. This can also be seen in the design of the 6 (੬), where the loop on top instead appears on the bottom in this typeface, giving the impression that the figure is entirely flipped. Finally, the descender heights of the 2 (੨) is relatively short and small compared to the rest of the set, creating an uneven bottom alignment in the figures (figure 7.20).

Considering the above, overall, there is not much in the 1870 Gurmukhi typeface used for printing by Stephen Austin & Sons that suggests improvement over the work of the missionaries. Despite improvements in vowel alignment and contrast logic and application, the appearance of some letterforms is very different from what exists in manuscripts, the spacing, colour, and texture remain uneven, and the borrowing of characters from the typefaces of other scripts can still be seen. The similarities of this design with the prior work suggests that it was, at least to some extent, based on these designed that were not successful in replicating the appearance of letterforms as they appear in handwritten examples in print.

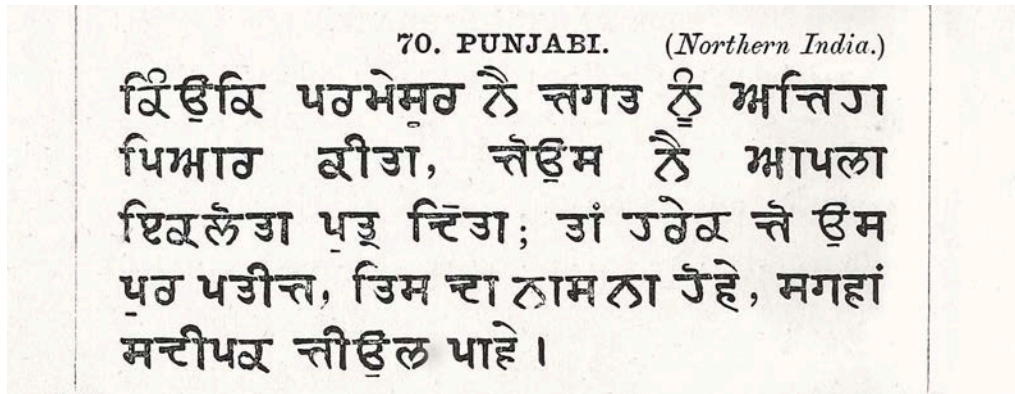


Figure 7.21. The 1872 Gurmukhi typeface of the Gilbert & Rivington type foundry. Image cropped from *St John III. 16, in some of the languages and dialects in which the British & Foreign Bible Society has printed the Holy Scriptures*. London, Gilbert & Rivington, 1875. From the BL, shelfmark: general reference collection 11902.aa.45.

### Gilbert & Rivington (1872)

The foundry of Gilbert & Rivington printed in two distinct Gurmukhi typefaces. Whether these typefaces were both designed and developed in the Gilbert & Rivington foundry, or inherited through the acquisition of the Oriental Type Foundry of Richard Watts is unclear. However, as stated in chapter 5, through the similarities between the Devanagari typeface of Richard Watts and the earlier (1872) typeface of Gilbert & Rivington, it can be assumed that if the Oriental Type Foundry did not cast a separate fount of Gurmukhi, then at the very least the Devanagari types acquired from the purchase of this foundry served as a starting point for Gilbert & Rivington's 1872 Gurmukhi typeface. This earlier design can be seen in the foundry's specimens from 1872 and 1875, in which the typeface is used for setting the same sample text from the third chapter, verse sixteen, of the *Gospel of St John in a variety of languages and dialects* (figure 7.21). The original volumes of these specimens are accessible at the BL, and high quality samples were also available online for consulting when conducting the analysis.<sup>15</sup> The size of the 1872 Gurmukhi typeface from Gilbert & Rivington is not definitively stated in any of the specimens. However, the Devanagari type from Richard Watts (upon which this design is based), is sized in his specimen as G. P., which probably means the point size was *great primer*—18 point, a large size usually used in the printing of large-format Bibles.<sup>16</sup> This means that, considering the larger size of the letterforms, features such as smaller counters, higher contrast, tighter spacing and kerning, and more detail could have been applied to the design of this typeface, none of which are actually applicable in this case. Not much sample text exists that shows Gilbert & Rivington's earlier Gurmukhi fount in use, as such it is difficult to evaluate many of the parameters outlined in the analysis framework. Despite this, the short text found in the 1872 specimen is enough to show that the colour and texture is uneven, primarily due to spacing and contrast application. Like the founts from the missionaries and Stephen Austin & Sons, here too the word spacing is very generous in comparison to the character spacing. This is exaggerated by setting justified lines of text in the available example, creating large gaps between the words. The composition method is very likely the Akhand system, and once more the puzzling choice to extend the descender height of the kannā vowel to match that of the siharī (ਫਿ) and biharī (ਫੀ) is repeated in this design, as in earlier typefaces (figure 7.22m page 292). Regarding contrast, the overall intention here was clearly to create a high-contrast design. However, as in the Gurmukhi design from the missionaries, the contrast is not correctly and

<sup>15</sup> *Specimens of some of the Oriental and foreign type now in use in Gilbert & Rivington's printing offices*. London, Gilbert & Rivington, 1872. The Library of Congress, call number: 8320491; *St John III. 16, in some of the languages and dialects in which the British & Foreign Bible Society has printed the Holy Scriptures*. London, Gilbert & Rivington, 1875. BL shelfmark: general reference collection 11902.aa.45.

<sup>16</sup> *Types in ninety-seven languages prepared by Watts*. 1859.

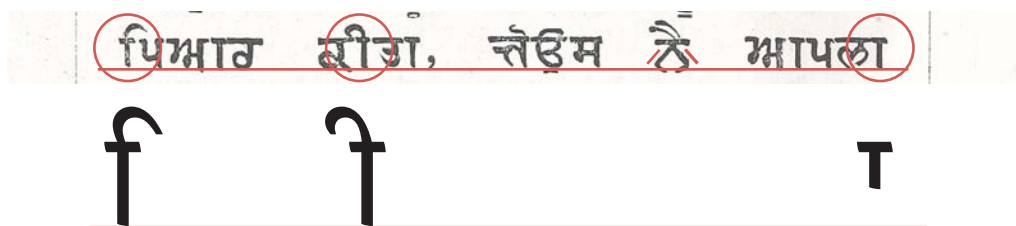


Figure 7.22. Vowel characters highlighted from text in *Specimens of some of the Oriental and foreign type now in use in Gilbert & Rivington's printing offices*, London, 1875. Encircled characters show (from left to right) the siharī, biharī, and kannā vowels, all with the same descender height. In the bottom row, the same vowels can be seen as typed using the Murty Gurmukhi font. Image cropped from figure 7.21.

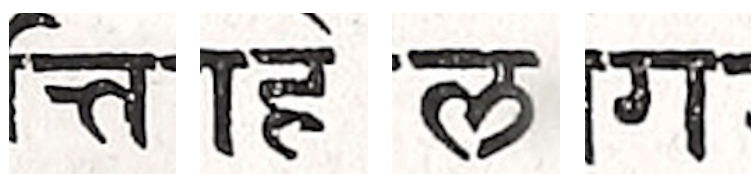


Figure 7.23. Use of characters borrowed from other scripts, sometimes with slight modifications to give letterforms the appearance of belonging to the Gurmukhi script. Images cropped from figure 7.21.



Figure 7.24. A demonstration of the lack of consistency in contrast axis and speed of the curves between the highlighted characters and the rest of the character set. Images cropped from figure 7.21.

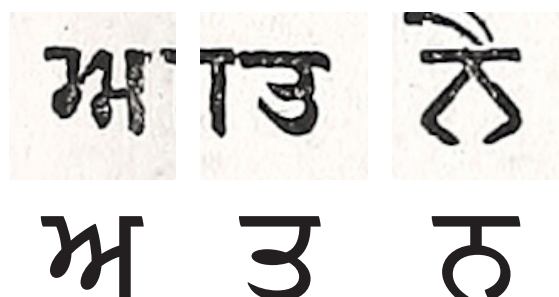


Figure 7.25. A demonstration of the lack of consistency in proportions of the 1872 Gilbert & Rivington Gurmukhi typeface. For comparison, the row below shows the same letterforms set in the Murty Gurmukhi font. Images cropped from figure 7.21.



consistently applied; while the contrast and modulation in the arches of the *siharī* and *biharī* is correctly placed and applied, the left arm of the *nannā* (ਨ) is lighter than the right, suggesting a pen nib cut in the opposite direction of the one used for drawing the two vowel marks (see figure 7.22).

The limited amount of sample text available also means that it is not possible to determine the extent of the Gurmukhi character set from Gilbert & Rivington's 1872 design. However, as previously mentioned, it is clear that some characters have been—with little to no modification—borrowed from the Devanagari great primer fount of Richard Watts.<sup>17</sup> This includes a number of letterforms such as the Devanagari *ha* (likely used as a replacement for the Gurmukhi *vāvā*), the *jajjā* (ਜ) which, like the *daddā* in the typefaces previously discussed in this chapter (as well as this design), looks like a separate character with a knot-like node later attached in an effort to make the shape recognisable as the intended consonant in Gurmukhi. Finally, the *gaggā* (ਗ) has also been replaced by the Devanagari letterform *ga* (ग), which means the typically open counter of the left side portion of the *gaggā* has been replaced with a feature created with the flick of the pen, and no distinguishable counter shape (figure 7.23). The use of letterforms of a related (but different) script gives the Gurmukhi text a discordant appearance, and this is further hindered by the seemingly random slanting of some letterforms; the *ūrā* (ੳ) is drawn with a slant, an element that recurs in only a few other consonants, such as the *hāhā* (ਹ), the *tattā* (ਤ), and to a lesser extent, the *kakkā* (ਕ); this creates a contrast to the upright rhythm in the rest of the character set, disrupting the pattern of the strokes in a line of text (figure 7.24).

The proportions of the letterforms are another area where not much improvement can be seen compared to prior examples. An exception to this is the *airā* (ਅ), which, while drawn unevenly (with one loop much larger than the other), has smaller loops in general, and takes up less horizontal space. However, beyond this vowel bearer, the remainder of the characters are uneven in the sizing of the counters and apertures. As an example, the *tattā* (ਤ) is relatively narrow (especially considering the complexity of the character), while the *nannā* (ਨ) is wide by comparison and has a generous aperture (figure 7.25).

Considering the three vowel bearers, the *airā* (ਅ), *ūrā* (ੳ), and the *īrī* (ੲ), and a number of other consonants including the *tattā* (ਤ), *rārā* (ਰ), and *pappā* (ਪ) an overall favouring of roundness can be seen in the construction of these letterforms (particularly in the *īrī*, which is excessive in its roundness when compared to calligraphic models), but this is not consistently applied to the rest of the character

<sup>17</sup> This could also mean that they did not necessarily have a complete fount of Gurmukhi, but just the characters cast to be able to print the text in the specimen. It is impossible to determine this in the absence of further printed examples.

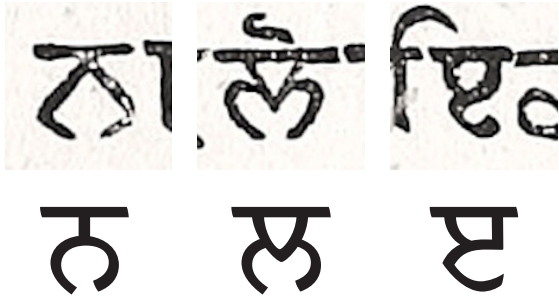


Figure 7.26. The enlarged characters show a lack of consistency in character structure—some consonants like the nannā (left) and lallā (centre) are very sharp and angular in their construction, while other like the īrī (right) are overly soft and rounded. In the bottom row, each character can be seen as typed using the Murty Gurmukhi typeface. Images cropped from figure 7.21.

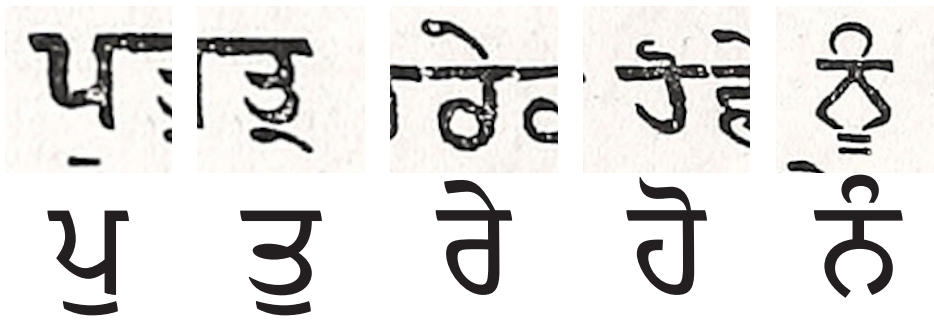


Figure 7.27. Illustration of the various approaches to vowel shaping in Gilbert & Rivington's 1872 typeface, such as (from left to right) flattening of the subscript vowels, replacing subscript vowels with flipped superscript vowels, calligraphic and modulated design of the superscript vowels, mismatched sizes between vowels and consonants, and finally, mismatched sizing between the vowels themselves. In the bottom row, each character can be seen as typed using the Murty Gurmukhi typeface. Images cropped from figure 7.21.

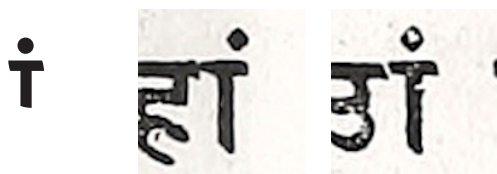


Figure 7.28. Illustration of the varying positioning of the bindi mark in comparison to the kannā vowel. On the far left, this pairing can be seen as typed using the Murty Gurmukhi typeface. Images cropped from figure 7.21.

set. The nannā (ਨੰ), as in previous foundry type examples discussed in this analysis, is designed with two sharp diagonal lines. This lack of consistency can also be seen in the counter of the lallā (ਲੰ), which is prominently triangular and sharp, highlighting an overall inconsistent approach to letterform shaping (figure 7.26).

As in the vowels of the Ludhiana typeface, the subscript diacritic marks of the 1872 Gilbert & Rivington Gurmukhi typeface appear as straight horizontal lines, although oddly, sometimes use of superscript lāvā in the place of the subscript auṅkaṛ is evident. On the other hand, the superscript lāvā (ੌ) and dulāvā (ੌ) are pronounced in their contrast and curves, as well as their size, and are perhaps the only two diacritic marks that match the base characters in size and, to some extent, weight. Unlike these two superscript marks, the hoṛā (ੌ) is by comparison quite small, giving the impression it was intended for type of a much smaller body size. The ṭippī (ੌ) is oversized, and looks lighter than the rest of the characters, contributing to the uneven and irregular appearance of text set in this fount (figure 7.27). In comparison, the bindī is proportionally sized, however, it can be seen used twice in the sample text paired with the kannā vowel, and in each instance it is positioned differently with no clear reason why this might be the case (figure 7.28).<sup>18</sup> While the superscript vowel marks can at times be seen with an attachment to the headline, this is not always the case, and a lack of extensive sample texts means it is difficult to judge whether any intent was attached to instances where the connections appear as they do in manuscripts. The vowels generally align to the consonants and vowel bearers as expected. However, the discrepancies in size, shaping, and weight of the diacritics complicates the evaluation of these characters; for example, if the hoṛā (ੌ) was appropriately sized, would it still align as expected? There can be no clear answer to this question, and again, the lack of extensive texts and further examples of the diacritic vowels in use makes it difficult to reach any conclusion about their alignment. Finally, no examples of figures could be found for this typeface. The only figures that appear alongside the Gurmukhi text are set in Arabic numerals. The same applies to the inclusion of the six other consonants that were added to the Gurmukhi character set in the 19th century (ਸ਼, ਖ਼, ਜ਼, ਞ, ਝ, ਲ਼), which are all absent from the sample text available in the specimens from 1872 and 1875.

Overall, not much improvement can be seen in the 1872 Gilbert & Rivington Gurmukhi when compared to prior typefaces of this script from the missionaries and the foundry of Stephen Austin & Sons. No clear approach can be seen in the character and word spacing—the colour and texture, contrast, proportions, and approach to the design of the characters for this typeface are uneven and inconsistent.

<sup>18</sup> This is likely due to the fact that the compositors of Gilbert & Rivington's sample texts probably could not read the script.

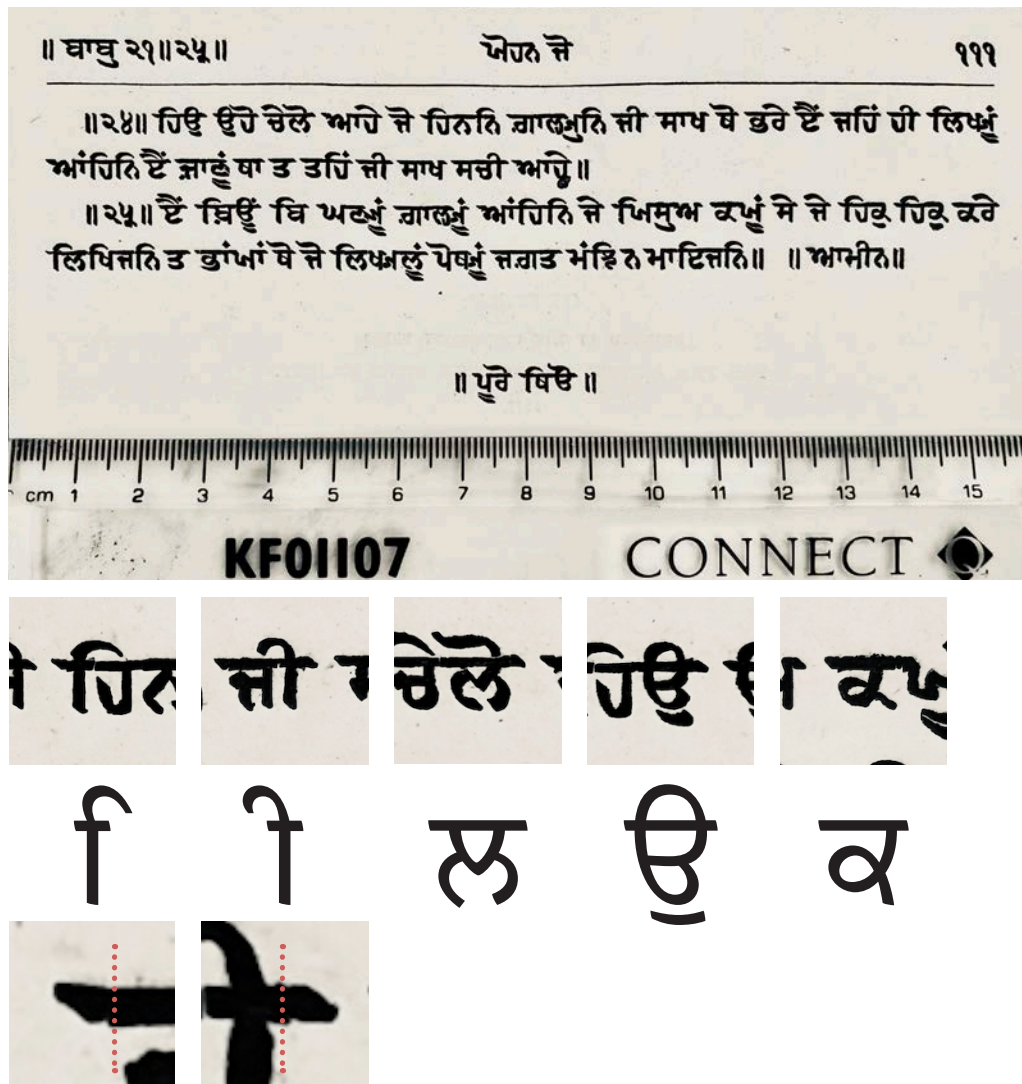


Figure 7.29. Sample text from St John's Gospel in Sindhi set in OUP Gurmukhi. consistent application of contrast can be seen in select vowels, vowel bearers, and consonants. An example of the use of triangle-shaped sorts at the beginning and end of the headline to convey the mark of the calligraphic pen when set on paper and lifted off at the end of each word can also be seen in the bottom row. Image cropped from *St John in Gurumukhi Sindhi*. Oxford, British & Foreign Bible Society. 1877. From the BL, shelfmark: Asia, Pacific & Africa 14164.aa.42.

