



Conventions, traditionalism, Latinisation, and modernity in Armenian typefaces across type-making technologies from 1512 to 1977

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Declaration

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

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Abstract

This thesis investigates conventions, traditionalism, Latinisation and modernity in Armenian text typefaces across different type-making technologies from their inception in movable type until 1977. The study identifies the factors – technical limitations, typographic trends, Western culture, Armenian identity, readers' preferences – that influenced the development of Armenian founts by assessing the most significant Armenian typefaces in their historical, social, cultural and geographical context.

In the mid-nineteenth century the standard forms of printed Armenian underwent significant changes inspired by Western forms, styles and proportions. This radical transformation is known as Latinisation. This thesis examines the shift from the Bolorgir style to an upright style and establishes the significance of the first Armenian printing house that used Latinised Bolorgir typefaces extensively in its publications.

In the twentieth century, developing Armenian typefaces for hot-metal and phototypesetting raised the issue of adapting Armenian letterforms to suit technologies developed for the Latin script. This thesis identifies the complexities of producing Armenian typefaces by leading typefounding manufacturers; analyses the impact of readers' preferences on the typographic development of the Armenian script. Particular attention is paid to the contribution of the Armenian Diaspora towards the development of Armenian typefaces for emerging phototypesetting technologies, and to Monotype and Linotype's interest in Armenian typefaces in the late 1970s.

The paucity of reliable published narratives on Armenian typography has rendered primary sources, and therefore archival research, crucial to this investigation. Pre-twentieth-century primary sources were gathered from various libraries across the UK, Austria, France, Italy and Armenia. Twentieth-century primary sources, such as pattern drawings, correspondence, etc. were studied from different archives in the UK and the USA.

This thesis fills identified gaps and corrects inaccuracies in the existing literature; it forms a reliable reference source on Armenian type design providing an original contribution to the understanding of multicultural typedesign.

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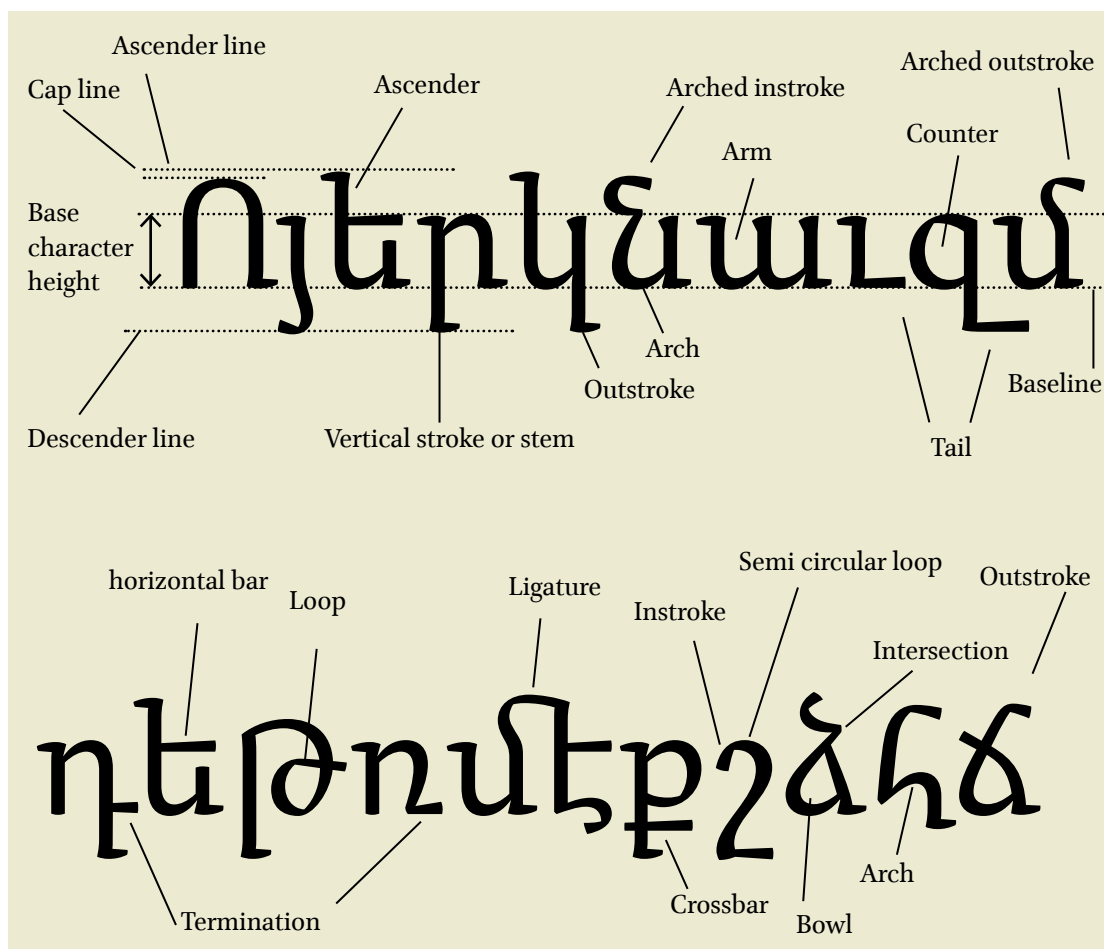
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Scheme of transliteration

Capital and lowercase letters	Letter names	Transliteration	
Ա	ա	ayb	a
Բ	բ	ben	b
Գ	գ	gim	g
Դ	դ	da	d
Ե	ե	ech	e
Զ	զ	za	z
Է	է	eh	ē
Ը	ը	et	ə
Թ	թ	to	t'
Ճ	ճ	zhe	ž
Ի	ի	ini	i
Լ	լ	liwn	l
Խ	խ	xeh	x
Ճ	ճ	ca	c
Կ	կ	ken	k
Հ	հ	ho	h
Ձ	ձ	ja	j
Ղ	ղ	ghad	ł
Ճ	ճ	ch eh	č
Մ	մ	men	m
Յ	յ	yi	y
Ն	ն	now	n
Շ	շ	sha	š
Ո	ո	vo	o
Չ	չ	cha	č'
Պ	պ	peh	p
Ջ	ջ	jheh	ǰ
Բ	ր	ra	r
Ս	ս	seh	s
Վ	վ	vew	v
Տ	տ	tiwn	t
Ր	ր	reh	r
Ց	ց	co	c'
Ի	լ	yiwn	w
ՈՒ	ու	ow	u
Փ	փ	piwr	p'
Ք	ք	keh	k'
ԵՒ	և	jew	ev
Օ	օ	oh	ō
Ֆ	ֆ	feh	f

Armenian nomenclature



The nomenclature focuses on Armenian lowercase letters in Bolorgir style.

The Armenian typeface 'Arek' is used as a digital interpretation of the Bolorgir style.

Armenian types abbreviations (alphabetical order)

ABA ₁	Text typeface used by Antonio Bortoli in the <i>Auteran</i> in 1759 in Venice.
ABB ₁	Text typeface used by Antonio Bortoli in the Bible in 1733 in Venice.
ADA ₂	Text typeface based on <i>Arevelk</i> used by Čanik Aramean in <i>Arevelk</i> in 1855 in Paris.
Arevelk	Text typeface used by Čanik Aramean in <i>La Colombe du Massis</i> in 1855 in Paris.
CAVG	Text typeface cut by Christoffel Van Dijck and his son Abraham, used in the <i>Geography of Fable</i> .
CMA ₃	Text typeface used by Čanik Aramean in <i>La Colombe du Massis</i> in 1857 in Paris.
CMA ₄	Text typeface used by Čanik Aramean in <i>La Colombe du Massis</i> in 1858 in Paris.
CMA ₅ -IT	Italic text typeface used by Čanik Aramean in <i>La Colombe du Massis</i> in 1858 in Paris.
CMU ₁	Text typeface introduced by Khalipean Usumnaran in <i>La Colombe du Massis</i> in 1861 in Theodosia.
CMU ₂	Text typeface introduced by Khalipean Usumnaran in <i>La Colombe du Massis</i> in 1861 in Theodosia.
CVB	Text typeface cut by Christoffel Van Dijck and used by Voskan Yerevantsi and his disciples Karapet Andrianatsi in the Bible at the St. Ejmiacin and St. Sargis Press in 1666 in Amsterdam.
CVY	Text typeface cut by Christoffel Van Dijck and used by Matteos Tsaretsi and Avetis Ghlichentsi Yerevantsi in <i>Yisus vordi</i> at the St. Ejmiacin and St. Sargis Press in 1661 in Amsterdam.
HHC	A (Canon) typeface, probably cut by Richard Starr, under the supervision of Homan Hallock, and used by the ABCFM in <i>Rule of exercise</i> in 1837 in Smyrna.
JSD	Text typeface cut by Salenque in 1633 and used by Antoine Vitré in <i>Dictionarium armeno-latinum</i> in 1633 in Paris.
FJM ₁	Text typeface used by Jacob Meghapart in <i>Friday Book</i> in 1512 in Venice.

Masis	Text typeface used by Čanik Aramean in <i>La Colombe du Massis</i> in 1855 in Paris.
MVP	Text typeface from the Mekhitarists in Venice and used by the Mekhitarists in <i>Preces Sancti Nersetus</i> in 1823 in Venice.
MGN	Text typeface used by the Group of Madras in <i>Nor tetrak vor kochi hordorak</i> in 1772 in Madras.
MVT	Text typeface from the Mekhitarists in Venice used by the Mekhitarists in <i>Télémaque</i> in 1850 in Venice.
MWP	Text typeface from the Mekhitarists in Vienna and used by the Mekhitarists in <i>Precatio viginti quinque linguis exarata</i> in 1838 in Vienna.
NKA	Text typeface cut by Nicholas Kis in 1685 and used in Schröder's <i>Thesaurus</i> in 1711 in Amsterdam.
OA1	Text typeface based on Onnik Awetisean's design, used in Awetisean's Հայ պատգամաբան իր ծանրագիրը in 1968 in Beirut.
PAT1 & PAT2	Text typefaces cast by Abgar Dpir Toxatec'i, using punches cut in Venice by a German punch-cutter. Used by Abgar Dpir Toxatec'i, in the Armenian <i>Psalter</i> in 1565 in Venice.
RG1	Text typeface cut by Robert Granjon and used by Domenico Basa at the Polyglot Press in the <i>Gregorian Calendar</i> in 1584 in Rome. the New Testament in 1825 in Paris.
SADD01	Text typeface probably cut by Joseph Molé and used in the New Testament in 1825 in Paris.
Vark	Text typeface used by Čanik Aramean in <i>La Colombe du Massis</i> in 1855 in Paris.
WCHA	Text typeface cut by William Caslon in 1730 and used in the <i>Historiae Armenicae libri tres</i> in 1736 in London.

Introduction

The year 2012 marked the 500th anniversary of the first printed Armenian book. The choice of Yerevan, the Armenian capital, as Unesco's World Book Capital, provided a unique occasion to generate interest in Armenian type design, not only in Armenia but also in the wider world. In 2017 the tenth Granshan International Type Design Competition and Conference were held in the Armenian capital.

Throughout the centuries the Armenian script has been consistently perceived and used as a vehicle of national identity. A small country surrounded by dominant empires needed to assert itself. Careful preservation of language and culture found its expression in the script. This strong tendency has continued whenever expatriate Armenians formed closely-knit communities, first in Europe and later in various parts of the world. The importance of the script was reflected in the efforts made to keep pace with typographic technological developments wherever Diaspora communities found themselves.

The troubled history of Armenia bears witness to the close correlation between the development of the Armenian cultural identity, its language and its script, and Armenia's contact and interaction with the West. An Armenian slanted style of type, named Bolorgir, was predominant in the printing of texts until the middle of the nineteenth century. In the 1840s this 'traditional' style was replaced by the introduction of a new upright Armenian type style that had significant consequences for Armenian typography. This marked the first step in the adoption of Western influences in the Armenian script. Since the second half of the nineteenth century Armenia has consistently looked West, but this has gone hand in hand with strong nationalism, reflected in Armenian eagerness to preserve its script, not simply its language. The need to foster a strong sense of identity is compounded by the existence of a vast, worldwide Diaspora: Armenians are present all over the world.

From the mid-nineteenth century until Armenia's independence in 1991, Armenian typography developed in the context of long periods of occupation, first under the Ottoman Empire, then the Soviet Union. The slow pace of type development in Armenia during these times contrasted with the typographically more refined output of the well-established communities in the Diaspora. The Diaspora was well-established in urban centres, and was influenced by other cultures such as those brought by the English in Madras and Calcutta; the French in Smyrna, Constantinople and Paris; Italians in Venice; Germans in Dorpat (today in Estonia) and Vienna; and Russians in St. Petersburg, Moscow, and Tiflis.

The coincidence of the demand for bilingual parallel texts in Diaspora communities and the opportunity to develop Armenian typefaces for hot-metal typesetting raised the question of fitting Armenian letterforms into technological systems developed for the Latin script. This pressure continued in the Soviet era, when typefaces developed for phototypesetting systems continued this trend. These changes, driven by technical limitations and an explicit Western influence, shaped the Armenian script in such a

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manner that made it borrow key elements from Latin typefaces, at the expense of the well-established identity of the script. As can be expected, inhabitants of Armenia and members of the Diaspora have different perceptions of what constitutes Armenian culture, and their perspectives on Armenian typefaces can differ greatly.

Motivation of the study

The history of Armenian typefaces since 1840 has been neglected by researchers. So far, typographic research has privileged the sixteenth, seventeenth and, to some extent, the eighteenth century, rather than more recent periods. This has led to a gap in the knowledge of the development of the Armenian typefaces in Armenia and in the Diaspora in the nineteenth and twentieth centuries. It could be argued that the lack of scholarly interest and the relative scarcity of Armenian typefaces developed throughout the centuries are a consequence of the limited number of users in comparison to Latin or other scripts. For the Armenian script there has been insufficient research to present useful narratives on the development of typographic styles and to inform satisfactory designs. Furthermore, with regard to current designs, few articles published in magazines or websites address the issue of Latinisation of current Armenian typefaces. However, an article worthy of note is *The story of the Armenian alphabet*, written in 2010 by Carolyn Puzzovio, former Principal Lecturer at the School of Art & Design of the University of Lincoln and published in *Baseline* 58.¹ Puzzovio provides an account of recent Armenian type developments, observing that modern Armenian types have become more Latinised: shapes have been altered in weight and proportions, x-heights have been increased, descenders have been shortened and terminals subordinated to Western choices.² However, she refrains from assessing the quality of the typefaces mentioned. Another important article, written by Hrant Papazian, a Los Angeles based type designer and an Armenian native of Lebanon, addresses the problems of harmonising multi-script typefaces – pointing out the issue of vertical proportions when Latin typographic rules are transferred to other scripts, in *Latinization: Prevention and cure*.³ Using the Armenian script as an example, he suggests the use of a versatile system within the same font family that can preserve authenticity and harmony of Armenian and Latin.

These essays raise important points, although the investigation of Latinisation of Armenian typefaces, discussed from a practitioner's point of view, lacks historical research as to how and why Latinisation was introduced. This brings up the need for a comprehensive exploration of how this occurred in the middle of the nineteenth century.

Most literature on Armenian typography engages with the history of printing, rather than with that of typefaces. The current body of historical studies focuses on Armenian palaeography, on the history of Armenian printing and on the development of early Armenian typefaces. While the recent study by Meliné Pehlivanian on Armenian

1 Carolyn Puzzovio, 'The story of the Armenian alphabet. Part 2: recent developments', *Baseline*, 58 (2010), pp. 34–43.

2 Ibid. p. 43.

3 Hrant Papazian, 'Latinization: Prevention and cure', *Spatium Magazin für typografie*, 4 (2004), pp. 10–20.

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printing from the sixteenth to the twentieth century provides important historical descriptions of the Armenian presses and book printers, covering a rather extensive period, it does not discuss typefaces.⁴ Relevant to the field of type design are Hendrik D. L. Vervliet's essay on the Armenian type cut by Robert Granjon in *The palaeotypography of the French Renaissance*,⁵ Sebouh David Aslanian's study of the first Armenian printing press in Isfahan published in the academic Armenian journal *Handes Amsorea*,⁶ and John Lane's work *The Diaspora of Armenian printing 1512–2012*, the first international publication on Armenian printing published in English and Armenian.⁷ These works provide significant historical information, but their narratives do not include the design process, a critical appraisal of the outcome, and the relevance of such outcome for the development of subsequent Armenian typefaces. This leaves a wide field of research open to exploration. Furthermore, except for Lane's book, they do not assess in detail the typefaces that are referenced.

There are numerous and substantial gaps in existing historical sources for the period spreading from the mid-nineteenth century to the turn of the millennium. Typographic research has been inconsistent regarding the development of Armenian typefaces, both in Armenia itself and throughout the Diaspora. A major example of neglected history relates to the typographic development of Armenian typefaces instigated by Čanik Aramean in a Parisian journal in 1855. His motivations and the reactions of readers have not yet been studied. Furthermore, where scholarly work has indeed been carried out, inaccuracies have jeopardised their reliability.

Therefore, there is the need to undertake research where published accounts of historical events on the topic are not available, as described by John Tosh:

The first test by which any historical work must be judged is how far its interpretation of the past is consistent with all the available evidence; when new sources are discovered or old ones are read in a new light, even the most prestigious book may end on the scrapheap. In a real sense, the modern discipline of history rests not on what has been handed down by earlier historians, but on a constant reassessment of the original sources.⁸

Thus, a continuous assessment of primary sources is necessary to evaluate the reliability of information in the recent histories of Armenian typography. What has just been said about the poor availability of scholarly sources for the nineteenth century is even more true for the twentieth century. The paucity of secondary sources is striking in this case, making it absolutely essential to identify and exploit primary sources.

4 Meliné Pehlivanian, 'Mesrop's heirs: The early Armenian book printers' in E. Hanebutt-Benz, D. Glass, G. Roper et al. (eds), *Middle Eastern languages and the print revolution* (Westhofen, Wva-Verlag Skulima, 2002), pp. 53–92.

5 Hendrik D. L. Vervliet, 'Granjon's English-sized Armenian [Arm 98] or Saint-Augustin (1579)', *The palaeotypography of the French Renaissance* (Leiden, Brill, 2008), vol. 2, pp. 436–441.

6 Sebouh David Aslanian, 'The early arrival of print in Safavid Iran: new light on the first Armenian printing press in New Julfa, Isfahan (1630–1650, 1686–1693)', *Handes Amsorea* (2014), pp. 383–468.

7 John Lane, *The Diaspora of Armenian printing, 1512–2012* (Amsterdam, Special Collections of the University of Amsterdam, 2012).

8 John Tosh, *The pursuit of history* (New York, Routledge, 2015), p. 73.

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As the nineteenth century drew to a close, a new phase of industrialisation had just begun. This introduced two major innovations in the type design industry: hot-metal and phototypesetting technologies, which lead first to the mechanisation, and then to the dematerialisation of types. Investigations on the development of Armenian typefaces for such technologies and their impact on the design of subsequent typefaces has so far been excluded from typographic history. Miguel Sousa's unpublished MA dissertation at the University of Reading has a section on twentieth century Armenian typefaces, but as his title suggests, 'A brief history of Armenian typeface design', his scope was limited and therefore he approached the twentieth century aiming to provide a general overview.⁹ His work is a useful starting point for further research on Armenian type design and typography; however, it is far from being an exhaustive study.¹⁰

Furthermore, the otherwise thorough investigation by John Lane, the historian of printing and printing type, of *The Diaspora of Armenian printing 1512–2012* reveals a substantial gap in the history of Armenian typefaces produced in the light of the typographic innovations of the twentieth century.¹¹

At the beginning of the twenty-first century it is impossible to evaluate the state of Armenian typefaces and to comprehend tradition, modernity and authenticity in design, if a narrative on the typographic heritage of Armenian types from previous centuries is not made available to scholars and practitioners.

This thesis provides an original contribution to the understanding of multicultural type design, and it is a reliable source of reference for future study and production of Armenian type design and typography. In so doing, it fills the identified gaps and corrects inaccuracies in the existing literature.

9 Miguel Sousa, 'A brief history of Armenian typeface design' (Dissertation, University of Reading, 2005).

10 Sousa mistakenly dated the Linotype Armenian to 1964 instead of 1912. There is no account of phototypesetting production. Sousa, 'A brief history of Armenian', pp. 33–35.

11 Lane, *The Diaspora*, pp. 202–207.

Ա Բ Գ Դ Ե Զ Է Ը Թ Ժ Ի Լ Խ Ծ Կ Զ Ը Թ Ժ
 Մ Յ Ն Շ Ո Ղ Պ Ջ Ռ Ս Վ Տ Ր Ց Ի Փ Ք

Fig. 1 Digital interpretation of the 36 letters of the Armenian script created in the fifth century CE. The vowels are marked in blue and the consonants in black. The typeface used is Arek Regular.

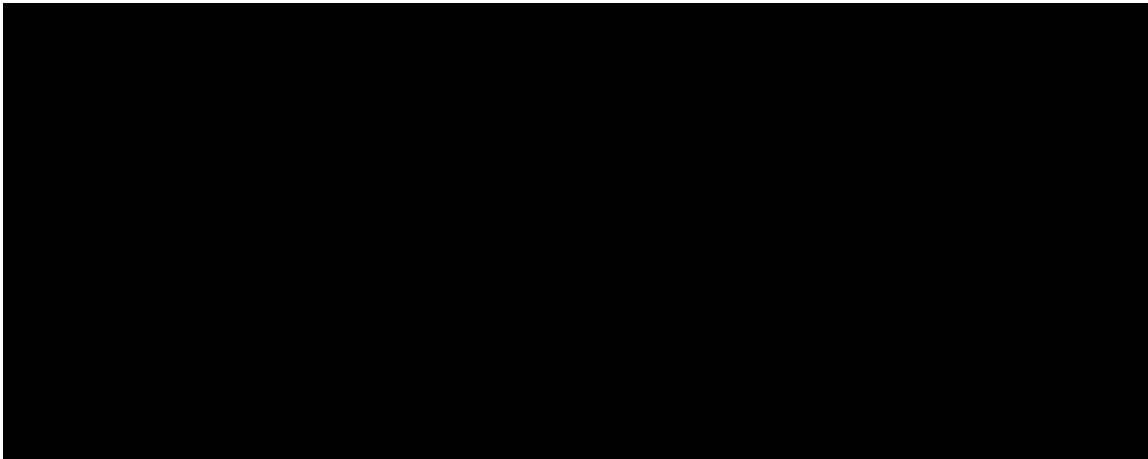


Fig. 2 The lapidary inscription from the Cathedral of Avan, dated 633 CE, shows both Armenian (top) and Greek letters (bottom). This large and rounded Armenian majuscule letters were equivalent of Greek majuscules. They were named Erkat'agir (Երկաթագիր) 'Iron letters', which is one of the four major types of script recognised by modern paleographers. (Original dimension: 214 × 50 × 60 cm). Held at the History Museum of Armenia. The picture was taken by the author at the History Museum of Armenia (Yerevan) in June 2012.

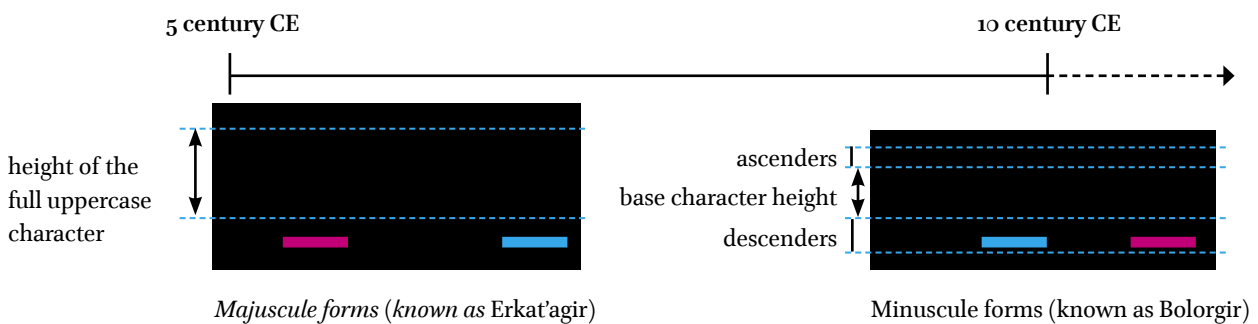


Fig. 3 At the turn of the tenth century letterforms went from uppercase to lowercase. For example, see: the transformation of capital letter U to its lowercase shape u, both underlined in magenta; and the evolution of letterform 'now' from the majuscule Մ into the minuscule form ն, both underlined in blue.

The Armenian script

Armenian is a member of the Indo-European family of languages and forms a stand-alone branch of this.¹² The Armenian script was conceived in the early fifth century CE by the Armenian cleric Mersrop Maštotc'.¹³ Its inception enabled Armenian people to foster national unification, to promote Christian identity and to develop a literary tradition. In 387 CE the Armenian Highland¹⁴ was not only ruled by a foreign sovereign, but even divided between two great powers: the Persian and Byzantine empires. Thus, the Western region became a protectorate of the Byzantine Empire, whereas the king (Shah) of Persia ruled the Eastern region. Geographically divided, Armenian people were deprived of their independence, divided by territorial and political rules, governed by different cultures and policies, and disconnected by the use of dissimilar languages.¹⁵ It was in this context that, at the beginning of the fifth century, the Armenian alphabet was created.

Originally, the Armenian alphabet consisted of thirty-six letters, representing six vowels and thirty consonants, one character for each phoneme [Fig. 1]. The Armenian script did not appear in a vacuum: it was influenced by the structure and the letterforms of existing alphabets.¹⁶ The Armenian letters were created in Edessa, a city in Upper Mesopotamia, a major educational and scientific centre. There, Maštotc' exploited sources available, studying various alphabets, their structure and letterforms.¹⁷ Maštotc' may have used the Greek alphabet as a starting point for Armenian, as there were similarities in the structure of the two scripts: like Greek, Armenian has consonants and vowels and it is written from left to right.¹⁸ Also, Armenian letters follow the alphabetical order used in Greek, although the latter has only twenty-four signs [Fig. 2].

The early tenth century saw the introduction of lowercase letterforms. In contrast to constant height of the full uppercase character, lowercase characters got a reduced, compact base character height, together with ascenders and descenders. Thus, 36 lowercase letters were added to the pre-existing capitals [Fig. 3].¹⁹

¹² David Diringer, *The alphabet: A key to the history of mankind* (London, Hutchinson's scientific and technical publications, 1949), p. 320.

¹³ See: Stone, Michael E., Dickran Kouymjian and Lehmann Henning, *Album of Armenian paleography* (Denmark, Aarhus University Press, 2001), pp. 13.

¹⁴ The Armenian language (Hayeren) was already spoken in the sixth century BCE by the people living in the mountainous regions of Ararat, around Lake Van, on the southeastern shore of the Black Sea, and the Euphrates and Tigris. See: Vahan Kurkjian, *A history of Armenia* (New York, Armenian General Benevolent Union of America, 1959), p. 365.

¹⁵ Eduard Bagрати Aghaian, *Mesrop Mashtots* (Yerevan, Yerevan University Press, 1986), p. 11.

¹⁶ For more information on the origin of the Armenian alphabet and Mesrop Mashtots see: Aghaian, *Mesrop Mashtots*. See also: Krikor Maksoudian, *The origin of the Armenian alphabet and literature* (New York, St. Vartan Press, 2006), pp. 144–148; Carolyn Puzzovio, 'The story of the Armenian alphabet. Part 1: historical summary', *Baseline*, 57 (2009), pp. 34–35. Both Puzzovio and Aghaian agree that Koryun's representation of the origin of the alphabet as a consequence of Mesrop's holy vision cannot be accepted and that it is likely that Western and Eastern sources might have influenced the forms of Mashtots alphabet. See: Puzzovio, 'The story of the Armenian alphabet', *Baseline*, 57, p. 35; Aghaian, *Mesrop Mashtots*, p. 43.

¹⁷ Aghaian, *Mesrop Mashtots*, p. 40.

¹⁸ The direction of the Armenian script is from left to right. Only occasionally in inscriptions and manuscripts, can texts be written from top to bottom, in circular or following different patterns. However, there have been no discoveries where the writing was 'boustrophedon' (from right to left and from left to right in alternate lines).

¹⁹ In the Middle Ages letters օ and Ֆ were added to the 36 letters of the Armenian alphabet.

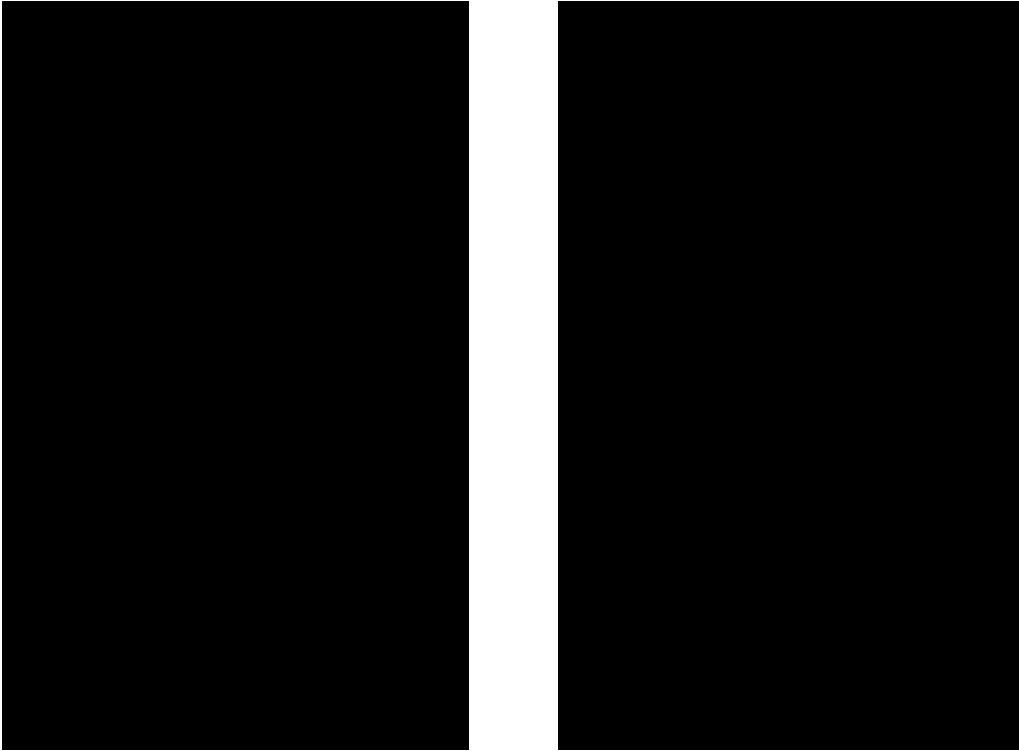


Fig. 4 'The Armenian Unicode Standard, Version 11.0. Character code table (Range: 0530–058F)'. Retrieved from: <https://unicode.org/charts/PDF/U0530.pdf>. Accessed on 3 August 2018.

Blue: 38 capital letters; pink: 39 lowercase letters; orange: seven modifier characters; yellow: two punctuation symbols; grey: two religious symbols; white: the Armenian currency symbol; green: two letters used for phonetic notation, (these were introduced in the Unicode Standard 11.0). The Armenian script has also 5 ligatures: FB13–FB17. 'The Unicode Standard, Version 12.1. Alphabetic Presentation Forms. (Range: FB00–FB4F)'. Retrieved from: <http://www.unicode.org/charts/PDF/UFB00.pdf>. Accessed on 7 September 2019.

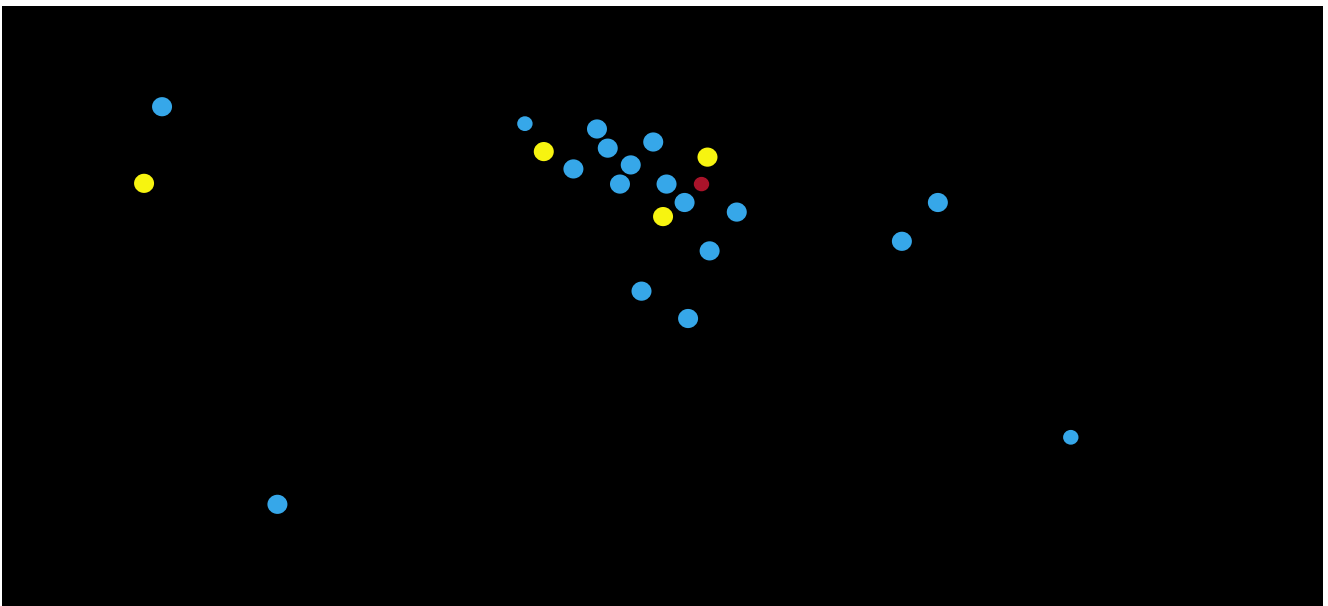


Fig. 5 Map of the Armenian Diaspora. Armenia, marked by a red dot, is bordered by Turkey, Georgia, Azerbaijan and Iran. The blue dots indicate the settlements of Armenian communities around the world, whereas the yellow dots indicate the largest Armenian communities in the US, France, Lebanon and Russia. There are about 10 million Armenian speakers worldwide.

The form used for the minuscule letters is a style known as Bolorgir.²⁰ This style was used to copy short passages, colophons, and entire manuscripts. In the early thirteenth century the Bolorgir style was refined and standardised: letters became smaller and ascenders and descenders were extended to a uniform height and slant. This standardisation occurred under the royal families and religious leaders of the newly established Armenian Cilician state, aiming to form a more legible, compact and uniform writing to be used as the book hand of the major scriptoria. Therefore, Bolorgir became the main style for biblical and literary texts and it remained as such, for more than 500 years. Consequently, Bolorgir became the conventional type style for the principal texts in Armenian publications in printing as well. As with the case of the introduction of the Armenian alphabet, printed Bolorgir letters enabled the preservation and diffusion not only of the Christian religion, but also of the Armenian culture and language among the Diaspora and Armenians in the homeland. Today, according to the Unicode Standard,²¹ the Armenian alphabet comprises 38 capital and 39 lowercase letters, seven modifier characters, two punctuation symbols, two religious symbols, and the currency symbol [Fig. 4]. The Armenian script is employed by 3 million people in Armenia and by 7 million Armenians in the Diaspora, and it is used for both modern Eastern and Western Armenian, which have developed as separate standard and literary languages since the eighteenth century²² [Fig. 5].

20 The Armenian script was developed in four major writing styles from the manuscript tradition: Erkat'agir (Երկաթագիր), Bolorgir (Բոլորգիր), and the cursive scripts named Notrgir (Նոտրգիր) and Šlagir (Շղագիր). Erkat'agir was the script style used in the ancient Armenian inscriptions from the fifth century, and literally means 'iron letter'.

Šlagir was an informal style, representative of the last phase in the development of Armenian manuscripts. It was a fluid cursive with joined letters, while Notrgir was a cursive, notary style, used as an alternative to Bolorgir. In printing, Notrgir was used to annotate in the margin of the text, whereas Šlagir was never produced as movable type. Both cursive styles were introduced in the fourteenth century.

See: Stone, *Album of Armenian paleography*, pp. 5, 104.

21 The Unicode Standard is a character coding system 'designed to support the worldwide interchange, processing, and display of the written texts of the diverse languages and technical disciplines of the modern world. In addition, it supports classical and historical texts of many written languages'. Retrieved from: <http://unicode.org/standard/standard.html>. Accessed on 17 August 2018.

22 Although the formation of Modern Eastern literary and standard language only took place in the mid-nineteenth century, East Armenian is based on the dialect of the region of Ararat and West Armenian on that of Constantinople. West Armenian is spoken in Armenian communities in the Middle East, except Iran, Europe and Americas. East Armenian is spoken in the Armenian Republic within Armenian communities in the territory of the former Soviet Union and also in Iran. Recent migrants to Europe and the US from Armenia and Iran also speak East Armenian. East and West Armenian differ essentially in grammar. Whereas East Armenian distinguishes between voiced (b, d, g), aspirated (p', t', k') and unaspirated (p, t, k) consonants, West Armenian has lost the use of unaspirated consonants and pronounces them exactly as their voiced equivalents. See: Diringer, *Alphabet. A key to the history of mankind*, p. 320; Stuart Mann, *Armenian and Indo-European (historical phonology)* (London, Luzac & Co. Ltd., 1963), p. vii.

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Scope

The thesis investigates conventions, traditionalism, Latinisation and modernity in Armenian text typefaces across different type-making technologies from their inception in movable type until their production for the first generation of phototypesetting machines. Therefore the period under examination is from 1512 to 1977.

The study identifies the factors – technical limitations, typographic trends, Western culture, Armenian identity, readers' preferences – that influenced the development of Armenian founts. The investigation is limited to text typefaces and does not include display types. The Bolorgir style used in manuscripts and developed with printing methods such as engraving and lithography is only used for comparative or contextual purposes, such as in the first chapter.

The scope of this thesis is fourfold: during the period under examination it seeks to

- identify the impact of the historical and political context (Ottoman hegemony, formation of the Diaspora, incorporation within the Soviet Union) on the Armenian typographic script.
- establish the significance of the first Armenian printing establishment that used Armenian Latinised Bolorgir typefaces extensively in its publications.
- evaluate the extent to which Western typographic trends have influenced the design of Armenian typefaces.
- explore the effect of technological developments in type-making on the design quality of Armenian typefaces.

This thesis documents and analyses selected key typefaces which are representative of the development of Armenian typefaces and therefore influenced the design of subsequent printed typeforms. It identifies the context for the shift from the Bolorgir style to the upright style, during the second half of the nineteenth century. It emphasises the contribution made by the Armenian Diaspora on preserving their script throughout centuries, despite the political and social situation in the homeland. Inevitably, the integration of the Diaspora in Europe and the US made them assimilate technologies and cultural traits, which affected the development of Armenian typefaces. This study also considers the extent to which the views of readers and other individuals (for example Monotype clients) had significant influence on the typographic development of the Armenian script, which determined the success of those typefaces whose design was not of the best quality. This thesis concludes with an appraisal of the Armenian typefaces produced for the first generation of phototypesetting machines whose development began in 1977. It should be added that the extent of the market for Armenian publications and its distribution channels is not within the scope of this thesis.

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Sources and methodology

The study follows an approach established by Fiona Ross in Bengali type considering ‘each significant development in ... type design within its historical context and attempts to identify the influences behind the styling of ... typefaces, appreciating the constraints imposed by technical or artistic limitations, typographic fashions, and even linguistic ignorance and misinformation.’²³ Significant typefaces are therefore assessed within their historical, social, cultural and geographical context. This approach is well established at the University of Reading and it has been adopted by De Baerdemaeker in his PhD on Tibetan and by Nemeth and Conidi in their PhDs on Arabic.²⁴

The analytical dimension of the research has involved the use of case studies. Key typefaces were selected according to two major criteria:

- Each typeface was considered representative of a certain stage of development of Armenian typefaces;
- Among the typefaces meeting the first criterion, preference was given to those which had an identifiable influence on subsequent developments.

Case studies proceed through the analysis at three levels: text level, word level and letter level.²⁵

The paucity of reliable published narratives on Armenian typography has made this study highly dependent upon the analysis of primary sources, and therefore on archival research. As shown by PhDs on non-Latin scripts,²⁶ tracking down source material is not possible without visiting libraries or archives. The uncertainty of the kind of ‘raw-data’, such as ephemera, photographs, printed items, and handwritten correspondence that can be found in archives, leads researchers to develop their own approach to conducting the investigation. Whereas a set of prepared questions,²⁷ based on the analysis of primary and secondary sources previously studied, is likely to help structure the investigation, much depends on what libraries and archives have to offer and how their material is organised and made available.

Amongst the institutions visited when conducting research outside the UK, the investigation at the Mekhitarist Library and Archives held at the Mekhitarist monastery

23 Fiona Ross, *The printed Bengali character and its evolution* (Surrey, Curzon Press, 1999), p. 1.

24 Jo De Baerdemaeker, ‘Tibetan typeforms: an historical and visual analysis of Tibetan typefaces from their inception in 1738 up to 2009’ (PhD thesis, University of Reading, 2009); Titus Nemeth, ‘Arabic type-making in the machine age: the influence of technology on the form of Arabic type, 1908–1933’ (PhD thesis, University of Reading, 2013); Emanuela Conidi, ‘Arabic types in Europe and in the Middle East, 1514–1924: challenges in the adaptation of the Arabic script from written to printed form’ (PhD thesis, University of Reading, 2018).

25 This is detailed at the first case study, to be found in Chapter 1 of this thesis.

26 Jo De Baerdemaeker, ‘Tibetan typeforms: an historical and visual analysis of Tibetan typefaces from their inception in 1738 up to 2009’ (PhD thesis, University of Reading, 2009); Titus Nemeth, ‘Arabic type-making in the machine age: the influence of technology on the form of Arabic type, 1908–1933’ (PhD thesis, University of Reading, 2013); Emanuela Conidi, ‘Arabic types in Europe and in the Middle East, 1514–1924: challenges in the adaptation of the Arabic script from written to printed form’ (PhD thesis, University of Reading, 2018).

27 Tosh asserts that ‘a great deal of research – probably the larger part – consists not in ferreting out new sources, but in turning to well-known materials with new questions in mind’. Tosh, *The Pursuit of history*, p. 100.

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in Vienna and owned by the Armenian Catholic Fathers,²⁸ has been particularly challenging. Consultation of library material was restricted to only five items a day; archival documents on the typographic activity of the Mekhitarist Congregation was organised chronologically in 30 boxes, but it was not recorded, listed, or catalogued. Furthermore, access to the archive was granted to the author of this thesis only during the last three days of her visit.²⁹ For these reasons, the investigation could not be completely open: criteria needed to be set out in order to determine which sources were to be considered and why.³⁰

Locating and accessing sources prior to the nineteenth century was not particularly difficult as a substantial number of sources are to be found in the UK.³¹ However, the lack of archival documents, such as records of correspondence between people involved in the type-making process that could explain the evolution of Armenian typefaces in the middle of the nineteenth century, required that further primary sources should be identified and used instead. The analysis of different primary sources in libraries and archives has established that the most accessible and valuable documents are published journals that provide information on nineteenth-century Armenian typefaces used in the Diaspora. Journals were the most effective means of reaching the general public: as such, they had articles exploring typographical themes, alongside information about history, science, literature regarding the moral and intellectual progress of Armenians. Therefore, they provide valuable contextual information, and also data in the form of types used to enable a comparative analysis of the relevant types and their use.

Twentieth-century Armenian typographic primary sources identified were gathered from different locations in the UK and in the US. The material is part of professional archives of companies who worked and still work in the type design field, such as the Monotype Archives in Salfords (UK) which stores pattern drawings, business letters, memoranda and original artworks, and the Type Archive in London (UK), which stores Monotype matrices and machines. Whilst correspondence, pattern drawings, and even matrices for the hot-metal Armenian typefaces produced by Monotype are quite comprehensive, information on phototypesetting is more fragmentary. Some information about Armenian (hot-metal) Linotype and Armenian for the V-I-P machine between 1965 and 1975 was identified in the Non-Latin Type Collection of the Department of Typography & Graphic Communication at the University of Reading (UK). However, the material on the development of Armenian typefaces was limited. As a consequence, it was necessary to access the Mergenthaler Company Records held at the Archives Center of the National Museum of American History, Smithsonian

28 The library possesses the largest and oldest Armenian collection of journals, with about 70,000 volumes stored: 2600 manuscripts, approximately 120,000 books in Armenian language, and 15,000 works in foreign-languages. Information about the library came from a brochure of the 'Mekhitarist Congregation in Vienna', 2016.

29 The archive is kept off-limits by the Mekhitarist Congregation. Aspects such as gender and culture, which were overlooked in planning the visit, prevented full access to sources. Thus, a selection had to be made, ending up with six boxes.

30 The different sources were prioritised accordingly: type specimens, correspondence, pictures and other documents of more recent productions.

31 For example: the British Library and the Lambeth Library Palace in London, the Bodleian Library, the All Soul College and the Pembroke College libraries in Oxford, and the Cambridge University Library in Cambridge.

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Institution, Washington DC; and the letter-drawings of Armenian typefaces designed between 1912 and 1928 held at the Archive of the Museum of Printing in Haverhill, Massachusetts. The documents discovered in the US have been pivotal to assess the development of Armenian hot-metal text typefaces in 1912. Without these sources, a discussion on Armenian Linotype for the hot-metal technology would not have been possible. Valuable insight was gained by cross-referencing different primary sources in the case of documents emanating from competing type-making businesses.

The sources gathered at the National Library in Armenia have been useful to see how the typefaces produced by Linotype were used in newspapers. To have access to such sources, knowledge of the Armenian language was necessary. Therefore, since starting this PhD, the author took part in the Eastern Armenian language course at the Armenian Institute in London. The Armenian course has helped the author along the whole research, particularly in identifying relevant sources, and useful contents within them.

Working on primary sources for a substantial part of the research presented two particular advantages: firstly, it enabled the author to invest her professional experience as a type designer into the selection and analysis of Armenian typefaces; secondly, it ensured that her contribution to the subject would be original enough to deepen the academic understanding of recent Armenian type design.

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Overview of the study

The thesis comprises four chapters. Chapter 1 covers the establishment of tradition of printed characters in early printing. During the transition of Armenian from manuscript to print, printed Bolorgir was produced in a style that was meant to be as faithful to manuscript as possible. This aimed to meet the requirements of a limited readership of clergy and other scholars, who had always studied manuscripts and needed to feel familiar with the printed style. A standard for subsequent Armenian typefaces was set with the Armenian types cut by Christoffel Van Dijck for the Armenian Bible, published in 1668 in Amsterdam.

Chapter 2 deals with the spread of traditional Bolorgir typefaces in missionary and scholarly works. In the sixteenth century early books on the Armenian language were produced in Latin by European scholars whose main interest lay in the study of ‘exotic’ alphabets. In the seventeenth century books displaying and describing non-Latin scripts became widespread among Europeans. Such bilingual publications were either grammars and dictionaries or devotional texts produced by the Roman Church to support Christian missionary activities in the Near and Middle East. These were produced at European presses such as the *Sacra Congregatio de Propaganda Fide* in Rome and the *Imprimerie Royale* in Paris, aiming to extend the diplomatic and commercial influence of the Pope and the French monarch, respectively. Italy and France recognised that Armenians would be useful intermediaries in the Mediterranean, thanks to their skills in merchant activities, their settlements in different cities of Europe and elsewhere, and their commitment to the Christian faith. During the nineteenth century, the typefaces produced by the *Imprimerie Royale* in Paris did not bring any interesting innovation into the Armenian typographic field. They looked rather antiquated as they were merely refreshed copies of both Sanlecque’s 1633 Armenian type and of those types confiscated by Napoleon from the *Propaganda Fide* Press in the early 1800s. Throughout the nineteenth century the Armenian typefaces used by European presses for scholarly publications were also imitations of existing founts. It is in this context that the first theme concerns the lack of originality.

The second theme is the legacy of Van Dijck’s typographic conventions for Armenian initiated by the Mekhitarist publications in Venice. In 1685 the Vanadetsi press in Amsterdam needed a new stock of Armenian types. These new types, cut by the Hungarian punch-cutter Nicholas Kis, were almost an exact copy of those of Van Dijck used in the 1668 Armenian Bible. In 1720 Kis’s Armenian punches and matrices were bought by the Mekhitarist Congregation in Venice. Since then, Nicholas Kis’s Armenian founts of types were widely used by the Mekhitarists for their publications well into the nineteenth century, becoming the model for subsequent Armenian type founding enterprises in Europe and Turkey.

Chapter 3 explores the Latinisation – its reasons, peculiarities and consequences – of the Armenian script, introduced by Yovhannes Miwhêntisean (1810–1891) and implemented by the printer and publisher Čanik Aramean (1820–1879) during the second half of the nineteenth century in Paris. At that time, the standard forms of printed Armenian, well established since the sixteenth century, underwent significant

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changes based on the visual structure of the Western forms, styles, and proportions. The focus is on Aramean's typographic activities in Paris and particularly on those Armenian text typefaces that he used in his publications, as they are representative of the Latinisation of the Armenian script introduced in the nineteenth century. In the following decades, the spreading of Latinisation was encouraged by the multiplication of Armenian printed journals among the Diaspora. Journals did not only make the new Armenian upright type style known merely by using it to typeset their main texts, but also by publishing articles written on the topic to trigger reactions among readers. Thus, another theme deals with readers' responses. The third theme is the nationalistic facet of the upright Armenian typefaces. The adoption of Western features in the production of Armenian typefaces coincided with the awakening of national consciousness within the Armenian Diaspora. Consequently, up to the following type-making technology, the traditional or Latinised look of subsequent Armenian typefaces was determined by the preferences of printers and publishers.

With Chapter 4 the thesis moves into the twentieth century. Early in the twentieth century, both traditional and upright Bolorgir styles were well established in the Armenian culture. Both were used as text typefaces in various media, particularly in newspapers, where a greater variety of weights and styles was required. The political and social events that unfolded in the homeland in the twentieth century, such as the Armenian Genocide in 1915, the integration to the Union of Soviet Socialist Republics (USSR) and World War II forced a great number of Armenian people to leave their homeland to settle in Lebanon, Egypt and the US. This century was characterised by radical transformations in type-making and typesetting technologies: hot-metal and photocomposition, which was led by Mergenthaler Linotype and Monotype, the two major companies in the field of typography. The first theme is the complexities of composing and printing in Armenian, such as the inappropriate proportions of certain characters due to the limitations of the Linotype machine, and the inability to take advantage of the major benefit provided by the Monotype system: kerning. The second theme is about the impact of readers' preferences on the typographic development of the Armenian script. Despite the low standard of its design, the Linotype Armenian was deemed by the Diaspora to be the model of Armenian typeface excellence until 1984. In that year, Linotype converted its Armenian typeface for the CRTronic, a third generation typesetter. The third theme concerns the difficulties in keeping pace with technological development, as the market for Armenian composing machines was rather limited compared to other non-Latin scripts such as Cyrillic, Greek and Arabic. This is illustrated by Linotype's refusal to develop Armenian founts for either hot-metal or phototypesetting in the 1970s.

1. The establishment of the tradition of printed Armenian characters in early printing

1.1 The historical context

The development of early Armenian printed characters with movable types is closely connected with Europe, and particularly with its port cities. Several printing workshops were established in cities such as Venice, Rome, Livorno, Lvov and Amsterdam.¹

In the sixteenth century the Armenian territory was divided between two powers: Safavid Persia and Ottoman Turkey. Most of the land around Lake Van was occupied by the Turks, whereas the East side, including Yerevan² and Ejmiatsin, belonged to the Persians.³ Between 1500 and 1722 the recurring and lengthy Persian-Turkish wars, triggered by political and religious ambitions, left Armenians in very poor economic conditions, causing the decline of the level of education of the clergy and monastic discipline.⁴ Monasteries, which were centres of scriptorial activity and traditional depositories of manuscripts, were torn down. Consequently a substantial number of manuscripts was lost.⁵

The new method of production of texts introduced by Gutenberg in the middle of the fifteenth century, enabling the manufacturing of books in multiple copies with movable type, aroused great interest amongst ecclesiastic circles. They saw the new invention as a means to achieve their threefold purpose of preserving the Armenian cultural heritage, promoting Armenian identity, traditions and religion, and enhancing the level of education of the Armenian clergy.⁶ These became the main goals of the Armenian church, which in such a hostile environment remained the only national institution.⁷ However, printing in the Armenian territory in the sixteenth century was difficult: the use of printing presses was forbidden and punishable by death in the Ottoman Empire.⁸ This situation compelled Armenians to establish their printing workshops abroad.

1 The Armenian homeland had to wait for its first printing press until 1771. This was in Ejmiatsin, 12 miles West of Yerevan.

2 Yerevan (sometimes spelled Erevan) was known in Persian as Iravân, when it was under Turkish and later Persian rule. The official name of the city under Russian rule during the 19th and early 20th centuries was Erivan.

3 In 1554 a peace treaty was signed by Safavid Persian and Ottoman Turkey and the Armenian territory split.

4 Vrej Nersessian, *Catalogue of early Armenian books 1512–1850* (London, The British Library, 1980), p. 10; 'Armenian publishing and the quest for modernity (16th–19th centuries)' in Valentina Calzolari and Michael E. Stone (eds.), *HdO: Armenian philology in the modern era. From manuscript to digital text* (Leiden, Brill, 2014), p. 122.

5 Nersessian, *Catalogue of early Armenian*, p. 10.

6 Pehlivanian, 'Mesrop's heirs', p. 54.

7 Ibid. p. 54.

8 Kévorkian, 'Armenian publishing', p. 123. However, according to the scholar Khathryn A. Schwartz, extant documentary evidence does not support the claim that Ottoman sultans banned printing. Khathryn A. Schwartz, 'Did Ottoman Sultans ban printing?', *Book history*, 20 (2017), pp. 1–39.

For about two centuries printing houses were established in Europe before reaching Ottoman soil.⁹ Lead by a spirit of enterprise, trade and culture, Armenian communities in Europe had existed for several centuries before Armenian printing began in Venice. The thirteenth century had witnessed active commercial relationships between the Cilician Armenian kingdom and the cities of Genoa, Venice, Pisa, as well as several cities in the Crimea. At that time Armenian communities existed in different cities and centres of commerce in Poland, Romania, Hungary, France and other countries. The growth in size and prosperity of these cities enabled Armenians to settle and to develop a cultural life, maintaining contacts between various Armenian diasporic centres and the homeland.¹⁰

Prior to the advent of movable type printing in 1450, the Renaissance took hold in the Italian peninsula.¹¹ This revival consisted of the rediscovery of the culture of classical antiquity, of interest in philosophy, humanism, scholarship and science.¹² Interest in the past involved the study of Classical languages which was significantly encouraged by printing. As early as 1469¹³ Venice became the major centre where the art of printing flourished. The geographical position of Venice on the shore of the Adriatic sea, the extent of its trade network, the intellectual and cultural liveliness, encouraged by the Academy of Padova, attracted typographers, publishers, and skilled punch-cutters.¹⁴ Between 1469 and 1519, about 200 printing houses were set up in Venice.¹⁵ Throughout the fifteenth century, about 1,350,000 books had been printed by the typographers of the Republic of Venice, of which, at least 4,500 titles came out from 153 different printing houses.¹⁶

- 9 Ibid. p. 123. According to Kévorkian the short life of Armenian printing houses in Constantinople (1567–1569) and New Julfa (1636–1647) proves that printing in the East was not possible in the sixteenth and seventeenth centuries. However, the evidence provided by Kévorkian does not support his claim. Indeed, before 1680 various Armenian printing offices in the West were short-lived, but no scholar has ever claimed that Armenian printing was impossible in the West. Actually, the existence of Armenian printing offices in Constantinople and New Julfa proves that printing in the East in the sixteenth and seventeenth centuries was possible. The author is grateful to John Lane for bringing to her attention the unreliability of Kevorkian's claim.
- 10 Vahé Oshagan, 'From Enlightenment to Renaissance: the Armenian experience' in David N. Myers and Richard G. Hovannisian (ed.), *Enlightenment and Diaspora. The Armenian and Jewish cases* (Atlanta, Scholars press, 1999), p. 146.
- 11 Elizabeth Eisenstein, *The printing revolution in early Modern Europe* (New York, Cambridge University Press, 2012), p. 124. According to Eisenstein the advent of printing and the cultural revival brought in by the Renaissance were not strictly connected. Renaissance scholars considered that a cultural transformation and a classical revival had already started as soon as the early fifteenth century, therefore before the innovative development of printing in Mainz. Ibid. pp. 123–124.
- 12 See: *The Italian Renaissance*. Retrieved from: http://www.newworldencyclopedia.org/entry/Italian_Renaissance. Accessed on 6 January 2019.
- 13 Printing was introduced in Italy at Subiaco in 1465, Rome in 1468 and Venice in 1469. Venice quickly became the most important centre of printing in Italy and elsewhere.
- 14 For example, at the end of the fifteenth century, the French punch-cutter Nicholas Jenson and the Italian printer and publisher Aldo Manuzio settled in Venice. Thus, Aldo Manuzio, founder of the Aldine Press, produced high quality and affordable editions, whereas Jenson created high quality types.
- 15 According to the Italian writer and publisher Neri Pozza, between 1469 and 1519, the number of printing houses in Venice exceeded those established in Rome, Florence, Bologna and Milan. Indeed, there were 37 in Rome, 32 in Florence, 40 in Bologna and 60 in Milan. Neri Pozza, 'L'editoria veneziana da Giovanni Spira ad Aldo Manuzio' in Neri Pozza (ed.), *La stampa degli incunabuli nel Veneto* (Vicenza, Neri Pozza Editore, 1984), p. 10.
- 16 Scholderer bases his calculation assuming an average 300 copies per edition. Victor Scholderer, 'Printers and readers in Italy in the fifteenth century' in D. E. Rhodes (ed.), *Fifty essays in fifteenth- and sixteenth-century bibliography* (Amsterdam, Menno Hertzberger, 1966), pp. 202–205.

