

A comparative study of the development of
the Gurmukhi script: from the handwritten
manuscript to the digital typeface.

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Submitted in partial fulfilment for the requirements for the Master of Arts in
Typeface Design, Department of Typography and Graphic Communication,
at the University of Reading, United Kingdom

Typeset in *Minion Pro* and *Linotype Gurmukhi*

Development of the printed character

This entire chapter is loosely organised upon the major technology developments over the past three hundred years: metal type, both hand and machine composed and the early and current digital format. Each will be elaborated upon when and where is necessary.⁴⁹

The first three sub-chapters refer to text typefaces which were designed in metal for hand composition, and are arranged by location: India, England and Europe. In *Typography for Devanagari*, Naik explains and illustrates the various typesetting systems: *degree* and *akhand*⁵⁰ [figure 52].

The *degree* system 'is assembled in three steps.'⁵¹ The character is divided into a total of four ems:⁵² one em for the superior and subscript diacritics and two ems for the base character, or in instances where a subscript character is not necessary, a three em base character can be used to create the required total of four ems [figure 52].

The *akhand* system uses as few components as possible to create the desired full-character, resulting in a larger character set. Components (base characters and vowel signs) overhang their body [figure 53] to achieve improved kerning.⁵³ The nature of this design, and the fragility of overhangs, caused the components were to be broken [figure 52].

These two typesetting systems will be taken into consideration when analysing the following typefaces. It is common for the printed result to possess no evidence as to which system may have been utilised.

India

Serampore Missionary Press, Serampore⁵⁴

The *Serampore Missionary Press* (SMP) was established in 1800 by Williams Carey. With the help of William Ward, 'a serious printer,'⁵⁵ Joshua Marshman, a punchcutter, and 'two able Indians, Panchanan Karmakar and Manohar'⁵⁶ whom helped cast the types, amongst others. Carey was able to reproduce bibles, dictionaries, grammar and historical

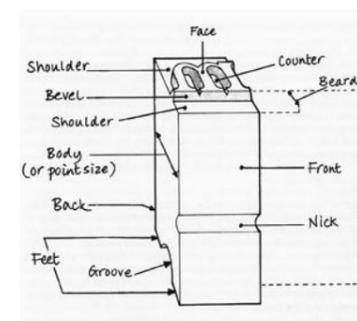


Figure 53: Nomenclature for a metal sort (character). Ross, Fiona. *The Printed Bengali Character and its Evolution* 1999; pages 9

NOTE: It is important to remember that the dates provided are often only that of the publication date for the type specimen, and is unlikely to bear any relationship with the date of design and or casting.

⁴⁹ For further reading see: SOUTHALL, Richard *Printer's type in the twentieth century* 2005

⁵⁰ NAIK, Bapurao S. *Typography of Devanagari* 1971; pages 327-329

⁵¹ NAIK, Bapurao S. *Typography of Devanagari* 1971; pages 327

⁵² An *em* in metal type refers to the height of the metal body.

⁵³ *Kerning* describes the alteration of space between any letter/character combination.

⁵⁴ For further reading see: Ross, Fiona. *The Printed Bengali Character and its Evolution* 1999; pages 40-60: predominantly regarding the Bengali script, but of good reference

⁵⁵ Ross, Fiona. *The Printed Bengali Character and its Evolution* 1999; page 42

⁵⁶ VERGHESE, Babu K. 'From palm leaves to the printed word' *The Hindu* April 2007; online

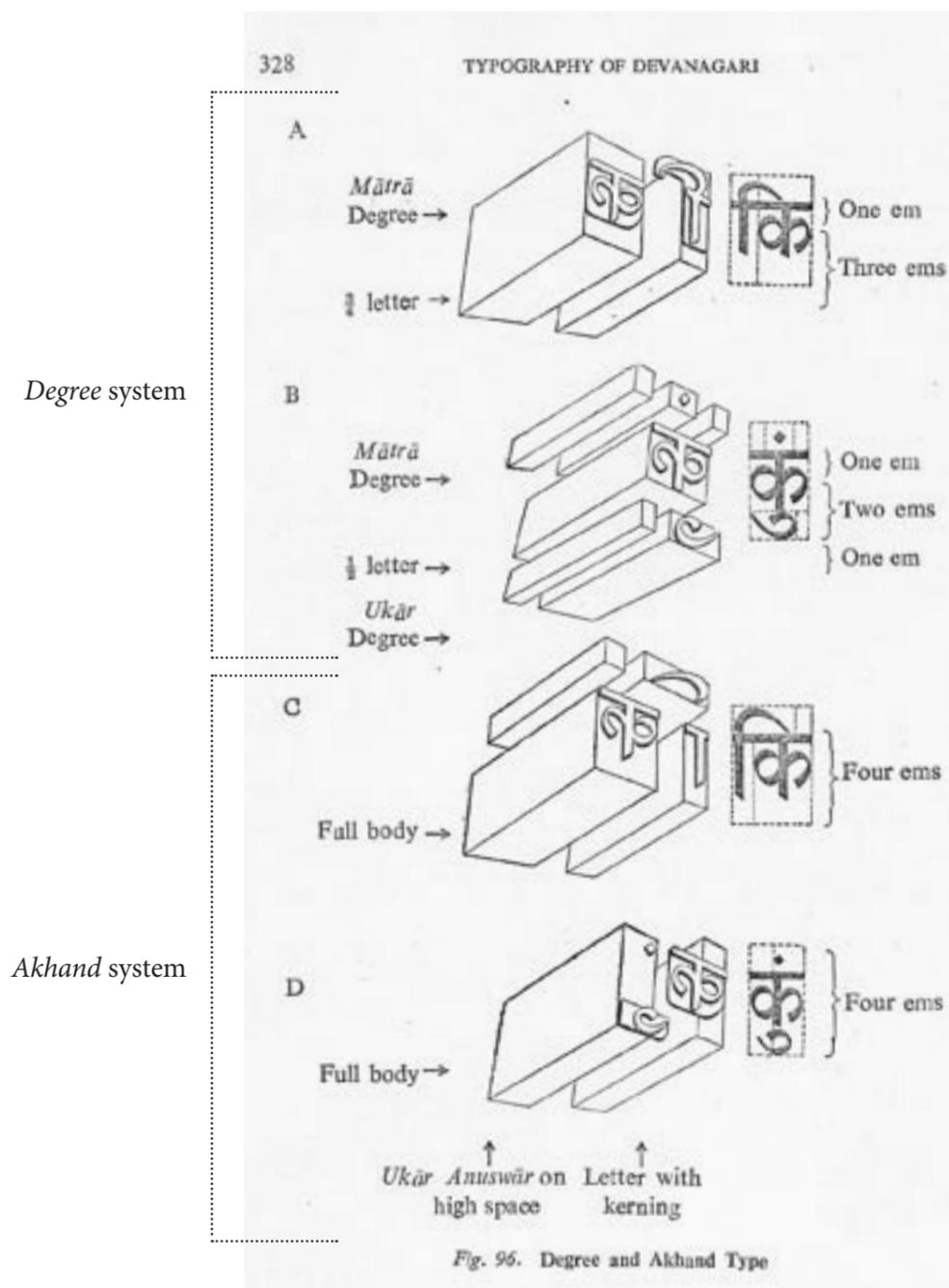


Figure 52. An illustration of the degree and akhand typesetting systems. NAIK, Bapurao S. *Typography of Devanagari* 1971; pages 328.

Figure 54. Plate 48: The Holy Bible in the Punjabi language, Setampore 1811. PRIOLKAR, Anant Kakba *The printing press in India*, 1958.

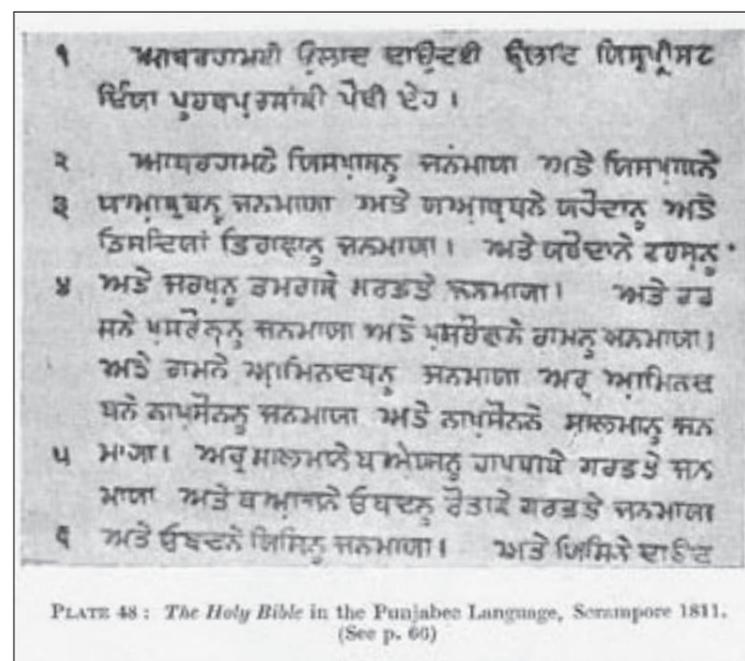


Figure 55. CAREY, Williams *Grammar of the Punjabee language* 1812; page 42.

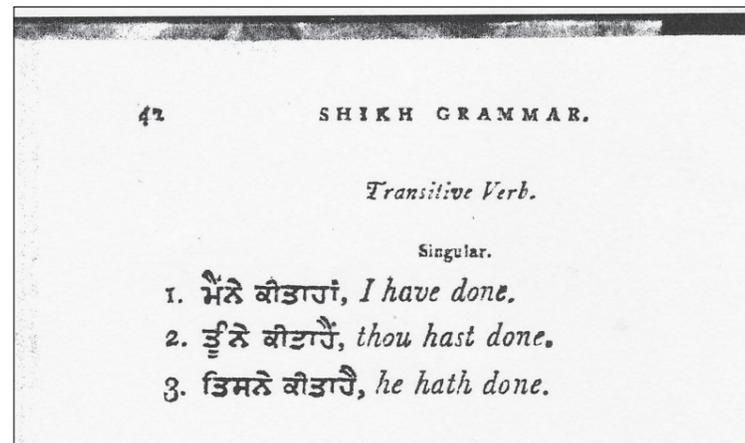


Figure 56. A specimen from the SMP's *Brief view of the Baptist missions and translations or various languages....*, 1815; page –

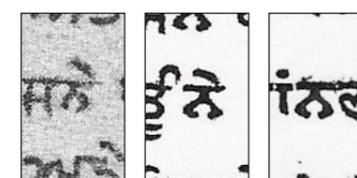
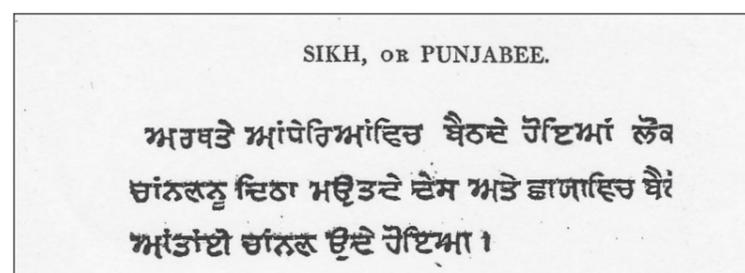


Figure 57. Forms share similar qualities between the three SMP examples [scale 200%], [see figures 54–56; page 40].

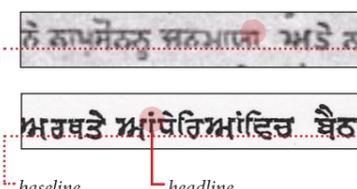


Figure 58 Differences in quality are apparent [see figures 54 and 56; page 40].

books in a wide range of Indian scripts. In Anant Kakba Priolkar's *The printing press in India*, Priolkar refers to a list made by a Mr Smith, which specifies the various scripts used for translating the *New Testament* over 30 years.⁵⁷ Approximately forty scripts were covered.

Punjabi is dated 1815, referring *only* to the New Testament, and in 1822 Smith states that Historical books were also printed. In Priolkar's book, plate 48 shows an extract from '*The holy Bible in the Punjabee language*', published in Serampore in 1811 [figure 54]. This is the earliest example found of a Gurmukhi typeface, and seems to be identical to the typeface used in Carey's *Grammar of the Punjabee language*, published in 1812 [figure 55]. Another specimen is shown in the SMP's *Brief View of the Baptist Missions and Translations, with specimens of various languages in which the Scriptures are printing at the Mission Press, Serampore*, published in 1815, which appears to be the same typeface again [figure 56].

Looking at the three examples from the SMP [figures 54–56], could lead one to believe that they are of three separate designs. Considering the close proximity of which the publications are dated, and the length of time in which it takes to design, cut and cast⁵⁸ an entire metal typeface, this seems unlikely. The printing quality of each example varies, making it difficult to formulate a valid evaluation, especially as figures 54 and 56 are facsimiles themselves.⁵⁹

However, one can see that similarities can be drawn between each [figure 57]. In figure 54 the colour appears considerably even overall, and the line is fine, with few dark points, noticeably so on those characters with knots, such as ਅ and ਦ. Comparing figure 54 to figure 55, the colour appears much darker in the latter and both are examples of poor typesetting [figure 58]. This effect is evident more so in figure 56: the difference in colour could be the result of a number of factors: the reproduction of samples;⁵⁹ the choice of stock and ink used; the metal sorts would have attained some level of wear-and-tear, resulting in a defected print.

⁵⁷ PRIOLKAR, Anant Kakba. *The printing press in India* 1958; page 65–66
⁵⁸ "Thomas C. Hansard noted: "the number of punches necessary to complete a fount, or every sort used is very great ... An artist of the greatest industry could not cut more than two in a day. After they are completed for the ordinary number ... it will take a founder six months in matrix-making, casting, dressing, and before he could deliver anything complete for printing ..." Ross, Fiona. *The Printed Bengali Character and its Evolution* 1999; page 89
⁵⁹ Assuming that the *facsimiles* were reproduced from the original publication, and then have since been photocopied and re-printed for the use in this dissertation: quality will have decreased at each point of reproduction.

Figure 60. Gurmukhi syllabry: using SMP typeface. CAREY, William *Grammar of the Punjabee language* 1812; page 6.

6 SHIKH GRAMMAR.

Consonants.

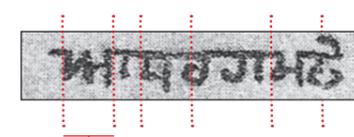
ਕ	ਖ	ਗ	ਘ	ਙ	gutturals.
ਚ	ਛ	ਜ	ਝ	ਞ	palatals.
ਟ	ਠ	ਡ	ਢ	ਣ	linguals.
ਤ	ਥ	ਦ	ਧ	ਨ	dentals.
ਪ	ਫ	ਬ	ਭ	ਮ	labials.
ਯ	ਰ	ਲ	ਵ	ਸ਼	} semi-vowels, &c.
ਸ਼		ਹ	ਕਸ਼		

Differences occur between few characters: denoted by circle.

Figure 61. Gurmukhi syllabry: using LMP typeface after the fire, assuming this is the new design, which is likely a revision of the SMP typeface. NEWTON, Rev. John *A Grammar of the Panjabi language, with appendices* 1851; page 3.

These letters are divided into seven classes; thus—

1	ਮ	ਲ	ਕ	ਸ	ਚ	Gutturals.
2	ਘ	ਛ	ਜ	ਝ	ਞ	Palatals.
3	ਟ	ਠ	ਡ	ਢ	ਣ	Linguals.
4	ਤ	ਥ	ਦ	ਧ	ਨ	Dentals.
5	ਪ	ਫ	ਬ	ਭ	ਮ	Labials.
6	ਯ	ਰ	ਲ	ਵ	ਸ਼	
7	ਸ਼	ਹ	ਕਸ਼			



character width – repeated

Figure 59. Character widths generally appear well-proportioned, except for ਅ which is much too wide [scale 200%], [see figures 54–56; page 40].

In each example the individual characters share similar proportions, an approximate baseline is visible [figure 57; page 41]. Generally one of the widest characters ਅ appears far too wide [figure 59], and there are inconsistencies between identical characters: ਲ਼ appears with a different form on more than one occasion, again, this could be a printing defect.

The vowels signs are short and stumpy, except for ਓ which appears narrow, tall and connected to the headline (reflecting a handwritten trait), whereas the rest sit apart. It is possible that smaller characters such as the vowels signs could have been adjusted, refined or even re-cut at a later date, a process of which would not require as much time as the entirety of the original typeface.⁵⁸ It would have also been common practice to borrow such characters from another typeface (different script).

Ludhiana Missionary Press, Punjab⁶⁰

The Ludhiana Missionary Press (LMP) was the first press in the Punjab, arriving in 1835. There is not any record to say when printing commenced but in 1837 ‘printing materials were still in short supply and more paper and types (Persian, Roman and Gurmukhi) were duly ordered from Serampore and Calcutta.’⁶¹ 1838 was ‘the year in which Devanagari and Gurmukhi founts were employed for the first time.’⁶² *St Matthew’s Gospel* and the *Old Testament* had been produced using the SMP typeface: one assumes it was an SMP rather than a Calcutta import as no evidence has been found to suggest that Gurmukhi typefaces were available from foundries located from the latter.

In 1845 a fire broke out at the LMP destroying everything apart from a Gurmukhi typeface which was in situ in the original press. Nevertheless, John Marshman⁶³ of the SMP had ‘cast an improved fount of Panjabi type.’⁶⁴ The date is unknown, but one can see it is of a similar design, even if smaller in size than that of the SMP’s typeface [figures 54–56], visible in the 1851 publication, *A Grammar of the Panjabi language, with appendices*, by the Rev. John Newton⁶⁵ [figure 60 and 61].