### Oxford University Press (1877) <sup>19</sup>

With a design based entirely on calligraphic manuscripts acquired by Rev. Andrew Burn (editor of the *St John's Gospel in Sindhi*, 1877), OUP Gurmukhi has a noticeably different appearance than the typefaces evaluated so far in this chapter. The type was specifically manufactured for printing the Sindhi version of the *St John's Gospel* for the BFBS, and was cast on a paragon (20 point) body size, meaning that like its predecessor, the 1872 Gurmukhi typeface from Gilbert & Rivington, it was designed with the intention of being used for large-size text setting. As previously mentioned, the sorts, specimens, and character synopsis of OUP Gurmukhi were made available by the archivists at the Oxford University Press for this research, and an original copy of the *St John's Gospel in Sindhi* (housed in the BL) provided extensive sample texts set in the fount, all of which were consulted for this assessment.<sup>20</sup>

Unlike prior Gurmukhi typefaces discussed in this chapter, it is evident that careful consideration was applied to the design of OUP Gurmukhi. Generally, the colour and texture of this typeface are consistent and even, and despite some skewed proportions, nothing immediately stands out on the page as being too dark, light, or distracting to the eye. The only portion of the letterforms that is relatively dark is the loops of the *airā* (ਅ), but apart from this feature of the vowel bearer, the rest of the knots and loops are by comparison sized to work well with the weight of the rest of the character set. Another improvement over previous efforts that is noteworthy in OUP Gurmukhi is the uniform word and character spacing; considering the use of this typeface at large sizes, the character spacing has been made tighter, and the word spacing is done in a manner which does not create too much of a gap between word groups, and appears balanced when considering the overall colour of the text on the page. The use of calligraphic models and adherence to the logic of handwritten Gurmukhi is clearly evident in design of the typeface, where the application of contrast to the entire character set is done in a consistent matter. This is demonstrated clearly in the design of the *siharī* (ਿ) and *biharī* (ੀ) vowels, but also in the curved arms of the *lallā* (ਲ), the curves of the *ūrā* (ੳ), and the transition of the curve in the *kakkā* (ਕ). Very particular to this design also is the use of sorts which only served as calligraphic details; the two small triangular segments that would be affixed to the beginning and ending of the headline to create the diagonal mark which, in handwriting, would be left by the scribe when using a broad nibbed reed pen (figure 7.29).

As previously discussed in chapter 5, OUP Gurmukhi is composed in the

<sup>19</sup> A shorter version of this analysis (with some minor changes) was previously published in an article from the author. See Afshar, Sahar. 'The Gurmukhi type of Oxford University Press.' 2020.

<sup>20</sup> Burn. *St John's Gospel*, 1877.



**Gurumukhi**  
**Paragon 1-nk.**  
 The punch-struck matrices for this fount are numbered from 1-157, with the exception of numbers 59 and 140 for which no matrices exist. The type was cast at Oxford about 1876, and used for 'The Gospel according to St. John' (in Sindhi), edited by the Rev.—Burns, Missionary, and printed for the B. & F. B. S., in 1877.  
 There are duplicate matrices for numbers 141-2 and 143-4.  
 Numbers 49-54, 56-8, 132, and 135-9 are cast on a Pearl body.  
 Weight of fount December 1956: 350 lb.

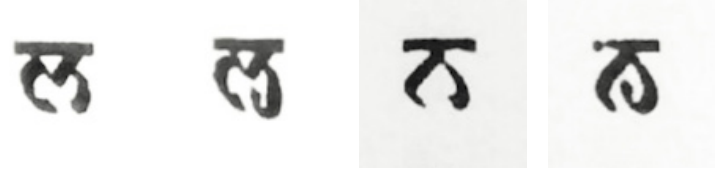


Figure 7.30. The character synopsis for OUP Gurmukhi as seen in *List of ancient and modern Greek and Oriental founts at the University Press Oxford*, Oxford, Oxford University Press, 1959, p. 42. The character set is extensive when compared to other founts of Gurmukhi. The enlarged characters show the peculiar decision to make the consonant clusters smaller than the base forms. From specimen held in the Library of St Bride Foundation, London, shelf reference TS2:8X.

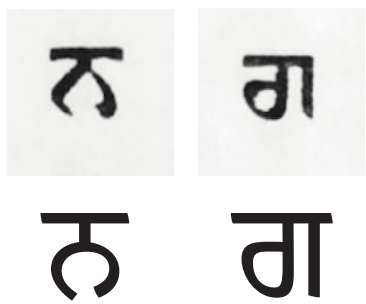


Figure 7.31. In OUP Gurmukhi, for the first time in British-made Gurmukhi type, correct shaping of characters such as the nannā (left) and gaggā (right) can be seen. In the bottom row, each character has been typed using the Murty Gurmukhi typeface. Images cropped from figure 7.30.



Akhand system. Unlike its predecessors, however, for the first time in this typeface varying descender heights were applied to the siharī, biharī, and kannā vowel; the latter is shorter than the other two vowels, another example of adherence to calligraphic precedent in this typeface. Regarding the proportions of the rest of the character set, some letterforms such as the aiṛā (ਅ), kággā (ਯ), and yayyā (ਯ) are generously proportioned. However, the width of these letterforms most likely mirror the calligraphic model on which they were based. Nevertheless, type is different from calligraphy, and the width of these letterforms would have benefited from some alterations to achieve a more standardised amount of internal white space, especially when comparing them to the rest of the character set, where the discrepancy can be noticeable to the trained eye. Conversely, despite the balanced width of the lallā (ਲ) and nannā (ਨ), the combination of these letterforms with the subscript form of the rārā consonant are noticeably condensed (figure 7.30). It is not entirely clear why the width of these combinations was decreased, as it seems logical to keep the general shape similar to that of the characters as they appear when independent of any marks or conjuncts. One explanation for this may be that the aim was to keep the subscript marks aligned to the remainder of the character set to simplify—as much as possible—the work of the compositor. The sassā (ਸ) for example, becomes vertically compressed when paired with subscript consonants such as the vāvā (ਵ - number 76 in figure 7.30) to accommodate the elongation of the character. Still, it is not entirely clear why this would have an effect on the horizontal width of a letterform; if anything, the addition of extra strokes inside the counter of a letterform when combined with a subscript mark would call for a wider space to avoid the entire counter appearing like a noticeably dark spot on the page. Another noteworthy feature visible in figure 7.30 is that for the first time in the work of British typefounders, the ‘arms’ of the nannā (ਨ) are more curved in OUP Gurmukhi, whereas in all previously assessed typefaces, these were sharp and had a rigid structure. Another novelty in this design is in the shaping of the gaggā (ਗ). In all British-made typefaces prior to OUP Gurmukhi, the size of the counter was either very small and had a circular shape, or a shaping similar to that of the Devanagari ga was used. It is in this typeface that for the first time, the letterform has been designed to reflect its appropriate shaping, as seen in Gurmukhi manuscripts (figure 7.31). The nāṇā (ਣ), however, remains unchanged in this typeface—as in previous examples, the arm on the right side remains too long for the body of the consonant.

As can be seen in figure 7.30, the character set of OUP Gurmukhi is extensive; this is largely due to the fact that the intention was always to use this design for setting the text of the St John’s Gospel in the Sindhi language, therefore, additional characters were required in response to the linguistic needs of this language. The entirety of the base characters needed for setting texts in Gurmukhi can, however, be seen in the synopsis. One curiosity amongst these base characters is the yayyā



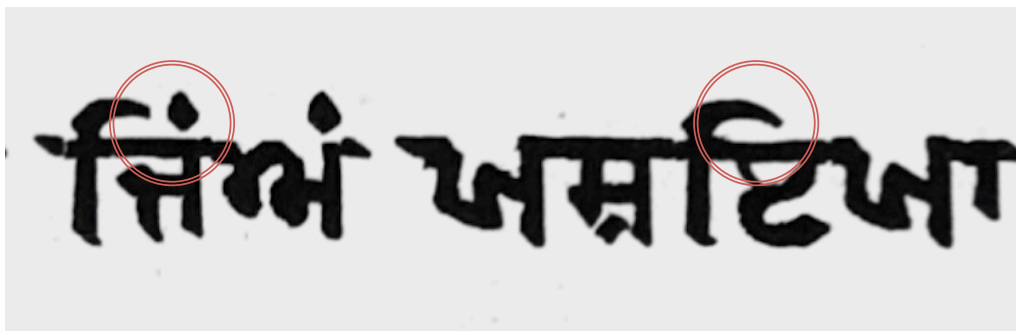


Figure 7.32. Sample text from St John in Sindhi set in OUP Gurmukhi highlighting the alternating use of sihari vowels with longer and shorter arches when combined with other letterforms and superscript vowels. Image cropped from *St John in Gurumukhi Sindhi*. Oxford, British & Foreign Bible Society. 1877. From the BL, shelfmark: Asia, Pacific & Africa 14164.aa.42.

(ੴ). The expectation with this character is that it always has a headline connection across the top, which only gets removed when using the half-form of the consonant (also present in OUP Gurmukhi, as can be seen in figure 7.31, character number 99).

The headline connection is absent in this typeface, which may be due to the specificities of the Sindhi language rather than an oversight of the designers of this typeface. Also present in the set is five of the six later additions to the Gurmukhi character set (ਸ਼, ਝ, ਞ, ਜ਼, ਢ), and for the first time in British examples, these consonants are accompanied by a subscript nukta rather than a horizontal line (as in the Ludhiana and the 1872 Stephen Austin & Sons examples). The lalle pair bindī (ਲ਼) remains absent from the character set, as this was the final addition to the Gurmukhi script, and likely either did not exist at the time when this typeface was being designed, or was not brought to the attention of those involved in the development of OUP Gurmukhi due to limited use at the time (figure 7.32).

Another significant calligraphic feature of this design that can rarely be seen in the other Gurmukhi typefaces considered in this chapter is the attachment of long, dynamic superscript vowel marks to the headline (figure 7.28, page 294). In the typefaces that preceded OUP Gurmukhi, these marks generally sit at a distance from the headline, giving the sense that they are ‘floating’ on top of the letterforms, while in manuscripts they are—as in OUP Gurmukhi—never entirely separate from the headline. Furthermore, the decision to make the superscript vowel marks longer (they tend to extend beyond the length of many of the individual base characters) also helps to further convey the sense of the design having a calligraphic, handwritten quality.

This elongation can also be seen in the top portion of the siharī (ਿ). While the sorts also include this vowel mark with an arch that curves higher up but is shorter in length (figure 7.32), the latter possesses the handwritten approach where the scribe would extend the curve of the arch to encompass the following character the vowel was to affect. The alternate form with the shorter curve may then have been added in anticipation of situations where there would not be room for the use of the elongated siharī in combination with other superscript marks like the ṭippi (ੴ) or the bindī (ਿ). This approach is not dissimilar to that of Charles Wilkins for his first Bengali type, where alternate sorts were sometimes used for some of the vowel marks. Regarding this action of modifying a sort for contextual shaping, Ross writes:

The vowel sign ਿ also appears to have two forms with very similar designs: one possessing a higher and shorter curve than the other to facilitate kerning over characters which extend above the headline . . . It is possible

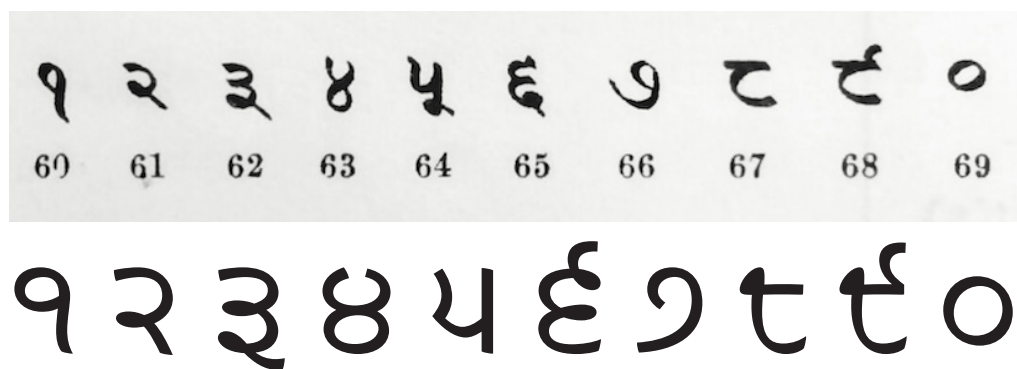


Figure 7.33. Comparison of the form of the figures in (top) OUP Gurmukhi, and the Murty Gurmukhi typeface (bottom row). The figures in this design are more reminiscent of the shaping of Devanagari numerals. Images cropped from figure 7.30.

that in such cases the metal curve of the ascender is forced back by use of compositor's tools to accommodate the additional height of the consonant it modifies.<sup>21</sup>

This explanation applies to the case of OUP Gurmukhi as well, as evident in texts set using the type, where it is evident that the arch was either pushed back as in the explanation above from Ross, or filed back to a shorter length (figure 7.32). Another notable aspect of the diacritics is the comparatively large size of the superscript and subscript marks; even the bindī, usually represented with a modestly sized dot, appears here as a distinct, diamond-shaped sign. Whether legibility was the motivation for the increased size of these marks is unclear. However they undoubtedly helped to enhance the ease of reading of long texts set with this fount, and despite their large size, these marks are balanced in terms of weight, so they do not appear heavy when compared to the rest of the character set.

The figures of OUP Gurmukhi are overall less faithful to calligraphic precedents than the letterforms, and bring to mind the shaping of the numerals of the 1872 Gurmukhi of Stephen Austin & Sons. The 5 (੫), and 6 (੬) are both written with additional knots on the bottom that are peculiar in Gurmukhi (unlike in Devanagari), as this feature is not present in these figures in handwritten Gurmukhi texts. In the case of the 7 (੭), in most typefaces the top portion of the letterform is drawn with a loop that is often left open, and a descending stem that sits on the baseline with a slight slant. In OUP Gurmukhi, the top loop has been closed and the stroke emerging from this loop turns back up at the baseline, all of which aids in conveying a sense of speed and dynamism that is reminiscent of calligraphy and handwriting, but distances the shaping from handwritten examples. Similarly, while the numbers 8 (੮) and 9 (੯) often do have a knot on top left hand joint between the horizontal stem and the curving ascender, in this typeface the shaping appears as though the straight, horizontal stem was written, and instead of the pen turning to create a knot, the scribe lifted their hand and placed the nib back in the centre of the horizontal stroke to draw the bottom curve. Finally, the zero is small and (with considerable exaggeration) leans to the right, to the point where the figure almost appears to be falling over. Such divergence in the shaping of the numbers is one of the peculiarities of this design; not necessarily in comparison to the other Gurmukhi typefaces considered prior to this example, but more importantly, when the numerals are set side by side within a line of text—both measured against each other, and against other characters; there remains a want for consistency.

---

21 Ross. *The printed Bengali character*, 1999, p.15.

### PICA PANJABI.

V. & J. FIGGINS, LONDON.

Equivalents.	Character on Pica Body. No. of Matrix.	Cast also on Bourgeois Body.	Equivalents.	Character on Pica Body. No. of Matrix.	Cast also on Bourgeois Body.	Equivalents.	Character on Pica Body. No. of Matrix.	Cast also on Bourgeois Body.	Equivalents.	Character on Pica Body. No. of Matrix.	Cast also on Bourgeois Body.
a	ੳ	1	ch	ਚ	34	t	ਤ	66	bh	ਭ	101
ai	ਐ	2	chu	ਚੁ	35	tu	ਤੁ	67	bhu	ਭੁ	102
i	ੲ	3	chú	ਚੂ	36	tú	ਤੂ	68	bhú	ਭੂ	103
e	ੲ	4	chh	ਚ਼	37	te	ਤੇ	69	m	ਮ	104
u	ੳ	5	chhu	ਚੁ਼	38	tr	ਤਰ	70	nu	ਨੁ	105
á	ਐ	6	chhú	ਚੂ਼	39	th	ਥ	71	má	ਮਾ	106
uá	ਐ	7	j	ਜ	40	thu	ਥੁ	72	maá	ਮਾ	107
o	ੳ	8	ju	ਜੁ	41	thú	ਥੂ	73	maiá	ਮਾ	108
s	ਸ	9	jú	ਜੂ	42	d	ਦ	74	y	ਯ	109
su	ਸੁ	10	je	ਜੇ	43	du	ਦੁ	75	yu	ਯੁ	110
sá	ਸਾ	11	jé	ਜੇ	43	dá	ਦਾ	76	yá	ਯਾ	111
w	ਵ	12	jh	ਝ	44	dr	ਦਰ	77	r	ਰ	112
h	ਹ	13	jhu	ਝੁ	45	dh	ਢ	78	ru	ਰੁ	113
hu	ਹੁ	14	jhú	ਝੂ	46	dhu	ਢੁ	79	rú	ਰੂ	114
há	ਹਾ	15	n	ਨ	47	dhá	ਢਾ	80	l	ਲ	115
he	ਹੇ	16	nu	ਨੁ	48	n	ਨ	81	lu	ਲੁ	116
hai	ਹਾ	17	nú	ਨੂ	49	nu	ਨੁ	82	lá	ਲਾ	117
k	ਕ	18	t	ਤ	50	ná	ਨਾ	83	lh	ਲ਼	118
ku	ਕੁ	19	tu	ਤੁ	51	náá	ਨਾ	84	l	ਲ	119
ká	ਕਾ	20	tú	ਤੂ	52	ne	ਨੇ	85	!	!	120
kr	ਕਰ	21	th	ਠ	53	nai	ਨਾ	86	v	ਵ	121
kh	ਕ਼	22	thu	ਠੁ	54	nh	ਨ਼	87	vu	ਵੁ	122
khu	ਕੁ਼	23	thú	ਠੂ	55	p	ਪ	88	vá	ਵਾ	123
khá	ਕਾ਼	24	d	ਦ	56	pu	ਪੁ	89	r	ਰ	124
g	ਗ	25	dú	ਦੁ	57	pú	ਪੂ	90	ru	ਰੁ	125
gu	ਗੁ	26	dá	ਦਾ	58	púá	ਪਾ	91	rú	ਰੂ	126
gá	ਗਾ	27	dé	ਦੇ	59	ph	ਫ	92	d	ਦ	127
gh	ਗ਼	28	dhu	ਢੁ	60	phu	ਫੁ	93	dá	ਦਾ	127
ghu	ਗੁ਼	29	dhu	ਢੁ	61	phú	ਫੂ	94	i	ੲ	128
ghá	ਗਾ਼	30	dhá	ਢਾ	62	phe	ਫੇ	95	í	ੲ	129
n	ਨ	31	p	ਪ	63	b	ਬ	96	íá	ੲ	130
nu	ਨੁ	32	pu	ਪੁ	64	bu	ਬੁ	97			
nú	ਨੂ	33	pú	ਪੂ	65	bú	ਬੂ	98			
			pe	ਪੇ	65	bá	ਬਾ	99			
						bái	ਬਾ	100			

<p>FIGURES.</p> <p>133 134 135 136 137 138 139 140 141 142</p> <p>ੳ ੲ ੳ ੳ ੳ ੳ ੳ ੳ ੳ ੳ</p> <p>1 2 3 4 5 6 7 8 9 0</p>	<p>POINTS.</p> <p>131 132</p> <p>! !</p>
--	--

POINTS—On Minikin Body.

1 2 3 4 5 6 7

Figure 7.34. Pica Panjabi. London, V. & J. Figgins, 188? Image courtesy of the St Bride Library, shelfmark unknown.

Generally, the design of OUP Gurmukhi shows many improvements over the previously assessed typefaces in this chapter. The colour and texture are even, and the spacing suits the relatively larger size point of the body of the type. The previously inconsistent application of contrast in other designs is not repeated here; instead, by abiding to the contrast logic of manuscript examples, a (generally) uniform approach can be seen in the contrast application. Furthermore, many instances of letterform shaping and proportions that were dissimilar to handwritten precedents in the previous examples have been refined to reflect the inherent structure of the script in OUP Gurmukhi. A combination of these features with other factors such as attention to details in vowel shaping and alignment, and innovative approaches designed to convey calligraphic style (with the addition of characters for the headline instroke and outstroke) highlight the importance of reliable models in the design of a typeface, and demonstrate the prioritisation of aesthetics in the development of OUP Gurmukhi by those involved in the process.

#### Vincent Figgins (188?)

The only example of printing with the unique Gurmukhi type from the foundry of V. & J. Figgins (that could be found by this research) is an undated synopsis sheet housed in the archives of St Bride Library in London. This folio displays characters separately rather than in a line of text, making the task of analysing the design somewhat difficult.<sup>22</sup> Regardless, certain features and assessment criteria are still clear with this single resource. The size of the type is relatively small; a majority of the characters are cast on a pica (12 point) body, with many of these also available at an even smaller bourgeois (8 point) size. Despite the 4 point difference in size between the pica and bourgeois, no visible effort to make any optical adjustments to the counter sizes nor proportions of the characters in the smaller size can be seen, save for the generally smaller sizing of the latter. While nearly all consonants and vowel bearers are precomposed with accompanying subscript and (less often) superscript diacritics, a set of diacritic marks was also separately cast by this foundry on a minikin (3 point) body size (figure 7.34).