Coincidentally, a number of foreign communities present in Venice, such as Greek, Jewish and Armenian together with the activity of Arabs and Turkish traders, had opened a new market opportunity for Venetian printers, global rather than local. These foreign communities, mainly merchants, dispatched publications from Venice to different parts of the world and often assisted in the preparation of printed texts.¹⁷

The cultural and political environment of Venice, its printing activity and the settlement of an Armenian community led the first Armenian book, the *Friday Book*,¹⁸ to be printed in this city in 1512.¹⁹ By the end of the seventeenth century Armenian printing was flourishing in Rome, Livorno, Marseilles, Amsterdam, and elsewhere. However, Venice continued to produce Armenian publications. According to Sivazliyan, between 1512 and 1800 in Venice, 250 different works were published in Armenian by 19 printing houses, owned by both Armenians and others.²⁰ Armenian publications were mainly religious, such as Psalters, Bibles, Breviaries, Missals, religious calendars, lives of Saints (Synaxaria), but also included trade manuals and maps, intended for Armenian merchants, and dictionaries and grammars for scholarly and missionary purposes.²¹

Armenian printing enterprises were usually established in important trading centres and financially supported by wealthy Armenian merchants and tradesmen, who were also assuring the distribution circuits of the Armenian publications to Armenia via the Levant.²² For example, in the second half of the sixteenth century the Armenian merchants from Old Julfa began travelling to Venice to sell silk and other Asian products in Northern Italy and beyond.²³ In the seventeenth century the edict of Shah Abbas I forced Armenians to move from Old Julfa to New Julfa, a suburb in the Iranian city of Isfahan founded in 1605. On their return journey eastwards, those Julfan merchants would transport European manufactured goods and also distribute Armenian publications, to Armenia and, later on, further East when Armenian communities developed in South Asia.²⁴

17 Marino Zorzi, 'I libri antichi a stampa nelle raccolte della biblioteca Marciana' in Scilla Abbiati (ed.), *Armeni, Ebrei, Greci stampatori a Venezia* (Venezia, Casa Editrice Armena, 1989), p. 18.

18 Ուրբաթագիրք, (*Owrbat'agirk*) (Venice, 1512).

19 The first Ethiopic book was printed at Rome in 513, and the first Arabic book was printed at Venice for publication in Fano in 1514.

20 Baykar, Sivazliyan, 'Venezia per l'oriente: la nascita del libro Armeno' in Scilla Abbiati (ed.), *Armeni, Ebrei, Greci stampatori a Venezia* (Venezia, Casa Editrice Armena, 1989), pp. 29–35.

21 Kévorkian, 'Armenian publishing', p. 123. About 70% of the Armenian publications produced in the sixteenth and seventeenth centuries were Church books. Raymond H. Kévorkian, 'Le livre imprimé en milieu arménien ottoman aux XVIe–XVIIIe siècles', *Revue des mondes musulmans et de la Méditerranée*, 87–88 (September 1999), p. 180.

22 Kévorkian, 'Armenian publishing', p. 123.

23 At that time, the trading connections of merchants from Old Julfa were not limited to Venice. Merchants were trading in Aleppo, probably in the Mughal Empire (India), as well as in other European and East Asian's cities. Sebouh David Aslanian, *From the Indian Ocean to the Mediterranean* (California, University of California Press, 2011), pp. 25, 41.

24 In the seventeenth century printing materials such as founts, hand presses and paper supplies were shipped from one Armenian community to another by merchants from New Julfa. This enabled the establishment of printing houses in remote locations. For example, founts, hand-presses and papers for the first Armenian press in Ejmiatsin arrived from India (Madras and Pondicherry). Sebouh David Aslanian, 'The Early Arrival of Print in Safavid Iran: new light on the first Armenian printing press in New Julfa, Isfahan (1630-1650, 1686-1693)', *Handes Amsorea* (2014), p. 401.

The presence of Armenian communities around the world promoted the growth of communication, exchange and networking among Armenian traders. Their skills as intercultural mediators and traders made the Armenians ‘the most successful of trading groups in the broader Asian trade and the individual fortunes they accumulated were at least as great as those of the most successful merchants in London and Amsterdam.’²⁵

The Armenian church was the major structure that held Armenian society together. Formed by well-educated priests, the Armenian Church played an important role in preserving Armenian culture and identity. In the sixteenth century different Catholicos, the head of the Armenian Church, and clergymen travelled to the West to first learn and then improve their printing skills, to establish presses and to gain the support of the Pope to free the homeland from foreign rulers.²⁶ The progress of Armenian printing was closely connected to Armenian communities abroad. In the seventeenth century the extension of trade networks to North-West Europe, Russia, and even to South Asia, stimulated the establishment of new Armenian settlements in foreign lands. Thus, individuals set up printing houses in Marseilles, Livorno, Constantinople, St Petersburg, Madras, Calcutta, Bombay and many others. The presence of Armenian diasporic communities in different cultural environments explains why the first Armenian book was produced in 1512 in Venice, whereas the first Armenian Bible was printed in 1666–1668 in Amsterdam and the first Armenian journal, *Azdarar*, published in 1794 in Madras.²⁷

25 Philip D. Curtin, *Cross-cultural trade in world history* (Cambridge, Cambridge University Press, 1984), pp. 203–204.

26 Oshagan, ‘From Enlightenment to Renaissance’, p. 147.

27 The circulation of British newspapers and journals in India might have inspired the creation of *Azdarar*.

1.2 The transition between manuscript and movable type in the Armenian script

The introduction of printing with movable type meant a change in tools, techniques and methods of production of the reading material. The new technology could be perceived as a smooth transition rather than a radical revolution: the layout of early Armenian publications remained remarkably close to the appearance of traditional manuscripts and consequently complied with readers' expectations. Indeed, they faithfully maintained characteristics such as margins, decorative motifs and borders, used in Armenian manuscripts.²⁸

Armenian publications relied on non-Armenian-speaking Europeans to produce the types and on engravers from Europe for illustrations. As every printer, also Armenian printing offices would finance and organise the making of the types²⁹ but they would not be involved with any other aspect of it. The tasks of cutting punches, striking and justifying matrices, mould-making and casting were separate from printing and carried out by independent contractors.³⁰ When the first book printed with Armenian type appeared in 1512, the golden age of Venetian punch cutting and type founding was drawing to a close. However, Venice may have remained the most important centre of type manufacture, even though Cologne, Strasbourg and Basle may have begun to compete with it already in the 1470s. In the first decade of the sixteenth century there were probably several professional punch-cutters available in Venice, even though little is known about them.³¹ Therefore, the first Armenian type might have been cut in Venice, where also the book was printed, rather than elsewhere.

Similar to the case of Latin, where Blackletter was dominant in ecclesiastical texts, Armenian scribal models were well established at the inception of printing: the Bolorgir style, which was the book hand of the major scriptoria, had become the principal style for biblical and literary texts. In the early thirteenth century, under the royal families and religious leaders of the newly established Armenian Cilician state, the handwritten Bolorgir style became more consistent – letters became smaller and ascenders and descenders were extended to a uniform height and slant. As Stone states, the Cilician court encouraged the formation of a more legible, compact and uniform writing style.³² Every time a punch-cutter had to cut a set of Armenian types, he would need to interpret the handwriting of a manuscript source. This meant that, although the hand-written model would be in Bolorgir style, much would depend on the scribe's idiosyncrasies and the punch-cutter's skills. For each different hand producing a model, the starting point for printing would therefore be a different one. Manuscripts provided

²⁸ However, Armenian printers borrowed aspects, such a titlepage and a pre-titlepage, from the West. Dickran Kouymjian, 'Revolution or Evolution? The Armenian Book from Manuscript to Print', paper presented on 10 November 2012 at the UCLA conference: 'Port Cities and Printers: Five Centuries of Global Armenian Print', p. 7.

²⁹ As already mentioned in Section 1.1 of this thesis, Armenian printing enterprises were often financially supported by wealthy Armenian merchants and tradesmen.

³⁰ Harry Carter, *A view of early typography up to about 1600*. Reprinted with an introduction by James Mosley (London, Hyphen Press, 2002), p. 10.

³¹ The author is grateful to John Lane for this information.

³² There is no evidence of prescriptive attempts at standardisation in the form of edicts from the Court. Stone, *Album of Armenian paleography*, pp. 71–73.

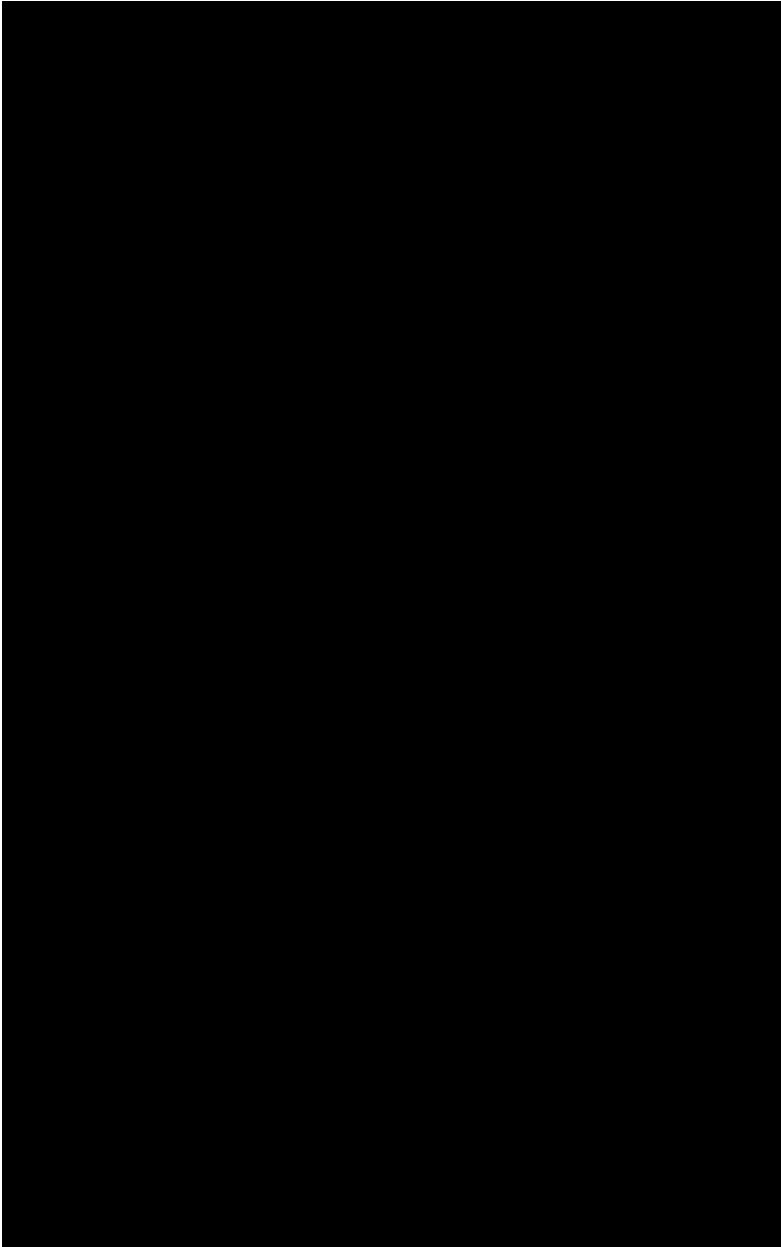


Fig. 1 Meghapart, *Friday Book* (Venice, D.I.Z.A, 1512), (folio 3). (Original size: 11 × 16,5 cm). Shown at original size. *National Library of Armenia (the World Digital Library)*. Note that the book is named after the first word in the text: ‘Owrba’air’, which means Friday.

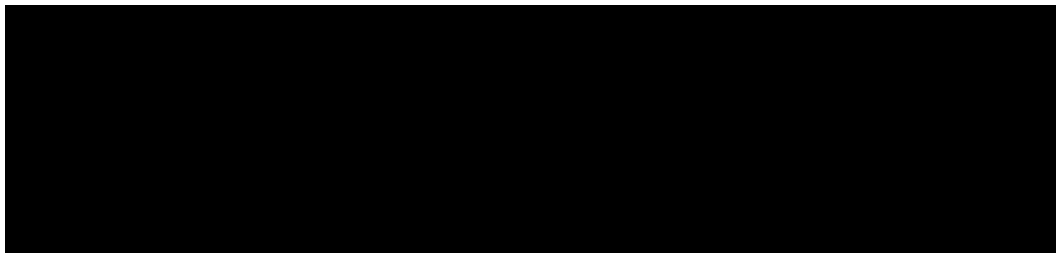


Fig. 2 Detail of a running title from the first major section of the *Friday Book*: ‘Ուրբաթ Սուրբ’ (Holy Friday). The word Ուրբաթ is printed on the odd pages, whereas Սուրբ on the even pages. Here, the capital letter is mistakenly printed as a U whereas it should be a Ո. This is an example of the several typesetting mistakes in the running titles. Such inaccuracies suggest that the individual who printed the headings was not familiar with the Armenian script. Therefore, it is possible that Meghapart worked at this book with an Italian firm. Meghapart, *Friday Book* (Venice, D.I.Z.A, 1512), (folio 79). Shown at 200% of original size.

type-makers with essential typographic information about letterforms, their frequency in text, the overall vertical proportions of characters, the relation between capital and lowercase letters, the amount of leading required, and ligatures and alternate characters used to maintain a consistent space between letters. Finally, the morphology of the Armenian script for the movable type technology was determined by the skills of punch-cutters; inevitably, a technology invented and developed for Latin would present constraints when applied to Armenian.

1.2.1 The first Armenian movable type

The first endeavour to print an Armenian book with movable type was by Jacob Meghapat in Venice in 1512.³³ Information on Meghapat's identity, his role as printer and his involvement in the type-making process for the first Armenian book is still very limited. Historians have suggested that Meghapat was an Armenian priest, or even a merchant, and the printer of five Armenian books published in Venice between 1512 and 1513.³⁴ Among these five books, only the *Missal* published in 1513, has a colophon revealing the name of the printer: 'Jacob the sinful'.³⁵ The enigma surrounding Meghapat is emphasised by the printer's mark at the end of each book: a cross over a circle divided in four quadrants to accommodate the letters of the acronym D.I.Z.A.³⁶ The low profile kept by Meghapat at the beginning of the sixteenth century may be the consequence of a 25-year patent granting the Venetian Democrito Terracina in 1498³⁷ the exclusive right to print books in Armenian among some other languages.³⁸ The consistency kept in the layout and the usage of the same type and decorative ornaments throughout the five Armenian books printed by D.I.Z.A, suggest that Meghapat was not only the printer of the *Missal*, but also of the other four Armenian publications.³⁹

The pioneering work of Meghapat is the *Owrbat'agirk'* (known as the *Friday Book*),⁴⁰ published in Venice in 1512 [Fig. 1].⁴¹ This publication contains the earliest Armenian

33 About 70 years after the introduction of Gutenberg's invention.

34 According to Meliné Pehlivanian, Meghapat printed the *Friday Book (Owrbat'agirk')* (1511–1512), the *Horoscopes and Astronomy (Agt'ark)* (1511–1512), the *Simplified Calendar of Armenian feast days*, the *Missal (Pataragatetr)* (1513), and the *Hymnal (Tagaran)* (1513). Pehlivanian. 'Mesrop's heirs', p. 62.

35 Kévorkian, 'Armenian publishing', p. 126.

36 According to the historian Ališan, these initials could belong to the well known printer and engraver Zuan Andrea. According to the Armenian scholar Karapet Basmajean and Nersessian, the initial D.I.Z.A can be deciphered as: Dei Servus, Jacobus, Zanni or Zuanne [=Yovhannes], Armenius.

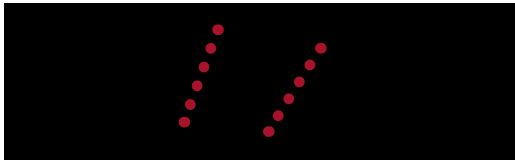
37 Horatio Brown, *The Venetian printing press* (London, John C. Nimmo, 1891), pp. 41–42. This theory is also supported by Kévorkian and Lane. See: Kévorkian, 'Armenian publishing', p. 126; Lane, *The Diaspora*, p. 26.

38 Other languages were: Arabic, Moorish, Syrian, Indian, and Barbary. Democrito Terracina died in 1513, however his nephews Lelio and Paulo managed to renew their uncle's privilege for a further twenty-five years.

39 According to Kévorkian the *Missal* is the last of the extant books printed by Meghapat (see Kévorkian, 'Armenian publishing', p. 126 note n. 16). Kévorkian claims that the place of publication is omitted from the colophon of the *Missal*. However, this information is inaccurate. Nersessian cites the colophon of the *Missal*: 'these sacred words [Pataragatetr] were printed in the Armenia era 962 [ad 1512] in the God-fearing city of Venice of the Franks, by sinful Yakob.' See: Nersessian, *Catalogue of early Armenian*, p. 13.

40 Or Ուրբաթագիրք in Armenian characters.

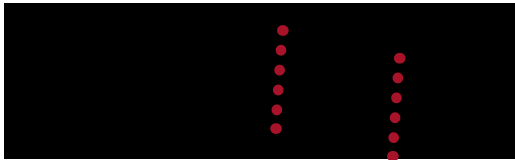
41 The appearance of the Armenian alphabet in a printed book precedes the *Friday Book* by 26 years. However, the Armenian alphabet published in Mainz in 1486 in Bernhard von Breydenbach's *Pilgrimage to the Holy Land* was printed from a woodblock. See p. 102 of this thesis.



a



b



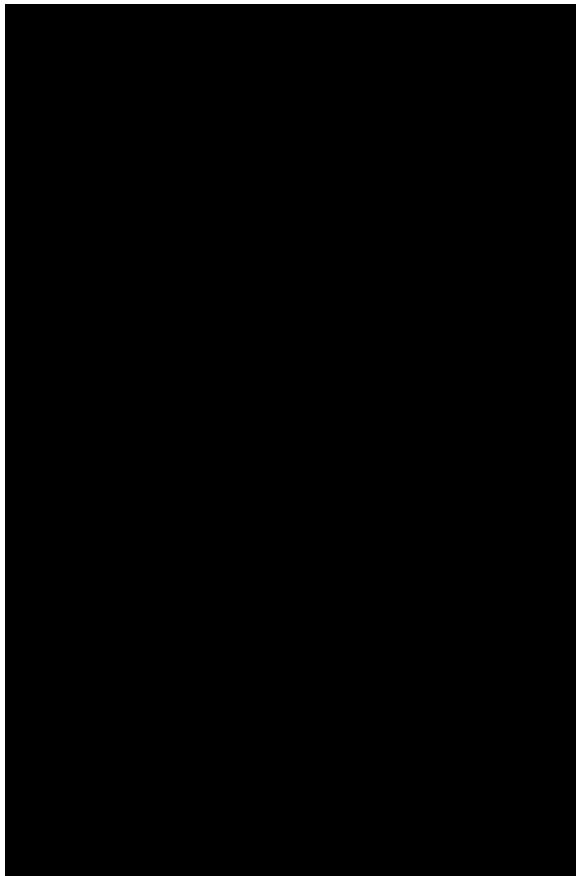
c

Fig. 3 Contrary to manuscript tradition (**image a**), Meghapart's type (**image b**) is an upright Bolorgir style, with a vertical rather than a slanted axis. Only occasionally is it possible to find manuscripts with Bolorgir letters possessing an almost vertical axis (**image c**).

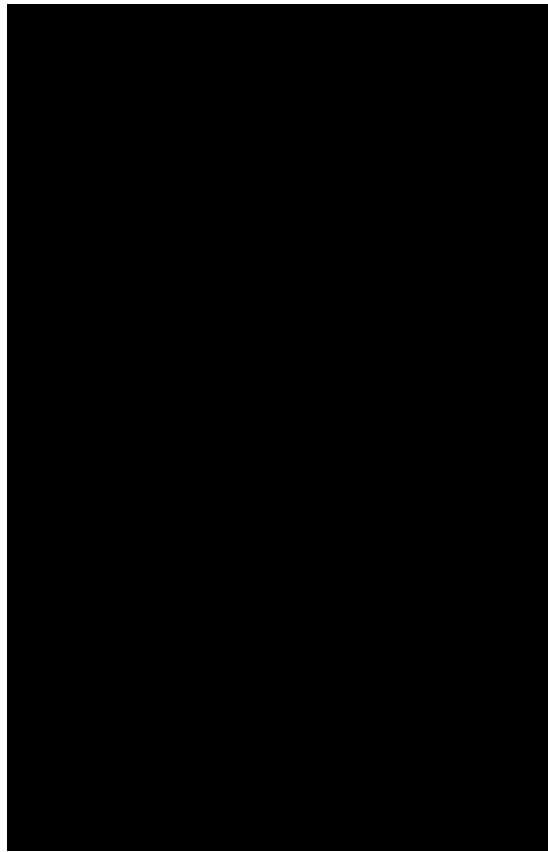
a Detail from the *Armenian Gospel*. Scribe Yohannes Vardapet, Lake Van – Monastery of Gamahiel in Xizan, 1455 CE. Walters Art Museum Ms. W. 543. Shown at 200% of original size. *The Digitized Walters Manuscripts*.

b Detail from Meghapart, *Friday Book* (Venice, D.I.Z.A, 1512), (folio 21). Shown at 200% of original size.

c Detail from the *Roman Breviary, Missal*. Scribe Polos Arakel'ci abela, Bologna, 1381 CE. Bibliothèque nationale de France Ms. 107, in Stone, *Album of Armenian paleography*, p. 374. (Original size: 28 × 19 cm). Shown at 200 % of original size.



a



b

Fig. 4 Comparison between the layout of the *Friday Book* (**image a**) and the *Armenian Gospel* manuscript (**image b**) dated 1455. Both pages show passages from the Gospel of Luke.

a Meghapart, *Friday Book* (Venice, D.I.Z.A, 1512), (folio 21). Shown at 70% of original size.

b The *Armenian Gospel*. Scribe Yohannes Vardapet, Lake Van – Monastery of Gamahiel in Xizan, 1455 CE. Walters Art Museum Ms. W. 543. Shown at 40% of original size.

characters for movable type, which for convenience is here named FJM₁, and marks the beginning of Armenian hand composition.⁴²

The content of the *Friday Book*

Despite the importance of the Armenian Church, the first Armenian printed book is not a book for worship, but a collection of folk tales for Armenian travelling merchants.

The book has two major sections, identified with the running titles in red ink at the top of each page: the first one is ‘Ուրբաթ Սուրբ’ (Holy Friday) [Fig. 2] which provides recommendations regarding tasks that should be avoided on Fridays (Folio 1–46); the second one is ‘Կարիանոս Սուրբ’ (Saint Cyprian) which has the Confession of Cyprian the Mage (Folio 48–52) and includes ‘Կուսիմ Ուստիանէ’ (the Story of the Virgin Justine) (Folio 53–58). Other sections (Folio 59–121), which are shorter, have prayers to heal, a prayer of Gregory of Narek, Gospel excerpts (from Matthew, Mark and Luke) and prayers of protection against demons.⁴³ The content of this book can be compared to that used in *Hmayils*: prayers on scroll papers or parchment which function as talismanic amulets⁴⁴ [an example of a *Hmayil* is shown in Appendix A, p. 437]. Armenian travellers carried amulets in order to remain healthy and protected against demons and spells during their long journeys. The scroll was for personal use, and therefore the owner had his own name at the end of each prayer. When the scroll was passed on, or sold to someone else, the new owner removed the name of the previous holder to inscribe his own.

1.2.2 Methodology for the analysis of the types

Meghapart’s type, a first of its kind in the Armenian script, is an upright Bolorgir style possessing a vertical axis in contrast to the right leaning letterforms from manuscript tradition [Fig. 3]. Before undertaking a detailed analysis of this first Armenian type, it is essential to specify the methodology to be implemented here and throughout this thesis. Analysis is conducted at three levels: text level, word level and letter level. At each level the type is examined in comparison to an early reference text. Its analysis is accompanied by a detailed explanation of the rationale behind this methodology to

⁴² According to John Lane, it is highly probable that Meghapart’s types were cast in metal. He observes that the use of woodcut type for text size was uncommon since it was ‘difficult to make and liable to warp, shrink or expand with varying conditions’ and that Meghapart’s types might have been made in the traditional manner – by cutting punches, striking matrices and casting type. However, Lane notes that detailed comparisons of high-quality macro photos – one would have to photograph numerous examples of the same letter in a single printer’s forme – could shed light on the manufacturing technique.

⁴³ Alessandro Orengo, ‘L’Owrbat’agirk’ (‘Il Libro del Venerdì’) e gli inizi della stampa Armena, *Egitto e vicino Oriente*, 34 (2011), pp. 230–233. See also: Agnès Ouzounian (Translation by Alexis Pernsteiner), ‘Ուրբաթագիրի (Venice, 1512): From the manuscript to the first printed book’. Paper conference presented on 10 November 2012 at the UCLA conference: Port Cities and Printers: Five Centuries of Global Armenian Print, p. 1. Retrieved from: <https://www.fresnostate.edu/artshum/armenianstudies/500th-anniversary/>. Accessed in July 2018. See also: Jacob Meghapart, *Ուրբաթագիրի*, (Venice, D.I.Z.A. 1512).

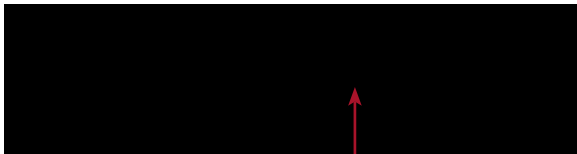
⁴⁴ Ouzounian, ‘From the manuscript’, p. 1. See also: Theo Maarten Van Lint and Robin Meyer, *Armenia: masterpieces from an enduring culture* (Oxford, Bodleian Library, 2015), p. 130.



Fig. 5 Detail from the *Friday Book*. The red arrows point to clashes between descender of letter ψ and ascender of Է, and descender of ր and ascender of զ.



a



b

Fig. 6 K'ahanay manuscript (**image a**) dated 1386 illustrates the absence of word spacing in manuscripts. The inter-word spacing in the *Friday Book* (**image b**) is also compressed.

a Detail from *Miscellany*. Scribe Grigoris K'ahanay, Ernzka (Kotayk Province), 1386 CE. Matendaran 557 in Stone, *Album of Armenian paleography*, p. 376. (Original size: 28 × 19 cm). Shown at 200% of original size.

a Detail from Meghapart, *Friday Book* (Venice, D.I.Z.A., 1512). Shown at 200% of original size.



Fig. 7 Throughout the *Friday Book* inter-character spacing is very inconsistent and letters are horizontally too compressed, causing occasional collision between letters. Here the second descender appears to have broken off.



Fig. 8 The *Friday Book* presents issues with the alignment of the characters at the baseline. Here, letters ւ and u do not align at the baseline with other characters. In the text there are many other letters which behave similarly.



Fig. 9 Comparison between the vertical proportions in the *Friday Book* (**image a**) and in the *Armenian Gospel* manuscript (**image b**) dated 1455. In the *Friday Book* (**image a**) the ratio is 3:2:3. The numbers on the left indicate the 3 different lines of ascenders and descenders.

facilitate the comprehension of subsequent type analyses.⁴⁵ For example, Meghapart's type is analysed by comparing it with manuscripts.

Text level

Analysis at text level involves examining the page layout, leading and texture.

While the content is close to that of the scroll, the layout of the *Friday Book* is close to the format of a bound manuscript. Several typographic elements in the *Friday Book* were derived from manuscripts. Examples are: the use of black and red ink in the text, ornate drop capitals used as a decorative element at the beginning of each section and the use of quires [Fig. 4].⁴⁶ However, in the *Friday Book* there is a distinctive element which belongs to Western printed books rather than to the Armenian manuscript tradition: the running title framed in the scroll-form headers situated on the top of each page.

FJM₁ is a large type. The leading is exceedingly tight, and consequently descenders collide with ascenders of the following line [Fig. 5]. The larger the size of a type, the greater space between lines is required. However, this is an aspect which seems to have been overlooked while composing the *Friday Book*. On each page there are 16 lines of texts and 23 characters per line. Similar numbers of characters per line, and lines per page are expected to be found in manuscripts that are close in dimension to the *Friday Book*.

Word level

Analysis at word level covers word spacing, letter spacing, vertical proportions, and the relationship between capital and lowercase letters.

In addition to the problem seen with the leading, the readability of FJM₁ is reduced by the lack of word breaks (in imitation of manuscripts) and by the uneven letter spacing [Fig. 6]. Letter spacing is inconsistent: usually letters that have tails extending to the right or to the left cause blank spaces. On the other hand, letter spacing can be also extremely tight; for example spacing between the pairs n and լ, and լ and ղ [Fig. 7]. Furthermore, at each line, the eye is distracted by poor composition: letters do not align well on the baseline [See the diagram on p. xv]. This occurs more frequently with the letters un and u [Fig. 8].⁴⁷ Inconsistencies in the composition of the *Friday Book* indicate a lack of knowledge of printing techniques.

There are no extant manuscripts that closely resemble the letterforms of FJM₁.⁴⁸ However, manuscripts from the late fifteenth century may reveal the origins of

⁴⁵ Subsequent typefaces examined in this thesis do not require such extensive analysis.

⁴⁶ In Armenian manuscripts, quires were numbers expressed by the letters of the Armenian alphabet. These numbers were usually placed at the bottom center of the recto of the first folio and the same number at the bottom center of the verso of the last folio of the quire. Dickran Kouymjian, 'The making of the Armenian manuscript: An Overview', Paper conference presented on 14 October 2011 at the Maison du Séminaire, Nice: 'The Making of the Oriental Book', p. 1.

⁴⁷ It is possible that the frequent misalignment of un and u comes from turning the un upside down and using an upside down n for u. The author is grateful to John Lane for the suggestion.

⁴⁸ According to Lane: 'As the first Armenian printing type it could hardly have followed anything other than a manuscript hand, yet I have seen no manuscript that closely resembles it'. Lane, *The Diaspora*, p 22.

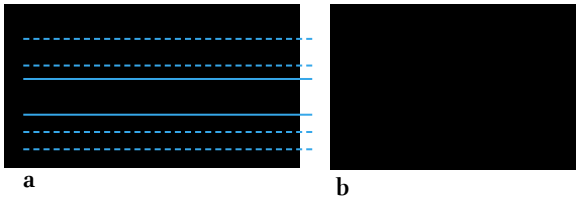


Fig. 10 In the *Friday Book* (image a) the height of the uppercase letters extends from the second line of descenders to the second line of the ascenders and uses the second line of descenders as its baseline. The lack of integration between uppercase and lowercase letters is also evident in manuscripts (image b). Image b is shown at 100% of original size.



Fig. 11 In the *Friday Book* three different characters were designed for letters l (image a) and q (image b). Shown at 200% of original size.



Fig. 12 Examples of variant designs for letter l used in the *Friday Book* (image a). The detail of the *Armenian Gospel* manuscript (image b) illustrates variant design for letter l. *Roman Breviary, Missal*. Bibliothèque nationale de France Ms. 107, in Stone, *Album of Armenian paleography*, p. 374. Shown at 200% of original size.

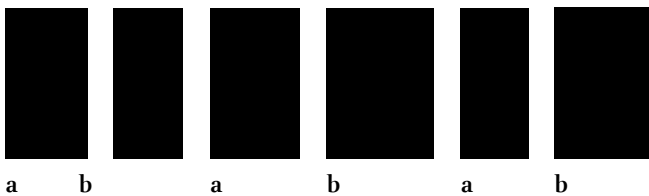


Fig. 13 In the *Friday Book* (Images b) are variant designs of (images a). The letter shown are: p, h, and r. 200%

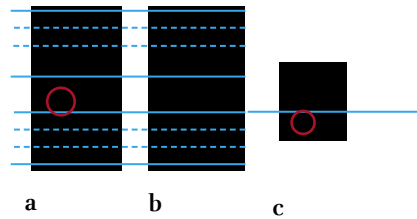


Fig. 14 The red circles highlight the foot of p̄. In the *Friday Book* (image a) the foot of p̄ is shorter than the small loop inside the letter, and it does not extend below the baseline as in the *Armenian Gospel* manuscript (image c). In the *Friday Book* (image b) not only the loop of the head of p̄ is transformed into a sharp angle, but also the position of the whole letter on the vertical alignment is modified. The head is extended to the height of the first line of ascenders and the foot to the first line of the descender. The counter of the small loop crosses the baseline at the middle.

particular typographic features introduced by type-makers. The vertical proportions used in FJM₁ follow the norm used in manuscripts from the end of the fifteenth century. For instance, as in manuscripts, FJM₁ has ascenders and descenders that extend above and below the base character height at different lengths. Yet, unlike in manuscripts the deepest and tallest extend by the same amount. It is also worth noting that the greatest extension would exceed the height of the base character. In FJM₁, these common manuscript practices were refined and standardised for printing. Thus, the length of both ascenders and descenders were regularised to three different lengths with the base character height at 2/3 of the maximum descenders (or ascender) [Fig. 9].

In FJM₁ the capital letters, which in manuscript were very different from lowercase characters and could be extremely large, had to be made to fit a typographic arrangement. In other words they do not exceed the height of the ascenders and descenders, but, as in manuscripts, they remain proportionately wide. For this reason they fail to integrate well with Bolorgir lowercase letters [Fig. 10].

Letter level

Analysis at letter level examines the shape of individual letters, as well as their vertical and horizontal proportions, contrast and ligatures.

The system used by Meghapart to compose the *Friday Book* determined the design of letterforms and the number of characters produced. As already mentioned in the word level analysis, the *Friday Book* has poor readability, mainly because of unsuitable word and letter spacing.

A close examination of the *Friday Book* reveals that the number of sorts designed for the lowercase letters of FJM₁ was 55 (in contrast to the current standard of the 44 letters). Among these, 13 variants of certain characters appear throughout the book [a synopsis of the 55 characters is shown in Appendix A, p. 438]. An example is the different versions of the consonants լ and զ. For each of them, two variants with shorter tails were produced [Fig. 11]. The function of the three different forms of լ, each of them having a long, a medium, and a short tail, is evident in the composition of the sequences լն and լնյ [Fig. 12].⁴⁹ Alternative sorts were employed for letters ք, հ, and ը. Variations were made on the length of their descenders in order to facilitate kerning when following a tailed letter [Fig. 13]. Letter թ also appears to have an alternative form with the loop of the rounded head transformed into a rectangular shape and the descending stroke (foot) shortened. This solution was adopted to accommodate the abbreviation mark ‘pativ’ at the top of letter թ. [Fig. 14]. The purpose of employing two or even three sorts for the same character was to avoid collision between letters and to improve spacing. Shortening tailed letters and reducing the height of some characters was a system introduced in manuscripts using the Bolorgir style, in the middle of the fourteenth century.⁵⁰

49 It is worth noting that characters with tails of different lengths may have been cast in a single matrix, either by blocking part of the tail before casting or by cutting off part of the tail after casting. The author is grateful to John Lane for the information.

50 During the late fifteenth century this system became widely used in manuscripts. Stone, *Album of Armenian paleography*.

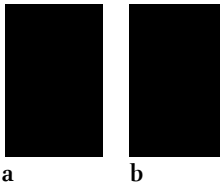


Fig. 15a and b Two different shapes of z from the *Friday Book*.

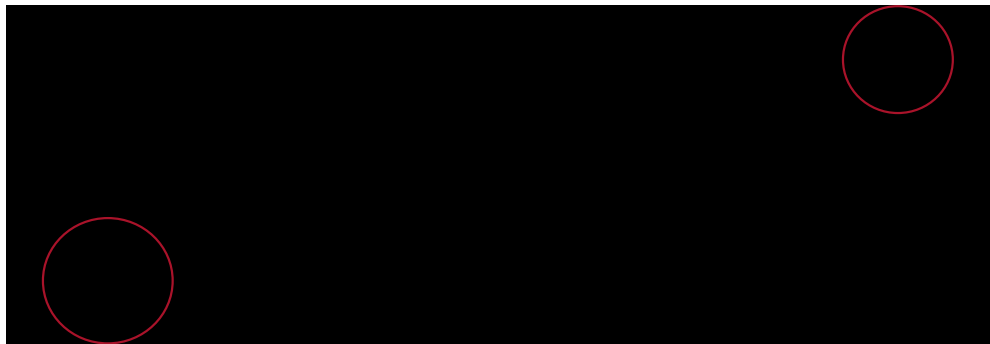


Fig. 16 In the absence of word spacing, alternate designs were introduced in the *Friday Book* to support the justified text. For example, for this purpose, two characters were designed for the letter l, here circled in red. Either the wide or the narrow versions were used to accommodate the length of the line.



Fig. 17 In the *Friday Book* the counter of u is smaller than ũ and l̄ but the counter of ũ is larger than in the other letters in the example.



Fig. 18 Ligatures produced for the *Friday Book*.

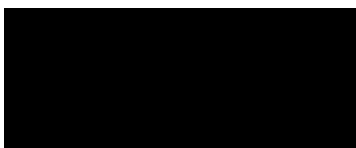


Fig. 19 Example showing the high quality execution of the ligature ũŋ compared to the rough design of the other letters in the *Friday Book*.

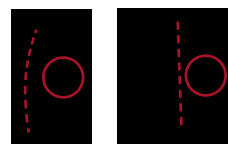


Fig. 20 Letters 'ini' from the *Friday Book*. The different ductus of the stroke of ascender and descender is marked with a red line; the shape of the arch used in the individual letter and in 'ini' in the ligature is highlighted by the red circle.

Alternate letters were necessary to improve the readability of the *Friday Book*. For example, character շ appears throughout the text of the *Friday Book* with two very different designs. The first one is a calligraphic letterform; the head is a semi-circular loop opened at the left, the stroke then continues below the baseline, curving towards the left and afterwards to the right to extend almost horizontally to form a long tail [Fig. 15a]. The shape of the second շ is rigid, and poorly executed: the semi-circular loop of the head turns abruptly into a diagonal stroke. The rigidity of this letter shape is emphasised by the angle (almost 30°) between the diagonal stroke and the tail. Also, the ductus and contrast of the two forms of շ are different [Fig. 15b]. A close analysis of the first pages of the *Friday Book* reveals that the wide, high contrasted, calligraphic form was used to begin a word starting with շ, whereas the other form was used in between words. It can be assumed that, because the lack of word breaks (in imitation of manuscripts) reduces readability, in FJM1 the alternative form of շ was devised to help readers identifying words [see Appendix A, p. 439].

Another reason to create letter variants was to enable the text to appear in justified format. A justified text is spaced in a manner that the right and left sides of the text block have a straight edge. The justification is obtained by adding white space between words, so that all the lines are of the same length. In the *Friday Book*, where there is no word spacing, lines were justified by means of alternate characters of different widths. This is the case for the letter լ, where a narrow version was created by shortening the horizontal stroke at the baseline. In many instances the use of either the narrow or the wide form in the text was not related to the shape of the following letter, but to the overall widths of the characters in the line. This is noticeable in the pair լււ in the words 'Արիսաւարկ' and 'ուսմբնաւ' on the 11th and 13th lines in folio 5, respectively [Fig.16]. The variation in widths throughout the book, can be observed in the lack of consistency between the counter of letters ս, ն, կ, մ, which have a similar basic structure [Fig. 17].

In the *Friday Book* pairs մ and ն, մ and ի, մ and է, and մ and կ were each designed as ligatures: a character consisting of two joined letters [Fig. 18]. In manuscript the use of a stroke that joins adjacent characters is common in the Notragir writing, which was a cursive script,⁵¹ rather than in Bolorgir. The quality of the ligatures used to print the *Friday Book* are more refined than the clumsy other characters of FJM1. The clear print of the ligatures, unspotted by the ink on letters, and the firm structure of these characters suggest that they were designed by a skilled punch-cutter [Fig. 19]. For example, the forms of the single characters մ and ի differ when the letters join to form a ligature. In the ligature the strokes of ascender and descender of ի are straight, instead of bending backwards to the right as in the individual character ի. Another difference is the shape of the arch of ի: the stroke of the arch of the ligature is rounded and closes towards the left with a thick outstroke. The arch of the individual character, which ends with a thin and sharp stroke, is not a smooth curve [Fig. 20]. Other dissimilarities between ligature մի and its individual letters can be noticed in the shape of մ. In the ligature there is a thin instroke on the left side of the stroke, and the ascender at the right side of the letter becomes straight [Fig. 21]. In մի the calligraphic appearance is

⁵¹ Stone, *Album of Armenian paleography*, p. 62.

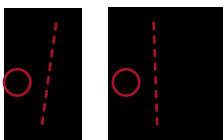


Fig. 21 Letters 'men' from the *Friday Book*. The different inclination of the ascender is marked with a red line. The absence of an instroke in the individual letter is highlighted by the circle.

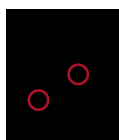


Fig. 22 The high contrast between thin and thick strokes in the ligature *uþ* from the *Friday Book*. The thin strokes are highlighted in red. Additionally, the stroke modulation in letter *þ* can be appreciated in its vertical stem: the descender stroke increases before exiting as a thin outstroke to the right.



Fig. 23 In the *Friday Book* the foot of letter *p* is different: in the first and second example, the foot is rounded, whereas in the third it is squarish. However, the foot of the second *p* is bigger than the foot in the first version. Also, in the fourth instance, the foot appears on both sides of the descender.

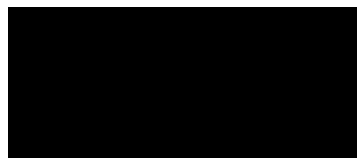
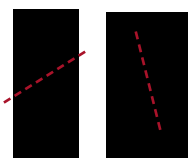


Fig. 24 Comparison between the high contrast character *z* and other letters having a more rigid design. In the *Friday Book* rounded letters are lighter than the other characters.



a b manuscript
Fig. 25 Unconventional distribution of the weight.

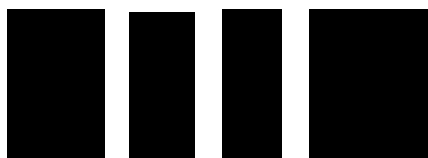
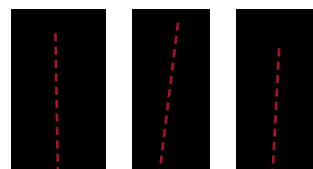


Fig. 26 The speed of the stroke is strictly related to the complexity of letter shapes. The ductus is rapid in rounded letters such as *o* and *δ*, but slow in characters with stems.



a
Fig. 27 Examples of differing angles of inclination in the *Friday Book*.



Fig. 28 The right part of the letter *r* is an arch with a pointed ending, whereas that of *ṛ* has a thin diagonal stroke joining left and right stem. The descender of *ṛ* is not straight, but slightly bent at the centre.

maintained by the high contrast – characterised by thin strokes at junctions with arches and stems, and rather thick strokes of stems – and stroke modulation. For instance, in the ligature the stroke of letter ի increases at the bottom of the descender before exiting as a thin outstroke [Fig. 22].

The unsatisfactory quality of the printed page, caused by the frequent smearing of ink on the characters, prevents the identification of the design details of some letters. Consequently, it is not possible to ascertain whether other variations in letterforms are a mere consequence of the spread of the ink, or are effectively alternative designs of a character. An example of this phenomenon is the character ք that seems to have four different feet [Fig. 23].

Despite the inadequate quality of the printed outcome, it can be identified that rounded letters and letter shapes with complex designs differ from other letters of FJM1 in weight, contrast and ductus. Some of the rounded letters, for example շ, օ and ծ have high contrast and strokes which are too thin compared to those of the other letters; consequently the rounded letters appear lighter than the other characters in FJM1 [Fig. 24]. Noticeable is the unconventional distribution of the weight in the sign օ: the stroke forming the circle is thinnest at the upper right and lower left, instead of having the greater weight at the right and left sides. [Fig. 25]. The inconsistency amongst letterforms of FJM1 is increased by the contrast between the fluid and rapid ductus of շ, օ and ծ, and the relative lack of change of modulation in characters with stems [Fig. 26].

It can be argued that the unevenness in stroke weight, ductus, width and contrast was because FJM1 was the first Armenian type. However, in the colophon of the *Missal*, Meghapart refers to FJM1 as ‘writing’ rather than ‘printing’. Therefore, it appears that Meghapart intended to make FJM1 as faithful as possible to handwriting, and that he intentionally retained irregularities, such as: the contrasting angle of inclination in ՛ and the characters զ and ղ [Fig. 27], and the different interpretation of common elements in letterforms ը, ղ and ղ [Fig. 28]. As the pioneer of Armenian typography, Meghapart would have selected, possibly even from idiosyncrasies in his own handwriting, the main features of the Armenian script to convey them as typographic norms. This would have been a difficult task for an Armenian who did not have type-casting knowledge and any experience in printing.

Overall, FJM1 is an unsatisfactory fount. However, because this is the first Armenian type, it constitutes a significant achievement. Furthermore, the system used in the *Friday Book* – in that specific signs were designed as different characters by modifying either the length of their descenders or tails to improve inter-character and word spacing – became widely used by subsequent type-makers until the middle of the nineteenth century. Meghapart’s system as indicated above, necessitated a large number of characters in the fount, which raised the cost in terms of metal type and slowed the speed of composition.

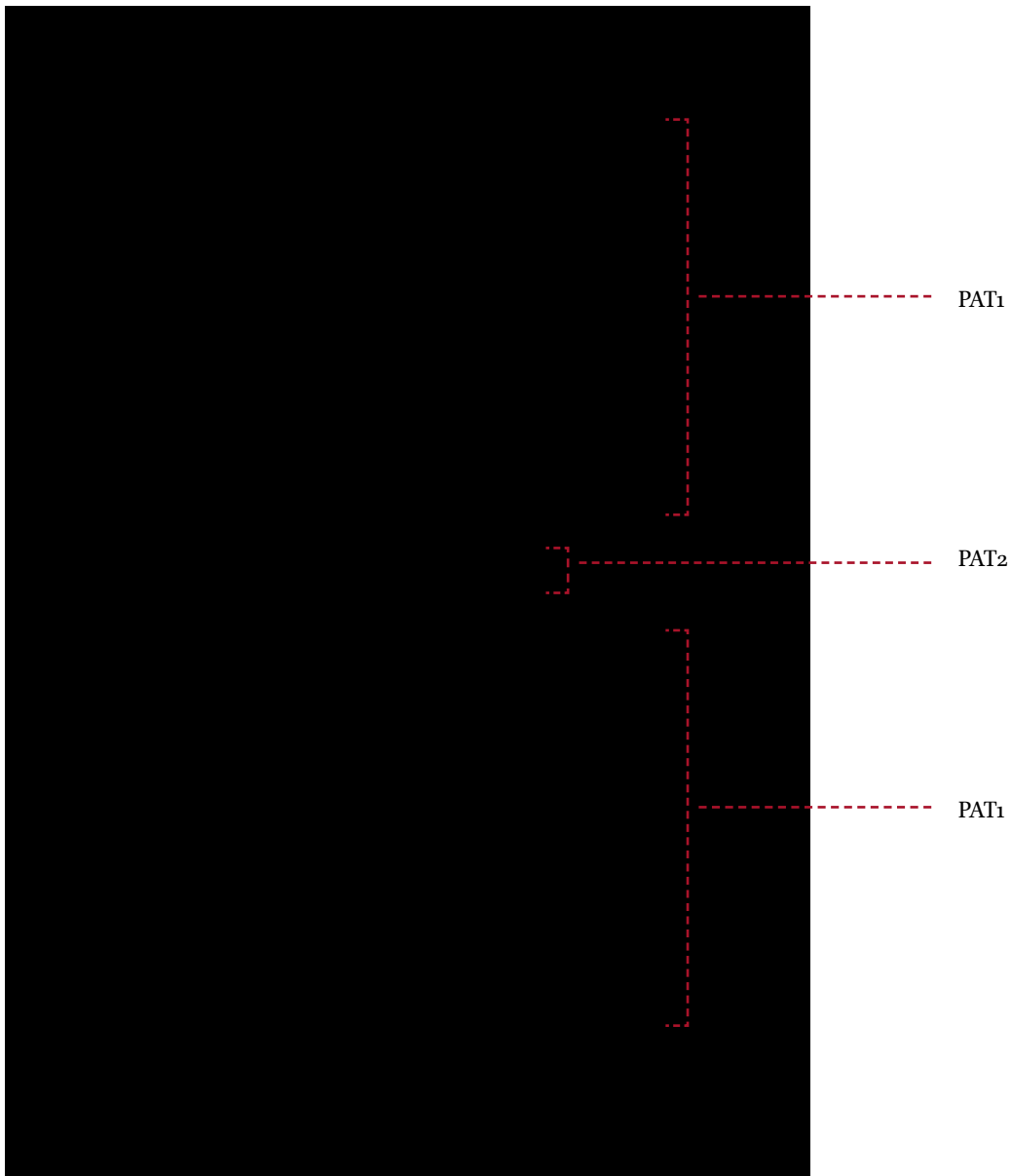


Fig. 29 Abgar Dpir Toxateci, *Psalter* (Venice, 1565). (Original size: 10 × 15,5 cm). Shown at original size. *The Mekhitarist Library in San Lazzaro, Venice*.

(The book has printed quire signatures in both Armenian and Arabic numerals (on this page 23); this copy also has penciled folio numbers (here 209). The book is made up of 32-page quires). As in this page, most of the *Psalter* is composed in PAT1, whereas PAT2 is used only sporadically.

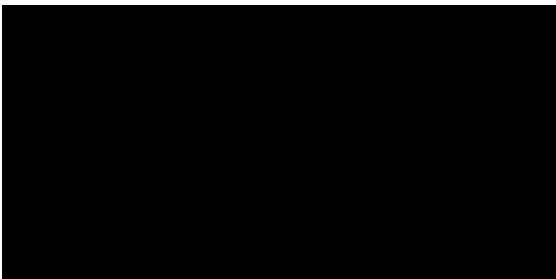


Fig. 30 Contrary to the *Friday Book*, the *Psalter* has large inter-line space that increases the legibility of the type. Image is shown at 200% of original size.

1.2.3 Two Armenian types cut for the *Psalter*

In 1565 (fifty-three years after the *Friday Book* was produced) another Armenian, Abgar Dpir Toxatec'i, printed an Armenian Psalter in Venice using two Armenian types cut for the occasion.⁵² The printing activity of Abgar in Venice was relatively short and consequently his output was limited: in 1565–1566 he printed the *Psalter*⁵³ (*Salmosaran* or *Salmosagirk* in Armenian) and a broadsheet calendar.⁵⁴

Since at that time the production of religious books in Italy was fully controlled by Roman censorship, Abgar's printing establishment in Venice had to be endorsed by Pope Pius IV to produce early Armenian religious publications. After two years in Venice, Abgar moved his printing enterprise to Constantinople aiming to reach a broader Armenian audience.⁵⁵ There, he worked until 1569 printing half a dozen different titles, all of religious content. Although his activity in Constantinople lasted only three years, his was the first Armenian printing press to be set up in the Ottoman capital.⁵⁶

Until 1883, when Garegin Zarbahnalean determined the correct chronology of Armenian books, the *Psalter* had been deemed by scholars to be the first Armenian printed work. Intellectual Armenians were disappointed that the first Armenian book was a popular and 'Medieval' work instead of a book of psalms.⁵⁷ It is also likely that widespread dissatisfaction arose amongst educated Armenians when they noticed that the first Armenian type used in the *Friday Book* was less refined than those used for the printing of the *Psalter*. The Armenian types used in the *Psalter*, which for convenience are here identified as PAT1 and PAT2, were cast by Abgar using punches cut in Venice by a German punch-cutter.⁵⁸

The layout of the *Psalter* is very simple: the text, printed entirely in black ink, is composed to cover almost the whole width of the leaf [Fig. 29]. Additionally, Abgar, who preferred to closely imitate Armenian manuscripts, did not employ running titles, that were elements inspired by Western books and used by Meghpart in the *Friday*

52 In 1539 Teseo Ambrogio Albonesi's *Introductio in Chaldaicam linguam. Syriacam atque Armenicam et decem alias linguas* was published in Pavia. Albonesi is the first Western scholar to use movable type for Armenian text. This is the first publication in a Western language to have a substantial text printed with Armenian movable type, a translation and a phonetic transliteration. However, since the Armenian type employed by Albonesi did not influence the design of subsequent Armenian founts, it is not considered for analysis in this thesis. Nevertheless, Albonesi's publication deserves attention as it anticipates the typographic requirements for the composition of Armenian grammars. The typographic arrangement used for Armenian in the *Introductio* is discussed on pp. 107–111 of this thesis.

53 The *Psalter* was produced with the financial support of some wealthy Armenian merchants from New Julfa.

54 The broadsheet calendar is known as *Kharnapntiur tomari* (*Confusion of the calendar*).

55 Agop J. Hacikyan, *The heritage of Armenian Literature* (3 vols., Detroit, Wayne State University Press, 2005), vol. 3, p. 44.

56 His activity was stopped by the Ottoman authorities. However, Schwartz argues that the sources available to scholars today do not support the notion that Ottoman sultans banned printing. Therefore, the Ottoman authorities might have not been the reason for the short life of Abgar's printing activity in Constantinople. Kévorkian, 'Armenian publishing', p. 129; Schwartz, 'Did Ottoman Sultans ban printing?', pp. 1–39.

57 Pehlivanian, 'Mesrop's heirs', p. 63.

58 Puzovio, 'The story of the Armenian alphabet', *Baseline*, 57, p. 37. According to Puzovio, these are the first known instances of Armenian movable metal types. In her article, Puzovio observes that Meghpart's types 'may not have been cast but cut as woodblocks'. However, as explained in footnote 42 on p. 37 of this thesis, the types used in the *Friday Book* were probably cast in metal.

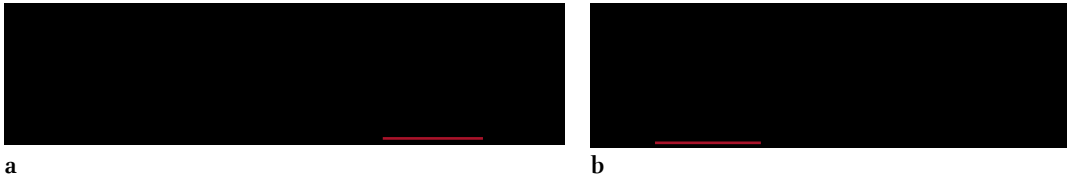


Fig. 31 The inter-character spacing in the *Psalter* (**image a**) is more consistent than in the *Friday Book* (**image b**). Note for example the space between the letters *u* and *j* in (**image a**) and (**image b**), which are here underlined in red. In (**image a**) this space is improved and consequently also the readability of the word.
Image a is shown at 300% of original size, (**image b**) at 200%.



Fig. 32 Characters *ր*, *ի*, *ն*, *դ*, and *դ* from the *Psalter*. Shown at 300% of original size.

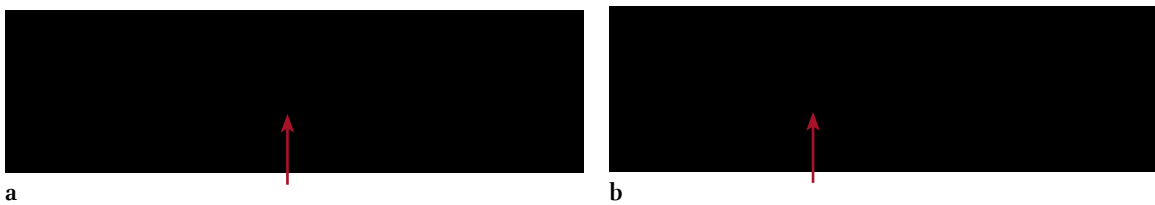


Fig. 33 Yohannes Vardapet's manuscript (**image a**) dated 1455 illustrates the narrow word spacing in manuscripts. The inter-word spacing in the *Psalter* (**image b**) is also tight. **a** Detail from the *Armenian Gospel*. Scribe Yohannes Vardapet, Lake Van – Monastery of Gamahiel in Xizan, 1455 CE. Walters Art Museum Ms. W. 543. Shown at 200% of original size. **b** Detail from Abgar Dpir, *Psalter* (Venice, 1565). Shown at 300% of original size.



Fig. 34 The example shows PAT₁ descenders extending below the baseline at two different heights. Thus, letters with tails, such as *վ*, reach the deepest height, whereas all the other letters with descending strokes, such as *ի*, *ր*, *յ*, *կ* and *բ* elongate to a lesser extent.

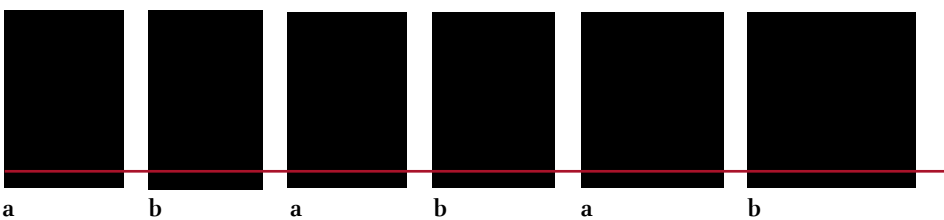


Fig. 35 In PAT₁ tails of letters *q*, *վ* and *զ* change from a straight line (**images a**) to a line bending towards the bottom (**images b**). From this example is evident that the descender of letter *զ* (**image a**) is shorter than in the other tailed letters (**other images a**). Additionally, letter *զ* (**image b**) shows that the alternate form of *զ* was necessary to avoid collision between the edge of the tail and the descender of letter *ի*.

Book (see p. 34 of this chapter, Fig. 2). In order to optimise the legibility of a large type such as PAT₁, it was necessary to provide sufficient inter-line spacing in order to avoid collisions between characters with ascending and descending strokes [Fig. 30].

The evenness and consistency of the texture is obtained by the neat impression of PAT₁ on the page, by consistent inter-character spacing [Fig. 31], and by uniform internal counters in letterforms sharing similar basic structures such as ը, ի, ո, ղ, and ճ [Fig. 32]. Despite the inter-word spacing of the Psalter being tight, the consistent inter-character spacing enables readers to identify words easily within a line of text [Fig. 33].

It would be expected that Abgar, as the second Armenian printer, followed the typesetting composition formula used by his predecessor. Instead, the types for the Psalter were devised in such a manner that the number of characters employed was reduced, the composition simplified, and most likely lower the cost of cutting the punches and casting the types. In order to optimise the readability of the Psalter, the height of the descenders was standardised, establishing two main vertical distances below the baseline. The deeper one was for the tailed characters զ, վ, լ and ղ, in order to allow sufficient space to accommodate the subsequent character without any collision. The second one was used for the other letters with descenders [Fig. 34]. Thus, Abgar demonstrated that the amount of variant designs introduced by Meghapart could be drastically reduced without affecting the quality of the composition and that variant designs could be considered as a product of handwriting rather than an essential aspect of the script. Indeed, in PAT₁ only characters զ, վ and զ were cut as variants. In the variants the tail bends towards the bottom, thus altering the ductus. It appears that the alternate form of letter զ was designed to prevent the tail from colliding with the descender of any subsequent character; in fact character զ extends below the baseline to a lesser extent than զ and վ. However, the reason behind the variant designs զ and վ is unclear [Fig. 35].

In his type, Abgar used a general feature of manuscripts in Bolorgir style: the slanted angle. PAT₁ lowercase letters slant to the right, most of them at an angle of 20°. However, the tailed letters զ, վ and ղ, as well as the character հ have a greater angle of inclination [Fig. 36]. A close analysis of the Psalter does not reveal a rationale for the changes of vertical axis in some of the characters: for example, the angle of inclination in letters ը and թ is slightly different, although letters ը and թ share a similar basic structure [Fig. 37a]; the same inconsistency can be observed in ե and է [Fig. 37b]. However, because the different axes are used only on a few occasions, the rhythm in PAT₁ is not affected.