The quality of printing has greatly improved from the facilities at the

⁶⁰ For further reading see: SHAW, Graham *The first printing press in the Panjab* 1979; pages 161–72

⁶¹ SHAW, Graham *The first printing press in the Panjab* 1979; page 164

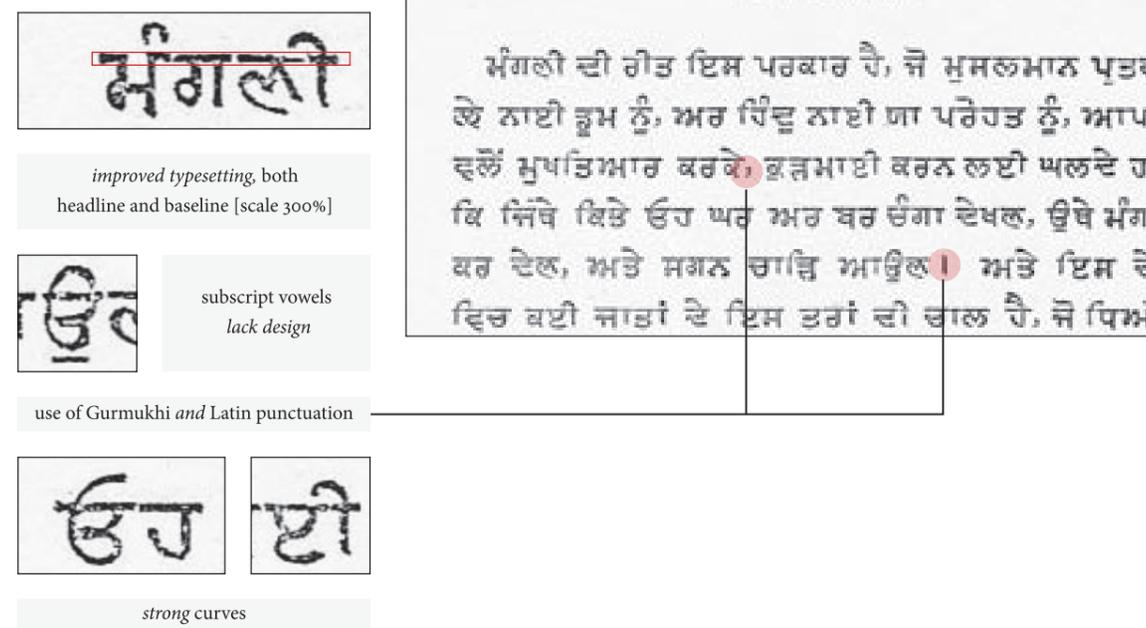
⁶² SHAW, Graham *The first printing press in the Panjab* 1979; page 164

⁶³ Son of Joshua Marshman, one of the original punchcutters of the SMP.

⁶⁴ SHAW, Graham *The first printing press in the Panjab* 1979; page 170

⁶⁵ No publications have been found prior to this one, to suggest that the SMP typeface had definitely been in use at the LMP

Figure 62. Extract number two. NEWTON, Rev. John *A Grammar of the Panjabi language, with appendices* 1851; page –



SMP, which emphasises the newly refined characters. Each character is either identical in form or a development is clear from one to the other: curved strokes appear refined as do the vertical and horizontal strokes; inconsistencies between identical characters still exist [figure 62].

The superscript vowel signs are of a similar characteristic to the SMP typeface, whereas those that sit beneath the characters, appear to have *no design*: they are small horizontal, monolinear dashes, which have a slight curve to their form and appear to be set both ways, curve arched and curve dipped [figure 62]. The addak ੱ, introduced in the nineteenth century, looks as if it appears in this sample: its purpose is to remove the occurrence of a double consonant, yet on two occasions, it sits above a pair of identical consonants⁶⁶ [figure 62].

Characters constructed predominantly by curves, stress a handwritten quality, with an emphasis on the horizontal movement. Conjuncts are not visible in this sample. Punctuation is a combination of the Gurmukhi danda and a selection of basic Latin components [figure 62].

Sudarshan Printing Press, Amritsar

Only one reference was found to mention the Sudarshan Printing Press (SPP), Varinder Walia's article *A proud legacy lies in dust*, published online in 2006. It is worth discussing as the SPP's ownership is mentioned, Dhani Ram Chatrik, who supposedly 'was the first to standardise the Gurmukhi type ... using modern technique at his SPP.'⁶⁷ Assuming this is true, for someone, Chatrik, who had established a *standard* form for a particular script, it seems odd to find so little reference to his name; one would have expected to find Chatrik and *his* SPP mentioned in multiple publications. Ranjit Singh Freed proclaims that Chatrik was 'the *father* of Gurmukhi printing ... the first to print sarroops of Sri Guru Granth Sahib at his SPP.'⁶⁸

No dates are declared in Walia's article regarding the SPP's existence, but one can assume it is likely to have been around the 1900s.⁶⁹ The SPP's location is not mentioned, but again one will assume that it is of the same location or within close proximity to Chatrik's house in Amritsar. One of Chatrik's sons still possesses, at his father's house, 'parts of the Gurmukhi

⁶⁶ Familiarity with the Punjabi language would be of great use.

⁶⁷ WALIA, Varinder *A proud legacy lies in dust* August 2006; online

⁶⁸ FREED, Ranjit Singh *A celebration of Gurmukhi* May 2008; online

⁶⁹ Dhani Ram Chatrik: 1876–1954

Figure 63. Extract from a dictionary printed by Munshi Gulab Singh & Sons: Singh, Maya Bhai ed. *The Panjabi dictionary* 1895.

form becoming closer to its contemporary equivalent, with a shorter right exit stroke

peculiar flaring to the left exit stroke [scale 300%]

vowels are even in colour but light in comparison to base

BIKÁÚ (155)		BILALLA
ਬਿਕਾਉ a. For sale, saleable; <i>Vikáú.</i>	ਬਿਕਾਉਣਾ v. a. To cause to <i>ú</i> ; i. q. <i>Vikáúgá.</i>	ਬਿਖ s. m. Poison; i. q. <i>Vikh Bía.</i>
DH ਬਿਖਾਯ s. m. Hatred, dissent, quarrelling, contention; opposition; i. q. <i>Bakhádh.</i>	DHAN ਬਿਖਾਯਣ s. f. } A DHI ਬਿਖਾਯੀ s. m. } pleasant person; i. q. <i>Bakhádhay.</i>	BIKKARMÁJÍTÍ ਬਿਕਰਮਜੀ or belonging to <i>Bikkarmájití</i> (spoken of the epoch, which d B. C. 57.)
ਬਿਖੜਾ a. See <i>Bikhá.</i>	BIKKHIA ਬਿਖਿਆ s. m. See	

Figure 64. Extract from a dictionary printed by Wazir-i-Hind Press: Singh, Jawahir ed. *English to Punjabi Dictionary, Roman & Panjabi characters* 1905.

broken, unbalanced headline [scale 300%]

Con (43)		C
Consent, v. a. <i>man lainá,</i> ਮਨ ਲੈਣਾ	Consequence, s. m. <i>natija phal,</i> ਨਤੀਜਾ, ਫਲ	Consequently, v. a. <i>is káran,</i> ਇਸ ਕਾਰਨ,
Consider, v. a. <i>jánná,</i> ਜਾਣਨਾ	Consideration, s. f. <i>soch,</i> ਸੋਚ	Consign, v. a. <i>saurip dená,</i> ਸੌਂਪ ਦੇਣਾ
Consignment, s. f. <i>saurip, rapurági,</i> ਸੌਂਪ, ਜਪੁਰਦਗੀ	Constable, <i>shapáhi,</i> ਸ਼ਾਪਾਹੀ	Constancy, s. m. <i>dhíraj,</i> ਧੀਰਜ
	Constant, <i>darir,</i> ਦਰਿਰ	Constantly, <i>sadá la nitt.</i> ਸਦਾ ਲਈ, ਨਿੱਤ
	Construct, v. a. <i>bandána,</i> ਬਣਾਨਾ	Construction, s. f. <i>bandic</i>

letters prepared by Chatrik ... These letters, made of metal, are worth keeping in a museum.⁷⁰

'In his biographical note,⁷¹ Chatrik gives interesting information about the Gurmukhi type and his contribution in its modification. He writes that Christian missionaries brought *Punjabi letters* from England in the year 1875 and published the Bible in Gurmukhi at the Mission Press, Ludhiana. But the type, invented by the Christian missionaries, was not up to the mark and required modification.⁷²

Contribution implies that Chatrik did not work alone. Walia continues: 'Lala Hira Nand improved the type with the help of writers from Amritsar and published beautiful books in Lahore by 1880.⁷³ Again, one could find no other reference to a *Lala Hira Nand*. Via Madra of the UKPHA, one was provided with contact details for Walia, but no response was received regarding references and resources he used regarding his article.

The last paragraph of Walia's article mentions two presses which were not directly referenced to Chatrik himself:

'Later, Munshi Gulab Singh & Sons, Lahore, prepared another Gurmukhi type with the help of a Muslim worker, Munshi Noordin, who was instrumental in introducing the Gurmukhi letters in different parts of Punjab. He was later employed by the Wazir Hind Press, Amritsar, and more varieties of the Gurmukhi type were introduced.⁷⁴

Specimens could not be traced regarding the typefaces used at the *Munshi Gulab Singh & Sons* (MGS), in Lahore and the *Wazir Hind Press* (WHP), in Amritsar. A publication⁷⁵ from each shows an improved development in the design and reproduction of Gurmukhi typefaces.

The Panjabi dictionary prepared by MGS [figure 63], uses a typeface of substantial quality. The heavy appearance does not deter you from the use of consistent, well-balanced forms. The ਴ is unusual, the left stem flares drastically beneath a rather heavy knot. Counters are open and spacing is fair. The character ਲ਼, has a smaller protrusion, closer to its contemporary representation. Vowel signs are even in colour and stroke formation, yet somewhat light in comparison with the base characters. The ੱ appears

⁷⁰ WALIA, Varinder *A proud legacy lies in dust* August 2006; online

⁷¹ Found no reference to Chatrik's *biographical note*, and no response was received.

⁷²⁻⁷⁴ WALIA, Varinder *A proud legacy lies in dust* August 2006; online

⁷⁵ The Gurmukhi characters can only be considered in small clusters rather than running copy, as only dictionaries could be found with this type in use.

Figure 70. Specimens of oriental and other types in use at the office of Stephen Austin & Sons, Hertford 1870

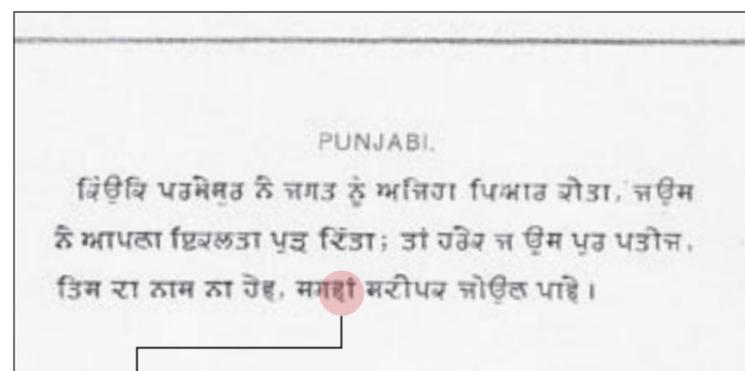
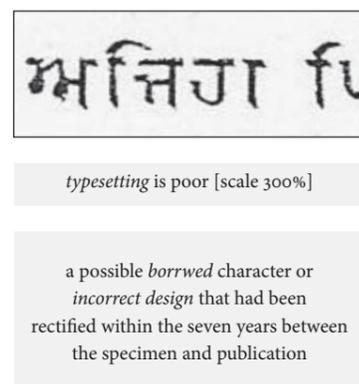
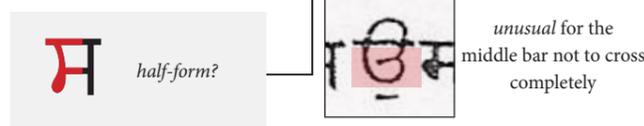
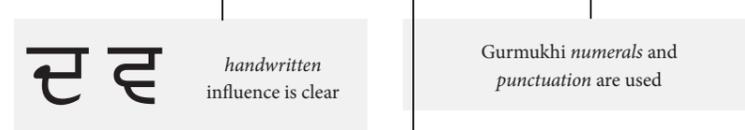
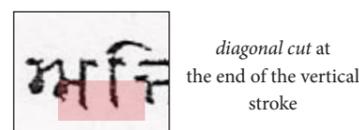
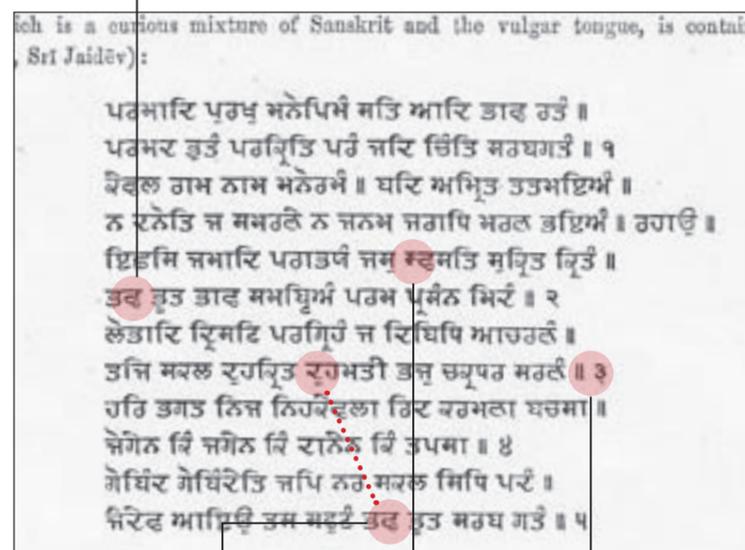
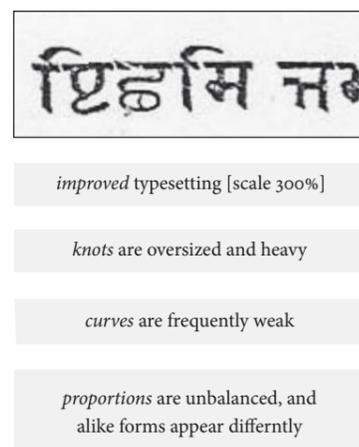


Figure 71. Translation of the *Adi Granth* 1877; page cxxiii



England⁸³

Stephen Austin & Sons, Hertford

Stephen Austin & Sons (SAS), the leading Oriental printers,⁸⁴ was the appointed printer for publications in use at the nearby East India College. Seven specimens were found, of various dates [figure 69], all included a small text sample of Gurmukhi; no character synopses were discovered.

The earliest specimen, dated 1870, is identical to one published fifteen years later in 1885: the *Punjabi* typefaces will be referenced as one and referred to as SAS 1 [figure 70]. An example of SAS 1 is provided so one can see it in extended use: an 1877 translation of the *Adi Granth* [figure 71].

The overall texture is uneven: the colour is patchy where knots appear heavy. The curves are fine in comparison to the general strokes, likely with the intention of increasing legibility by increasing the whites of the counters. Vertical strokes end with a diagonal cut, and the majority are of a monolinear fashion, with few that express contrast. Those that do appear lighter in comparison could be an effect of poor printing.

Character proportions are tolerable amongst themselves, but forms in which one would expect a similarity do not always exist. Few characters are reminiscent of the handwritten forms, with a strong cursive quality, in particular, ਦ and ਵ. The superscript vowels are tall and narrow, ੋ and ੌ, whereas the tops of ਿ and ੀ appear too shallow: a peculiarity which may suggest they have been borrowed from another typeface [figure 71].

It is possible to see that the *akhand* system was used: the vowels ਿ and ੀ appear as two separate components and this would further explain their visible breakages [figure 72]. Another element to suggest this system was used is the appearance of the vowel ੀ as a full-length vertical stroke, rather than the half-length which is of standard practice [figure 72].

Conjuncts sit neatly under their base characters, even if a little odd in shape. The use of Gurmukhi numerals and punctuation is evident, as well as basic Latin characters [figure 71].

The 1928 and 1932 specimens use a typeface which appears to be identical to SAS 1, referred to as SAS 2, with only minor differences that determine it otherwise [figure 73]. The type size is referred to as *pica*, twelve point with regards to the point-system which we are familiar with today. The colour appears more even than before, likely due to improved

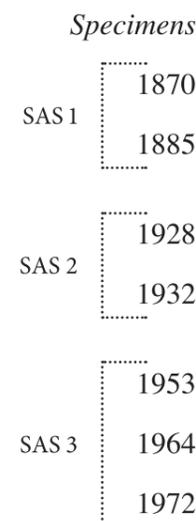


Figure 69. Dates of the Stephen Austin & Sons' specimens and their typefaces.

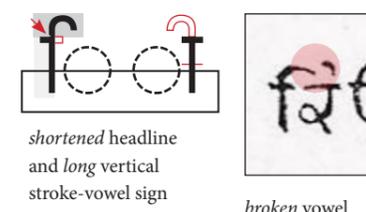


Figure 72. Evidence of the *akhand* system is visible with the vowel signs [scale 300%].