The type has been cast using the Akhand system, with the top arches of the siharī (ਿ) and biharī (ੀ) clearly joining with the stems. Peculiarly, and in a design unique to this fount, the stem of these two vowels are slightly curved outwards at the bottom. This detail in itself is indicative of the likely referencing of handwritten models in the design of the typeface, rather than using the design of other Gurmukhi typefaces as a base or model. Another oddity of these two vowels

<sup>22</sup> *Pica Panjabi*. London, V. & J. Figgins, 188[?]. St Bride Library, shelfmark unknown.

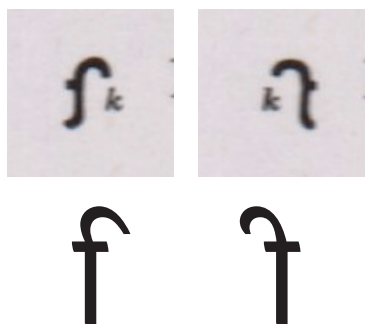


Figure 7.35. Enlarged sihari and bihari vowels from undated character synopsis of Gurmukhi from the V. & J. Figgins foundry in London, showing the absence of the headline as a means to facilitate kerning (marked by the small letter 'k') where a consonant would align next to either of the two vowels. In the bottom row, each character has been typed using the Murty Gurmukhi typeface. Images cropped from figure 7.34.

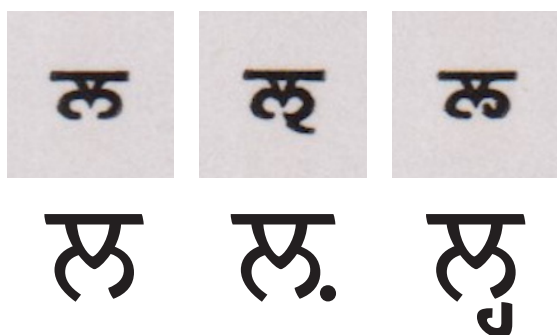


Figure 7.36. Illustration of the base form of the lallā (left), as well as the lalle pair bindī (centre) and the lallā-hāhā consonant conjunct (right) from undated character synopsis of Gurmukhi from the V. & J. Figgins foundry in London. In the bottom row, each character has been typed using the Murty Gurmukhi typeface. Images cropped from figure 7.34.

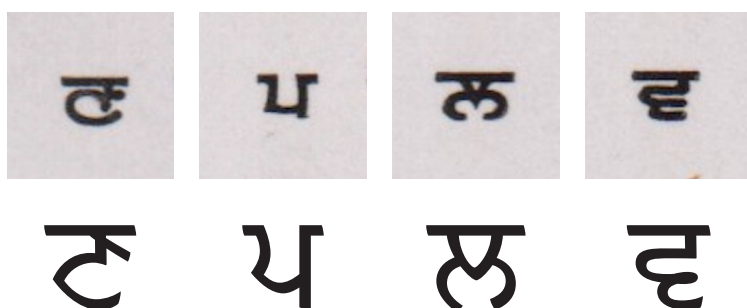


Figure 7.37. characters designed with tight spaces, short segments, small counters, and heavy weights in complex shapes, enlarged from undated character synopsis of Gurmukhi from the V. & J. Figgins foundry in London. In the bottom row, each character has been typed using the Murty Gurmukhi typeface. Images cropped from figure 7.34.



is the exclusion of the headline in their design; this was likely done as a means of improving kerning, evident from a small letter ‘k’ written to the right and left of these characters as an indicator of ‘kerning’ space (figure 7.35).

The character set of the Figgins Gurmukhi typeface covers all base characters, vowel bearers, and an extended list of precomposed consonant and vowel or nasalisation mark pairings. Noticeably absent from this set is the later additions to the Gurmukhi character set with the subscript nukta (ੲ, ੳ, ੴ, ੵ, ੶, ੷). The only indication to the consideration of any of these characters is the appearance of the lallā (੸) with the short horizontal stroke as seen in the typefaces from the Ludhiana Mission Press and Gilbert & Rivington’s 1872 Gurmukhi, where the horizontal stroke was used in place of a subscript nukta mark. Another shared feature of this typeface with prior examples (specifically, OUP Gurmukhi) is the vertical merging of the subscript hāhā (੹) inside the aperture of consonants like the lallā and nannā (੺), and the decision to not open up the aperture of this letterform more, so as to compromise for the added complexity and darker colour that the addition of the subscript consonant brings to the letterform (figure 7.36). As in previous typefaces, the subscript vāvā (੻) consonant and half-form of the yayyā (੼) are entirely absent from the character set, while the sassā (੽), kakkā (੾), daddā (੿), and pappā (੺) are combined with the subscript rārā (੻) in precomposed pairings (see figure 7.34).<sup>23</sup>

The overall design of the Figgins Gurmukhi typeface is noticeably different from the previous Gurmukhi designs considered in this research; noteworthy consideration is apparent in the balance and harmony in the characters and the uniform proportions, and very distinctively, the design direction of a simplified, slightly geometric, low contrast construction is applied consistently to all the letterforms. The overall proportions of the letterforms are wide and generous, and the counters and apertures are often open and large, no doubt a method used to aid in legibility in the intended small size use of pica and bourgeois. Curiously, however, some consonants have discernibly small counters and apertures. The lallā (੸) has a relatively minuscule counter, while the bowl of the nāṅā (੹) seems to be almost touching the headline. In more complex consonants such as the vāvā (੻) and the chacchā (੼), lighter strokes in horizontal strokes could have been utilised to keep the characters from looking slightly darker on the page, but extended text samples would be required to be able to accurately judge if this was an issue in texts set in this fount. Also useful to check in texts would be the short segments at the bottom of the stems in consonants like the taddā (੿) and the mammā (੺), as these fragments seem like they might become diminutive

23 The half-form of the yayyā is the exception this, as it does previously appear in the character set of OUP Gurmukhi.

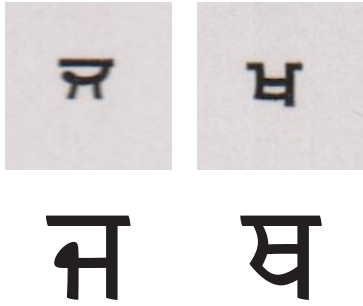


Figure 7.38 A juxtaposition of the overly round stroke used in the design of the jajjā when compared against more rigid letterforms such as the thatthā, enlarged from undated character synopsis of Gurmukhi from the V. & J. Figgins foundry in London. In the bottom row, each character has been typed using the Murty Gurmukhi typeface. Images cropped from figure 7.34.

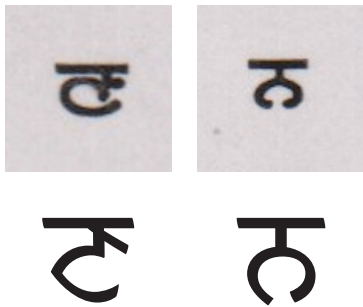


Figure 7.39. Unlike previous typefaces examined in this chapter, the nāṇā (left) and nannā (right) consonants from the Figgins Gurmukhi typeface resemble the shaping of the letterforms when written by scribes. enlarged from undated character synopsis of Gurmukhi from the V. & J. Figgins foundry in London. In the bottom row, each character has been typed using the Murty Gurmukhi typeface. Images cropped from figure 7.34.

FIGURES.									
133	134	135	136	137	138	139	140	141	142
੧	੨	੩	੪	੫	੬	੭	੮	੯	੦
1	2	3	4	5	6	7	8	9	0



Figure 7.40. Comparison of the form of the figures in (top) the Gurmukhi type of Vincent Figgins, and the Murty Gurmukhi typeface (bottom row). Image cropped from figure 7.34.

and impede legibility in text sizes (figure 7.37). Another point of departure (from other typefaces considered prior to this) in the Figgins Gurmukhi typeface is the inclusion of a curved ‘spine’ in the jajjā (ਜ), which is typically drawn with straight strokes. This feature is especially highlighted in this design because of its near-geometric design, where the rounder shapes are often brought closer to rectangular forms with straight strokes (as in the thatthā and other consonants that share this shape). For example, the subscript vowel marks—the rounded half-moon shapes of the auṅkaṛ (ਊ) and dulaṅkaṛ (ਊ)—are flattened to near straight lines in this design, reminiscent of the approach of the Ludhiana Mission Press and Gilbert & Rivington’s 1872 Gurmukhi. As such, while the curves of the jajjā do invoke a similar approach previously highlighted (see figure 7.35, page 306) in the curved stems of the siharī (ਸਿ) and biharī (ਬਿ), the consonant does look somewhat out of place. The fact that this feature is applied elsewhere in the typeface keeps it from being an outlier with regard to design. However the fact remains that there is some indecisiveness between making characters more rounded, or utilising flatter strokes in letterform shaping (figure 7.38).

One additional notable improvement over all prior British-made Gurmukhi typefaces is the correct shaping of the nāṅā (ਙ) consonant. In all prior examples, the arm on the right side of this letterform was relatively long, and overpowered the rest of the letterform in its size and weight. In the Gurmukhi type of Figgins, the length of the arm has been shortened, and the transition from the headline to the bowl of the consonant reflects more closely what can be seen in manuscripts. As in the Gurmukhi type of OUP, the design of the nannā (ਙ) is also refined here, and resembles handwritten precedents (figure 7.39). Finally, the figures are also visibly improved compared to prior examples. While some of the shaping is questionable, such as the clear re-use of the pappā (੫) for the 5 (੫), and the small size of the zero (with a more Perso-Arabic shaping than what is typical in Gurmukhi), or the very narrow 4 (੪), the alignment is much improved in this design. More importantly, the overall construction of the figures is correct; for the first time in British-made Gurmukhi typefaces, the 6 (੬) is not flipped, the 7 (੭) does not have a closed counter, and the 8 (੮) and 9 (੯) are designed with a knot and made distinguishable with an arch on the latter numeral (figure 7.40).

Overall, the design of the Figgins Gurmukhi typeface is, like the other appraised founts produced at the V. & J. Figgins foundry, notable for its unique, harmonious, clean design that would seemingly work well in the intended sizes, as (for the most part) measures necessary to maintain legibility at small size have been applied and considered in the design.<sup>24</sup> While some questionable character shaping is evident in the design, and texts could not be assessed for qualities like

24 For more on Figgins’s approach to the design of Indian scripts, see Ross. ‘South-Asian typeforms’, 2018.

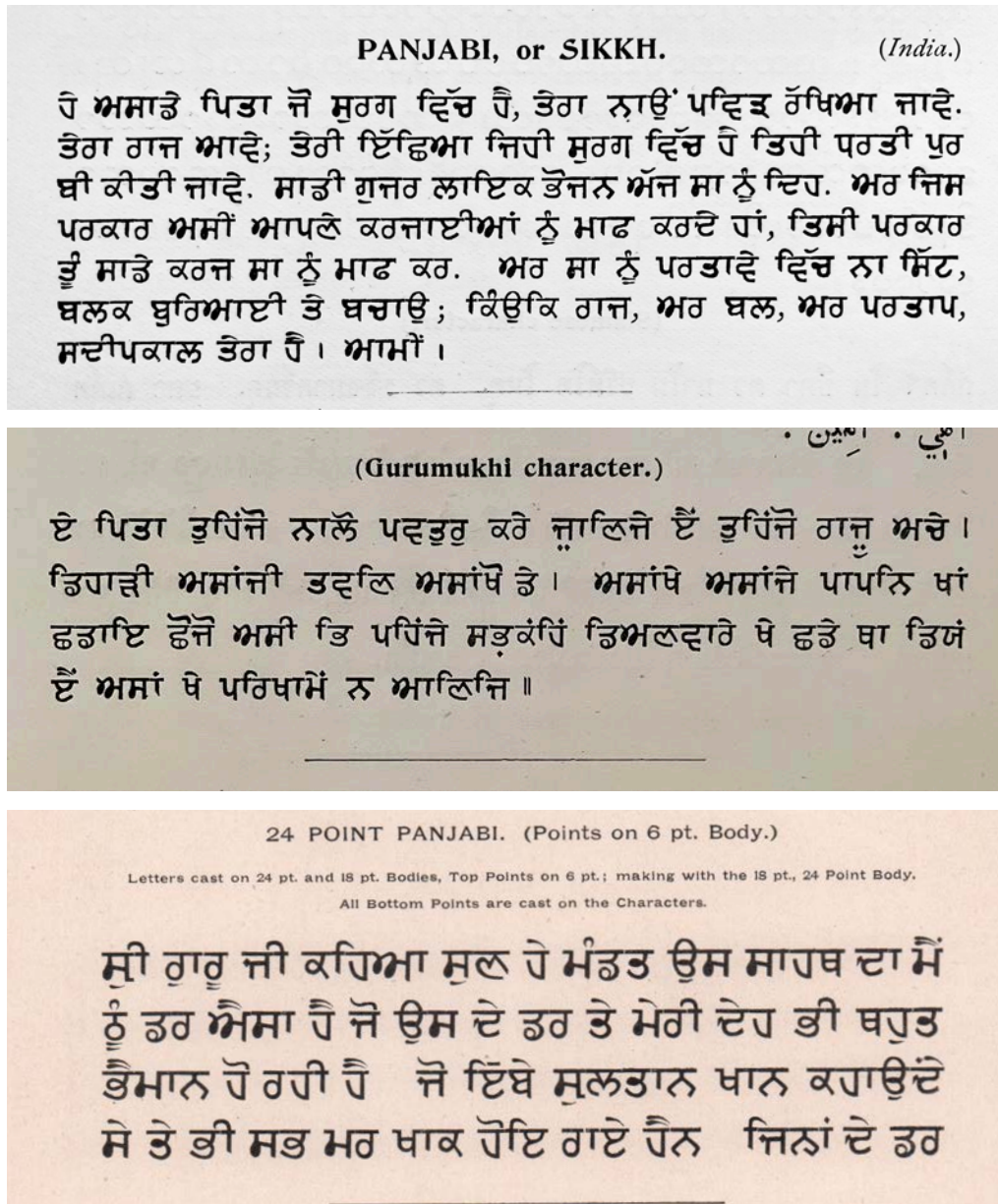


Figure 7.41. The 1891 Gurmukhi typeface of the Gilbert & Rivington type foundry. From top to bottom: *The Lord's Prayer in three hundred languages*, London, Gilbert & Rivington, 1891, *The Lord's Prayer in five hundred languages*, London, Gilbert & Rivington, 1891 (later reprinted without any changes by the foundry of William Clowes & Sons in 1908), and sample text from folio sheet showing 24 Point Panjabi, R. H. Stevens & Company, London, unknown date (likely early twentieth century). From folio housed at the St Bride Library in London, shelfmark unknown. The top two pictures are from the author's personal collection.

alignment, spacing, colour, and texture, improvements in the shaping of a number of consonants and figures, and consistent weight and contrast application are noteworthy aspects of the typeface, and the unique proportions offer possible routes for further inquiry in Gurmukhi typeface design.

### Gilbert & Rivington (1891)

Sample texts set in the later Gurmukhi typeface from the foundry of Gilbert & Rivington (designed and developed prior to 1891) can be seen in both *The Lord's Prayer in three hundred languages* (1891), and *The Lord's Prayer in five hundred languages* (1905). As stated before (see chapter 5), this typeface can also be seen in specimens from William Clowes & Sons (*Some specimens of the Roman, Oriental, and foreign types now in use in the offices of William Clowes & Sons*, c. 1908), and Steven Shanks and Company (synopsis sheet of 24 Point Panjabi, R. H. Stevens & Company Limited, London, unknown date). Considering that the latter of these two foundries concluded its work of type founding in 1971 (eighty years after the first examples of printing in Gilbert & Rivington's 1891 Gurmukhi could be found by this research) this typeface was presumably used in a number of volumes across the years and seen by many. From the above printed examples, original volumes were used as references for analysis and assessment. However, the examples from the foundry of Williams Clowes & Sons did not prove particularly advantageous to this assessment; the specimen from the foundry merely shows an exact reprint of the text in figure 7.41 (top), in addition to crude enlargements of the type with no consideration for optical corrections or adjustments in spacing. The sizes of the fount from William Clowes & Sons range from 12 points (as in the Gilbert & Rivington example), to 48 points in size (see chapter 5).

The synopsis sheet from Steven Shanks and Company is more helpful in this regard for showing the complete character set of this typeface. This foundry cast the type in question on 24 and 18 point body sizes, while the superscript diacritics are cast on a smaller 6 point body size (presumably to simplify alignment) and the subscript vowels are, as in the Gurmukhi type of Vincent Figgins, precomposed with consonants as a single integral sort. For the purpose of the evaluation, the original 14 point type from Gilbert & Rivington is primarily considered, as no notable changes are evident in the enlarged versions from the other two foundries that printed with this type. To complement the assessment, however, characters not present in the shorter sample texts from Gilbert & Rivington will be cross-referenced against the synopsis sheet from R. H. Stevens & Company (figure 7.41).

Despite the improved designs of Gurmukhi typefaces from the OUP and Vincent Figgins, the 1891 Gurmukhi typeface from Gilbert & Rivington is more



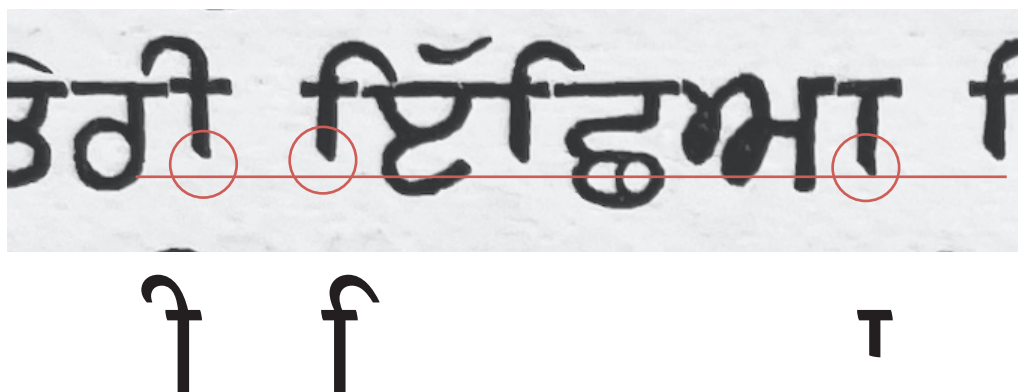


Figure 7.42. Vowel characters highlighted from text in *The Lord's Prayer in three hundred languages*, London, 1891. Encircled characters show (from left to right) the bihari, sihari, and kannā vowels, and the shorter length of the two former vowels compared to the (typically shortest) latter. In the bottom row, the same vowels can be seen as typed using the Murty Gurmukhi font. Image from author's personal collection.



Figure 7.43. A comparison of the lalle pair bindi as it appears in the character synopsis sheet from Steven Shanks & Company, and typed using the Murty Gurmukhi font. Image cropped from folio sheet showing 24 Point Panjabi, R. H. Stevens & Company Limited, London, unknown date (early twentieth century). From folio housed at the St Bride Library in London, shelfmark unknown.

reminiscent of the works of the missionary printers and the 1870 design from Stephen Austin & Sons, as well as the previous Gurmukhi typeface (from 1872) from their own foundry. The colour and texture is spotty and uneven, mostly due to the oversized loops and knots, and the justification of text has resulted in large word spacing and gaps that have made the distribution of white space in the paragraph irregular. Despite the existence of contrast in the design, it is, as in the examples prior to OUP Gurmukhi, unevenly and inconsistently applied.

As in the 1872 Gurmukhi fount from Gilbert and Rivington, this newer version too was likely cast in the Akhand system, though it is not possible to be certain on this matter, and the printing types could not be found to confirm this hypothesis. Judging from the text, the top arches of the *siharī* and *biharī* seem attached to the stem, and there is some kerning visible in the sample texts. Interestingly, in this typeface (and contrary to previous examples assessed in this chapter), while the *siharī*, *biharī*, and *kannā* vowel are once again of equal descender height, instead of making the *kannā* vowel taller than what would be expected, the length of the stem of the *siharī* and *biharī* vowels have been shortened to the extent that they are even shorter than the typically shortest vowel that has a stem in Gurmukhi (figure 7.42). The reasoning or merits of this approach are unclear; the *siharī* and *biharī* vowels are frequently used characters in Gurmukhi texts, and the misaligned descender heights of these vowels compared to the consonants creates an uneven texture (one that likely hinders the readability of texts set in this type). This misalignment does not only happen in these vowels; it extends to much of the character set in which no clear alignment of the consonants at the descender height is discernible.