The length of ascenders and descenders, and the angular joining of vertical and horizontal stems give the fount a rigid appearance. The absence of smoothness in the stems' connections occurred frequently in manuscripts [Fig. 38]. The design of letters թ and ժ, which in manuscripts were complex shapes, in PAT₁ were simplified into squarish forms [Fig. 39]. Furthermore, the modulation used in letters կ, է and լ is noticeable: here, the stroke of the ascenders is abruptly narrowed when joined to the horizontal stem [Fig. 40a]. In other characters, such as ի, յ, where the ascender stroke extends to a lesser extent, the contrast is less evident [Fig. 40b]. The modulation of the stroke in the vertical stems disappears in characters such as ա, յ, ց and ը [Fig. 40c] and even in

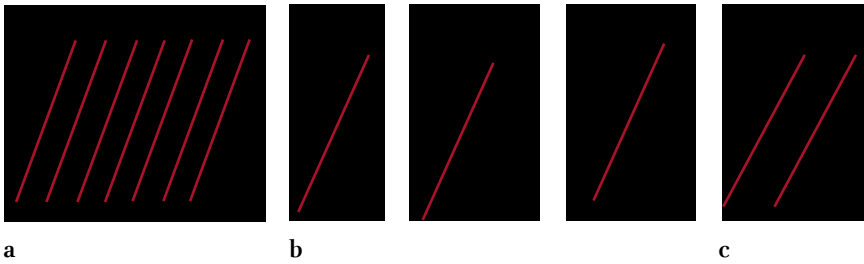


Fig. 36 Examples of the different angle used in some letters. Most of the letters in PAT1 are slanted to the right, at an angle of 20° (image a), there are however, some exceptions for letters such as q, ɥ and η (image b), and ʎ (image c).

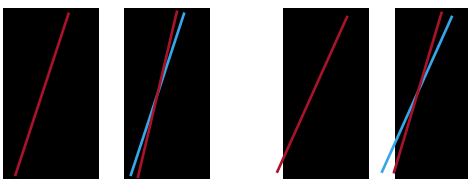


Fig. 37a and 37b In PAT1 some letters, such as p and p̄ (Fig. 37a), and t and t̄ (Fig. 37b), have a similar basic structure, but a different angle of inclination. The blue line indicates the different angle of inclination used in p̄, and t̄.

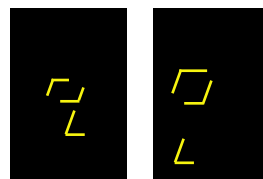


Fig. 38 Yohannes Vardapet's manuscript (image a) dated 1455 illustrates the join of vertical and horizontal stems at an angle. The same angularity is used in PAT1 as well (image b).

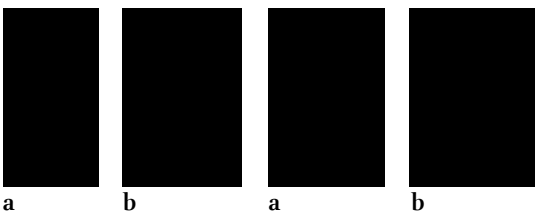


Fig. 39 Letters Ɔ and ɔ in Yohannes Vardapet's manuscript (image a) dated 1455 have rounded forms. However, in PAT1 (image b) they are transformed into square forms to be consistent with the angularity of the remaining characters.

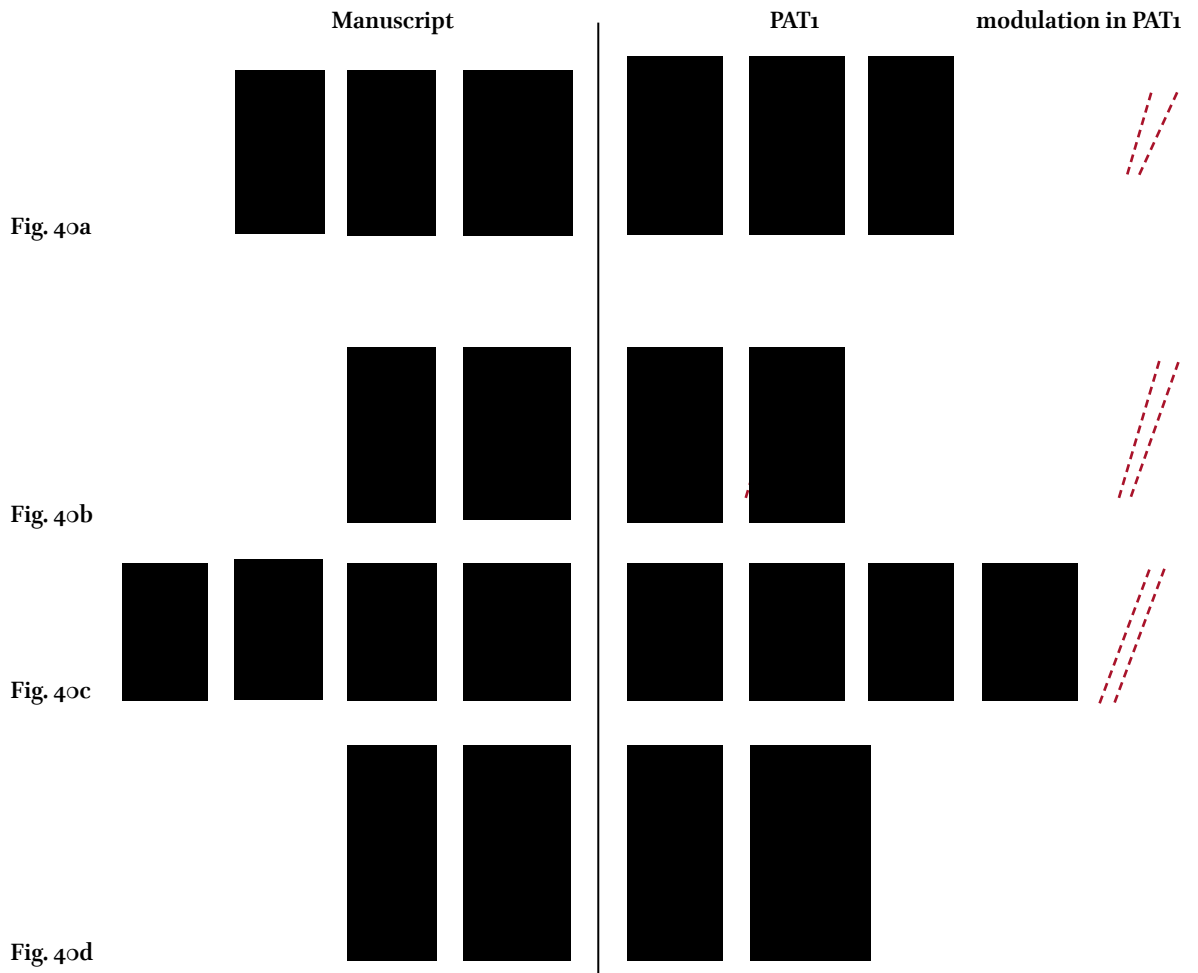


Fig. 40a - Fig. 40d

In Yohannes Vardapet's manuscript dated 1455 the modulation of the vertical strokes is inconsistent. This is adopted by Abgar in the design of PAT1. The red lines on the right illustrate the different handling of the modulation of the strokes in PAT1. Thus, following the manuscript tradition, PAT1 has letters either with high or low contrast. However, contrary to Yohannes Vardapet's manuscript, PAT1 letters ξ and ζ [Fig. 40d] have very low contrast and their strokes are too thin compared to the other characters in PAT1.

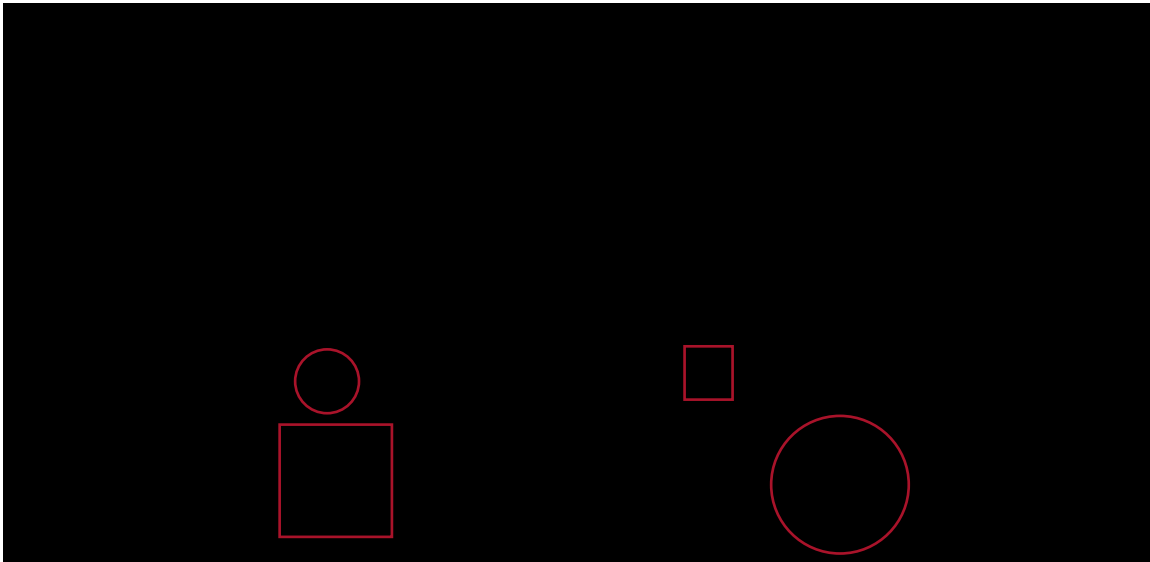


Fig. 41 In this detail of the *Psalter* it is possible to appreciate the different size and design used in PAT1 and PAT2. For example, the letters *l* in the red circles are very different: where in PAT1 the width of the stroke is reduced at the baseline, in PAT2 it is kept steady. Additionally, *l* appears static in PAT2 due to its short ascender and descender. Another example of a letter with short ascender and descender strokes, marked by a red square is letter *h*. By drastically reducing the overall vertical proportions of PAT2 types, the punch-cutter altered the design of some letters and affected legibility. Image shown at 200% of original size.

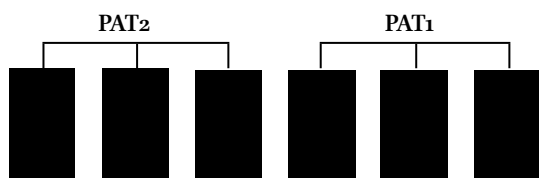


Fig. 42 Some more examples of letters with short ascender and descender strokes in PAT2, in comparison to PAT1. PAT1 and PAT2 are shown at 200% of original size.

letters with more complex designs, such as Է and Շ. In these last two letters, the contrast is reduced and the stroke of their diagonal is excessively thin, without any modulation [Fig. 40d]. The overall readability of PAT₁ is not adversely affected by the inconsistent stroke modulation and contrast: this is because of the consistent inter-character spacing, the almost constant angle of inclination and the angularity throughout the type.

PAT₁ marks the departure from the idiosyncrasies of the scribes, and the establishment of prescriptive norms to be translated into Armenian type. However, the application of inconsistent stroke modulation and contrast demonstrates that the design had not yet reached a sufficient degree of maturity in execution and visual quality. Additionally, the shortcomings in the design of PAT₂, the second type cut at a smaller size for the *Psalter*, are evidence of the lack of skill of the punch-cutter. Lowercase letters in PAT₂ appear static and clumsy, as PAT₂ has no stroke modulation (the width of the strokes is kept equal). Other design differences between the two types used in the *Psalter* can be appreciated in the vertical proportions of some lowercase letters. Worthy of note is the different vertical proportion used for the lowercase letter ի: whereas in PAT₁ it has a long descender, in PAT₂ the descender stops close to the baseline [Fig. 41]. In PAT₂ also the descenders of other characters, such as բ, ղ, զ were excessively shortened [Fig. 42]. These changes in the vertical dimensions reduced the legibility of PAT₂ and they can be considered as the major design deficiency of this type.

Overall, the type PAT₁, cast by Abgar, is superior to the type employed by Meghapart in the *Friday Book*. However, the quality of these Armenian types is very low considering the typographic achievement obtained in Latin by Nicholas Jenson in 1470 and Francesco da Bologna (or Griffo) in 1499 in Venice.⁵⁹ The Armenian types used in the *Friday Book* and in the *Psalter* did not comply with the standard of Jenson's Roman type. Indeed, the *Friday Book* is hardly readable due to the inconsistent stroke weight, ductus and contrast of the Armenian type FJM₁, and to the inadequate inter-character and inter-linear spaces used to typeset the publication. Instead, the readability of PAT₁ in the *Psalter* is improved by even inter-character and wide inter-linear spaces, but the unevenness of colour is noticeable in letters with more complex design. Despite the low design quality of FJM₁ and PAT₁, these early types are representative of the transition between manuscript and movable type in the Armenian script. They show two distinct ways of hand-setting movable Armenian types: one preserves the alternate letters from the manuscript tradition, the other simplifies the vertical alignment to reduce the number of characters produced.

59 Updike acknowledges that the Roman typefaces that Nicholas Jenson had produced in 1470 for the *De Preparatione Evangelica* and Francesco Griffo (known also as da Bologna) had designed for the *Hypnerotomachia Poliphili* published in 1499 by Aldus Manutius were both considered excellent works. Updike also remarks the superiority of Jenson's Roman type compared to Griffo's. Daniel Berkley Updike, *Printing types: their history, forms, and use*, (2 vols., Massachusetts, Harvard University Press, 1962), vol. 1, pp. 70, 73. Updike's view on Jenson's Roman type is supported by recent historians. An example is Martin Lowry, *Nicholas Jenson and the Rise of Venetian Publishing in Renaissance Europe* (Oxford, Blackwell, 1991).

1.3 Production of Armenian types by highly skilled type-makers

The introduction of printing in the Western world had given rise to a trade in type founding material.⁶⁰ Early printers probably turned to professional metalworkers from the very beginning, paying goldsmiths to cut punches and make matrices.⁶¹ This meant that Armenians in Europe could also benefit from the services of professional punch-cutters and from resources of local enterprises to set up and run their own printing businesses.

Although early Armenian printers were priests sent to Europe by the Armenian Catholicos, printing was a commercial enterprise that had to satisfy the needs of their main customers: the merchants. Rather than being motivated by religious and charitable purposes, early Armenian printers sought to make a profit through publishing.⁶² Up to the mid-seventeenth century, the market for Armenian publications seemed to be an unprofitable business⁶³ and many workshops had to close down: for example, Meghapart's activity lasted only a couple of years; and Abgar Dpir's printing enterprise did not survive for more than five. Before 1685 about six more printing offices produced publications using Armenian types in Rome, Venice and Constantinople. However, most of them were short-lived and published only a few mediocre books with a limited range of materials.⁶⁴ These businesses were not able to build up enough experience to reach sufficient levels of quality for Armenian types.

Armenian presses were not the only ones to suffer from adverse economic conditions in the second half of the sixteenth century. The Counter Reformation initiated by the Roman Catholic Church often took the form of very severe censorship in Italy, particularly in Venice. Any printer who had produced Protestant pamphlets or books would be liable for persecution and his business would be shut down by authority of the

60 According to Vervliet, at the end of the fifteenth century and at the beginning of the sixteenth the printing trade centuplicated, and type founding and the sale of type became internationally organised. Moreover, Riccardo Olocco established that Nicholas Jenson was responsible for initiating the trade in printing type in Italy as early as 1471. H. D. L. Vervliet, *Sixteenth-century printing types of the Low Countries* (Leiden, Brill; Hes & De Graaf, 1967), p. 11. Riccardo Olocco, 'The Jenson roman: its mutation and spread in fifteenth-century Italy', *Journal of the Printing Historical Society*, 29 (2018), p. 145.

61 For instance, Carter notes that Gutenberg used the service of the goldsmith Hans Dünne, in Florence in the 1470s goldsmiths cut punches and made matrices for a convent in Ripoli, a caster in Basle complained about the matrices he is given to work by a printer. Carter, *A view of early typography up to about 1600*, p. 93.

62 Razmik Panossian, *The Armenians* (New York, Columbia University Press, 2006), pp. 94–95.

63 It is worth noting that the Leipzig type founder Anton Janson introduced the first Armenian type offered on the open market ca. 1679. However, this type was not popular among Armenians and it did not influence the design of subsequent Armenian typefaces. The author is grateful to John Lane for bringing this information to her attention.

64 Lane, *The Diaspora*, p. 36. Beside Meghapart's and Abgar's printing activities, and the Tipografia Poliglotta Pontificia in Rome (the latter is discussed in section 1.3 of this thesis), before 1685 in Venice, Rome and Constantinople there were six more presses that printed with Armenian types. The six presses were – Venice: Terznc'i 1587 & 1596; Salicata, 1642–1643; Povis 1660. Rome: Moneta 1674; Barboni 1678/80–1690. Constantinople: 1677–1678. The author is grateful to John Lane for this clarification.

Roman Inquisition.⁶⁵ It is in this context that the ambitious project to establish a new press in Rome, to print texts in every language and script, was conceived by the Catholic Church. The typographic establishment of the Vatican started with the creation of the Polyglot Press (also known as the Tipografia Poliglotta Pontificia), initiated by Pope Gregory XIII in Rome in 1578.⁶⁶ The interest of the Catholic Church in printing was to restore the integrity of the Catholic doctrine, which had been compromised by Protestant reformers, and possibly to convert Protestants back to the Catholic faith.⁶⁷ In order to reach a wide audience, the papacy had to produce books in different languages and scripts, thus requiring punch-cutters capable of cutting foreign characters according to calligraphic models. Thus, the Tipografia Pontificia hired the master punch-cutter Robert Granjon (1513–1590) for the cutting of oriental types, convincing him to relocate from Lyon to Rome.⁶⁸

At this point (1578), Granjon was able to bring the expertise acquired through many years of experience in cutting Greek and Latin into Armenian types. This introduced a new phase for Armenian printing, when Armenian types began to be cut by highly skilled craftsmen, who were able to reach high levels of quality in design.

1.3.1 The Armenian type cut by Robert Granjon

Born in Paris in 1513 and son of the Parisian bookseller Jean Granjon, Robert Granjon was amongst the prolific punch-cutters of the sixteenth century. He was a highly skilled and versatile craftsman: he worked as a publisher, a printer and a punch-cutter.⁶⁹ Before 1579, the year when Granjon began to cut the oriental types for the Vatican, he had already cut many types including Italic⁷⁰ and Greek. The letterforms of Greek were far more elaborate than Roman shapes and consequently they required a skilled punch-cutter for their execution. This outstanding craftsman was able to produce a Bolorgir fount superior to what his predecessors had achieved.

65 Paul F. Grendler, 'The Roman Inquisition and the Venetian Press, 1540-1605', *The Journal of Modern History*, XLVII, 1 (March 1975), pp. 50–51. According to Paul F. Grendler, Emeritus Professor of History of the University of Toronto, in 1588 in Venice the presses had declined from 120 to 70, and in 1596 to 40. *Ibid.* p. 62.

66 The historian Alberto Tinto explains that it was the printer Francesco Zanetti who proposed to Gregory XIII to establish a polyglot printing office. Alberto Tinto, *La tipografia Medicea Orientale* (Lucca, Maria Pacini Fazzi Editore, 1987), p. 5.

67 The context was set by the Council of Trent, whose purposes were to clarify the theological differences between the Roman Catholic Church and the rising Protestant churches, to standardise liturgical practices in the Roman Catholic Church and to reform the church in response to the criticism that has been so influential in the Reformation. It also addressed the education of the clergy. See: Eleanor H. Tejirian, Reeva Spector Simon, *Conflict, Conquest, and Conversion: Two Thousand Years of Christian Missions* (New York, Columbia University Press, 2012), pp. 59–60.

68 Granjon was in Lyons from about 1575 to 1577 before arriving in Rome. Hendrik D. L. Vervliet, *Cyrillic & Oriental typography in Rome at the end of the sixteenth century: an inquiry into the later work of Robert Granjon* (Berkeley, Poltron Press, 1981), p. 7.

69 For more information on Granjon's activity, see: Colin Clair, *A history of European printing* (London & New York, Academic Press, 1976), pp. 175–178; Vervliet, *The palaeotypography of the French Renaissance* (Leiden, Brill, 2008), vol. 1 and 2.

70 For example, the Italic type supplied to Jean de Tournes and to Sebastien Gryphe in 1543. (This is the first Italic that can be attributed with certainty to Granjon). Clair, *A history of European printing*, p. 175. According to the list provided by Vervliet, Granjon cut 26 Italic types between 1543 and 1579. Vervliet, *The palaeotypography*, vol. 2, p. 363.

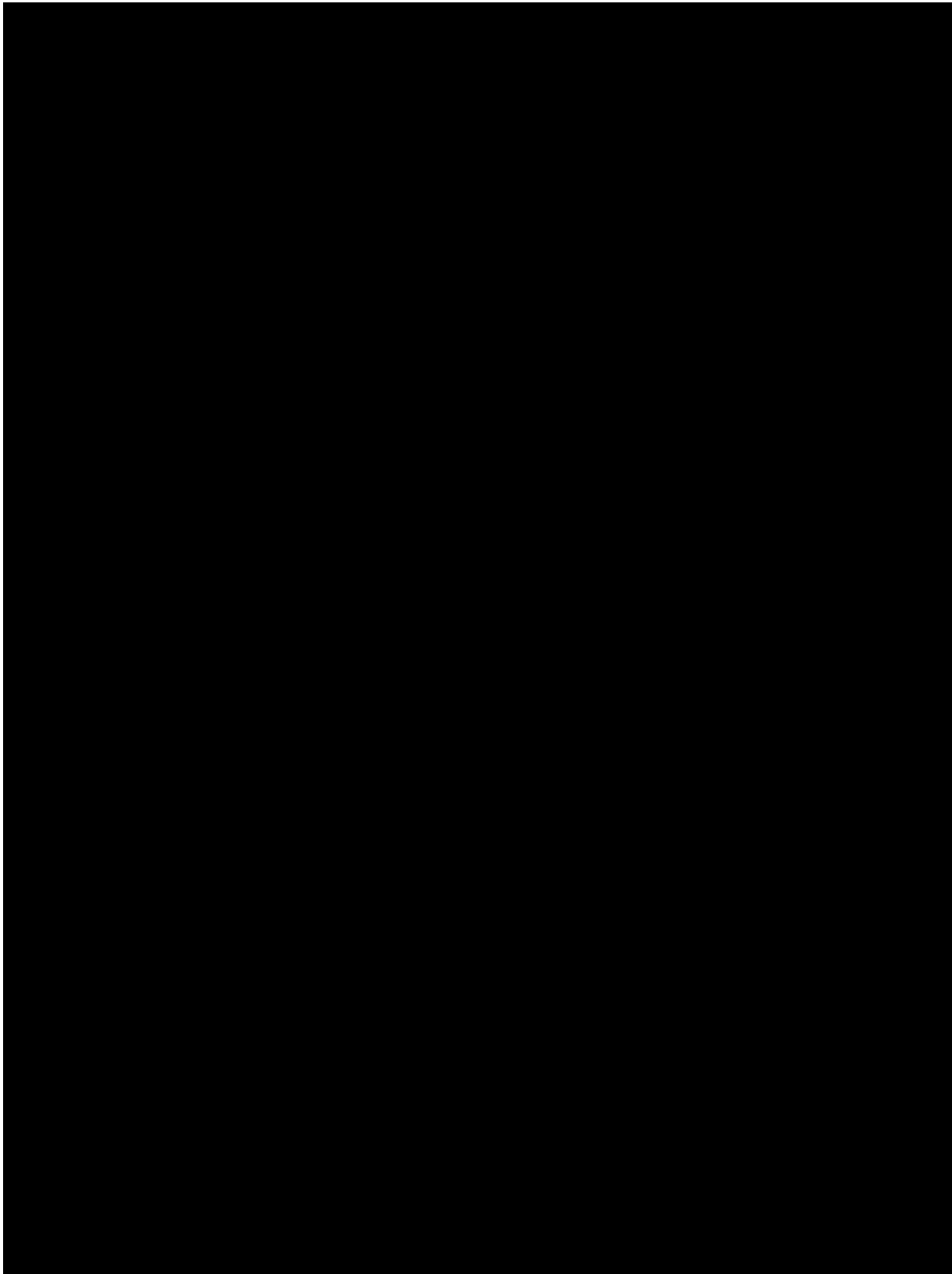


Fig. 43 The first book printed with Granjon's Armenian type: the *Gregorian Calendar* (Rome, Domenico Basa, 1584), (folio 9). The decorative border that frames the text is made using Western ornaments. (Original size: 15,5 × 20,5 cm). Shown at original size. *The Mekhitarist Library in San Lazzaro, Venice.*

Granjon's first commission in Rome was to cut Armenian types for the publication of the *Tomar Grigorean* (known also as the *Gregorian Calendar*)⁷¹ [Fig. 43]. In September 1579, four months after Pope Gregory XIII had endorsed the printing of Armenian, Robert Granjon had already cut and cast the Armenian types which he presented to the Pope printed as a type specimen.⁷² The Calendar was printed in 1584 at the Polyglot Press in the printing shop of Domenico Basa.⁷³ The Press might have required the help of compositors capable of working with non-Latin characters, and proofreaders who were erudite in languages to control the orthodoxy of books printed in different scripts.⁷⁴

According to the colophon of the *Gregorian Calendar*, Armenian Bartolomeo Abgaro, son of Abgar Dpir Toxatec'i,⁷⁵ was the translator, proofreader, compositor, and together with the Armenian Yovhannes Terznc'i⁷⁶ he was also the printer of the publication. However, secondary sources provide different information about the involvement of these two Armenians in the printing activity of the Vatican. The Armenian historian Meliné Pehlivanian asserts that the Armenian Bartolomeo Abgaro, Yovhannes Terznc'i and also Terznc'i's son Xac'atowr printed the *Gregorian Calendar* at the Vatican Press;⁷⁷ whereas the French Armenian historian Raymond Kévorkian states that Terznc'i and Bartolomeo Abgaro translated the *Gregorian Calendar* into Armenian.⁷⁸

Since there is no record of any manuscript model supplied to Granjon, and therefore no documents that can reveal the scribal hand,⁷⁹ Grigoryan's claim that Abgaro was the

71 In 1582 Pope Gregory XIII decreed a modification of the Julian calendar, imposing a reform of the calendar for countries in the Near and Middle East. The Ottoman Empire and the Soviet Union adopted it only in 1917, whereas Iran never did. See Lane, *The Diaspora*, p. 34.

72 A copy of this specimen was discovered in 1912 in the Biblioteca Vallicelliana in Rome (document K17) among Cardinal Santoro's papers. The specimen title is: the 'Armenici characteres Gregorii XIII. Pont. Opt. Max. iussu nunc primum Romae incisi', at the foot is 'Rob. GranJon Parisien. incidebat. Romae. 1579.' Vervliet, *The palaeotypography*, vol 2, p. 436.

Santoro helped lead the Catholic Church's Counter-Reformation efforts to find converts among non-Europeans, both in their homelands and in their European colonies. He aimed to provide them with Catholic books in their own languages (Armenian, Ethiopic, Syriac, Arabic and Coptic type). He held several other offices in the Curia, and in particular he was a prefect of the Propaganda Fide Congregation.

73 The frontispiece of the *Gregorian Calendar* has the inscription 'Ex [Excudebat] Typographia Domenici Basae'.

74 This was the case for the Medicea Press in 1584. Tinto, *La tipografia Medicea Orientale*, p. 18.

75 Hacikyan claims that Abgar's son was known as Marc-Antonio. Abgar Dpir Toxatec'i was the type-caster of the first Armenian types developed as metal type (PAT1 and PAT2) and printer of the *Psalter*. After his father's departure from Venice in 1568, Bartolomeo remained in Venice under the patronage of the Pope to then settle in Rome. There, he supervised six Armenian publications issued by the Vatican Press from 1584 until 1623. Hacikyan, *The heritage of Armenian Literature*, p 44.

76 Yovhannes was a priest from Amida, an Ottoman Turkish city, today known as Diyarbakir, one of the largest cities in southeastern Turkey. He settled in Italy with his son Xac'atowr to establish his own printing enterprise. Hacikyan, *The heritage of Armenian Literature*, p 44.

77 Pehlivanian, 'Mesrop's heirs', p. 64.

78 Kévorkian, 'Armenian publishing', p. 125, footnote 10. Abgaro was an Armenian cleric trained in Rome. He was appointed by Rome to control the orthodoxy of Armenian books. Ibid. p. 124.

79 The type specimen sheet, printed in Granjon's Armenian types and found with Santoro's diary, is without annotations or indications revealing the manuscript used by Granjon.

‘co-designer’ of Granjon’s Armenian type should be considered with caution.⁸⁰ It is only possible to suggest that either, or both, Terznc’i and Abgaro might have advised Granjon on the Armenian type while they were in Rome.⁸¹ A mistaken attribution of Granjon’s work to other craftsmen occurred in the nineteenth century. For instance inaccurate information on Granjon’s authorship of RG1 can be found in the following statement by Lelio Carfora:

And since 1600 the illustrious Roman typographer Stefano Paolini, a pupil of Giovan Battista Raimondi, recommended by Sixtus V to the nascent Vatican Press, created Armenian characters. In 1623 a number of Armenian books printed in that printing establishment were released with these types, among which: the *Concordia Armenorum* [*Harmony of the Armenians with the Roman Church*], written by the Armenian Bartolomeo Abgaro, and the *Summa Doctrinae Christianae in lingua Armeniana* [*Christian doctrine in the Armenian language*].⁸²

The publications mentioned by Carfora refer to productions made for propagandistic and missionary purposes by the newly created *Sacred Congregation for the Propagation of the Faith*⁸³ (also known as the Tipografia Poliglotta of the *Sacra Congregatio de Propaganda Fide*) to provide for the needs of missions. The typographic material of the *Propaganda Fide* was substantial: there were types in 23 different scripts, as well as oriental types acquired from the Stamperia Vaticana⁸⁴ and the Tipografia Medicea

80 Metaksya Grigoryan (p. 43) writes that the colophon of the *Gregorian Calendar* mentions both Yovhannes Terznc’i and Bartolomeo Abgaro as the printers. Metaksya Grigoryan also refers to other colophons of unspecified books to assert that Bartolomeo Abgaro was also the proofreader and compositor for his father’s and Terznc’i’s publications. Metaksya Grigoryan also sees Abgaro as the translator of the text for the calendar and the ‘co-designer’ of Granjon’s Armenian (pp. 15–16). However, as Abgaro’s involvement with Granjon’s type is not referenced in her MA dissertation, there is no way to assess the reliability of her statement. Metaksya Grigoryan, ‘Beginnings of early Armenian printing in Venice and Rome in the sixteenth century: reconsideration of research frameworks and contexts’ (Dissertation, Budapest, Central European University Department of History, 2014). Consequently, the involvement of Domenico Basa in the printing of the *Gregorian Calendar* also remains uncertain. Further research is needed to shed light on the individuals involved in the composition and printing process of the *Gregorian Calendar*.

81 Terznc’i was in Rome since 1564 and Abgaro since 1577/1578. Lane, *The Diaspora*, p. 32.

82 ‘E fino dal 1600 l’illustre tipografo romano Stefano Paolini, discepolo di Giovan Battista Raimondi, proposto da Sisto V alla nascente tipografia vaticana, diede opera alla formazione de’ caratteri armeni. Uscirono poscia alla luce nel 1623 parecchi libri armeni stampati in quella tipografia con questi caratteri, fra’ quali son nominate la concordia degli Armeni colla Chiesa romana, opera scritta dall’armeno Bartolomeo Abgaro, e la dottrina cristiana in lingua armena’. Lelio Carfora, ‘Degli studi Orientali in Italia’, *Il progresso delle scienze, lettere ed arti*, XIX, 37 (1838), p. 88.

83 This should not be confused with the Commission de propaganda fide, consisting of the Cardinal Caraffa, Medici, and Santorio [sic.], established by Gregory XIII (1572–1585) soon after his election as Pope in 1563. See Peter Guilday, ‘The Sacred Congregation de Propaganda Fide (1622–1922)’, *The Catholic Historical Review*, VI, 4 (January 1921), p. 480.

84 The Stamperia Vaticana was established in 1587 by Pope Sixtus V. In 1610 it was merged with the printing office of the Reverenda Camera Apostolica. James Mosley, ‘A guide to the present location of typographical punches, matrices, drawings, type specimens and archives’, in *Typefoundry*. Retrieved from: <http://typefoundry.blogspot.com>. Accessed on 1 May 2018.

Oriente.⁸⁵ The engraver Stefano Paolini⁸⁶ (also known as Etienne Paulin or Stephanus Paulinus), a pupil of Giovanni Battista Raimondi, executed the design of new types for the *Propaganda Fide*.⁸⁷ However, according to Alberto Tinto, the role of Stefano Paolini at the *Propaganda Fide* seems to have been very different: Tinto described Paolini as the director of the press of the *Propaganda Fide*.⁸⁸

The study of the *Concordia Armenorum* [Fig. 44] and the *Summa Doctrinae Christianae* [Fig. 45] shows that RG1 was the type used in both publications. These books were printed for the Sacra Congregatio three years before the *Propaganda Fide* was established. A note which accompanies a copy of the *Summa Doctrinae Christianae* held at the British Library confirms that, except for the title and the imprint in Latin language and characters, the Armenian text is printed with the types cut by Robert Granjon in 1579. Because the frontispieces of the *Concordia Armenorum* and the *Summa Doctrinae Christianae* bears the imprint 'Stefano Paolini', it is possible that Carfora incorrectly credited the printer with the design of Granjon's slanted Bolorgir type, which for convenience is here referred to as RG1. This confusion deprived Granjon of the credit due to him for cutting the Armenian types for the Vatican.

85 The Tipografia Medicea Orientale (Medici Oriental Press) bought the Armenian (97 mm), cut by Granjon in 1579, from Domenico Basa. Tinto, *La tipografia Medicea Orientale*, p. 24.

Under Ruggieri, new Chaldean and Armenian letters were used for the printing of textbooks. Ruggieri also tried to get a number of Armenian letters from the monastery of St. Lazzaro and an Armenian priest in Holland. Finally, Ruggieri was able to obtain Latin, Armenian, Arabic and Syrian letters from the Vatican printing house, which had been made by the famous French punch-cutters Garamond and Le Bé and were no longer needed. Willi Henkel, 'Die Druckerei der Propaganda Fide im Dienste der Glaubensverbreitung (II)', *Communicatio Socialis*, IX, 3 (1976), p. 218–219.

A comparative study of the types used in the Armenian publications produced by the Stamperia Vaticana, Tipografia Medicea Orientale, the *Sacra Congregazione* and later on by the Tipografia Poliglotta Vaticana (formed by the merging in 1909 of the Stamperia Vaticana and the *Sacra Congregazione*) could reveal the origin of the Armenian types.

86 *Treccani, Tipografia Vaticana*. Retrieved from the online encyclopedia: <http://www.treccani.it/enciclopedia/tipografia-vaticana/>. Accessed on 16 May 2018).

87 He was a printer in Rome in 1600. He first worked for Raimondi at the Medicean Press, and then employed by the Propaganda Press. While in Paris he trained the Frenchmen Jérôme Blageart in oriental printing. G. J. Toomer, *Eastern wisdom and learning: The study of Arabic in Seventeenth-century* (Oxford, Clarendon Press, 1996), p. 30, footnote 93. Toomer is a Professor Emeritus of the History of Mathematics Brown University Associate in the History of Science Department.

In Rome Stefano Paolini also printed the *Doctrina Cristiana* in the Arabic language in 1613, and he was the author of the *Dictionary on the Georgian language*. Gabriel Peignot, *Dictionnaire raisonné de bibliologie* (Paris, Chez Villier, 1802), vol. 2, p.39; Geoffrey Roper, 'Arabic printing in Malta 1825–1845: its history and its place in the development of print culture in the Arab Middle East' (Thesis, Durham, Durham University, 1988), p. 19.

88 Paolini was a punch-cutter, but by 1642 his eyesight was failing. The author is grateful to John Lane for this clarification.

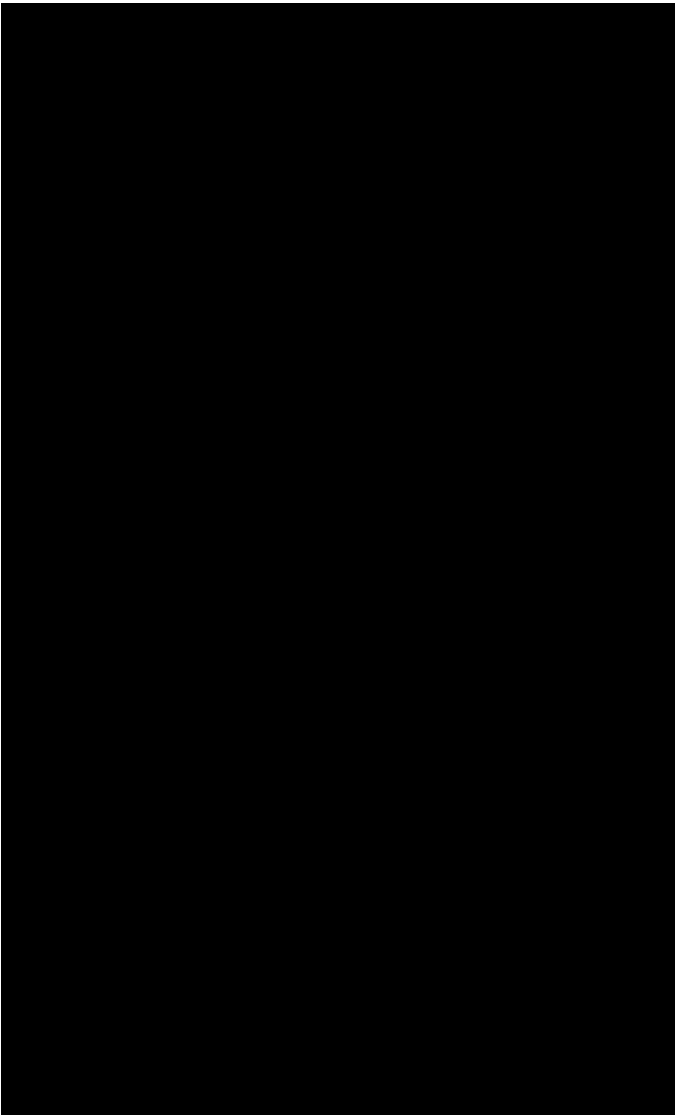


Fig. 44 Armenian Bartolomeo Abagaro, *Concordia Armenorum* (Rome, Stephanus Paulinus, 1623). (Original size: 9 × 14,5 cm). Shown at original size. *The British Library*.

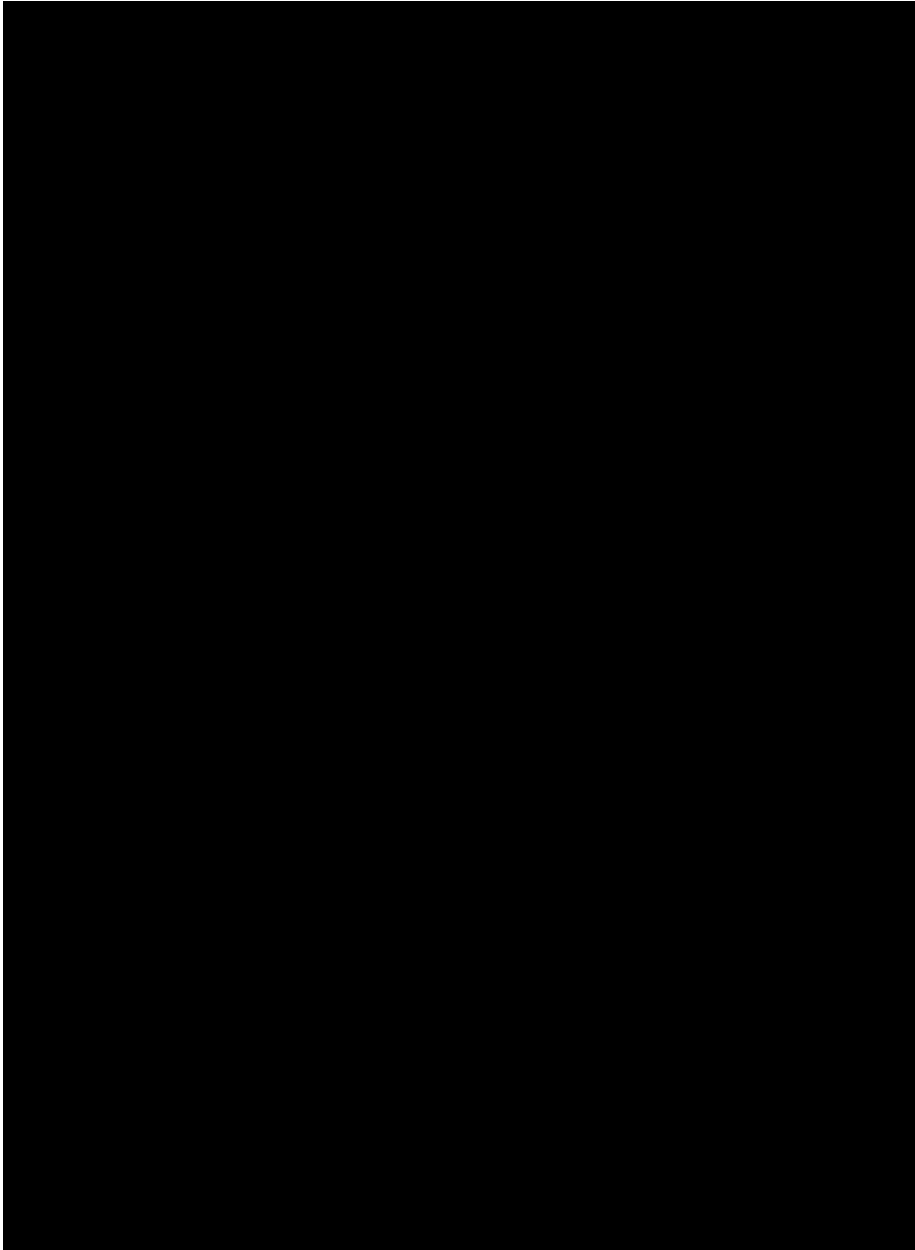


Fig. 45 Saint Roberto Bellarmino, *Summa Doctrinae Christianae* (Rome, Stephanus Paulinus, 1623)
(Original size: 11 × 16 cm). Shown at original size. *The British Library*.

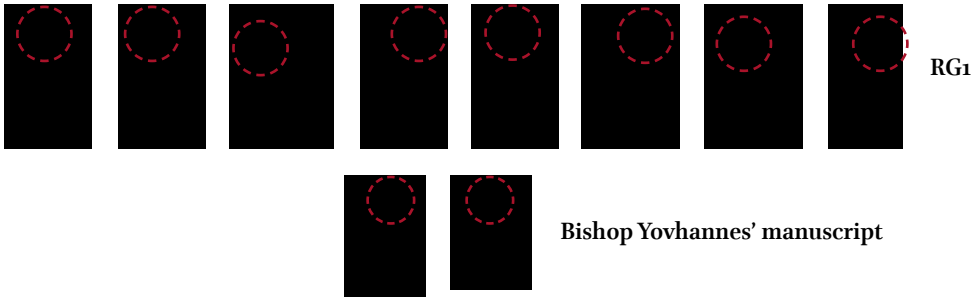


Fig. 46 The leading strokes at the top of ascenders is an element particularly evident in thirteenth- and fourteenth-century manuscripts written in Bologir. The shape of the leading strokes at the top of ascenders in RG1 are very close to those of Bishop Yovhannes, in the *Four Gospels*, exemplified here by the letters ƒ and ʃ.

RG1 letters shown at 300% of original size.
 Bishop Yovhannes Alinax Taronec'i, *Four Gospels*, 1370.

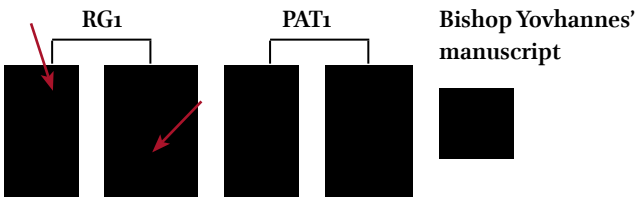


Fig. 47 In RG1 the connection of vertical and horizontal strokes is handled differently than in PAT1. The smooth connection in RG1 recalls the hand of Bishop Yovhannes and of some other scribes from both fourteenth and fifteenth centuries. However, the roundness at the stems' connections was infrequent in manuscripts.

RG1 letters shown at 300% of original size.
 PAT1 letters shown at 200% of original size

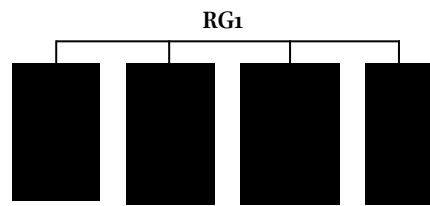


Fig. 48 In RG1 the contrast between thin and thick strokes is kept consistent in characters with complex designs. Even if letters are very different in forms, their strokes width, contrasts and ductus are consistent.

RG1 letters shown at 300% of original size.



Fig. 49 An example of the vertical proportions of RG1. Following the manuscript tradition, ascenders and descenders in RG1 extend at different lengths. For example, the descending stroke of letter ʀ extends deeper than ʃ and ʁ, ʀ elongates more than ʁ, but ʀ extends even more than ʀ.

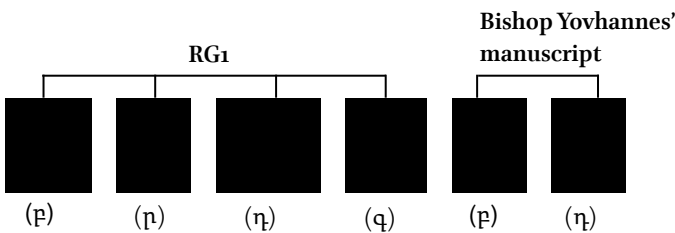


Fig. 50 In manuscript tradition characters ʀ and ŋ are wide. The length of their horizontal stroke is particularly noticeable. Thus, in RG1 the horizontal bar of ʀ and ŋ is also kept long. This example shows that the length of the bar of ʀ and ŋ was pivotal to identifying letters that share a very similar structure. RG1 letters shown at 300% of original size.

1.3.2 Analysis of RG1

Robert Granjon's slanted Bolorgir type (RG1)⁸⁹ is evidence of his skill and experience. Indeed, Granjon was in his seventies when he designed the Armenian types for the Polyglot Press. He had already cut various types for thirty-five years in Paris, Lyon and Antwerp.⁹⁰ RG1 is a high contrast type and shows some pen-influenced leading strokes at the top of ascenders, which Granjon adopted from the manuscript tradition. Thus, the top of the ascenders of letters ե, է, թ, ժ, ի, լի, խ and վ has an almost vertical leading stroke that ascends, and then merges with the main vertical stroke⁹¹ [Fig. 46]. The leading strokes at the top of ascenders are probably the most distinguishing design features of RG1.

Granjon's ability as a punch-cutter can be seen in the calligraphic aspects of RG1 letters. For example, in letters such as ն and լ the vertical and horizontal strokes join smoothly, instead of connecting at an angle as in Abgar's types [Fig. 47]. Another important element which is worth noting is that letters շ, չ, թ, ձ are finely executed: the stroke weight is well distributed and the contrast between thick and thin strokes is consistent not only across these letters having complex designs, but also across all the other characters [Fig. 48].

On the one hand, RG1 letters are rather compact: ascenders and descenders do not extend significantly from the base character height and the baseline, but there is some noticeable difference between the deepest and shortest descenders. On the other hand, descending strokes of letters լ, վ, ի, and ռ vary in length, but even those with the shortest descenders, such as ռ, remain legible [Fig. 49]. In RG1 the horizontal bar of letters ք, դ is so long that it is impossible to mistake them for characters having a similar design: thus, readers would immediately distinguish an ք from a ռ and a դ from a գ in a text printed at low quality [Fig. 50].

Vervliet describes Granjon's Armenian as a 'superb type, far superior' to the type a contemporary like the German humanist Leonhard Thurneysser zum Thurn produced in 1583 at his oriental press in Berlin for the *Das ist ein Onomasticum und Interpretatio*⁹² [Fig. 51]. Thurneysser's Armenian letters resemble the Gothic characters used by Guillaume Postel in 1538 in the *Linguarum duodecim characteribus differentium alphabetum* [Fig. 52] and the types used by Ambrogio Teseo in 1539 in the *Introductio in Chaldaicum linguam, Syriacam, atque Armenicam, et decem alias linguas* [Fig. 53].⁹³

89 Vervliet refers to it as 'Granjon's Armenian (:97mm)' in *Cyrillic & Oriental typography*, p. 13. However, in *The palaeotypography of the French Renaissance (2008)*, vol. 2, he refers to Granjon's Armenian as 'English-Sized Armenian [Arm98] or *Saint-augustin*.' (p. 436).

90 Vervliet, *Cyrillic & Oriental typography*, p.5-7.

91 Lane also notices these features. Lane, *The Diaspora*, p. 34.

92 Vervliet, *The palaeotypography*, vol. 2, p. 436. The subjects of this multilingual book were: chemistry, philosophy, medicine, language and natural history. Sousa, 'A brief history of Armenian typeface design'. According to Kévorkian, Thurneysser's Armenian characters – in 'Bolorgir style, 19 pt' – have atypical angular forms, distorting proportions and their style seems to find inspiration in the Bastard Gothic types used to compose the main text. Raymond Kévorkian, *Catalogue des 'incunables' arméniens (1511-1695) ou chronique de l'imprimerie arménienne* (Genève, Patrick Cramer, 1986), p. 172.

93 Guillaume Postel's and Ambrogio Teseo's works are discussed in Section 2.1 of this thesis.



Fig. 51 The Armenian type (single-case letters) used in Leonhard Thurneysser zum Thurn's 1583 *Das ist ein Onomasticum und Interpretatio*. Some characters resemble Ethiopic letters and those of the Georgian Asomtavruli script. Letters have inconsistent widths, they are angular and monolinear. Leonhard Thurneysser zum Thurn, *Das ist ein Onomasticum und Interpretatio* (Berlin, Nicolaum Voltzen, 1583). Shown at 150% of original size. *The British Library*.

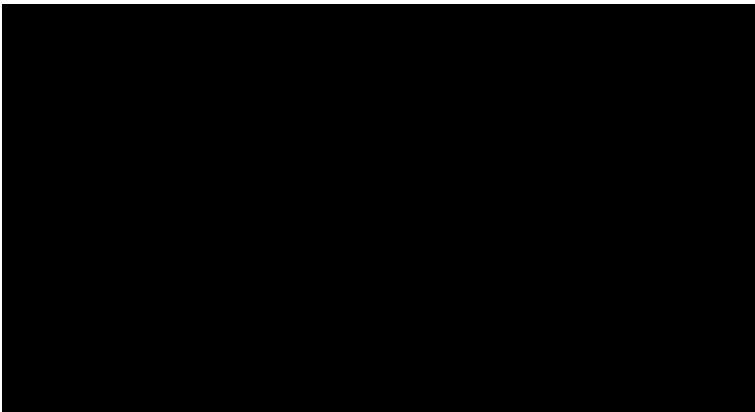


Fig. 52 Woodcut Armenian text from Postel's 1538 *Linguarum duodecim characteribus differentium alphabetum*. Guillaume Postel, *Linguarum duodecim characteribus differentium alphabetum* (Paris, Dionysium Lescuier, 1538). Shown at 150% of original size. *The Cambridge University library*.

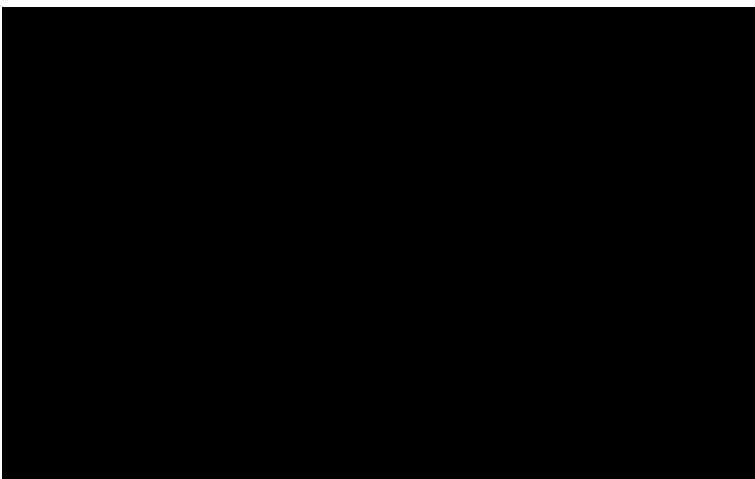


Fig. 53 The upright Bolorgir type used in Teseo's *Introductio*. Teseo Ambrogio, the *Introductio in Chaldaicum linguam, Syriacam atque Armenicam et decem alias linguas* (Pavia, 1539). Shown at 150% of original size. *The British Library*.

Thurneysser's Armenian type was of low quality because the characters were poorly designed.

In the first half of the seventeenth century several Armenian printing presses were established in various locations in Europe and Asia, contributing to the production of Armenian religious publications. When types were cut for these, some followed Granjon's Armenian in an attempt to emulate its quality, whereas others produced Bolorgir types of a much lower standard. Thus, after Granjon, type-makers failed to improve on the design quality he had reached. Eighty years would have to pass before another Armenian Bolorgir type, comparable in quality to Granjon's achievement, was designed.

1.3.3 The first two Armenian types cut by Christoffel Van Dijck

The early seventeenth century saw the Netherlands become the world's leading centre of type founding and punch cutting, not only producing a variety of Latin types (such as Roman, Italic and Textura), but also types in Greek, Hebrew, Arabic and other non-Latin types.⁹⁴ It is in this country that Armenian types were cut several decades later. In 1658 the Armenian Matteos Tsaretsi, notary and secretary of Hakob IV Jughayetsi of New Julfa, who was the Catholicos at Edjmiadzin, travelled to Holland.⁹⁵ In the same year Tsaretsi drew up a contract with the punch-cutter and type founder Christoffel Van Dijck (ca. 1605–1669).⁹⁶ The first direct record of Van Dijck⁹⁷ dates back to 1640, when he worked as a journeyman goldsmith in Amsterdam. Although he never became a master goldsmith, in 1647 he set up a type-foundry in a rented house on the Bloemgracht: he was the punch-cutter, and two journeymen and an apprentice were his three casters.⁹⁸ Van Dijck cut punches for different customers, such as the atlas printer Joan Blaeu, whose printing office had its own in-house type-foundry, and the Elzeviers in Leiden, for whom he may have cut the Ethiopic types, which the Elzeviers introduced in 1654.⁹⁹ By 1658, year in which he started to work on the Armenian punches and matrices commissioned by the Armenian Matteos Tsaretsi, Christoffel Van Dijck was the most influential punch-cutter of that time.¹⁰⁰ It was therefore expected that he would produce Armenian types of a high standard.

94 Lane, *The Diaspora*, pp. 68–69.

95 Ibid. p. 69.

96 Lane, *The Diaspora*, pp. 71–72. According to Lane, Tsaretsi used the Armenian merchant Shahnazarven as his interpreter. Armenian merchants were still important in the development of Armenian printing and culture. Not only did they support the Armenian presses financially, but they also offered their skills as intermediaries to help printers obtain the necessary printing tools and goods and even distribute publications. Ibid. p. 71.

97 Born in Dexheim, in the Palatinate (today Germany, near Oppenheim).

98 Lane, *The Diaspora*, p. 74, and Lane, *The Enschedé type specimens of 1768 & 1773* (the Netherlands, the Enschedé Font Foundry, 1993), p. 26. For more information on Van Dijck see also John Lane, *Early type specimens in the Plantin-Moretus Museum* (Delaware and London, The Oak Knoll Press and the British Library, 2004), pp. 45–47.

99 Lane, *The Diaspora*, p. 74.

100 Ibid. p. 75.

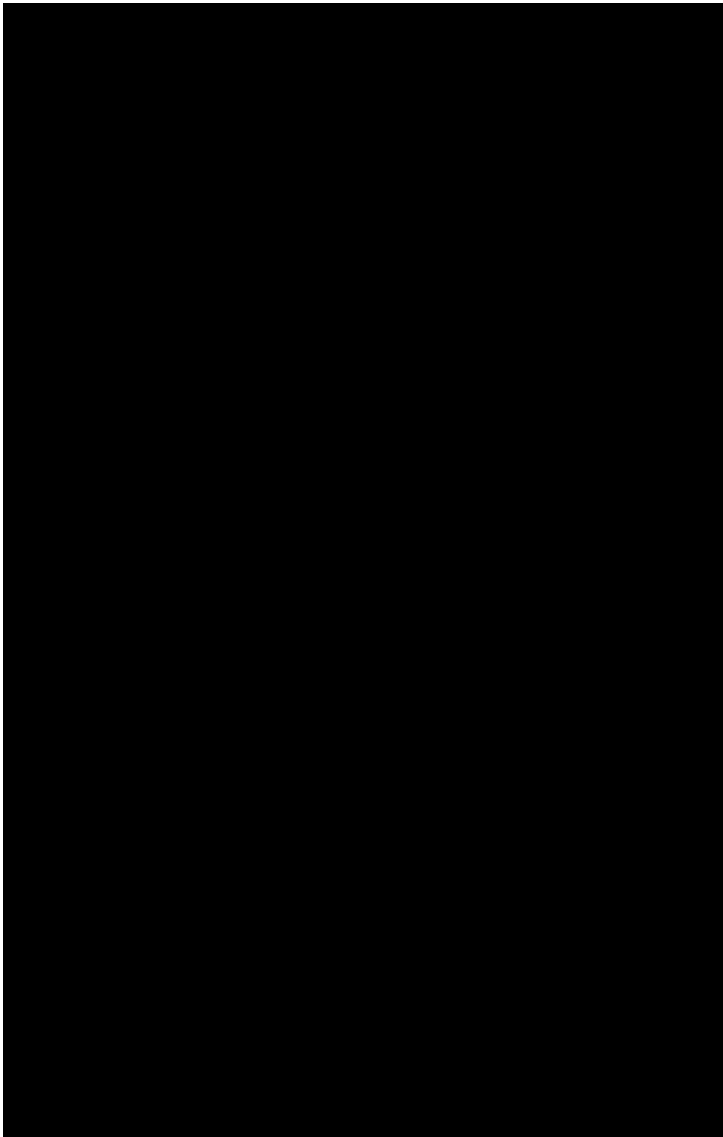


Fig. 54 Nersēs Šhnorhali IV, *Yisus vordi* (*Jesus the son*), printed by Matteos Tsaretsi and Avetis Ghlichentsi Yerevantsi (Amsterdam, St. Ejmiacin and St. Sargis Press, 1661). (Original size: 9,1 × 14,6 cm). Shown at original size. *The British Library*.