⁸³ For further reading see: REED, Talbot Baines *A history of the old English letter foundries 1887*
⁸⁴ MORAN, James *Stephen Austin of Hertford 1968*; page 23

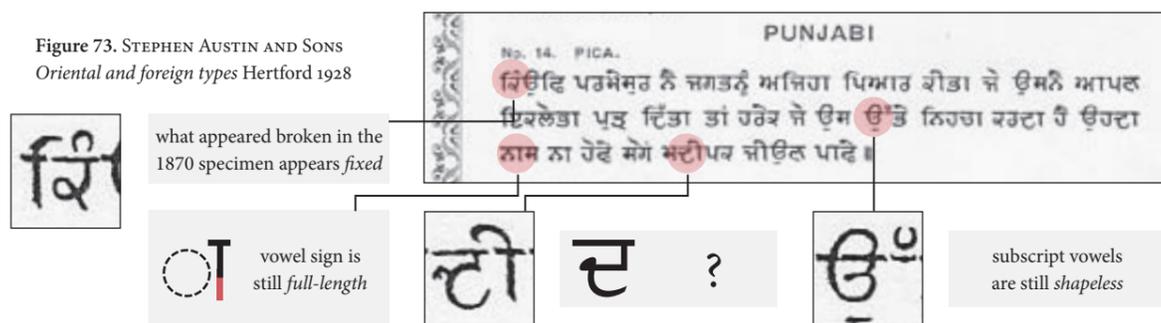


Figure 73. STEPHEN AUSTIN AND SONS *Oriental and foreign types* Hertford 1928

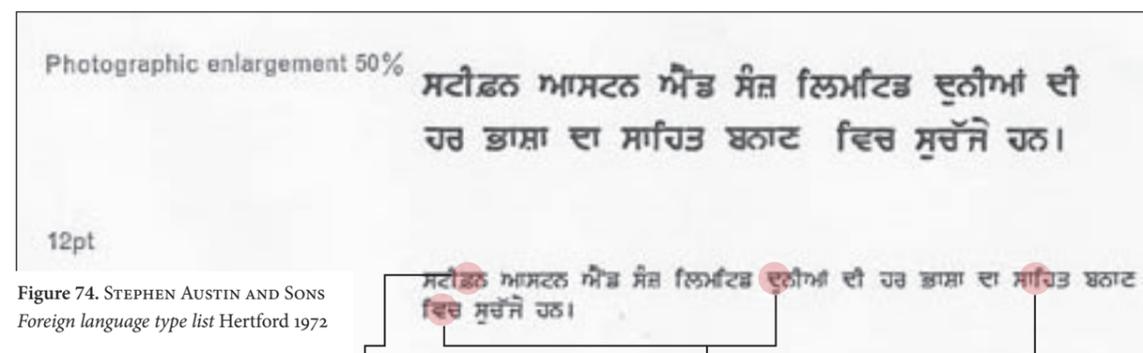


Figure 74. STEPHEN AUSTIN AND SONS *Foreign language type list* Hertford 1972

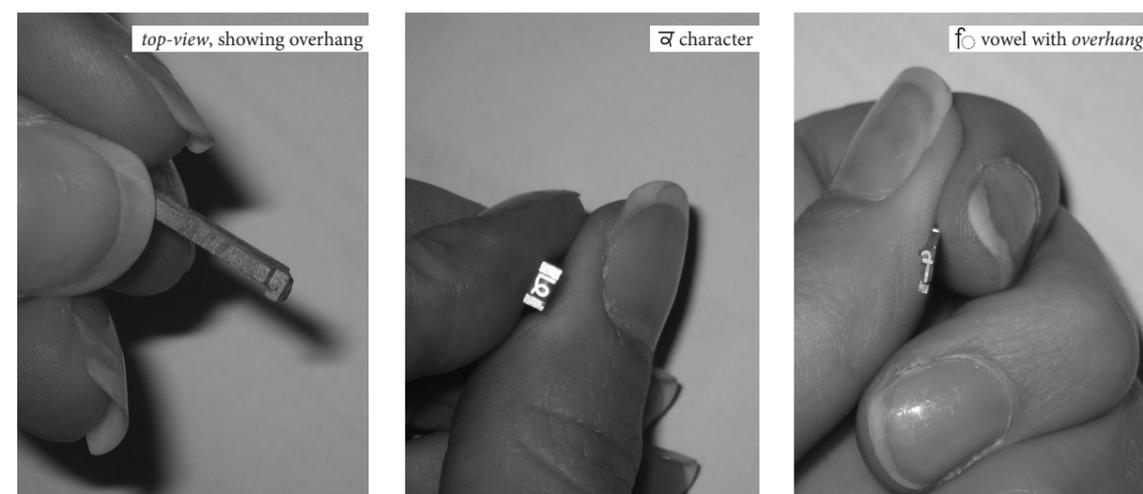


Figure 75. Three SAS 3 metal sorts from the collection at the British Library.

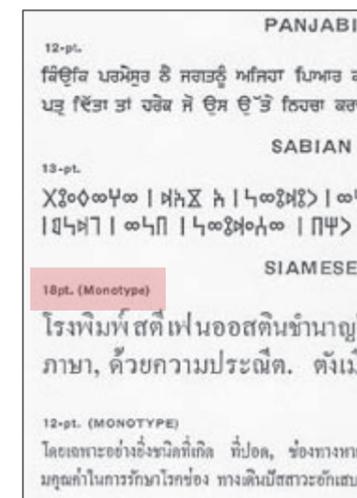


Figure 76. SAS reference *Monotype* in their specimens: not done so for *Panjabi*. STEPHEN AUSTIN AND SONS *Continental and oriental types* Hertford 1953



Figure 77. When comparing SAS 3 with MTC 1, there are obvious differences: widths, proportions and weight [scale 300%].

printing methods over the past forty years. Issues seem to have been resolved regarding the broken top stroke of the vowel ੇ [see figure 72; page 51]. What had been believed to be a ਕਿੰ adjacent, instead seems to have meant to be a ਕਿੰ.⁸⁵ A shorter top has replaced the original, over-extended version [figure 73].

The addition of the addak ੱ is visible in this sample, and is cast as a headline extension. A peculiar character makes an appearance, and with attempts to assign it to an early handwritten variant, one can assume that it is ਦ, only with an exaggerated bottom curve⁸⁵ [figure 73].

An entirely new design appears under *Panjabi* in three specimens dated 1953, 1964 and 1972, referred to as SAS 3 [figure 74]. The *point* system is now adopted, with no effect upon the size. The 1972 specimen provides a variety of sizes through the method of photographic enlargement and reduction [figure 74].

The overall characteristics have changed between SAS 1 and 2 and that of SAS 3: colour, character designs and proportions are entirely new. Inconsistencies between similar forms do not occur, the vowels signs fit their base characters and the typesetting is controlled with the headline running continuously, even if not perfectly joined. The monolinear stroke is consistent, except for the vowel signs which vary in weight. This is not necessarily a negative circumstance.

Five cases of SAS 3 are held at the British Library. Here evidence is found that the degree system is used [figure 75]. Both base characters and vowels were cast as overhangs, amongst a few that were cast as whole units: base character plus both subscript and superscript vowels, ie. ੱ.

The origins of all SAS's Gurmukhi typefaces is still unknown, but one is aware that the later typefaces for other non-Latin scripts were attained from *Monotype* [see *Monotype Gurmukhi*; page 69] and referenced accordingly in their specimens [figure 76]. This does not appear to be the origin for the SAS 3: their designs are similar at a glance but a closer inspection proves their differences [figure 77].

An introduction of extra characters to SAS 3 could have been a direct influence from their familiarity with *Monotype's* character synopses. These additional characters: ਸ਼, ਝ, ਞ, and ਢ, are not visible until 1964: *Monotype's Gurmukhi 601* and *604* is dated 1963. This may or may not be coincidental, and rather a sign of the times: the necessity to adhere to the language alterations and additions, providing what the user requires.

⁸⁵ Familiarity with the Punjabi language would be of great use.

Figure 79. Punjabi in GILBERT & RIVINGTON Specimens of some of the oriental and foreign types London 1873

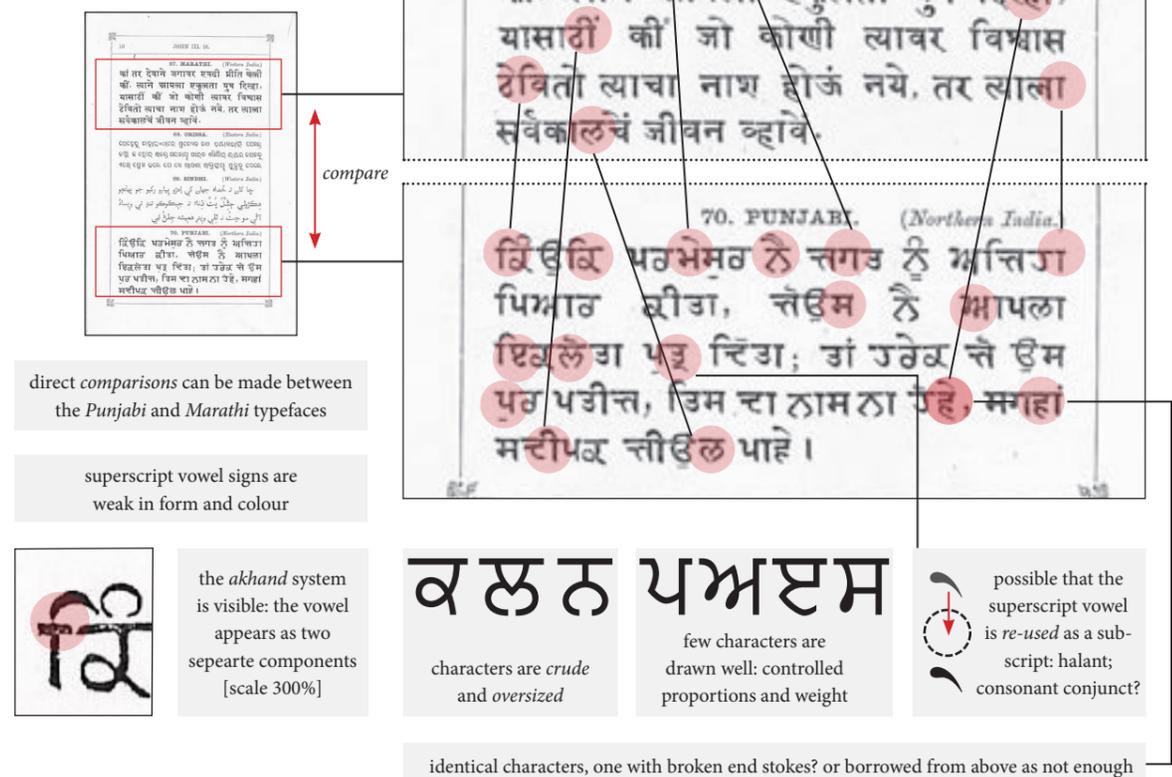
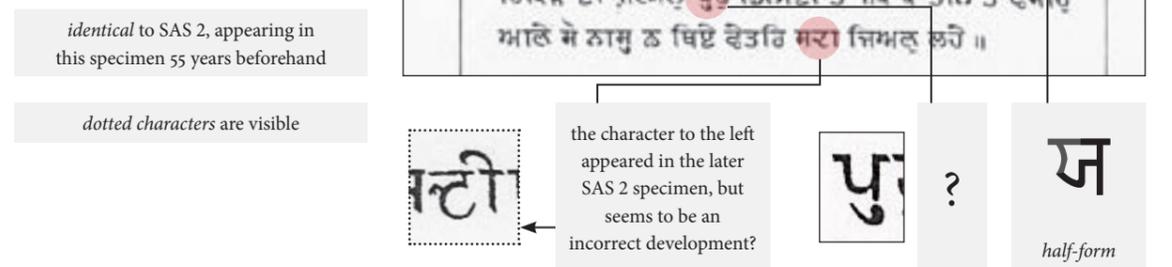


Figure 80. Sindhi, using Gurmukhi, in GILBERT & RIVINGTON Specimens of some of the oriental and foreign types London 1873



Specimens

	1873
GAR 1	1875
	1878
GAR 2	1873
	1891
GAR 3	1905
	1915
WCS 1	1915
	1931
WCS 2	
WCS 3	
WCS 4	
WCS 5	
WCS 6	
WCS 7	
WCS 8	

Figure 78. Dates of the Gilbert & Rivington and William Clowes & Sons' specimens and their typefaces. Those highlighted with grey are of display size and not considered.

Gilbert & Rivington and William Clowes & Sons, London

Gilbert & Rivington's first specimen to include Gurmukhi was published in 1873, and repeated in 1875 and 1878 [figure 78]. The short duration between the three leaves no surprise that no alterations were made during each edition. This Punjabi typeface, referred to as GAR 1, hardly seems worth mentioning as it is an extremely poor representation of the Gurmukhi script [figure 79]. The appearance is clumsy and random, with what seems a medley of characters from various scripts. A direct comparison can be made to the Marathi typeface above [figure 79], in which a selection of characters, both vowels and base consonants, can be identified in the Gurmukhi specimen beneath. Some have no relation to the Gurmukhi characters.⁸⁶

The remaining characters which appear to be Gurmukhi, are either well-drawn (in comparison to the borrowed or remaining) or are oversized, crude depictions of what they should in fact be. The vowel signs are faint, except for ੜ which looks out-of-place.

The akhand typesetting method is used, which should have improved kerning has proven otherwise here: the baseline is uneven to avoid the superscript and subscript vowels clashing. This is resolved by altering only the baseline of the affected character. A similar situation occurs in the Marathi sample above, but enough leading has been provided to avoid a messy result [figure 79].

Appearing only in the 1873 specimen was another Gurmukhi typeface, GAR 2, which had been used for the Sindhi language. It is a far better representation of the Gurmukhi character compared to that of GAR 1. Its origins are unknown, but it appears to be identical to SAS 2. GAR 2 makes no other appearance with GAR, but re-appears in the 1928 and 1932 SAS specimens, only with different characters [figure 80]. The size, slightly smaller than GAR 1, appears to be of improved printed quality compared to that of the SAS 2. The characters are darker and more refined, detail is greater.

In GAR's 1891 and 1905 specimens another, entirely different typeface occurs, GAR 3 [figure 81; page 56]. It is a type size that sits between GAR 1 and GAR 2. An improvement on GAR 1, it lacks the coherence and balance achieved in GAR 2. The counters appear at various sizes: the knots are oversized, a combination causing distraction; the vowels signs lack consistency and the tippi is barely visible. A particular oddity is the reversal in stroke length with regards to the vowels ਿ, ੀ and ਾ.

⁸⁶ Familiarity with the Punjabi language would be of great use.

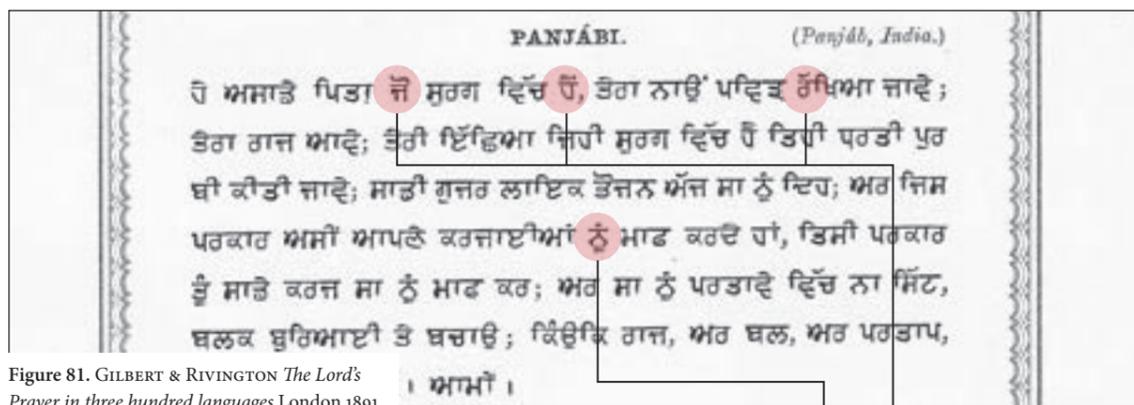


Figure 81. GILBERT & RIVINGTON *The Lord's Prayer in three hundred languages* London 1891

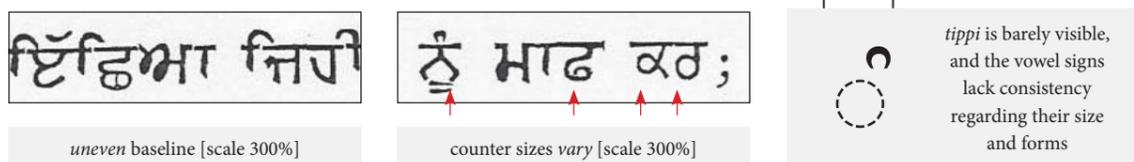


Figure 83. WILLIAM CLOWES & SONS LTD. *Specimens of some of the oriental and foreign types* London 1873