The character set of the typeface does not seem to include any figures—none can be seen in either printed examples nor in the character synopsis sheet from Steven Shanks and Company—and no half-form of the *yayyā* (ਯ) consonant. With regard to the subscript consonants, the logic of which consonants they are paired with and the placement and shaping follow very closely the example of the typeface from Vincent Figgins (which in itself is similar to the 1870 Stephen Austin & Sons Gurmukhi in this aspect). Five of the six later additions to the Gurmukhi character set (ਸ਼, ਝ, ਞ, ਜ਼, ਝ) are also once again absent from this character set, and only the *lalle* pair *bindī* (ਲ਼) appears in the synopsis sheet from Steven Shanks and Company, where it is once again designed with a horizontal stroke, rather than a subscript *nukta* mark (figure 7.43).

The proportions of the typeface and the general design direction are yet another area where a lack of consistency is apparent. The *aiṛā* (ਐ) is wide (and made noticeable by its relatively oversized loops), while in comparison the *kāggā* (ਐ) is horizontally cramped, and looks almost to be the same width of the





Figure 7.44. A comparison of the internal and inter-character proportions of some letterforms, enlarged from synopsis sheet from Steven Shanks & Company, and typed using the Murty Gurmukhi font in the bottom row. Image cropped from folio sheet showing 24 Point Panjabi, R. H. Stevens & Company Limited, London, unknown date (early twentieth century). From folio housed at the St Bride Library in London, shelfmark unknown.

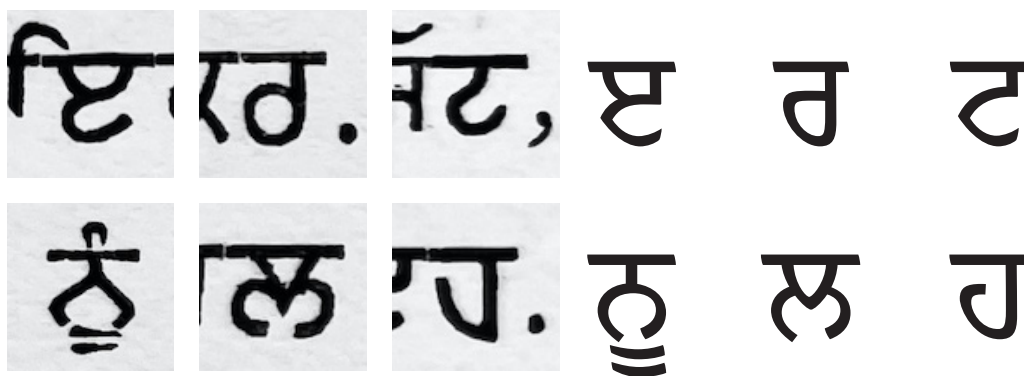


Figure 7.45. An illustration of the lack of consistency in design direction and character shaping in the 1891 Gurmukhi typeface from Gilbert & Rivington. In the top row, characters that have added roundness in their shaping can be seen compared against their appearance when typed using the Murty Gurmukhi font. The bottom row shows the opposite; characters that are generally round in calligraphic examples have been made rigid and flat in the Gilbert & Rivington design. Images from author's personal collection.

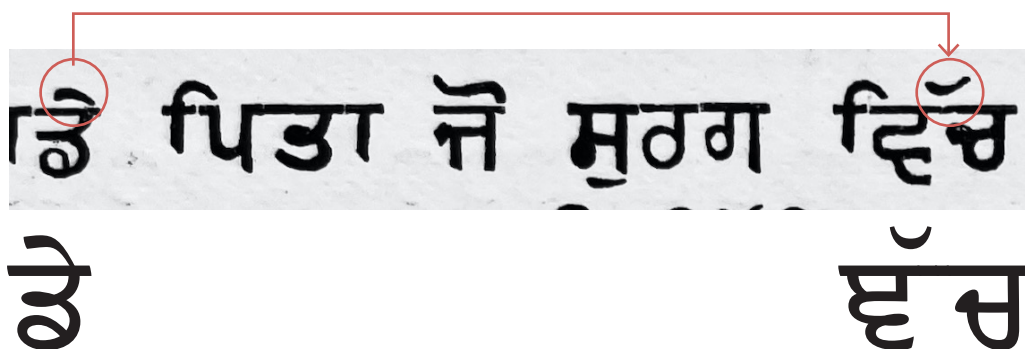


Figure 7.46. Illustration of the use of an inverted lāvā vowel in the place of an addhak mark in the 1891 Gilbert & Rivington typeface. The bottom row shows the correct shaping of each, as typeset in the Murty Gurmukhi font. Image from author's personal collection.

typically narrower sassā (ਸ਼). The internal proportions are also at discrepancy with manuscript examples in characters such as the gaggā (ਗ਼), which is once again shaped closer to the Devanagari ga with the small, closed knot on the left (in place of the open counter), and the uneven separation of the two counters of the chacchā (ਚ਼). All of these factors further hinder the consistency and harmony of the typeface (figure 7.44). As with the typeface from 1872, some characters such as the īrī (ੳ), rārā (ੳ), and ṭainkā (ੳ) are exaggerated in their roundness, while others like the nannā (ਨ), the lallā (ਲ), and the hāhā (ਹ) consonant are all drawn with rigid strokes instead (figure 7.45). This is also the case in the typically curved (even if on a subtle level) subscript diacritic marks like the auṅkaṛ (ਙ) are replaced with flat and thin horizontal lines (as in the Gurmukhi type of the Ludhiana Mission Press and the 1872 Gilbert & Rivington typeface). The superscript diacritics maintain a discernible curve, despite having less flourish than the 1872 Gilbert & Rivington typeface. The previously too-small hoṛā (ੳ) superscript mark has instead been replaced by one so wide, it entirely fills the space above consonants it is applied to. Conversely, the large ṭippī in the 1872 design is replaced by one with a counter so small, some effort is required to notice the nasalisation indicator. Finally, the addhak (ੳ) mark appears to have been replaced with an inverted lāvā vowel (ੳ), making it feel elongated, and not displaying the required shaping of an easily identifiable addhak diacritic (figure 7.46).

Gilbert & Rivington's 1891 Gurmukhi typeface is the last example of foundry type that was discovered by this research. However, it is far from being the better example when compared to the typefaces previously considered in this chapter. This is true for all the criteria that have been considered in the evaluation framework; consistency in shaping, proportions, contrast, spacing, alignment, and overall colour and texture—none of which have been accomplished in this design. The design of the 1891 typeface is closer to the foundry's own example of Gurmukhi type from 1872, rather than the foundry type from OUP or Vincent Figgins, both of which are more successful in achieving Gurmukhi printing types that are faithful to the inherent features of the Gurmukhi script, and show consideration in the aesthetics of the design.

Considering the later re-use of these types from Gilbert & Rivington by the foundries of William Clowes & Sons and Steven Shanks & Company, the question of why no efforts were made to refine the type in the eighty year span of its use between the three foundries comes to mind. One assumption can be that there was not much demand from these foundries to print in this script, or, if there was, that aesthetic sensitivities were not a concern of the clients for materials published in this script at the time.

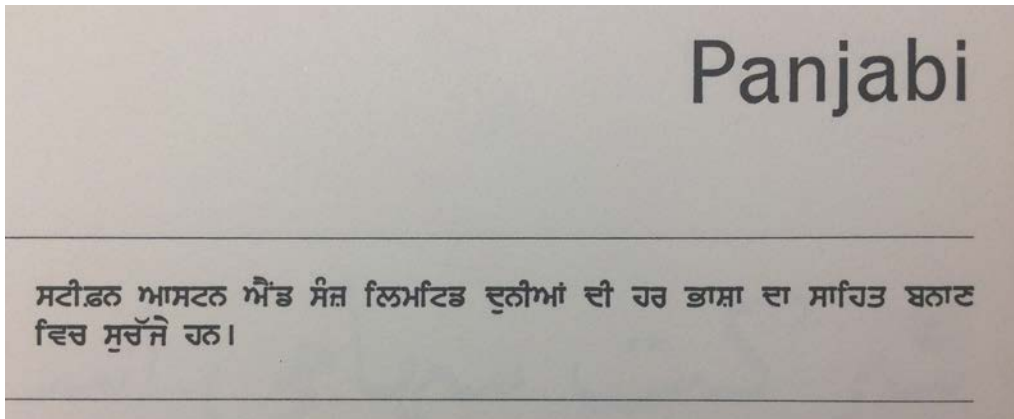


Figure 7.47. Sample text set in the hot-metal Gurmukhi fount from Stephen Austin & Sons. Image from author's personal copy of *Continental and Oriental type list*, Stephen Austin & Sons, 1958.

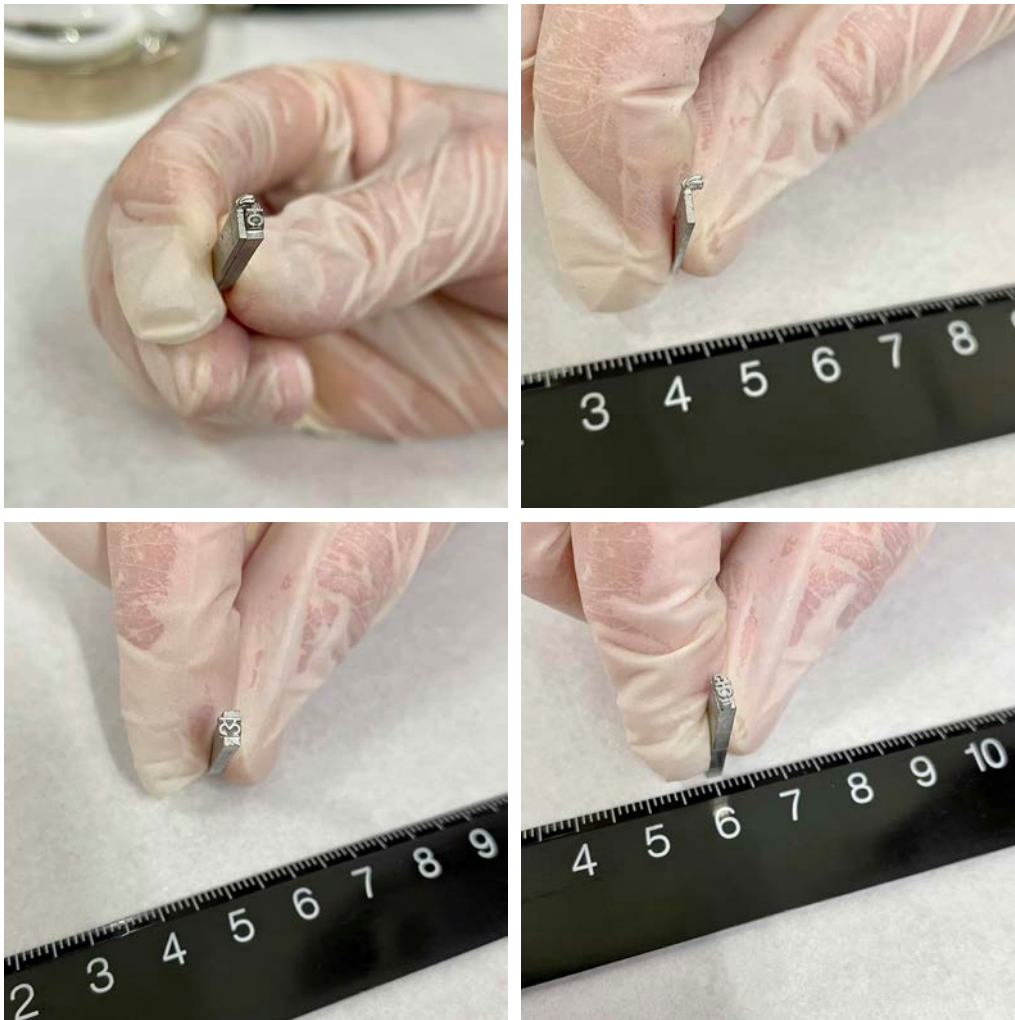


Figure 7.48. Stephen Austin & Sons pica Gurmukhi type, showing the use of hollowing out and overhangs to set type in the Akhand system. Here for sample purposes a combination of the dulāvā diacritic mark (top right) when combined with the lallā consonant (bottom left) can be seen in the top left image. Curiously, this case also contained a pre-composed nannā (ਠ) consonant with a subscript dulaīṅkaṛ and superscript ṭippī. Marina Chellini confirmed that this was likely owing to the extensive use of this particular pairing in Panjabi texts. Images taken with the permission of the BL, Sept. 2021.

### Stephen Austin & Sons (1958)

In comparison to the older Gurmukhi type (1870) that was used in their printing office, the second Gurmukhi fount (dating c. 1958) used at the company of Stephen Austin & Sons, this one cast at the company's own type foundry, is visibly improved with regard to design. There is an overall cohesive and decided approach in the design of the typeface; the characters all have a uniform, low-contrast construction, with subtle lower stroke weights used only to enhance legibility or for optical corrections.<sup>25</sup> The size of the fount is 12 point, indicating that it was intended for use in text sizes. However, the only example of text set in this typeface that this research could find is in the foundry's specimen of *Continental and Oriental type list* printed in Hertford in 1958 (figure 7.47). While the original volume of this specimen was available for this research, the lack of samples of extended text complicates the task of evaluating the typeface, and assessing the evolution of letterforms from their shaping in previous typefaces considered in this chapter, against this example. Nevertheless, a variety of characters can be seen in the available text, and some criteria outlined in the framework can still be gauged from the limited text.

Like the 1870 Gurmukhi fount used by Stephen Austin & Sons, the new fount also uses the Akhand system of composition. However, the two founts differ in that the 1870 design was realised in hand-set foundry type, while the 1958 design was cast on Monotype hot-metal machines. In an article from the Oriental and India Office Collections newsletter of 1994 titled *Experience, concentration and a good memory: Stephen Austin and Oriental printing*, Shaw recorded that 'the OIOC recently came into possession of over 100 cases of types from a variety of writing systems, donated by the office of Stephen Austin and Sons'.<sup>26</sup> With the help of Marina Chellini—curator of North Indian languages at the BL—an up close study of five cases containing Stephen Austin & Sons' Gurmukhi type held in the archives of this institution was made possible, confirming that the Akhand system of overhangs and kerning letterforms was used to create the sorts. In this typeface however (unlike most previous examples), the stem length of the kannā is rightly shortened to reflect the proper height of this vowel, which typically sits higher than the descender height of the consonants in Gurmukhi. The sorts housed in the BL archives were in excellent condition, and most showed signs of little to no use, which made the study of the available sorts easier, albeit limited space (and time)

<sup>25</sup> To read more on optical corrections in type design, see Unger, Gerard. *While you're reading*. Mark Batty Publisher, 2006.

<sup>26</sup> To mark the donation and to celebrate 225 years since the founding of the firm of Stephen Austin & Sons, an exhibition was held in the British Museum displaying the works of Stephen Austin & his sons and predecessors over the long years of print work from the firm. Shaw, Graham. 'Experience, concentration and a good memory: Stephen Austin and Oriental printing.' *OIOC Newsletter. British Library, 1990-97*, vol. 50-51, 1994, pp. 10-12.

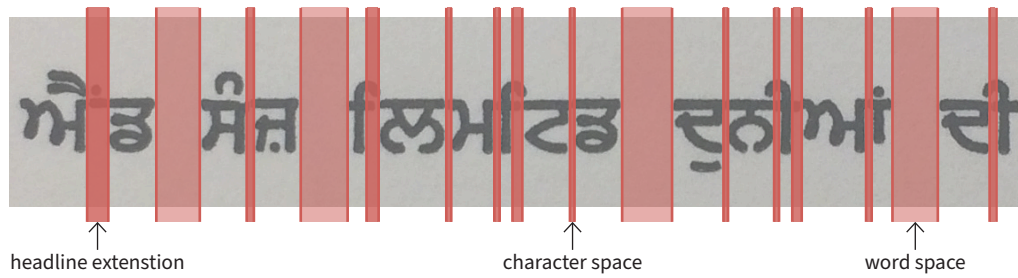


Figure 7.49. Sample text set in the hot-metal Gurmukhi fount from Stephen Austin & Sons, illustrating a comparison between the character and word spacing of the foundry's 1958 typeface. Where use of headline elongations has not been made (see pairing on the far right side of image), the character spacing is considerably tight, particularly when compared to the generous word spacing. Image cropped from figure 7.47.

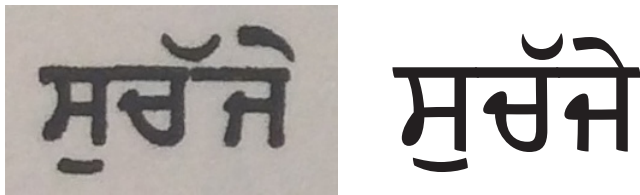


Figure 7.50. Sample text set in the hot-metal Gurmukhi fount from Stephen Austin & Sons, illustrating the high contrast of the superscript diacritics when compared to the consonants, and the elongated and light addhak mark which appears as though its design was borrowed from another script that also uses the mark. A comparison of the shaping can be seen in the Murty Gurmukhi font. Image cropped from figure 7.47.

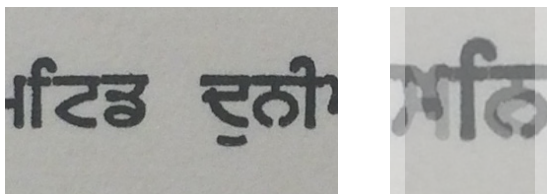


Figure 7.51. Sample text set in the hot-metal Gurmukhi fount from Stephen Austin & Sons, illustrating the equal lengths of the arch in the sihari and bihari vowels. An overlay of the flipped bihari over the sihari character confirms that a flipped version of one was used for the other. Images cropped from figure 7.47.



in the basements of the BL where the type cases are stored meant an exhaustive and comprehensive study of each piece of type was not achievable (figure 7.48, page 316).<sup>27</sup>

The limitations and constraints of the Monotype machine in spacing is immediately detectable in the 1958 Stephen Austin & Sons Gurmukhi typeface (see chapter 6 for more on these limitations). The character spacing is tight, particularly in comparison to the word spacing, which is relatively wide, a discord that creates large gaps of white space in sentences, subsequently resulting in uneven distribution of black and white in a line of text. There is varying amounts of space between the siharī (ਿ), biharī (ੀ), kannā (ਾ), and the consonants they are paired with, and at times some neighbouring consonants are close to colliding with these vowels. Finally, as in the previous fount from Stephen Austin & Sons (1870), the use of elongations in the headline to allow space for additional superscript diacritic marks can be seen in this typeface as well, which in itself creates additional white space where none is expected under these headline extension segments. The combination of these issues in spacing is unideal, as these can inhibit legibility and readability in longer texts (figure 7.49).

While the design of the characters is, as previously mentioned, generally monolinear, some contrast is apparent in the design of the superscript diacritic marks, but this is justifiable when considering manuscript examples where this often occurs as a result of the pressure applied to the writing tool.<sup>28</sup> The stand-out in the superscript diacritics is the addhak (ੱ), which looks very light (yet oversized), compared to both other diacritics, and the base consonants.<sup>29</sup> In all likelihood, this mark was borrowed from another design (figure 7.50). In the sample text, the superscript vowels are detached from the headline, unlike the approach used when writing this script, where the superscript marks never hover over consonants or vowel bearers. Another notable aspect of the vowels in this typeface which is a novel feature in the design (but would go on to often be repeated in other typefaces as well) is the equal lengths of the arch of the siharī and biharī, where one is the flipped version of the other (figure 7.51).<sup>30</sup> Despite the fact that this gives the typeface a more uniform appearance, the feature distances type from handwriting, where the siharī is always slightly elongated, while the

27 It is noteworthy that this particular visit to the archives of the British Library took place during the Covid-19 pandemic restrictions, as such the kind assistance and time of Marina Chellini and the staff in the archives was greatly appreciated, especially considering the trying circumstances.

28 See chapter 3.

29 This was also a limitation of the Monotype machines, that small marks would drop out or break, as the metal used was not as hard as foundry type.

30 It is important to note that this is only the first instance of the appearance of this feature in a British-made Gurmukhi typeface. Certainly the approach can be seen prior to this in foundry type from India, such as the Gurmukhi type of the Gujarati Type foundry. *Specimen book of the Gujarati Type Foundry*. Bombay, Gujarati Type Foundry, unknown publication date. St Bride Library shelf reference: TS1:926.