Van Dijck committed to producing 170 punches and 240 matrices for a Text Armenian type (120 millimetres/20 lines)¹⁰¹, as well as the same amount of punches and matrices for a small size¹⁰² known as Mediaen Armenian to print a Bible.¹⁰³ He was to receive 34 stuivers¹⁰⁴ per matrix as well as the same amount per punch cut, in addition to a bonus of 10 guilders for his wife at completion of the job, a salary equal to the annual income of the Dutch painter Rembrandt.¹⁰⁵ Tsaretsi's aim to become the sole owner of the Armenian types produced by Van Dijck might have justified the high cost of this job. In fact, Tsaretsi would have bought both punches and matrices, thus preventing the punch-cutter from supplying the same types to other printers. Additionally, by owing the punches, Tsaretsi ensured that he could have additional sets of matrices if he ever needed them.¹⁰⁶

According to Fred Smeijers' estimation that a sixteenth-century punch-cutter would cut one punch per day,¹⁰⁷ Van Dijck should have spent almost a year cutting the 360 Armenian punches.¹⁰⁸ However, due to Van Dijck's critical state of health,¹⁰⁹ in 1660 he had cut only about a hundred punches for the Text Bolorgir, which was sufficient to start with printing.¹¹⁰ Thus, the printing of the *Yisus vordi* (*Jesus the son*) [Fig. 54], a twelfth century poem by Nersēs Šnorchali, was the first book that Tsaretsi started to print using the new type. His was the third printed edition of the *Yisus vordi*: the first one was by Hovhannes Ankyuratsi in Venice in 1643, and the second one by the Italian publisher Joan (Giovanni) Battista Bovis in 1660 [see Appendix A, pp. 440–441].

The colophon of Tsaretsi's *Yisus vordi* reveals that the pressmen and the compositors were Dutch and could not read Armenian, which means that Tsaretsi took on the task to proofread the text. Although it would have been more suitable for a printer to have workmen who had knowledge of foreign languages, compositors and pressmen working at printing shops were rarely native speakers of the languages whose script they would compose and print. Tsaretsi died in February 1661, leaving the printing of the *Yisus vordi*

101 Or about 17 and 1/2 point. Lane, *The Diaspora*, p. 211 (Chapter IV, note 2).

102 This is the Mediaen Armenian type (85,5 mm/20 lines or about 12 and 1/2 point). Ibid. p. 211 (Chapter IV, note 2). On millimetric measurement, see: Vervliet, *Sixteenth-century printing types of the Low Countries*, pp. 15–19; Philip Gaskell, *A new introduction to bibliography* (Oxford, 1972), p. 14.

103 Lane, *The Diaspora*, p. 72.

104 A stuiver was a pre-decimal coin used in the Netherlands. It was worth 16 penning or 8 duit. Twenty stuivers equalled a guilder. It circulated until the Napoleonic Wars. After the conflict, the Netherlands decimalised its guilder into 100 cents.

105 The total would be 1404 guilders.

106 Lane, *The Diaspora*, p. 75.

107 Smeijers, *Counterpunch*, p. 127.

108 Assuming that he cut all the punches by himself.

109 'still 220 more characters should have been carved (for the printing of the Bible) ... and should have come out by the feast of the Holy Cross (September 14, 1661) ... unless the master dies'. Translation the colophon of the *Yisus vordi* (Amsterdam, St. Ejmiacin and St. Sargis Press, 1661) p. 612, in Edmond Schütz, 'The Oscanian and Vanandian type-faces of the Armenian Printing Office in Amsterdam: (Christoffel Van Dijk–Nicholas Kis Of Tótfalu and their forerunners)', *Acta Orientalia Academiae Scientiarum Hungaricae*, XLII, 2–3 (1988), p. 174. See also Garegin Zorbhanalean, Պատմություն հայկական տպագրության սկզբնաւորութեան յիշչ առ յեւ, (The history of Armenian printing) (Venice, Mekhitarian Press, 1895), p. 178.

110 Lane, *The Diaspora*, p. 72.

unfinished – only 24 of the 38 sheets were done – and the printing office in economic difficulties. The book was completed in Amsterdam by an Armenian merchant, Avetis Ghlichentsi Yerevantsi, who helped finance the printing office.¹¹¹ Despite his efforts in printing the book, Avetis declared himself unsuited to run the printing business; the main reason was that he was unable to read texts in classical Armenian and he could only proofread the texts of Armenian books by comparing the printed copy against its original.¹¹² Thus, Avetis turned to his brother Bishop Oskan (1614–1674), abbot of the Saint Sargis monastery near Ushi and theologian at the seminary of the Holy Ejmiadzin monastery.¹¹³ Before having his position at the Holy Ejmiadzin monastery in 1634, Oskan had studied in New Julfa with Bishop Khachatur Kesaratsi (1590–1646). It is possible that Oskan had learnt how to print there: in fact, the interest of Kesaratsi for printing resulted in the establishment of an Armenian printing house in New Julfa in 1636.¹¹⁴

Under the supervision of Avetis, in 1663¹¹⁵ Van Dijck completed the Mediaen type commissioned from him by Tsaretsi in 1658. Despite the type being completed, the printing of the Bible could not have started before obtaining financial support to cover all its costs. On his way to Amsterdam, Oskan took on the issue and stopped in Rome and Livorno seeking merchants to help with the cause; it was in Livorno in 1664 that he found three merchants from New Julfa willing to finance the production of a printed Armenian Bible.¹¹⁶ Thus, Oskan could afford to commission the cutting of ‘neumes’, an extensive system of inflection marks placed above the words of psalms and chants to indicate their tonality, to be used with the Armenian Mediaen type. He also had a Mediaen Notrgir type¹¹⁷ cut for annotations or headings,¹¹⁸ and acquired punctuation signs and Arabic numerals from other printers.¹¹⁹

Providing Armenian communities with an Armenian version of the Bible was perceived by the Church authorities as an urgent necessity, considering that Armenians were a small Christian minority within large Muslim empires. Preserving the faith was therefore paramount in a context where persecution could occur at any time and could result in the elimination of the Armenian Christian heritage.

111 When Tsaretsi was still alive he bequeathed the printing office to the monasteries of the Saint Sargis near Ushi, and of the Holy Ejmiadzin. For 57 years the printing office was under the name of the two monasteries. Lane, *The Diaspora*, p. 78.

112 Ibid. pp. 78–79. Only an erudite scholar, such as Oskan, could have dealt with texts in classical Armenian and taken care of the editorial aspects.

113 Ibid. p. 79.

114 This is the first letterpress printing office of any kind in Iran.

115 The Mediaen Armenian type first appeared in a prayer book completed by Avetis in 1663. Lane, *The Diaspora*, p. 81.

116 While Oskan was in Italy, one of his students, Karapet Andrianatsi, was sent from Ejmiadzin to help run the printing office in Amsterdam.

117 According to Lane this is the first type ever cut in Notragir style. See Lane, *The Diaspora*, p. 81.

118 Ibid. pp. 81, 85.

119 Nersessian, *Catalogue of early Armenian*, p. 28.

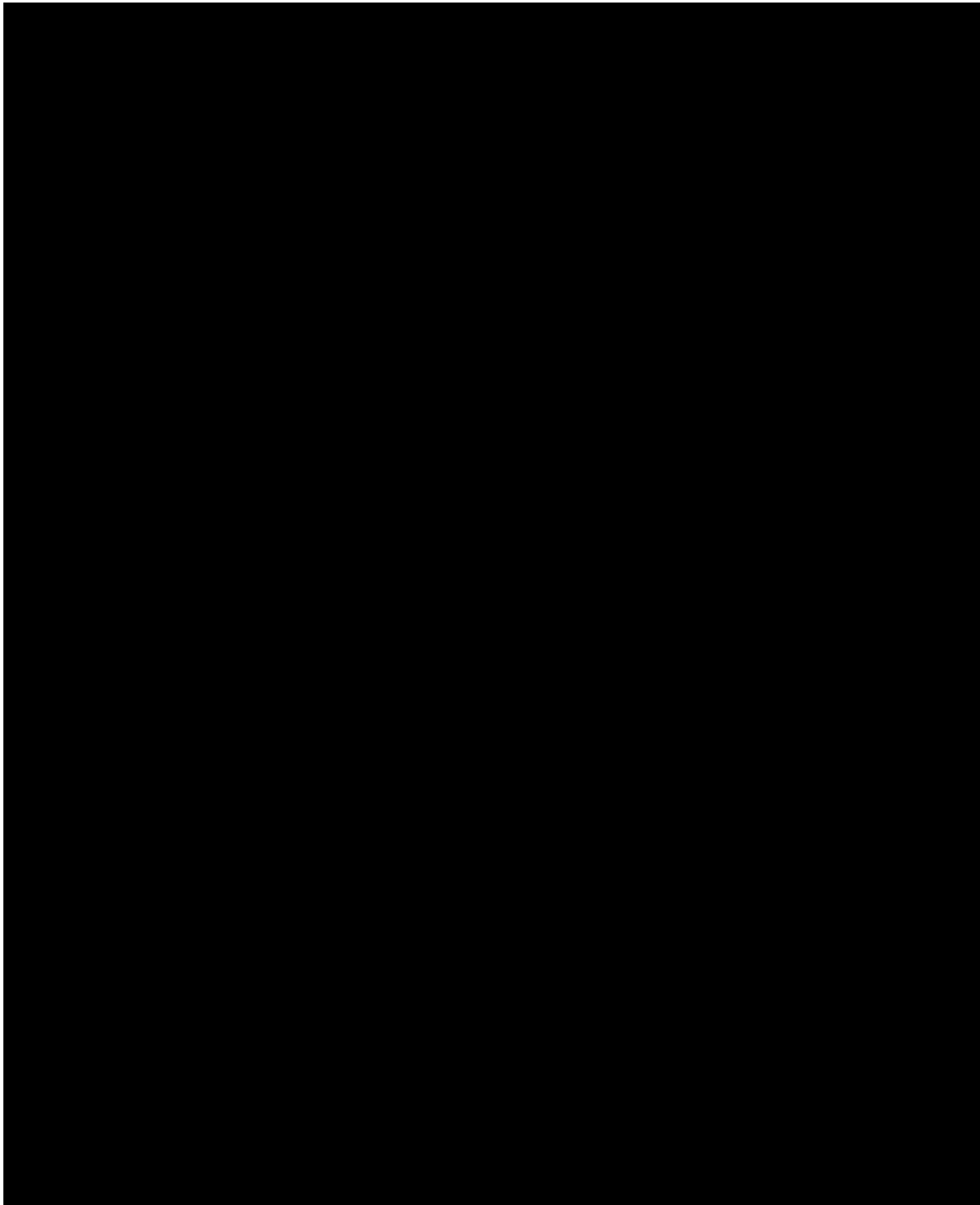


Fig. 55 Oskan Yerevanoz, the Armenian Bible (Amsterdam, St. Ejmiacin and St. Sargis Press, 1668).

This Bible was printed from 11 March 1666 to 13 October 1668 by Oskan Yerevantsi and his disciple Karapet Andrianatsi in 5,000 copies: it was the first time that such an extensive work was printed by Armenians.

The Armenian Bible consists of 1,462 double column pages having 159 illustrations produced by the Dutch artist Christoffel van Sichem (1581–1658). (Original size: 20,5 × 25,5 cm). Shown at 70% of original size.

The Mekhitarist Library in San Lazzaro, Venice.

The Mediaen Armenian type and its manuscript source

The printing of the Armenian Bible (known as the Oskanian Bible) [Fig. 55] began in 1666 and was completed in 1668. This is the first extensive Armenian edition where both type design and composition are of a high standard.¹²⁰ In *Four centuries of fine printing* Stanley Morison asserts that an exceptional piece of printing can be achieved only if a printer works with carefully chosen type, ink and paper.¹²¹ This means that the merit of a publication would depend on the skills of the punch-cutter and the printer. While the use of a mediocre type can have negative effects on the quality of a printed work, a well executed type can be spoiled by a careless or inexperienced printer. In the case of the Armenian Bible, Oskan's technical expertise combined with his attention to detail enabled the quality of Van Dijck's type produced for the Bible (also known as 'Avetis' characters,¹²² described here as CVB) to stand out. Furthermore, the elegance of a fount is not solely due to the skills of the punch-cutter, but also to the quality of the model (in this case the handwritten manuscript) used by the punch-cutter to develop the types.¹²³ For example, CVB had been described as 'newly made' and 'perfect'¹²⁴ compared to the type used in the *Yisus vordi*, named here CVY for convenience. At first glance, CVB and CVY look very similar, but by comparing some of their letters it is possible to observe that the types are different. The width of the vertical stroke in letter խ is uniform in CVB, whereas in CVY it is thicker at its top and bottom, but narrower at the middle [Fig. 56]. The vertical proportion of letter ք differs noticeably between the two designs as descender of letter ք is shorter in CVB [Fig. 57]. The ductus of letter թ is dynamic: the stroke of the big loop curves at the top, instead of being flat. The same happens to the stroke of the small loop prior to crossing the stroke of the big loop to the right [Fig. 58]. Furthermore, in CVB the bottom of the descender of tailed letters, such as ղ and զ, joins the horizontal stroke at an angle, whereas in CVY the two strokes connect smoothly [Fig. 59].

The different designs of CVB and CVY lead to the assumption that Van Dijck used two different prototypes (probably manuscript models) to cut these types. Unfortunately the precise models on which Van Dijck based his designs are not known, and it is only possible to tentatively suggest a source for CVB. The Matenadaran Museum of ancient

¹²⁰ Sousa, 'A brief history of Armenian typeface design', p. 17.

¹²¹ Stanley Morison, *Four centuries of fine printing* (London, Ernest Benn Limited, 1949), p. 11.

¹²² The Text Armenian types were also known as 'Avetis' characters. From the 18th century onwards the characters were customarily named after the owners of printing offices and not after the cutters.

¹²³ Fiona Ross and Graham Shaw, 'An unexpected legacy, and its contribution to early Indian typography' in John D. Berry and John Randle (eds.), *Type and typography* (New York, Mark Batty Publisher, 2003), p. 179.

¹²⁴ Schütz, 'The Oskanian and Vanandian', p. 186.

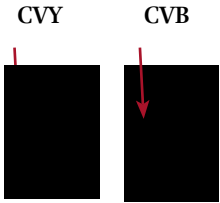


Fig. 56 Different modulation of the vertical stroke in letters with ascenders and descenders such as խ.

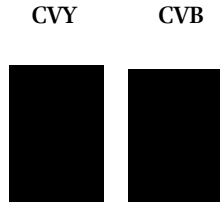


Fig. 57 The design of letter p is different in CVY from CVB: in CVY the descender is longer and the middle bar, crossing the vertical stem, is lower than in CVB.

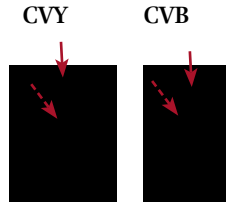


Fig. 58 The red arrows indicate the different design of letter թ in CVY and CVB.

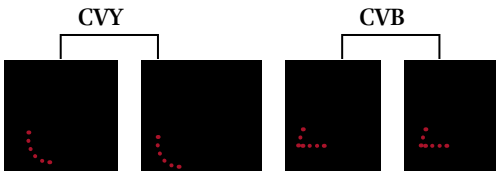


Fig. 59 The red lines on the left side of the letters ղ and ճ indicate the two different design used in CVY and CVB where vertical and horizontal strokes of tailed letters join.

All images on this page are from:

CVB is from Oskan Yerevanoz, the Armenian Bible (Amsterdam. St. Ejmiacin and St. Sargis Press, 1668). CVB is shown at 200% of original size.

CVY is from Nersēs Šhnorhali IV, *Yisus vordi* (*Jesus the son*), (Amsterdam. St. Sargis Press, 1661). CVY is shown at 300% of original size.

manuscripts in Yerevan has a manuscript MS 180 [Fig. 60] that belonged to the printer Oskan Yerevantsi, who used it as a base for his printed Bible (1666–1668).¹²⁵ MS 180 is the Sis Bible (1295), a manuscript copied by the scribe Stepanos for King Het'um II of the Cilician Kingdom of Armenia. A careful, in depth study carried out by Suren Kolanjyan¹²⁶ of MS 180 and Oskan's printed Bible, demonstrates that the manuscript was in Oskan's possession. In fact, the marginalia, the verse numbering and other corrections in the manuscript were the editorial notes that Oskan made while he was comparing the text with the Latin Vulgate.¹²⁷

Oskan had the opportunity to study the Sis Bible, preserved at the Hovhannavank Monastery¹²⁸ since 1656, as well as to access other sources available at the same monastery while he was the abbot of the monastery of St. Sargis near Ushi.¹²⁹ However, the fact that CVB was already completed in the mid-1662, predating Oskan's arrival in Amsterdam by almost 2 years, confirms that MS 180 is not the manuscript provided to Van Dijck. Furthermore, a comparison between the manuscript hand and the type suggests that MS 180 was not the source used by Van Dijck to cut CVB, as MS 180 was written with unsteady characters that were also aesthetically inferior to the shapes of CVB.¹³⁰ Contrary to Edmond Schütz's observation that the model for Van Dick's CVB should be a manuscript of the Cilician era (thirteenth century), rather than codices from the fourteenth to the seventeenth centuries,¹³¹ the source for CVB could be a codex written about ten years before the establishment of Tsaretsi's press in Amsterdam.¹³²

The similarity between manuscript MS 1549 held at the Matenadaran and CVB is striking. The manuscript dated 1646¹³³ is the *Yisus vordi*, written in Edjmiadzin by the scribe Step'annos Ilovac'i [Fig. 61]. The aim of Ilovac'i was to achieve the aesthetic outcome obtained with printing; this is suggested by the consistency in his handwriting and by the wide margins of the page. Such accuracy might imply that MS 1549 was

125 According to Devrikyan V. G. (Translated from Armenian by L. Verdyan), the information provided by Oskan in the colophon of the New Testament published in 1668, and the untitled poem of King Heth'um II published at the end of the Bible enabled scholars to establish that the Bible of the King Heth'um II was the manuscript used by Oskan as a base for the printed Bible. 'Preparation works and printing of the first Armenian publication of the Bible', *Fundamental Armenology*, 1 (3) (2016), p. 447.

126 Ibid. p. 448.

127 Oskan added some books of the Old Testament previously excluded from the Armenian canon. These included the Fourth Book of Esdras, and the Book of Sirach, which he himself had translated into classical Armenian from the Latin. Nersessian, *Catalogue of early Armenian*, p. 27.

128 Hovhannavank was a medieval monastery located in the village of Ohanavan (in the Aragatsotn Province of Armenia).

129 Hovhannavank was close to the monastery of St. Sargis near Ushi (in the Aragatsotn Province of Armenia).

130 The Bolorgir style in thirteenth century's manuscripts from Cilicia was compact and uniform. See Section 1.2 of this chapter.

131 Edmond Schütz, 'The Oscanian and Vanandian type-faces', p. 197. According to the historian Dickran Kouymjian it is in the second half of the eighteenth century that the production of handwritten copies declined sharply. Kouymjian, *Revolution or Evolution?*, pp. 3–4.

132 Lane observed that 'a manuscript combining these features [fragmented initials and sober Bolorgir] could have provided the models for both the upper and the lowercase of Van Dijck's Text and Mediaen. This combination can be found even in quite late manuscripts'. Lane mentioned, as example of manuscripts combining these features, an Edjmiadzin manuscript of 1646 (which is MS 1549) and one from 'Isfahan' dated 1660. He noticed that their Bolorgir letters and Yerk'atagirk initials are similar to those of Van Dijck's types.

133 Stone, *Album of Armenian paleography*, p. 444.

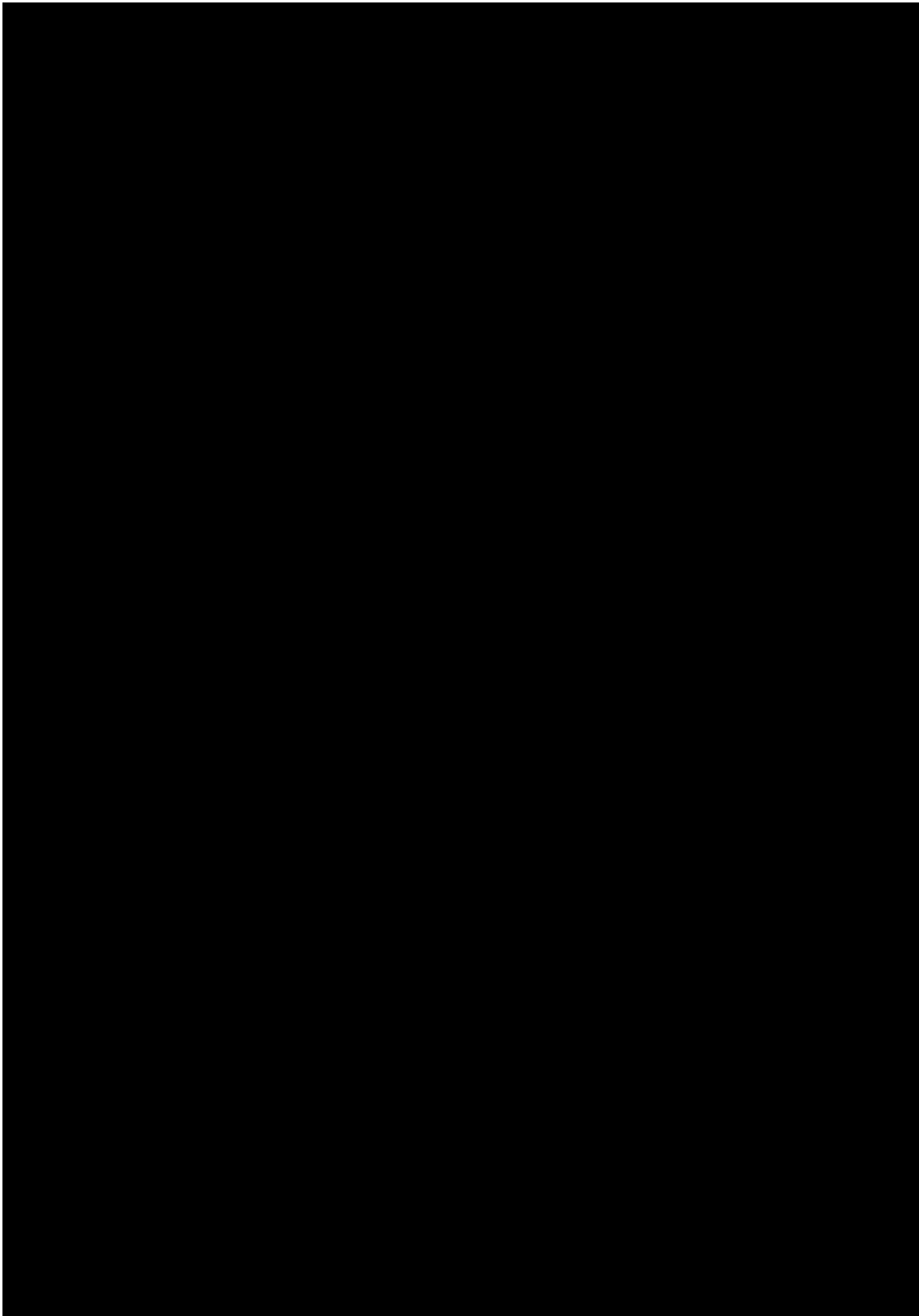


Fig. 6o The Sis Bible. Scribe Stepanos, Cilicia, 1295. Owned by the King Het'um II. MS Matenadaran n. 180, fol. 164. Image from Devrikyan V.G., 'Preparation works and printing of the first Armenian publication of the Bible' 'Preparation works and printing of the first Armenian publication of the Bible', *Fundamental Armenology*, 1 (3) (2016), p. 458. Beginning of the book of Deuteronomy. The verse numbering, and the marginalia on the left are in Oskan's handwriting.



Fig. 61 *Nersēs Šhnorhali (Yisus vordi)*. Scribe Step'annos Ilovac'i, Edjmiadzin, 1646. MS Matenadaran n. 1549, fol. 8. (Original size: 13,5 × 9,3 cm). Shown at original size. From: Stone, *Album of Armenian paleography*, p. 444.

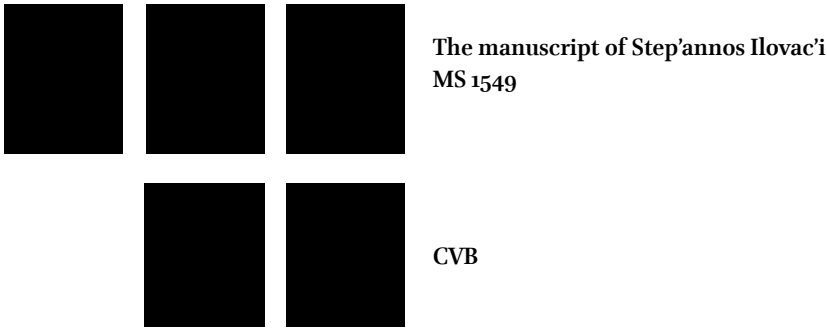


Fig. 62 The shapes of the capital letters in the manuscript and in the book are identical. It is worth noting the consistent width of the strokes kept by the scribe, almost to emulate the uniformity achieved by means of printing. All CVB letters on this page are from the printed Armenian Bible (1666–1688), shown at 300% of original size. Also MS 1549 is shown at 300% of original size.

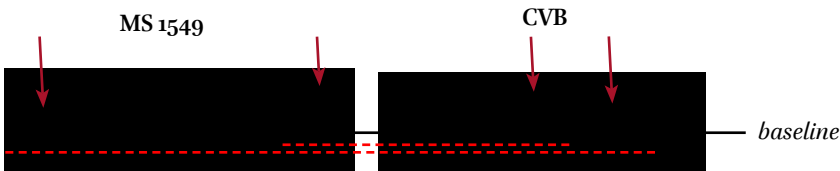


Fig. 63 The red lines indicate the correspondence in the vertical proportions between ρ and η in both manuscript and CVB descenders.

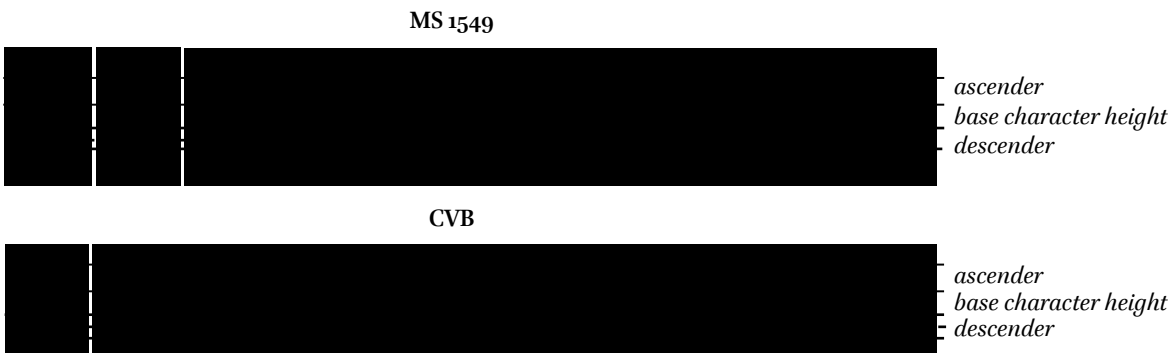


Fig. 64 Almost identical vertical proportions are used in MS 1549 and CVB. (The same vertical grid is superimposed in MS 1549 and CVB).

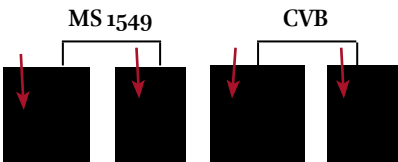


Fig. 65 Both Ms 1549 and CVB have a uniform width of the vertical stroke in letters such as χ and η .

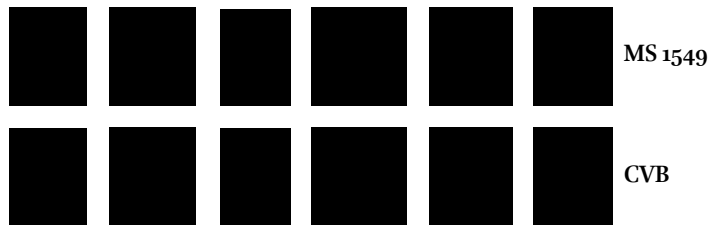


Fig. 66 Some other similar features are: the long and sharp terminal of the g , the shape of the arch of ρ , the form of ζ , the long hook of $\bar{\iota}$ turning downward, the angular join of the descender and the horizontal stroke of q . Furthermore, the letter $\dot{\alpha}$ in both MS 1549 and CVB is almost identical in the vertical proportion, as well as in the body which is made by an horizontal straight stroke at the right, and a bowl at the left.

a handwritten copy of a book instead of an earlier manuscript. It was common for a monastic copyist to use as his sample a printed version of a text rather than an earlier manuscript;¹³⁴ thus he would have copied not only the text, but also the layout and the type. However, because the two earlier editions of the *Yisus vordi* were printed with Granjon's type (RG₁),¹³⁵ which differs from the handwriting of Ilovac'i, these publications were not used by Ilovac'i as an exemplar for MS 1549.

The similar design of the uppercase letters in the manuscript and CVB, such as the fragmentation, the relatively narrow height and width, and the symmetrical form of letters such as U, is striking [Fig. 62]. With regard to lowercase letters, the following observations can be made: in both MS 1549 and CVB, letters such as ը and ի have short descenders [Fig. 63]; the vertical proportions used by Ilovac'i are employed almost without any variation by Van Dijck [Fig. 64]. The width of the vertical strokes in letters such as ի and խ is uniform in MS 1549 and in CVB [Fig. 65], and finally, the forms of ց, բ, ը, վ, գ, and ձ in CVB are similar to the letters in MS 1549 [Fig. 66]. Since there are numerous similarities between the handwriting of Ilovac'i and CVB, it can be suggested that the manuscript MS 1549 is the source manuscript used by Van Dijck for CVB.¹³⁶

The early Armenian types developed in the sixteenth century in Venice and used by Jacob Meghapart in the *Friday Book* and by Abgar Dpir Toxatec'i in the *Psalter* reveal two different approaches to the composition of Armenian by movable type. FJM₁ kept the alternate letters from the manuscript tradition, whereas PAT₁ simplified the vertical alignment to reduce the number of characters produced. Therefore, these early types are representative of the transition between manuscript and movable type.

It was perhaps inevitable that both types would be of low design quality, as they were the first to be used in Armenian printing. Progress became possible when highly skilled type-makers, such as Robert Granjon in Rome and Christoffel Van Dijck in Amsterdam cut Armenian types. Their achievements demonstrate that the skills of the punch-cutter are an essential condition for obtaining a high level of quality. However, the elegance of a type does not only depend on the punch-cutters' skills, but also on the quality of the manuscript used as a model to develop the types. This is particularly evident in the instance of the Mediaen Armenian type (CVB) produced by Van Dijck for the Armenian Bible in 1663.

¹³⁴ Kouymjian, 'Revolution or Evolution?', p. 12.

¹³⁵ The Granjon's type (RG₁) is discussed on pp. 67–69 of this thesis.

¹³⁶ In order to confirm this hypothesis, further investigation on the manuscript (MS 1549) and its scribe should be carried out.

1.4 From religious books to nationalistic publications

For centuries Armenian printing presses, established in cities where the Armenian Diaspora had formed their communities, aimed to preserve and disseminate Armenian identity and culture. While early Armenian publications were mainly of a religious nature, in the mid-eighteenth century Armenians began to use the printing press to circulate new and radical ideas, such as national liberation and the establishment of an Armenian state. These progressive thoughts were the consequence of a cultural, philosophical and social movement, which spread in Europe throughout the eighteenth century: the Enlightenment.¹³⁷

Described as the ‘Age of Reason’, the Enlightenment was based on new ideas concerning freedom, progress, tolerance, constitutional government and the separation of Church and state. Such ideas, centred on reason as the main source of authority and legitimacy, triggered some major changes in the cultural sphere, which would have an impact on eighteenth-century printing worldwide: the commercialisation of culture, and the emergence of public opinion.¹³⁸ In the eighteenth century culture was no longer restricted to royal, aristocratic, or clerical patrons, but it was made available to everyone who could afford it. Consequently, a wider number of people began to actively contribute to the advancement of culture by engaging in scientific, political and philosophical discourse. People would meet in public spaces, such as coffee houses or Masonic lodges, to exchange information, ideas and arguments, fostering the birth of a new source of authority, namely public opinion.¹³⁹ Moreover, through the dissemination of the knowledge generated in the Enlightenment, the eighteenth century witnessed the proliferation of new printed genres, such as periodicals, pamphlets, newspapers, and scientific works.¹⁴⁰

Despite Europe being the place where the ‘Age of Reason’ began to shape, where numerous books and essays were produced, and where inventions, scientific discoveries and revolutions took place, enlightened ideas and social contract theories (such as those by Locke and Montesquieu) found their way to India, and to the Armenian community in Madras.¹⁴¹ There, in the last decades of the eighteenth century, a group of Armenian liberal intellectuals – called the ‘Madras Group’ – was formed, and the first Armenian nationalistic book *Nor tetrak vor kochi hordorak* (1772) and the first Armenian journal *Azdarar* (1794) were printed.

137 On the Enlightenment see: Ray Porter, *the Enlightenment* (New York, Palgrave, 2001); Matthew White, ‘The Enlightenment’, (The British library, 21 June 2018). Retrieved from: <https://www.bl.uk/restoration-18th-century-literature/articles/the-enlightenment>. Accessed on 30 November 2018; Dorinda Outram, ‘The Enlightenment’ (New York, Cambridge University Press, 2013).

138 Timothy Charles William Blanning, *The Eighteenth century: Europe 1688–1815* (Oxford, Oxford University Press, 2000), p. 4.

139 Ibid. p. 4.

140 The most influential publication of the Enlightenment was the *Encyclopédie* (Encyclopaedia). Published between 1751 and 1772 in thirty-five volumes, it was compiled by Diderot, d’Alembert (until 1759) and a team of 150 scientists and philosophers. It helped spread the ideas of the Enlightenment across Europe and beyond.

141 Panossian, *The Armenians*, p. 93.

Armenians had established in Madras as early as 1504, but it was during the seventeenth and eighteenth centuries that an Armenian community flourished in this south-eastern Indian city. The founding of New Julfa in 1605, which became an Armenian quarter by the edict of Shah Abbas I,¹⁴² and the transfer of Hormuz, the only sea passage from the Persian Gulf to the open ocean, from Portuguese to Safavid control, enabled Armenian merchants from New Julfa to easily travel to the East and to form Armenian communities in India.¹⁴³

Besides Armenians, other ethnic groups had settled in the Indian subcontinent: for example, the Portuguese – on a fleet led by the explorer Vasco Da Gama – were the first Europeans to reach India in 1498 by circumnavigating Africa; the Danish, the Dutch, the English and the French set foot there in the seventeenth century. The first Danish expedition to India was undertaken in 1618 under the Danish East India Company, and in the early 1660s trading settlements were established by the Dutch,¹⁴⁴ as well as by the English, under the East India Company. The French were the last European power to enter the eastern trade and to arrive in India.¹⁴⁵ Europeans settled in port cities of the Indian subcontinent not only to establish trading posts for the commerce of spices, but also to gain political and economic control over India and South East Asia. Contact between Armenian and English merchants in India intensified: in 1688 a trade agreement was signed in London between the English East India Company and the Armenian traders represented by Khoja Panos Kalantar. This granted Armenians special privileges and placed them on an equal footing with the English. Armenian merchants would live and trade freely as though they were English born, they would be able to sell and to buy lands, to pay low taxes, to practice their own religion and to access all Civil Offices.¹⁴⁶ On the other hand, the agreement was an English expedient to expand the East India Company's trade to the Persian market. The English aimed to alter the ancient course of Armenian trade to and from Europe, enabling Armenian merchants to transport their goods to Europe on English ships around the Cape of

142 He forcefully moved Armenians from Old Julfa to New Julfa. Armenians moved to Iran to escape from Ottoman rulers.

143 Aslanian, *From the Indian Ocean*, p. 48. A return trip to India from the Persian Gulf during the same year was not possible due to the monsoon season. Therefore, merchants would have to settle in India for at least two years, thus encouraging the formation of Armenian communities.

From the seventeenth century onwards most of the Armenians who arrived in India were from New Julfa. They established communities in Madras, Delhi, Calcutta, Surat and Bombay and other cities. Panossian, *The Armenians*, p. 81.

144 Under the control of the Dutch East India Company. The Dutch East India Company was established in 1602 by a charter of the Government of Holland to protect the state's trade in the Indian Ocean and to assist in the Dutch war of independence from Spain. The Dutch commercial empire was in the East Indies (today's Indonesia) and was dissolved in 1799. In 1619 the The Dutch East India Company had established a central position in the Indonesian city of Jakarta, which was named Batavia by the Dutch. Batavia became the centre of the Dutch East India Company's Asian trading network. In the following 200 years the Company acquired additional trading posts and gradually colonised surrounding areas. See: *Encyclopaedia Britannica*. Retrieved from: <https://www.britannica.com/topic/Dutch-East-India-Company>. Accessed in April 2018; and Adrian Vickers, *A History of Modern Indonesia* (Cambridge, Cambridge University Press, 2005), p. 10.

145 The French settled in Surat in 1668. The French East India Company was established in 1664.

146 Aslanian, *From the Indian Ocean*, pp. 48–49; Mesrobian Jacob Seth, *History of the Armenians in India* (London, Luzac & co., 1897), p. 48. The treaty is reproduced in its original length in Mesrobian Jacob Seth, *Armenians in India* (New Delhi, Asian Educational Services, 2005), pp. 233–238.

Good Hope, instead of via the land route across Ottoman territory. In return, the East India Company required Armenian merchants to assist them with their commerce in Persia.¹⁴⁷ The agreement not only stimulated the migration of merchants from New Julfa to the Indian subcontinent,¹⁴⁸ but also strengthened relations between the East India Company and Armenians. By the first half of the eighteenth century Armenian communities were well integrated into the local colonial administrative institutions, and the Company even encouraged merchants from New Julfa to settle in some of the cities of the Indian subcontinent.¹⁴⁹ It is in this context that Armenian merchants in India came into contact with European values, philosophical and political writings, and that Madras became the hub of the Armenian patriotic Enlightenment.

1.4.1 *Nor tetrak vor kochi hordorak (New pamphlet, called Exhortation)*

As already mentioned, a group of liberal intellectuals, called the 'Madras Group', was formed in Madras in the early 1770s. Movses Bagramean (eighteenth century) – an intellectual activist originally from the Garabah region,¹⁵⁰ Joseph Émin¹⁵¹ (1726–1809), Sahamir Sahamirean (New Julfa 1723–Madras 1797) – a wealthy Armenian merchant and an influential member of the Armenian community in Madras – and his eldest son Hakob Sahamirean (Madras 1745–Malacca 1774) were the most prominent members of the group. The group was dedicated to the cause of emancipation of Armenia and it began to lay ideological foundations for independence and a democratic government.¹⁵² In fact, the Madras Group believed that by exposing the Armenian Diaspora to democratic principles and procedures, Armenian communities would be encouraged to form a political and military alliance to defeat the Ottoman regime.¹⁵³ In order

147 The East India Company aimed to expand their trade (mainly woollen goods) to the Persian market. The main obstacle to the Company's efforts to break into the area was likely to come from the Armenian merchants who purchased cloths from the Europeans at Aleppo and shipped them eastward in order to barter them for the raw silk of Persia. Kirti N. Chaudhuri, *The trading world of Asia and the English East India Company: 1660–1760* (Cambridge, Cambridge University Press 1978), p. 225. According to the historian Mesrovb J. Seth, the 1688 treaty was the 'death knell' or the 'Death Warrant' of the extensive and important Armenian trade in India. Seth, *Armenians in India* (2005), p. 231.

148 Aslanian, *From the Indian Ocean*, p. 48. See also: Sushil Chaudhury, Kéram Kévonian, *Les Arméniens dans le commerce asiatique au début de l'ère moderne* (Paris, Éditions de la Maison des sciences de l'homme, 2008), p. 47; Seth, *History of the Armenians in India* (1897), p. 81.

149 Aslanian *From the Indian Ocean*, p. 51.

150 Today the region belongs to eastern Armenia and southwestern Azerbaijan. Little is known about the life of Bagramean.

151 Joseph Émin was a Calcutta-based Armenian from Hamadan (Iran) who had traveled to London in 1751. There, he became familiar with the European/British Enlightenment. While in London, he wrote an autobiographical text: *The Life and Adventures of Joseph Émin, an Armenian* (London, 1792). A second edition, with annotations and appendices of original correspondence by the author, was published in 1918 by the Calcutta Baptist Mission Press by Emin's great great granddaughter, Amy Aparcar.

In 1762 Movses Bagramean and Emin met in Russia. There, for about six years they collaborated in an attempt to liberate Armenia from Persian and Turkish regime, mainly based on armed resistance. Convinced that the violent methods advocated by Emin would never succeed, Bagramean moved to Madras.

152 Hacikyan, *The heritage of Armenian Literature*, vol. 3, p. 160.

153 *Ibid.* p. 160.

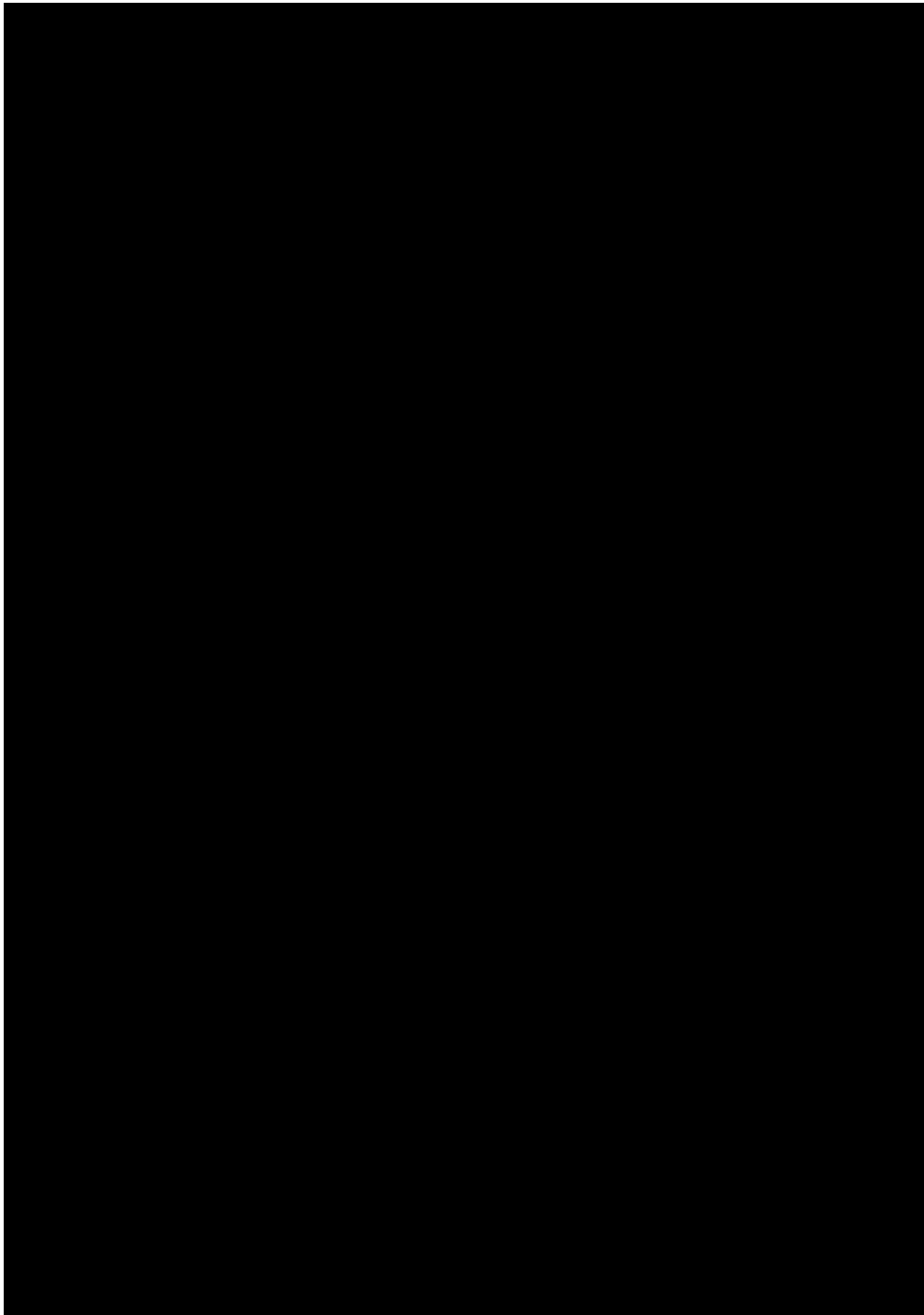


Fig. 67 Movses Bagramean, *Nor tetrak vor kochi hordorak* (Madras, Sahamir Sahamirean, 1772). (Original size: 13 × 18,5 cm). Shown at original size. *The Mekhitarist Library in Vienna*.

Seth provides an English translation of the title page: 'New pamphlet, called Exhortation, composed for the awakening of the Armenian youth from the weak and idle drowsiness of the sleep of slothfulness, and with an ardent and tender desire printed at the expense and through the exertions of Jacob Shameer by his tutor Moses Bagram, for the benefit of the tender Armenian youth, in the year of the incarnation of the Word 1772 and in the year 1221 of the Armenian era. In India, at the city of Madras, at the press of the said Jacob Shameer.'

to circulate the ideology of the group and to start a liberation movement, Sahamir Sahamirean¹⁵⁴ together with his two sons Hakob and Yeghiazar (Madras 1758–n.p. 1787) established a printing office in Madras in 1772. From its foundation to 1783, Sahamirean's press printed eight Armenian publications. The most significant is the third book entitled *Nor tetrak vor kochi hordorak* (New pamphlet, called Exhortation),¹⁵⁵ written by Movses Bagramean¹⁵⁶ [Fig. 67]. This was the first Armenian publication to deal with political affairs and nationalistic ideologies.¹⁵⁷ Sahamirean's press would become the first Armenian enterprise to use printing for propaganda purposes.

Nor tetrak vor kochi hordorak, which is a substantial work – 240 pages – opens with a section on national geography and history, providing a twofold explanation for the loss of independence: the monarchical system of government and the dissention among Armenian communities. In the book, Bagramean reminds Armenians of the unnecessary suffering provoked by foreign oppressors and appeals to the young Armenians to free their nation by taking actions against the Persian and the Turkish hegemony. He also asserts the necessity to separate the church from the state and education, and to establish either a parliamentary system of government, such as a republican democracy – like the one in place in Madras – or a constitutional monarchy. Finally, he remarks that patriotism and education were paramount to regain the independence of the nation: not only should parents give their children appropriate education, but also Armenian communities should open new schools.¹⁵⁸ For the first time the idea of Armenian national liberation was made the subject of a printed book.¹⁵⁹

Towards the end of the pamphlet (pp. 214–217) Bagramean pleads with the reader not to blame him and the Sahamirean's press¹⁶⁰ for the defects of this publication and not to disregard the effort that it took to produce the book. The author devotes an entire section to a further discussion of this subject, under the title: 'Արգահատանք Առ Ընթերցողն' (An appeal to the reader). In early Armenian books, usually towards the

154 Also known as Chahamir Chahamirian and Agah Shameer Soolthanoomean (see Seth, p. 145). He was born in New Julfa, in Iran, in 1723, but he spent most of his life in Madras, where he was a famous pearl merchant and where he carried on a profitable trade in Persian rose-water and dried fruits. Seth, *History of the Armenians in India* (1897), p. 145.

155 Or *Նոր արգահատանք, որ կոչի Յորդորակ* in Armenian characters.

156 According to Vazken Ghougassian, at the end of the book, Hakob Sahamirean claims to be, together with Bagramean, the author and the publisher of the book, which they finished printing in 1773. Bagramean was the tutor of Hakob Sahamirean, the eldest son of Sahamir. Vazken Ghougassian, 'The Quest for Enlightenment and Liberation: The case of the Armenian community of India in the late eighteenth century' in Richard G. Hovannisian and David N. Myers (eds.), *Enlightenment and Diaspora: the Armenian and Jewish cases* (Atlanta, Scholars Press, 1999), p. 251.

157 See: Marc Nichanian, 'Enlightenment and historical thought' in Richard G. Hovannisian and David N. Myers (eds.), *Enlightenment and Diaspora: the Armenian and Jewish cases*, p. 115. The first publication to be produced by Sahamirean's press was a book in Armenian, called *Aibbenaran* (*Alphabet*), to teach the Armenian language; the second was a geography book: *Ashkharhagrutun Hayastani* (*Geography of Armenian*).

158 Oshagan 'From Enlightenment to Renaissance', p. 166.

159 Panossian, *The Armenians*, p. 92.

160 In his appeal to the reader, Bagramean uses the first person plural 'we'. It is unclear whether 'we' refers to the Madras Group, the printers, or the authors of the book.

end of the book, such pleas would be part of the colophon (*Yišatakaranner*, – literally ‘memorial writings’ or ‘memoranda’): a relatively short piece of writing, which provided an account of historical events, information about the authorship, the printer, and the circumstances in which the publication was produced.¹⁶¹ Thus, the writer would leave an account of himself and his work for posterity. However, the section ‘An appeal to the reader’ in *Nor tetrak vor kochi hordorak* suggests that the author aimed to engage in a dialogue with his reader, and indicates that Bagramean anticipated that a favourable reception of this book from the audience would determine the future of the Armenian nation.

According to the historian Louise Nalbandian, the book was addressed to Armenians of prominence and to foreign dignitaries.¹⁶² However, the section ‘An appeal to the reader’ reveals that the Madras Group aspired to reach a different audience. In fact, Bagramean points out that several Armenian words were provided with their foreign equivalents in order to help the reader to comprehend their meaning, because ‘many compatriots have a very poor knowledge of Classical Armenian and others know nothing at all about it’,¹⁶³ thus suggesting that the expected audience was probably the general public, acquainted with a popular vernacular language mixed with foreign loan words. Usually, Classical Armenian, known as Grabar, was the language of well-educated Armenians, such as Armenian clergymen.

This ambitious publication, which laid the foundation of Armenian political thinking and literature, was printed in forty copies, a very low number compared to the 5000 copies produced for the Armenian Bible in 1666–1668 in Amsterdam. Pressured by higher authorities (probably the Catholicos), Sahamirean’s press had to publish the book as quickly as possible. The forty copies of the book came out of the press after seven months of assiduous work, and distributed free of charge among the Armenian Diaspora. Despite the limited number of copies produced, Armenian readers could have borrowed copies of the *Nor tetrak vor kochi hordorak* from their friends, thus creating a circuit of distribution among Armenians. However, the circulation of *Nor tetrak vor kochi hordorak* might have been hindered by the Armenian Church, which considered the ideas of the Madras Group a threat to the Catholicosate’s position in Armenian society. Particularly interesting is the reaction of Catholicos Simeon Yerevantsi (1710–1780), who during the 1770s ordered the public burning of this publication.¹⁶⁴

Time pressure prevented Sahamirean’s press and Bagramean to proofread the job, thus leaving many mistakes in the text, such as improper uses of letters, syllables and words, and various discrepancies with prefixes and declensions. Moreover, time restrictions might also explain the limited number of copies produced.

161 Pehlivanian, ‘Mesrop’s Heirs’, p. 61.

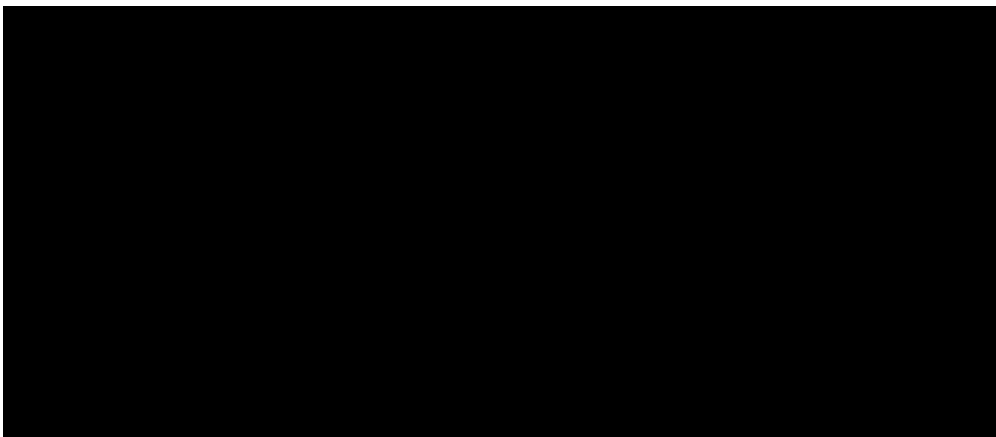
162 Louise Nalbandian, *The Armenian revolutionary movement* (California, University of California Press, 1975), p. 36

163 Hacikyan, *The heritage of Armenian Literature*, vol. 3, p. 149.

164 See: Sebouh D. Aslanian, ‘A reader responds to Joseph Emin’s Life and adventures: notes toward a ‘History of Reading’ in late eighteenth century Madras’, *Handes Amsorya* (January-December 2012), pp. 377–388.



a



b

Fig. 68 a and b. The Bolorgir type used by the printer Barboni in Venice in 1680 (image b) is also used by Sahamirean in 1772 (image a).

a. Detail from Movses Bagramean, *Nor tetrak vor kochi hordorak* (Madras, Sahamir Sahamirean, 1772). (Original size: 13 × 18,5 cm). Shown at 200% of original size. *The Mekhitarist Library in Vienna*.

b. Detail from Yovhannēs Kostandnupolsec'i *Mirror's Truth* (Venice, Michel Angelo Barboni, 1680). (Original size: 9,6 × 13,8 cm). Shown at 200% of original size. *The British Library*.



Fig. 69

MGN is from Movses Bagramean, *Nor tetrak vor kochi hordorak* (Madras, Sahamir Sahamirean, 1772). Shown at 300% of original size.

CVB is from the printed Armenian Bible (1666–1688). Shown at 300% of original size.

An old-fashioned Armenian type from Italy

Due to its remote location, Sahamirean's press faced several printing issues, which are explained by Bagramean in the section 'an appeal to the reader': unable to find high-quality paper in the country, Sahamirean's press had to use papers of uneven quality: thus, some pages were smooth and thin, whereas others were rough and thick. Additionally, the lack of printing experience and knowledge of Sahamir and Hakob Sahamirean, as well as the absence of skilled printing craftsmen on the Indian subcontinent, affected the aesthetic quality of the book and consequently reduced the legibility of some characters. For example, some pages were stained with ink spilled during the printing process, or else letters were poorly rendered because the ink could not be easily absorbed by the paper. Bagramean also explains that the Press did not have lead type for all the characters of the alphabet, and that for this reason when composing the text it was obliged to substitute the missing characters with others Armenian letters, thus creating spelling mistakes.¹⁶⁵ In the section 'an appeal to the reader' Bagramean does not provide further information about the Armenian type used in the publication. However, the fact that at the time there were no skilled craftsmen who could cut the Armenian type locally, it must have been made elsewhere and then shipped to India. The Armenian type used in *Nor tetrak vor kochi hordorak*, here designated as MGN [Fig. 68a], appears first in a publication printed in 1674 by the Italian Paolo Moneta in Rome, and then in several other publications printed in Venice in the 1680s by the Italian Michel Angelo Barboni [Fig. 68b].

Barboni,¹⁶⁶ whose activity in Venice is attested from the late 1660s to the 1690s,¹⁶⁷ began to print books in the Armenian language in 1678.¹⁶⁸ From 1678 to 1683 his Armenian publications were printed in MGN, an upright Armenian Bolorgir at 11 pt,¹⁶⁹ with some letters, such as ք, հ and տ having extreme widths, inferior in quality to Van Dijck's Mediaen type (CVB)¹⁷⁰ [Fig. 69]. The printer Barboni also acquired two different sizes of Armenian types very similar to the Mediaen Armenian cut in Amsterdam by Van Dijck in 1663. Both appear in 1685 in the publication: *Նորսագրոյն ծաղիկի պօրութիւն* [քա] նոյ (*Flower's virtue*. Translated by Hōhannis Vardapet¹⁷¹ Kostandinupōlsets'i).

165 Hacikyan, *The heritage of Armenian Literature*, vol. 3, p. 149. However, when analysing the printed page, it seems that all lowercase letters appear in the book. Therefore, Bagramean might have meant that the Press had a short supply of some letters and that the composer had to make substitutions when running out of some sorts.

166 Barboni does not appear in the Venetian Mariogola list (lista di immatricolati all'arte degli stampatori e dei librai di Venezia) from 1695, neither in the Italian bibliographic dictionary (Treccani).

167 He published a *Zhamagirk* (Armenian breviary) and *Tagharan* in 1681, in 1682 a *Saghmosaran* (Psalter) and *Dashants tught* (*Letter of Concord*) in 1683, and in 1685 a prayerbook based on Latin sources, a *Gospel*, and a *Calendar*. The latest date of any item from his press seems to be 1690, this work and a confession of faith by Nersēs Šnorhali.

168 From 1678 to 1690, Barboni printed 13 books in Armenian characters. See: the Mekhitarian P. Nerses Der-Nersessian, 'Due antiche edizioni Armene di Venezia' in Scilla Abbiati (ed.), *Armeni, Ebrei, Greci stampatori a Venezia* (Venice, Casa Editrice Armena, 1989), p. 44.

169 This is given by the Mekhitarian P. Nerses Der-Nersessian. Der-Nersessian, 'due antiche edizioni Armene di Venezia', p. 41.

170 MGN can be considered a poor design, similar in quality to the first Armenian movable type (FJM1) used by Meghapart and discussed in Section 1.2.2 of this chapter. PMN is described by John Lane as a crude and old-fashioned Bolorgir. Lane, *The Diaspora*, p. 164.