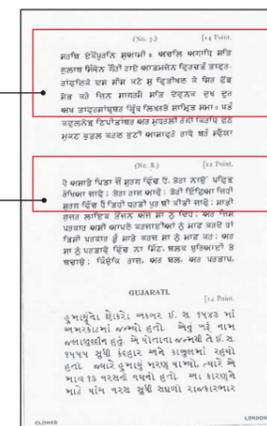
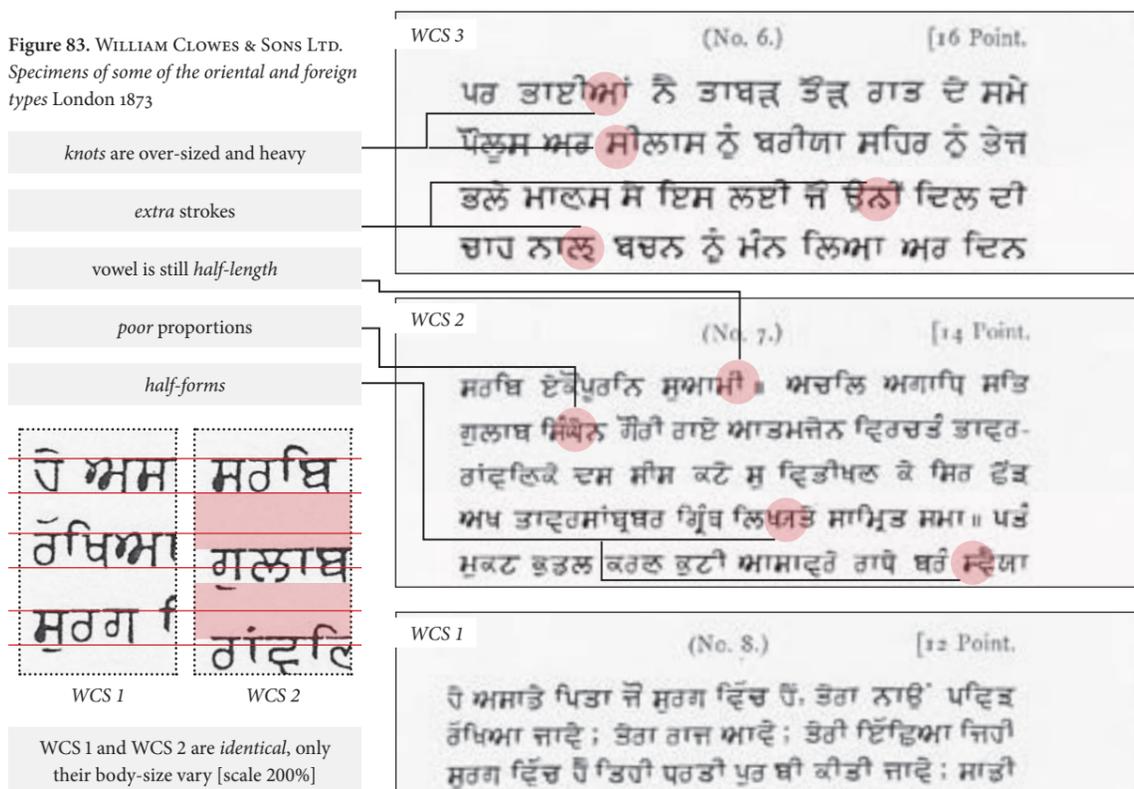


Figure 82. WILLIAM CLOWES & SONS LTD. *Specimens of some of the oriental and foreign types* London 1915 [scale 35%]

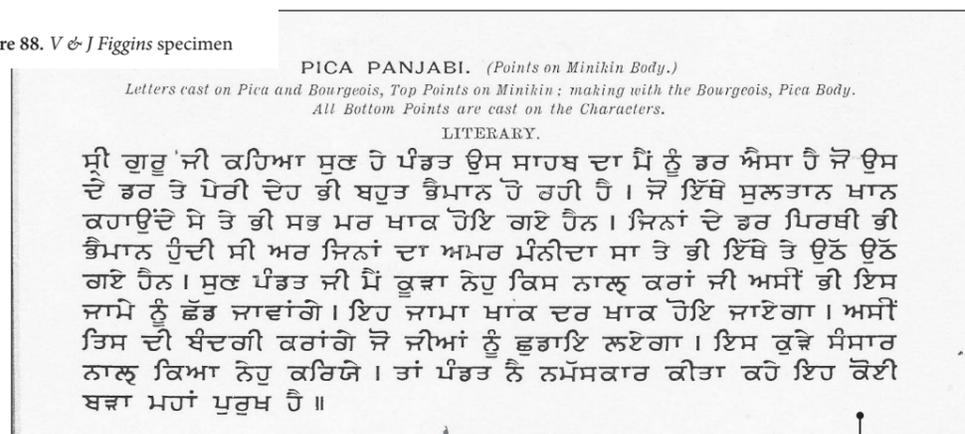
The vowel ਿ, normally of full-length, appears more often in GAR 3 as half ਿ. Whereas the vowel ਾ frequently appears at full-length ਾ; incorrect, but an indication that the akhand system was used; this may have been to ensure that the number of characters required was kept to a minimum. It does not seem likely that the akhand system was used in GAR 3, as spacing is often a little too wide. Character proportions vary in width and depth. A clear development can be seen with the ਵ: in GAR 2 the design is closer to the handwritten form, whereas in GAR 3 the curves are achieving structure, evolving into a character which could appear in a contemporary typefaces. It seems unlikely that GAR could have attained their typefaces from the same origin, as each is an example with great variation in design, skill and knowledge with regards to the Gurmukhi script itself.

William Clowes & Sons (WCS) took over GAR in 1908.⁸⁷ Their 1915 and 1931 specimens display the same eight Gurmukhi typefaces [figure 82]. WCS 1–8 vary in size from as large as forty eight point to as small as twelve point. With the intention of only considering text typefaces for this dissertation five will be discarded leaving three point sizes: twelve (WCS 1); fourteen (WCS 2) and sixteen (WCS 3) [figure 83]. WCS 1 is merely GAR 3, and WCS 2 is GAR 3 but cast on a fourteen point body [figure 83]. Small differences are visible: the tippi appears larger and the WCS 2 sample shows the use of consonant conjuncts as well as the half form ਜ, and unusually, a half form of ਫ, (first seen in SAS 1 [see figure 71; page 50]) [figure 83]. WCS 3 is of no improvement. The size has increased, but the inconsistencies of WCS 1 and 2 are still apparent. If the knots alone had been reduced in colour the improvement could have been vast. The height of the vowel signs appear more consistent, all follow a shallow depth. Two characters stand alone due to the addition of small exit strokes, ਨ and ਲ. One is assuming that these may be characters which have been cast with conjuncts attached, reminiscent of handwritten forms, or maybe they represent the ੍⁸⁸ [figure 83].

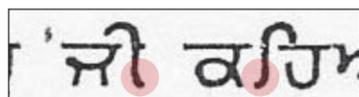
Oxford University Press, Oxford
The *Oxford University Press* specimen clearly dates the casting of its Gurmukhi typeface, *OUP 1*, at 1876 [figure 84; page 58], and for the

⁸⁷ Ross, Fiona. *The Printed Bengali Character and its Evolution* 1999; page 100
⁸⁸ Familiarity with the Punjabi language would be of great use.

Figure 88. V & J Figgins specimen



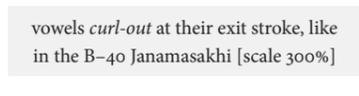
curves and verticle strokes are barely visible [scale 300%]



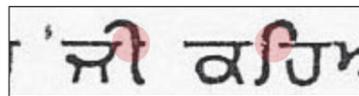
a geometric system seems to have been applied to the design of each character



counters are large and often open [scale 300%]



vowels curl-out at their exit stroke, like in the B-40 Janamasakhi [scale 300%]



kerning is possible due to removed headline, gaps are left intentionally

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	ਅ	1	ā	ਅ	34	ē	ਏ	61	ē	ਏ	101
ai	ਐ	2	ēu	ਐ	35	fu	ਐ	67	ēhu	ਐ	102
e	ਏ	3	ēū	ਏ	36	tū	ਐ	68	ēhū	ਐ	103
o	ਓ	4	ēō	ਓ	37	to	ਐ	69	ū	ਐ	104

FIGURES.										POINTS.	
133	134	135	136	137	138	139	140	141	142	131	132
1	2	3	4	5	6	7	8	9	0	I	II

POINTS—On Minikin Body.						
1	2	3	4	5	6	7

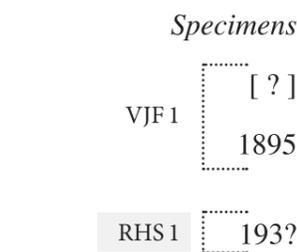


Figure 87. Dates of the V & J Figgins and R. H. Stevens & Co, Ltd. specimens and their typefaces. Highlighted with grey are of display size and not considered.

Figure 89. V & J Figgins character synopsis [above: scale 25%] [left: scale 75%]

V & J Figgins and R. H. Stevens & Co, Ltd. London

Vincent and James Figgins (VJF), were given their father's, Vincent Figgins, business in 1908. They published their first type specimen book in 1858⁹⁰ [figure 87]. A Gurmukhi typeface, *Pica Panjabi*, VJF 1, could not be found until the VJF specimen, *Specimens of type – printing materials*, published in 1895 [figure 88]. An undated character synopsis for VJF 1, was found, listing approximately 150⁹¹ characters according to their body size, offering base characters alone and cast with the subscript vowel signs [figure 89].

The general colour is pleasant, and the base characters and vowel signs work well together. The monolinear stroke is not out of the ordinary but the characters themselves stress an unusual *personality*: the expanded characters look as though they have been simplified, achieving a geometric design: corners which are normally constructed with a curve are barely visible, with shallow forms; the strokes finish rounded rather than flat, and the vertical strokes appear nonexistent. The handwritten quality is disappearing, apart from an unusual flared exit stroke to the vowels ਿ and ੀ, which can be seen in the B-40 Janamasakhi [see *Manuscripts*; page 24], [figure 88].

The degree system is evident: the specimen explains 'letters are cast on Pica (twelve point) and Bourgeois (nine point), Top points on Minikin (superscript vowels on three point); making with the Bourgeois, Pica Body. All Bottom Points (subscript vowels) are cast on the characters.'⁹² Kerning of the vowels ਿ and ੀ was possible, as the headline had been removed. It seems by choice, that *loose* kerning was preferred as the white space appears with consistency [figure 88].

An advertisement for an Indian 'letter founders' was found in the journal *The element of letterpress printing*, published in 1895 [figure 90; page 63]. It is for *P. Aroolanunthum & Sons*, whom advertise their affiliation with VJF, suggesting that VJF 1 was a desirable typeface for Indian consumers at this time.

Reed writes in *A History of the Old English Letter Foundries*, that 'the last of the Figgins died in 1907, when a new firm was established by his nephew, Mr R. H. Stevens.'⁹³⁻⁴ Evidence of only one Gurmukhi typeface for *R. H. Stevens & Co. Ltd.*, *RHS 1*, could be found as an undated⁹⁴ specimen page [figure 91; page 62] and a separate character synopsis

⁹⁰ V & J Figgins *Specimen of Plain & Ornamental Types* London 1858
⁹¹ This figure doubles as identical characters were cast on more than one body size [figure 89]
⁹² V & J Figgins *Specimens of type – printing materials* 1895
⁹³ REED, Talbot Baines *A History of the Old English Letter Foundries* 1887; page 336

24 POINT PANJABI. (Points on 6 pt. Body.)

Letters cast on 24 pt. and 18 pt. Bodies, Top Points on 6 pt.; making with the 18 pt., 24 Point Body.
All Bottom Points are cast on the Characters.

ਸ੍ਰੀ ਗੁਰੂ ਜੀ ਕਹਿਆ ਸੁਲ ਹੇ ਮੰਡਤ ਉਸ ਸਾਹਬ ਦਾ ਮੈਂ
ਠੰ ਡਰ ਮੈਸਾ ਹੈ ਜੋ ਉਸ ਦੇ ਡਰ ਤੇ ਮੇਰੀ ਦੇਹ ਭੀ ਥਹੁਤ
ਭੈਮਾਨ ਹੋ ਰਹੀ ਹੈ ਜੋ ਇੰਝੇ ਸੁਲਤਾਨ ਖਾਨ ਕਹਾਉਦੇ
ਸੇ ਤੇ ਭੀ ਸਭ ਮਰ ਖਾਕ ਹੋਇ ਗਏ ਹੈਨ ਜਿਨਾਂ ਦੇ ਡਰ

R. H. STEVENS & Co. Ltd., SOUTHWARK STREET, LONDON

24 POINT PANJABI
R. H. STEVENS & Co. Ltd., LONDON

18 POINT	18 POINT	18 POINT	24 POINT	6 POINT
1 ਚ	50 ਕ	98 ਯ	17 ਿ	51 ਙ
2 ਚ	62 ਚ	99 ਝ	18 ਨੰ	52 ਞ
3 ਨ	63 ਚ	100 ਞ	20 ਿ	53 ਟ
4 ਨ	64 ਨ	101 ਟ	21 ਿ	54 ਠ
5 ਟ	65 ਞ	102 ਟ	27 ਉ	55 ਠ
6 ਠ	66 ਟ	103 ਟ	30 ਉ	56 ਠ
7 ਠ	67 ਠ	104 ਟ	32 ਮ	57 ਠ
8 ਠ	68 ਠ	105 ਟ	37 ਉ	58 ਠ
9 ਠ	69 ਠ	106 ਟ		59 ਠ
10 ਠ	70 ਠ			60 ਠ
11 ਠ				61 ਠ



[figure 92; page 62]. RHS 1 is only mentioned as it previously appeared in the 1915 WCS specimen as WCS 4, [see figure 82; page 57].

Dating the RHS foundry's existence between 1908 and the early 1930's does not suggest that either foundry may have been the typeface's point of origin.⁹⁴ Yet the resemblance of WCS 4 and RHS 1 to that of WCS's 1, 2 and 3 is very strong: the same feature of large knots exists between all of WCS Gurmukhi typefaces and could merely be enlargements of WCS 1, suggesting that WCS is the point of origin for the WCS and RHS 1 typefaces with the likelihood of WCS exploiting the 'practices of electrotyping and stereotyping.'⁹⁵ Not elaborated any further as its size, twenty-four point, renders it outside the text typeface boundaries.

ADVERTISEMENTS. 299

P. AROOLANUNTHUM & SONS, Poodoopettah, MADRAS,
LETTER FOUNDERS,
Manufacturers of Vernacular Type (Tamil, Telugu, Canarese, Malayalam, Hindustani, Grantham, etc.), and other Printing Materials.

SOLE AGENTS FOR THE MADRAS PRESIDENCY TO
MESSRS. V. & J. FIGGINS, LONDON,
Letter Founders, Machine, Press, Printing and Binding Material Manufacturers.

MESSRS. JAMES SPICER & SONS, LONDON,
Manufacturers of Printing Papers and Stationery.

BEG to announce that they have made special arrangements to promptly execute orders in the branches of business named below, to the satisfaction of the public.

Photo-Engraving.
A most faithful picture is turned out by the blocks engraved in our firm, which has a Staff of Engravers who have been specially trained by us to execute this species of fine art with exquisite style; and it is largely patronised by

Postage Stamp Perforator.

Figure 90. Advertisement found at the back of FISHER, T. *The elements of letterpress printing, composing and proof reading...* Madras 1895; page 299 [full-page detail; top: scale 25%]

◀ Figure 91. (Top) R. H. STEVENS & Co, LTD. *Specimen* London [date unknown].

◀ Figure 92. (Bottom) R. H. STEVENS & Co, LTD. *Character synopsis* London [date unknown].

⁹⁴ ...Reed mentions no dates which determine when VAJ, changed to R. H. Stevens (RHS) or when that to Stevens, Shanks & Sons. Using Kelly's *directory of stationers, printers, publishers, booksellers and paper makers*, it was possible to define a range of dates which help to determine the company's name change:

- Figgins died 1907 and R. H. Stevens appeared in Kellys in 1908: change within the year.
- R. H. Stevens mentioned in 1930 and the Shanks in 1935: change within five years.

No trace could be found of Stevens, Shanks & Sons ever producing a Gurmukhi typeface.s

⁹⁵ Ross, Fiona. *The Printed Bengali Character and its Evolution* 1999; page 100

SIKH.

Zeichen	Wert										
ਅ	a	ਐ	au	ੳ	dīha	ਦ	dā	ਰ	ra	ਰੁ	rha
ਆ	ā	ਕ	ka	ੲ	ḍā	ਪ	pā	ਲ	la	ਲੁ	lha
ਇ	i	ਖ	kha	ੳ	ṭā	ਨ	nā	ਵ	vā	ੲ	rha
ਈ	ī	ਗ	ga	ੳ	ṭhā	ਪ	pā	ੲ	vā	ੲ	rha
ਉ	u	ਘ	gha	ੳ	ḍā	ਫ	phā	ਸ	sā	ੲ	rha
ਊ	ū	ਙ	ṅa	ੳ	ḍhā	ਬ	bā	ਹ	hā	ੲ	rha
ਏ	e	ਚ	chā	ੳ	ṅā	ਭ	bhā	ੳ	ḍhā	ੲ	rha
ਐ	ai	ਛ	chhā	ੳ	ṭā	ਮ	mā	ੳ	ḍhā	ੲ	rha
ਓ	o	ਜ	jā	ੳ	ṭhā	ਯ	yā	ੳ	ḍhā	ੲ	rha

Vokale: ਕਾ ka, ਕਿ ki, ਕੀ ki, ਕੁ ku, ਕੌ kō, ਕੇ ke, ਕੈ kai, ਕੌ ko, ਕੌ kau, ਕੌ kō, ਕੌ kya.

Ziffern: ੧ 1, ੨ 2, ੩ 3, ੪ 4, ੫ 5, ੬ 6, ੭ 7, ੮ 8, ੯ 9.

Die Schrift der Sikh heisst *Gurmukhi*; sie hat die Verbindung durch die Schreiblinie aber keine Verbindung der Konsonanten unter sich. ੳ kürzt die Wörter ab, unter gewissen Umständen vertritt es ੲ ੳ ੲ ੳ ੲ ੳ.

Figure 93. FAULMANN, Karl *Das Buch der Schrift enthaltend die...* Hildesheim 1878

vowels have strong *cursive* qualities

numeral six is *upside down*

formally the same character: the exit strokes could have *broken*?