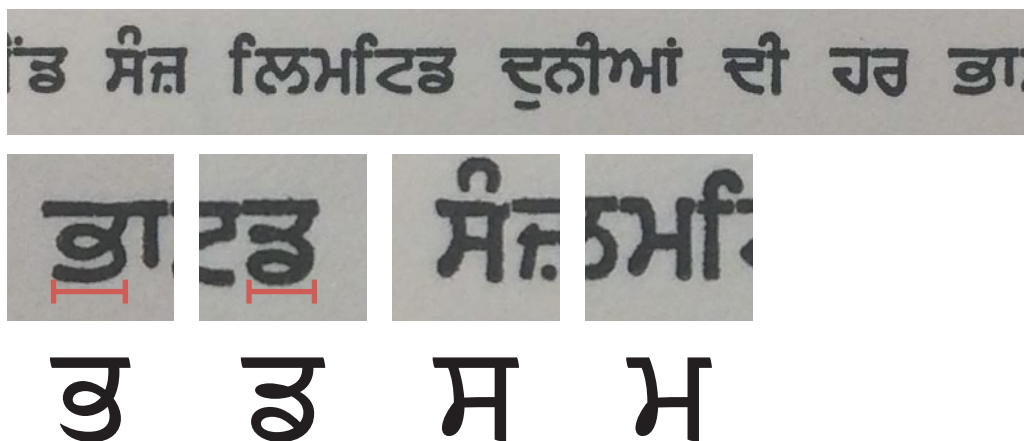


Figure 7.52. A comparison of the proportions and sizes of letterforms that share similar base forms in Gurmukhi. The same consonants can be seen in the bottom row, typed in the Murty Gurmukhi font. Image(s) cropped from figure 7.47.

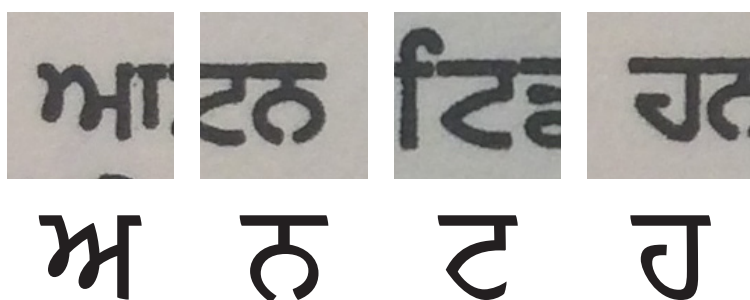


Figure 7.53. The design of some consonants from the 1895 Gurmukhi typeface of Stephen Austin & Sons. The enlarged characters demonstrate (from left to right) the relatively wide airā, the nannā which has been rounded to match the appearance of the letterform in manuscripts, and the sharper angles in the design of the ṭainkā and the ṭainkā. The bottom row shows each character as typed in the Murty Gurmukhi font for comparison. Images cropped from figure 7.47.

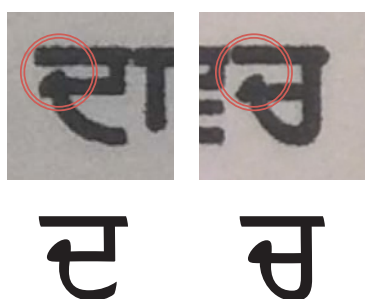


Figure 7.54. A comparison of the relationship between the knot and the headline in the (left) daddā and the (right) caccā consonants. The aperture between the two segments is narrow and almost closed off in the daddā, while in the caccā, the aperture is wide and avoids cramped spacing. The bottom row shows each character as typed in the Murty Gurmukhi font for comparison. Images cropped from figure 7.47.



arch of the biharī curls in a bit at the instroke before transitioning into a curve to complete the arch of the character.

The weight of the knots and loops in characters that contain them are relatively balanced in this typeface; these generally darker spots have been reduced to match the colour of the rest of the character set, avoiding any cause for distraction when reading texts set in the fount. The proportions of the letterforms are more even in this design compared to many of its predecessors (particularly the 1870 Stephen Austin & Sons typeface). However, there is some inconsistency in the sizing and proportions of characters that share similar base forms. For example, the pābbā (ਭ) consonant is wide when compared to the ḍaḍḍā (ጜ). While the two are different in some aspects, the expectation is that the widths of the characters would be almost the same. On the other hand, the sassā (ਸ) and mammā (ਮ) also share the same base forms in handwriting, and in this typeface, they appear to have similar proportions as well (figure 7.52), so evenness in the proportions is sometimes applied correctly, and other times some differences are discernible. Furthermore, the imbalance seen in some previous Gurmukhi typefaces assessed thus far in this chapter sometimes still persists in the this design from Stephen Austin & Sons. The airā (ਅ) is wide, and the right side of the top aperture is more generously sized compared to the left, likely due to the particular design of the loop transition. While the sharpness and rigidity that could previously commonly (though not always) be seen in some letterforms such as the nannā (ਨ) does not exist in this typeface, other consonants such as the ṭaiṅkā (ਟ) and the hāhā (ਹ) still have an out-of-place angularity in their structure (figure 7.53). The design of the daddā (ੲ) also remains troublesome in this typeface; the aperture below the headline is far too small and near closed-off by the knot. This is an oddity when considering the exact same structure exists in the caccā (ਚ), but the latter consonant is balanced and has a clear separation between the headline and the knot (figure 7.54). Finally, as in OUP Gurmukhi, the 1958 Gurmukhi typeface of Stephen Austin & Sons is the second instance of British type founders including the later additions to the Gurmukhi script with the subscript nukta.

Considering the overall design of this typeface, despite some oversights in details of the design that hinder the overall internal consistency of the typeface, the hot-metal fount of Stephen Austin & Sons, the first Gurmukhi to ever be cast using this technology, shows clear improvements over both the foundry types of the missionaries in India, and the early Gurmukhi foundry type that was being developed in Britain. The fact that the machine would typeset lines of text improved the alignment of the letterforms, and although gaps in the headline where characters connect can still be seen, the amount is considerably reduced when compared to handset texts using foundry type. Longer amount of texts and an overview of the entire character set would have helped to provide a more



Figure 7.55. Undated character synopsis and sample text of Gurmukhi Series 601 and 604 from Monotype, in *Specimen book of 'Monotype' non-Latin faces*. There is no indication of what method of composition was used for setting the text in this example. However, it may be that the improved alignment is due to the use of photocomposition. Images courtesy of Vaibhav Singh.

thorough assessment of this typeface. However, the design is unique in that it follows a consistent, low contrast construction, and despite the drawbacks of the technology with regard to spacing, the overall appearance of the design is more even and consistent compared to a majority of the foundry type evaluated in this chapter.

### Monotype (1958)

As evident in the timeline diagram at the beginning of this chapter (figure 7.1, page 262), Monotype's Gurmukhi Light and Bold typefaces were developed for both hot-metal and phototypesetting technologies. It was not possible to find examples of texts printed in Monotype's Gurmukhi types where the composition method (hot-metal or photocomposition) was clearly defined for this analysis. However, it is well documented that Monotype did not apply refinements to designs when transitioning to newer typesetting and typesetting technologies, thus it is doubtful that being unencumbered by the restraints of the hot-metal typesetting machine and the gradual dematerialisation of type offered notable, intended improvements to the internal consistency of the Light and Bold typefaces.

In a volume dated roughly from the 1970s titled *Specimen book of 'Monotype' non-Latin faces*, both the Series 601 (Bold) and 604 (Light) have a page each showing the complete character sets and sample texts set in each of the two weights—in three sizes each; 12, 14, and 16 point, a range that sits comfortably between legible text size and also in larger display contexts.<sup>31</sup> Generally, the design of Monotype's Gurmukhi typeface is much improved in comparison to prior efforts in that it remains true to the shaping of Gurmukhi letterforms as they appeared in manuscripts, though this is likely due to the design closely following samples of foundry type from inside India (see chapter 6 for more on this).

Both in the previous chapter and when considering the 1958 Gurmukhi typeface of Stephen Austin & Sons, it was pointed out that the limitations of the Monotype typesetting machine when dealing with scripts that were considered technologically complex (like Devanagari and Gurmukhi) impacted the visual appearance of these writing systems; in the case of their Gurmukhi, this can clearly be seen in the spacing of the typeface, particularly in the bold weight. The character spacing is very tight when compared to the word spacing. This combined with the use of headline extensions where collision would be inevitable has created, at times, an uneven colour on the page; sometimes the letterforms are very tightly set, while in other instances, use of the headline extension introduces generous white space to an otherwise dark line of text. This is because

---

31 Monotype Corporation. *Specimen book of 'Monotype' non-Latin faces*. Redhill, The Monotype Corporation, undated volume.

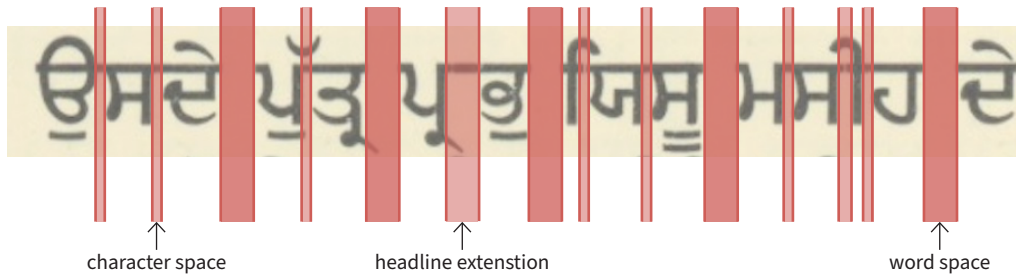


Figure 7.56. Sample text set in the hot-metal Gurmukhi fount from Montotype, illustrating a comparison between the character and word spacing of the foundry's Bold (601) typeface. the character and word-spacing is almost always of an equal width. However, use of the headline elongation which is equal to the width of the word space contributes to an uneven appearance in the colour and texture of the text. Image cropped from figure 7.55.



Figure 7.57. Varying approaches to contrast application in the Monotype Gurmukhi typeface. The same characters can be seen typed in the Murty Gurmukhi font below each image. Images cropped from figure 7.55.

a width equal to that of the word space has been considered for this extension. For comparison, the character space (seemingly evenly applied to every character irrespective of its design requirements for less or more space) is nearly one-third of the width of the word space. Overall, this contributes to a relatively uneven colour and texture in both weights of this typeface (figure 7.56).

While the use of contrast in the design is apparent, this is not consistently applied; in all the superscript vowel marks and also in consonants such as the tattā (ਤ) and the daddā (ਦ), a high amount of contrast can be seen in the transition of the stroke from heavy to light strokes. In other characters such as the subscript vowels, the siharī (ਿ) and biharī (ੀ) vowels, and the hāhā (ਹ) and kakkā (ਕ) consonants, the design is near-monolinear. As was the case in the work of the missionaries, the placement of the contrast is also often not correct and consistent. For example, in the daddā (ਦ) and nāṇā (ਣ), the outstroke tapers, whereas in calligraphic examples the outstrokes tend to widen and slightly flare. In the light weight, these tapered outstrokes become so light, it is not surprising that they were susceptible to breaking when pressure was applied to the sorts for printing. This uneven administration of contrast and weight has also contributed to the spotty colour and irregular texture of the text (figure 7.57).

Beyond the application of contrast, the subscript and superscript vowels are not consistent in design structure; the auṅkaṛ (ੳ) and dulaiṅkaṛ (ੲ) are only slightly curved, while all the superscript vowels display calligraphic flare in their structure and weight (although these all sit at a distance from the headline, unlike in handwritten examples where they are always connected to said headline). Compared to the vowel marks, the addhak (ੜ) is large, and the weight does not match in either the Bold or the Light typefaces. One curiosity is also the precomposed superscript and bindī combinations, in which the two characters are always colliding. This undoubtedly goes back to the constraints in spacing capabilities of the Monotype hot-metal machines. However the entire point of precomposed characters such as this would be to ensure ideal positioning and avoidance of clashes, indicating that without these ready pairs, the combination of such marks would have hindered legibility.

Like the hot-metal Gurmukhi type of Stephen Austin & Sons, the arches of the siharī (ਿ) and biharī (ੀ) are of equal length in Monotype Gurmukhi. However, a subtle distinction is evident in this typeface in the design of the instrokes. The arch of these characters is slightly tapered in the siharī, but flares in the biharī; a small indication of the pen movement and the contrast created as a result of the transition of the nib when writing (see enlarged examples of these vowels in the top row of figure 7.57, page 324).

For the first time in all the typefaces assessed to this point, the design of



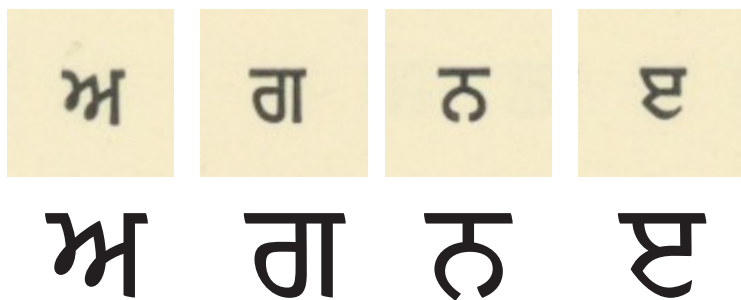


Figure 7.58. An illustration of the improved design of (from left to right) the airā and the gaggā, and the balance of curves against straight lines in the nannā and īrī characters in the Monotype Gurmukhi typeface. The same characters can be seen typed in the Murty Gurmukhi font below each image. Images cropped from figure 7.55.

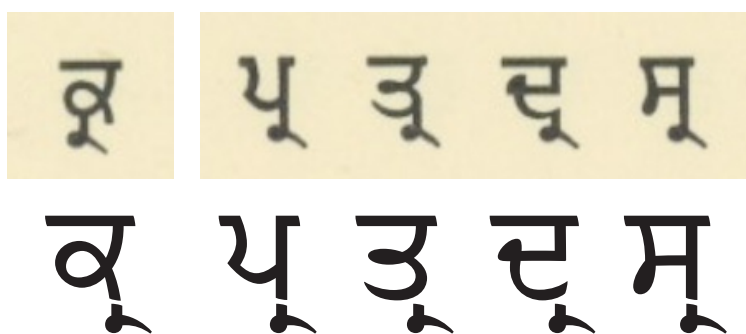


Figure 7.59. An illustration of the different approach to alignment of the subscript form of rārā when paired with the kakkā (left) when combined to other pre-composed conjuncts in the Monotype Gurmukhi typeface. The same pairings can be seen in the bottom row, typed in the Murty Gurmukhi font. Images cropped from figure 7.55.

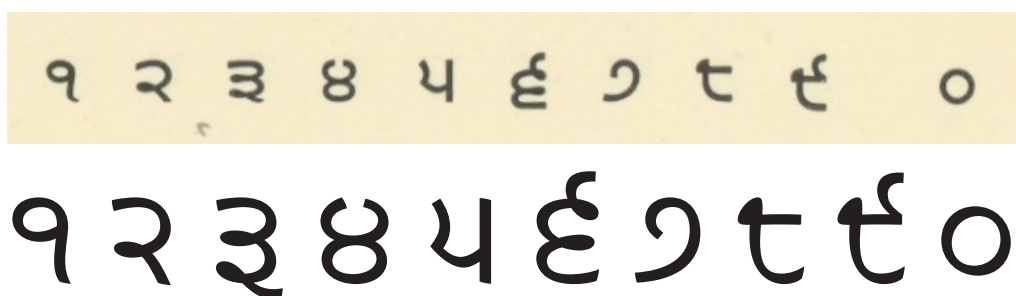


Figure 7.60. Comparison of the form of the figures in (top) the Monotype Gurmukhi typeface and (bottom) the Murty Gurmukhi typeface. Image cropped from figure 7.55.

the airā (ਅ) in this typeface is balanced when compared to other characters with regard to proportions; it is not noticeably wide nor cramped, and the internal white space of the apertures separated by the loops are balanced as well. The counter of the gaggā (ਗ) is also balanced in this design, both in terms of size, and its overall shaping that resembles a soft triangle shape rather than a circle (as in the majority of the previously assessed examples). This shaping correctly resembles that of the rārā (ਰ), but it is made narrower to allow for distinction between the pairing of a rārā consonant with the kannā vowel (ਕਾ), and the gaggā (ਗ)—increasing the legibility of the letterforms when reading. Furthermore, the design direction of this typeface shows a more cohesive approach and a balanced use of straight segments combined with curved strokes. Characters like the nannā (ਨ) which was drawn with sharp arms in many previous designs, or the overly round īrī (ੳ) are more balanced in this typeface, and resemble the calligraphic examples of manuscripts (figure 7.58).

Of the three subscript consonants, only the subscript form of rārā appears in pre-composed pairs with select consonants. In the case of the pairing of this consonant with the kakkā (ਕ), the odd choice of placing the subscript consonant below the counter of the consonant rather than at the outstroke (ਕੜ) makes this particular combination stand out from the rest of the pairings in which the subscript consonant is joined where expected, at the end of the stems (figure 7.59). The numerals of Monotype's Light and Bold Gurmukhi typefaces are another instance where adherence to correct shaping as seen in manuscripts is evident. This was also the case in the Gurmukhi type from Vincent Figgins, however, in the example from Monotype, the proportions are more even, and the sizing of the zero has been adjusted. It does appear that no contrast has been applied to the zero numeral however, which gives the figure a subtle feel of being an outlier in its design when compared to the rest of the set (figure 7.60).

The overall design of Monotype Gurmukhi is based on foundry type from inside the Indian subcontinent (see chapter 6 for more on this) rather than any prior typefaces designed for this script within Britain, and the design work was carried out in collaboration with native readers and writers of the script—the impact of all this is evident in the final result. Many of the characters that were either incorrectly shaped in previous typefaces are revised in this design, and the overall proportions are balanced. While technological constraints in spacing and some instances of incorrect contrast application have contributed to uneven colour and texture of texts set in Monotype Gurmukhi, many improvements are still evident in this design over its predecessors.



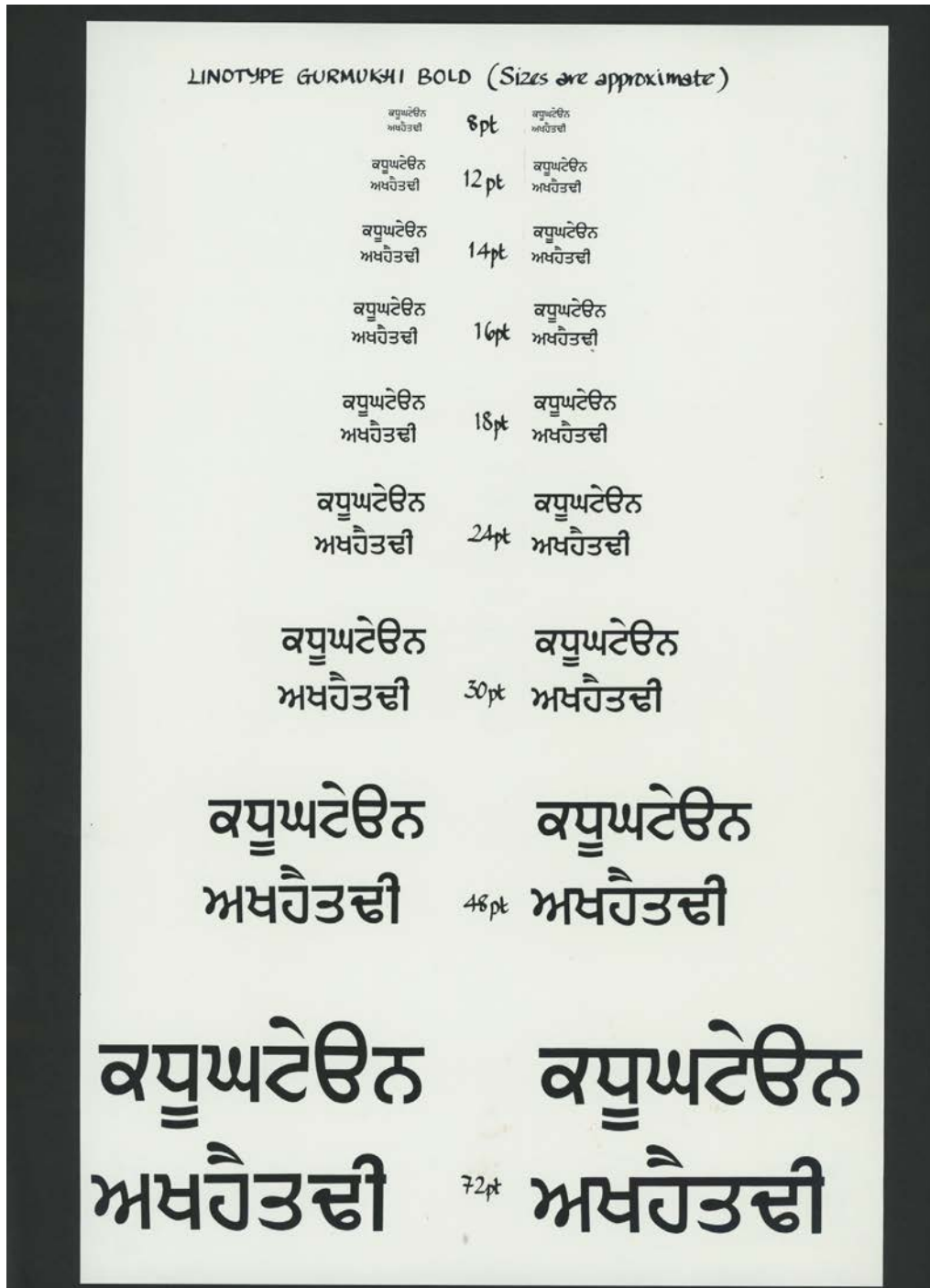


Figure 7.61. Undated camera-made paste up of the hand-drawn characters of Linotype Gurmukhi Bold, showing imitation-gaps in the headline in different point sizes (left), and the shift to removing these gaps and achieving overlaps (right). From the DTGC, Gurmukhi Correspondence folder.