171 An ecclesiastical rank for celibate clergy below that of a bishop in the Armenian Church.

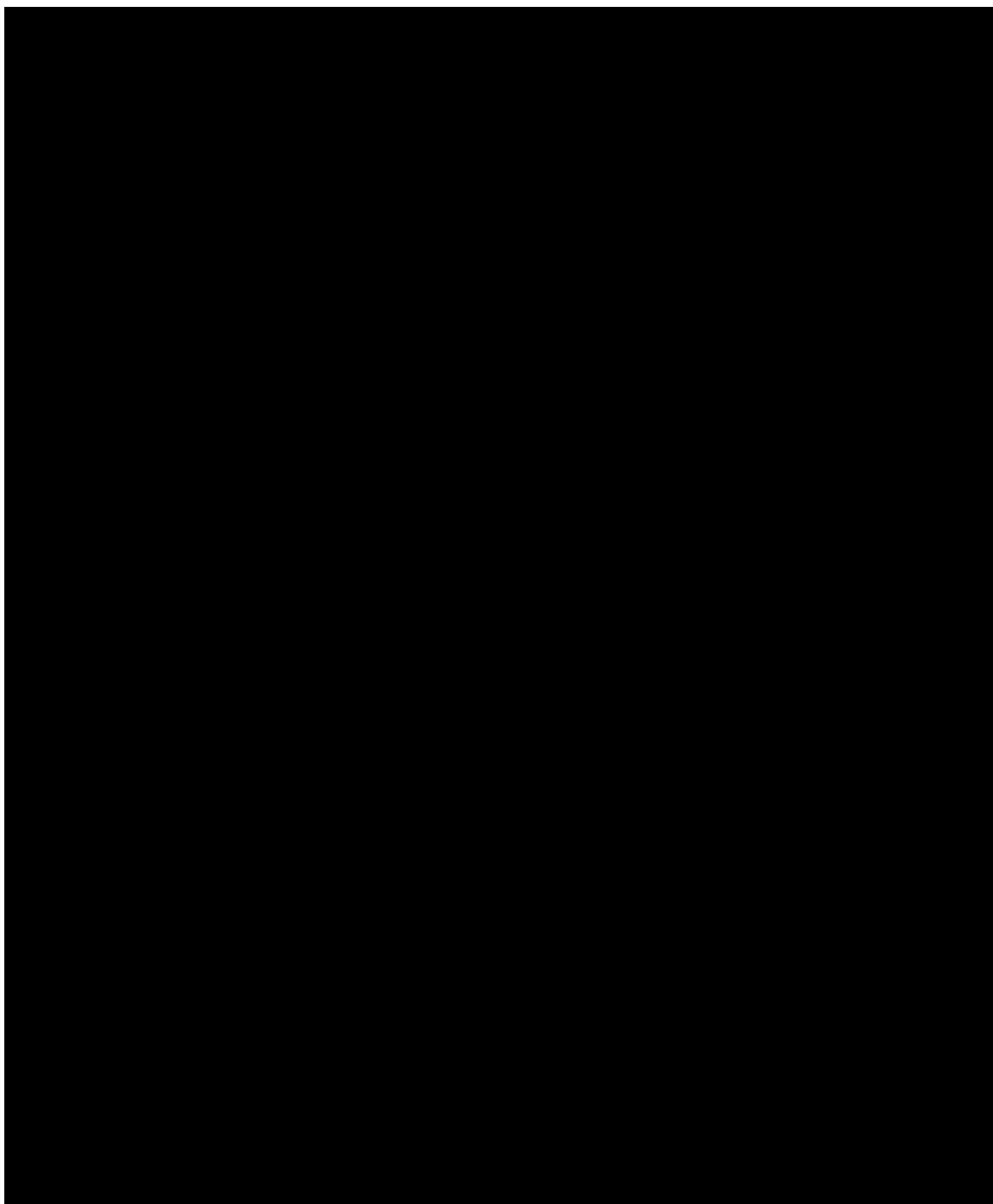


Fig. 70 *Azdarar* (Madras, Harutiun Shmavonian, 1794). (Original size: 18,5 × 22,5 cm). Shown at original size. *The Mekhitarist Library in Vienna*.

Because the first known publication to use MGN is dated 1674, and since it is of a very low quality compared to CVB used in the Armenian Bible, it might be suggested that MGN was cut before the Armenian Bible circulated amongst Armenians in 1668.¹⁷² It is likely that, after the closure of the Barboni press in 1690, MGN as well as Barboni's printing material was acquired by another printer in Venice, before it reached India.

MGN was not commissioned for *Nor tetrak vor kochi hordorak*, neither was it a deliberate choice, as the publishers had little concern for the aesthetic appearance of the pamphlet. They probably used a Bolorgir type that was available to them, without aiming to make any connection between the type used and the contents. There was nothing unusual with the type, despite the innovative content and purpose of the publication.

1.4.2 The first Armenian printed journal: *Azdarar*

The publication of the first Armenian-language journal, *Azdarar* (Intelligencer) [Fig. 70] in 1794 was another important event in the history of Armenian printing to take place in Madras.¹⁷³ Not only was this the first Armenian journal to be printed in India, but also the first journal in a non-Latin script to be produced in the Indian subcontinent. Produced for the Julfan trading community in Madras, *Azdarar* provided information about the prices of various commodities, timetables of ship arrivals and departures from the port of Madras, reported news on political and economic development in India, Manila, Canton (China), Iran, the Caucasus, the Russian Empire, and Europe. This enabled the Armenian community in Madras to be connected with other Armenian communities established in different parts of the world. The most fashionable and 'hottest' topic to appear in *Azdarar* was the French Revolution, which began in 1789 but engulfed Europe for the following decade, just when *Azdarar* was published.¹⁷⁴

Printed journals were still a fairly new genre in Europe in the mid-seventeenth century,¹⁷⁵ and introduced into the East through the colonial expansion of European countries. By 1765 the influence of the English East India Company had grown to such an extent that the British had established their political supremacy in most parts of the Indian subcontinent. By 1794 over twenty English-language newspapers were to be found in Calcutta, Bombay and Madras.¹⁷⁶

The first issue of *Azdarar* was published in October 1794 by an Armenian priest, Harutiun Shmavonian¹⁷⁷ (Iran 1750–Chennai 1824), who arrived in Madras in 1784 to

172 MGN may be the work of either a mediocre craftsman, or of a craftsman who based the type on a poor handwritten manuscript model.

173 Panossian, *The Armenians*, p. 94.

174 Sebouh D. Aslanian, 'Port cities and printers: reflections on early modern global Armenian print culture', *Book history*, 17 (2014), pp. 80–81.

175 Newspapers began as pamphlets in the seventeenth century. The first weekly news periodicals were published in 1622. First English papers were already produced in 1640 (mid-seventeenth century). Their political purpose arose from the events leading up to the Commonwealth. Allen Hutt, *The changing newspaper. Typographic trends in Britain and America 1622-1972* (London, Gordon Fraser, 1973), p. 9.

176 Date and information are given by Aslanian, 'A reader responds to Joseph Emin's Life and adventures', p. 385.

177 Shmavonian was proficient in Iranian, Arabic, the esoteric sciences, literature, philosophy and theology.

serve in the Parish of St. Mary. There, in 1789 he established an Armenian printing press and began to print religious books.¹⁷⁸ According to Seth, since Shmavonian could not rely on any skilled workmen in the Indian subcontinent, not only did he have to act as compositor and printer, but he struck matrices and cast type.¹⁷⁹ However, since there is no evidence that Shmavonian acquired any punch cutting and type-casting knowledge and skill, it is unlikely that the Armenian types he used in his publications were entirely the work of his own hand. Inspired by two preexistent English newspapers circulating in Madras: the *Madras Courier*, established in 1785, and *The Hircarrah* (The Messenger) introduced in 1793/1794, *Azdarar* was published monthly for eighteen months from October 1794 to early 1796.¹⁸⁰ Introducing the first issue of *Azdarar*, Shmavonian reports that:

one month ago, a distinguished Englishman started publishing, at the end of each month, a journal that contains the lives of celebrated people, interesting articles and stories. With, as a pastime, a section at the end with information about the market, world shipping, shipwrecks and other news. Following the example of that paper, we too started publishing, at the end of each month, a similar paper.¹⁸¹

It is difficult to ascertain whether in this introduction, Shmavonian might have referred to either *The Hircarrah* or the *Madras Courier*, or even to another English weekly newspaper or monthly magazine published in a trading post different to Madras.¹⁸² These two English-language newspapers were both weekly and five to six pages in length,¹⁸³ whereas *Azdarar* was a monthly journal of forty-eight pages. If, according to Aslanian 'English-language newspapers in India and their print culture would serve as a prototype of the first Armenian newspaper in the world', a comparison between *Azdarar* and *The Hircarrah* reveals that the layout used for the Armenian journal was still based on Armenian manuscript and religious printed books. In *The Hircarrah* the 'gossip for Madras European community', official government notices, advertisements, essays on morals from different parts of Europe, as well as information on trading for the merchant community in Madras were printed in a four-column newspaper. Such diverse information were organised on the pages using different type styles, such as Roman, Italic and Bold, in different sizes; thus providing a visual hierarchy that would enable readers to skim quickly through the journal [Fig. 71]. In the case of *Azdarar*,

178 The press was closed in 1818, when the Armenian community in Calcutta began to emerge. Hacikyan, *The heritage of Armenian Literature*, vol. 3, p. 49.

179 See: Seth, *Armenians in India* (2005), p. 598 and Hacikyan, *The heritage of Armenian Literature*, vol. 3, p. 49.

180 From 1794 to 1796, eighteenth issues of *Azdarar* were published. Hacikyan, *The heritage of Armenian Literature*, vol. 3, p. 49.

181 See: *Azdarar* (Tira [16 October], 1794), p. 4. The English translation of the quote is from Oshagan, 'From Enlightenment to Renaissance', p. 172.

182 According to Graham Shaw, in 1780 the Monday newspaper *India Gazette* and the Thursday magazine *Calcutta Gazette* were the leading publication of the Calcutta press. Graham Shaw, *Printing in Calcutta to 1800* (London, The Bibliographical Society, 1981), p. 8.

183 See: Aslanian, 'A reader responds to Joseph Emin's Life', p. 388.

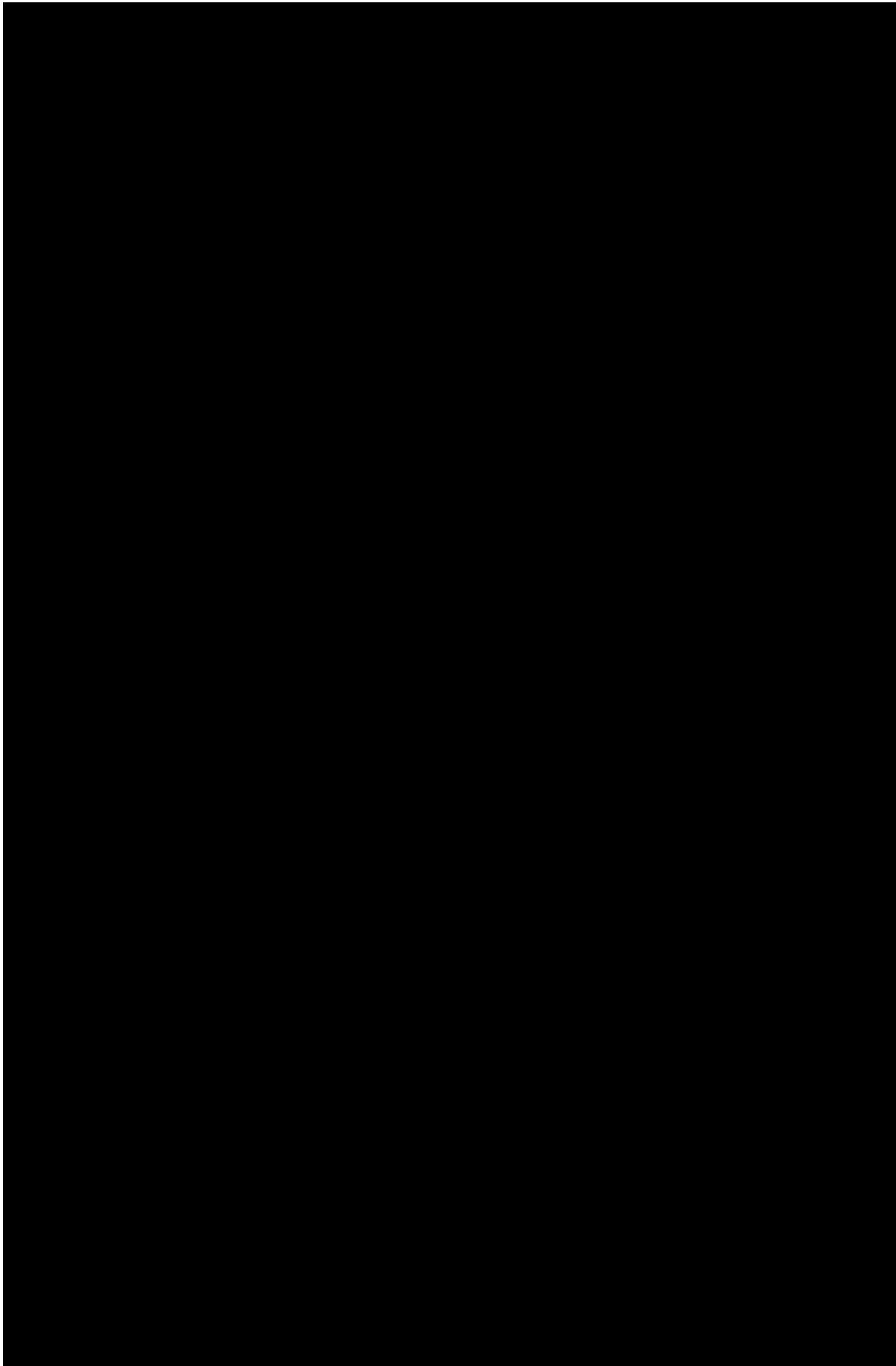


Fig. 71 *The Hircarrah* (Madras, 1794). (Original size: 30 × 46 cm). Shown at 50% of original size. *The British Library*.

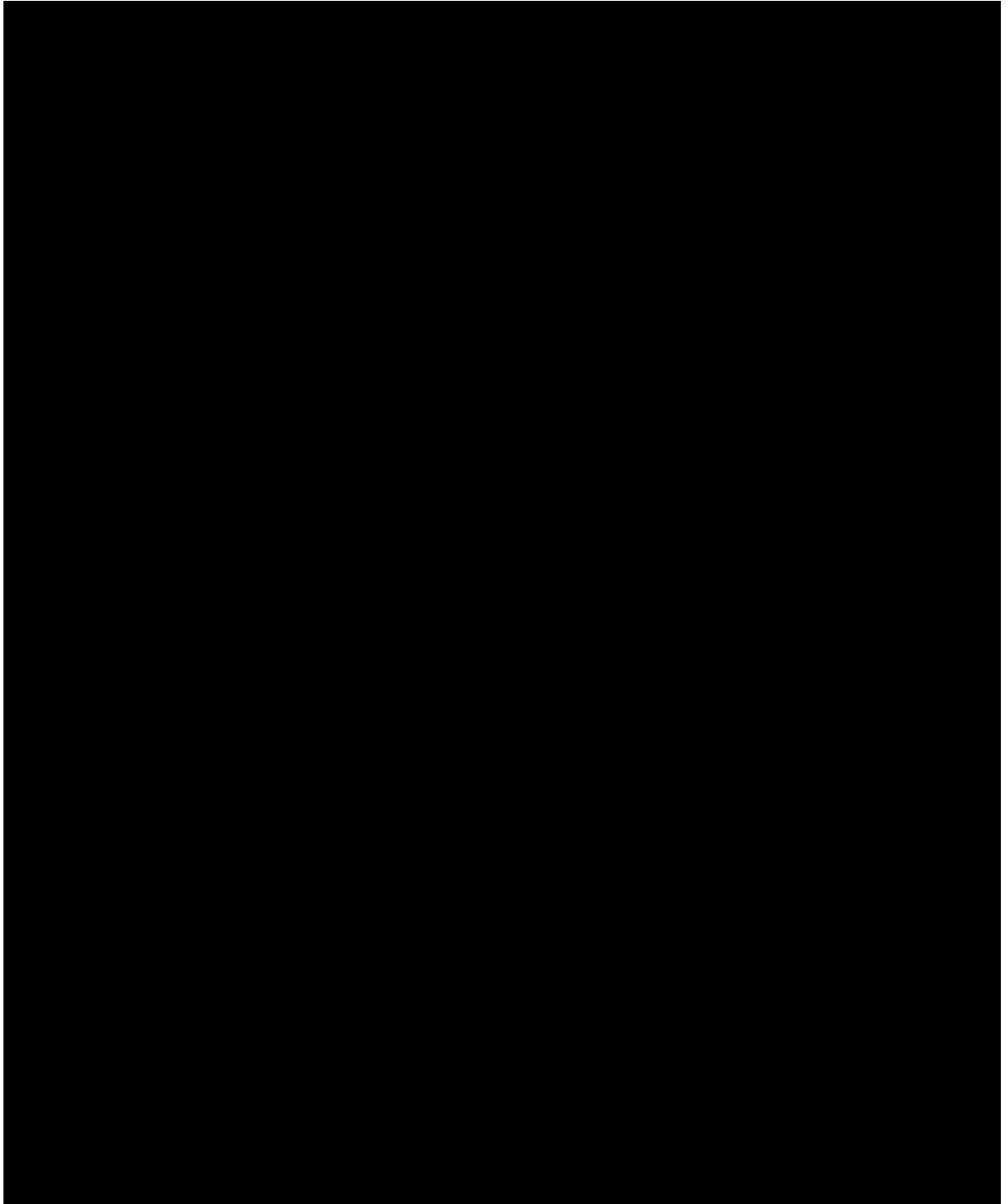


Fig. 72 *Azdarar* (Madras, Harutiun Shmavonian, 1794). (Original size: 18,5 × 22,5 cm). Shown at original size. *The Mekhitarist Library in Vienna*.

the layout is very simple: one column, titles in Notragir style, an ornamental letter at the beginning of the section, whereas the main text is typeset in a traditional slanted Bolorgir. Both Notragir and Bolorgir appear in one size only, with the exception of the heading which uses a rather large size of capital letters in Erkat'agir style [Fig. 72]. An unexpected aspect of *Azdarar* is its dimension, which remains close to that of an Armenian book rather than to the big format used by *The Hircarrah*. The different appearance of *Azdarar* and *The Hircarrah* might have been determined by the very limited choice of Armenian styles, as opposed to the greater variety of Latin types. It would therefore not be possible to produce something similar to Western newspapers, and publishers would naturally fall back on familiar layouts, such as those used in manuscripts and early prints. The result was a reproduction of the contents of English-language journals, but not of their layout.

The emergence of Armenian journals contributed to strengthening the ties between Armenian communities in a new way: from then on, news travelled and more people could access them. Promoting social and cultural awareness inevitably led to debates among Armenians, and journals became the loci of such debates, making readers active participants in the whole communication process. For the first time, publications received feedback from a wider audience, and the opinion of readers became important for the future of a publication: 'It was the first time Armenian minds could encounter and exchange views in public, an event that set the pattern for a century and a half of intellectual communication for a people living in dispersion'.¹⁸⁴ The importance of readers was clearly emphasised in the 'an appeal to the reader' section of the first nationalistic publication *Nor tetrak vor kochi hordorak*.

Whereas in the sixteenth and seventeenth centuries publications remained focussed on religious themes and were printed in traditional Bolorgir, the eighteenth century was the time when non-religious themes emerged. Despite the innovative character of the contents and of the media themselves, traditional Bolorgir remained the standard for both pamphlets and journals.

¹⁸⁴ Oshagan 'From Enlightenment to Renaissance', p. 173.

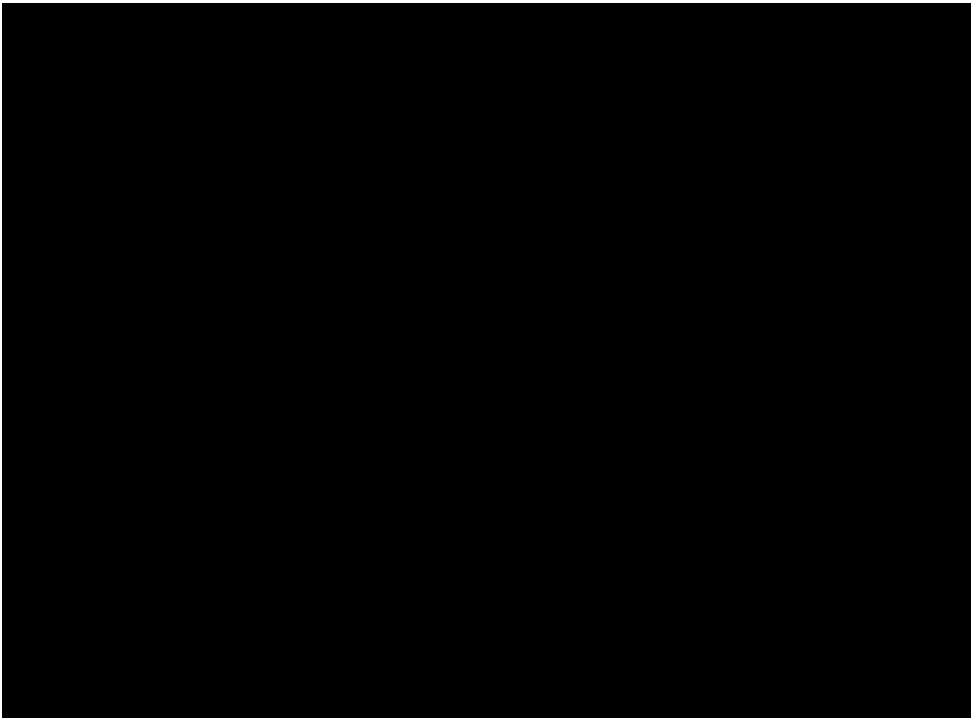


Fig. 1 This table of the Armenian alphabet is printed as a single woodcut. From Bernhard von Breydenbach's *Pilgrimage to the Holy Land*, printed and published by Erhard Reuwich and Peter Schöffer (Mainz, 1486 – first German edition), p. 225. (Original size: 22,01 × 31,24 cm). Shown at original size. *The Bayerische Staatsbibliothek (on World Digital Library)*.

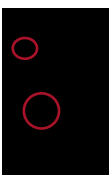


Fig. 2 The red circles highlight the similar features. Detail of the Armenian alphabet table in Bernhard von Breydenbach's *Pilgrimage to the Holy Land* (Mainz 1486). Shown at original size.

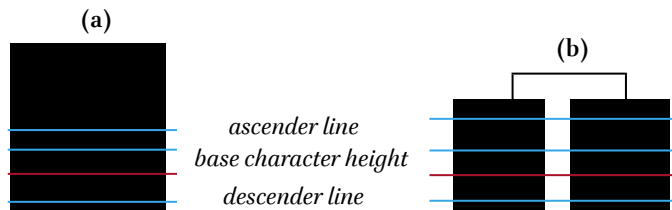


Fig. 3 For example, in (a) the lower horizontal stem of letter Է is below the baseline (red line), whereas the upper horizontal bar does not reach the base character height. Finally, the vertical stem does not extend up to the ascender line. (a) Detail of the Armenian alphabet table in Bernhard von Breydenbach's *Pilgrimage to the Holy Land*, (Mainz 1486). Shown at original size. (b) *The Armenian Gospel*. Scribe Yohannes Vardapet, Lake Van – Monastery of Gamahiel in Xizan, 1455 CE. Shown at 200% of original size. *Walters Art Museum Ms. W. 543*.

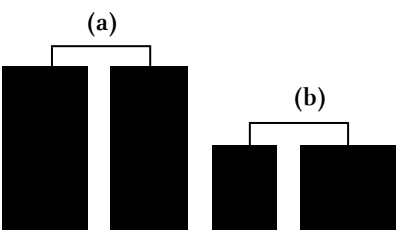


Fig. 4 Armenian letters n and η from (a) the table in Bernhard von Breydenbach's *Pilgrimage to the Holy Land* (Mainz 1486) (shown at original size), and from (b) the *Armenian Gospel*. Scribe Yohannes Vardapet, Lake Van – Monastery of Gamahiel in Xizan, 1455 CE. Shown at 200% of original size. *Walters Art Museum Ms. W. 543*.

2. The spread of Bolorgir types through missionary and scholarly works

2.1 The rise of interest in Armenian texts

In the sixteenth and seventeenth centuries Armenian printers who learned their craft in Europe had established their printing houses outside the homeland. They worked in Western centres such as Venice, Livorno, Amsterdam, Marseille and Lvov (Lviv), and for a short time also in the East in Constantinople and New Julfa. They printed books aiming to preserve the Armenian culture and heritage for a specific readership: Armenian merchants.

On the other hand, Bernhard von Breydenbach's *Pilgrimage to the Holy Land* (first German edition, 1486) is the first known printed instance introducing the Armenian script to Europeans.¹ In this printed account, woodcut illustrations support Breydenbach's description of foreign places, people and cultures he encountered on his route to the Holy Land. An Armenian alphabet table formed of 37 Armenian lowercase letters,² with the corresponding values in Latin characters is printed from woodcut [Fig. 1]. This table omits uppercase letters, and the letter shapes look rigid and static. Their poor quality may stem from the lack of knowledge of the Armenian script. However, because the long sharp serifs attached to the stems are based on the Gothic style used in the same table for the Latin characters, Armenian letters may have been designed to appear similar to those of the Latin [Fig. 2]. The proportion of most Armenian letters differs from that used in traditional forms [Fig. 3], and some characters, for example *n* and *η*, are almost unrecognisable compared to those in contemporary manuscripts [Fig. 4].

The sixteenth century saw the beginning of the modern era of science, great exploration, religious and political turmoil, and major literary works. Exploratory and scientific expeditions from Europe to distant continents, motivated by commercial, missionary, or military interest, enabled Europeans to access new places and cultures. The discovery and observation of a world that was different from Europe, and that appeared strange to Europeans, stimulated their interest for 'exotic' cultures, languages,

¹ *Peregrinatio in Terram Sanctam* includes a description of Mediterranean islands (Bernhard, Canon of Mainz, travelled to the Holy Land) and shows woodcuts of some oriental alphabets such as Arabic, Hebrew, Greek, Syriac, Coptic, Ethiopic and Armenian. Breydenbach's work was published first in Latin (Mainz, 1486) German (Mainz, 1486) and Dutch (Mainz, 1488) and then translated in French (Lyon, 1488) and Spanish (Zaragossa, 1498). According to the scholar Zur Shalev, the Armenian alphabet appears in the first German edition (Mainz, 1486) and in the first Spanish edition (Zaragossa, 1498).

For a complete overview of all editions, see 'Table 1: Overview all editions'. Stephanie Teunisse, 'Bernhard von Breydenbach's *Pilgrimage to the Holy Land* (1488)' (Dissertation, Leiden University, 2015), p. xiii.

² The Armenian script is discussed in the introduction to this thesis, pp. 9–11.

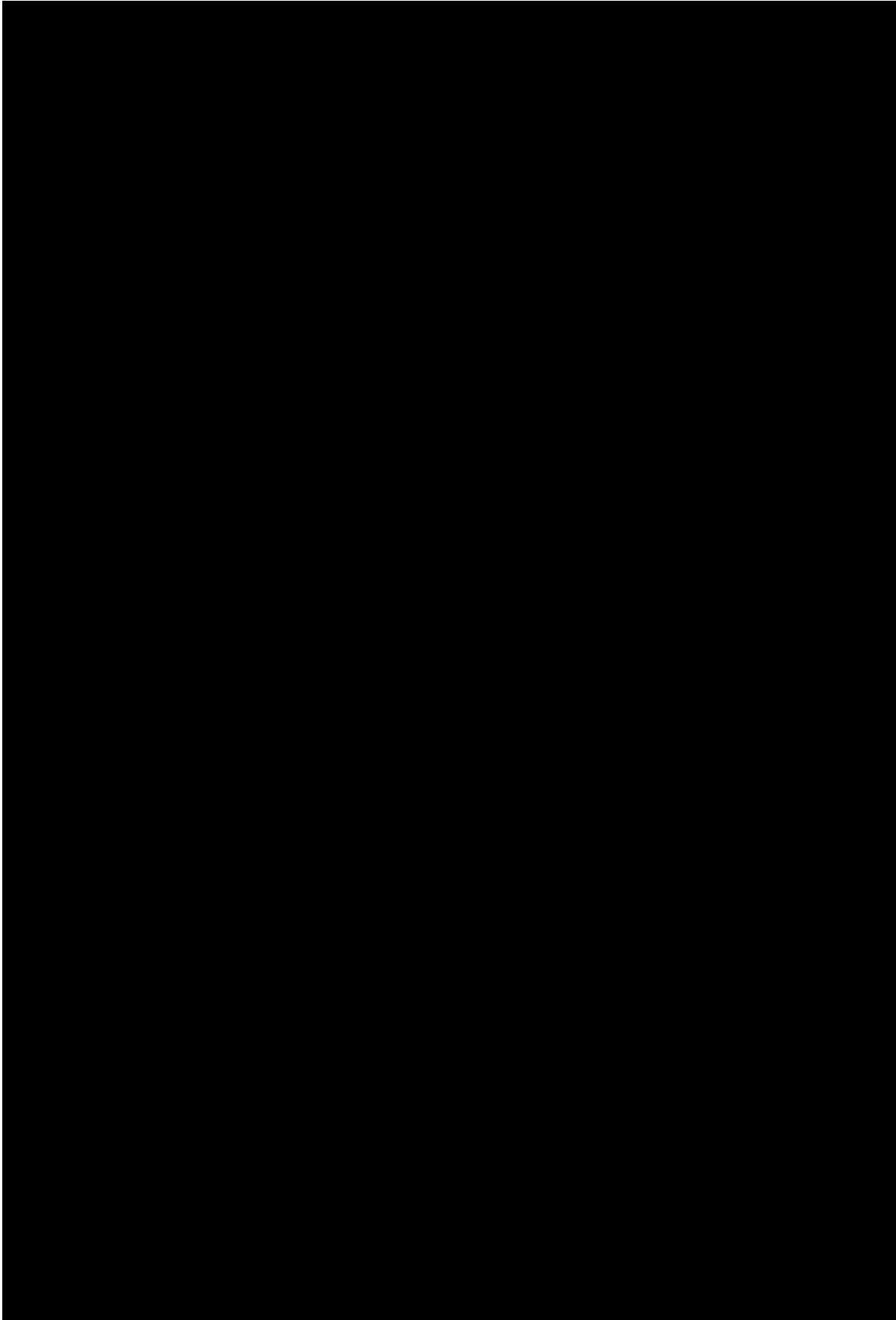


Fig. 5 Guillaume Postel, *Linguarum duodecim characteribus differentium alphabetum* (Paris, Dionysium Lescuyer, 1538). (Original size: 15,5 × 22,2 cm). Shown at original size. *The Cambridge University Library*.

and scripts. Consequently, works displaying non-Latin scripts (both handwritten manuscripts and printed texts) appeared in Europe in the sixteenth century.³

Besides Breydenbach's Armenian table of letters, two sixteenth-century multilingual publications deserve attention. The first one is Guillaume Postel's *Linguarum duodecim characteribus differentium alphabetum* (Paris, 1538), and the second is Teseo Ambrogio Albonesi's *Introductio in Chaldaicam linguam, Syriacam, atque Armenicam, et decem alias linguas. Characterum differentium Alphabetum, circiter quadraginta, et eorundem inuicem conformatio. Mystica et cabalistica quamplurima scitu digna. Et descriptio ac simulachrum Phagoti Afranij* (Pavia, 1539). These are early examples of texts in Armenian composed with Latin and they anticipate the typographic requirements for the composition of Armenian grammars.

Postel and Albonesi were Western scholars who approached non-Latin scripts from a mystical and cabalistic perspective, rather than from a linguistic and philological viewpoint. Postel's work is modest (about 80 pages) and only three folios are dedicated to the Armenian language: one shows the Armenian letters and their transliterations, another one, entitled 'De Armenica', provides a brief historical description in Latin on the Armenians. The last folio is entitled 'Oratio dominica, Armenica Lingua' (the Lord's Prayer in Armenian) [Fig. 5]. Two blocks of Armenian text, one from an Armenian woodcut and the other in Latin characters, are composed side by side. This can be considered the first printed example of an Armenian text with its phonetic transcription in Latin characters. However, the first Western scholar to use movable type for Armenian text is Ambrogio Teseo Albonesi.⁴ In 1537 in Venice, Albonesi met one of his most important Armenian informants: John, a nobleman from Tabriz (northern Persia).⁵ John taught him about the Armenian alphabet and languages, and together with other Armenians in Venice, he helped Albonesi to make translations and phonetic transcriptions (in Eastern Armenian) of various Armenian manuscripts to prepare the Armenian texts for the latter's book. According to the Armenologist Virgil B.

3 In the sixteenth century printed tables showing non-Latin scripts were particularly widespread for Greek and Hebrew. According to Henri Omont from 1528 to 1590, 19 books in a pamphlet form were published on the Greek language, and from 1529 to 1567, 20 were on Hebrew. Henri Omont, 'Alphabets Grecs et Hébreux publiés à Paris au XVIe siècle', *Bulletin de la Société de l'histoire de Paris et de l'Ile-de-France* (Novembre–Décembre 1884), p. 174.

4 Born in Padua in 1469, Albonesi trained first as a lawyer, he became a Regular Canon of the Lateran. In 1512 – at the opening of the fifth session the Lateran council – he moved to Rome, and participated in the Fifth General Lateran Council. Many members of the clergy of Eastern churches, such as Maronite, Ethiopian and Syriac were not allowed to make their service in accordance with their traditions, unless liturgies were examined in advance and approved by Rome. The clergymen who attended the Council considered Teseo Ambrogio suitable to make the content of liturgies of the Eastern Churches accessible to the Pope. Therefore, he was employed by Cardinal Santa Croce to translate the Eastern liturgy from the Chaldean into Latin. Since he was proficient in different languages (about 18), Pope Leone X gave him the chair of Professor of Syriac and Chaldean languages at the University of Bologna in Italy. Robert J. Wilkinson, *Orientalism, Aramaic, and Kabbalah in the Catholic Reformation* (Leiden, Brill, 2007), p. 11; William Roscoe, *The life and pontificate of Leo the tenth* (4 vols., London, Cadell & Davies, 1806), vol. 2, p. 397.

5 John is mentioned by Albonesi in Chapter XIII of the *Introductio*, in folio 142. Teseo Ambrogio Albonesi, *Introductio* (Pavia, 1539).

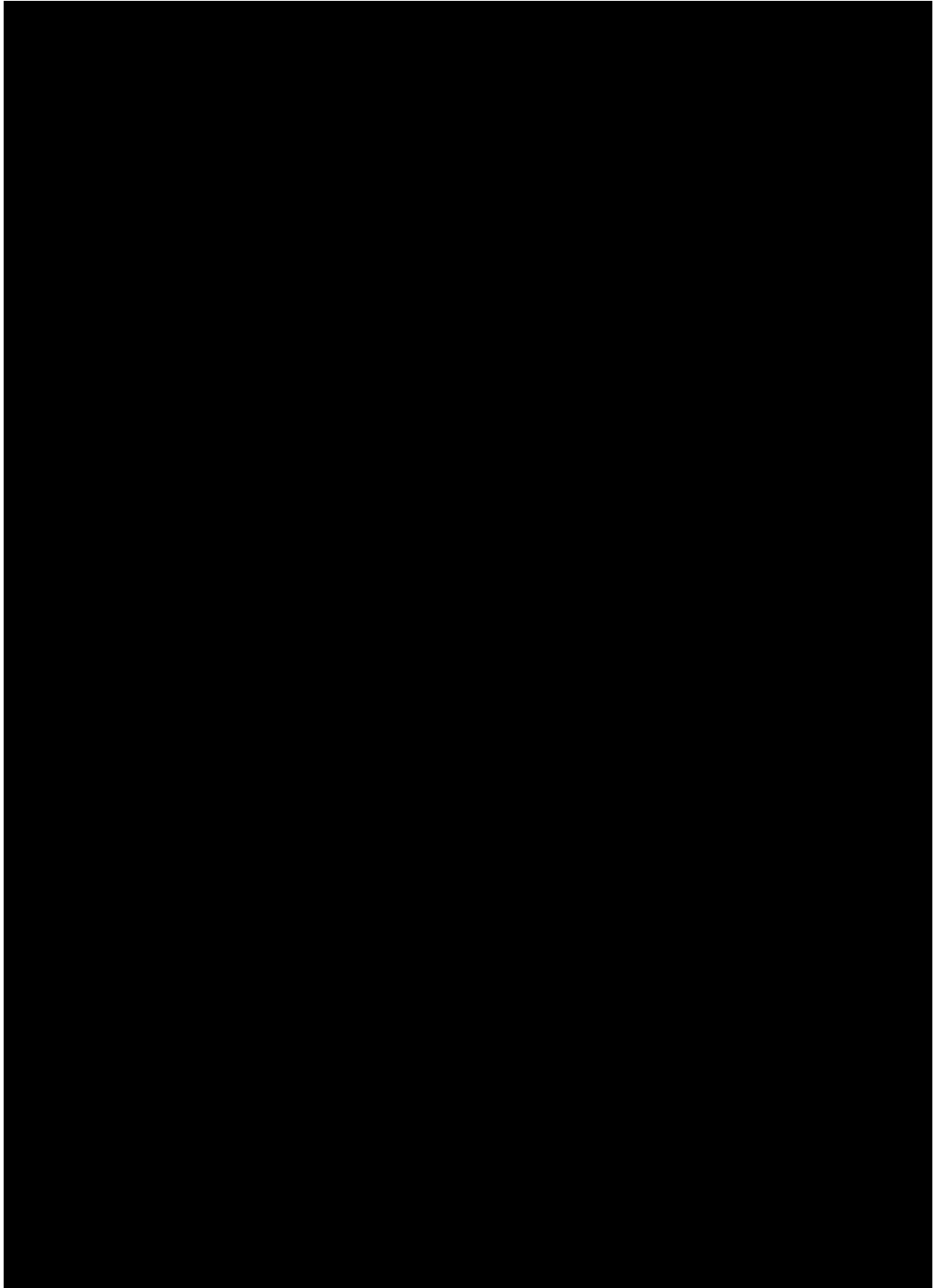


Fig. 6 Teseo Ambrogio Albonesi, *Introductio in Chaldaicam linguam, Syriacam atque Armenicam et decem alias linguas* (Pavia, 1539). (Original size: 16,4 × 23,5 cm). Shown at original size. *The British Library*.

Strohmeyer, the fact that Albonesi's main informant spoke Eastern Armenian may have determined the choice of transcribing Armenian according to the pronunciation of the East rather than the West.⁶

Albonesi's *Introductio* pioneered the Western study of Armenian and several other scripts (such as Syriac): this is the first publication in a Western language to have a substantial text printed with Armenian movable type, a translation and a phonetic transliteration. It also includes the earliest detailed printed account of the Armenian alphabet and language, and it records the sources used to compile the book. For these reasons, even though the study of different scripts and languages is not approached from a linguistic point of view, Albonesi's work remains a valuable historical source for later scholars.⁷

The typographic arrangement used for Armenian in the *Introductio*

The *Introductio* is the outcome of Albonesi's extensive study on 'exotic' alphabets – a work of about four-hundred pages – in which he describes Chaldean, Syriac, Armenian and other languages [Fig. 6].⁸ Because this book was intended for Europeans, Armenian and the other oriental languages considered by Albonesi required a phonetic transcription and translation in Latin characters. Therefore, for the Armenian language,⁹ the compositor adopted a layout that involved printing the Armenian next to the Latin text [Fig. 7]. In some cases, Armenian words or phrases were embedded inside the Latin text: this meant that, in order to stand out, the Armenian type was proportionally larger than the Latin. The same observation applies when Albonesi presents Armenian letters and their Latin transcription and transliteration: Armenian and Latin types appear different in size and colour – the Armenian looks larger and heavier – thus providing a visual hierarchy that enables readers to easily identify Armenian words within the Latin text [Fig. 8a and b].

When printing full text in Armenian and Latin side by side [Fig. 9], such as in the 'textual examples' in folios 191a and 191b, the need for the two texts to progress in parallel for easy reference made the presentation of the Armenian text follow the layout of the Latin exactly. It is possible to observe that for each line of text, the number of words used in Armenian corresponds to those used in Latin, Armenian words are

6 Virgil B. Strohmeyer, *The importance of Teseo Ambrogio degli Albonesi's selected Armenian materials for the development of the Renaissance's perennial philosophy and an Armenological philosophical tradition* (Yerevan, The Publishing House of the NAS RA, 1998), p. 36.

7 Lane, *The Diaspora*, p. 44.

8 In folio 1 of *Introductio*, Ambrogio provides a complete list of languages and scripts he discusses in his work.

9 The sections dedicated to Armenian are: *Folio 142 Chapter 13: Concerning the Armenians and the origin of their alphabet. Folios 143–173 Chapter 14: Concerning the divisions of the Armenian letters into vowels, diphthongs, and consonants with their Latin equivalents. Folios 174–183 Chapter 15: Concerning the various grammatical functions of the Armenian syllabic morphology; illustration of the Phagotis; a catalogue of the eminent men of Pavia.* [However, the content in folios 177–183 does not concern Armenian]. *Folios 184–192: Chaldean and Armenian textual examples.* Folios 185a–185b has the Lord Prayer's in Syriac characters (185a) and Armenian characters (185b); 186a–186b has the Hail Mary in Syriac characters (186a) and Armenian characters (186b). Both prayers have Latin transcription and translation as well. From Ambrogio's *Introductio*, folio 8 'Index Capitulum'. Translated from Latin to English by the Armenologist Virgil B. Strohmeyer. Strohmeyer, *The importance of Teseo Ambrogio*, pp. 21–22.

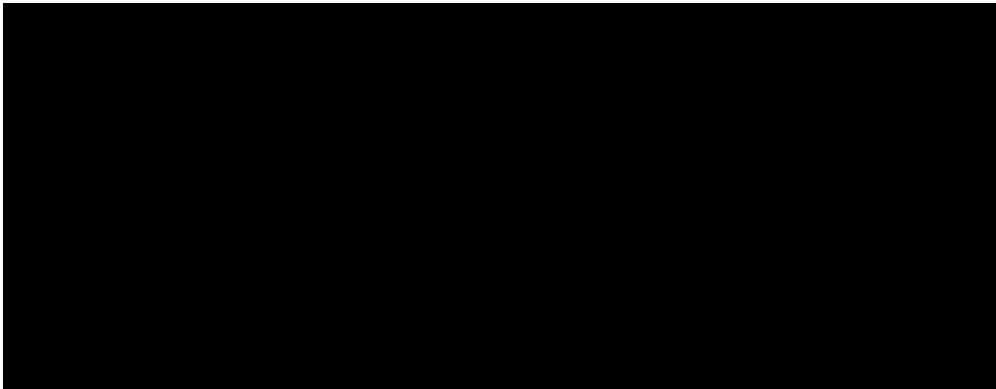


Fig. 7 Detail from Teseo Ambrogio Albonesi, *Introductio* (Pavia, 1539). Folio 146b, 'Chapter 14: Concerning the divisions of the Armenian letters into vowels, diphthongs, and consonants with their Latin equivalents.'

All images on this page are shown at 80% of original size. *The British Library*.

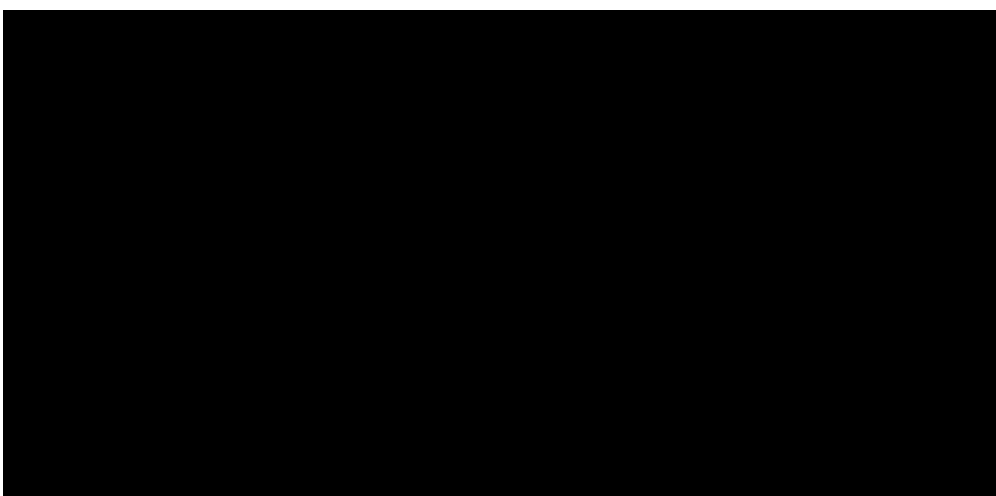


Fig. 8a A table displaying the Armenian alphabet. Detail from *Introductio* (Pavia, 1539). Folio 143, 'Chapter 13: Concerning the Armenians and the origin of their alphabet.' On this page, Albonesi provides Armenian letters with their phonetic evaluation and transcription in both Western and Eastern pronunciations. However, the Armenian texts presented in his book are transcribed according to the pronunciation of the East rather than the West.

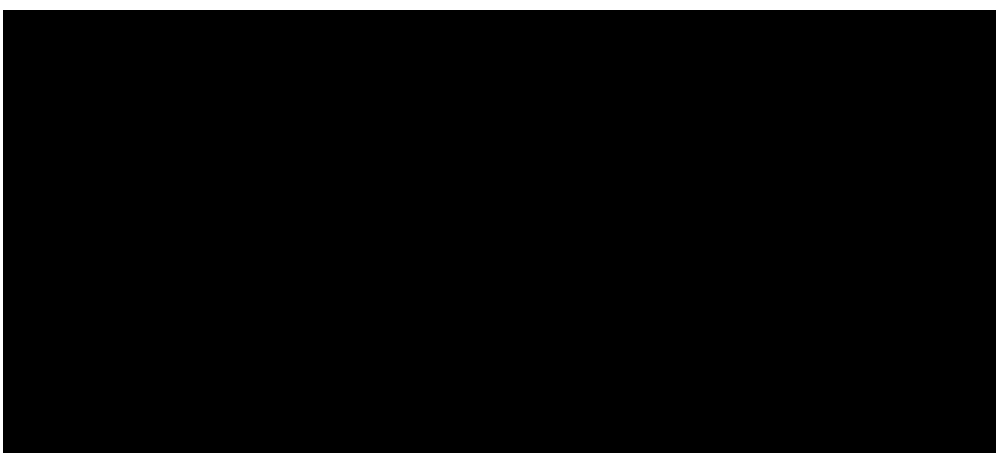


Fig. 8b Detail from *Introductio* (Pavia, 1539). The 'Hail Mary' in Armenian: each Armenian word is transcribed according to the pronunciation of the East and translated in Latin. Folio 186b, 'Chaldean and Armenian textual examples.'

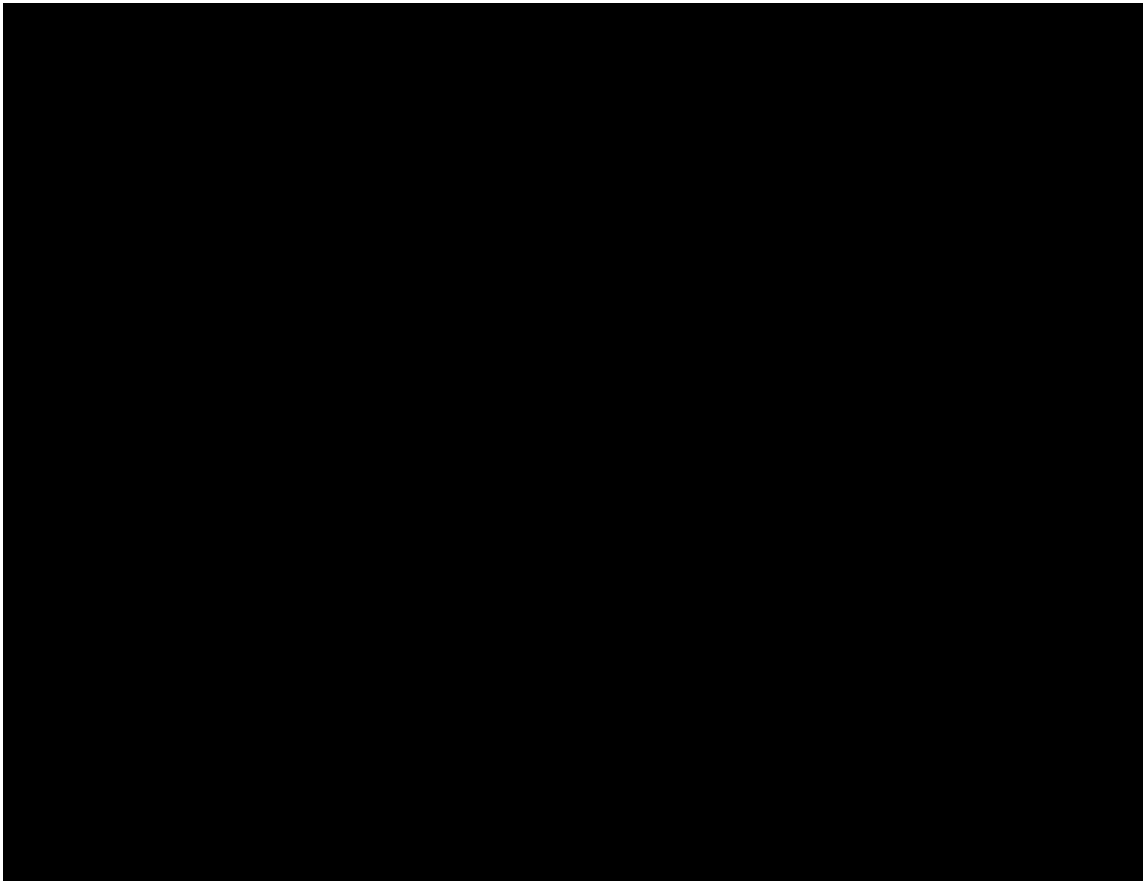


Fig. 9 Ambrogio Teseo Albonesi, *Introductio* (Pavia, 1539). Spread of 'Gospel of Matthew' – Chapter 5' in Armenian and Latin. Folio 191a and 191b, 'Chaldean and Armenian textual examples.' All images on this page are shown at 50% of original size. *The British Library*.

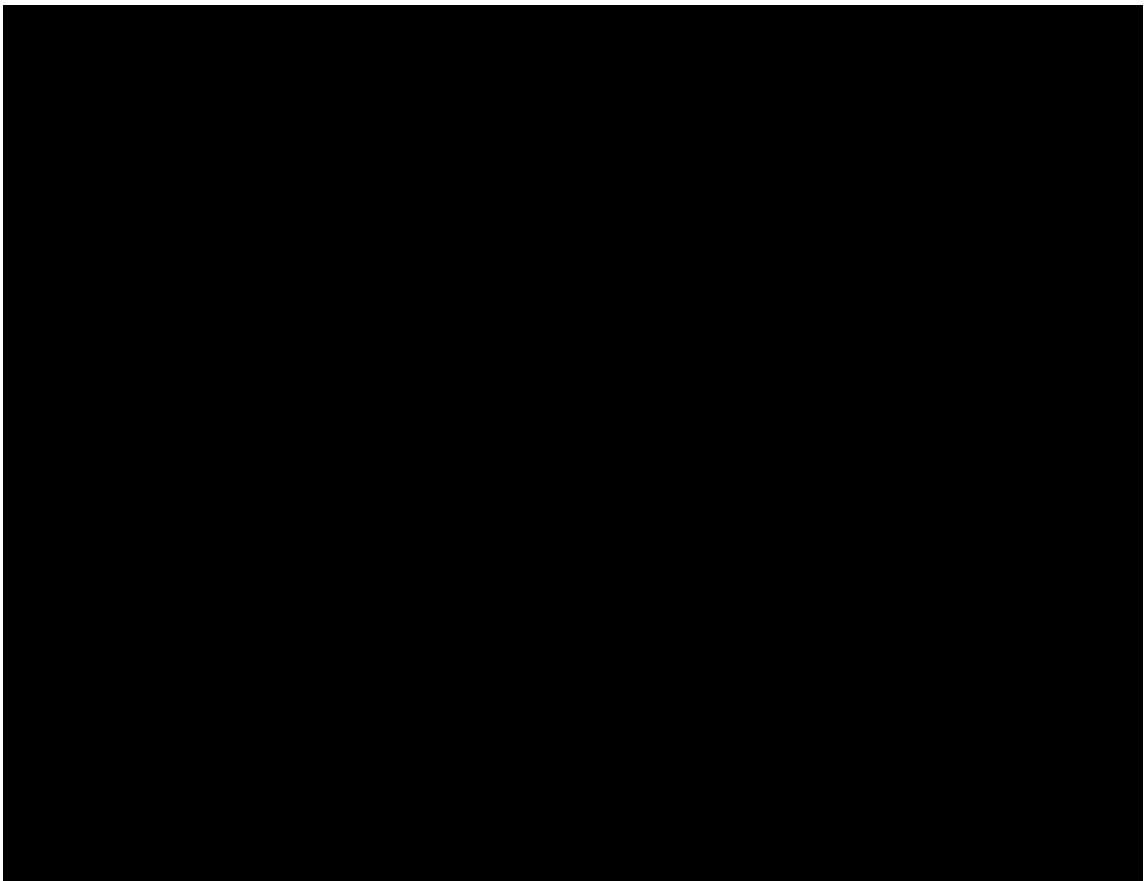


Fig. 10 'The Hail Mary' in Syriac and Armenian. Folio 186a and 186b, 'Chaldean and Armenian textual examples.' In the 'Hail Mary' in Folio 186a, the Latin is difficult to read due to the word by word translation made accordingly to the writing direction of Syriac (from right to left).

2. THE SPREAD OF BOLORGIR TYPES THROUGH MISSIONARY AND SCHOLARLY WORKS

hyphenated whenever the corresponding in Latin is organised on two consecutive lines, and for both scripts the block of text is justified. However, because Latin and Armenian are two distinct scripts, such arrangements affects the readability of the Armenian. The Armenian page (folio 191a) appears crowded and in some cases, where it was necessary to fit many words in a line, it is difficult to discern words that are separated by only a narrow inter-word spacing. The fact that Albonesi presented Syriac in the same way as Armenian (interspersing with its transcription and its translation into Latin) provided Western scholars with a familiar pattern that they would find easy to follow whichever language they chose to study [Fig. 10].

The Armenian type Albonesi used in his work is a rather crude, vertical Bolorgir type, similar to the one used in the *Friday Book*, printed by Jacob Meghapart in 1512.¹⁰ The Armenian type employed by Albonesi in *Introductio* did not influence the design of subsequent Armenian types. However, *Introductio* anticipated some of the requirements for the design of Armenian types for bilingual publications – one size, one style (Bolorgir), visually darker and proportionally larger than the Latin type (the Armenian needs to be easily distinguishable from the Latin).

In the seventeenth century, books displaying and describing non-Latin scripts became widespread among Europeans. Such bilingual publications were either grammars and dictionaries or devotional texts produced by the Roman Church to support Christian missionary activities in the Near and Middle East.

¹⁰ The *Friday Book* and the type used by Meghapart are discussed in Chapter 1 of this thesis, pp. 35–45.

2. THE SPREAD OF BOLORGIR TYPES THROUGH MISSIONARY AND SCHOLARLY WORKS

2.2 Early Armenian dictionaries and grammars in a Western language

The Roman Church's interest in oriental languages¹¹ was linked to its missionary activities. In his account of the 'Oriental study in Italy', Lelio Carfora notes:

The Roman pontiffs, seeing how necessary the knowledge of the oriental languages was for the intelligence of the sacred books, for the maintenance and diffusion of the faith among those peoples, with papal bulls and councils prescribed their study.¹²

The Roman Church encouraged Western scholars to study languages, to teach them at European public universities, and to use their knowledge to translate books into different languages, particularly biblical works.¹³ In order to make vernacular languages accessible to non-native speakers, Western scholars compiled grammars and dictionaries, which were printed at the presses of European institutions. To this end, scholars travelled to the Middle East and the Levant to study the languages of the local populations: this enabled them not only to benefit from native speakers, but also to access and even to acquire manuscripts, thereby enriching the depositories of European libraries, which began to host manuscripts in 'exotic' scripts.

European interest in oriental languages encouraged the establishment of presses in cities such as Rome, Milan, and France to foster their missionary activities. Aiming to convert Eastern people to the Catholic faith, European missionaries focused on the production of publications in non-Latin languages, fostering the practice of mixed-language settings, one usually in Latin types.

In the seventeenth and eighteenth centuries, four books on the Armenian language were published in Latin prescribing the use of the structure and rules of Latin grammar for Armenian grammar books.¹⁴ These were the *Grammaticae armenae libri quattuor* by Francesco Rivola (Milan 1624), *Grammaticae et logicae institutiones linguae literalis Armenicae* by Clemente Galano¹⁵ (Rome, 1645), *Thesaurus linguae armenicae, antiquae et hodiernae, cum varia praxios materia* by Johann Joachim Schröder (Amsterdam, 1711),

11 The interest of the Roman Church for oriental languages can be observed even before printing with movable type appeared in the West. Indeed, it was during the General Council of Vienna in 1305 that Clement V sanctioned the law under which in all main universities in Europe there must be two professorships of Arabic, two of Chaldean, and two of Hebrew. Carfora, 'Degli studi Orientali in Italia', p. 86.

Initially focused on the ancient and modern Near East, the term 'Orient' was indiscriminately used for all of the Asian civilisations encountered by Europeans in their eastward imperial and colonial expansion.

12 'I romani pontefici veggendo quanto fosse necessaria la cognizione delle lingue orientali per la intelligenza de' sacri libri, per lo mantenimento e la diffusione della fede presso quei popoli, con bolle e concilii ne prescissero lo studio.' Carfora, 'Degli studi Orientali in Italia', p. 86. Translated into English by the author.

13 Ibid. pp. 86–87.

14 Rouben Paul Adalian, *From humanism to rationalism* (Atlanta, Scholars Press, 1992), p. 2. In the sixteenth century there was a strong tendency towards 'grammatisation' in Western culture, which meant that vernacular languages were made accessible to non-native speakers through grammars and dictionaries. Van Lint and Meyer, *Armenia, masterpieces*, p. 64.

15 Clemente Galano preached among Armenians in Georgia and Poland.

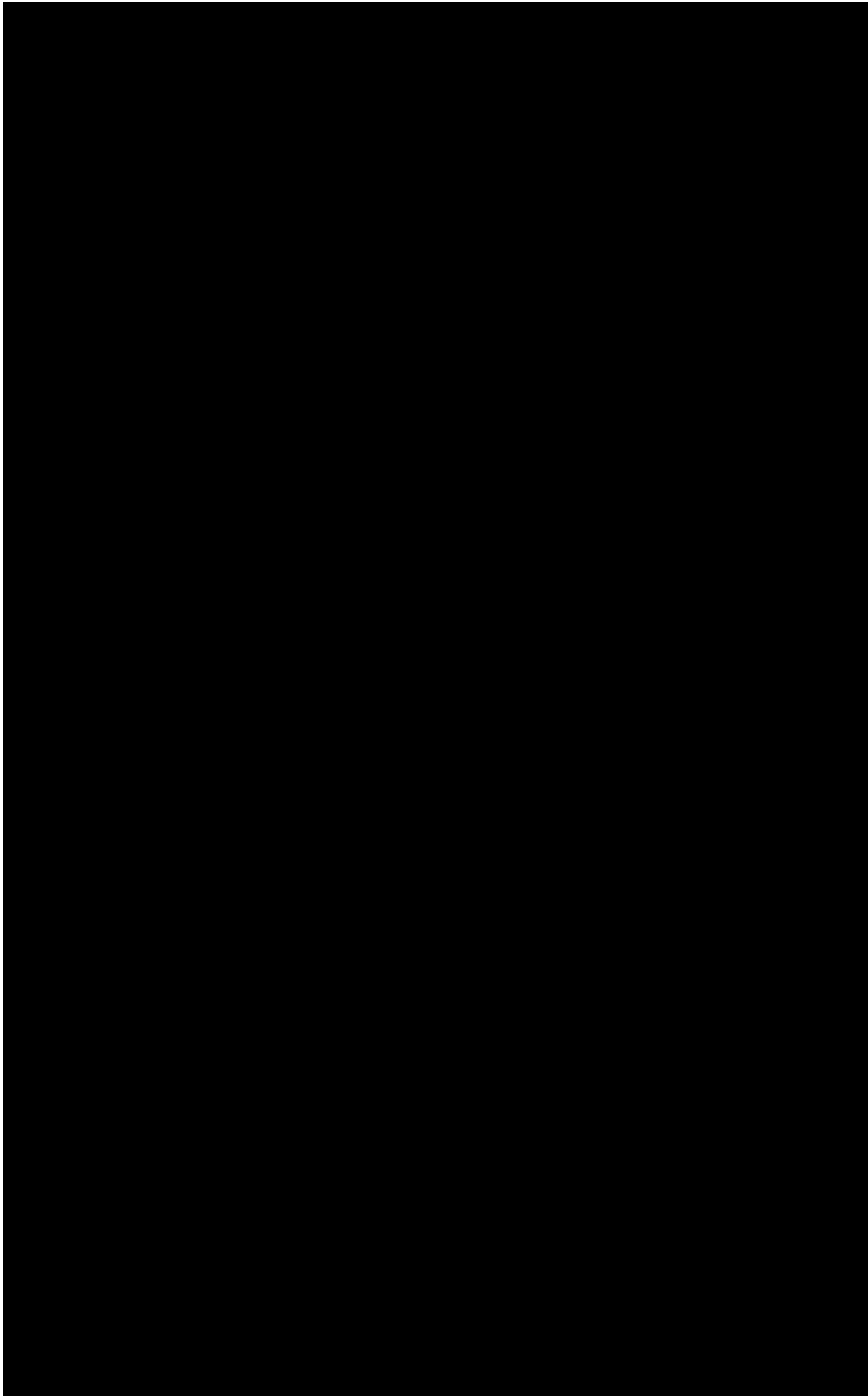


Fig. 11 Francesco Rivola, *Dictionarium armeno-latinum* (Milan, Tipografia del Collegio Ambrosiano, 1621). (Original size: 19 × 29 cm). Shown at 80% of original size. *The British Library*.

and *Dictionarium novum latino-armenium ex praecipuis armeniae linguae scriptoribus concinnatum* (Rome, 1714) by Jacobo Villotte.¹⁶ Galano's and Villotte's works were issued at the presses of the *Sacred Congregation for the Propagation of the Faith*,¹⁷ the doctrinal and missionary arm of the Papacy during the Counter-Reformation.