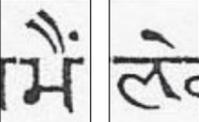
small counters are not ideal

blind counter?

poor proportions for the *half-form* combination

possible pre-composed characters: halant; consonant conjunct (highlighted)

shallow vowel signs except for one [scale 300%]:



No 329 Petit

ਚੇ ਸੁਰਗਮੈ ਰਹਲੇਵਾਲੇ ਹਮਾਰੇ ਪਿਤਾ ਭੋਗ ਨਾਮ ਪਵਿਤ੍ਰ ਹੋਵੇ । ਭੋਗ ਰੋਜ਼ ਆਵੇ ਭੋਗ ਟਿਸਟ ਜਿਸਪ੍ਰਕਾਰ ਸੁਰਗਮੈ ਭਿਜਪ੍ਰਕਾਰ ਪ੍ਰਿਥੋਵਿਚ ਕੀਤਾ

Figure 94. K. K. HOF- UND STAATS-DRUCKEREI *Schriftproben der K. K. Hof- und...* Wein 1910

Europe

No evidence of Gurmukhi typefaces were found in specimens from the prominent European type foundries.⁹⁶ Only two examples were found, suggesting that the Gurmukhi script was not of great demand compared to the more dominant Indian scripts such as Devanagari and Bengali.

K. K. Hof- und Staats-Druckerei, Vienna⁹⁷

The Austrian *Kaiserlich-Koenigliche Hof- und Staats-Druckerei* (KKH) of Vienna dates from the early-nineteenth century, known predominantly for their plagiarised designs. In 1841, *Alois Auer* was appointed as the KKH's director. Auer came with eleven years of typographic experience and was responsible for the reformed establishment,⁹⁸ yet the KKH was re-built upon a re-stock of brought typefaces which were reproduced by the method of stereotyping.

The first occurrence of the KKH's Gurmukhi typeface, *KKH 1*, appears in Karl Faulmann's *Das Buch der Schrift enthaltend die Schriften und Alphabete aller Zeiten und aller Völker des gesammten Erdkreises*, published in 1878 and reproduced in 1910. *KKH 1* is titled *Sikh*, and a character synopsis is provided as a table of six columns [figure 93]. Aware that the KKH was notorious for plagiarism, one was initially doubtful as to *KKH 1*'s authenticity, and the tabular method of display could have easily enabled the KKH to *fudge* the characters by carving them in wood as six line blocks, or one with six columns. However, with the later find of a KKH specimen dated 1910, the *KKH 1* has been set as a small sample of running text, and one can see that the two examples barely differ [figure 94].

The size is *Petit* (eight point), no numerals or punctuation are used. An immediate, and only⁹⁹ difference between the two is that of the superscript vowel signs, especially ੳ which now appears defined with even colour. Basic proportions of alike forms are missing, ੳ and ੳ [figure 93] and the character synopsis displays characters with a dash

⁹⁶ European foundries not to include Gurmukhi [check titles/spellings]: *Catalogue des caracterres non latines employees a l'imperiale 1892*; *Specimen des types divers de l'imprimerie nationale 1878*; *Manuale Typografico 1788*; *Oriental manuscripts purchased in Turkey 1840*; *Oratio Dominica in CCL linguas 1870*; *Orientalisch-und occidentalis cher sprachmeister welchern 1748*;

⁹⁷ Ross, Fiona. *The Printed Bengali Character and its Evolution 1999*; page 111–117

⁹⁸ Ross, Fiona. *The Printed Bengali Character and its Evolution 1999*; page 111–112

⁹⁹ A reminder that *only* a small sample is available: not enough to compile a thorough analysis.

Zeichen	Umschrift	Zeichen	Umschrift	Zeichen	Umschrift
ਅ	a	ਖ	gha	ੳ	dha
ਆ	ā	ਙ	ñ	ਨ	na
ਇ	i	ਚ	ca	ਪ	pa
ਈ	ī	ਛ	cha	ਫ	pha
ਉ	u	ਜ	ja	ਬ	ba
ਊ	ū	ਝ	gha	ਭ	bha
ਏ	e	ਞ	ña	ਮ	ma
ਐ	ai	ਟ	ṭa	ਯ	ya
ਓ	o	ਠ	ṭha	ਰ	ra
ਔ	au	ਡ	ḍa	ਲ	la
ਕ	ka	ਣ	ṇa	ਲ਼	ḷa
ਖ਼	kha	ਤ	ta	ਲ਼	ḷa
ਗ	ga	ਥ	tha	ਸ	sa
		ਦ	da	ਹ	ha
				ੜ	ṛa

Allgemeines: Pañjābī, die Sprache des „Fünfstromlandes“ im nordwestlichen Indien (16 Millionen Sprecher), wird gewöhnlich in der aus der Devanāgarī sehr frei abgeleiteten Gurmukhī-Schrift geschrieben.

Vokalbezeichnung im In- und Auslaut:

—T ā	—i e
—ī ai	—u au
—ī i	—i o
—r =	—i au
—r ā	

Grammatik:
T. F. Cummings and T. G. Bailey, Panjabi Manual and Grammar, Calcutta 1925

Figure 95. *Alphabete und Schriftzeichen des Morgen- und des...* Bundesdruckerei, Berlin 1924

ਐ ਐ
incorrect vowel bearers

ੜ ੜ
forms which should be alike, appear different where space has been added to account for the counter

more alike here, compared to their appearance in KKH's

consulted BAILEY and CUMMINGS' *Panjabi Manual and Grammar*, however the Punjabi is written in its transliterated form

beneath: either representing conjuncts, the halant or perhaps the additional dotted consonants. The half character of ਞ is combined with ਕੌ resulting in a compressed, almost illegible form. The consonant conjunct ਕੌ is an exaggerated cursive form, likely borrowed [figure 93].

Der Reichsdruckerei, Berlin

Reichsdruckerei was founded in 1876, yet a Gurmukhi typeface did not appear until Reichsdruckerei's 1924 specimen (re-printed in 1969), *Alphabete und Schriftzeichen des Morgen- und des Abendlandes*. A table of three columns display a set of Gurmukhi characters, DRB 1. One would have the same assumptions with DRB 1 as one had with KKH 1 regarding the authenticity of design and impression. However, it appears that the majority of characters are identical, and with different structures to their tables it is likely that the characters were metal [figure 95].

Comparing directly with KKH 1, numerous differences occur with their design and transliteration system [figure 95]: the general impression is darker, resulting in poorer legibility; the likelihood of too much ink or pressure on the press. The character synopsis is smaller, missing the ten characters suspected to represent the additional sounds. It has composed base character-consonant conjunct combinations and no numerals. The vowel signs are alike and they represent the second example of KKH 1, as the vowels appear with stronger form. Four characters, ਕ; ਜ; ਢ and ਢ, have evolved dramatically: increasing in size, the forms are crude, and generally appear out of place. ਐ and ਐ appear over incorrect vowel bearers [see *The writing system*; page 17], indicating that this table had been composed by someone without knowledge of the Punjabi language [figure 95].

Hot metal to early digital type¹⁰⁰

The end of the nineteenth century saw the transition from hand-composed type to that composed by a machine. There are two predominant systems to consider: *the Monotype* system developed by Tolbert Lanston and J. S. Bancroft in 1890 and the *Linotype* system of 1885, developed by Ottmar Mergenthaler. The introduction of these machines improved the speed and cost of the manufacturing process, but they also caused constraints of their

¹⁰⁰ For further reading see: SOUTHALL, Richard *Printer's type in the twentieth century* 2005

Figure 96. Gurmukhi Bold 601: MONOTYPE CORPORATION Specimen book of Monotype non-Latin faces Redhill 1963 [scale 50%].

pre-composed characters are supplies
only one half-form character
this character combines with ੲ, to make the Ek Onkar symbol

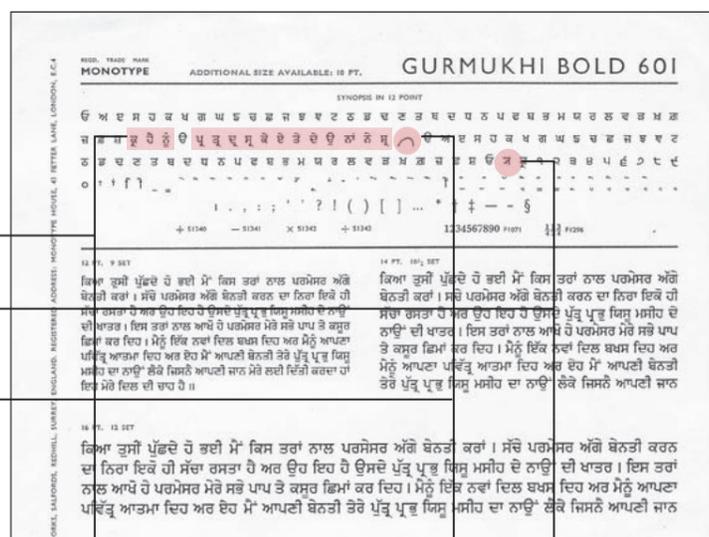
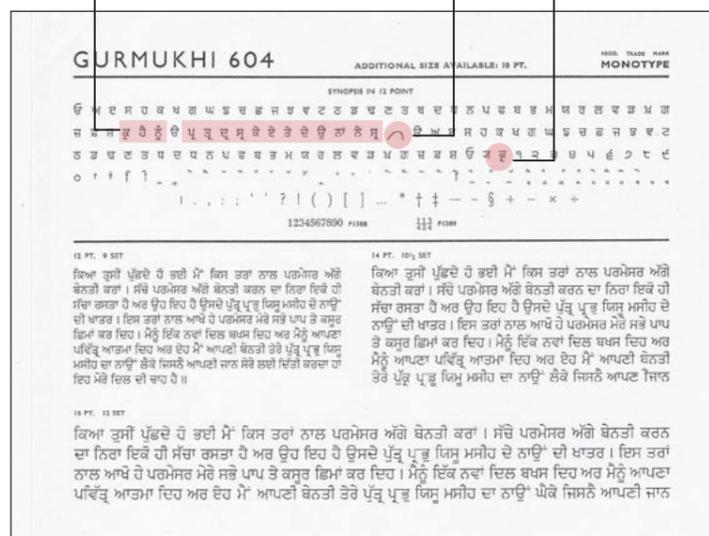
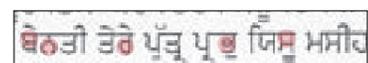


Figure 97. Gurmukhi Light 604: MONOTYPE CORPORATION Specimen book of Monotype non-Latin faces Redhill 1963 [scale 50%].

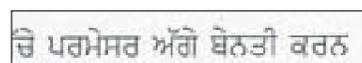
illustrations below refer to bot MTC 1a and MTC 1b, using the 16pt type



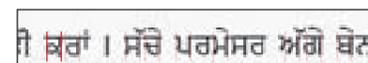
knots are small and match stroke weight



counter size is balanced



typesetting is neat, with minor gaps



character widths are controlled



vowels are open and do not join headline



vowels signs share proportions and weight

own. The following sub-chapter provides a brief description of each system and development, but predominantly describes the design of the typeface, and when necessary the technical details will be mentioned. To discuss the processes in any greater detail would be beyond this dissertation.

Also, one should note that an entire process has been skipped, *film-setting*.¹⁰⁰ No evidence was found, unless misinterpreted, to suggest that any of the Gurmukhi typefaces analysed used this process (which occurred between hot metal and early digital). Monotype were contacted regarding their Gurmukhi versions, as one is aware that their other non-latin typefaces existed in this format, but no response was received.

Monotype Gurmukhi

The Monotype system consisted of two components, a *keyboard* that punched character codes into a paper ribbon, which drove the *casting machine*, consisting of a matrix case holding the matrixes (metal sorts), with an equal number in each row/column. Type, composed as individual characters meant that kerning could still occur, reminiscent of the akhand typesetting method.¹⁰¹

The first Monotype Gurmukhi typefaces can be found in the *Specimen book of 'Monotype' non-Latin faces*, dated 1963. Titled *Gurmukhi Bold 601* and *Gurmukhi Light 604*, referred to as *MTC 1a* and *MTC 1b* respectively. They are essentially of the same design, just a variation in weight [figures 96 and 97]. The character set is large, a possibility with the Monotype system as the matrix cases were of two standard sizes, the smallest of capacity was sufficient for Gurmukhi, providing space for a maximum of 225 characters. The MTC 1a and MTC 1b were comprised of 183 characters: along with the basic synopsis were a wide variety of composed conjuncts, along with their base characters or superscript vowels, numerals both Gurmukhi and Arabic and the inclusion of standard Latin punctuation.

The texture is balanced: knots have enough colour, and are not a distraction. Counters are large, and legibility is just as successful in MTC 1a as it is in MTC 1b. The typesetting is neat, both headline and baseline run smoothly, with only minor gaps when considered at a close proximity [figure 98]. Kerning is visible with the vowels ੰ and ੱ, their top strokes are open. There seem to be no discrepancies regarding diacritics clashing, (at least not in the sample provided). The vowel sign ੰ which has frequently appeared oversized, now fits within the width of the base



Figure 98. Gaps are still visible with the machine composed type MONOTYPE CORPORATION Specimen book of Monotype non-Latin faces Redhill 1963 [scale 300%].

¹⁰¹ TRACY, Walter *Letters of Credit* 1986; page 39

Figure 102. Screenshot displaying Monotype's current Gurmukhi typeface of three weights: *monotypeimaging.com*



the current Monotype Gurmukhi typefaces appear to share the same design as MTC 2

light
new middle-weight
bold



ITR Kabel
ਪੰਜਾਬ ਦੇ ਜ਼ਿਲਾ ਹੁਸ਼ਿਆਰਪੁਰ ਵਿਚ ਟਾਂਡਾ ਨੇੜੇ
ਪੰਜਾਬ ਦੇ ਜ਼ਿਲਾ ਹੁਸ਼ਿਆਰਪੁਰ ਵਿਚ ਟਾਂਡਾ ਨੇੜੇ
ਪੰਜਾਬ ਦੇ ਜ਼ਿਲਾ ਹੁਸ਼ਿਆਰਪੁਰ ਵਿਚ ਟਾਂਡਾ ਨੇੜੇ

ITR Mahan
ਪੰਜਾਬ ਦੇ ਜ਼ਿਲਾ ਹੁਸ਼ਿਆਰਪੁਰ ਵਿਚ ਟਾਂਡਾ ਨੇੜੇ
ਪੰਜਾਬ ਦੇ ਜ਼ਿਲਾ ਹੁਸ਼ਿਆਰਪੁਰ ਵਿਚ ਟਾਂਡਾ ਨੇੜੇ
ਪੰਜਾਬ ਦੇ ਜ਼ਿਲਾ ਹੁਸ਼ਿਆਰਪੁਰ ਵਿਚ ਟਾਂਡਾ ਨੇੜੇ

ITR Manohar
ਪੰਜਾਬ ਦੇ ਜ਼ਿਲਾ ਹੁਸ਼ਿਆਰਪੁਰ ਵਿਚ ਟਾਂਡਾ ਨੇੜੇ
ਪੰਜਾਬ ਦੇ ਜ਼ਿਲਾ ਹੁਸ਼ਿਆਰਪੁਰ ਵਿਚ ਟਾਂਡਾ ਨੇੜੇ
ਪੰਜਾਬ ਦੇ ਜ਼ਿਲਾ ਹੁਸ਼ਿਆਰਪੁਰ ਵਿਚ ਟਾਂਡਾ ਨੇੜੇ

ITR Nilesh
ਪੰਜਾਬ ਦੇ ਜ਼ਿਲਾ ਹੁਸ਼ਿਆਰਪੁਰ ਵਿਚ ਟਾਂਡਾ ਨੇੜੇ
ਪੰਜਾਬ ਦੇ ਜ਼ਿਲਾ ਹੁਸ਼ਿਆਰਪੁਰ ਵਿਚ ਟਾਂਡਾ ਨੇੜੇ
ਪੰਜਾਬ ਦੇ ਜ਼ਿਲਾ ਹੁਸ਼ਿਆਰਪੁਰ ਵਿਚ ਟਾਂਡਾ ਨੇੜੇ

ITR Ranjit
ਪੰਜਾਬ ਦੇ ਜ਼ਿਲਾ ਹੁਸ਼ਿਆਰਪੁਰ ਵਿਚ ਟਾਂਡਾ ਨੇੜੇ
ਪੰਜਾਬ ਦੇ ਜ਼ਿਲਾ ਹੁਸ਼ਿਆਰਪੁਰ ਵਿਚ ਟਾਂਡਾ ਨੇੜੇ
ਪੰਜਾਬ ਦੇ ਜ਼ਿਲਾ ਹੁਸ਼ਿਆਰਪੁਰ ਵਿਚ ਟਾਂਡਾ ਨੇੜੇ

ITR Vijay
ਪੰਜਾਬ ਦੇ ਜ਼ਿਲਾ ਹੁਸ਼ਿਆਰਪੁਰ ਵਿਚ ਟਾਂਡਾ ਨੇੜੇ
ਪੰਜਾਬ ਦੇ ਜ਼ਿਲਾ ਹੁਸ਼ਿਆਰਪੁਰ ਵਿਚ ਟਾਂਡਾ ਨੇੜੇ
ਪੰਜਾਬ ਦੇ ਜ਼ਿਲਾ ਹੁਸ਼ਿਆਰਪੁਰ ਵਿਚ ਟਾਂਡਾ ਨੇੜੇ

ITR Yogesh
ਪੰਜਾਬ ਦੇ ਜ਼ਿਲਾ ਹੁਸ਼ਿਆਰਪੁਰ ਵਿਚ ਟਾਂਡਾ ਨੇੜੇ
ਪੰਜਾਬ ਦੇ ਜ਼ਿਲਾ ਹੁਸ਼ਿਆਰਪੁਰ ਵਿਚ ਟਾਂਡਾ ਨੇੜੇ
ਪੰਜਾਬ ਦੇ ਜ਼ਿਲਾ ਹੁਸ਼ਿਆਰਪੁਰ ਵਿਚ ਟਾਂਡਾ ਨੇੜੇ

Figure 103. Current ITR Gurmukhi type faces offered through *monotypeimaging.com*

Figure 104. Text & display type faces: Gurmukhi ITR Pune, India [scale 50%].