### Linotype (1986)

As previously discussed, Linotype never developed hot-metal Gurmukhi type, as such, a number of issues seen in the previous typefaces discussed in this chapter do not apply to Linotype Gurmukhi. One example of this is the gaps in the headline where letterforms connect to create words. With metal type, due to the nature of the printing sorts, a separation was often visible where characters join. In the case of Gurmukhi, these gaps were often visible in the headline. Interestingly, the fact that phototypesetting technology removed any instances of these gaps in the connections by achieving overlaps in joining characters was a cause for concern for Linotype's clients. The clients at the Chandigarh Tribune Trust newspaper were concerned that the lack of these gaps would estrange readers that were accustomed to seeing them. As such, Linotype introduced artificial gaps to their typeface, and reduced these separations in the headline over time to slowly adapt the visual habits of their client's readership (figure 7.61).

This account in itself is indicative of how large the role of technology has been in informing reader habits. While it may seem that printing technology was the significant facilitator of advancement, this concern from a native readership shows that in some instances, cultural and regional preferences played a more significant part in design considerations and shaping, and highlights the importance of keeping readers in mind, rather than progress for the sake of progress. Nonetheless, other advantages of the dematerialisation of type can be clearly seen in Linotype's Gurmukhi Light and Bold typefaces; primarily, the character set is much smaller in the absence of need for numerous pre-composed pairs. The type is set in neat, even lines, clearly directing the eye of the reader to the space between the headline and the descender height. Finally, characters that share similar base forms such as the sassā (ਸ) and mammā (ਮ) are clearly structured and designed similarly, rather than one appearing larger than the other where they should be similar.

The design of the typeface is decidedly monolinear, with minimal contrast applied to achieve balanced colour on the page.<sup>32</sup> Characters that are relatively notable for the contrast applied in their design include the kággā (ਕ), the ḍaḍḍā (ਙ), the tattā (ਤ), and the řārā (ਰ). The introduction of stroke modulation and the placement of light strokes adjacent to the loops in these consonants has been used as a measure to prevent darker spots on the page by balancing the colour of the

<sup>32</sup> It is worth noting that in the field of type design, a design referred to as 'monolinear' still has some variation of weight in the stroke weights to compensate for dark joints, optical corrections, and other such instances where refinement is required to give the visual impression of a monolinear stroke. The more correct term is low-contrast. For more on these optical corrections, see Unger, Gerard. *Theory of type design*. Nai 010, 2018.

Linotype Gurmukhi

# ਕ ਖ ਗ

ੳ ਅ ਏ ਸ ਹ ਕ ਖ ਗ ਘ ਙ ਚ ਛ ਜ  
 ਝ ਵ ਠ ਠ ਡ ਢ ਣ ਤ ਥ ਦ ਧ ਨ ਪ  
 ਫ ਬ ਭ ਮ ਯ ਰ ਲ ਵ ਙ  
 ਸ਼ ਖ਼ ਗ਼ ਜ਼ ਫ਼  
 ਅ ਆ ਇ ਈ ਉ ਊ ਏ ਐ ਓ ਔ  
 ੴ ੲ ੳ ੴ ੵ ੶ ੷ ੸ ੹ ੺ ੻ ੼ ੽ ੾ ੿  
 + - × ÷ = % Rs £ \$ | ~ °  
 ! ? — , . ( ) [ ] / \* † §

**L**inotype Gurmukhi Light and Bold was designed and produced by Linotype in 1987. Based on traditional foundry types, Linotype Gurmukhi is a clean monolinear typeface, whose swelling vowel signs, and knots in the formation of particular characters, imbue it with liveliness and add to its readability in all sizes. Linotype-Hell's Indian software ensures accurate placement of superscripts and subscripts.

Please note: these fonts will only operate in conjunction with Apple Macintosh system software that has been modified using the Linotype-Hell Installer. GMSV2.0, attributes 27/01/93R, Issue2, IDSV2.13. (V24, 29/01/93). Typeset on a Linotronic imagesetter. Linotype, Hell, and Linotronic are registered trademarks of Linotype-Hell AG and/or its subsidiaries. Linotype Gurmukhi is a trademark of Linotype-Hell AG and/or its subsidiaries. PostScript, Macintosh and Indian Design Studio are registered trademarks of our licensors.

LIGHT

ਪਿਛਲੇ ਦਿਨੀਂ ਕੇਂਦਰੀ ਕਾਨੂੰਨ ਮੰਤਰੀ ਜਗਨ ਨਾਥ ਕੌਸ਼ਲ ਨੇ ਲੋਕ ਸਭਾ ਵਿਚ ਇਕ ਸਵਾਲ ਦਾ ਜਵਾਬ ਦਿੰਦਿਆਂ ਕਿਹਾ ਕਿ ਸਰਕਾਰ ਪੂਰੀ ਗੰਭੀਰਤਾ ਨਾਲ ਚੋਣਾਂ ਵਿਚ ਲੋੜੀਂਦੇ ਸੁਧਾਰ ਕਰਨ ਬਾਰੇ ਵਿਚਾਰ ਕਰ ਰਹੀ ਹੈ। ਉਨ੍ਹਾਂ ਕਿਹਾ ਕਿ ਇਸ ਦੇ ਸਾਰੇ ਪਹਿਲੂਆਂ ਤੇ ਵਿਚਾਰ ਕਰਨ ਲਈ ਉਸ ਦੇ ਸੁਝਾਵਾਂ ਤੇ ਵੀ ਨਜ਼ਰ ਰੱਖੀ ਜਾਵੇਗੀ।

ਪਿਛਲੇ ਦਿਨੀਂ ਕੇਂਦਰੀ ਕਾਨੂੰਨ ਮੰਤਰੀ ਜਗਨ ਨਾਥ ਕੌਸ਼ਲ ਨੇ ਲੋਕ ਸਭਾ ਵਿਚ ਇਕ ਸਵਾਲ ਦਾ ਜਵਾਬ ਦਿੰਦਿਆਂ ਕਿਹਾ ਕਿ ਸਰਕਾਰ ਪੂਰੀ ਗੰਭੀਰਤਾ ਨਾਲ ਚੋਣਾਂ ਵਿਚ ਲੋੜੀਂਦੇ ਸੁਧਾਰ ਕਰਨ ਬਾਰੇ ਵਿਚਾਰ ਕਰ ਰਹੀ ਹੈ। ਉਨ੍ਹਾਂ ਕਿਹਾ ਕਿ ਇਸ ਦੇ ਸਾਰੇ ਪਹਿਲੂਆਂ ਤੇ ਵਿਚਾਰ ਕਰਨ ਲਈ ਉਸ ਦੇ ਸੁਝਾਵਾਂ ਤੇ ਵੀ ਨਜ਼ਰ ਰੱਖੀ ਜਾਵੇਗੀ।

ਪਿਛਲੇ ਦਿਨੀਂ ਕੇਂਦਰੀ ਕਾਨੂੰਨ ਮੰਤਰੀ ਜਗਨ ਨਾਥ ਕੌਸ਼ਲ ਨੇ ਲੋਕ ਸਭਾ ਵਿਚ ਇਕ ਸਵਾਲ ਦਾ ਜਵਾਬ ਦਿੰਦਿਆਂ ਕਿਹਾ ਕਿ ਸਰਕਾਰ ਪੂਰੀ ਗੰਭੀਰਤਾ ਨਾਲ ਚੋਣਾਂ ਵਿਚ ਲੋੜੀਂਦੇ ਸੁਧਾਰ ਕਰਨ ਬਾਰੇ ਵਿਚਾਰ ਕਰ ਰਹੀ ਹੈ। ਉਨ੍ਹਾਂ ਕਿਹਾ ਕਿ ਇਸ ਦੇ ਸਾਰੇ ਪਹਿਲੂਆਂ ਤੇ ਵਿਚਾਰ ਕਰਨ ਲਈ ਉਸ ਦੇ ਸੁਝਾਵਾਂ ਤੇ ਵੀ ਨਜ਼ਰ ਰੱਖੀ ਜਾਵੇਗੀ।

ਪਿਛਲੇ ਦਿਨੀਂ ਕੇਂਦਰੀ ਕਾਨੂੰਨ ਮੰਤਰੀ ਜਗਨ ਨਾਥ ਕੌਸ਼ਲ ਨੇ ਲੋਕ ਸਭਾ ਵਿਚ ਇਕ ਸਵਾਲ ਦਾ ਜਵਾਬ ਦਿੰਦਿਆਂ ਕਿਹਾ ਕਿ ਸਰਕਾਰ ਪੂਰੀ ਗੰਭੀਰਤਾ ਨਾਲ ਚੋਣਾਂ ਵਿਚ ਲੋੜੀਂਦੇ ਸੁਧਾਰ ਕਰਨ ਬਾਰੇ ਵਿਚਾਰ ਕਰ ਰਹੀ ਹੈ। ਉਨ੍ਹਾਂ ਕਿਹਾ ਕਿ ਇਸ ਦੇ ਸਾਰੇ ਪਹਿਲੂਆਂ ਤੇ ਵਿਚਾਰ ਕਰਨ ਲਈ ਉਸ ਦੇ ਸੁਝਾਵਾਂ ਤੇ ਵੀ ਨਜ਼ਰ ਰੱਖੀ ਜਾਵੇਗੀ।

BOLD

ਪਿਛਲੇ ਦਿਨੀਂ ਕੇਂਦਰੀ ਕਾਨੂੰਨ ਮੰਤਰੀ ਜਗਨ ਨਾਥ ਕੌਸ਼ਲ ਨੇ ਲੋਕ ਸਭਾ ਵਿਚ ਇਕ ਸਵਾਲ ਦਾ ਜਵਾਬ ਦਿੰਦਿਆਂ ਕਿਹਾ ਕਿ ਸਰਕਾਰ ਪੂਰੀ ਗੰਭੀਰਤਾ ਨਾਲ ਚੋਣਾਂ ਵਿਚ ਲੋੜੀਂਦੇ ਸੁਧਾਰ ਕਰਨ ਬਾਰੇ ਵਿਚਾਰ ਕਰ ਰਹੀ ਹੈ। ਉਨ੍ਹਾਂ ਕਿਹਾ ਕਿ ਇਸ ਦੇ ਸਾਰੇ ਪਹਿਲੂਆਂ ਤੇ ਵਿਚਾਰ ਕਰਨ ਲਈ ਉਸ ਦੇ ਸੁਝਾਵਾਂ ਤੇ ਵੀ ਨਜ਼ਰ ਰੱਖੀ ਜਾਵੇਗੀ।

ਪਿਛਲੇ ਦਿਨੀਂ ਕੇਂਦਰੀ ਕਾਨੂੰਨ ਮੰਤਰੀ ਜਗਨ ਨਾਥ ਕੌਸ਼ਲ ਨੇ ਲੋਕ ਸਭਾ ਵਿਚ ਇਕ ਸਵਾਲ ਦਾ ਜਵਾਬ ਦਿੰਦਿਆਂ ਕਿਹਾ ਕਿ ਸਰਕਾਰ ਪੂਰੀ ਗੰਭੀਰਤਾ ਨਾਲ ਚੋਣਾਂ ਵਿਚ ਲੋੜੀਂਦੇ ਸੁਧਾਰ ਕਰਨ ਬਾਰੇ ਵਿਚਾਰ ਕਰ ਰਹੀ ਹੈ। ਉਨ੍ਹਾਂ ਕਿਹਾ ਕਿ ਇਸ ਦੇ ਸਾਰੇ ਪਹਿਲੂਆਂ ਤੇ ਵਿਚਾਰ ਕਰਨ ਲਈ ਉਸ ਦੇ ਸੁਝਾਵਾਂ ਤੇ ਵੀ ਨਜ਼ਰ ਰੱਖੀ ਜਾਵੇਗੀ।

ਪਿਛਲੇ ਦਿਨੀਂ ਕੇਂਦਰੀ ਕਾਨੂੰਨ ਮੰਤਰੀ ਜਗਨ ਨਾਥ ਕੌਸ਼ਲ ਨੇ ਲੋਕ ਸਭਾ ਵਿਚ ਇਕ ਸਵਾਲ ਦਾ ਜਵਾਬ ਦਿੰਦਿਆਂ ਕਿਹਾ ਕਿ ਸਰਕਾਰ ਪੂਰੀ ਗੰਭੀਰਤਾ ਨਾਲ ਚੋਣਾਂ ਵਿਚ ਲੋੜੀਂਦੇ ਸੁਧਾਰ ਕਰਨ ਬਾਰੇ ਵਿਚਾਰ ਕਰ ਰਹੀ ਹੈ। ਉਨ੍ਹਾਂ ਕਿਹਾ ਕਿ ਇਸ ਦੇ ਸਾਰੇ ਪਹਿਲੂਆਂ ਤੇ ਵਿਚਾਰ ਕਰਨ ਲਈ ਉਸ ਦੇ ਸੁਝਾਵਾਂ ਤੇ ਵੀ ਨਜ਼ਰ ਰੱਖੀ ਜਾਵੇਗੀ।

ਪਿਛਲੇ ਦਿਨੀਂ ਕੇਂਦਰੀ ਕਾਨੂੰਨ ਮੰਤਰੀ ਜਗਨ ਨਾਥ ਕੌਸ਼ਲ ਨੇ ਲੋਕ ਸਭਾ ਵਿਚ ਇਕ ਸਵਾਲ ਦਾ ਜਵਾਬ ਦਿੰਦਿਆਂ ਕਿਹਾ ਕਿ ਸਰਕਾਰ ਪੂਰੀ ਗੰਭੀਰਤਾ ਨਾਲ ਚੋਣਾਂ ਵਿਚ ਲੋੜੀਂਦੇ ਸੁਧਾਰ ਕਰਨ ਬਾਰੇ ਵਿਚਾਰ ਕਰ ਰਹੀ ਹੈ। ਉਨ੍ਹਾਂ ਕਿਹਾ ਕਿ ਇਸ ਦੇ ਸਾਰੇ ਪਹਿਲੂਆਂ ਤੇ ਵਿਚਾਰ ਕਰਨ ਲਈ ਉਸ ਦੇ ਸੁਝਾਵਾਂ ਤੇ ਵੀ ਨਜ਼ਰ ਰੱਖੀ ਜਾਵੇਗੀ।

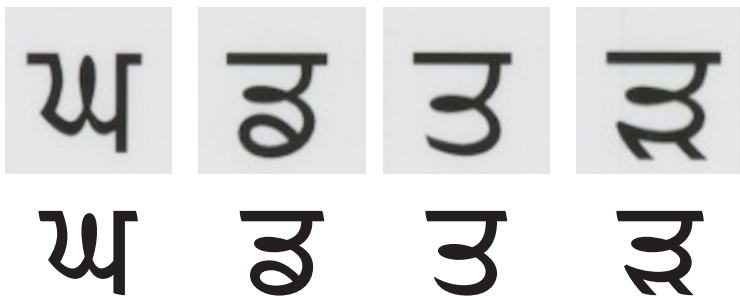


Figure 7.62. Character synopsis and sample text of Linotype Gurmukhi Light and Bold, typeset on a Linotronic Imagesetter, 1993. In the bottom row, consonants with contrast applied where the strokes turn to create loops (as a way to prevent the creation of any dark spots on the page) can be seen, in comparison to the same character type set in the Murty Gurmukhi font, where a similar approach is evident in the design. From the DTGC, Gurmukhi Correspondence folder.

characters. In these instances, maintaining a similar stroke weight would have resulted in dark loops, ultimately disrupting the even colour and texture of texts set in this typeface (figure 7.62).

The spacing is even, and whenever needed, kerning has been carefully applied to maintain the uniform spacing. Not unlike a majority of the other typefaces discussed prior to this, the superscript vowels do not attach to the headline, although the *lāvā* (ੴ) and *dulāvā* (ੴ) sit very close to it. Similarly to the foundry type the design is based on, the subscript marks are highly simplified when compared to the superscript marks. However, it is important to keep in mind that from the start, it was the wish of Linotype's clients to achieve a design similar to the aforementioned foundry typeface, as such it would likely have been a difficult task to persuade the client to consider alternative shaping from these marks which see heavy use in text.

As in the examples from Monotype and hot-metal fount from Stephen Austin & Sons, the length of the arch in the *siharī* (ੴ) and *biharī* (ੴ) is identical in this typeface, where the outlines of one was likely horizontally flipped and used for the other. While in this way, Linotype Gurmukhi does not resemble Gurmukhi manuscript traditions, the longer stem length of these two vowels signs in comparison to the *kannā* (ੴ) vowel is correctly considered, as is the matching descender height of the *siharī* and *biharī* with the consonants and vowel bearers.

The subscript consonants are positioned at a distance from the base characters in Linotype's Gurmukhi typefaces. As with the headline connection, achieving overlaps would have been attainable with phototypesetting technology, but the client was also concerned that the characters would look vertically elongated, or appear as such to readers who were, once more, accustomed to the separation between the base consonant and the subscript consonant in conjuncts. However, despite the vertical distance in these consonant clusters, the subscript consonants have all been carefully placed in the designated location to base consonants, with numerous text sheets proving careful attention was given to this horizontal mark placement.

In many other aspects of its design, including the shaping of the numerals, the inclusion of the nineteenth century additions to the Gurmukhi character set, the proportions, and the counter sizes, the Gurmukhi type of Linotype is not dissimilar to that of Monotype, bearing in mind that both designs were ultimately based on the same foundry type from India. What separates the two is improved spacing of the Linotype design, the consistent application of contrast, and the internal consistency of the design. With regard to consistency, the approach to the construction of outstrokes and terminals is consistent across the entire character



set, with the exception of the terminal on the daddā (ੳ), which tapers considerably when compared to the not-dissimilar-in-construction īṛī (ੲ), ṭaiṅkā (ੳ), and nāṅā (ੳ). This difference in shaping was likely also due to the client's wish to remain faithful to the design of their previous foundry type (figure 7.62, page 330).

Overall, the internal consistency in Linotype Gurmukhi is much improved when compared to its predecessors. The obvious technological benefits and improved printing conditions and material aside, the approach to the structure of the design is more consistent. The contrast is balanced and consistently applied, as is the spacing, kerning, and mark positioning. While the overall design lacks the originality achieved by OUP and Vincent Figgins in their Gurmukhi founts (which were not designed for specific clients with clear design parameters than needed to be followed and thus, had more artistic and creative freedom to achieve novel designs), the design is much refined when compared to the foundry type upon which it was based.

## 7.6 Conclusion

This chapter presents an assessment and documentation of the changes in British-made Gurmukhi typeforms over time. This assessment is carried out with adherence to a framework which prioritises subjective factors that focus on the internal consistency of a typeface, rather than design approaches that are subject to personal preferences and visual bias. Furthermore, the analysis always considers the various historical, cultural, and technological contexts that underpinned the development of each of the printing types, bearing in mind that the conditions created by each of these components have an impact on the outcome of the production process; whether it be during the design phase and requests for particular character shaping from a client, during the development phase where compromises were made necessary due to economic circumstances or technological constraints, or in the final outputs, with the impact of unfavourable printing material and climatic conditions, and the bearing of these factors on the appearance of the type when realised in print.

When considering the conversion of Gurmukhi letterforms from being written on paper to their printed forms using type (both material and immaterial), a number of differences are apparent; the most noticeable of these perhaps is the introduction of word spacing in typefaces, which either did not exist in manuscript traditions, or was not commonly used (see chapter 3 for more). In many of the early (prior to 1900) Gurmukhi typefaces considered in this chapter, this spacing created uneven texture and colour on the page, as the width of the spaces was not balanced with the spacing of the characters, and the amount of white space





Figure 7.63. Sample newspapers for sale in Jammu, India (north of Amritsar in the Indian Panjab). The two examples in the bottom of the centre row are set in Gurmukhi type. Image courtesy of wikimedia commons, and available to publish under the Creative Commons Attribution 4.0 International license, commons.wikimedia.org/wiki/File:Punjabi\_newspapers\_at\_Jammu.jpg. Accessed 17 Mar. 2022.



in the design of the letterforms. The introduction of the Monotype type-casting machine not only did not resolve this, but further hindered the even spacing due to the constraints of the machinery when dealing with more complex scripts such as Gurmukhi. It is only in rare instances such as the Gurmukhi type of OUP, or the much later (1986) work of Linotype that careful attention can be seen in the consideration of the width of the space character for typefaces of this script.