2.2.1 The Bolorgir types used for printing Rivola's dictionary and grammar in Milan

In 1621 and in 1624 the first Armenian dictionary and grammar in a Western language – the *Dictionarium armeno-latinum* (1621)¹⁸ [Fig. 11] and the *Grammaticae armenae libri quattuor* (1624) [Fig. 12] – were issued at the presses of the Ambrosiana Library in Milan.

The Ambrosiana Library was founded by the Archbishop of Milan, Cardinal Federico Borromeo¹⁹ (1564–1631) in 1609.²⁰ The Library was established to become a centre of research for scholars focused on Hebraism and Eastern Christianity,²¹ rather than only a place where manuscripts and printed books should be protected and preserved.²² The main aim of the Ambrosiana Library was to restore the authority of the Roman Church and its doctrine by educating a small group of clerics in different disciplines.²³ Additionally, Cardinal Federico Borromeo established a polyglot press, known as the 'Typographia Collegii Ambrosiani' (Tipografia del Collegio Ambrosiano), to publish books in Armenian, Hebrew, Chaldean, Arabic and Persian.

The *Dictionarium armeno-latinum* and the *Grammaticae armenae libri quattuor* were written by the missionary and orientalist Francesco Rivola,²⁴ who worked among Armenians in the Near East to convert them and to reinforce the Catholic doctrine in Protestant regions. These works were produced for the benefit of Rivola's colleagues,

16 Jacobo Villotte preached among Armenians in Iran and in the Armenian territory.

17 The *Sacred Congregation for the Propagation of the Faith* (*Sacra Congregatio de Propaganda Fide*) in Rome was founded in 1622 by the bull of Pope Gregory XV (1554–1623), *Inscrutabili Divinae*. The polyglot press and the foundry of the *Sacred Congregation for the Propagation of the Faith* were established in 1626.

18 Secondary sources provide different dates of publication for the dictionary. Girolamo Tiraboschi dates the earliest publication of the dictionary as 1613. Girolamo Tiraboschi, *Storia della letteratura italiana* (Milan, Società tipografica de' classici italiani, 1824), vol. XV, tome 8, part ii, p. 442. The Bodleian Library's catalogue records the earliest Armenian-Latin dictionary as 1621, second edition in Paris as 1633. *Catalogus librorum impressorum bibliothecae Bodleianae in Academia Oxoniensi* (Oxford, Academic Press, 1843), vol. 3, p. 287.

19 Cardinal Borromeo received a classical education at Pavia and Bologna; in Rome he studied theology, archeology and Hebrew. His scholarly interest and his support for academic studies impelled him to establish the Biblioteca Ambrosiana.

20 Edgardo Franzosini, *Sotto il nome del cardinale* (Milan, Adelphi, 2014), p. 4. On 7 Settembre 1607 Borromeo proceeded, with a formal notary document, to the establishment of the 'Collegio dei Dottori dell'Ambrosiana'. However, the Ambrosiana Library was inaugurated on 8 December 1609.

21 See: Gabriella Uluhoyjan, 'A new development for Armenian studies in Italy: the Ambrosian Academy in Milan'. *Journal of Armenian Studies*, 1 (Yerevan, NASSR, 2016), p. 161. The Library hosted about 30,000 publications and 14,000 manuscripts.

22 Ibid. p. 161.

23 To this end, Borromeo also established an Ecclesiastic institution. There, the 'Collegio dei Dottori', a group of nine scholars, taught different disciplines including: Italian, Latin, Greek, and languages of the Near and Middle East, such as Hebrew, Syriac, Arabic, Chaldean, Persian and Abyssinian. See: Pamela M. Jones, *Federico Borromeo e l'Ambrosiana* (Milan, Vita e Pensiero, 1997), p. 40.

24 Rivola taught at the 'Collegio dei Dottori' at the Ambrosiana.

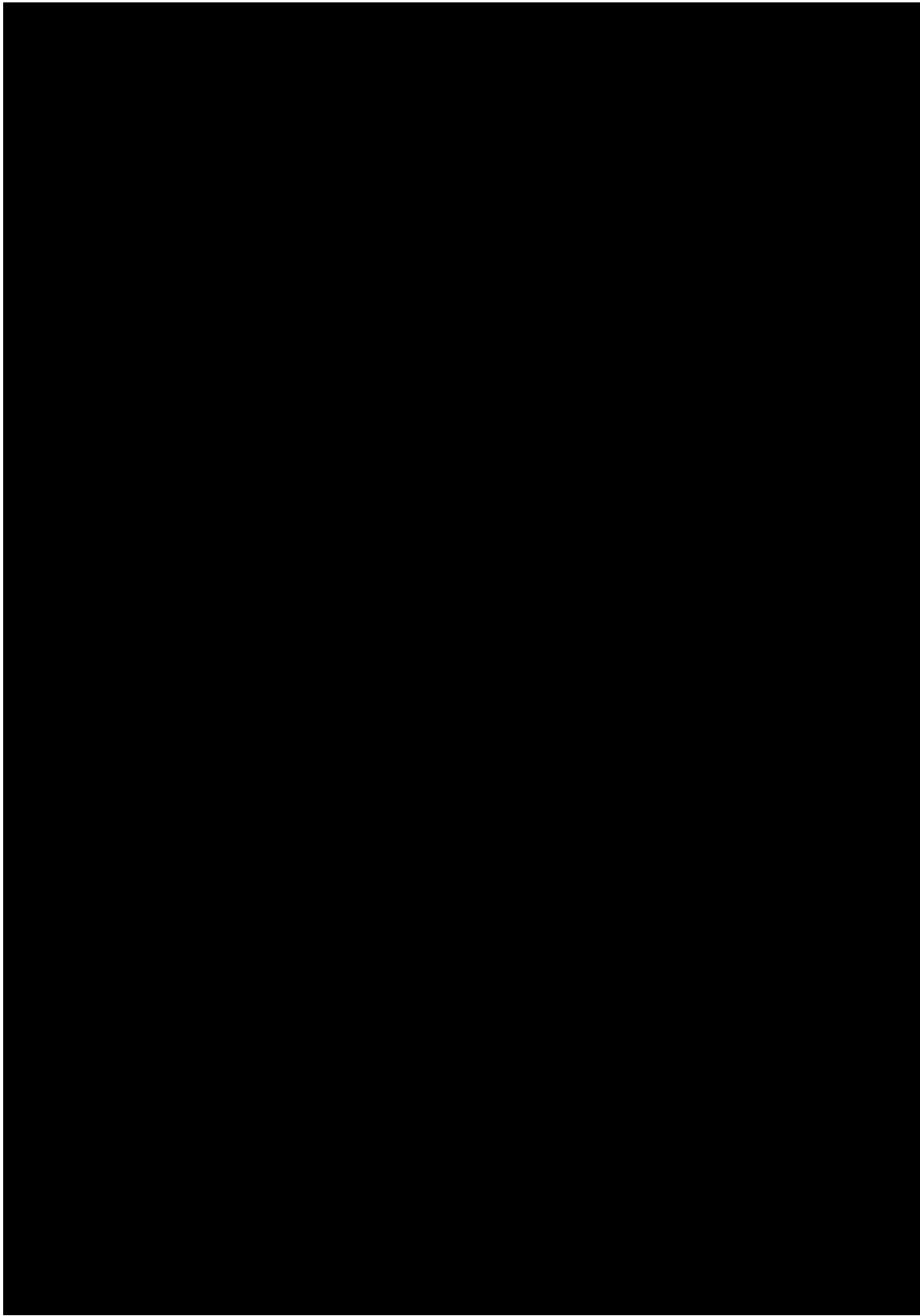


Fig. 12 Francesco Rivola, *Grammaticae Armenae libri quattuor* (Milan, Tipografia del Collegio Ambrosiano, 1624). (Original size: 15 × 21,5 cm). Shown at original size. *The British Library*.

engaged in learning the Armenian language to spread their own religious beliefs. In fact, in both publications Rivola combined Classical Armenian with Turkish and colloquial influences, recognising that in Ottoman territories this would have made communication between missionaries and Armenians more effective. It is therefore evident that this European press did not have an interest in the progress of Armenian culture and language.

The *Dictionarium armeno-latinum* and the *Grammaticae armenae libri quattuor*, first published in Milan, are the first bilingual books to be entirely dedicated to the Armenian language. However, because the main target of these publications were Europeans, Rivola's works were designed using a layout and a typographic arrangement which was familiar to European readers. This can be particularly appreciated in the *Grammaticae armenae*, which is mainly written in Latin (with Latin characters). Thus, not only is the Armenian language and alphabet described in Latin, but also the text in the frontispiece, the dedication to Cardinal Borromeo at the beginning of the grammar, the table of contents, heading sections at the top of each page, headings and subheadings. As already anticipated when observing the Armenian text in *Introductio* by Teseo Albonesi, only one size of Bolorgir was required for the composition of the grammar.

Despite John Lane's assertion that the Armenian type used to compose the dictionary in 1621 and the grammar in 1624 was 'cut for the occasion'²⁵ and other secondary sources refer to it as the type of the 'Ambrosiana',²⁶ an analysis of the printed pages of Rivola's grammar reveals that the Armenian text was printed with the Armenian characters cast in 1565 in Venice by the Armenian printer Abgar Dpir Toxatec'i (PAT1)²⁷ for the *Psalter*. This is unsurprising as Bartolomeo Abgaro, son of Abgar Dpir Toxatec'i, was Rivola's Armenian teacher.²⁸ According to Rivola himself, he met the Armenian priest 'Bartolomeo Abbagaro' in Venice and convinced him to move to Milan to teach him Armenian²⁹ to enable him to compile the grammar and dictionary for the Ambrosiana Library. It is possible that Abgaro owned his father's types or punches and

25 Lane, *The Diaspora*, p. 48.

26 See for example: Uluhojyan, 'A new development for Armenian studies in Italy', p. 161.

27 Abgar's type is discussed in Chapter 1 of this thesis, pp. 46–53.

28 Rivola writes that another Armenian priest, Paolo Copus, arrived in Milan after Bartolomeo Abgaro. According to Rivola, both were pivotal in devising the content of the grammar and the dictionary. Francesco Rivola, *Vita di Federico Borromeo* (Milan, Dionisio Gariboldi, 1656), pp. 320–321. See also: Tiraboschi, *Storia della letteratura italiana*, vol. XIV, tome 8, part i, p. 138.

29 According to Rivola, Bartolomeo Abgaro resided in Milan for six months. He lived at Rivola's house and received financial support from Cardinal Borromeo. Rivola, *Vita di Federico Borromeo*, p. 320.

PAT ₁ (1624)	PAT ₁ (1565)	Superimposition
Collegio	Abgar Dpir	of PAT ₁ : (1624)
Ambrosiano	Toxatec'i	and (1565)

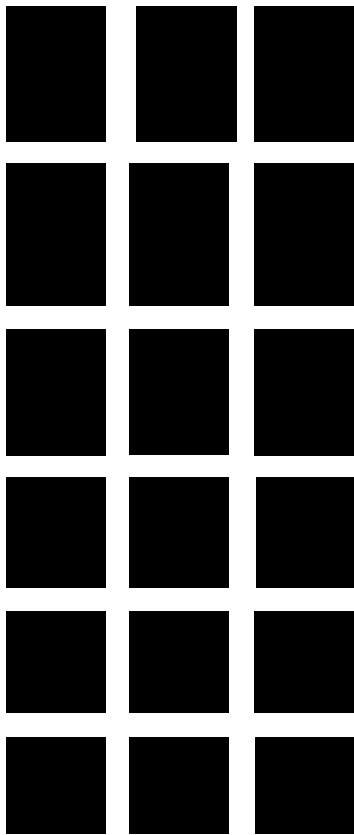


Fig. 13 Comparison between PAT₁ from *Grammaticae Armenae libri quattuor* (Milan, 1624) and *Psalter* (Venice, 1565). Left: PAT₁ from Francesco Rivola, *Grammaticae Armenae libri quattuor* (Milan, Tipografia del Collegio Ambrosiano, 1624). Center: PAT₁ from Abgar Dpir Toxatec'i, *Psalter* (Venice, 1565). Right: Superimposition of PAT₁ (letters from the left and middle columns) used in the two books. Images are shown at 200% of original size.

that he brought them with him to Milan [Fig. 13]. Therefore, Armenian grammars and dictionaries could have been easily composed using an existing Bolorgir type, without having to cut new ones.³⁰ A similar pattern can be observed with the grammars and dictionaries issued at the *Propaganda Fide*: the Armenian type (RG1),³¹ cut by Robert Granjon for the Vatican in 1579 to print the *Gregorian Calendar* in Armenian, is used in Clemente Galano's *Grammaticae et logicae institutiones linguae literalis Armenicae* (1645) [Fig. 14a and 14b], and in Jacobo Villotte's *Dictionarium novum latino-armenium ex praecipuis armeniae linguae scriptoribus concinnatum* (1714) [Fig. 15 and 15b]. Another example is Johann Joachim Schröder's *Thesaurus linguae armenicae, antiquae et hodiernae, cum varia praxios materia* [Fig. 16a]. The *Thesaurus* was printed in Amsterdam in 1711 with a Bolorgir type cut by Nicholas Kis³² in Amsterdam in 1685 [Fig. 16b].

The production of grammars and dictionaries induced a demand for Bolorgir types among European presses, which would distribute their books free of charge or sell them at a reasonable price. For example, the *Propaganda Fide* in 1632 would distribute its publications freely, except for 100 copies that would be sold at the production price to interested readers.³³ Armenian printing at the Ambrosiana Library was short-lived: it only issued Rivola's Armenian-Latin dictionary and grammar. This may have stemmed from the *Propaganda Fide*'s policy to assert its monopoly over oriental printing by ruling in 1629 that no book could be published without formal approval based on an assessment of its necessity for the propagation of the faith,³⁴ and in 1631 that a Latin or Italian translation had to accompany books in other languages so as to avoid doctrinal errors.³⁵ The *Propaganda Fide* tended to centralise oriental printing in Rome. However, the distribution of Rivola's dictionary was widened by its reprint in 1633 in Paris.

³⁰ According to Placido Sukias Somalian, Abbot of the Mekhitarist Congregation in Venice, the types used in Rivola's *Grammaticae armenae* were 'assai rozzi ed informi'. *Quadro della storia letteraria di Armenia* (Venice, Tipografia Armena di S. Lazzaro, 1829), p. 202.

³¹ RG1 is discussed in Chapter 1 of this thesis, pp. 57–69.

³² The type cut by Nicholas Kis is discussed in the next Section of this chapter. According to Kévorkian the printer Lukas Vanadec'i used two Bolorgir types (8 and 12 points) to print Schröder's work. However, an examination of the printed pages of the *Dictionarium novum latino-armenium* reveals that only one size of lowercase letters (Bolorgir style) is used. Therefore, Kévorkian in his *Catalogue des incunables armeniens* might be referring to capital letters (Erkat'agir style), which appear in two different sizes. Kévorkian, *Catalogue des 'incunables' armeniens*, p. 96.

³³ Jan de Clerq, Pierre Swiggers, Louis Van Tongerloo, 'The linguistic contribution of the Congregation de Propaganda Fide' in Mirko Tavoni (ed.), *Italy and Europe in Renaissance linguistics*, (Ferrara, Franco Cosimo Panini, 1996), p. 444.

³⁴ Ibid. p. 442.

³⁵ Bartholomew Egan, 'Notes on Propaganda Fide printing-press and correspondence concerning Francis Molloy, O. F. M.', *Collectanea Hibernica*, 2 (1959), p. 115.

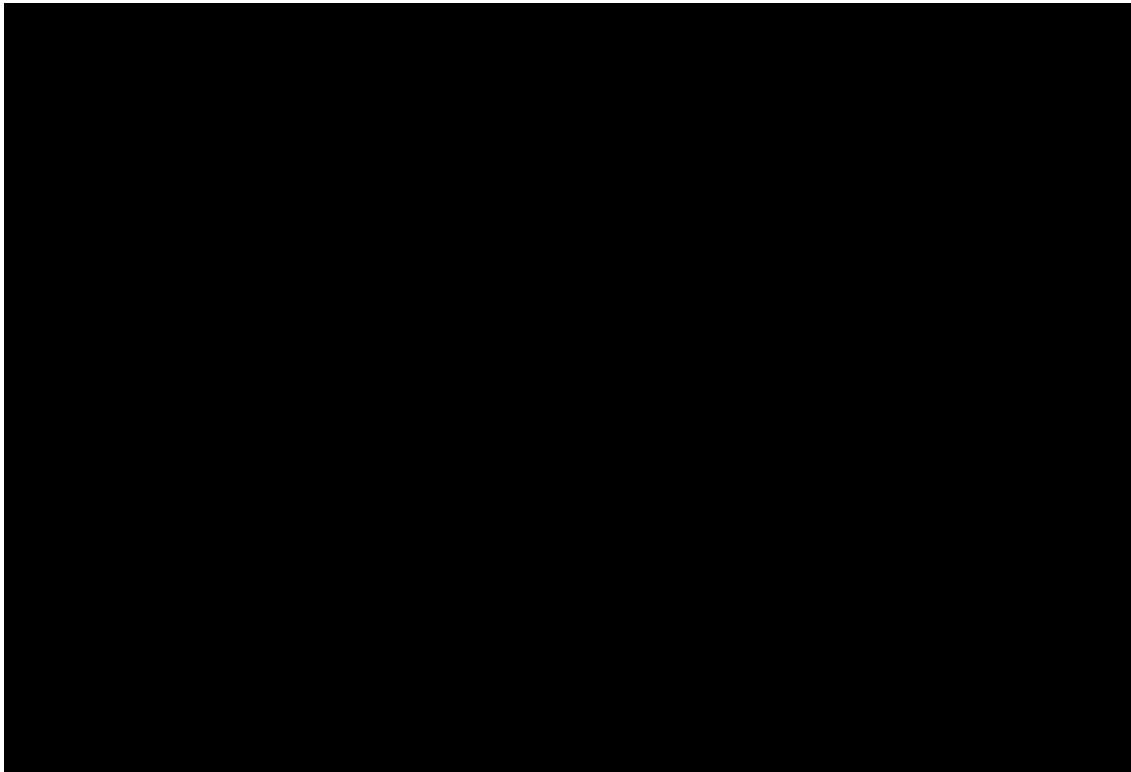


Fig. 14a Clemente Galano, *Grammaticae et logicae institutiones linguae literalis Armenicae* (Rome, Sacred Congregation for the Propagation of the Faith, 1645). (Original size: 11,7 × 17 cm). Shown at 60% of original size. *The British Library* (*British Library collection items digitised by Google*).

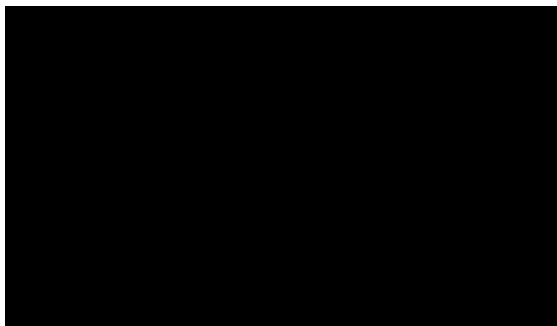


Fig. 14b Detail from Clemente Galano, *Grammaticae et logicae institutiones linguae literalis Armenicae* (Rome, Sacred Congregation for the Propagation of the Faith, 1645). Shown at original size. The type is RG1, cut by Robert Granjon in 1579 for the Vatican in Rome. *The British Library* (*British Library collection items digitised by Google*).

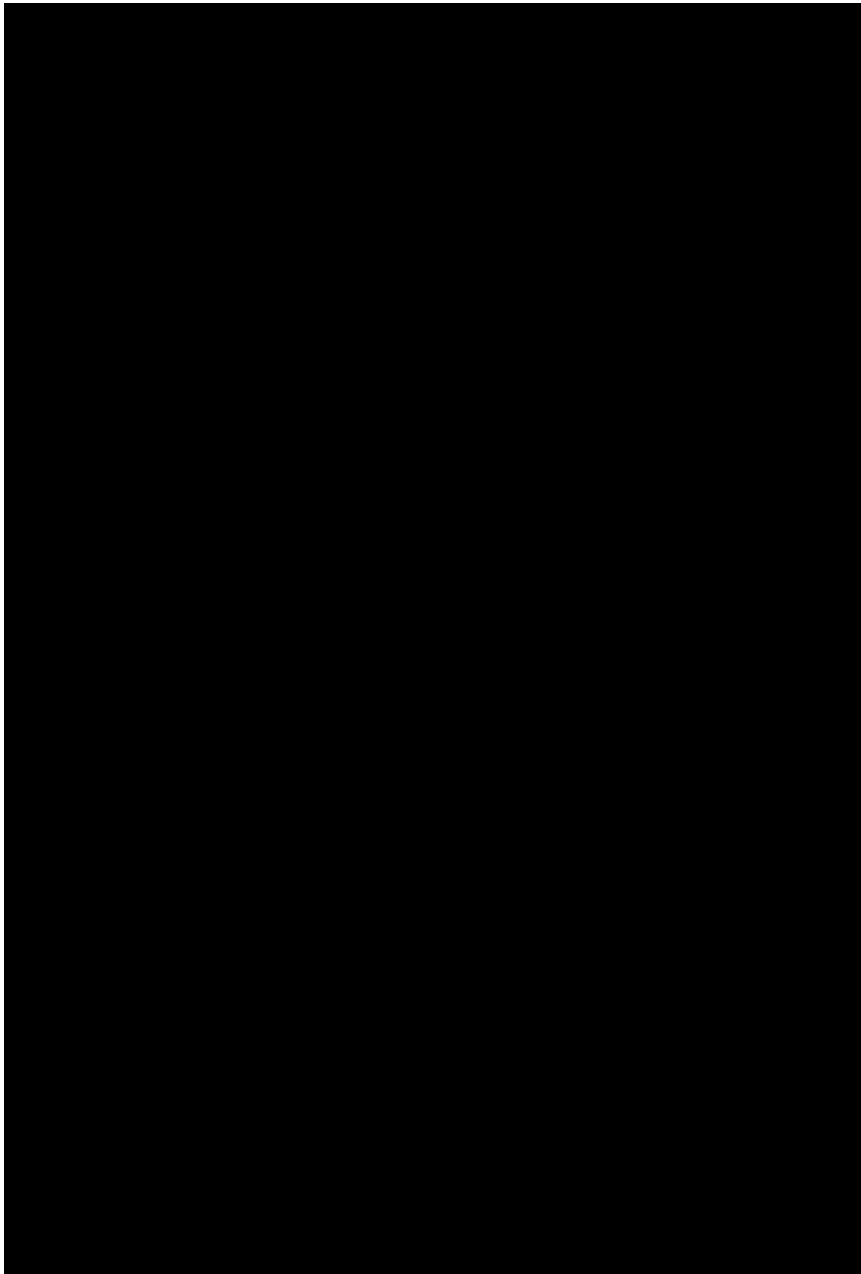


Fig. 15a Villotte Jacobo, *Dictionarium novum latino-armenium ex praecipuis armeniae linguae scritoribus concinnatum* (Rome, Sacred Congregation for the Propagation of the Faith, 1714). (Original size: 18 × 28,3 cm). Shown at 60% of original size. *The Cambridge University Library*.

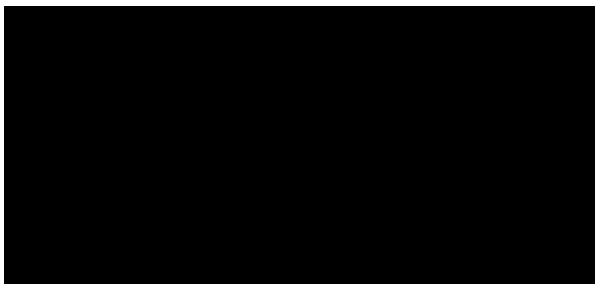


Fig. 15b Detail from Villotte's *Dictionarium novum latino-armenium* showing the Armenian type used. The type is RG1, cut by Robert Granjon in 1579 for the Vatican in Rome. Shown at original size. *The Cambridge University Library*.

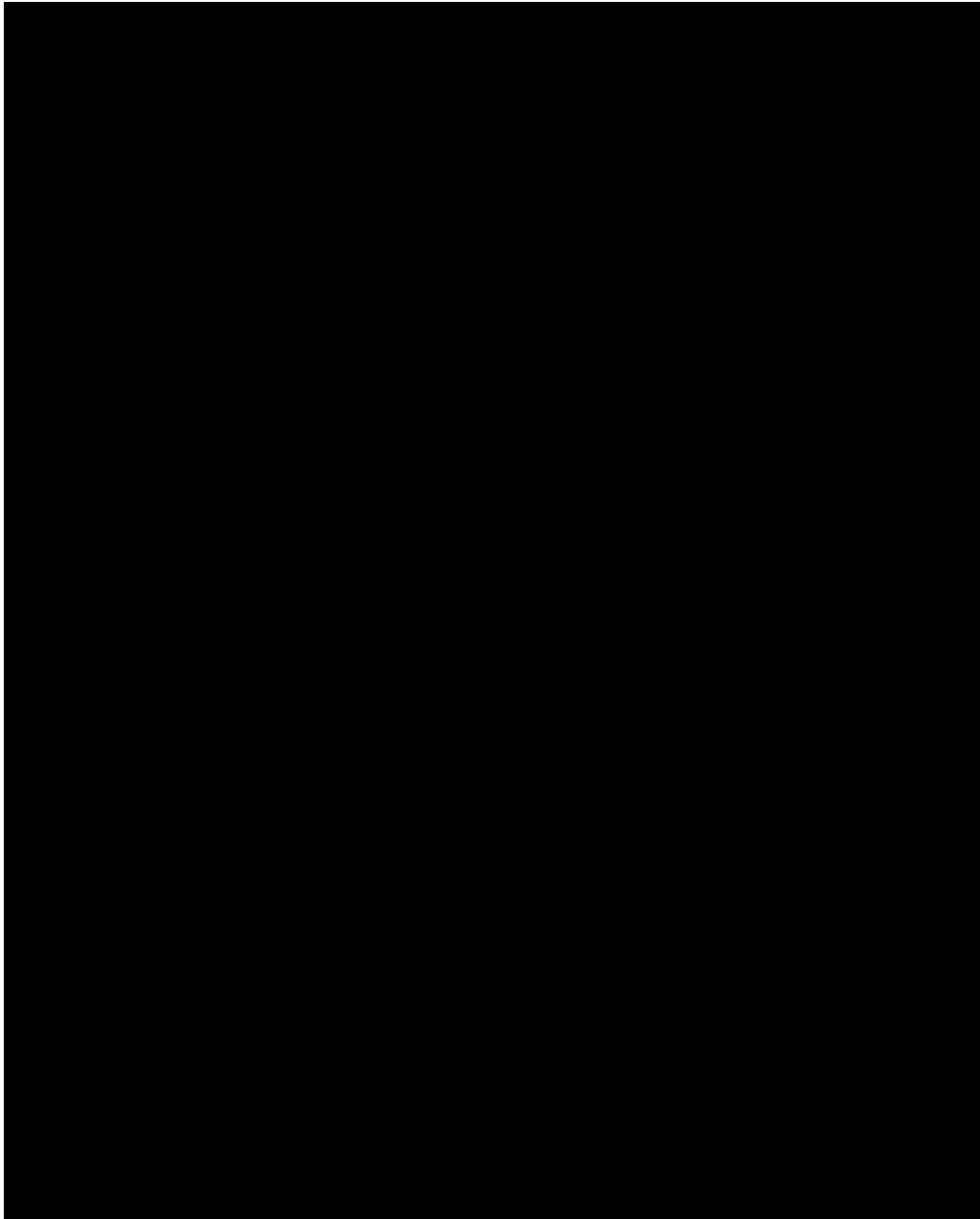


Fig. 16a Johann Joachim Schröder, *Thesaurus linguae armenicae, antiquae et hodiernae* (Amsterdam, 1711). (Original size: 17 × 20,6 cm). Shown at 80% of original size. *The Cambridge University Library.*

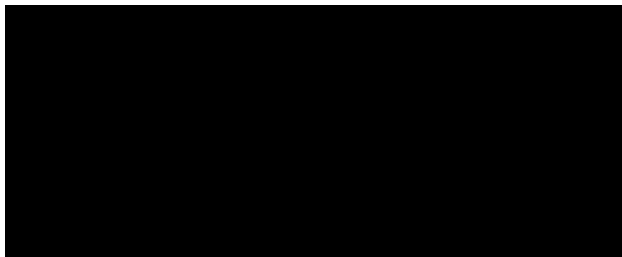


Fig. 16b Detail from the *Thesaurus*. The *Thesaurus* is composed with the type cut by Nicholas Kis in Amsterdam in 1685. Schröder's *Thesaurus*. Shown at original size. *The Cambridge University Library.*

2.2.2 The reprint of Rivola's dictionary in Paris

About ten years later Rivola's dictionary was reprinted in Paris by Antoine Vitré, who was appointed as the King's Printer for Oriental Languages in 1630 [Fig. 17]. The purpose of the work was not to promote Armenian language and culture but to contribute to the affirmation of Catholic doctrine. This can be seen in the Latin preface to the 1633 edition of Rivola's dictionary, dedicated to Cardinal de Richelieu (1585–1642), first minister of the French King Louis XIII, who commissioned Vitré to reprint Rivola's first work:³⁶

Our lord, Cardinal Richelieu, will travel there [Near East] with other [non war-related] plans; he will, of course, illuminate the whole afflicted Orient so as to wipe out all fibres of their sins; he will gather the lost sheep, and re-establish and re-affirm there the Kingdom of Christ Jesus.³⁷

However, the interest of Cardinal de Richelieu in the Catholic missions – France funded most of the Jesuits and Capuchin missionary operations in the Near East, such as those in Istanbul, Izmir, Aleppo, and in New Julfa³⁸ – was with a view to improving France's image as protector of near eastern Christians and to restraining Habsburg initiatives in the east.³⁹ Aware that oriental studies could be made into an 'instrument of state policy',⁴⁰ in 1631 Richelieu founded in Paris the *Societas typographica librorum officii ecclesiastici*, formed of eighteen printers and booksellers. The *Societas typographica* was given the monopoly of ecclesiastical books revised according to the canons established at the Council of Trent, in exchange for the printing of religious and linguistic texts in oriental characters for the missions⁴¹ in the Near East.⁴²

³⁶ In *Armenia, masterpieces from an enduring culture* (p. 158) the information on the Armenian-Latin dictionary is partially incorrect. Cardinal de Richelieu commissioned the reprint of Rivola's dictionary, but not their first publication in Milan. Additionally, whereas in the caption the book is correctly dated 1633, the publisher is mistakenly recorded as the Typographia Collegii Ambrosiana. Van Lint and Meyer, *Armenia, masterpieces*, p. 158. Rivola's *Grammaticae armenae libri quattuor* was reprinted by Vitré in Paris in 1634. See: Jaques Charles Brunet, *Manuel du libraire et de l'amateur de livres* (Bruxelles, Société Belge de librairie, 1839), vol. 4, p. 73. Under 'Rivola', Brunet records that the Armenian-Latin grammar was reprinted in Paris in 1634: 'Cette grammaire a été réimpr. à Paris, en 1634, in-4, 5, á 8 fr.'

³⁷ Translated and quoted in English by Van Lint and Meyer in: Van Lint and Meyer, *Armenia, masterpieces*, p. 158.

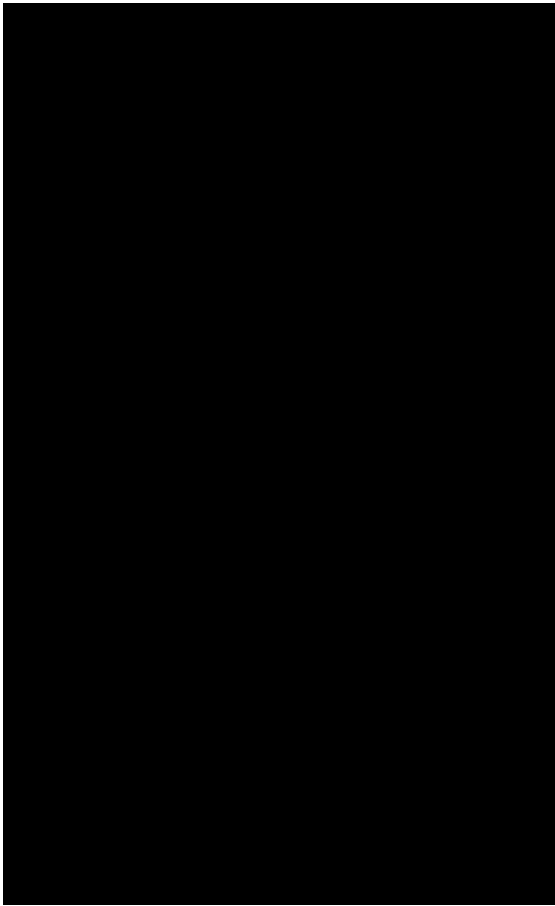
³⁸ An Armenian community was formed in 1606.

³⁹ S. Peter Cowe, 'Church and Diaspora: the case of the Armenians', *The Cambridge History of Christianity*, (Cambridge, Cambridge University Press, 2006), vol. 5, p. 432.

⁴⁰ Peter N. Miller, 'Making the Paris Polyglot Bible: humanism and orientalism in the early seventeenth century' in Herbert Jaumann (ed.), *Die europäische Gelehrtenrepublik im Zeitalter des Konfessionalismus* (Wiesbaden, Harrassowitz Verlag, 2001), p. 83. According to Miller, an important episode in which Richelieu made oriental printing a 'nationalistic' matter is when the French Cardinal convinced Vitré to buy Savary de Brèves type, punches and matrices. The reason was to prevent the types, which already were in France, from being acquired by English or Dutch printers for their Protestant activities.

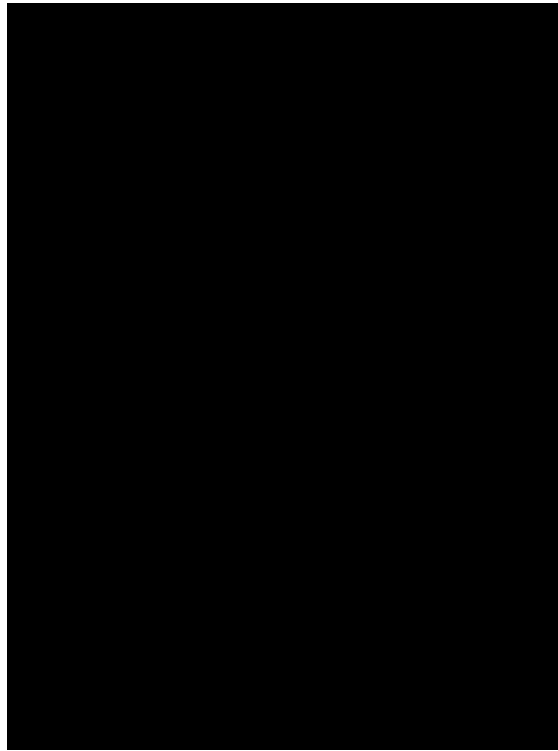
⁴¹ In 1628 the *Propaganda Fide* asserted its monopoly over oriental printing by stopping the project of Richelieu (and Père Joseph) to establish a French press in Lebanon. Following this failure, Richelieu decided to establish the *Societas*.

⁴² See: Meliné Pehlivanian, 'Les lettres arméniennes dans les éditions européennes (XV–XVII siècle)' in Claude Mutaflan (ed.), *Arménie, la magie de l'écrit* (Paris, Somogy, 2007), pp. 335–336.



(a)

Fig. 17 The two editions of Rivola's dictionary: (a) was published in Milan at the Tipografia del Collegio Ambrosiano in 1621 and (b) was published in Paris at the *Societas typographica librorum officii ecclesiastici* in 1633. The Parisian edition (b) has some printing mistakes: on this page, the capital letter Ռ of the first word in the list – ‘Sabay’ – appears reversed. It is not possible that such mistake was made by an Armenian. This means that Vitré did not have Armenians assisting the composition or printing process. (a) Shown at 40% of original size. *The British Library*. (b) Shown at 40% of original size. *SOAS Archives & Special Collections*.



(b)

In this context, Antoine Vitré in 1632 had acquired ‘exotic’ types from Savary de Brèves, and in 1633 commissioned the Parisian punch-cutter Jaques de Salencque⁴³ to cut Armenian and Ethiopian punches⁴⁴ so that ‘his majesty [the French King Louis XIII] might possess the characters of every nation in the world.’⁴⁵ In fact, despite the declared religious purpose, this was a matter of adding scripts to the Royal collection of oriental types in competition with Rome. In April 1633 Vitré received 50 Armenian punches from Salencque,⁴⁶ and started to print Rivola’s dictionary that was published in the same year. This publication marks the beginning of Armenian printing with movable type in France.

The Armenian type of Jaques de Salencque

The text of *Dictionarium armeno-latinum* printed by Vitré is in two columns: Armenian is on the left and Latin on the right of the recto leaf, whereas the arrangement is reversed in the verso. The Armenian is composed with Salencque’s type and has decorative drop caps at the beginning of each section. Unlike the Latin, which uses capital letters at the beginning of each line, Armenian words are in lowercase only [Fig. 18]. This can be justified by the fact that the first edition of Rivola’s dictionary and grammar, which was the reference used by Vitré in Paris, did not employ capital letters for Armenian.⁴⁷

The first edition of Rivola’s dictionary also served as reference to Salencque to cut the Armenian. In fact, by comparing PAT₁ and Salencque’s Armenian type, here designated as JSD, it is possible to observe that Salencque’s type was clearly influenced by that of Abgar. Distinctive features adopted by Salencque in JSD, which were peculiar in PAT₁ are: the long tail in letters such as ի and զ [Fig. 19]; the squarish shape of թ [Fig. 20]; and the horizontal stroke of հ [Fig. 21]. Nevertheless, the punch-cutting skills of Salencque can be appreciated in the lively calligraphic quality he was able to give the Armenian characters. Salencque’s approach to cutting Armenian type was therefore different from that employed by the German punch-cutter for Abgar’s types, and even from highly skilled punch-cutters, such as Robert Granjon and, later, Van Dijck. Salencque’s starting point was a printed typeface instead of a manuscript, meaning that he could easily and quickly interpret the shapes and proportions of Armenian letters. Such practice – to base new types on successful ones – was not new in the context of Latin types: an example is the Roman types cut for the Estienne in the sixteenth century, probably by a punch-cutter known as Maître Constantin (c. 1500–c. 1533). These were produced by deriving the design from Roman types cut for Aldo Manuzio in Venice in 1495 by Francesco Griffo.⁴⁸

43 He was the last of the great Paris punch-cutters after Garamond and Granjon.

44 The Ethiopian was not executed due to difficulties arising with the payment of the Armenian punches and matrices.

45 Auguste Bernard, *Histoire de l’Imprimerie Royale du Louvre* (Paris, Impr. impériale, 1867), pp. 46–47.

46 Ibid. pp. 46–47.

47 See: Fig. 12 on p. 116 of this chapter.

48 Vervliet, *The palaeotypography*, vol. 2, pp. 110, 164–165.



Fig. 18 Francesco Rivola, *Dictionarium armeno-latinum* (Paris, *Societas typographica librorum officii ecclesiastici*, 1633). (Original size: 18 × 24,5 cm). Shown at 40% of original size. *SOAS Archives & Special Collections*.

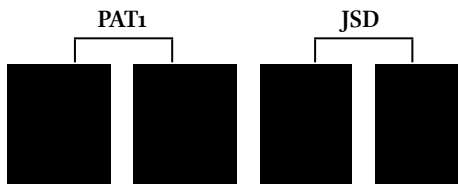


Fig. 19 JSD retained one of the main features of PAT1: the long horizontal stroke in tailed letters.

From Fig. 20 to Fig 21: JSD is from Francesco Rivola, *Dictionarium armeno-latinum* (Paris, *Societas typographica librorum officii ecclesiastici*, 1633). *SOAS Archives & Special Collections*. PAT1 is from Francesco Rivola, *Dictionarium armeno-latinum*, (Milan, *Tipografia del Collegio Ambrosiano*, 1621). *The British library*.

All shown at 200% of original size.

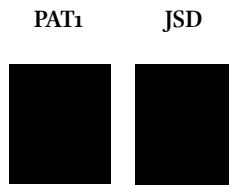


Fig. 20 The squarish shape of the head of ρ.

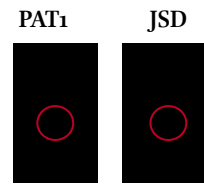


Fig. 21 In both PAT1 and JSD letter ϣ is rigid. In JSD the punch-cutter elongated the descending stroke, but kept it attached to the ascender – marked here with a red circle – parallel to the baseline.

Salenque's approach to designing new Armenian types was reflected by the punch-cutter Nicholas Kis⁴⁹ (1650–1702) for the needs of a second Armenian press in Amsterdam, established by the Armenian Matteos Vanadetsi in 1684.⁵⁰ Kis's Armenian types closely resemble Van Dijck's. It is possible that in the process of largely copying Van Dijck's types, Kis revised some of Van Dijck's punches – which could have been brought by Vanadetsi to Amsterdam – replaced others and made new matrices.⁵¹

Kis, a theologian originally from Hungary, was sent to Amsterdam by clergymen and the Bishop of the Transylvanian Reformed Church to supervise the printing of a new edition of the Hungarian Bible and to become familiar with the printing process.⁵² When he arrived in Amsterdam in 1680, Kis learned type founding from a Dutch Master who can be identified as Dirk Vosken, and became a proficient punch-cutter.⁵³ In 1685 Matteos Vanadetsi (ca. 1649–1705 or later) drew up a contract for Kis to supply Armenian punches, matrices and types in three sizes and three different styles, according to a printed example, not preserved, but probably an example from a book printed by Oskan with the excellent type from Van Dijck (CVB).⁵⁴ This might have served as the model to Kis's Armenian types. However, considering that two sizes were completed in less than a year, it is likely that Kis had Van Dijck's punches.⁵⁵

Whereas both Van Dijck and Kis understood the need to cut variants for certain characters to achieve more regularity in character spacing, Kis obtained a better result by shortening the middle and lower terminals in letters like ղ, ղ̇, ք [Fig. 22]. Additionally, the design of letters such as թ was slightly altered: its upper part was flattened and the whole shape widened [Fig. 23]; letter ծ had its backward slant reduced [Fig. 24]. As Schütz observes, Kis's types may be described as a 'reworked variant' of Van Dijck's.⁵⁶ Kis's types were to become extensively used in the eighteenth century and in the first half of the nineteenth century, either in their original forms or with some variations.

From the end of the seventeenth century, Armenian types produced for missionary activities and scholarly works would be mainly imitations of existing founts, thus diminishing the variety and originality in the production of Bolorgir types. However, the intensification of missionary activities encouraged the dissemination of Bolorgir types and generated interest in the Armenian language.

49 For information on Nicholas Kis see: György Haiman, *Nicholas Kis: a Hungarian punch-cutter and printer 1650–1702*, (S. Francisco, Jack W. Stauffacher, The Greenwood Press, John Howell Books, 1983); John Lane, 'The types of Nicholas Kis', *Journal of the Printing Historical Society*, 18 (1983/1984), pp. 47–79.

50 Oskan, who was the last printer at the first Armenian press in Amsterdam, moved the press to Livorno in 1669 and to Marseille in 1672. Matteos Vanadetsi, cousin of Bishop Thovmas Nurijanian Vanadetsi (ca. 1617–1708), had worked for the Armenian press in Marseille as a compositor in 1670/1671.

51 However, it would be necessary to carry out a careful character-by-character comparison in order to determine what characters come from the same, revised or new punch. Lane, *The Diaspora*, pp. 106–107.

52 György Haiman, *Nicholas Kis: a Hungarian punch-cutter and printer 1650–1702*, (booklet printed in recognition of the *Tricentenary of the printing of Nicholas Kis Tófalusi's Amsterdam Bible*, Debrecen, Hungary, 25–27 April 1985) (S. Francisco, The Greenwood Press, 1985), p. 4.

53 *Ibid.* p. 4.

54 Haiman, *Nicholas Kis* (1983), p. 409.

55 Lane, *The Diaspora*, pp. 106–107.

56 Schütz, 'The Oscanian and Vanandian', p. 199.

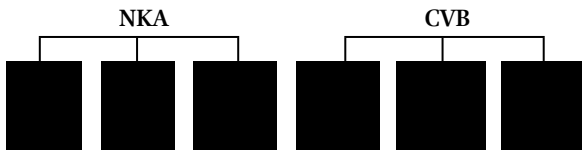


Fig. 22 NKA has shorter middle and lower terminal than CVB.

For all images on this page: NKA is from Johann Joachim Schröder, *Thesaurus linguae armenicae, antiquae et hodiernae* (Amsterdam, 1711). *The Cambridge University Library*.

CVB is from Oskan Yerevanoz, the Armenian Bible (Amsterdam. St. Ejmiacin and St. Sargis Press, 1668). *The Mekhitarian Library in St. Lazarus, Venice*.

Images are shown at 200% of original size.

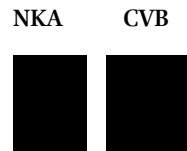


Fig. 23 In NKA letter ρ is wider than in CVB and has its upper part flattened.

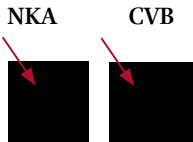


Fig. 24 The backward slant is reduced in NKA.

2.3 The importance of the Mekhitarist printing establishments up to the mid-19th century: Venice and Vienna

While European linguists and missionaries produced publications for a very limited readership (European missionaries), a congregation of Armenian priests called the 'Mekhitarists', under the leadership of Mekhitar⁵⁷ settled on the Isle of St. Lazarus in Venice in 1717.⁵⁸ The Mekhitarist Fathers were the first Armenian 'body of scholars, who in the eighteenth and nineteenth centuries, shaped most of the ideas on Armenian history, language, and literature'.⁵⁹ Their reputation as publishers was not inferior to that as scholars: the Armenian types used in books published by the Mekhitarist Fathers considerably influenced the development of subsequent Armenian types for eighteenth and nineteenth-century textbooks and scriptural works. Theirs can be considered the first printing establishment in Europe run by Armenians to successfully operate for about 200 years.⁶⁰

2.3.1 The successor of the Amsterdam printing offices

Immediately after Mekhitar of Sebastia arrived in Venice – before the installation of the Mekhitarist Congregation on the Isle of St. Lazarus in 1717 – he began to publish Armenian books.⁶¹ The Mekhitarists were forced to print their works with printer Antonio Bortoli, who had obtained from the court of the Serenissima the monopoly of printing books in Armenian characters in Venice from 1695 to 1729. Early works of the Mekhitarists were printed by Bortoli in 1715 with Van Dijck's Armenian types, but in 1704 Bortoli was already using them in Armenian publications. According to Lane, it is possible that the Mekhitarists owned Van Dijck's Armenian matrices and perhaps even

57 Mekhitar's original name was Manuk, son of Petros. Born in Sebastia (Sivas, in Turkey) in 1676, he converted to Roman Catholicism at a young age. In 1701 Mekhitar (which means the Comforter, the Consoler) established a congregation in Constantinople to enhance the education of Armenians. However, the opposition of local authorities – these were not Ottomans but officials of the Armenian Apostolic Church – forced him to seek refuge in Europe. Thus, in 1703 Mekhitar and his pupils fled to the Republic of Venice: they first settled in Modon (Methoni in Greece), which was under Venetian control, and built a Church and a Convent. When the Turks invaded the Morea, Mekhitar and the other monks were forced to leave Modon and to settle in Venice, where they arrived in 1715. On 26 August 1717 the Senate assigned to Mekhitar and his community the Isle of St. Lazarus, which in the past had hosted lepers. Victor Langlois, *The Armenian monastery of St. Lazarus–Venice*, (translated by Frederick Schröder) (Venice, Printing office of St. Lazarus, 1874), p. 19; Sivazliyan, 'Venezia per l'oriente: la nascita del libro Armeno', p. 32.

58 Fathers Richard and Giraud, *Dizionario universale delle scienze ecclesiastiche* (Naples, Stabilimento tipografico e calcografico di C. Batelli e Comp., 1847), vol. 6, p. 319.

59 Adalian, *From humanism to rationalism*, p. vii.

60 The Mekhitarist Fathers' printing shop operated from 1789 to 1997 in Venice and from 1811 to 1998 in Vienna. The one in Trieste was short-lived.

61 As early as 1714, when Mekhitar was still in Modon, he contacted the Armenian Noradunk Zacarian – resident in Venice – to ask whether it would have been possible to print the *Abbreviation of the Theology of the Blessed Albertus Magnus* in Armenian. The book was printed by Bortoli in 1715–1716, just after Mekhitar had arrived in Venice. Sivazliyan, 'Venezia per l'oriente: la nascita del libro Armeno', p. 32.

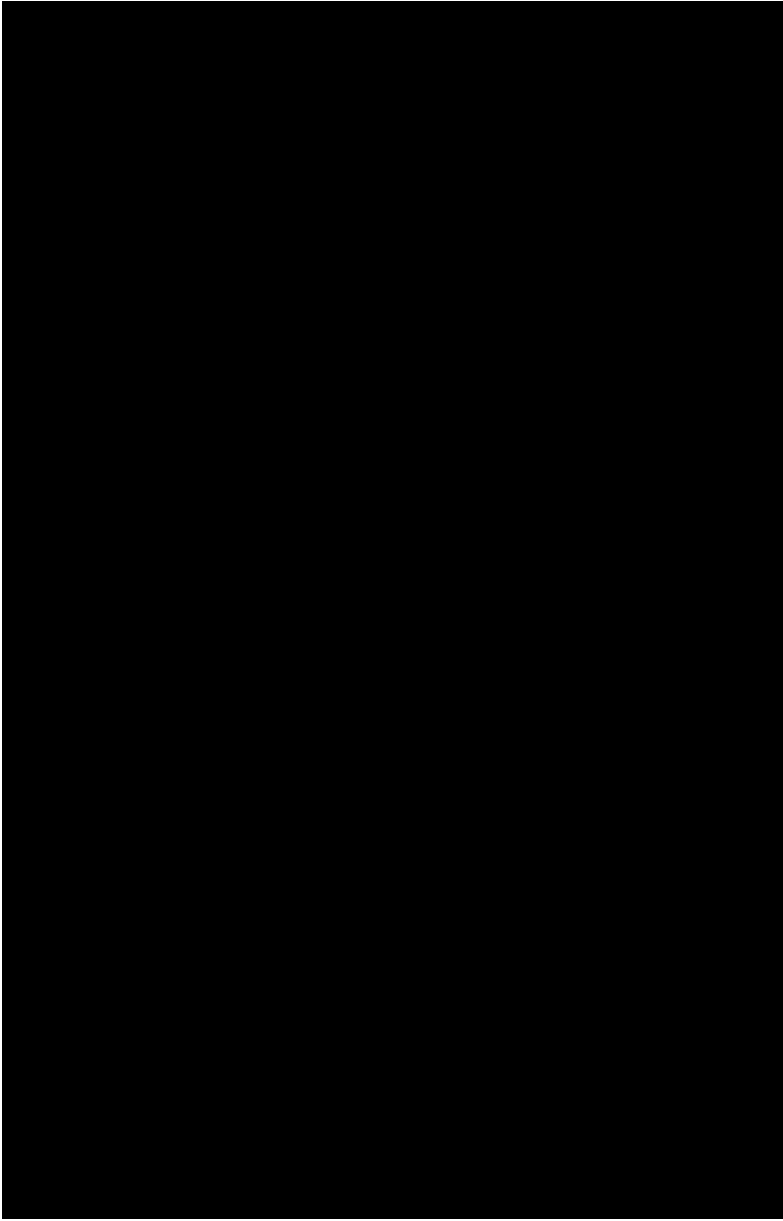


Fig. 25 *Preces Sancti Nersetis* (Venice, Armeniaca S. Lazari typographia, 1823). (Original size: 9,5 × 15,5 cm). Shown at 100% of original size. *Sparrow Library, Oxford*. Picture taken by the Sparrow Library. The book is composed with fresh cast Kis Mediaen Bolorgir type.

the punches: Mekhitar may have brought them from the Constantinople printing office when he fled in 1701. In 1729, other Armenian types reached the Isle of St. Lazarus:

... the copper matrices of the types and steel punches for each of them have reached us ... There are three series of these, a large-size, a small-size and a medium-size series.⁶² To all of the series there can be found the corresponding upper-case letters, and there exist also the matrices of all sorts of punctuation and intonation marks which are important for the printing of books. All are flawless, in perfect condition.⁶³

These were the Armenian types (known as the Vanadetsi types) from the second Amsterdam office.⁶⁴ Informed of the possibility to purchase Vanadetsi's typographic materials, Mekhitar persuaded his friend Harutyun Gevorkian to cover the debts incurred by the Amsterdam office and to acquire the types.⁶⁵ Apparently, Mekhitar intended that the acquisition and shipment of Vanadetsi's materials be done in total secrecy, thus preventing the types from falling into Apostolic hands.⁶⁶ Additionally, the news that the Mekhitarists acquired all Amsterdam punches, matrices and types was not to be revealed to the public, even after the typographic material had reached Venice.⁶⁷

From 1731 until 1749 all of Mekhitar's books were published by Bortoli: it is likely that the Serenissima extended Bortoli's monopoly for other 20 years. It is in 1731 that the new types acquired by Mekhitar began to be used by Bortoli. However, in order to prevent the printer from using the Armenian types for other clients, types were not handed to Bortoli. Instead, Armenian types would be composed at St. Lazarus, transported by boat to the printer's premises, and brought back to St. Lazarus once the impression was completed.⁶⁸ In 1789 the Mekhitarist Fathers finally established their own printing shop in the Isle of St. Lazarus (1789–1997).

62 On 6 February 1685 one of Vanadetsi's financier drew up the formal contract with Kis, described as a punch-cutter. Lane, *The Diaspora*, p. 105. According to Haiman, Nicholas Kis had cut three different series of Armenian types for the Amsterdam office: two sizes of Bolorgir type, and one size of a Notrgir type. Information on the Armenian types is to be found in the colophon of the Armenian *Hymnarium* (Amsterdam, Vanadetsi, 1685). An English translation of a few lines of the colophon is provided by Haiman, *Nicholas Kis* (1983), p. 25.

63 Cited in Haiman, *Nicholas Kis* (1983), p. 405.

64 Ibid. pp. 25, 405. The Armenian printer Mattheos Vanadetsi established the second Amsterdam printing office after leaving Marseille for Holland in 1684. According to Schütz, from the eighteenth century onwards, types were named after the owner of the printing office rather than the punch-cutter. However, Lane notes that types were rarely 'named' after their punch-cutter at any date, and that recently people are more likely to refer to a type by the founder and less likely to refer to it by the printer. Schütz, 'The Oscanian and Vanandian', pp. 185–187. The author is grateful to John Lane for this information. Kis's approach to designing Armenian types is discussed on p. 127 of this thesis.

65 Lane notes that 656 steel punches, 816 copper matrices, 99 woodcut initials and three crates of cast types were purchased for 520 guilders. Lane, *The Diaspora*, p. 135.

66 The Apostolic priest in Amsterdam, Yeghishe di Filebo, aimed to establish another Amsterdam printing office and tried to purchase Vanadetsi's material. Lane, *The Diaspora*, p. 135.

67 Letter from Mekhitar to Brother Elijah (dated April 21, 1729) in Haiman, *Nicholas Kis* (1983), p. 405.

68 Sivazliyan, 'Venezia per l'oriente: la nascita del libro Armeno', pp. 32–33. Lane observes that the typesetting office certainly would not have enough type to set a lengthy book. Therefore, it would have to set one or two sheets, transport the set type to the printer, wait until it was returned after printing to distribute the type and set the next one or two sheets. The author is grateful to John Lane for this clarification.