Research), Pune, India. They vary immensely in style from that of the Monotype Gurmukhi, and would probably suit a display-setting rather than text-setting [figure 104]. Reference to the introduction of ITR to Monotype's catalogue can be found online.¹⁰⁴ An earlier specimen for ITR shows a different range of Gurmukhi typefaces, yet still of the same *display* quality. The date of this specimen is unknown [figure 106].

Linotype Gurmukhi

The Linotype system consisted of four components, 'a keyboard, a magazine containing matrices, a casting and a distributing mechanism.'¹⁰⁵ In comparison to the Monotype system, it was now possible to set type as an entire line rather than individual characters. The combination of previous separate methods such as casting and typesetting into one system meant that the production rate was increased. However, it became evident that the system was not suited to the complicated nature of non-Latin scripts, such as Devanagari and Bengali, regarding the difficulty of kerning numerous subscript and superscript characters.¹⁰⁶ Non-Latin scripts required refining, resulting 'with what was to become acceptable as legible typography.'¹⁰⁷

There seems no evidence that a *hot-metal* Gurmukhi typeface existed.

The first Linotype Gurmukhi typeface, *LTG 1*, appears as an early digital format. 'Developed in conjunction with Tribune Trust Publications in Chandrighar, it is available in Light and Bold for the Linotron 202.'¹⁰⁸ Held in the Linotype collection, in the Typography Department at the University of Reading, are the original drawings and correspondences to-and-fro between the designers and the Tribune Trust; much of the process can be traced through these papers, dated from as early as 1984.

Linotype Gurmukhi Light and Bold, LTG 1a and LTG 1b respectively were designed by Fiona Ross, Georgina Surman & Donna Yandle. The character synopsis is substantial, supporting all of the necessary characters plus extra: a benefit of digital technology meant that a character synopsis need not be constrained to a particular figure [figure 105; page 74].

The design is very much a revival, 'based on traditional foundry

¹⁰⁴ http://findarticles.com/p/articles/mi_moEIN/is_2001_March_12/ai_71554955
¹⁰⁵ Ross, Fiona. *The Printed Bengali Character and its Evolution* 1999; page 135
¹⁰⁶ Ross, Fiona *Non-Latin Type Design at Linotype* 2003; page 3
¹⁰⁷ Ross, Fiona. *The Printed Bengali Character and its Evolution* 1999; page 135
¹⁰⁸ LINOTYPE 'New non-Latin fonts : Gurmukhi' *Linotype expressissue no. 7* 1985; page 7

Linotype Gurmukhi

ੳ ਅ ਏ ਸ ਹ ਕ ਖ ਗ ਘ ਙ ਚ ਛ ਜ
 ਝ ਞ ਟ ਠ ਡ ਢ ਣ ਠ ਡ ਢ ਣ ਠ ਡ ਢ ਣ
 ਫ ਬ ਭ ਮ ਯ ਰ ਲ ਵ ਝ
 ਸ਼ ਖ਼ ਗ਼ ਜ਼ ਫ਼
 ਅ ਆ ਇ ਈ ਉ ਊ ਏ ਐ ਓ ਔ ਅੰ
 ੴ ੲ ੳ ੴ ੲ ੳ ੴ ੲ ੳ ੴ ੲ ੳ ੴ
 + - × ÷ = % Rs £ \$ | ~ °
 ! ? — , . () [] / * † §

ਵਰਣਮਾਲਾ

Linotype 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 Linotype-Hell system software. Linotype and Hell are registered trademarks of Linotype-Hell AG and/or its subsidiaries. Linotype Gurmukhi is a trademark of Linotype-Hell AG and/or its subsidiaries.

ਲਾਇਨੋਟਾਇਪ ਗੁਰਮੁਖੀ



LIGHT

ਪਿਛਲੇ ਦਿਨੀਂ ਕੇਂਦਰੀ ਕਾਨੂੰਨ ਮੰਤਰੀ ਜਗਨ ਨਾਥ ਕੋਸ਼ਲ 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

ਪਿਛਲੇ ਦਿਨੀਂ ਕੇਂਦਰੀ ਕਾਨੂੰਨ ਮੰਤਰੀ ਜਗਨ ਨਾਥ ਕੋਸ਼ਲ ਨੇ ਲੋਕ ਸਭਾ ਵਿਚ ਇਕ ਸਵਾਲ ਦਾ ਜਵਾਬ ਦਿੰਦਿਆਂ ਇਹ ਕਿਹਾ ਸੀ ਕਿ ਸਰਕਾਰ ਪੂਰੀ ਗੰਭੀਰਤਾ ਨਾਲ ਚੋਣਾਂ ਵਿਚ ਲੋੜੀਂਦੇ ਸੁਧਾਰ ਕਰਨ ਬਾਰੇ ਵਿਚਾਰ

ਪਿਛਲੇ ਦਿਨੀਂ ਕੇਂਦਰੀ ਕਾਨੂੰਨ ਮੰਤਰੀ ਜਗਨ ਨਾਥ ਕੋਸ਼ਲ ਨੇ ਲੋਕ ਸਭਾ ਵਿਚ ਇਕ ਸਵਾਲ ਦਾ ਜਵਾਬ ਦਿੰਦਿਆਂ ਇਹ ਕਿਹਾ ਸੀ ਕਿ ਸਰਕਾਰ ਪੂਰੀ ਗੰਭੀਰਤਾ

BOLD

ਪਿਛਲੇ ਦਿਨੀਂ ਕੇਂਦਰੀ ਕਾਨੂੰਨ ਮੰਤਰੀ ਜਗਨ ਨਾਥ ਕੋਸ਼ਲ ਨੇ ਲੋਕ ਸਭਾ ਵਿਚ ਇਕ ਸਵਾਲ ਦਾ ਜਵਾਬ ਦਿੰਦਿਆਂ ਇਹ ਕਿਹਾ ਸੀ ਕਿ ਸਰਕਾਰ ਪੂਰੀ ਗੰਭੀਰਤਾ ਨਾਲ ਚੋਣਾਂ ਵਿਚ ਲੋੜੀਂਦੇ ਸੁਧਾਰ ਕਰਨ

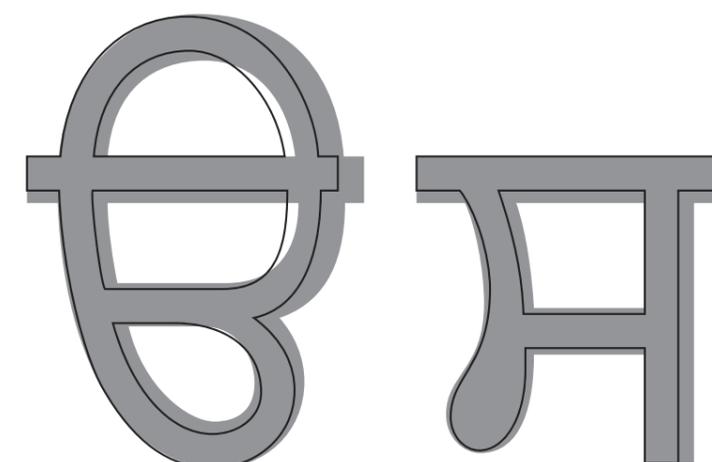
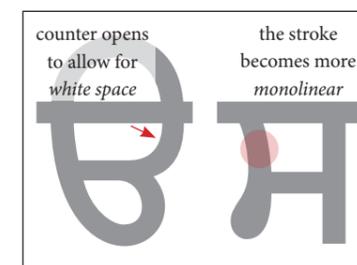
ਪਿਛਲੇ ਦਿਨੀਂ ਕੇਂਦਰੀ ਕਾਨੂੰਨ ਮੰਤਰੀ ਜਗਨ ਨਾਥ ਕੋਸ਼ਲ ਨੇ ਲੋਕ ਸਭਾ ਵਿਚ ਇਕ ਸਵਾਲ ਦਾ ਜਵਾਬ ਦਿੰਦਿਆਂ ਇਹ ਕਿਹਾ ਸੀ ਕਿ ਸਰਕਾਰ ਪੂਰੀ ਗੰਭੀਰ

◀ Figure 105. Linotype specimen and synopsis for the 1985, early digital typeface.

types.¹⁰⁹ It was not a *revival* of any one particular typeface but rather an improvement upon the features which had been successful during the end of the nineteenth and early twentieth centuries: possibly taking into consideration previous designs such as GTF's, SAS 3 and MTC 1 typefaces which were reaching standards that are visible in LTG 1.

The two designs, LTG 1a and LTG 1b, are very much alike and differ only by weight. The large, open counters are a benefit to the bold weight of LTG 1a, ensuring that legibility is not lost if used at smaller sizes [figure 106]. Consistency is the prominent feature of LTG 1, and is clearly visible when regarding the proportions, which benefit from the consistent use of recurring forms [figure 107; page 76]; widths have been controlled, along with the height and depth of vowel signs; and the monolinear stroke is accompanied by 'swelling vowel signs, which imbue it with liveliness,'¹¹⁰ [figure 108]. Attention to typesetting was improved with the capabilities of specialised software, designed specifically with consideration for the correct placement of superscript and subscript vowel signs. Alterations and decisions made can be seen amongst the drawings in the Linotype Collection [figure 109; page 76].

Figure 106. Comparing Linotype's Gurmukhi *light* (outline) and *bold* (solid) weights: considering the bold (below), it is visible that their forms do not vary much:



In 1992 Linotype Gurmukhi Light and Bold were revised and released using the PostScript technology. The new technology meant an increase in resolution size, resulting in improved quality of outlines.

¹⁰⁹ Linotype Gurmukhi character specimen/synopsis; loose-leaf
¹¹⁰ Linotype Gurmukhi character specimen/synopsis; loose-leaf

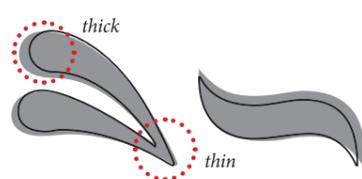
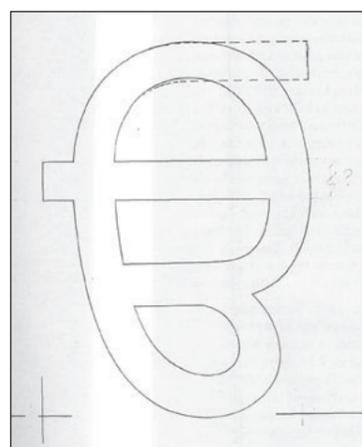
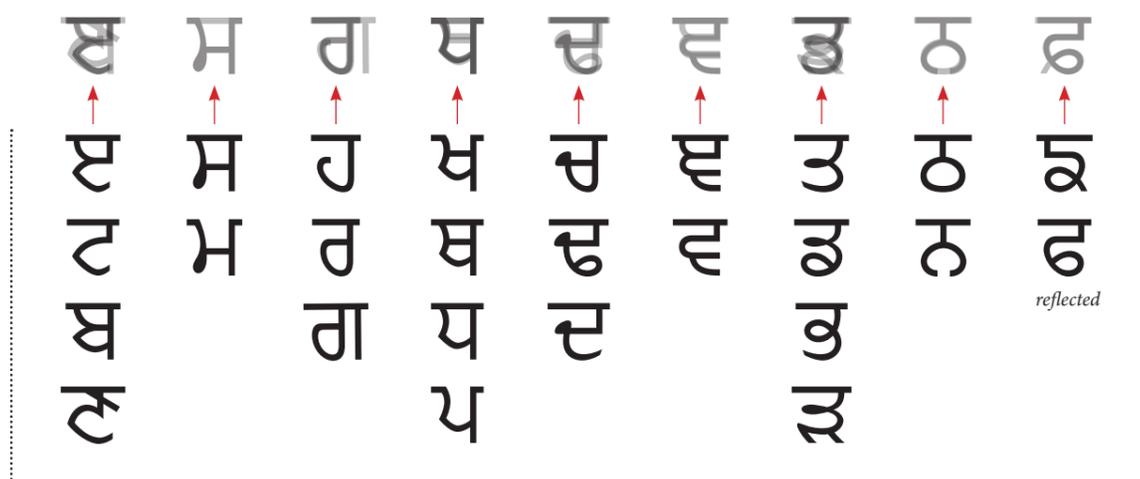


Figure 108. The vowel signs for Linotype Gurmukhi appear with stroke contrast to add colour and movement to the page: there is very little difference between the light (outline) and bold (solid) variants.

Figure 107. The Linotype Gurmukhi characters can be divided into ten groups: nine of which are formed of characters which share an alike feature (above the dotted line), whereas the tenth group consists of nine characters which do not fit amongst the others. Above the arrows are each character from the nine groups overlaid, highlighting the common feature, through the density of its occurrence.

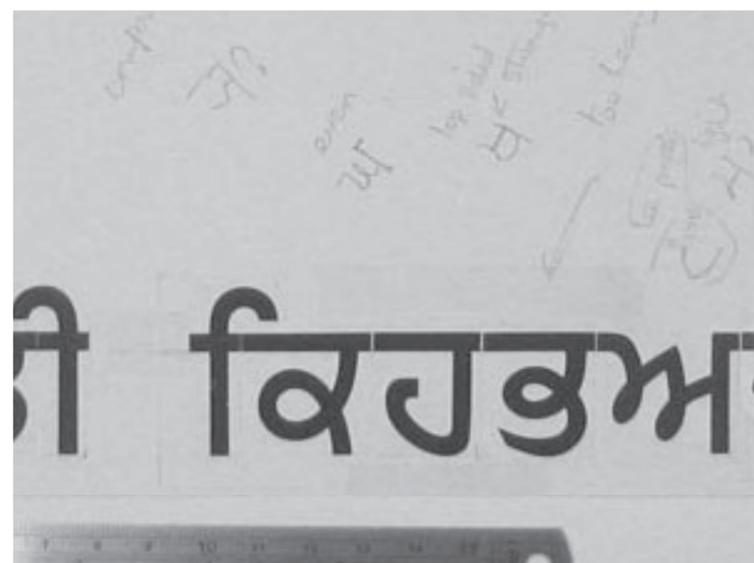


Figure 109. An examples of a paste-up from the Linotype Collection, in which the typesetting is considered by pasting printed characters together and make alterations by hand first.

Digital type: Unicode and OpenType features

With the introduction of digital typeface design in the 1980's, the entire method of production changed from what had been a process of combined efforts in the nineteenth and early twentieth centuries to a process which one could approach single-handedly; feasible for those whom were and are not professional designers.

Each technology development has improved the design process and introduced new constraints which were considered and, more than often, rectified. The digital revolution is no different. Positive aspects have been the introduction of the Unicode standard, and the application of the OpenType font format:

ABVM. This feature positions all above-base marks on the base glyph or the dependant vowel.



BLWM. This feature positions all below-base marks on the base glyph.



VATU. Vattu variants are formed when combining consonants with the vattu mark. Vattu ligatures can be either half or full form, and fonts must contain both.



Figure 110. Above are three examples, out of a possible twelve OpenType features for the Gurmukhi script: www.microsoft.com

The Unicode standard¹¹¹

Introduced in the 1991, by the Unicode Consortium, who created a system by which all scripts could be organised and identified in defined groups. Scripts are assigned a range of numerals and each character is given its own numerical value, creating a system which functions universally across computer systems and software.

The Gurmukhi Unicode range is between 0A00–0A7F [see Appendix; page 110] and consists of 77 characters, covering the majority of the writing system, along with the addition of the pre-composed vowel-bearers and vowel-sign combinations. However, it seems odd not to have included the Gurmukhi punctuation marks as a standard.

By means of the Unicode Consortium, additions or alterations to the Unicode tables can be proposed within reason; a process which takes time and consideration. A proposal was made by the Technology Development for Indian Languages (TDIL), for the introduction of the punctuation marks: changes which are awaiting acceptance [see Appendix; page 111].

The OpenType font format¹¹²

The OpenType font format was developed by Microsoft and Adobe in 1996 and is based upon the Unicode system, enabling the combination of multiple scripts in any one typeface. A typeface including OpenType 'enables support for ligatures, positional forms, alternates, and other substitutions,'¹¹³ particularly beneficial for non-Latin scripts [figure 110].