Another significant change is in the alignment of diacritic vowels, marks, and subscript consonants. In manuscripts, certain features are consistently present across different styles of writing (whether with a diagonally cut nib or something more pointed and resembling a stylus). This includes the connection of superscript vowels to the headline, a continuous connection between the base characters and subscript consonants, and aligning the subscript vowels so they are centred to the base character they are paired with. None of these features are constants in the typefaces examined in this chapter. The Serampore Gurmukhi typeface, in fact, achieves none of these alignment requirements; the superscript vowels are detached from the headline, and the subscript vowels are shifted to the far right side of the characters they are suppose to be centred under. While it appears the Ludhiana Mission Press attempted to keep the attachment of the superscript diacritics to the headline, it is not always successful, and this was later repeated in the work of most British type founders as well. Ostensibly this misalignment between diacritics and base characters and separations where connections are expected can be attributed to the inflexible nature of metal type. However, OUP Gurmukhi was able to achieve all of the alignment necessities in its design, which shows that while it may have been a difficult matter to achieve, it was entirely possible to do so. The impact of repeated detachment and misalignment of these characters can be seen in current typefaces of Gurmukhi, where it is not uncommon to see the superscript vowels separate from the headline, or the subscript consonants disconnected from base consonants; reader habits have been shaped by many years of seeing these characters in this way, and it has now become an expectation, or at the very least a familiar feature to see in printed Gurmukhi texts (figure 7.63).

On the surface, it might seem easy to say that, when considering the timeline of these Gurmukhi typefaces, clear improvements can be seen in more recent designs when compared to early attempts. However, this is not always the case, and comes close to being an over-generalization. As with all historical advances, the evolution of Gurmukhi typeforms is not a straight and linear progression, but rather one with deviations, interludes, and at times, even reversals. In the words of historian E. H. Carr when describing historical progress in general, 'clearly there are periods of regression as well as periods of progress'.<sup>33</sup> The last and most

---

33 Carr. *What is history?* 2018, p. 116.



recent typeface considered in this chapter, Linotype Gurmukhi, which arguably achieves the most internal consistency when considering the overall design, does not maintain attachment of superscript vowels to the headline, which is a constant in manuscripts. On the other hand, Gilbert & Rivington's first Gurmukhi typeface does achieve such connections (albeit inconsistently), but when considering every other parameter used for this analysis, remains unremarkable. To provide another example, while technological progress made it possible to attain overlaps in the connections in the phototypesetting era, reader habits necessitated not only dismissing this improvement, but imitating the output of the earlier technology during the development of Linotype Gurmukhi. Taking these examples into account, while earlier Gurmukhi type is relatively sub-standard in terms of the overall design and structure, technological advance has not always meant improved rendering of the Gurmukhi script in type.

It is also important to consider why the type was being developed, and (when available) by whom. In the case of the Gurmukhi type of the missionary printers, it is evident that the appearance of the letterforms and achieving beautifully typeset volumes was not a priority. When considering the Gurmukhi types of Linotype and Monotype however, the input of native clients, the dedication of entire departments to typographic design and research, and the know-how of staff with expertise in practical and technological aspects of type development resulted in final outputs that were superior to most earlier examples. These companies were concerned with commercial success (and as a pre-requisite, reader satisfaction), rather than text distribution as a means for proselytising. So, it is understandable that the intent for printing had a discernible impact on the appearance of the typefaces under assessment. Finally, there is not always a clear connection between typographic quality and consistency (as measured against the framework set in this chapter) and commercial success. The Gurmukhi type from Vincent Figgins and OUP are both inventive in their design and relatively consistent in their structure, yet neither seems to have seen extensive use (or none that this research could uncover), as such the amount of impact they may have had on the habits of readers through being widely seen and consumed by said readers is uncertain.

An understanding of this continuum of events and the underlying contexts supplies historians and practitioners with insights on where the current standards in Gurmukhi type design may stem from, to navigate the possibilities for future practice, and contribute to the continuous improvement of the representation of this script when realised in type.



## 8 Concluding observations

This thesis presents a comprehensive overview of British involvement in the development of printing types for the Gurmukhi script in the nineteenth and twentieth centuries. In doing so, it provides an historical account of the individuals, foundries, and companies that were undertaking the production of Gurmukhi type, their intentions and reasoning for doing so, what was being printed with the resulting type and for whom. Moreover, it discussed the solutions for adapting the Gurmukhi script to technologies not compatible with the specificities of this writing system. It therefore considers characteristics of Gurmukhi typefaces that do not align with handwritten traditions as seen in manuscripts, and reflects on the reasoning and origin of this divergence between the printed and written forms.

The narrative that has emerged as a result of this historical inquiry presents essential economic, cultural, and technological contexts against which the Gurmukhi type considered within the scope of this thesis could be assessed. The final chapter of this thesis thus concentrates on this evaluation, and provides a comparative and chronological analysis, tracing the changes in the characters used to write Gurmukhi in the transition from pen to printed forms, the evolution of the typeforms over time, and enduring features that—through repetition and gradual assimilation—have become legacy characteristics of the script when realised in type.

As in the work of other typographic historians such as Ross and De Baerdemaeker who have considered changes in typeforms with a view of technological and manufacturing complexities, this research drew upon predominantly unexplored primary resources in various archives that housed records on the endeavours of the foundries under consideration in this thesis. By considering this archival material and cross-referencing it against other primary sources such as the printed examples of the work from these foundries and extant printing material and other relevant material artefacts, a previously undocumented account of Gurmukhi type production history has emerged, helping to fill a gap in the printing history and culture of both the Panjab, and Britain.

This historical overview of the development of Gurmukhi type in the timeline considered in this research brings the names and efforts of a number of



individuals who played an important part in the evolution of Gurmukhi type to the fore—many of which were previously not recorded. By shedding light on their hitherto unexplored contributions and documenting their processes, networks, and operations, this work comprises an interdisciplinary research that can prove useful to historians and scholars in a number of academic fields, including cultural and cross-cultural studies, Indology, printing history, and typography. The documentation of the efforts of these players is also noteworthy in that the information was largely collected from archival sources, some of which have already become unavailable to researchers at the time of finalising the writing of this thesis. This research therefore provides an important historical thread on Gurmukhi printing that may otherwise have been lost with the closure of archives.

Furthermore, by calling attention to prevalent features of Gurmukhi typefaces that are a direct result of limitations in the typesetting and typesetting technology, and—at times—lack of familiarity or misinformation of those undertaking the development of Gurmukhi type with the inherent features of the script, the thesis offers a basis upon which practitioners of the field of type design can build their work in designing typefaces for this script through research-based design. The findings presented in this thesis are intended to aid practitioners and prompt them to not only consider contemporary work, but to also question and seek precedence in the shaping of letterforms, and to gain an understanding of the origins of current conventions. In the words of Tosh, ‘No human practice ever stands still; all demand a historical perspective which uncovers the dynamics of change over time’.<sup>1</sup> For practitioners of the field of type design and particularly those whose work focuses on the Gurmukhi script, this work outlines precedent in letterform shaping (what came before), current fashions and historical perspective (why the letterforms look the way they do now), and, by highlighting unique examples of Gurmukhi type design (such as the work from OUP), this thesis provides practitioners in the field of type design with models for imaginative methods in the design of Gurmukhi typefaces (what can be added to existing body of work in the future).

As previously acknowledged in greater detail in the Introduction to the thesis, this research has not been without its limitations. Constraints in access to archival material due to restrictions on travel and COVID-19 lockdowns entailed compromises in this historical research that was heavily reliant on archival material and primary resources (particularly in the absence of relevant secondary sources and literature). Furthermore, limitations in time to conduct thorough research meant that the scope of this research was necessarily restricted to Britain, and the efforts of British printers and typefounders. Such constraints

---

<sup>1</sup> Tosh. *The pursuit of history*, 2013, p. 12.





are not uncommon in research, however, they do offer opportunities for future research—in this instance, for further research on the typographic history of the Gurmukhi script.

In particular, there is room for further research on the work of native printers and typefounders of this script, and their invaluable contributions to the printing history and culture of Gurmukhi. Research in this area would likely benefit greatly from native familiarity with the Panjabi language and Gurmukhi script, and regular access to archives in Northern India. Beyond this, there are a number of other foundries, both in India and in Europe, that also produced Gurmukhi type. Constructing a thorough history of Gurmukhi printing requires investigation and research of a wider geographic scope. It is only through further research, reflection, and gaining insight to historical perspectives that current practice and application can be improved and expanded upon, as good practice is often developed out of history and theory.



## 9 Bibliography

### Printed sources

- Aiyar, Swarna. “‘August anarchy’: The partition massacres in Punjab, 1947.’ *South Asia: Journal of South Asian Studies*, vol. 18, no. S1, 1995, pp. 13-36.
- Afshar, Sahar. ‘The Gurmukhi type of Oxford University Press.’ *Midland History*, vol. 45, no. 2, 2020, pp. 161-175.
- Ananda, Prakash. *A history of the Tribune*. Tribune Trust, 1986.
- Bashir, Elena and Thomas J Connors. *A descriptive grammar of Hindko, Panjabi, and Saraiki*. De Gruyter Mouton, 2019.
- Beames, John. *A comparative grammar of the modern Aryan languages of India: to wit, Hindi, Panjabi, Sindhi, Gujarati, Marathi, Oriya, and Bangali. On sounds*. Vol. 1, London, Trübner, 1872.
- Bhardwaj, Mangat. *Panjabi: a comprehensive grammar*. Routledge, 2016.
- Bhatia, Tej. *Punjabi*. Routledge, 2013.
- Bigmore, Edward Clements, and Charles William Henry Wyman, editors. *A bibliography of printing*. Cambridge University Press, 2014.
- Blair, Sheila S. *Islamic calligraphy*. Edinburgh University Press, 2020.
- Bland, Mark. *A guide to early printed books and manuscripts*. John Wiley & Sons, 2013.
- Bowden, Andrea L. *Punjabi tonemics and the Gurmukhi script: a preliminary study*. Brigham Young University, 2012.
- Briggs, George Weston. *Gorakhnāth and the Kānpḥaṭa Yogīs*. Motilal Banarsidass Publications, 1998.
- Bright, William. ‘A matter of typology: alphasyllabaries and abugidas.’ *Studies in the Linguistic Sciences*, vol. 30, no. 1, 1991, pp. 63–71.
- Browne, George. *The history of the British and Foreign Bible Society: from its institution in 1804, to the close of Its jubilee in 1854*. London, Bagster and Sons, 1859.
- Boag, Andrew. ‘Monotype and phototypesetting.’ *Journal of the Printing Historical Society*, no. 2, 2000, pp. 57–77.



- Board of Missions. 'Report of the Board of the Foreign Mission of the Presbyterian Church in the United States of America'. *Annual report no. 1—18*, New York, 1838-55.
- Bowers, Fredson. 'Printing in London from 1476 to modern times: competitive practice and technical invention in the trade of book and Bible printing, periodical production, jobbing.' *Modern Language Quarterly*, vol. 22, no. 2, 1961, pp. 214-214.
- Bowes, Robert. 'Biographical notes on the university printers from the commencement of printing in Cambridge to the present time.' *Cambridge Antiquarian Society*, 1886.
- Bradnock, Wilfred J. and Darlow, Thomas Herbert. *Historical catalogue of printed Christian scriptures in the languages of the Indian sub-continent*. British & Foreign Bible Society, London, 1977, p. 312.
- Brass, Paul Richard. *Language, religion and politics in North India*. Cambridge University Press, 1974
- Canton, William. *A history of the British and Foreign Bible Society*. Vol. 5. J. Murray, 1910.
- Carey, Eustace. *Memoir of William Carey, D. D., late missionary to Bengal, professor of Oriental languages in the College of Fort William, Calcutta*. London, Jackson and Walford, 1837.
- Carey, William, Joshua Marshman, William Ward, and J. Rowe. 'Religious Intelligence'. *The Panoplist and Missionary Magazine United*, vol. 3, no. 1, 1810, p.37.
- Carey, William. *A grammar of the Punjabee language*. Serampore, Serampore Mission Press, 1812.
- , *The Acts of the Apostles in Punjabi*. Serampore, Serampore Mission Press, 1811.
- , *The Holy Bible, containing the Old and New Testaments, translated from the originals into the Punjabee language, vol. V, containing the New Testament*. Serampore, Serampore Mission Press, 1811.
- Carr, Edward Hallett. *What is history?* Penguin, 2018.
- Carter, Harry. *A view of early typography: up to about 1600*. Hyphen Press, 2002.
- Carter, John, and Graham Pollard. *An enquiry into the nature of certain nineteenth century pamphlets*. Ardent Media, 1971.
- Clowes, William Beaufoy. *Family Business, 1803-1953*. William Clowes & Sons, 1953.
- Chatterjee, Rimi B. *Empires of the mind: a history of the Oxford University Press in India under the Raj*. Oxford University Press, 2006.
- Coningham, Robin A. Evelyn, et al. 'Passage to India? Anuradhapura and the early use of the Brahmi script.' *Cambridge Archaeological Journal*, vol. 6, no. 1, 1996, pp. 73-97.
- Coulmas, Florian. *The writing systems of the world*. Basil Blackwell, 1989.
- Christian Ministers of various denominations. 'Account by R. Morris.' *The Calcutta Christian Observer*, vol. 1, new series, Calcutta, Baptist Mission Press, Jan.–Dec. 1840.
- Dale, Ian R. H. 'Digraphia.' *International Journal of the Sociology of Language*, 1980,





pp. 5-14.

- Dalrymple, William. *The anarchy: the relentless rise of the East India Company*. Bloomsbury Publishing, 2019.
- Daniels, Peter T., and William Bright, editors. *The world's writing systems*. Oxford University Press on Demand, 1996.
- Danvers, Frederick Charles, et al. *Memorials of old Haileybury College*. Westminster, Archibald Constable and Company, 1894.
- Datta, Amaresh, editor. *Encyclopaedia of Indian Literature*. Sahitya Akademi, 1987-1994.
- De Baerdemaeker, Jo. *Tibetan typeforms—an historical and visual analysis of Tibetan typefaces*. De Buitenkant, 2020.
- Deol, Harnik. *Religion and nationalism in India: The case of the Punjab, 1960-1995*. London School of Economics and Political Science, 1996, PhD dissertation.
- Déroche, François, and Annie Berthier. *Islamic codicology: an introduction to the study of manuscripts in Arabic script*. No. 102, Al-Furqān Islamic Heritage Foundation, 2006.
- Dewana, Mohan Singh. *A history of Punjabi literature*. Bharat Prakashan, 1933.
- Diamond, Jeffrey M. 'A "vernacular" for a "new generation"? Historical perspectives about Urdu and Punjabi, and the formation of language policy in Colonial Northwest India.' *Language Policy and Language Conflict in Afghanistan and its Neighbors*, edited by Harold Schiffman, Brill, 2012, pp. 282-318.
- Dyson, Mary C. 'Where theory meets practice: a critical comparison of research into identifying letters and craft knowledge of type design.' *The Design Journal*, vol. 16, iss. 3, 2013, pp. 271-294.
- East India Company. *Memoir of the affairs of the East-India Company*. London, J. L. Cox, 1830.
- 'Electrotype Matrices.' *Typo: A Monthly Newspaper and Literary Review*, vol. 2, R. Coupland Harding, 1888.
- Farrington, Anthony. *The records of the East India College, Haileybury, and other institutions*. HM Stationery Office, 1976.
- Figgins, James. *Type founding and printing during the 19th century*. V. & J. Figgins, 1900, p. 13.
- Figgins, Vincent II. *The game of the chesse*. London, V. and J. Figgins, 1855.
- First Serampore memoir relative to the translations of the sacred Scriptures to the Baptist Missionary Society in England*. J. W. Morris, Dunstable, 1808.
- Fraser, Robert. *Book history through postcolonial eyes: rewriting the script*. Routledge, 2008.
- Galambos, Imre. *Orthography of early Chinese Writing: evidence from newly excavated manuscripts*. Department of East Asian Studies, Eötvös Loránd University, Budapest, 2006.
- Gallop, Annabel Teh, et al. 'A Jawi sourcebook for the study of Malay palaeography and orthography.' *Indonesia and the Malay World*, vol. 43, Iss. 125, 2015,



- pp. 13-171.
- Genette, Gérard. *Paratexts: thresholds of interpretation*. Cambridge University Press, 1997.
- Ghosh, Anindita. *Power in print: popular publishing and the politics of language and culture in a colonial society*. Oxford University Press, 2006
- Gilbert, Jerry. 'Thrown weapon types and thrown weapon use, 500 BCE to 1600 CE.' *Society for Creative Anachronism*, 2012.
- 'Gilbert and Rivington, the famous Oriental printers.' *British Printer*, Mar.-Apr. 1895, pp. 80-81.
- Goyal, Vishal and Gurpreet Lehal. 'Comparative study of Hindi and Punjabi language scripts.' *Journal of the Linguistics Society of Nepal*, vol. 23, 2008, pp. 67-82.
- Green, Ashbel D. D. *A historical sketch or compendious view of domestic and foreign missions in the Presbyterian Church of the United States of America*. Philadelphia, William S. Martien, 1838.
- Grierson, George. *A linguistic survey of India*. Office of the Superintendent of Government Printing, 1904.
- Gupta, Kulwant Rai. *Directory of publishers and booksellers in India*. Atlantic Publishers & Distributors, 3rd edition, 2009.
- Haralambous, Yannis. *Fonts & encodings*. O'Reilly Media, 2007.
- Hart, Horice. *Anglo-Saxon, German, Gothic, Oriental, Russian and other types (not being Roman, italic, or jobbing types) in use at the Oxford University Press*. Oxford University Press, 1901.
- Hochuli, Jost. *Detail in typography*. Hyphen Press, 2008.
- Houtsma, Martin Theodoor. *First encyclopaedia of Islam: 1913-1936*. Vol. 4. Brill, 1993.
- Jain, Danesh, and George Cardona, editors. *The Indo-Aryan languages*. Routledge, 2007.
- Jeffrey, Robin. 'Punjabi: The "subliminal charge".' *Economic and Political Weekly*, 1997, pp. 443-445.
- Jha, Bipin Kumar. 'Transformation and significance of Sanskrit (Tatsama) words.' *Mahatma Gandhi Central University Journal of Social Sciences (MGCUISS)*, vol. 1, iss. 1, 2019, pp. 34-40.
- Kaur, Mandeep, and Kumar, Sanjeev. 'A recognition system for handwritten Gurmukhi characters.' *International Journal of Engineering Research and Technology (IJERT)*, vol. 1, iss. 6, 2012.
- Khan, Mofakhkhar H. *History of printing in Bengali characters up to 1866*. University of London, School of Oriental and African Studies, 1976, PhD dissertation.
- Labuz, Ronald. *How to typeset from a word processor: an interfacing guide*. R. R. Bowker Bowker, 1984.
- Laird, Michael Andrew. 'The contribution of the Serampore Missionaries to education in Bengal, 1793-1837.' *Bulletin of the School of Oriental and African*



- Studies*, vol. 31, no. 1, 1968, pp. 92-112.
- Leech, Robert. *A grammar of the Panjabee language*. Bombay, Bombay Government Press, 1838.
- Legros, Lucien Alphonse, and John Cameron Grant. *Typographical printing-surfaces: the technology and mechanism of their production*. Longmans, Green, 1916.
- Lim, Wei Jin Darryl. *Networks, artefacts, and technology: nineteenth-century Muslim lithographers, missionaries, and colonialism in the Malay archipelago*. University of Reading, 2021, PhD dissertation.
- Louis, Wm Roger, et al. *History of Oxford University Press: volume III: 1896 to 1970*. Oxford University Press, 2013.
- Lowrie, John Cameron. *A manual of the foreign missions of the Presbyterian Church in the United States of America*. New York, William Rankin, 1868.
- , *Two years in Upper India*. New York, Robert Carter and Brothers, 1850.
- Mann, Gurinder Singh, et al. *An introduction to Punjabi: grammar, conversation and literature*. Publication Bureau of Punjabi University, 2011.
- Mann, Gurinder Singh. *The making of Sikh scripture*. Oxford University Press on Demand, 2001.
- Masica, Colin P. *The Indo-Aryan languages*. Cambridge University Press, 1993.
- Massey, James. 'Presbyterian Missionaries and the development of Punjabi language and literature, 1834-1984.' *Journal of Presbyterian History*, vol. 62, no. 3, 1984, pp. 258-261.
- Marshman, John Clark. *The life and times of Carey, Marshman, and Ward: embracing the history of the Serampore Mission*. London, Longman, Brown, Green, Longmans, & Roberts, 1859.
- McCord, Norman, and Bill Purdue. *British History 1815-1914*. Oxford University Press, 2007.
- McKenzie, Donald Francis. *Bibliography and the Sociology of Texts*. Cambridge University Press, 1999.
- McLeod, William Hewat. *Historical dictionary of Sikhism*. Vol. 59. Scarecrow Press, 2005.
- , *The evolution of the Sikh community: five essays*. Clarendon Press, 1976.
- 'Messrs. Figgins's typefoundry.' *The Printer's Journal and Typographical Magazine*, vol. 1, no. 33, May 1866, pp. 99-100.
- Mir, Farina. 'Genre and devotion in Punjabi popular narratives: rethinking cultural and religious syncretism.' *Comparative Studies in Society and History*, vol. 48, no. 3, 2006, pp. 727-758.
- , *The social space of language*. University of California Press, 2010.
- Monotype Recorder*. Vol. 42, no. 4, summer 1963.
- Moran, James. *Stephen Austin of Hertford: two hundred years of print*. Stephen Austin & Sons, 1968.
- Mosley, James. 'The typefoundry of Vincent Figgins 1792-1836.' *Motif*, iss. 1, Nov. 1958, pp. 29-36.
- , 'Memories of an apprentice typefounder.' *Matrix*, no. 21, 2001, pp. 1-13.