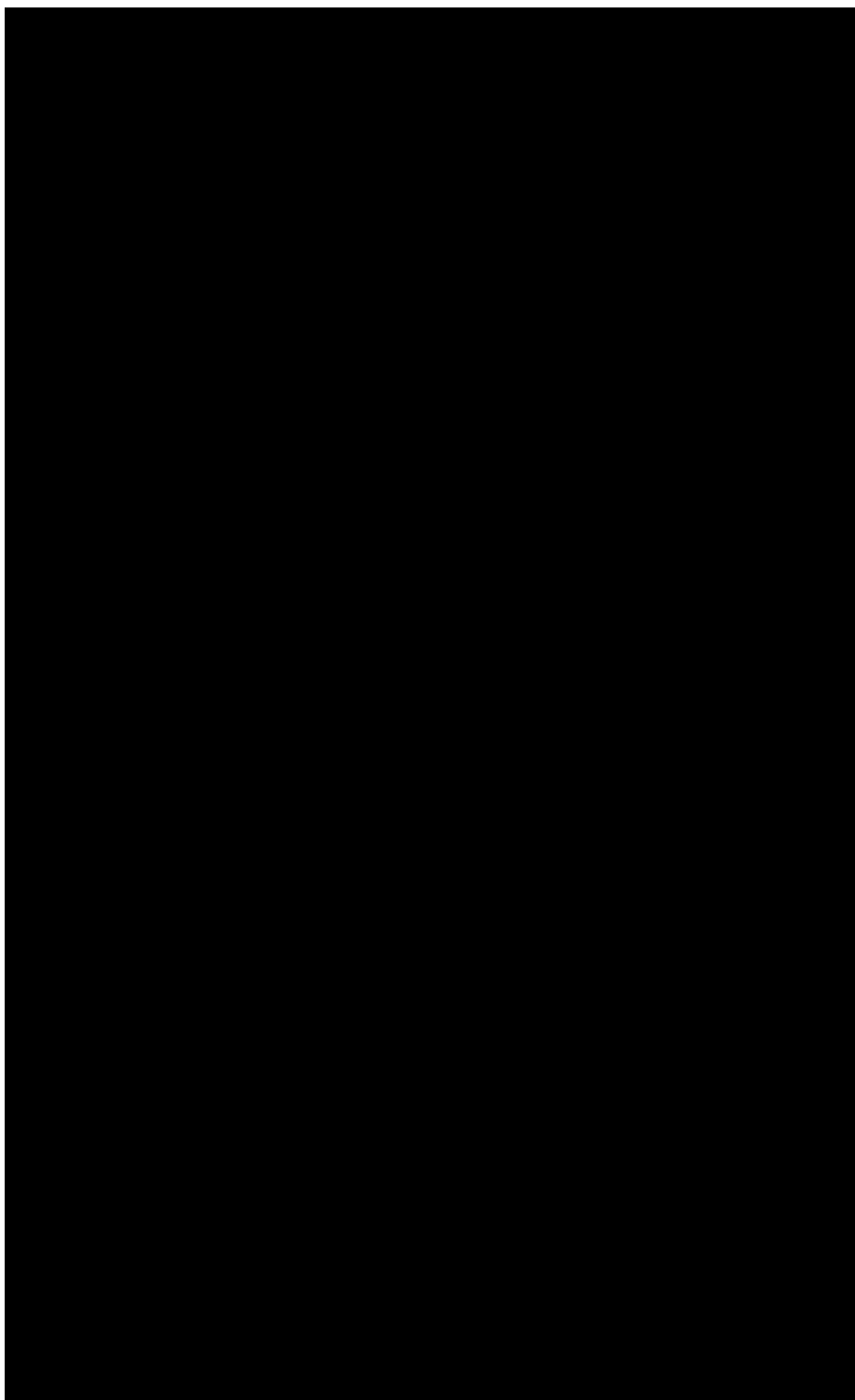


Fig. 26 Fénelon, *Télémaque* (Venice, Armeniaca S. Lazari typographia, 1850).
(Original size: 12 × 19,6 cm). Shown at original size. *The British Library*.

The historian György Haiman, in his English monograph on Nicholas Kis, compared some Armenian publications of the second Amsterdam office with those printed by Bortoli and concluded that most of the early Venetian publications were undoubtedly printed with types cut by Van Dijck.⁶⁹ After the Mekhitarists purchased Nicholas Kis's types, these were used in their Venetian publications up to the mid-nineteenth century.⁷⁰ A noteworthy example of the Mekhitarists' use of types in the nineteenth century can be seen in *Preces Sancti Nersetis* (St. Lazarus, 1823) [Fig. 25] and in *Télémaque* (St. Lazarus, 1850) [Fig. 26]. Whereas *Preces Sancti Nersetis* is a polyglot publication – liturgy and rituals according to the Armenian church printed in 24 languages – *Télémaque* was the most popular classic among Levantines in Istanbul in the first half of the nineteenth century.⁷¹

A comparison between the printed characters in Schröder's *Thesaurus* in 1711⁷² – type cut by Nicholas Kis (NKA)⁷³ – and the Bolorgir types in *Preces Sancti Nersetis* and in *Télémaque*, here designated as MVP and MVT confirms that the Mekhitarists in Venice continued using Armenian types similar to those of Kis up to the mid-nineteenth century. In MVP and MVT the form of letters of ը, ճ, յ and ք are identical to those in NKA [Fig. 27]. However, it is possible to observe slightly differences in the design of letter թ. For instance, in MVP and MVT the design of թ departs from that used in NKA: in MVP and MVT the outstroke of the small loop is short, the upper part of the letter has a circular shape instead of being square and the width of the letter is narrower than in NKA [Fig. 28]. Therefore, in the first half of the nineteenth century Venice used Nicholas Kis's types, cast new types from his matrices, and used his types as a model to create new ones.

In 1775 Empress Maria Theresa authorised the Mekhitarist Order to establish a monastery and a church in Trieste. This new community was permitted to set up a printing shop, apparently inside the monastery, which employed non-Armenians as compositors, binders and vice-superintendents, under the supervision of an Armenian director of the press. By 1795 the printing establishment in Trieste had forty-seven different types in three different scripts, of which fifteen were in Armenian.⁷⁴ Using

69 See: Haiman, *Nicholas Kis* (1983), pp. 405–414.

70 Haiman, *Nicholas Kis* (1983), p. 109.

71 Translated into many languages besides Turkish and Arabic, *Télémaque* is a didactic French novel by Fénelon, Archbishop of Cambrai and tutor of the Duc de Bourgogne. It was published anonymously in 1699 and reissued in 1717. In his book, Fénelon talks about the educational travels of Telemachus, son of Ulysses, accompanied by his tutor Mentor. The first printed version of a Greek translation dates back to the 18th century, while an Armenian translation in grabar was first made by the Vardapet Ciackciak and published in Venice in 1826. Johann Strauss, 'Who read what in the Ottoman Empire (19th–20th centuries)?', *Middle Eastern Literatures*, 6 (2003), pp. 49–50.

72 See images of Schröder's *Thesaurus* on p. 122 of this thesis.

73 On 6 February 1685 one of Vanadetsi's financier drew up the formal contract with Kis, described as a punch-cutter. Lane, *The Diaspora*, p. 105.

74 The other two scripts were Latin and Greek. Beside the fifteen Armenian types, the Mekhitarists in Trieste had thirty-one Latin types and one Greek type. P. Gregoris Dr. Kalemkiar (Director of Mekhitarist Congregation Printing House), *Eine Skizze der literarischtypographischen Thätigkeit der Mechitaristen-Congregation in Wien* (Wien, Druck und Verlag der Mechitharisten-Congregations-Buchdruckerei, 1898), pp. 5–6.

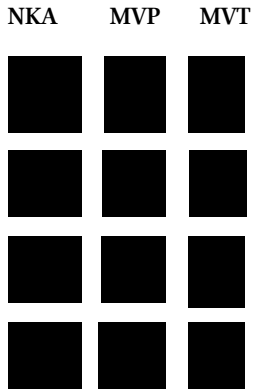


Fig. 27 In MVP and MVT the form of letters of ղ, ճ, յ and լ looks almost identical to those in NKA. All images on this page are: NKA is from Johann Joachim Schröder, *Thesaurus linguae armenicae, antiquae et hodiernae* (Amsterdam, 1711). *The Cambridge University Library*. MVT is from Fénelon, *Télémaque* (Venice, Armeniaca S. Lazari typographia, 1850). *The British Library*. MVP is from *Preces Sancti Nersesis* (Venice, Armeniaca S. Lazari typographia, 1823). *The Sparrow Library, Oxford*. All images are shown at 200% of original size.



Fig. 28 In MVP and MVT the design of letters թ is slightly different that in NKA.

these effectively when composing books and other publications would have required collaboration between non-Armenian professionals and members of the Congregation.

In 1805 Trieste was occupied by Napoleon, forcing the Congregation to seek refuge in imperial Vienna. In December 1810 Emperor Francis I gave permission to the Armenian monks from Trieste to reside in Vienna. Whereas Napoleon suppressed the Congregation in Trieste, he posed as the protector of the Armenian Catholic Mekhitarist Monastery in Venice. In 1810 Napoleon decreed that all monasteries in the kingdom of Italy must be suppressed, except that of the Mekhitarist Congregation in Venice.⁷⁵

2.3.2 The Mekhitarist printing-shop and type-foundry in Vienna

The Mekhitarist Fathers set up their own printing-shop and a type-foundry in the old Capucine convent 'Am Platzl' in the suburb of St Ulrich from 1811.⁷⁶ The printing-shop began with only two presses, forcing the Mekhitarists to subcontract works to other local printers. Even though the printing press had some of the typographic materials from Trieste,⁷⁷ the Mekhitarist Fathers had arranged for new Armenian types to be cut: one of the new types was used to print their first book: *Վարդի Ամենասուրբ Առաքին Մարիամն Աստուածածին* (The life of the Blessed Virgin) (1812).⁷⁸ In 1814 the books of the Mekhitarists in Vienna began to carry the imprint 'types of the Mekhitarist Fathers',⁷⁹ thereby informing readers that the press had its own types. Vienna was a major centre of punch-cutting and type founding, thus enabling the Mekhitarists to have types cut and cast for them, and also to provide for others.⁸⁰ The printing press gained an international reputation for its scholarly work, and it became a reference for other printers for its excellent printing.⁸¹ For example, by 1827 the Viennese Mekhitarists supplied matrices for a small Armenian type to Richard Watts, an oriental printer and type founder in London. The types look similar to those cut by Kis for the Amsterdam printing office in 1684, which were later acquired by the Mekhitarists in Venice.⁸²

75 Napoleon was favourable to the Mekhitarist Congregation in Venice as it was a centre of culture, but not the one in Trieste, which was under Habsburg power.

76 The type-foundry was first set up in 1811, and then rebuilt in 1838, after the printing office and type-foundry burned down in 1835. The Mekhitarist website suggests 1998 as the closing date of the printing house. For the dates see: Kalemkiar, *Eine Skizze*, pp. 10, 18; and 'Die Buchdruckerei (1811–1998)'. Retrieved from: <http://mechitharisten.org/die-wiener-mechitharisten/die-wienermechitharisten-buchdruckerei/>. Accessed in February 2017.

77 Lane, *The Diaspora*, p. 136. It is not said whether these were matrices, types, presses, paper, etc.

78 Kalemkiar, *Eine Skizze*, p. 13;

79 'Typis Patrum Mechitaristarum'. Before then, the printing establishment published using 'Nella cesarea regia privilegiata stamperia de' PP. Armeni Mechitaristi' in Trieste and since 1812 in Vienna 'In der k. k. priv. Buchdruckerey der EE. PP. Mechitaristen'. In Kalemkiar, *Eine Skizze*, p. 14.

80 Besides the types already cast, from 1812 to 1898, 55 different Armenian decorative founts, as well as display types for posters were produced due to the special co-operation of the punch-cutter Anton Ockenfuss and Father Avedik Hoffer (a born Viennese and a member of the Congregation), Brendler type-foundry, and Archbishop Aidyn. (Brendler traded from 1876 as 'Brendler & Harler', 1882 'Brendler & Marklowsky'. In 1896 Brendler's sons Karl and Joseph joined the company. This, which was then called 'Karl Brendler & Sons Typefoundry', was active in the last part of the 19th century in Vienna.) Whereby the range of Armenian typefaces from the Mekhitarist printing shop became one of the most complete in the world. Kalemkiar, *Eine Skizze*, pp. 61–62.

81 Kalemkiar, *Eine Skizze*, p. 16.

82 The Small Pica Bolorgir and probably the Notrgir, in the specimen of his son W. H. Watts, *Oriental and other types ... principally prepared by the late Mr. R. Watts, London, [1851]*. Lane, *The Diaspora*, pp. 137, 212 Section VI note 4.

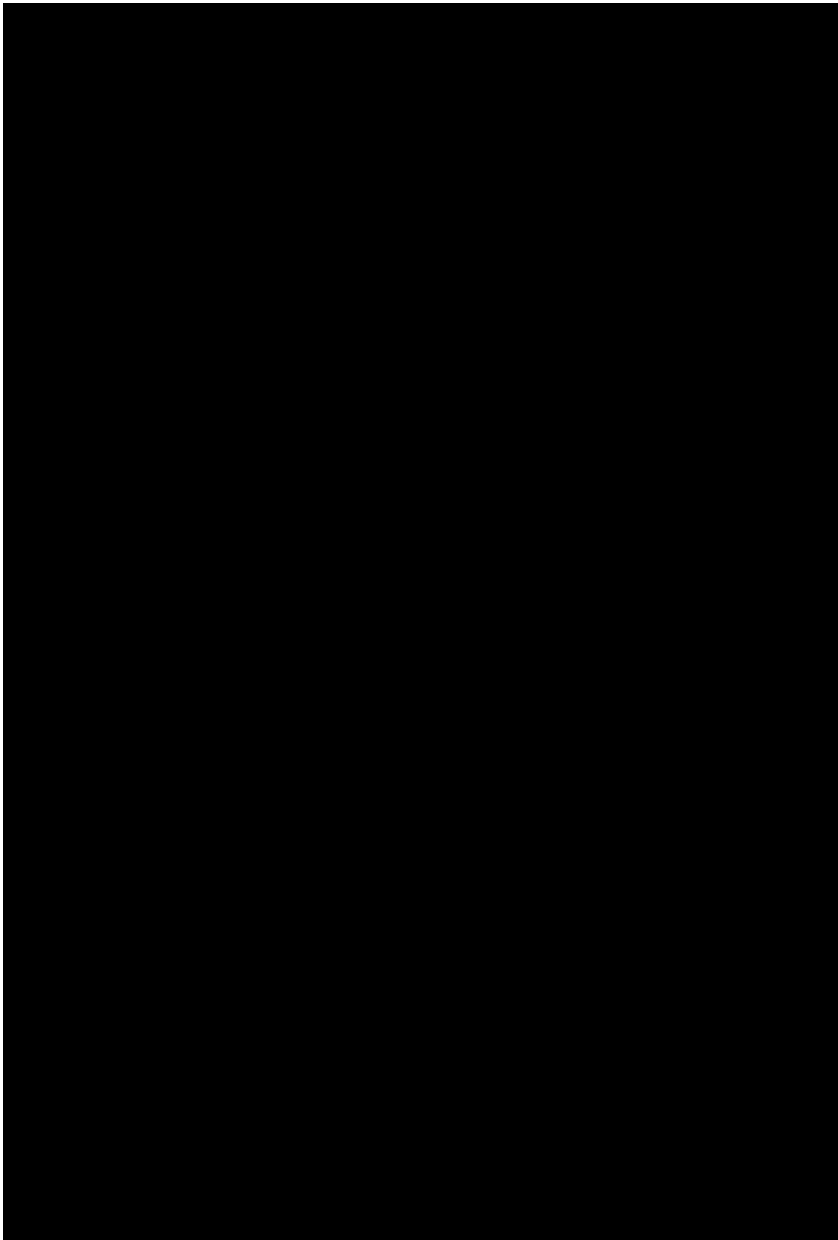


Fig. 29 'the Church prayer of St John Chrysostom from the Armenian liturgy', *Precatio viginti quinque linguis exarata* (Vienna, Mekhitarist Press, 1838). (Original size: 16,3 × 26 cm). Shown at 60% of original size. *The Mekhitarist Archives in Vienna. Box III.*



Fig. 30 Different designs of letter Թ in NKA. NKA is from Johann Joachim Schröder, *Thesaurus linguae armenicae* (Amsterdam, 1711). MWP is *Precatio* (Vienna, Mekhitarist Press, 1838). Images shown at 200% of original size.



Fig. 31 In MWP the hook of letter ւ is detached from the base character height. Images shown at 200% of original size.



Fig. 32 In MWP letter յ has a sharp and close end. Images shown at 200% of original size.

In 1837, 25 of their 26 printing presses were set to print a devotional text in 25 different languages: the Church prayer of St John Chrysostom from the Armenian liturgy [Fig. 29].⁸³ This attests that the type-foundry not only had Armenian types, but also that it began to include other foreign scripts into their type collection. Once again, the model used for the Armenian type – named MWP – is clearly Kis's (NKA), but with noticeable variations. For example, letter թ in MWP has a longer descending stroke than in NKA, and the width of the letter is narrower. The left side of the small loop is rounded and its counter is bigger than in NKA [Fig. 30]. In letter խ in MWP, the left vertical stem extends further up, which makes the hook detach from the base character height [Fig. 31]. In MWP, the semi-circular loop of letter յ has a sharp and closer end [Fig. 32].

In the first half of the nineteenth century, the Mekhitarists both in Venice and Vienna made use of Kis's designs as the model for their Armenian types, but with some variations. The Viennese foundry differed from the Mekhitarists in Venice as to the variations they applied, making the respective types identifiable. The quality of the work produced by the Mekhitarists in Vienna was praised in the newspaper *Allgemeiner Religions- und Kirchenfreund und Kirchenkorrespondent* in 1829: 'the work is beautifully printed ... [the Mekhitarists in Vienna] only published excellent printed works, this is why these printed works serve as a model for many ... book printers'⁸⁴ Additionally, according to P. Gregoris Dr. Kalemkiar, their outcome was produced with such typographical neatness that Armenians, and European scholars in Armenians, regarded the types 'from the Viennese' as the most beautiful Armenian types.⁸⁵ However, the quality possessed by the types from Venice never ceased to elicit praise from missionaries and scholars in the nineteenth century.

83 Kalemkiar, *Eine Skizze*, p. 18. Beside Armenian, there were other non-Latin scripts, such as Cyrillic, Greek and Persian.

84 Kalemkiar, *Eine Skizze*, p. 16. Translated from German by Joanna Schleicher, April 2019.

85 Ibid. p. 62.

2. THE SPREAD OF BOLORGIR TYPES THROUGH MISSIONARY AND SCHOLARLY WORKS

2.4 Missionary presses in the 19th century: imitation and originality

Whereas in the 17th century Armenians were instrumental for the Catholic missions of the Pope and the French monarch in the Near and Middle East, in the nineteenth century the Armenian Diaspora became an active participant in the missions of Protestant missionaries from Great Britain and the United States to propagate the Christian faith throughout the world. Protestant missionaries described Armenians as ‘the most generally useful body of Christian Missionaries’⁸⁶ and remarked that the Armenian Bible would ‘provide a right and precious fountain for the evangelization of the East’.⁸⁷

2.4.1 An Armenian type for the British and Foreign Bible Society

Established in 1804, the British and Foreign Bible Society (BFBS) financed the publication of the Armenian Bible first in St. Petersburg (1817), then in India (1819) and Constantinople (1823). Since the BFBS’s aims were to translate and print Bibles in different languages and scripts according to standard versions and distribute them all over the world, the editions of the Armenian Bible were based on the version prepared by Mekhitar and printed in Venice by Bortoli in 1733.⁸⁸ However, these editions of the Armenian Bible that the BFBS had produced were unable to reach the general population of Armenians: Mekhitar’s Bible was written in classical Armenian (grabar), a language that was understood only by well-educated Armenian clergy and scholars. Therefore, it was necessary to print a version of the New Testament in the language spoken by most Armenians in the Ottoman Empire: the Armenian Western vernacular.⁸⁹ Professor Jean Daniel Kieffer (1767–1833),⁹⁰ principal agent of the BFBS

86 Claudius Buchanan, *Christian researches in Asia* (Boston, Samuel T. Armstrong, 1811), p. 206. The English missionary Claudius Buchanan, rector of the College of Fort William in India, Calcutta, was very impressed with Armenians. He described them as wealthy and industrious merchants with a strong network from Canton to Constantinople, who had managed to establish more churches in India than the ruling British.

87 *Ibid.* pp. 209–210.

88 This was the third Armenian complete printed edition of the Bible. Mekhitar’s edition was a reprint of Oskan’s edition with minor revisions. Before Mekhitar’s edition of the Bible, a reprint of the 1668 edition appeared in Constantinople in 1705. Vrej Nersessian, *The Bible in the Armenian tradition* (Los Angeles, The J. Paul Getty Museum, 2001), p. 34.

89 In 1819 the BFBS decided to produce an Armeno-Turkish New Testament – Turkish written with Armenian characters. This was issued in St. Petersburg in 1819. Because this publication was in Turkish language it did not meet the expectation of the Armenians. However, it seemed to be useful for missionary activities in the East as the Ottoman government banned the publication of the Bible in Turkish printed with Arabic characters. The vernacular language, also known as ‘ashkharhabar’, or secular dialect, first appeared in the fourteenth century and then grew to such an extent that in the second half of the nineteenth century it became the written language for Armenian literature, replacing classical Armenian. Nersessian, *The Bible*, pp. 36–37.

90 Kieffer was born in Strassbourg in 1758. He was a member of the consistory of the Evangelical Church of France and served as the BFBS’s principal agent in France. He was Professor of Turkish at the Collège de France, and worked as an interpreter for the French King. Before obtaining these positions, from 1796 to 1803 he was a diplomatic officer, serving in Constantinople. Kieffer taught Turkish to Wilhem Schauffler and Elias Riggs, who became Bible translators. Bruce G. Privrtsky, ‘A History of Turkish Bible Translations’ (University of Tennessee, PhD thesis, April 2014), p. 37.

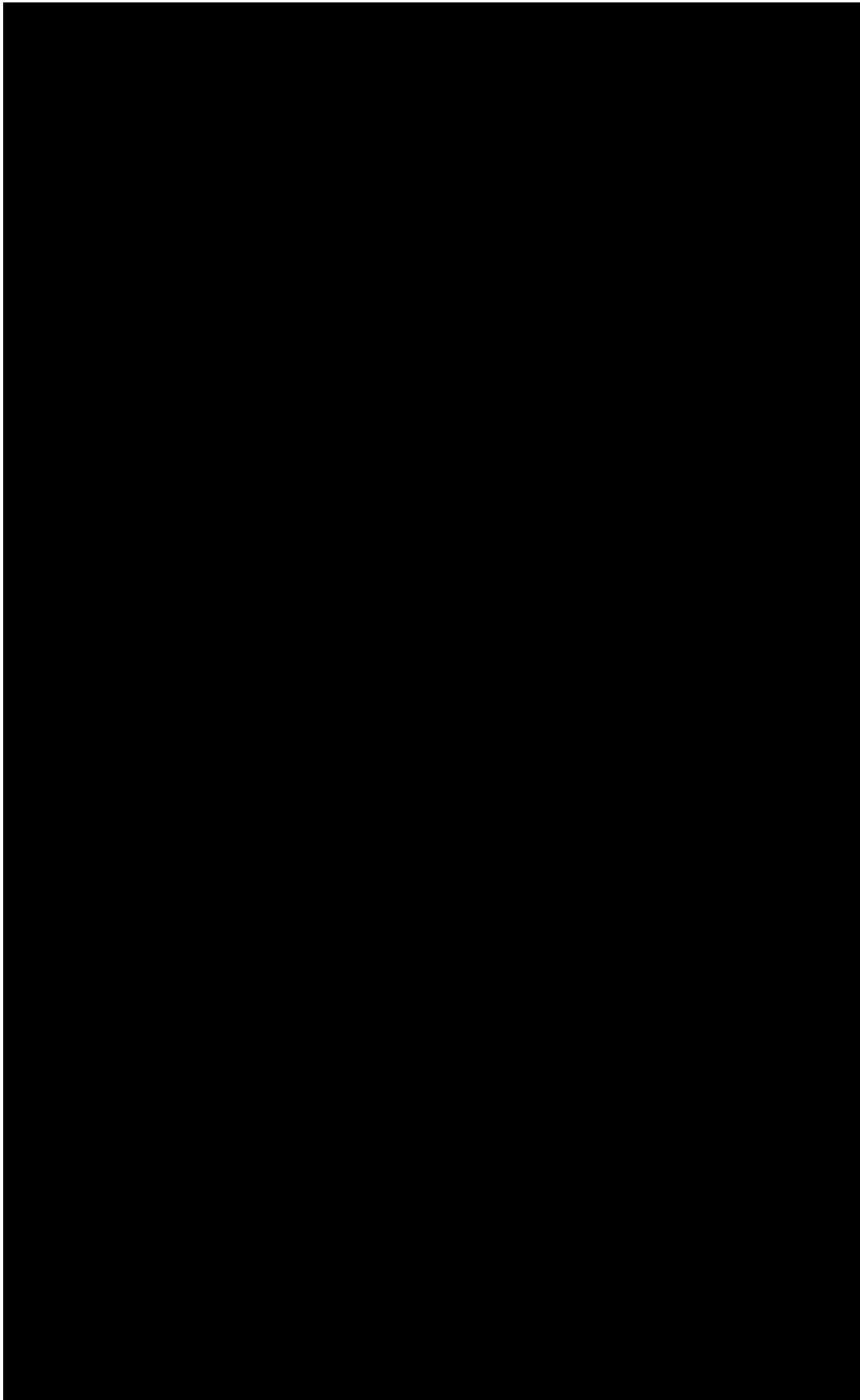


Fig. 33 Hovannes Zhorobian, *New Testament* (Paris, Dondey-Dupré, 1825).
Printed at the expense of the British and Foreign Bible Society.
Armenian New Testament's frontispiece showing the Armenian types
Lane attributed to Molé le jeune: these are two different sizes of Armenian
capital letters, and a size of lowercase letters in the Bolorgir style.
(Original size: 14 × 22,5 cm). Shown at original size. *The British Library*.

in Paris, informed the BFBS Committee that Hovhannes Zohrabian⁹¹ (1758–1829), a member of the Catholic Order of the Mekhitarist Congregation in Venice, was in Paris and well qualified to undertake the translation of the New Testament.⁹² Zohrabian was a learned Armenian, editor of the New Testament in Venice in 1789, and of a critical edition of the Old and New Testament in 1805 that was published at the expense of the Mekhitarist Congregation in St. Lazarus.⁹³ Following the recommendation of Professor Kieffer, the BFBS assigned to Zohrabian the translation of the New Testament in the Modern Armenian dialect of Constantinople. This was completed in 1824.

Initially, the BFBS intended to have a new Armenian type cut for the printing of this New Testament, under the direction of Zohrabian:

Let a new type be cast for the work, under the superintendency of Mr. Zohrab,⁹⁴ for this will greatly recommend the work, and the present types of the Royal Printing Office are very bad.⁹⁵

The types of the Royal Printing Office might have looked rather antiquated as they were merely refreshed copies of Salencques's 1633 type and revised versions of the types confiscated by Napoleon from the *Propaganda Fide* in the early 1800s.

The initial plan of the BFBS to have a new type cut for the occasion never materialised. However, the BFBS managed to have the New Testament printed with an original Bolorgir type that was produced in France and first used in 1823 [Fig. 33].⁹⁶ This was the first original Bolorgir type completed in France since 1632. Lane suggested on circumstantial grounds that the Parisian type founder Joseph Molé (ca. 1755–1841), known as Molé le jeune – one of the best punch-cutters of the nineteenth century – cut the Armenian Bolorgir type used for the 1824 New Testament.⁹⁷ However, the *Bulletin général et universel des annonces et des nouvelles scientifiques*, IV (1823) documents that attribution:

⁹¹ An Armenian from Constantinople.

⁹² Samuel Bagster and Sons, *The Bible of every land: a history of the Sacred Scriptures in every language and dialect into which translations have been made* (London, Samuel Bagster and Sons, 1848), p. 66.

⁹³ *Ibid.* p. 63.

⁹⁴ It is likely that Zohrabian needed to supervise the cutting rather than the casting of the type, and that the term casting is not appropriate. Also Lane observes: 'Zohrapian's [*sic*] oversight would hardly have been necessary unless it also applied to the cutting'. Lane, *The Diaspora*, p. 175.

⁹⁵ Thomas Pell Platt's manuscript history of the British and Foreign Bible Society's Bible translations, in the Society's archives at Cambridge University: BSA/E3/8/1, vol. 5, presented to the Society in August 1829. Quoted by Lane in: Lane, *The Diaspora*, p. 175.

⁹⁶ According to Lane, the type was probably finished by 1822 as it appears in 1823 in Jacob Saham Jrpetean's *Grammar de la langue arménienne*. Lane, *The Diaspora*, p. 175.

⁹⁷ Lane, *The Diaspora*, p. 175. Molé le jeune was a draftsman and painter in his youth. For 30 years he studied and worked as a punch-cutter and type founder. At the exhibition held at the Louvre in 1819, he presented a type specimen composed of 'two hundred and six characters' which he had cut: French, Greek, Hebrew, Rabbinic, Arabic, Syriac and Samaritan, poster titles, ornate double dotted letters, vignettes, fleurons and other symbols. At the exhibition held at the Louvre in 1823, Molé presented new proofs of his Greek, Arabic, Syriac, Samaritan and Hebrew characters, which he had improved under the direction of the leading Paris orientalist Louis-Mathieu Langlés (1763–1824). On this occasion Molé received a gold medal from Louis XVIII for the work carried out on oriental types. Andre Etienne d'Audebert de Ferussac, *Bulletin général et universel des annonces et des nouvelles scientifiques*, IV (Paris, 1823), p. 109. For more information on the Industrial exhibition of 1819 see: Michael P. Fitzsimmons, *From Artisan to Worker. Guilds, the French State, and the organization of labor, 1776–1821* (New York, Cambridge University Press, 2010), pp. 239–243.

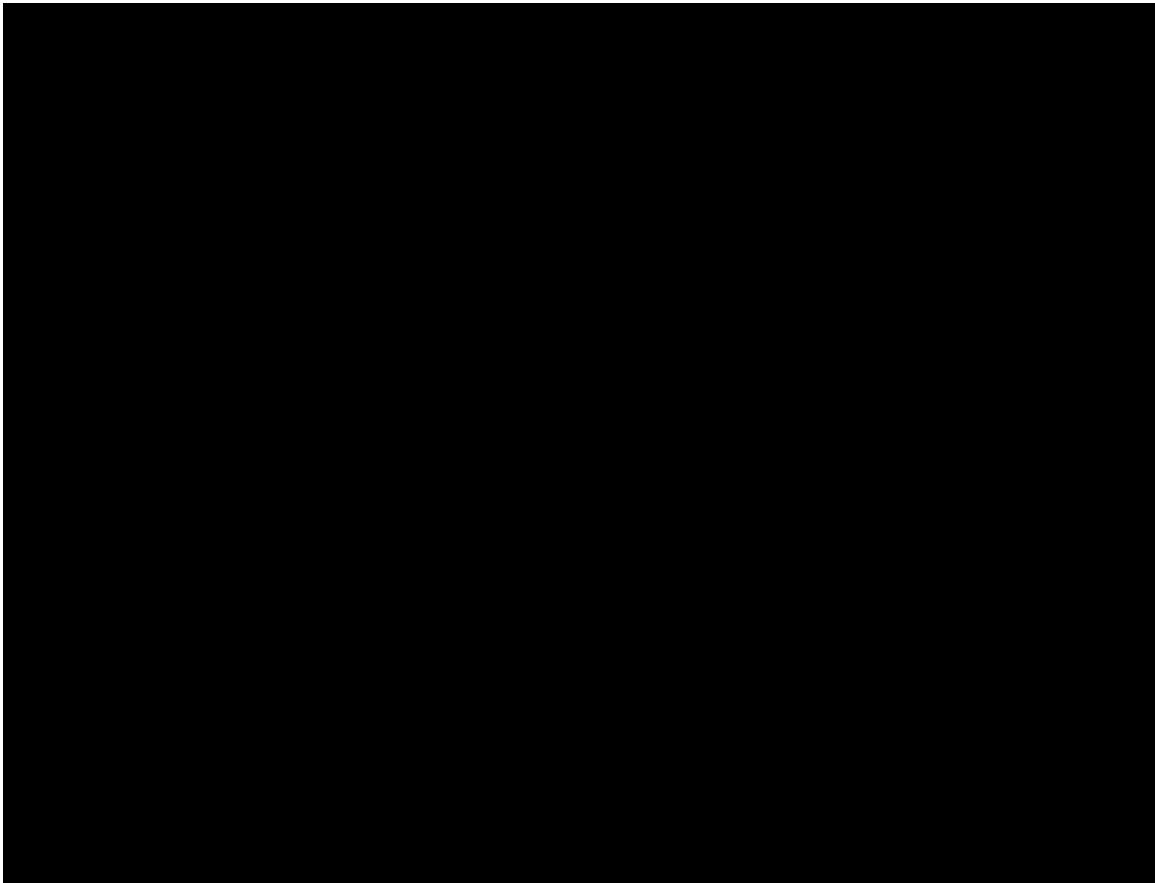


Fig. 34 Hovannes Zhorobian, *New Testament* (Paris, Dondey-Dupré, 1825). A spread of the New Testament in Classical and Modern Armenian, in parallel columns. The Modern Western version, with notes and references was prepared by H. Zhorobian, but the Armenian scholar J. St Martin examined the translation. (Original size: 14 × 22,5 cm). Shown at 50% of original size. *The British Library*.

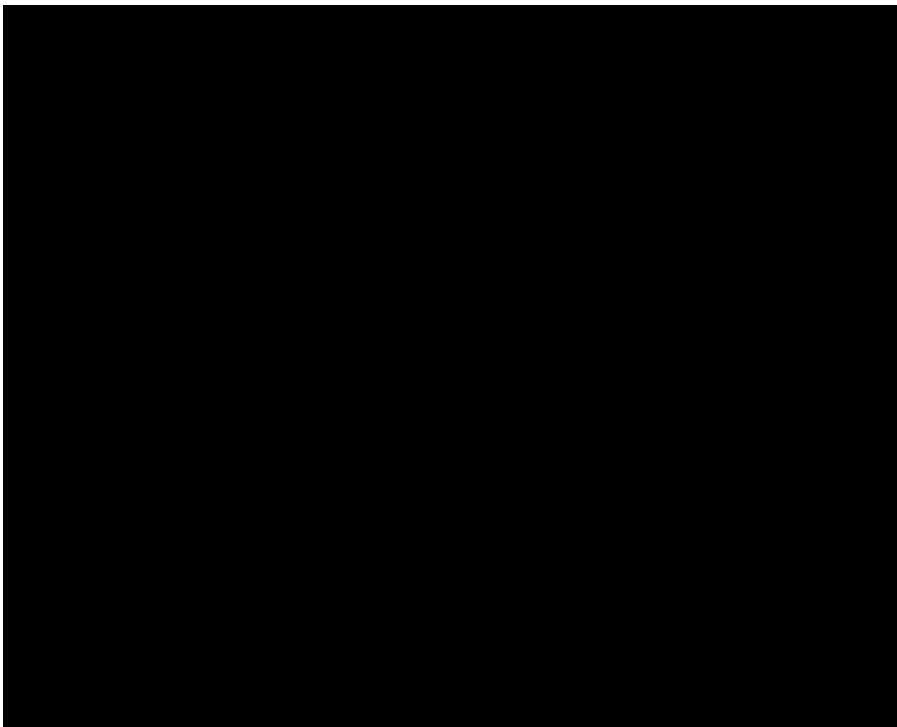


Fig. 35 Arewelts'i Vardan, *Choix de Fables de Vartan* (Paris, Dondey-Dupré, 1825). (Original size: 13x18cm). Shown at 50% of original size. *The British Library*.

Excepté aussi l'arménien et le samskrit que M. Molé se propose de nous donner incessamment, il a gravé,⁹⁸

The New Testament with the classical and the modern Western Armenian texts in parallel columns⁹⁹ was printed in 1000 copies at the printing establishment of Dondey-Dupré, printer of the *Société Asiatique* in Paris in 1825 [Fig. 34].

The decision of the BFBS to print and publish the New Testament at the press of Dondey-Dupré¹⁰⁰ in Paris was probably due to the acquaintance of Zohrabian and St. Martin¹⁰¹ with the printer. In fact, Zohrabian and St. Martin were members of the *Société Asiatique*, where Dondey-Dupré worked as a printer. The *Société Asiatique*, the first scholarly society of its kind in Europe was founded in Paris in 1822 to encourage the study of Asian languages through the publication of dictionaries and educational works.¹⁰² The initial issue faced by the French society in achieving their goals was the limited collection of oriental types owned by Dondey-Dupré. For example, when in June 1822 the *Société Asiatique* aimed to print their first Armenian publication, entitled *Choix de Fables de Vartan* [Fig. 35], the project had to be put on hold because the printing establishment did not have Armenian types. In 1823 the *Société Asiatique* decided to invest their own funds to enable Dondey-Dupré's printing establishment to expand their range of oriental types.¹⁰³ In the same year Dondey-Dupré, under St. Martin's instruction¹⁰⁴ acquired an Armenian fount to print the works for the *Société Asiatique*.¹⁰⁵

During the General meeting of the *Société Asiatique* on April 29 1824, particular attention was given to the Armenian types acquired by Dondey-Dupré:

98 'Except also the Armenian and the Samskrit that Mr. Molé intends to give us shortly, he engraved,' Ferussac, *Bulletin général et universel*, IV (Paris, 1823), p. 109 no. 171. Translated from French into English by the author. The notice no. 171, submitted to the *Bulletin général et universel*, IV by 'W', summarises an undated *Notice sur M. Molé jeune* published by Éverat in IV format. According to Lane, the undated *Notice* might have been published already in 1822. The author is grateful to John Lane for the suggestion.

99 Bagster and Sons, *The Bible of every land*, p. 66.

100 Dondey-Dupré (Paris 1794–1834) was a skilled typographer. Cercle de la librairie (France), *Bibliographie de la France, ou Journal général de l'imprimerie et de la librairie*, 45 (Paris, 6 November 1824), p. 678.

101 'Letters from the Rev. Dr. Pinkerton' (Paris, 14 February 1825), *The twenty-first report of the British and Foreign Bible Society* (London, 1825), p. 77. In 1826 St Martin had also supervised the cutting of M. Delafond's Armenian punches in 9 and 11 pt, described in the *Spécimen typographique de l'Imprimerie Royale* as 'Nouvelle gravure' (no. 106, no. 107, no. 109 and no. 110). See: Imprimerie Royale, *Spécimen typographique de l'Imprimerie Royale* (Paris, Imprimerie Royale, 1845).

102 The aims of the Asiatic Society were 'to encourage the study of the languages of Asia' by promoting the drafting and publication of dictionaries and educational works, 'to obtain Asian manuscripts, to disseminate them by way of the impression, to make extracts or translations', and 'to maintain relations and correspondence with societies (...) and with Asian or European scholars' (Regulation of 1822, § I art. 1 to 3). Retrieved from: <https://www.college-de-france.fr/site/bibliotheques-archives/bibliotheque-de-la-societe-asiatique.htm>. Accessed in December 2018.

103 By the end of 1824, the printing house of Dondey-Dupré had a substantial collection of oriental types, including Arabic, Armenian, Devanagari, Georgian, Hebrew punctuated and not punctuated, Hindustan, Malay, Manchu, Mongolian, Persian, Pashto (for the Afghan language), among others. Cercle de la librairie (France), *Bibliographie de la France, ou Journal général de l'imprimerie et de la librairie*, 47 (Paris, 20 November 1824), p. 678.

104 Société Asiatique (Paris, France), 'Nouvelle. *Société Asiatique*. Séance du 2 Juin 1823', *Journal Asiatique*, II (Paris, June 1823), pp. 376–377. The journal was printed and owned by Dondey-Dupré (Dondey-Dupré Père et Fils, Imp.-Lib. de la Société Asiatique).

105 *Ibid.* p. 376–377.

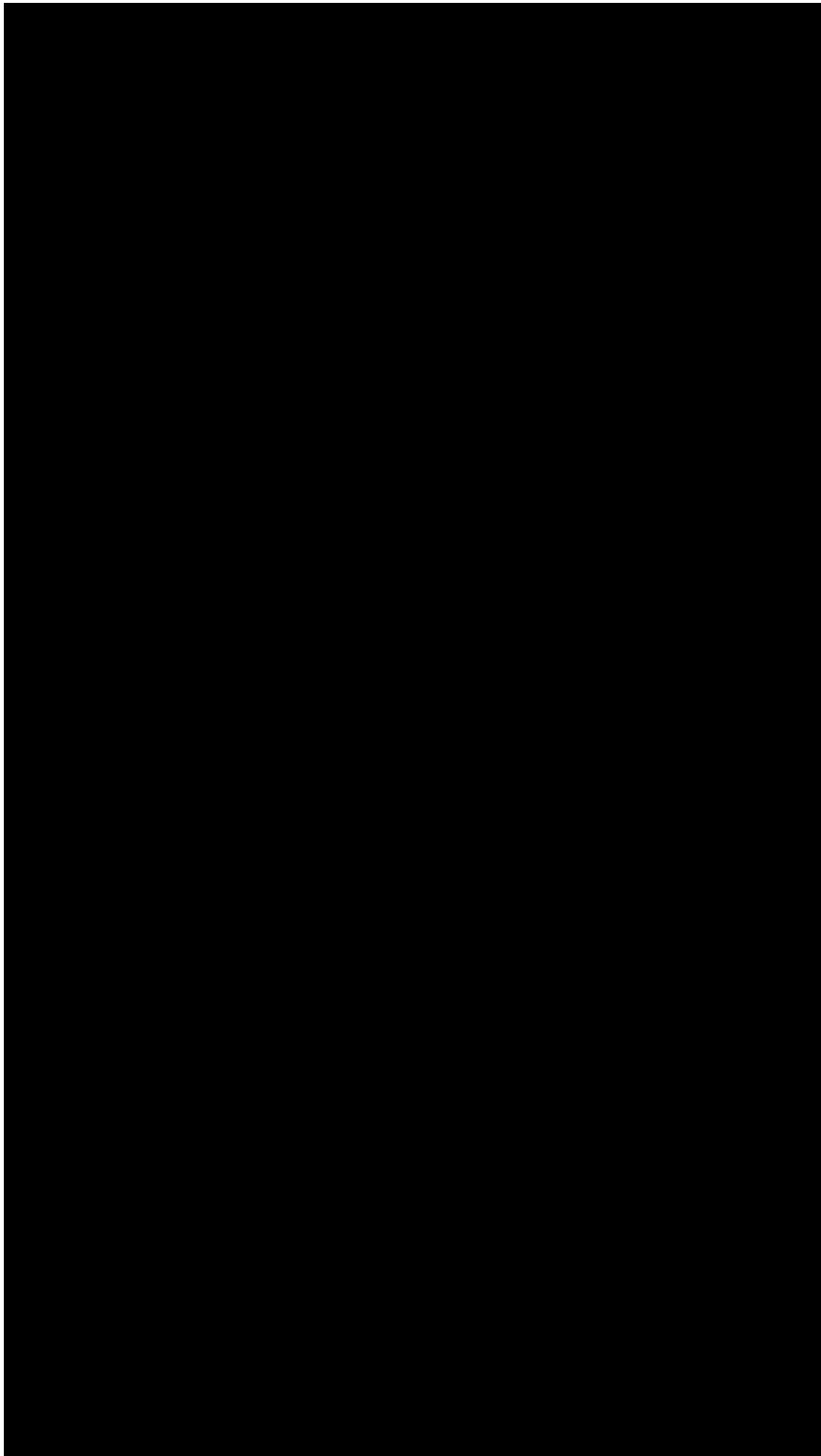


Fig. 36 Jacob Sahan Jrpetean (also called Cirbied), *Grammaire de la langue Arménienne* (Paris, Éverat, 1823). (Original size: 11,5 × 20 cm). Shown at original size. *The British Library*.

... It is necessary to distinguish the Armenian types, which they acquired. We owe them to an Armenian named Abro, who took the punches away to Egypt, but left in France the matrices necessary for casting.¹⁰⁶

An article on the *Asiatic Journal and Monthly Register for British India and its Dependencies*, which also published the outcome of the General Annual meeting of the *Société Asiatique* that took place on April 28 1824 in Paris, reveals that the Armenian who commissioned and perhaps provided either a manuscript or his handwriting to cut the type was Stephen Abro (Step'annos Abroyan), an Armenian from Alexandria (Egypt), who lived in Paris.¹⁰⁷ The Abroyan family (d'Abro)¹⁰⁸ was a nineteenth-century prominent Armenian family in Egypt, possibly of Bagratuni descent.¹⁰⁹ Step'annos (Smyrna 1804–Naples 1852) was the only son of Step'annos Abroyan, an Armenian merchant operating in Amsterdam.¹¹⁰ Abro left the matrices for casting, not claiming exclusive rights to the new type and even allowing the punch-cutter to cast type for others. This is also confirmed by the fact that the Armenian Bolorgir type had already been used in 1823 by Éverat, another Parisian printer and publisher, in Jacob Saham Jrpetean's¹¹¹ *Grammaire de la langue Arménienne* [Fig. 36].¹¹²

The statement made during the General Assembly represents well the situation of Armenian types at the beginning of the nineteenth century and gives an indication of the quality of the Armenian Bolorgir obtained by Dondey-Dupré in 1823:

¹⁰⁶ J. P. Abel-Rémusat, secretary of the *Société Asiatique*, reads the report on the work of the Board of the Asian Society and on the use of funds during the year 1823. J. P. Abel-Rémusat, 'Rapport sur les travaux du conseil de la Société Asiatique, et sur l'emploi des Fonds pendant l'année 1824, fait dans la Séance Générale du 29 Avril 1824', *Société Asiatique. Discours et rapports lus dans la Séance Générale annuelle du 29 Avril 1824* (Paris, 1824), p. 17. Translated from French into English by the author.

¹⁰⁷ Here Abro's name is mentioned in full: Stephen Abro, of Alexandria, Egypt. In 1824 Abro was still in Paris, and he was admitted as a member of the *Société Asiatique* during the General Annual meeting on 28 April 1825. 'Asiatic Society of Paris', *The Asiatic journal and monthly register for British India and its dependencies*, XX (London, August 1825), p. 211.

¹⁰⁸ Robert H. Hewsen, 'In search of Armenian nobility: five Armenian families of the Ottoman Empire', *Journal of the Society for Armenian Studies*, 3 (1987), pp. 108–109. The Abroyan family descend from an Armenian of Erzurum, named Astuatsarur. Astuatsarur had two sons, one of whose, Alp'iar, settled in Belgrade and became a merchant. After Abraham (d. 1676), one of Alp'iar grandsons emigrated to Constantinople, the family began to be known as Abroyan, or d'Abro in Italian. Abraham's son Matt'eos settled in Smyrna in 1688; Matt'eos sons operated in Amsterdam, receiving in 1717 permission from Peter the Great to trade (tax exempt) in Russia. Matt'eos's sons were: Abraham (1698–1719), Petros (d. 1765), and Step'annos (b. and d. dates unknown). The latter was the father of Step'annos (1804–1852) who, according to the *Société Asiatique*, owned the Armenian punches of Dondey-Dupré's types.

¹⁰⁹ Bagratuni was the most important princely dynasty of Caucasia (Bagratuni in Armenia, Bagrationi in Georgia), obtaining the kingly status in the ninth century and retaining it in Georgia up to the nineteenth century. *Enciclopedia Iranica*. Retrieved from: <http://www.iranicaonline.org/articles/bagratids-dynasty>. Accessed on 24 April 2019.

¹¹⁰ Step'annos (1804–1852) had two sons: Dikran Pasha d'Abro (Smyrna 1846–Smyrna 1904), who served as Minister of Foreign Affairs for Egypt (1891–1894), and Asian (Ermòpoli 1848–1917 Naples), known as Don Asian d'Abro Pagratide, who was recognized as a prince in Italy in 1882. Hewsen, 'In search of Armenian nobility', pp. 108–111.

¹¹¹ Jacob Saham Jrpetean (1772–1834) was also known as Cirbied.

¹¹² Lane, *The Diaspora*, p. 175.

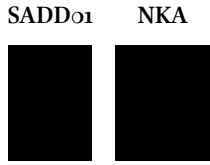


Fig. 37 In SADD₀₁ the design of letter ρ is totally different than in NKT. In SADD₀₁ the main loop of ρ is narrowed and rounded at the top.

SADD₀₁ is from Zhorobian's New Testament (Paris, Dondey-Dupré, 1825) and NKA (cut by Nicholas Kis) is from Schröder's *Thesaurus* (Amsterdam, 1711). Shown at 300% of original size.

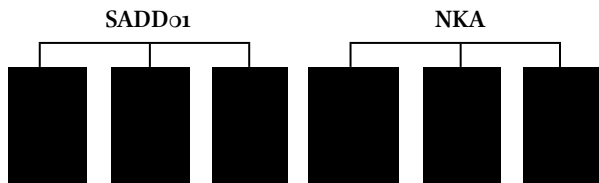


Fig. 38 Contrary to NKT, in SADD₀₁ the outstroke of vertical stems is prominent, sharp and turn towards the top.

SADD₀₁ is from Zhorobian's New Testament (Paris, Dondey-Dupré, 1825) and NKA (cut by Nicholas Kis) is from Schröder's *Thesaurus* (Amsterdam, 1711). Shown at 300% of original size.

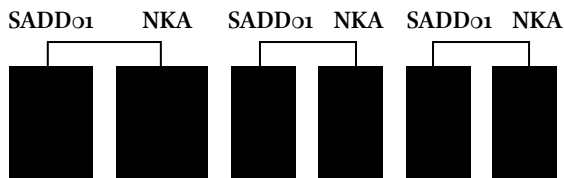


Fig. 39 Distinct features in SADD₀₁ are: the use of two strokes joining at 90° to design the hook of ũ; the semi-circular shape attached to the vertical stem at the baseline in b; the narrow semi-circular loop in j.

SADD₀₁ is from Zhorobian's New Testament (Paris, Dondey-Dupré, 1825) and NKA (cut by Nicholas Kis) is from Schröder's *Thesaurus* (Amsterdam, 1711). Shown at 300% of original size.

This character, without equalling the beauty of that which one possesses at Venice [the Armenian types the Mekhitarist Congregation acquired from the Amsterdam printing offices], is nevertheless superior to those which exist elsewhere.¹¹³

The Armenian Bolorgir type (here named SADD₀₁) used for the publications of the *Société Asiatique* is well executed, calligraphic, and has original uppercase letters.¹¹⁴ For about 100 years Salencque's Armenian had been used as a model for subsequent Armenian types produced in France,¹¹⁵ but the punch-cutter of SADD₀₁ departs completely from this model and creates something original, an alternative choice, likely to appeal to Armenians. However, SADD₀₁ might have looked unfamiliar to Armenians who were used to the Mekhitarist publications composed with the Amsterdam types.

Inevitably, new Armenian types would be compared against those of Venice, that were 'of a beauty, a sharpness and a perfection highly remarkable'.¹¹⁶ Although SADD₀₁ was a high quality design 'superior to those which exist elsewhere', it deviated from those of Venice for its calligraphic letter shapes, such as letter թ [Fig. 37]; its very thin and sharp outstroke in the descender of ի, ռ, ք [Fig. 38], the distinct features in letters զ, է and յ [Fig. 39].

While the *Société Asiatique* in 1823 had acquired Armenian types to print their publications in the Armenian language, it appeared that the printing of a New Testament was delayed since the *Société Asiatique* was not satisfied with the design of SADD₀₁ and its character set was not yet complete.

In order to put this character [the Armenian fount acquired by the printer of the *Société Asiatique*] in a usable state, we have had to make some additions to it, and certain changes that have required time. Now that it is complete, and has been brought to the degree of perfection of which it is susceptible, nothing could any longer hinder the publication [New Testament] ordered by the Society [the British and Foreign Bible Society], and presumably it could be enjoyed before the end of this spring.¹¹⁷

However, the Bolorgir type used by Èverat in Paris to print Cirbied's grammar (*Grammaire de la langue Arménienne*) in 1823 appears relatively complete: there were a

113 Abel-Rémusat, 'Rapport sur les travaux du conseil de la *Société Asiatique* (Paris, 1824), p. 17. Translated from French into English by the author.

114 The observations made on the quality of this Armenian Bolorgir type are also supported by Lane. Lane, *The Diaspora*, p. 175.

115 See for example the Armenian type presented by Nicolas Gando in a 1758 specimen (probably cut by Claude Lemesle). Claude Lemesle was a publisher and type founder in Paris. He bought Jean Cot's foundry (Cot père, mère, et fils) in 1737, which he sold to Nicolas Gando in 1758. Later he started the business again in Avignon. E. C. Bigmore, & C. W. H. Wyman, *A Bibliography of Printing* (Cambridge, Cambridge University Press, 2014), vol. 1, p. 419.

116 'Ils sont d'une beauté, d'une netteté et d'une perfection très-remarquables'. *Société Asiatique* (Paris, France), *Journal Asiatique*, II (March 1823), p. 184. Translated from French into English by the author.

117 Abel-Rémusat, 'Rapport sur les travaux du conseil de la *Société Asiatique* (Paris, 1824), p. 18. Translated from French into English by the author.

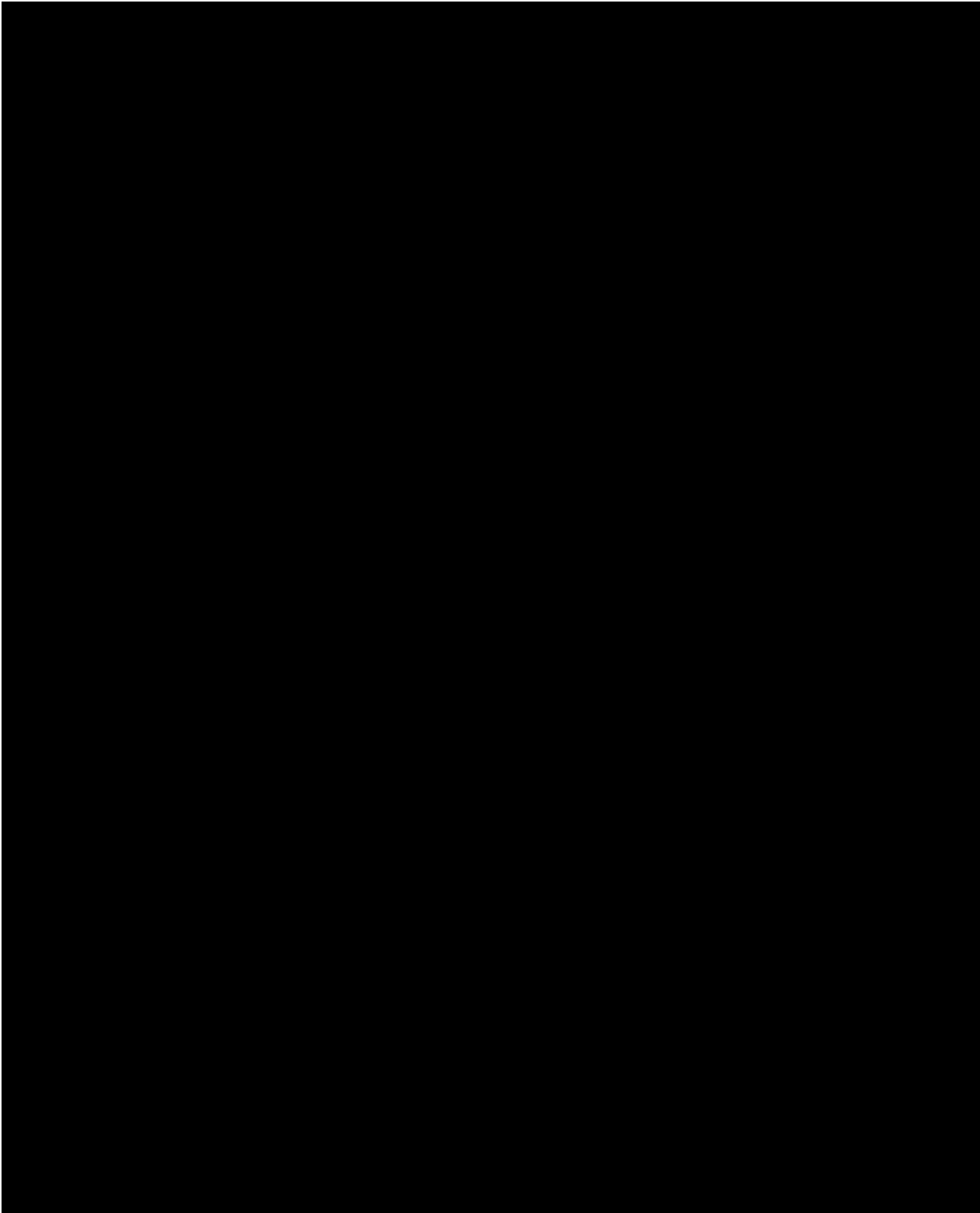
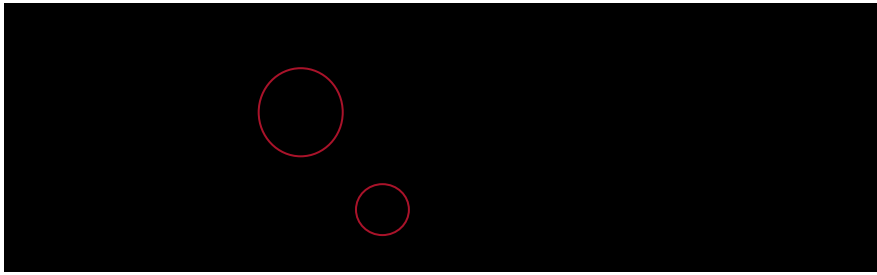


Fig. 40 Inset in Jacob Sahan Jrpetean (also called Curbied), *Grammaire de la langue Arménienne* (Paris, Éverat, 1823). (Original size of the inset: 28 × 34 cm). Shown at 60% of original size. *The British Library*.

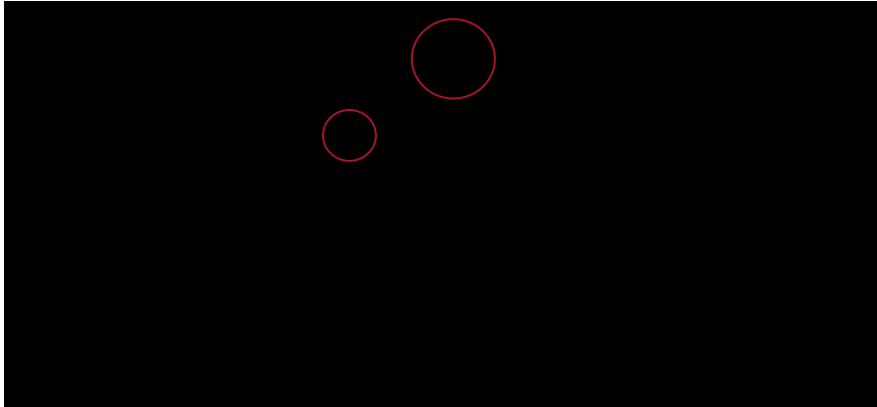
significant number of alternate letters created to improve the composition (mainly to avoid inconsistent letter-spacing), ligatures and punctuation marks (see table: alphabet Arménien [Fig. 40]). Furthermore, the *Grammaire de la langue Arménienne* had already two sizes of capital letters [Fig. 41], which in the New Testament except for the design of the capital letters U, they both remained unchanged [Fig. 42]. If significant changes and additions were made to the fount by the *Société Asiatique*, these must have occurred before 1823. It is possible that the punches, which the Armenian Abro had taken to Egypt were only for lowercase letters and perhaps even without alternate characters and ligatures. It is also possible that the manuscript (or printed) model used to design capital letters was different to the lowercase. The designs of lowercase and uppercase letters do not match in style and quality: the overall design used for uppercase letters (in both sizes) is atypical, and not as well executed as in the lowercase. With regard to uppercase letters, the punch-cutter seems to have reproduced the handwriting of someone who was not familiar with the Armenian script; it is even possible that uppercase and lowercase letters were cut by different hands. Some noticeable features that depart from tradition are: the wide proportion of some letters, such as Չ and Հ [Fig. 43], the unusual design of Թ [Fig. 44], the semicircle used for the middle bar of Ե [Fig. 45], the curvature of the stroke of Ի, which extends to the right from the middle, and its ending in an upward tick [Fig. 46]. Furthermore, the most remarkable unusual feature in the uppercase letters is the outstrokes at the bottom of vertical stems, such as in Ի, Ի, Ո and Ը. These outstrokes (at the bottom of uppercase letters) are not found either in the manuscript tradition or in the Amsterdam types; instead they seem closer to serif Latin types [Fig. 47]. It seems that the Bolorgir and Notrgir founts attributed by Lane to Molé were the result of collaborative work: evidence is provided by Zohrabian in an article published by St. Martin on the *Journal Asiatique* (August 1823), entitled ‘Response de M. Zohrab, Doctor arménien, à une Brochure publiée par M. Cirbied’ and in 1830 by Cirbied in the preface to *Denis de Thrace*. In the *Journal Asiatique* Zohrabian criticises Cirbied’s attitude: not only had Cirbied praised his own grammar in the pamphlet, but he also wrote of the effort he had put into cutting and casting types. While he did not participate in the production of the Bolorgir type, he seems to have provided his own drawings to a punch-cutter to prepare the Notrgir type and to have superintended its cutting.¹¹⁸ A few years later (1830), Cirbied had stated in the preface to *Denis de Thrace* that the cutting of the Armenian types was overseen by the leading Paris orientalist Louis-Mathieu Langlés (1763–1824).¹¹⁹ It is possible that either the uppercase or the lowercase letters of the Bolorgir were cut under the direction of Langlés, but due to the difference in quality it is unlikely that he worked on both.