¹¹¹ <http://www.unicode.org/>

¹¹²⁻¹¹³ <http://www.microsoft.com/typography/otfntdev/intro.htm> and <http://www.adobe.com/type/opentype/>

Figure 111. Specimen of Arial Unicode: Gurmukhi: ascendercorp.com [scale 50%]

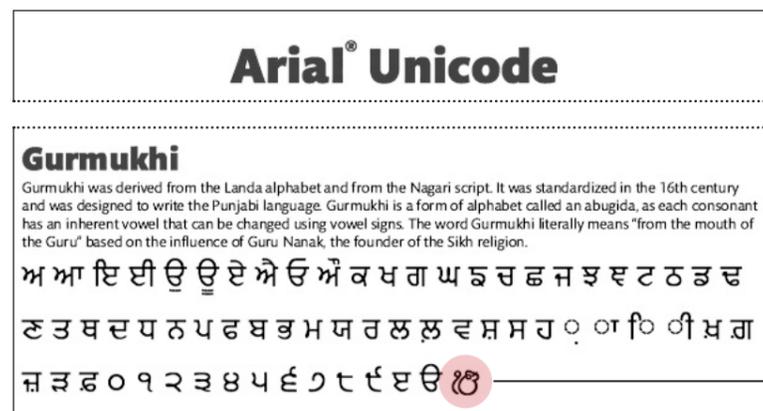
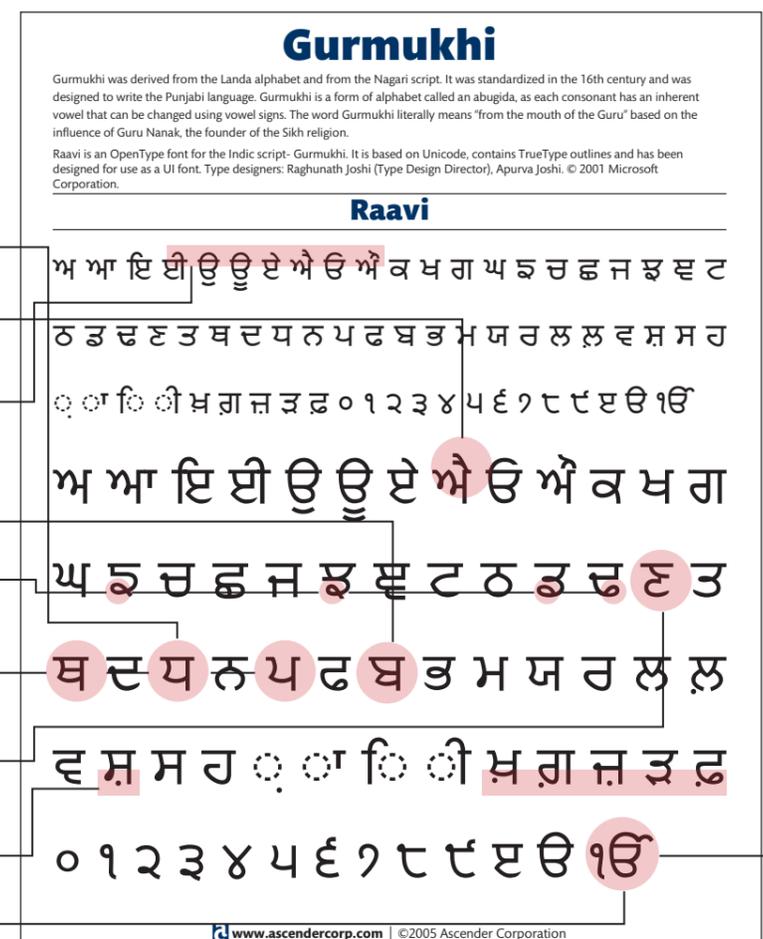


Figure 112. Specimen of Ascender Corporation's Raavi: ascendercorp.com [scale 50%]

- the base characters show some resemblance to the VJF 1 typeface: form and wide proportions
- vowel signs are geometric
- vowel signs vary between joining and not joining the headline
- proportions are not always balanced
- small counters
- consistency appears where general forms are repeated
- peculiar that the initial stroke from the headline consumes half of the base-character's proportions, normally smaller
- dots appear inconsistent
- unusual Ek Onkar symbol exist in both



5	6	7	8	9	10	11	12	
"	#	%	&	'	()	*	
7	18	19	20	21	22	23	24	25
'	0	1	2	3	4	5	6	7
0	31	32	33	34	35	36	37	38
:	=	>	?	@	[\]	^
3	44	45	46	47	48	49	50	51
...	-	-	-	-	-	-	-	-

Font - Raavi [/AscenderC

0	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
+	.	-	.	.	0	1	2	3	4	5	6	7
26	27	28	29	30	31	32	33	34	35	36	37	38
8	9	:	:	:	=	>	?	@	[\]	^
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	132	133	134	135	136	137	138	139	140	141	142
␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣
143	144	145	146	147	148	149	150	151	152	153	154	155
␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣
156	157	158	159	160	161	162	163	164	165	166	167	168
␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣
169	170	171	172	173	174	175	176	177	178	179	180	181
␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣
182	183	184	185	186	187	188	189	190	191	192	193	194
␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣
195	196	197	198	199	200	201	202	203	204	205	206	207
␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣
208	209	210	211	212	213	214	215	216	217	218	219	220
␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣
221	222	223	224	225	226	227	228	229	230	231	232	233
␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣
234	235	236	237	238	239	240	241	242	243	244	245	246
␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣
247	248	249	250	251	252	253	254	255	256	257	258	259
␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣
260	261	262	263	264								
␣	␣	␣	␣	␣								

Figure 113. Raavi's entire synopsis contains 264 characters, 45 of which are Latin based: arabic numerals and basic punctuation.

A negative aspect of the digital era is plagiarism. A result of growth in software development with the combined possibilities of the internet: only so much control can be provided with a copyright licence, and not enough to stop illegal adaptation and distribution of typefaces. Unsure of their whereabouts, it is not uncommon to come across an identical design under alternate names and supplied from various locations. With this in mind, the following sub-chapters describes three digital designs briefly.

Ascender Corporation: Raavi

Ascender Corporation display two Gurmukhi fonts on their online catalogue, Arial and Raavi¹¹⁴ [figures 111 and 112]. A discussion, via email with Ali Basit, one was informed that 'Microsoft only ships one font Raavi with Gurmukhi support.'¹¹⁵ For this reason, Raavi is discussed alone.

Designed by Raghunath Joshi and Apurva Joshi, the exact date for Raavi's creation is unknown. Basit mentioned that he 'inherited the ownership of the Indic fonts a few years ago...and that Raavi had been licenced more than ten years ago', with this in mind, one will apply a circa date of around the end of the nineties.

Raavi is an OpenType font, 'targeted for the screens used in today's digital world.'¹¹⁶ The character synopsis consists of approximately 265 characters, which is substantially larger than the Unicode standard, supplying extra characters such as the Arabic numerals and Gurmukhi punctuation marks [figure 113].

A firm monolinear design supports the moderately proportioned characters; possibly a little wide. Most follow the general practice of repeated forms, encouraging consistency as seen in LTG. A few characters break the consistency with uneven counter sizes: ਛ, ਝ and ਓ. The Ek Onkar is extremely subtle: the top stroke normally appears overly exaggerated, especially so in handwritten manuscripts. The vowels vary between connecting and not connecting to the headline, and the dots of the additional dotted consonants appear at different positions: distracting when seen together [figure 112].

¹¹⁴ http://www.ascendercorp.com/msfonts/msfonts_southasian.html#Gurmukhi
¹¹⁵ Ali Basit, program Manager at Microsoft responsible for Indic, minority script and Latin Advance reading fonts. Email 20th August 2008
¹¹⁶ <http://www.ascendercorp.com/legibility.html>

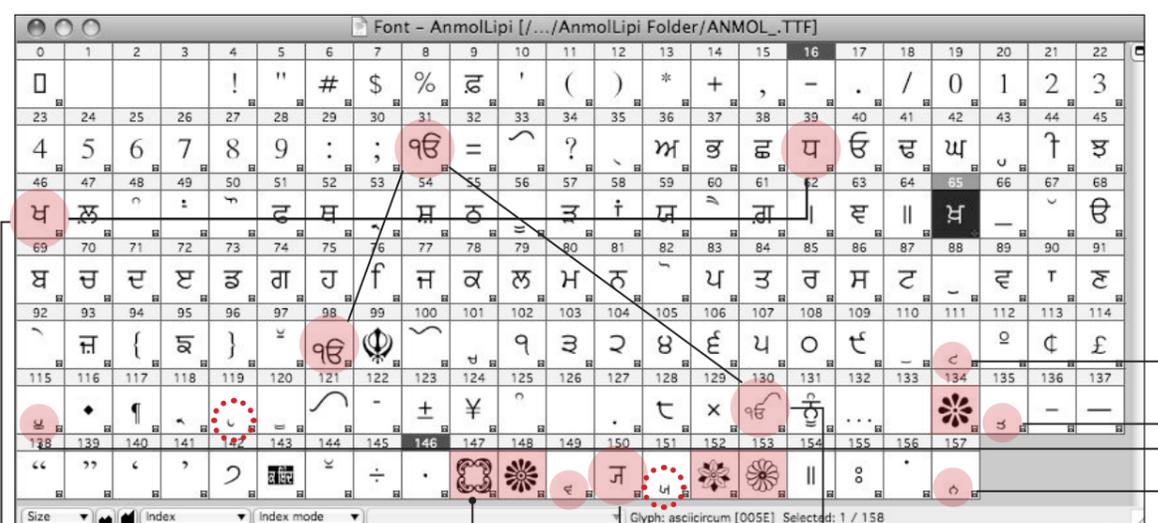


Figure 115. Character synopsis for AnmolLipi

- consistency does not always exist
- floral ornaments seem out-of-place
- a peculiar conjunct is provided of the normal half-form
- various alternates for the Ek Onkar
- unusual consonant conjuncts have been provided

Figure 116. Screenshots from *FontLab Studio*: the lines are of good quality and are constructed with few points which provides a cleaner line, unlike the design of Saab's characters [see figure 119; page 83].

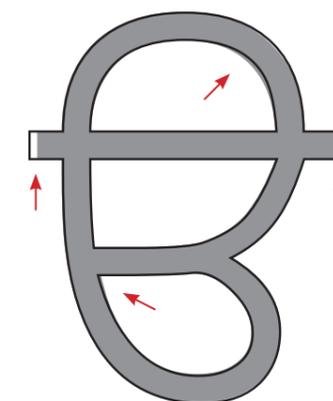
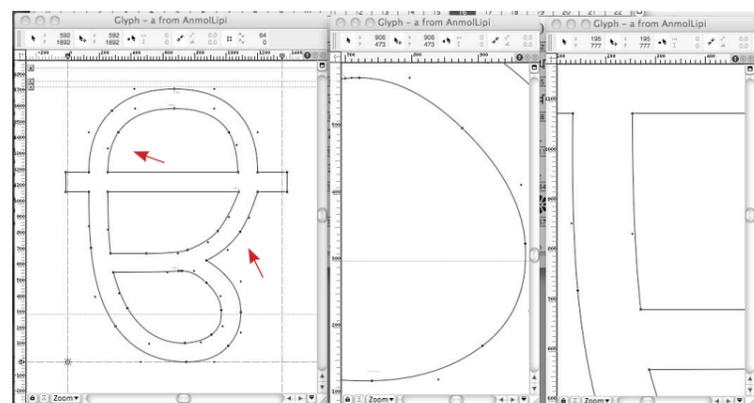


Figure 114. A comparison between *GurbaniLipi* (solid) and *AnmolLipi* (outline). The red arrows denote their minute differences.

Dr K. S. Thind: *GurbaniLipi* and *AnmolLipi*

GurbaniLipi and *AnmolLipi*, referred to as *GL* and *AL* respectively, are almost identical digital typefaces: one could assume that which ever had been the first design of the two, could have then been manipulated, ever so slightly to *create* the other [figure 114]. With a character synopsis of approximately 200, their main differences are their intended purposes: *GL* is used for traditional texts, the user is provided with Gurmukhi numerals; *AL* is aimed at everyday use, with Arabic numerals and a variety of weights.

Designed by *Dr K. S. Thind* in the early 1990's, they are freely distributed and can be sourced from numerous online locations, and are of great preference by users.¹¹⁷ Thind has since adapted *AL*, introducing the Unicode standard and under a new name of *AnmoUni*. As *GL* and *AL* are very much alike, *AL* will only be considered in this analysis [figure 115]:

In a discussion via email, Thind explained that existing materials, such as books had initially been evaluated and that 'Gurmukhi fonts tend to be monolinear' with no further explanation with regards to why. The quality of drawing is adequate, a few minor bumps, but Thind expresses a moderate understanding for constructing characters in the digital format [figure 116]. The character synopsis includes some peculiar additions: floral ornaments and Arabic numerals, which have a high stroke contrast, suggesting that they may have been sourced from another typeface, as they share no relation to the design of the Gurmukhi characters. Three variants for the Ek Onkar symbol are provided, one of which has a similar terminal ending to the VJF design. Overall, there is little consistency between the common repeated forms [figure 115].

Punjabi Computing Resource Centre: *Saab*

'*Saab*¹¹⁸ is the first ever freely available, Unicode 4.0 compliant, Open-Type, Gurmukhi font,' designed by Bhupinder Singh, with technical support from Sukhjinder Sidhu,¹¹⁹ completed in 2004 [figure 117; page 82]. Models used were Microsoft's Raavi [see *Digital type*; page 79], the Unicode chart [see *Appendix J*; page 110] and Dr. Kulbir S. Thind's Anmol Lipi [see *Digital type*; page 81].

¹¹⁷ When the author asked the Sewader of the SMS which digital font he used, AnmolLipi was of preference due to its free cost and satisfactory character synopsis. There seemed no concern regarding the *design* and *quality* of it, as 'it does the job'.

¹¹⁸ <http://guca.sourceforge.net/typography/fonts/saab/>

¹¹⁹ Sukhjinder Sidhu currently works with Thind, providing technical support for his designs.

Conclusion

The Gurmukhi script has made a clear development from the early nineteenth century metal types to its contemporary digital format. The most prominent being that of a standardisation of the characters' proportions and repeated forms, achieving consistency and balance [see *Linotype Gurmukhi*; page 76]. Surprisingly, the *standardisation* took some time, where one would have expected such a method to have been implicated earlier, providing a solution to saving materials etc. resulting in cheaper production. Rather than to swap and borrow characters between other typefaces, they could have been achieved by sharing alike forms within one script.

Through this process there has been a reduction of the traditional handwritten qualities that were once visible in the first metal types, a feature that only ever occurred with a small selection of characters. The Oxford University Press' typeface was the unique, with the handwritten quality overtly evident in all characters: a peculiarity that had very little presence throughout the research. Without the preliminary investigation of the Gurmukhi's traditional and contemporary written forms one could not have deciphered many of the early representations of the various characters and combinations. Highlighting the importance of such research, can suggest the *choices* made for the early designs. One is aware that there may be occasions of incorrect judgement regarding particular characters; therefore an understanding of the Punjabi language and Gurmukhi script would have been of great use.

The Gurmukhi characters are very much of a monolinear fashion, a characteristic which had been predominantly visible in the handwritten manuscripts, and is in existence in the contemporary digital format. One is still unclear with regards to which tool and method had been utilised, yet with further investigation one would hope to decipher this so that the transition between paper and screen could be understood a little more.

Technology has evolved immensely over the past four centuries, yet it has not had a great effect upon the design of the Gurmukhi script. It seems to have steadily evolved between each transition, improving the typesetting at each point. No reference has been found to suggest that there had been a *film-set* Gurmukhi typeface, further investigation could be made.

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Mss Panj. C6; 1930 British Library
Mss Panj. D4 British Library
Or. 16352 British Library
Or. 2754; 19th century British Library
Or. 2759 British Library