- Myers, John Brown. *The centenary volume of the Baptist Missionary Society, 1792-1892*. London, Baptist Missionary Society, 1892.
- Naik, Bapurao S. *Typography of Devanagari*. Vol. 2, Directorate of Languages, 1971.
- Nazir, Pervaiz. 'Modernity, re-Islamization and Waris Shah's Heer.' *ISIM Newsletter*, no.8, iss. 1, 2001, p.1.
- Nemeth, Titus. *Arabic type-making in the machine age: the influence of technology on the form of Arabic type, 1908-1993*. Brill, 2017.
- Newton, John. *A dictionary of the Panjābī language*. Ludhiana, American Presbyterian Mission Press, 1866.
- , *A grammar of the Panjabi language: with appendices*. American Presbyterian Mission Press, Ludhiana, 1851.
- , *Historical sketches of the India missions of the Presbyterian Church in the United States of America: known as the Lodiana, the Farrukhabad and the Kolhapur Missions*. Allahabad, Allahabad Mission Press, 1886.
- Nichols, John. *Literary anecdotes of the eighteenth century*. Vol. 7, Cambridge University Press, 2014.
- Oats, Lynne, and Pauline Sadler. 'The abolition of taxes on knowledge.' *Studies in the History of Tax Law*. Hart Publishing, 2007, pp. 287-306.
- Oxford University Press. *Some account of the Oxford University Press, 1468-1921*. Clarendon Press, 1922.
- Porter, James. *A grammar of the Panjabi language*. Ludhiana, American Presbyterian Mission Press, 1851.
- Potts, Eli Daniel. 'The Baptist Missionaries of Serampore and the government of India, 1792-1813.' *The Journal of Ecclesiastical History*, vol. 15, no. 2, 1964, pp. 229-246.
- , 'British Baptist Missionaries in India: 1793-1837; the history of Serampore and its missions.' *Church History*, vol. 38, no. 1, 1969, p. 124.
- Priolkar, Anant Kakba, and Joaquim Heliodoro da Cunha Rivara. *The printing press in India: its beginnings and early development, being a quatercentenary commemoration study of the advent of printing in India in 1556*. Marathi Samshodhana Mandala, 1958.
- Proceedings of the Council of the College of Fort William*. Delhi, Indian archives. Home Miscellaneous File 569, p. 193.
- Reed, Talbot Baines. *A history of the old English letter foundries*. London, Elliot Stock, 1887.
- Romano, Frank. *History of the Linotype company*. RIT Press, 2014.
- Ross, Fiona. *The printed Bengali character and its evolution*. Curzon, 1999.
- , 'From metal type to digital letterforms - a straightforward transition for Indian scripts?' *Matrix*, no. 9, Whittington Press, 1989, pp.128-136.
- , 'Historical technological impacts on the visual representation of language with reference to South-Asian typeforms.' *Philological Encounters*, vol. 3, no. 4, 2018, pp. 441-468.





- , 'Invisible hands: tracing the origins and development of the Linotype Devanagari digital fonts'. *Journal of the Printing Historical Society*, series 3, no. 2, 2021, pp. 111-153.
- Salomon, Richard. 'Writing systems of the Indo-Aryan languages.' *The Indo-Aryan languages*, edited by Jain Danesh and George Cardona, Routledge, 2007, pp. 75-114.
- Savoie, Alice. *International cross-currents in typeface design: France, Britain and the USA in the phototypesetting era*. University of Reading, 2014, PhD dissertation.
- , 'The women behind Times New Roman: the contribution of type drawing offices to twentieth century type-making.' *Journal of Design History*, vol. 33, no. 3, 2020, pp. 209-224.
- Sekhon, Sant Singh, and Kartar Singh Duggal. *A history of Punjabi literature*. Sahitya Akademi, 1992.
- Seybold, John W. *Fundamentals of modern photo-composition*. Seybold Publications, 1979.
- , *The world of digital typesetting*. Seybold Publications, 1984.
- Siddiqi, Imran, Florence Cloppet, and Nicole Vincent. 'Contour based features for the classification of ancient manuscripts.' *Conference of the International Graphonomics Society*, 2009, pp. 226-229.
- Silcock, Elfrid. 'The Monotype machine'. *Penrose Annual*, no. 48, Lund Humphries, 1954, pp. 104-105.
- Shackle, Christopher. *A Gurū Nānak Glossary*. Heritage Publication, 1981.
- , *An Introduction to the sacred language of the Sikhs*. School of Oriental and African Studies, University of London, 1983.
- , *Catalogue of the Panjabi and Sindhi manuscripts in the India Office Library*. India Office Library and Records, 1977.
- , 'Panjabi.' *The Indo-Aryan Languages*, edited by Jain Danesh and George Cardona, Routledge, 2007, pp. 582-622.
- Shaw, Graham. 'Experience, concentration and a good memory: Stephen Austin and Oriental printing.' *OIOC Newsletter*. *BL, 1990-97*, vol. 50-51, 1994, pp. 10-12.
- , 'The first printing press in the Panjab.' *The Library Chronicle*, vol. 4, Jan. 1979, pp. 159-179.
- Singh, Ganda. *Guru Gobind Singh's death at Nanded: an examination of succession theories*. Guru Nanak Foundation, 1972.
- Singh, Inder Jit. *The Sikh way: a pilgrim's progress*. Centennial Foundation, 2001.
- Singh, Pashaura. *The Guru Granth Sahib: canon, meaning and authority*. Oxford University Press, 2003.
- Singh, Patwant. *The Golden Temple*. South Asia Books, 1999.
- Singh, Nikky-Guninder Kaur. *The birth of the Khalsa: a feminist re-memory of Sikh identity*. SUNY Press, 2005.
- Singh, Vaibhav. *Devanagari type in the twentieth century: motivations, imperatives, technology and the design process*. University of Reading, 2017, PhD dissertation.



- , ‘The machine in the colony: technology, politics, and the typography of Devanagari in the early years of mechanization.’ *Philological Encounters*, vol. 3, no. 4, 2018, pp. 469-495.
- , ‘New horizons’: the beginnings of Devanagari photocomposition. University of Reading, 2015. Unpublished article.
- Slinn, Judy, Sebastian Carter, and Richard Southall. *History of the Monotype Corporation*. Printing Historical Society/Vanbrugh Press, 2014.
- Smeijers, Fred. *Counterpunch: making type in the sixteenth century, designing typefaces now*. Hyphen Press, 1996.
- Smith, George. *The life of William Carey, D. D.: shoemaker and missionary, professor of Sanskrit, Bengali, and Marathi in the College of Fort William, Calcutta*. London, J. Murray, 1885.
- Stark, Ulrike. *An empire of books: the Naval Kishore Press and the diffusion of the printed word in colonial India*. Permanent Black, 2007.
- Steinberg, Sigfrid Henry. *Five hundred years of printing*. Courier Dover Publications, 2017.
- Stern, Philip J. *The company-state: corporate sovereignty and the early modern foundations of the British Empire in India*. Oxford University Press, 2011.
- Talbot, Ian, and Gurharpal Singh. *The partition of India*. Cambridge University Press, 2009.
- Teece, Geoff. *Sikhism*. Black Rabbit Books, 2005.
- Tenth memoir respecting the translations of the Sacred Scriptures into the oriental languages by the Serampore brethren*. London, Parbury, Allen, and Co., 1834.
- Tidcombe, Marianne. *Women bookbinders, 1880–1920*. Oak Knoll Press, 1996.
- Tisdall, William St Clair. *A simplified grammar and reading book of the Panjabi language*. New York, Frederick Ungar, 1961.
- The friend of India*. Vol. 1, Serampore, Serampore Mission Press, 31 Dec. 1818.
- The Hertfordshire Mercury*. Vol. LVII. Hertford, 28 May 1892.
- The Monotype Corporation. *Programming notes for ‘Monotype’ composing machines*. Redhill, unknown publication date.
- , *The Monotype System: a book for owners & operators of Monotypes*. Lanston Monotype Machine, 1916.
- Tosh, John. *The pursuit of history: aims, methods and new directions in the study of history*. Routledge, 2013.
- Tracy, Walter. *Letters of credit: a view of type design*. David R. Godine Publisher, 2003.
- ‘Translations of the scriptures’. *Boston Recorder*, vol. VI, no. 50, 8 Dec. 1821.
- Trumpp, Ernst, editor. *The Ādi-Granth, or: the Holy Scriptures of the Sikhs*. London, WH Allen, 1877.
- Uberoi, Mohan Singh. *A history of Panjabi literature: 1100-1932*. Sadasiva Prakashan, 1971.
- Unger, Gerard. *While you’re reading*. Mark Batty Publisher, 2006.
- Unger, Gerard. *Theory of type design*. Nai 010, 2018.



- Wallis, Lawrence William. *A concise chronology of typesetting developments, 1886-1986*. Lund Humphries in association with the Wynkyn de Worde Society, 1988.
- , *Type design developments, 1970 to 1985*. National Composition Association, 1985.
- Ward, William. 'Letter XIII to Rev. Daniel Sharp, On the progress of the translation in India.' *Farewell Letters to a Few Friends in Britain and America, on Returning to Bengal in 1821*. Kentucky, Thomas T. Skillman, 1822, pp. 141-149.
- Web newspapers and magazine production*. Vol. 8, no. 1, Jan.–Feb. 1979.
- Wickremeratne, Upali C. 'The English East India Company and society in the maritime provinces of Ceylon 1796–1802.' *Journal of the Royal Asiatic Society*, vol. 103, no. 2, 1971, pp. 139-155.
- Wilkinson, Callie. 'The East India College debate and the fashioning of imperial officials, 1806–1858.' *The Historical Journal*, vol. 60, no. 4, 2017, pp. 943-969.
- Williams, Emma. *A comparative study of the development of the Gurmukhi script*. University of Reading, 2008, MA dissertation.
- Wishart, David. 'Exotics at OUP,' *Matrix*, no. 21, 2001, pp. 66–67.
- Wherry, Elwood Morris. *Our missions in India 1834-1924*. The Stratford Company, 1926.
- World-wide printer*. Vol. 2, iss. 3, May–June 1979.
- World-wide printer*. Vol. 3, iss. 1, Jan.–Feb. 1980.





**Online sources**

- Design and typography*. Murty Classical Library of India, [www.murtylibrary.com/about/design-and-typography](http://www.murtylibrary.com/about/design-and-typography). Accessed 23 Mar. 2022.
- Devanagari Unicode chart*. Unicode, [www.unicode.org/charts/nameslist/n\\_0900.html](http://www.unicode.org/charts/nameslist/n_0900.html). Accessed 19 Jan. 2022.
- Edward Pickard Hall*. Friends of St Sepulchre's Cemetery, [www.stsepulchres.org.uk/burials/hall\\_edward.html](http://www.stsepulchres.org.uk/burials/hall_edward.html). Accessed 2 Sept. 2019.
- Gurmukhi Ek Onkar*. Fileformat, [www.fileformat.info/info/unicode/char/0a74/fontsupport.htm](http://www.fileformat.info/info/unicode/char/0a74/fontsupport.htm). Accessed 29 June 2021.
- Gurmukhi, range: 0A00–0A7F*. Microsoft Typography OpenType® Standard. Version 13.0, 2020, [unicode.org/charts/PDF/U0A00.pdf](http://unicode.org/charts/PDF/U0A00.pdf). Accessed 29 June 2021.
- Gurmukhi script description*. Scriptsource, [scriptsource.org/scr/Guru](http://scriptsource.org/scr/Guru). Accessed 15 Sept. 2020.
- Mosley, James. *The materials of typefounding*. Typefoundry: Documents for the History of Type and Letterforms, 6 Jan. 2006, [typefoundry.blogspot.com/2006/01/materials-of-typefounding.html](http://typefoundry.blogspot.com/2006/01/materials-of-typefounding.html). Accessed 14 Feb. 2022.
- Nesbit, Eleanor. *Origins and development of Sikh faith: the Gurus*. Discovering sacred texts, BL, Sept. 2019, [www.bl.uk/sacred-texts/articles/origins-and-development-of-sikh-faith-the-gurus](http://www.bl.uk/sacred-texts/articles/origins-and-development-of-sikh-faith-the-gurus). Accessed 20 Nov. 2020.
- OpenType® specification. *Microsoft Typography, version 1.9*, Sep. 2021, docs. [microsoft.com/en-us/typography/opentype/spec/](http://microsoft.com/en-us/typography/opentype/spec/). Accessed 2 Oct. 2021.
- Pandey, Anshuman. *A roadmap for scripts of the Landa family*. Script Encoding Initiative (SEI) Online, Jan. 2010, [unicode.org/L2/L2010/10011-landa-roadmap.pdf](http://unicode.org/L2/L2010/10011-landa-roadmap.pdf). Accessed 10 Sept. 2020.
- Ross, Fiona. *Non-Latin type design at Linotype*. St Bride Foundation, 2002, [stbride.org/friends/conference/twentiethcenturygraphiccommunication/NonLatin.html](http://stbride.org/friends/conference/twentiethcenturygraphiccommunication/NonLatin.html). Accessed 4 Aug. 2019.
- Sidhu, Sukhjinder. *Proposal to encode Gurmukhi Sign Yakash*. Unicode, Jan. 2006, [unicode.org/L2/L2006/06037-yakash.pdf](http://unicode.org/L2/L2006/06037-yakash.pdf). Accessed 10 Sept. 2020.
- Shastra*. Merriam-Webster Dictionary, [www.merriam-webster.com/dictionary/shastra](http://www.merriam-webster.com/dictionary/shastra). Accessed 12 Apr. 2022.
- The Type Archive*. National Typefounding Collection, [www.typearchive.org/collections.htm](http://www.typearchive.org/collections.htm). Accessed 14 Feb. 2022.



### Consulted specimens and manuscripts

#### Serampore Mission Press

*Specimens of editions of the Sacred Scriptures in the Eastern languages, translated by the Brethren of the Serampore Mission, and of several others, printed at the Mission Press.*

Serampore, 1818. BL shelfmark: general reference collection 619.e.24.(4.)

#### Gilbert & Rivington

*Specimens of some of the Oriental and foreign type now in use in Gilbert & Rivington's printing offices.* London, Gilbert & Rivington, 1872. The Library of Congress, call number: 8320491.

*St John III. 16, in some of the languages and dialects in which the British & Foreign Bible Society has printed the Holy Scriptures.* London, Gilbert & Rivington, 1875. BL shelfmark: general reference collection 11902.aa.45.

*The Lord's Prayer in five hundred languages.* London, Gilbert & Rivington, 1905. BL shelfmark: general reference collection 2272.g.3.

*The Lord's Prayer in three hundred languages.* London, Gilbert & Rivington, 1891. BL shelfmark: general reference collection 4406.g.6.

#### Gujarati Type Foundry

*Specimen book of the Gujarati Type Foundry.* Bombay, Gujarati Type Foundry, unknown publication date. St Bride Library shelf reference: TS1:926.

#### Oxford University Press

Burn, Andrew, editor. *St John's Gospel in Gurumukhi Sindhi.* Oxford, British & Foreign Bible Society. 1877. BL, shelfmark: Asia, Pacific & Africa 14164.aa.42. Oxford University Press. *List of ancient and modern Greek and Oriental founts at the University Press.* Oxford University Press, 1959.

#### Richard Watts

*Oriental and other types in ninety-seven languages or dialects, principally prepared by the late Mr R. Watts.* London, 1859. BL shelfmark: general reference collection 1856.g.7.(10.).

#### Stephen Austin & Sons

*Specimens of Oriental and other types in use at the office of Stephen Austin & Sons.* Hertford, Stephen Austin & Sons, 187(?). Bl shelfmark: Asia, Pacific & Africa V 3646.

*Specimens of various types in Oriental and other foreign languages.* Hertford, Stephen Austin & Sons, 1885. Bl shelfmark: general reference collection 11899.ff.33.

*Specimen founts of Oriental and foreign languages.* Stephen Austin & Sons, 1916. BL



shelfmark: Asia, Pacific & Africa YD.2004.b.92.

*Oriental and foreign types used by Stephen Austin & Sons, Oriental and general printers, Hertford, England.* Stephen Austin & Sons, 1932. BL shelfmark: Asia, Pacific & Africa V 25269.

*Continental and Oriental type list.* Stephen Austin & Sons, 1958. BL shelfmark(s): Asia, Pacific & Africa ORW.1989.a.2413; Asia, Pacific & Africa ORW.1993.a.938.  
*The story of the opening of the new factory at Caxton Hill.* Stephen Austin & Sons, 1954.  
*Foreign language type list.* Stephen Austin & Sons, 1972. BL shelfmark(s): Asia, Pacific & Africa ORW.1989.a.2412; Asia, Pacific & Africa ORW.1993.a.1615.

#### V. & J. Figgins

*Pica Panjabi.* London, V. & J. Figgins, 188[?]. St Bride Library, shelfmark unknown.  
 Figgins, Vincent. *Specimens of type-printing materials.* London, V. & J. Figgins, ca. 1897. BL shelfmark: general reference collection 2707.cs.15.

#### William Clowes & Sons

*Some Specimens of the Roman, Oriental, and foreign types now in use in the offices of William Clowes & Sons, etc.* William Clowes & Sons, 1908. BL shelfmark: general reference collection 11916.l.22. Manuscripts

#### Manuscripts

*Prayer book of Rani Jindan.* 1828-30. BL shelfmark: MS Panj D4.  
*Rani Jindan Anthology of fourteen texts.* BL shelfmark: Or. 13231.  
*Adi Granth.* 1660-75. BL shelfmark: Or 2748.  
*Adi Granth.* 1727. BL shelfmark: MS Panj C5.  
*Adi Granth.* 1859. BL shelfmark: MS Panj E2.  
*Bulleh Shah's sīḥarfī.* 1885. PDL accession no. MN-000544.  
*Dasam Granth.* 1859. BL shelfmark: MS Panj E1.  
*Dasam Granth.* 1859. BL shelfmark: MS Panj E1.  
*Gurbilas Patshah Dasvin.* 1844. PDL accession no. MN-001035.  
*Heer Ranjha.* 1859. BL shelfmark: MS Panj E1.  
*Heer Varis Shah.* 1910. PDL accession no. MN-001036.  
*India Office Library London Janam Sakhi.* 1790. PDL accession no. MN-004571.  
*Mahima Parkasa.* 1857. PDL accession no. MN-000923.  
*Pracheen Janam Sakhi Samvat.* 1758. PDL accession no. MN-004557.  
*Ram Dutt Pyara sīḥarfī.* 1888. PDL accession no. BK-007309.  
*Sri Guru Granth Sahib Ji.* 1728. PDL accession no. MN-000418.  
*Sri Guru Granth Sahib Ji.* 1760. PDL accession no. MN-000408.



- Sri Guru Granth Sahib Ji.* 1783. PDL accession no. MN-000416.  
*Sri Guru Granth Sahib Ji.* 1786. PDL accession no. MN-000420.  
*Sri Guru Granth Sahib Ji.* 1787. PDL accession no. MN-000409.  
*Sri Guru Granth Sahib Ji.* 1801. PDL accession no. MN-000410.  
*Sri Guru Granth Sahib Ji.* 1823. PDL accession no. MN-000920.  
*Sri Guru Granth Sahib Ji.* 1828. PDL accession no. MN-001020.  
*Sri Guru Granth Sahib Ji.* 1851. PDL accession no. MN-000412.  
*Var Hakikat Rai.* 1861. PDL accession no. MN-001038.s