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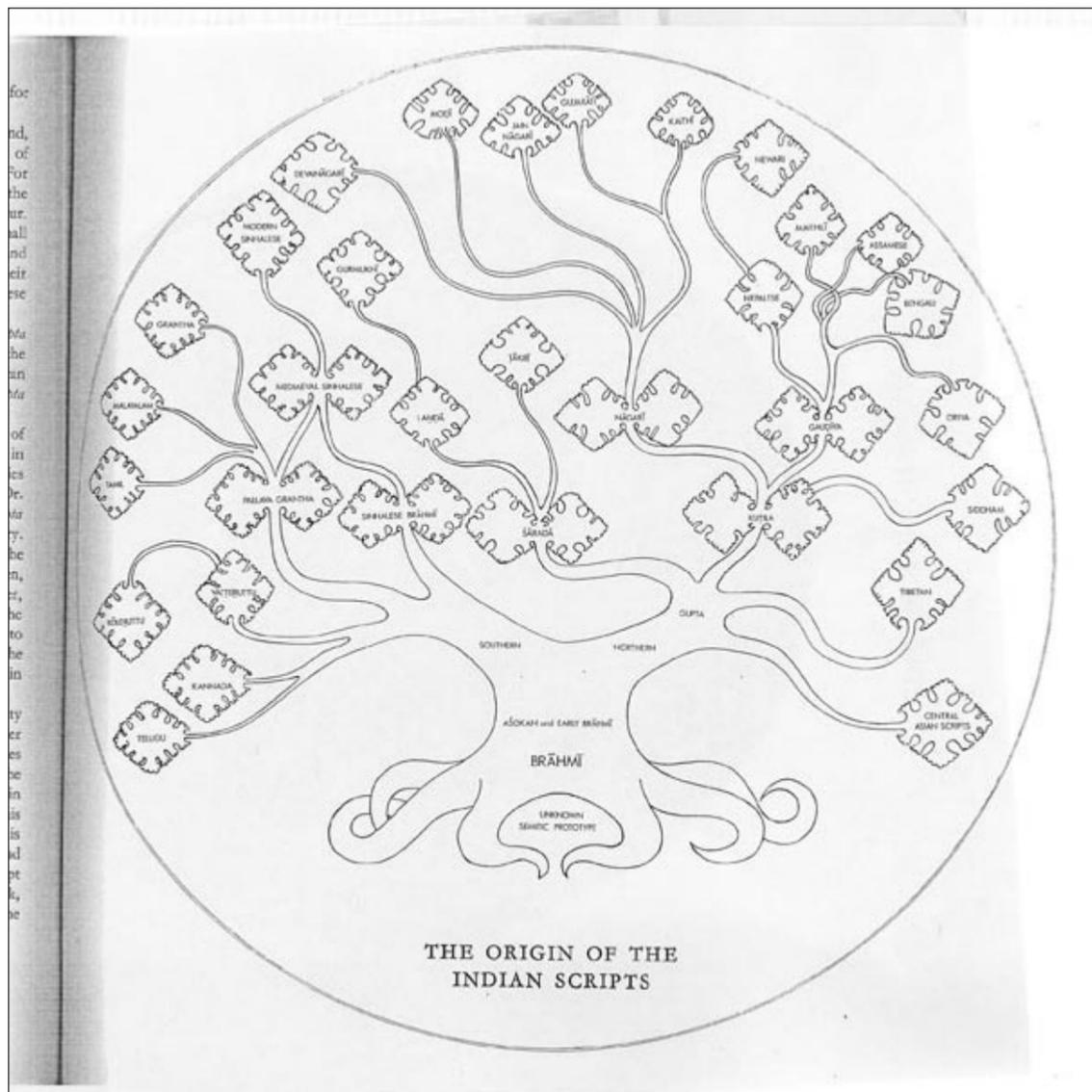
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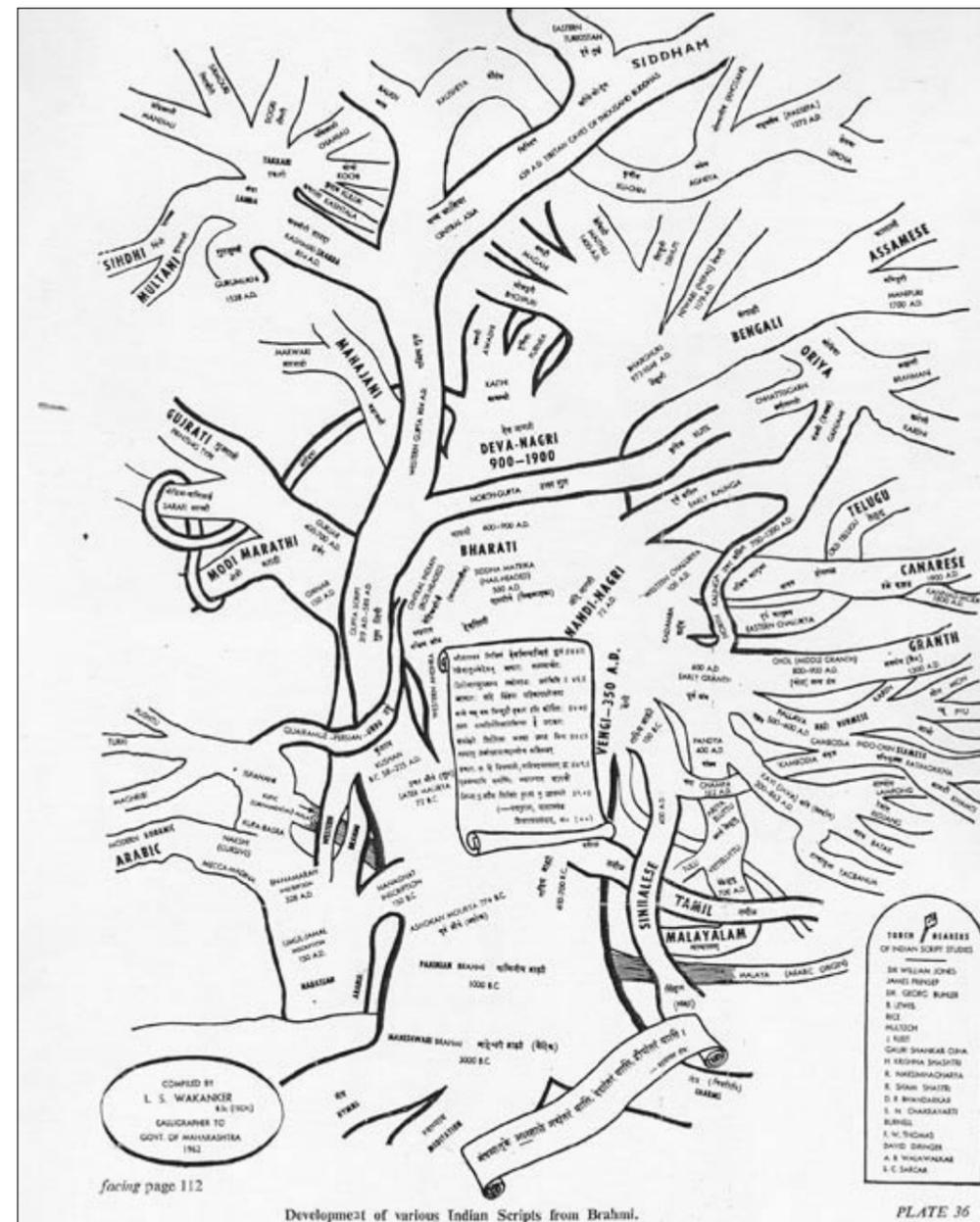
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Appendix

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Appendix A. HOSKING, R. F. and MEREDITH-OWENS, G. M. eds. *A Handbook of Asian Scripts* British Museum, London 1966 [scale 75%]



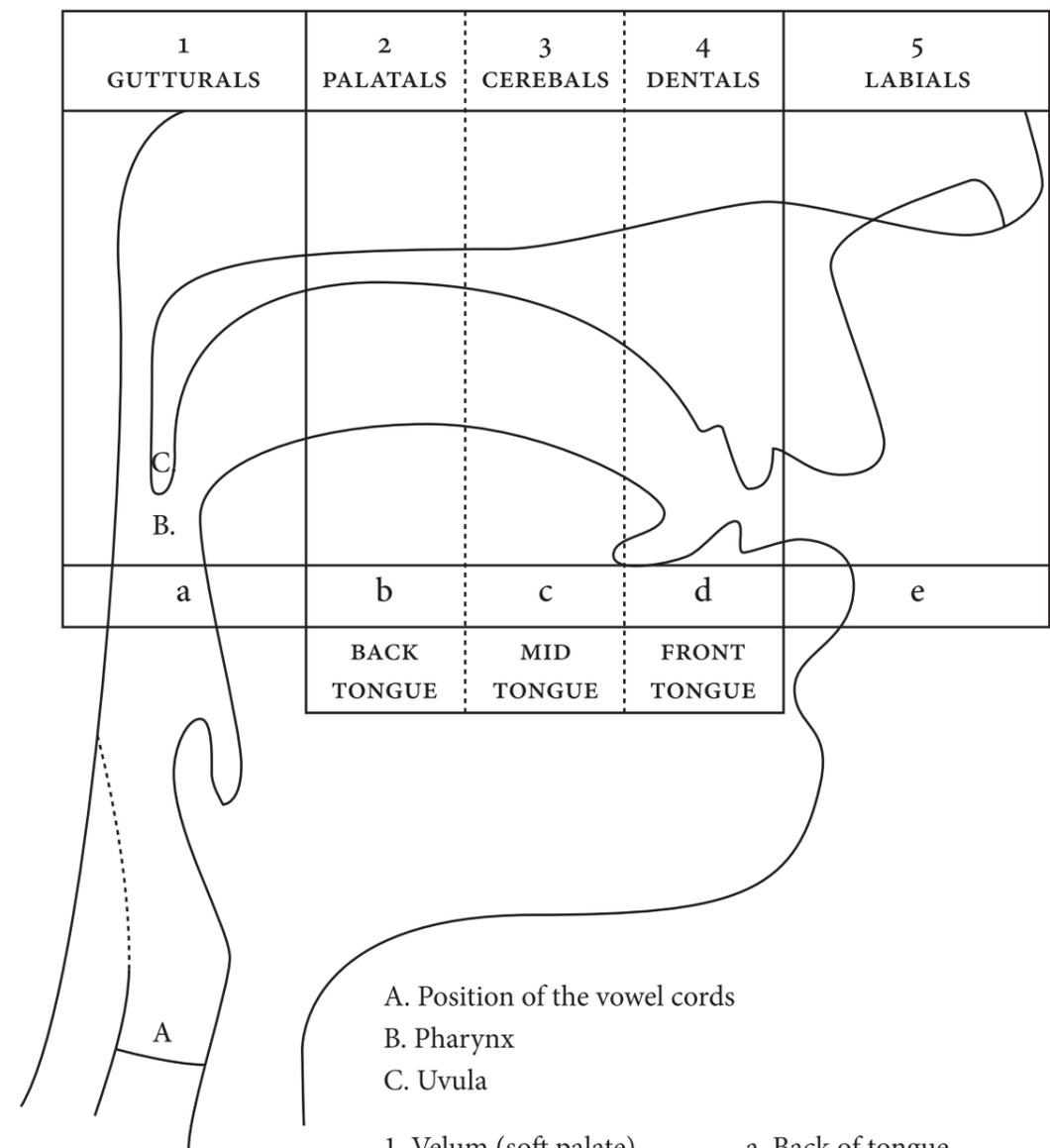
Appendix B. NAIK, Bapurao S. *Typography of Devanagari* Directorate of Languages, Govt. of Maharashtra, Bombay 1971; facing page 12 [scale 75%]

14 Upper Cornhill St.
18th April 1845.

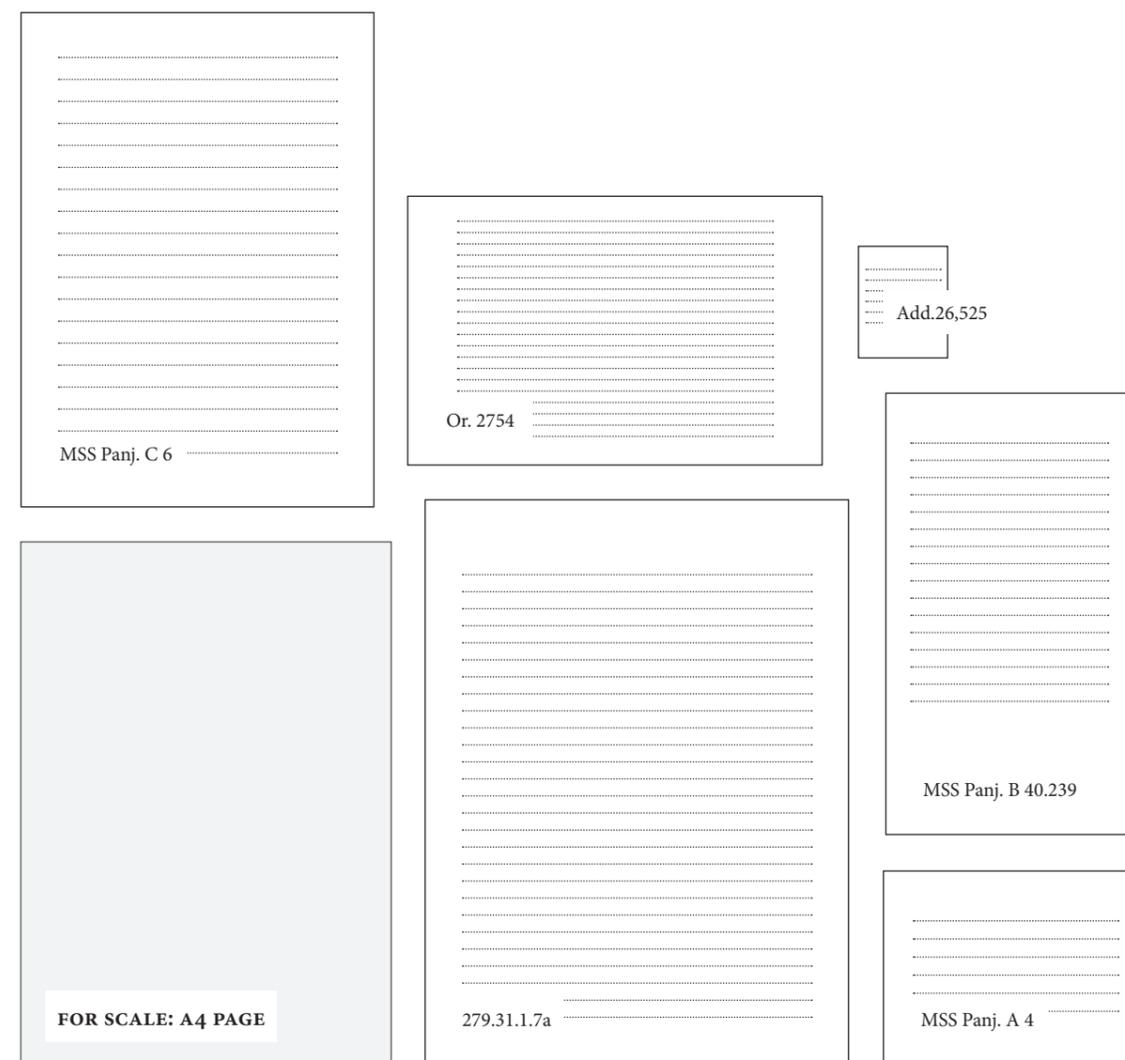
My Lord

I have the pleasure to return you Indian volumes with such brief notice of its contents as my imperfect acquaintance with them enables me to offer.

The language is Punjabi - that of the Sikhs and other tribes of the Punjab. The character is called Guroo-mookhi, having been devised by the Guroo Hidayat Teacher of the Sikhs. It is a modification of the Nagari or Sanscrit alphabets. The chief peculiarity of which is an alteration of the powers not of the forms of the letters. Thus A which in your Lordship's knows is V in Nagari is X in Guroo-mookhi, and H which is M in the ^{former} ~~letter~~ is S in the latter. There are other changes of the same kind. The propriety of the



Appendix H. Based on an illustration found in GRAY, J. E. *Sanskrit Grammar* SOAS in-house publication, date unknown: illustration of mouth and location of articulation.



NOTE: Illustrations are scaled 25% of their original size, along with an A4 page for a direct comparison. The amount of lines are shown to provide an idea of the density of copy (approximately drawn).

They share similar qualities to the manuscripts shown in *figures 33-37*.

Appendix I. Gurmukhi manuscripts seen at the British Library, London

MSS Panj. C6: 7+44 folios; 280x200mm; 19 lines; well-written Gurmukhi; 1930

Or. 2754: 281 folios; 152x235mm; 17 to 21 lines; written by different hands; c.19th century

Add.26,525: 212 folios; 64x51mm; 6 lines; c.19th century

279.31.1.7a: 320x240mm (lithography)

Mss Panj. B 40.239: 239 folios; 250x140mm; 16 lines; 1780

Mss Panj. A 4: 507 folios - as two volumes; 110x150mm; 8 lines; c.19th century

0A00		Gurmukhi						0A7F
	0A00	0A01	0A02	0A03	0A04	0A05	0A06	0A07
0		ਐ	ਠ	ਰ	ੀ			ੰ
1	ੰ		ਙ		ੳ	ੲ		ੱ
2	ੰ		ਢ	ਲ				ੲ
3	ੰ	ਓ	ਣ	ਲ਼				ੳ
4		ਐ	ਤ					ੳ
5	ਅ	ਕ	ਬ	ਵ				ੳ
6	ਆ	ਖ	ਦ	ਸ਼			ੳ	
7	ਇ	ਗ	ਧ	ੇ			ੳ	
8	ਈ	ਘ	ਨ	ਸੈ			ੳ	
9	ਉ	ਙ	ਹ	ਖ਼	ੳ			
A	ੳ	ਚ	ਪ		ਗ਼	ੳ		
B		ਛ	ਫ	ੋ	ਜ਼	ੳ		
C		ਜ਼	ਬ	ੋ	ੳ	ੳ		
D		ਝ	ਭ	ੳ		ੳ		
E		ਞ	ਮ	ਾ	ਫ਼	ੳ		
F	ਏ	ਟ	ਯ	ਿ		ੳ		

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Appendix J. 'U+0A00 – U+0A7F Gurmukhi Unicode chart' Unicode < http://www.unicode.org/charts/ > [scale 75%]

Appendix K. 'Unicode standard for Indian scripts (Gurmukhi)' TDIL < http://tdil.mit.gov.in/pchangeuni.htm > [scale 75%]

The Background color notation used in these charts are as follows, also a remark has been given for accepted changes.

- Indicates proposed characters/symbols/signs addition in the existing standard
- Indicates the change in the annotation/explanation of that particular code point
- Indicates proposed characters/symbols/signs shape change in the existing standard

Proposed changes in the Unicode Standards for Indic Script - Gurmukhi

0A0	0A1	0A2	0A3	0A4	0A5	0A6	0A7
0		ਐ	ਠ	ਰ	ੀ	ੳ	ੰ
1	ੰ		ਙ		ੳ		ੱ
2	ੰ		ਢ	ਲ	ੳ		ੲ
3	ੰ	ਓ	ਣ	ਲ਼			ੳ
4		ਐ	ਤ			ੳ	ੳ
5	ਅ	ਕ	ਬ	ਵ		ੳ	
6	ਆ	ਖ	ਦ	ਸ਼		ੳ	ੳ
7	ਇ	ਗ	ਧ		ੇ	ੳ	ੳ
8	ਈ	ਘ	ਨ	ਸੈ		ੳ	ੳ
9	ਉ	ਙ	ਹ		ਖ਼	ੳ	ੳ
A	ੳ	ਚ	ਪ	ੳ		ਗ਼	ੳ
B		ਛ	ਫ	ੳ	ੋ	ਜ਼	ੳ
C		ਜ਼	ਬ	ੋ	ੳ	ੳ	ੳ
D		ਝ	ਭ		ੳ	ੳ	ੳ
E		ਞ	ਮ	ਾ	ੳ	ਫ਼	ੳ
F	ਏ	ਟ	ਯ	ਿ	ੳ		ੳ