118 ‘He did not oversee the cutting of his main character, the same as we have here. Because his main character, the same as we use here, it is not he who engraved. The Italic character that M. C. [Monsieur Cirbied] has had executed following his own drawings and cast under his direction is bad in every respect’. Translated from French into English by John Lane. Hovannes Zhorobian, ‘Response de M. Zohrab, Doctor arménien, à une Brochure publiée par M. Cirbied’, *Journal Asiatique*, III (September 1823), pp. 186–187.

119 ‘Cette traduction, imprimée chez Éverat, avec de beaux caractères arméniens, fondus par les soins et sous la direction de feu Langlés’. (‘This translation, printed by Éverat, with beautiful Armenian characters, cast with care and under the direction of the late Langlés’) Translated into English by the author. Cirbied, *Grammaire de Denis de Thrace*, (Paris, Éverat, 1830), preface (pp. III–IV).



a



b

Fig. 41 Only capital letters U in (b) appears to be different than in (a).

Letter U is marked with a red circle and also illustrated in (Fig. 42).

a Jacob Sahah Jrpetean (also called Cirbied), *Grammaire de la langue Arménienne* (Paris, Éverat, 1823). Shown at original size. *The British Library*.

b Hovannes Zhorobian, *New Testament* (Paris, Dondey-Dupré, 1825). Shown at original size. *The British Library*.



a

b

a

b

Fig. 42 Different designs of capital letter U.

a Jacob Sahah Jrpetean (also called Cirbied), *Grammaire de la langue Arménienne* (Paris, Éverat, 1823). Shown at 200% of original size. *The British Library*.

b Hovannes Zhorobian, *New Testament* (Paris, Dondey-Dupré, 1825). Shown at 200% of original size. *The British Library*.

SADD01 SADD01



Fig. 43 Letters Q and Z are excessively wide.

All images on this page are:
SADD01 is from Zhorobian's New Testament (Paris, Dondey-Dupré, 1825).

NKA (cut by Nicholas Kis) is from Schröder's *Thesaurus* (Amsterdam, 1711).

All images are shown at 200% of original size.

SADD01 NKA



Fig. 44 Unusual design of letter O in SADD01.

SADD01 NKA



Fig. 45 The semicircle is here used for the middle bar of letter b.

SADD01 NKA

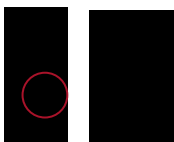


Fig. 46 The curvature of the stroke of letter h.

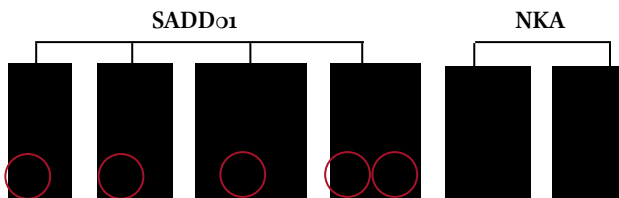


Fig. 47 The unusual outstroke at the bottom of vertical stems in SADD01 is highlighted by a red circle.

2. THE SPREAD OF BOLORGIR TYPES THROUGH MISSIONARY AND SCHOLARLY WORKS

SADD₀₁ was first used for scholarly works in Paris, then by Protestant missionaries for scriptural and other religious works. SADD₀₁ is a well executed type, but for nineteenth-century printers and scholars it did not reach the quality of those of the Mekhitarists in Venice. The authoritative work of the Mekhitarists contributed to the establishment of the Amsterdam types as benchmarks against which to evaluate the quality of subsequent Armenian Bolorgir types for scholarly and scriptural works.

2.4.2 Bolorgir Armenian types at the American Board of Commissioners for Foreign Missions: Malta and Smyrna

A missionary press that printed scriptural and religious works, and also schoolbooks for Armenians in the Middle East, taking particular care in its choice of Armenian Bolorgir types, was the American Board of Commissioners for Foreign Missions (ABCFM). Created in 1810, the ABCFM was one of the first American Christian missionary organisations, as well as the largest and most important in the 19th century.¹²⁰

The ABCFM's interest in Armenian readers began in 1822¹²¹ when the ABCFM established a printing press in Malta.¹²² In this then politically secure Mediterranean hub,¹²³ the press would provide all the region's missions¹²⁴ with publications in English, Modern Greek, Greek-Turkish and Armenian-Turkish.¹²⁵ However, the English government had forbade them to distribute any publications on the island ensuring that the American missionaries would not instil into Maltese people social and political ideas which could be unfavourable to the English rulers.¹²⁶

From the beginning, the ABCFM's press in Malta printed books for their missions. However, it was not until 1826, when the ABCFM recruited Homan Hallock (1803–1894), son of a Massachusetts Congregational minister, that the press had a regular and competent printer. Hallock had trained as a printer at the Flag and Gould printing office in Andover, Massachusetts, one of the few printing establishments in the USA to compose non-Latin types.¹²⁷ Printing with Armenian characters at the ABCFM's press

¹²⁰ It consisted of participants from Reformed traditions such as Presbyterians, Congregationalists, and German Reformed churches.

¹²¹ The first mission press of the ABCFM was established in 1816 in Bombay. American Board of Commissioners for Foreign Missions, 'Seventy Years in the Maratha Mission,' *The Missionary Herald*, LXXX, 8 (August 1884), p. 301.

¹²² Malta was a Catholic country which voluntarily became part of the British Empire in 1808.

¹²³ According to Anderson, printing could not be done safely at Smyrna or at Beirut. Rufus Anderson, *History of the Missions of the American Board of Commissioners for Foreign Missions to the oriental churches* (Boston, Congregational Publishing Society, 1872), vol. 1, p. 73.

¹²⁴ In the Mediterranean the ABCFM had stations in Malta, Greece, Syria and Constantinople. The Malta press served to provide publications for all these stations, *Seventh annual report of the American Tract Society* (New York, the American Tract Society, 1832), p. 37.

¹²⁵ Anderson, *History of the Missions*, vol. 1, p. 74. By 1832, the last year of activity of the ABCFM's Malta press, the office had three presses and besides Latin, Armenian and Greek types it had Arabic as well (in 1829, the Americans acquired an Arabic type from London). *Seventh annual report of the American Tract Society* (New York, the American Tract Society, 1832), p. 37.

¹²⁶ (Goodell, wrote from Valletta on July 24 1823.) E. D. G. Prime, *Forty years in the Turkish Empire; or, memoirs of Rev. William Goodell* (New York, Robert Carter, 1878), p. 75. According to William Goodell the English government was afraid of the influence of missionaries. Forbidding the circulation of missionary works in Malta demonstrates that in the nineteenth century publications could have a major impact on social and political ideas.

¹²⁷ James F. Coakley, 'Homan Hallock, punchcutter', *Printing History* 45, XXIII, 1 (2003), p. 19.

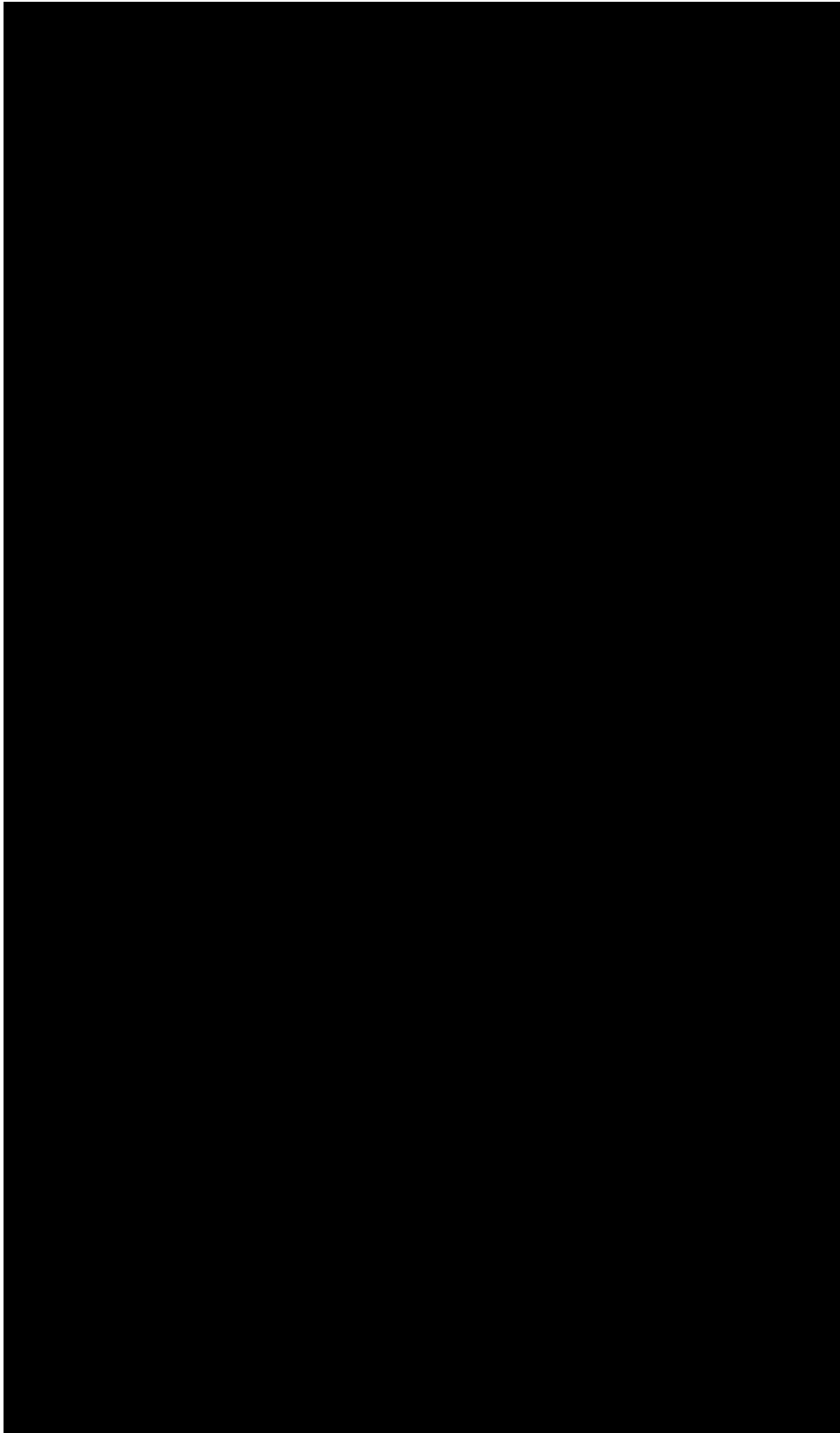


Fig. 48 The New Testament (Malta, the American Board of Commissioners for Foreign Missions, 1831). (Original size: 12 × 21cm). Shown at original size. *The British Library*.

in Malta commenced in 1827, when the American missionary organisation managed to purchase an Armenian fount.¹²⁸ Acquisition of Armenian types was entrusted to Rev. Jonas King,¹²⁹ who joined the ABCFM in 1822, while he was in Europe. After obtaining funds from donors in England and France, King arranged to have Armenian types cast in Paris.¹³⁰ In 1827 he purchased Armenian types from the Parisian printer Dondey-Dupré.¹³¹ King needed to find an Armenian fount that would be ‘best suited to the people of the East’:¹³² not only does this indicate that the ABCFM was attentive to the needs of its audience, but also that the Armenian types purchased from Dondey-Dupré must have been considered of high quality, familiar to Armenians in Europe and consequently expected to be suitable for those in the Near East.¹³³

Besides five small religious tracts in Turkish printed with Armenian characters, presumably at the end of 1828,¹³⁴ the most important work produced by the ABCFM in Malta was the New Testament in Armeno-Turkish¹³⁵ published in 1831 [Fig. 48]. Analysis of types used in this publication reveals that the ABCFM had purchased two sets of uppercase letters,¹³⁶ and one size of lowercase letters in Bolorgir style. These were the types that Dondey-Dupré had acquired for his printing establishment and used to print Zohrabian’s New Testament for the British and Foreign Bible Society (BFBS) in 1825 in Paris.

The 1831 publication, known as ‘Goodell’s version’,¹³⁷ was a revision of the Armeno-Turkish New Testament first published in 1819 by the Russian Bible Society in St. Petersburg. The New Testament in Armeno-Turkish was printed by the ABCFM at the expense of the BFBS in 2500 copies, a greater number than Zohrabian’s New Testament printed in 1825, suggesting that it was meant to address a wider audience. Indeed, since Armenians ‘universally speak the Turkish Language, and read it with the Armenian

128 The term Bolorgir is only used with reference to lowercase letters. In manuscript traditions, the style employed for capital letters was called Erkat’agir.

129 In 1822 King was in Paris to study Oriental languages. In the same year he replaced the deceased Levi Parson as a missionary for the Palestine Mission, and offered his services to the Board for three years. He arrived in Palestine in April 1823. See: Mrs F. E. H. Haines, *Jonas King, missionary to Syria and Greece* (New York, American Tract Society, 1879), pp. 46–50, 66; American Board of Commissioners for Foreign Missions, *The Missionary Herald*, XX, 3 (March 1824), p. 65.

130 He also managed to acquire one of Arabic in London. American Board of Commissioners for Foreign Missions, ‘Western Asia: new founts of types for the Mission Press’, *The Missionary Herald*, XXIII, 11 (November 1827), pp. 343–344.

131 *The Missionary Register* (February 1828), p. 57. King wrote on 13 June 1827: ‘I have just ordered a fount of Armenian’ and would get it ‘according to the agreement made by Dondey Duprés and myself’. Quoted in Lane, *The Diaspora*, p. 214, footnote 6.

132 American Board of Commissioners for Foreign Missions, *The Missionary Herald*, XXIII, 11 (November 1827), p. 343.

133 And also for Turkish speakers. Books were written in Turkish with Armenian characters: this was either to help Turkish-speaking Armenians who had lost their own language to preserve their culture – or it was for those who wished to write in Armenian characters rather than in the complicated writing system of Arabic. Throughout the nineteenth century a large volume of literature was published in Turkish with Armenian characters.

134 Lane, *The Diaspora*, p. 178.

135 Uses the pronunciation of Western Armenian as the basis for writing.

136 The New Testament published in 1831 uses the version of capital letter U, which was used by Éverat, but not by Dondey-Dupré.

137 William Goodell, a missionary of the ABCFM, had undertaken the task of providing a Turkish translation of the complete Bible in the vernacular, while H. D. Leeves, agent of the British and Foreign Bible Society, revised the version of the New Testament in Armenian vernacular. Nersessian, *Catalogue of early Armenian books*, p. 118, no. 455.

2. THE SPREAD OF BOLORGIR TYPES THROUGH MISSIONARY AND SCHOLARLY WORKS

Character',¹³⁸ not only were the prospective readers of this publication Armenian speakers, but also Turkish ones. Publications in Turkish with Armenian characters were common among Turkish-speaking Armenians: they enabled Armenians to preserve their culture even though they were forced to abandon their own language. Therefore, ABCFM missionaries were likely to look for Armenian types that could well reflect Armenian identity.

In 1829 the ABCFM decided to produce schoolbooks for elementary schools¹³⁹ rather than merely focus on scriptures and other works of a religious nature.¹⁴⁰ This was necessary to improve literacy¹⁴¹ and to provide a solid foundation for instruction. This diversification of production meant that the ABCFM's printing establishment in Malta had to extend its collection of types. Unable to find Armenian types, the printer Hallock took the initiative to cut its own large Armenian fount for school cards. However, since Hallock had been trained as a printer rather than as a punch-cutter, he immediately encountered some technical problems that prevented him from further developing the type, and forced him to let another craftsman finish the job several years later.¹⁴²

In the meantime, in 1833 the printing office of the ABCFM in Malta was relocated to Smyrna¹⁴³ (Izmir) and some of the presses and materials were shipped there.¹⁴⁴ Finally, in 1836¹⁴⁵ Hallock and his associates, who had continued to look for Armenian types, obtained 'two founts of great beauty' from the Mekhitarists in Vienna.¹⁴⁶ The ABCFM Committee¹⁴⁷ even authorised Hallock to have Armenian types cut in America, Brooklyn (New York) by Richard Starr,¹⁴⁸ one of the best punch-cutters in the country. Towards the end of the 1835, Hallock left Smyrna to work closely with Starr on the cutting of Armenian. Hallock commissioned Starr to devise a fount of Pica Armenian for the

138 William Goodell reports to the ABCFM. Church Missionary Society, 'Survey of the Protestant missionary stations throughout the world', *The Missionary Register* (February 1828), p. 57.

139 Anderson, *History of the Missions*, vol. 1, p. 73.

140 This Society printed books in ten languages, including works of a religious nature, hymnals and moralistic tales, but also schoolbooks on grammar, spelling, geography and mathematics, and in the later 19th century college-level scientific and medical texts. In addition, the Society published periodicals in five languages, dictionaries and volumes on literature and history, amounting to eight million books by 1914, including four million Bibles. Anthony L. Smyrniaios, 'Manuals of conversion: Protestant missionary schoolbooks in Greece during the 19th century', *History of Education & Children's Literature*, III, 1 (2008), p. 123.

141 Anderson, *History of the Missions*, vol. 1, p. 73.

142 Coakley suggests that Starr might have also completed the punches for the large Armenian (Canon) which Hallock had begun to cut in Malta for school cards in 1833. Coakley, 'Homan Hallock, punchcutter', pp. 21–22.

143 Daniel Temple, the missionary in charge of the Malta station, the printer Hallock, and the journeyman printer William Griffitt were sent to Smyrna.

144 The company decided that Armenian and Greek publications should be produced at Smyrna and overseen by Hallock, while Arabic in Beirut by Eli Smith. The typographic material for Arabic was shipped to Beirut.

145 Hallock arrived in America about September 1835 and arrived in Smyrna at the beginning of June 1836. Coakley, 'Homan Hallock, punchcutter', p. 22.

146 Lane, *The Diaspora*, p. 180.

147 Expend about five thousand dollars in punches, matrices, and types for Armenian, Greek and Hebrew and to purchase other material for the press.

148 He was also a type founder.

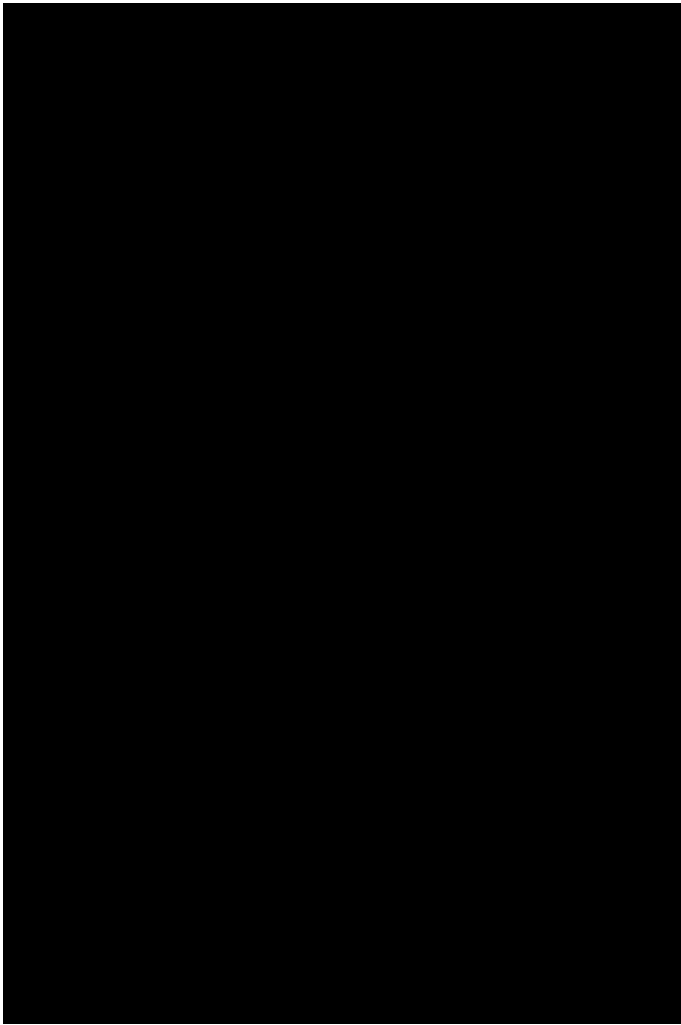


Fig. 49 *Almanac* (Smyrna, Homman Hallock, 1839).
(Original size: 9 × 13 cm). Shown at original size. *The
British Library*.

price of \$728.¹⁴⁹ According to Lane, Hallock would have commissioned Starr to finish his large type for school cards and to cut punches for a Pica Notrgir as well. However, since Starr cut about 200 punches and struck about 300 matrices, which he delivered to Hallock with some cast types in March 1836,¹⁵⁰ it is unlikely that Starr alone was able to cut punches and strike matrices for a size of Notrgir, and two sizes of Bolorgir founts in seven months.

According to Lane, the ABCFM needed new Armenian types since the only Bolorgir type they had (SADD01) was rather large to produce a Bible or even a New Testament in an inexpensive small format.¹⁵¹ However, it is more likely that the issue with SADD01 was not its size, but its style, which would not have met the expectations of Armenians in the Near East. For instance, in the *Report of the American Board of Commissioners for foreign missions* (1836) it is said that Hallock was sent from the ABCFM to America to supervise the cutting of new Armenian types that 'should be adapted to the taste of the Armenians, they having been rendered somewhat difficult to please on this point by the beautiful type employed in the books issued from the Catholic-Armenian press at Venice.'¹⁵² Indeed, the Bolorgir type Hallock had commissioned from Starr was a Pica (12 pt Pica),¹⁵³ a fount slightly smaller than SADD01 (St. Augustin,¹⁵⁴ 12 pt).

It was in 1838 that a small size of a Bolorgir fount, forwarded by the British and Foreign Bible Society, reached the ABCFM's press in Smyrna.¹⁵⁵ This was Richard Watts's Vienna Small Pica, which had already been used in London. A printed example of this type can be seen in the *Almanac* (for the year 1840),¹⁵⁶ a pocket book, printed by Homan Hallock for the ABCFM in 1839. Even though this was the smallest size available at the ABCFM in Smyrna, the narrow inter-line spacing in the *Almanac* implies that this size was inadequate for a book in such a small format [Fig. 49].

149 According to Coackley, Starr probably had also completed the punches for the large Armenian (Canon), Hallock had began to cut in Smyrna for school cards. Coakley, 'Homan Hallock, punchcutter', p. 22.

150 Lane, *The Diaspora*, p. 179. Considering the average of one punch a day achieved in the sixteenth century, Starr could have produced 200 punches in seven months, but not 300 matrices in the same period. Lane supports my observation and suggests that the work could have been accomplished in seven months if Starr would have cut three punches per day, and someone else would have done the other work.

151 Lane, *The Diaspora*, p. 178.

152 American Board of Commissioners for Foreign Missions, *Twenty-seventh annual report of the American Board of Commissioners for Foreign Missions* (1836), p. 45.

153 It corresponds to the French Cicéro (11 pt). All measurements are approximate. See the 'synopsis of the names for sizes of type, used in this book' in Vervliet, *Sixteenth-century printing types of the Low Countries*, p. 16.

154 According to Lane, the fount bought in Paris was an Augustin. Lane, *The Diaspora*, p. 178.

155 Ibid. p. 180.

156 The lowercase letters in Bolorgir style used in the *Almanac* and those in Gilbert & Rivington's *Specimens of some of the Oriental and foreign type now in use at Gilbert & Rivington's* (1875) match in size and style. See: Gilbert & Rivington's specimen on p. 182 of this thesis.

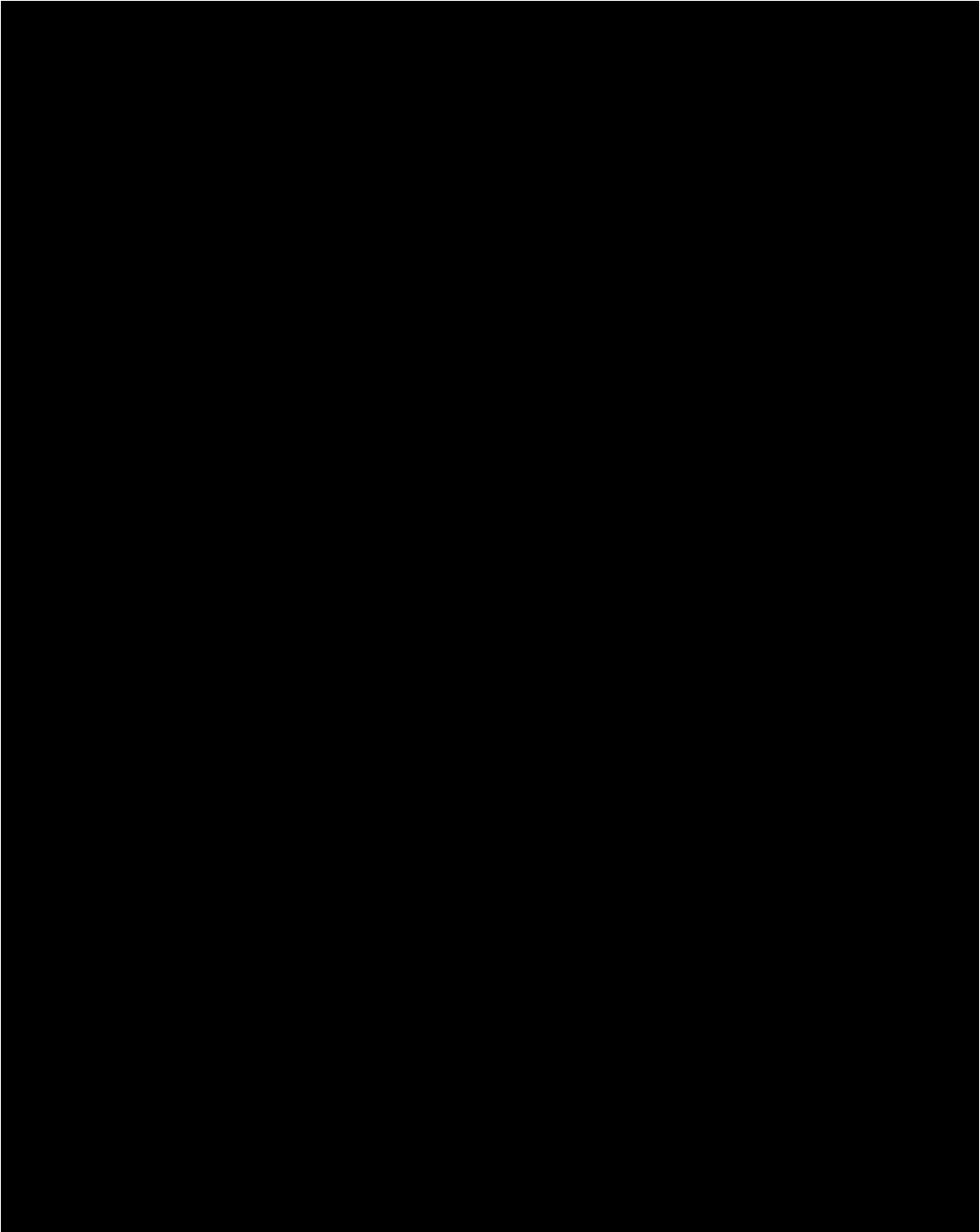


Fig. 50 *Rule of exercise* (Smyrna, ABCFM, 1837). Canon Armenian cut by Homan Hallock and Richard Starr. (Original size: 40 × 50 cm). Shown at 40% of original size. *Greenstone digital library* (http://greenstone.flib.sci.am/gsd/collect/armbook/books/kanonq_িরeravarjutyam1837_index.html).

Hallock's approach to Bolorgir Armenian types

Hallock's approach to Armenian types can be seen from his large Bolorgir type – here described as HHC – which the ABCFM began to use in 1837 for school cards and schoolbooks. In 1837 the ABCFM published the book *Rules of exercise*,¹⁵⁷ a publication in Armenian including the Armenian alphabet, a list of useful conversational words and passages on natural history and on the Holy Scriptures [Fig. 50]. At first glance the Bolorgir type seems to follow the Amsterdam tradition; yet it is possible to spot differences between HHC and the traditional types used by the Mekhitarists in Venice. For example, the sharp pointy outstroke which characterised letters g and j in Van Dijck's type (CVB), is substituted by a triangular ending stroke in HHC [Fig. 51]. Moreover, in HHC the lower part of Է was shortened [Fig. 52]. Furthermore, the vertical proportion of letter շ was unusual: the upper part of the letter was too small in relation to the lower one (the letter was also incorrectly cast, the letter should not exceed the base character height) [Fig. 53]. Other noticeable differences are the high contrast of HHC [Fig. 54] and the design of letter Ճ. Not only was Ճ different from the 'beautiful fount of Venice', but also unconventional in manuscript tradition [Fig. 55]. If Hallock and the craftsman who cut HHC used the Venice types in the Amsterdam style as their prototype (they might have had some publications available), the differences observed suggest that their aim was to produce something more original than the design of the Amsterdam types from Venice.

Assuming that HHC was cut by Starr and supervised by Hallock, as Coakley has suggested, it means that the design of this type goes far beyond the initial instructions given to Hallock by the ABCFM: to conceive Armenian types that could please Armenians, who were used to the traditional founts of the Mekhitarists in Venice. The fact that Hallock developed something different from what he was instructed might be explained by his 'eccentric, sarcastic, and resentful of authority' personality.¹⁵⁸ The excessive length of the horizontal bar in some characters implies that neither Hallock or the punch-cutter mastered the Armenian script: in general, in order to easily distinguish letters that share similar design constructions, such as q and q, such elements need to be emphasised [Fig. 56]. However, it was unnecessary in others, such as in letters p, Է, and ք [Fig. 57]. Thus, the long horizontal bar in those letters did not improve

¹⁵⁷ In its online database (Koha online catalog) the National Library of Armenia regards the Press of the Philanthropic Society of the Americans as the publisher of *Rules of exercise* (<http://haygirk.nla.am/cgi-bin/koha/opac-detail.pl?biblionumber=117906>. Accessed in April 2019). However, the book was published by the ABCFM and printed at the Press of the Philanthropic Society of the Americans (*Rules of exercise* was the fifth Armenian book printed at this press). From 1838 onwards, Armenian books published by the ABCFM would bear the printing houses' imprints: 'Homan Hallock', and 'Kuliemos Krifit'. The author is grateful to Dr Gagik Sthepan-Sarkissian for verifying the accuracy of her translation of the title Կանոնք իրերաւարժուութեան into English, and for helping her to clarify the imprint 'Press of the Philanthropic Society of the Americans' on the cover and at the foot of each sheet in *Rules of exercise*. She is also grateful to Dr Sarkissian for bringing the information provided by the digital library of the Fundamental Scientific Library of the National Academy of Sciences to her attention: (<http://greenstone.flib.sci.am/gsd/cgi-bin/library.cgi?e=d-01000-00---off-0publish-00-1---0-10-0---0---direct-10---4-----0-11--11-en-50---20-about---00-3-1-00-0--4--0--0-0-11-10-outfZz-8-00&a=d&c=publish&cl=CL1&d=HASH01daaa45b1f8d66d5adc44>. Accessed on 11 May 2019).

¹⁵⁸ Geoffrey Roper, 'Arabic printing in Malta 1825-1845: its history and its place in the development of print culture in the Arab Middle East', PhD thesis, Durham, Durham University, 1988, p. 117.

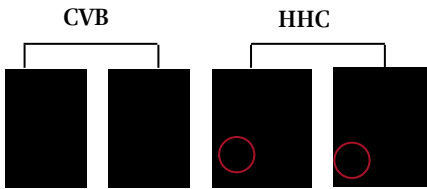


Fig. 51 The triangular ending stroke in HHC is highlighted by a red circle.

All images on this page are:

HHC is from *Rule of exercise* (Smyrna, ABCFM, 1837). Shown at 80% of original size.

CVB is from Oskan Yerevanoz, the Armenian Bible (Amsterdam. St. Ejmiacin and St. Sargis Press, 1668). Shown at 200% of original size.

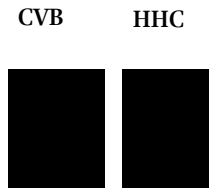


Fig. 52 In HHC the lower part of letter ζ is shortened.

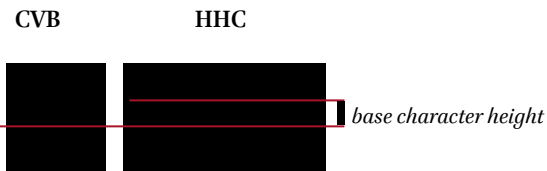


Fig. 53 In HHC the upper part of letter ζ is excessively small, and also exceed the base character height.



Fig. 54 HHC is a high contrast typeface.

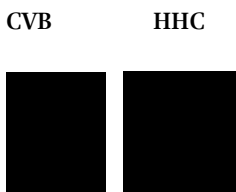


Fig. 55 In HHC letterform δ is unconventional.

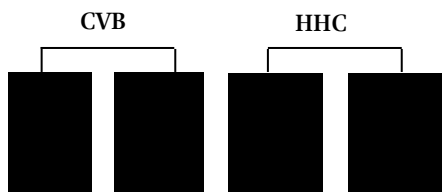


Fig. 56 A long horizontal bar was useful to distinguish letters that share similar design constructions, such as \bar{q} and q .

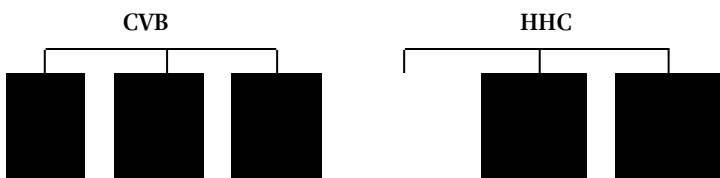


Fig. 57 In HHC the horizontal bar in \bar{p} , $\bar{\zeta}$ and \bar{p} is excessively long.

legibility and created spacing issues between letters during the composition process. To conclude, the lack of knowledge of Armenian letterforms can also be observed in the relation between uppercase and lowercase letters [Fig. 58]. Armenian uppercase letters are excessively small due to the unusual vertical proportion adopted – the height of the capital letters is slightly smaller than the height of the characters with ascending strokes. Without any doubt, the construction of Armenian uppercase letters, even if their designs are in the Erkat'agir style used by the Mekhitarists in Venice, follow closely the typographic rules of the Latin script. Despite his intent to create an Armenian type that could comply with reader's habits, HHC must have looked unfamiliar to Armenians and not particularly suitable for schoolbooks meant for Armenian pupils.

Since the publication of the Armenian Bible in 1668, the Mediaen Armenian type cut by Van Dijck for the Oskanian printing office had become widespread and well received by Armenians.¹⁵⁹ Printing establishments that included the Armenian script began to request punch-cutters to produce Armenian types similar to those of the Amsterdam (Oskanian) office.¹⁶⁰ It is in this context that the British and Foreign Bible Society (BFBS) and the American Board of Commissioners for Foreign Missions (ABCFM), as well as the *Société Asiatique* in Paris, contributed to promote variety in Armenian types.

The examples given in these sections from the BFBS and the ABCFM provide some insight into the preference for Bolorgir types for scriptural and scholarly works in the first half of the nineteenth century. It also underlines the impact that the Mekhitarists in Venice had on the development of subsequent Armenian types. Their types were considered 'superior to every other in finish and beauty',¹⁶¹ and therefore they became the standard against which to evaluate the quality of subsequent Armenian Bolorgir types. However, even though the Amsterdam types were widely established among Armenians and recognised by readers as the conventional representation of Bolorgir in printing, they did not prevent printers from looking for something different. This can be noticed from the atypical Bolorgir type cut by Molé le jeune and acquired by Dondey-Dupré in Paris in 1823 for the publication of the *Société Asiatique*, and even used by the missionary organisations such as the BFBS and the ABCFM for religious works. Furthermore, the example of Hallock at the ABCFM shows that, given the chance of cutting Armenian types, there could be a deliberate choice to initiate a new type rather than imitate existing designs.

¹⁵⁹ Since this Bible remained the only complete Armenian printed Bible until 1705, it may have spread widely through the network of Armenian communities worldwide. This is also supported by Lane. Lane, *The Diaspora*, p. 95.

¹⁶⁰ After 1668 the press had the larger Text used by Tsaretsi in the *Jesus Vordi* and the smaller type Mediaen used in the Bible. In 1667 Van Dijck and his son Abraham contracted to cut a Bourgeois Armenian, smaller than the previous types, for Oskan's nephew. This contract does not survive, but a document dated 27 May 1669 describes the Van Dicks as punch-cutters, and informs that the type was delivered and Oskan's nephew had paid for the work. (The Bourgeois Armenian type first appeared in the Mosis Khorenaci's *Geography with Fables* (published in 1669). Lane, *The Diaspora*, pp. 85–86.

¹⁶¹ American Board of Commissioners for Foreign Missions, *Thirtieth annual report of the American Board of Commissioners for Foreign Missions* (September 1839), p. 63.

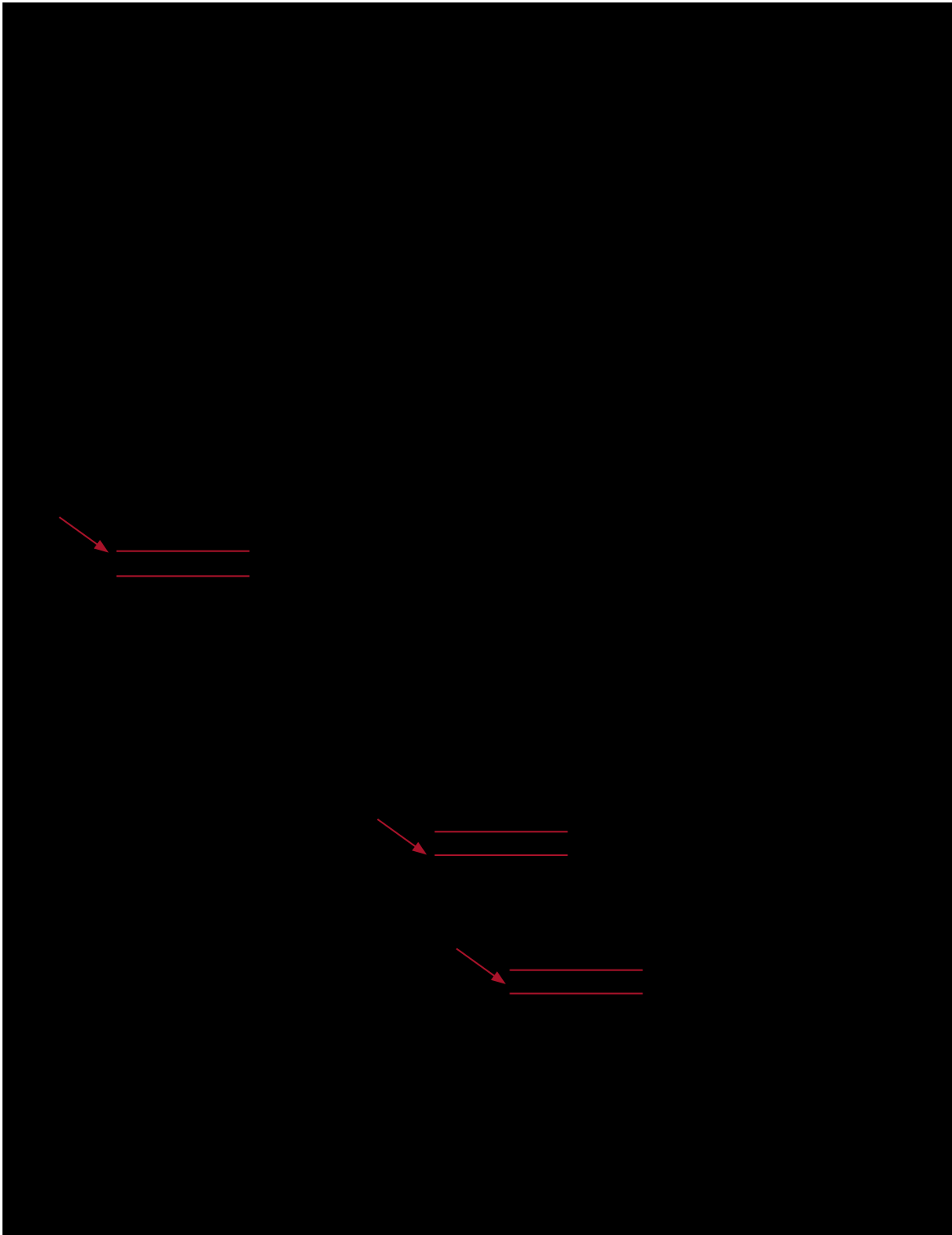


Fig. 58 A page from *Rule of exercise* (Smyrna, ABCFM, 1837). (Original size: 40 × 50 cm). The arrows point to uppercase letters Ω, U and U. The horizontal lines in red show the vertical dimension of uppercase letters in relation to lowercase letters. Shown at 40% of original size. *Greenstone digital library* (http://greenstone.flib.sci.am/gsd/collect/armbook/books/kanonq_ieravarjutyani1837_index.html).

2.5 Armenian types for scholarly works in England up to the 19th century

The interest in exotic languages among English scholars broadened significantly in the seventeenth century. These included languages from the Indo-European family, such as Gaelic and Russian, and from other languages groups, such as Turkish and Arabic. The study of oriental languages in England was fostered by major scholarly institutions, such as the University of Oxford and Trinity College, Cambridge.¹⁶² Oxford stands out for oriental studies, further encouraged by William Laud's remarkable contribution.¹⁶³ In the 1630s, Laud presented the University with manuscripts in several oriental languages,¹⁶⁴ but he also had the ambitious plan to establish 'a Greek press in London and Oxford, for printing of the Library Manuscripts'.¹⁶⁵ The Press was authorised by Letters Patent of 12 November 1632, and confirmed by the Great Charter of 1636. It allowed the University's three printers the right to print Bibles, already granted to Cambridge but otherwise reserved to the King's Printer.¹⁶⁶

The interest of English scholars for Armenian was rather limited: there were no extensive works on the Armenian language, but just a few words in Armenian either inserted or next to the Latin text of scholarly works, produced in London or in Oxford. Early works by English scholars that included Armenian were of poor typographic quality, because there were no metal types available in England as yet, and purchasing some from Europe presented difficulties. The development of Armenian Bolorgir types was slower in England than in other parts of Europe, and it came at a later time. For example, whereas in 1663 Van Dijck completed his Armenian types to print the Bible in Amsterdam (1666–1668), in England a few characters in Armenian Bolorgir style, cut by the punch-cutter Peter De Walpergen for Dr. John Fell,¹⁶⁷ appeared in William Guise's *Misnae Pars* in 1690.¹⁶⁸ This is the first known instance of punch-cutting and matrix-making of Armenian characters in England.

162 See: Christopher Wordsworth, *Scholae Academicae: some account of the studies at the English universities in the eighteenth century* (Cambridge, The University Press, 1877), pp. 162–170.

163 Ibid. p. 167. In 1628 Laud became Chancellor of the University of Oxford. He was later to become Archbishop of Canterbury.

164 In 1636 Laud presented to the University of Oxford two Armenian manuscripts, together with fourteen Hebrew, fifty-five Arabic, seventeen Persian, and twelve Chinese manuscripts. In 1636 King Charles ordered that every ship from the Levant was to bring home an Oriental MS, and that the Archbishop of Canterbury was to have the disposal of it.

165 William Laud, *The autobiography of Dr. William Laud, Archbishop of Canterbury and Martyr* (Oxford, J. H. Parker, 1839), Appendix A on p. 441. See also: Harry Carter, *A history of the Oxford University Press* (Oxford, the Clarendon Press, 1975), p. 26.

166 Carter, *A history of the Oxford University Press*, p. 27.

167 He was the Vice-Chancellor of the University of Oxford from 1666 to 1669.

168 Before 1637 type founding was not permitted in England. The combined gifts of John Fell and the scholar Francis Junius laid the foundation of the University foundry. It is likely that, apart from those given by Junius in 1677, all the types added to the stock of the Sheldonian Press from 1676 until 1686 were cut by Peter De Walpergen. After Fell's death in 1686, the University acquired further punches and matrices from De Walpergen. Among them were the Armenian punches and matrices used in 1690. Horace Hart, *Notes on a century of typography at the University Press, Oxford 1693–1794* (Oxford, The Oxford University Press, 1900), pp. vii–viii; Stanley Morison (with the assistance of Harry Carter), *John Fell, the University Press and the 'Fell' types* (Oxford, The Clarendon Press, 1967), pp. 71–72, 157.

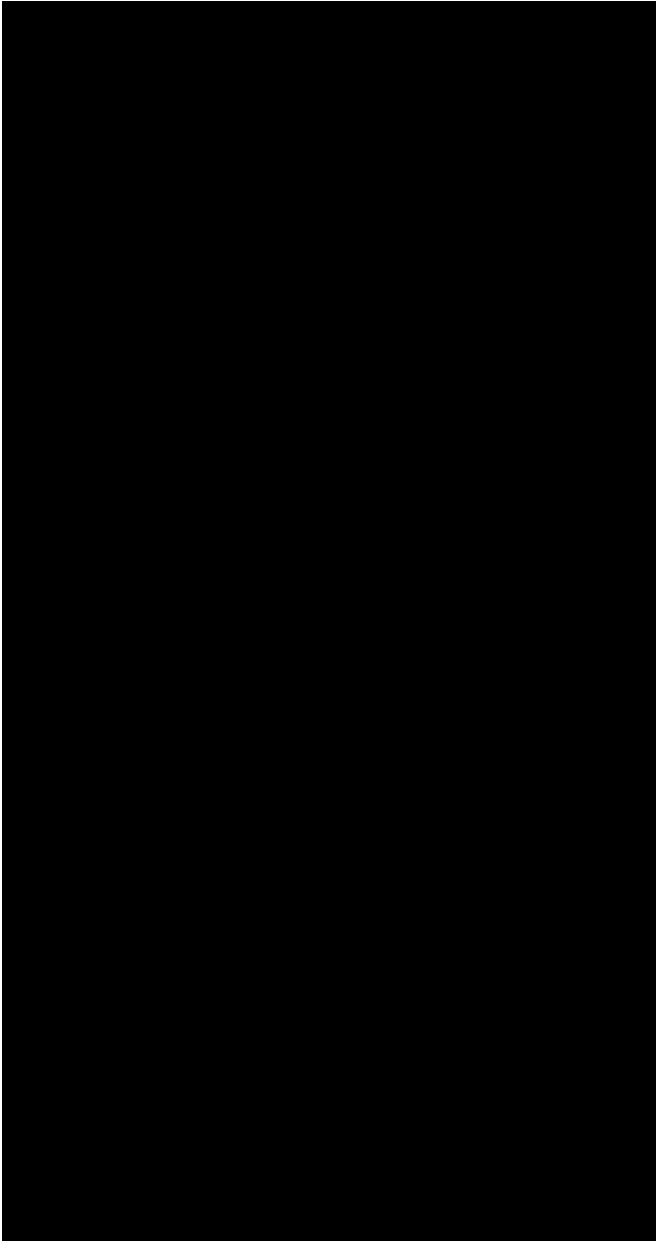


Fig. 59 Brian Walton, *Introductio ad lectionem linguarum orientalium: Hebraicae, Chaldaicae, Samaritanae, Syriacae, Arabicae, Persicae, Aethiopicae, Armenae, Coptae* (London, Roycroft, 1655). Second edition. (Original size: 8,6 × 16 cm). Shown at original size. *The British Library*.

In 1654 in London the English printer Thomas Roycroft¹⁶⁹ (1637–1677) printed the work of the English scholar Brian Walton¹⁷⁰ (1600–661), *Introductio ad lectionem linguarum orientalium: Hebraicae, Chaldaicae, Samaritanae, Syriacae, Arabicae, Persicae, Aethiopicae, Armenae, Coptae* [Fig. 59]. This publication, reprinted by Roycroft a year later, is a Latin tract, which included examples of scripts of different oriental languages; as this was an introduction, Walton focused on presenting the alphabets and their phonetic transcription, rather than providing grammatical information on the languages mentioned.¹⁷¹ For each script Walton gives short examples, enabling beginners to become acquainted with the visual representation of oriental scripts and their phonetic values.¹⁷² This work has ninety-six pages of Preface and one hundred twelve pages on the languages mentioned in the title. Three pages (pp. 103–106, from the second edition printed in 1655) are dedicated to the Armenian script: a brief description of the Armenian alphabet is given in Latin, but Armenian letters are inserted into the lines of Latin type (in-between words as well as next to single letters). According to Alastair Hamilton, they are printed from woodcuts:¹⁷³ this is a faithful reproduction of the Armenian Bolorgir type cut in Paris by Jaques de Salencque in 1634, comprising a calligraphic and dynamic design¹⁷⁴ [Fig. 60a and 60b]. Roycroft also used them for the Prolegomena of Walton's *Polyglot* (1653–1957).

The employment of woodblocks, like in the late fifteenth century in Bernhard von Breydenbach's *Pilgrimage to the Holy Land* (Mainz) and in the early sixteenth century in Guillaume Postel's *Linguarum duodecim characteribus differentium alphabetum* (Paris),¹⁷⁵ was an expedient necessitated by the lack of available Armenian movable metal type. While Walton remarks that care and diligence were taken to prevent typographic errors,¹⁷⁶ the limited typographic representation of the Armenian script to lowercase letters in *Introductio ad lectionem* can be considered as a deficiency with regard to the scholarly nature of the work.¹⁷⁷

Other less satisfactory expedients than woodblock or copperplate were adopted to print Armenian in the works of English scholars: the use of Roman or Greek characters to transcribe Armenian. For example, Edward Bernard (1638–1696), a mathematician with an interest in philology, and Savilian Professor of Astronomy at the University of

169 Roycroft commissioned oriental types – Hebrew, Syriac, Samaritan, Arabic and Ethiopic – to be cut in England for the printing of Walton's polyglot Bible (1653–1657). In 1658 Roycroft bought Walton's oriental characters.

After the Restoration Roycroft became the King's Printer for Oriental languages.

170 Biblical scholar, editor of Walton's Polyglot Bible, born in Yorkshire (Cleveland, Seymour), in 1600; died in London, 29 November, 1661. He studied at Cambridge, where he received a Bachelor of Arts in 1619–20 and a Master of Arts in 1623. For information on Brian Walton, see: Henry John Todd, *Memoirs of the life and writing of the right Rev. Brian Walton, D. D. Lord Bishop of Chester, editor of the London Polyglot Bibles* (London, Rivington, 1821), vol. 1.

171 Todd, *Memoirs of the life and writing of the right Rev. Brian Walton*, vol. 1, pp. 70–71.

172 Adam Clarke, *A bibliographical dictionary* (London, W. Baynes, 1803), vol. 2, p. 11.

173 Alistair Hamilton, 'The Learned Press: Oriental Languages' in Ian Gadd, Simon Eliot, and W. Roger Louis (eds.), *The history of Oxford University Press* (3 vols., Oxford, Oxford University Press, 2013), vol. 1, p. 402.

174 See Section 2.2.2 of this chapter.

175 See Section 2.1 of this chapter.

176 Todd, *Memoirs of the life and writing of the right Rev. Brian Walton*, vol. 1, p. 69.

177 For example, in his grammar (1622) Rivola showed capital letters as well and gave a description of the Armenian type styles. Therefore, the scholarly work of Walton was not accurate.

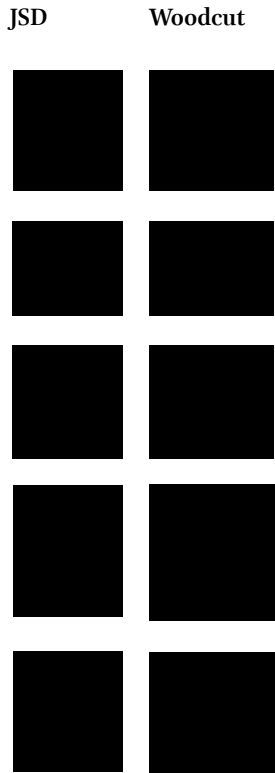


Fig. 6oa Comparison between JSD and woodcut characters from Brian Walton, *Introductio ad lectionem linguarum orientalium: Hebraicae, Chaldaicae, Samaritanae, Syriacae, Arabicae, Persicae, Aethiopicae, Armenae, Coptae* (London, Roycroft, 1655). Shown at original 200% of size. *The British Library*.

JSD is from Francesco Rivola, *Dictionarium armeno-latinum* (Paris, *Societas typographica librorum officii ecclesiastici*, 1633). Shown at 40% of original size. *SOAS Archives & Special Collections*.

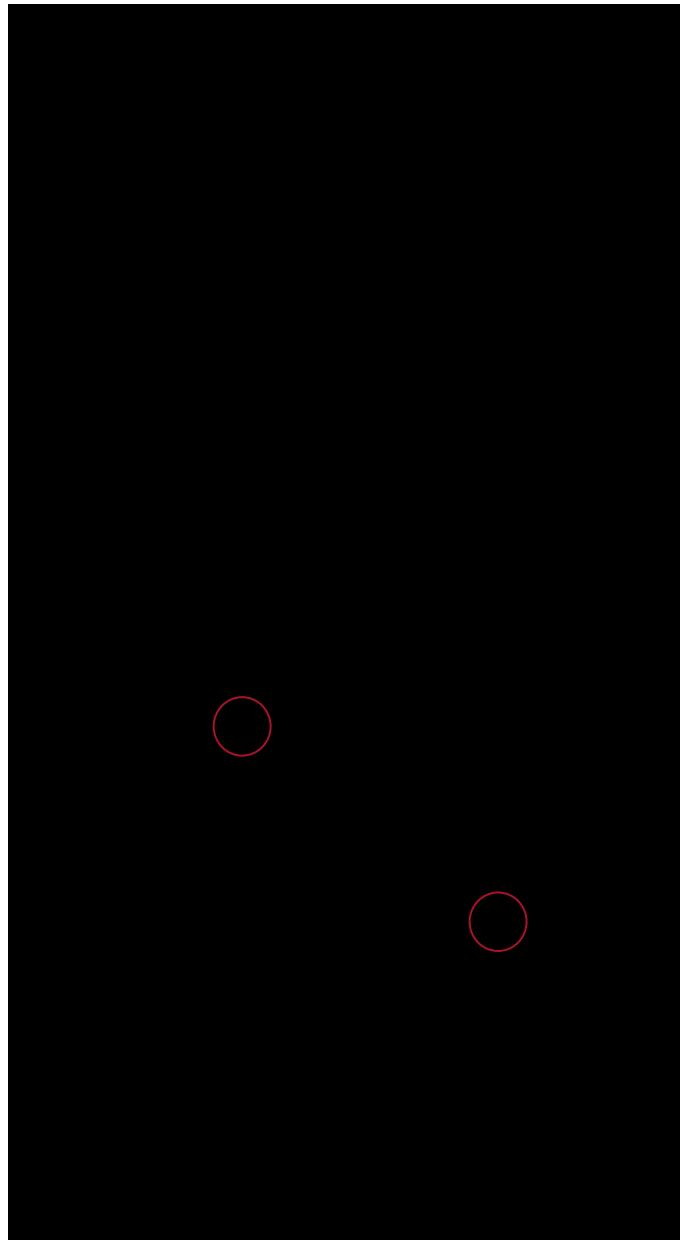


Fig. 6ob A page showing Armenian woodcut used by Roycroft. Brian Walton, *Introductio ad lectionem linguarum orientalium: Hebraicae, Chaldaicae, Samaritanae, Syriacae, Arabicae, Persicae, Aethiopicae, Armenae, Coptae* (London, Roycroft, 1655). Shown at original size. *The British Library*.

Oxford, printed Armenian using Greek types.¹⁷⁸ This can be seen in the ‘Etymologicon britannicum’ [Fig. 61],¹⁷⁹ printed as an appendix to George Hickes’s *Institutiones grammaticae Anglo-Saxonicae, Moeso-Gothicae, et Franco-Theotiscaae*, published by Oxford University Press¹⁸⁰ in Oxford in 1689.

The thirty pages of the ‘Etymologicon britannicum’ uses types¹⁸¹ previously owned by Francis Junius to compose Gothic, black letter for modern English, Saxon type for Old English and Greek type for Russian and Armenian [Fig. 62]. Clearly, the unavailability of Armenian and Cyrillic types at Oxford University Press forced Bernard to look for an expedient; his choice to substitute both Armenian and Russian with Greek was due to the fact that he considered both Armenian and Russian alphabets to be of Greek origin. His argument can be found in *Orbis Eruditi* [Fig. 63], an elaborate single-sheet table showing the descent of the Greek, Roman, Gothic, Runic, Coptic, Ethiopic, Cyrillic, and Armenian alphabets from the Samaritan one, the latter being closely related to Hebrew. The examples given hitherto show that the methods used by printers to present Armenian in the works of scholars were neither satisfactory in London nor Oxford.

178 At the beginning of the ‘Etymologicon’ it is written: ‘monitum ... voces equidem armeniorum et russorum, cum type proprii deessent, Alphabeto Graecanico exprimi iussimus’.

179 The ‘Etymologicon’ consists of some 800 English words with allegedly corresponding forms in Armenian, Russian, Slavonic, and Persian.

180 Publications by Oxford University Press bear the imprint ‘Teatro Sheldoniano’. The Sheldonian Theatre was constructed between 1664 and 1669. Funded by Gilbert Sheldon, Warden of All Souls College and later Archbishop of Canterbury, the Sheldonian Theatre was the first major design of Sir Christopher Wren. Retrieved from: <https://www.admin.ox.ac.uk/sheldonian/history/>. Accessed on 10 April 2019.

Fell (1625–1686) managed to persuade Archbishop Sheldon, Chancellor of the University, to use the building for the purpose of printing, whenever it was available. Presses and furniture for compositors were moved there in late 1668 or early 1669. Carter, *A history of the Oxford University Press*, p. 46.

181 Types owned by the scholar Francis Junius (residing in Holland).

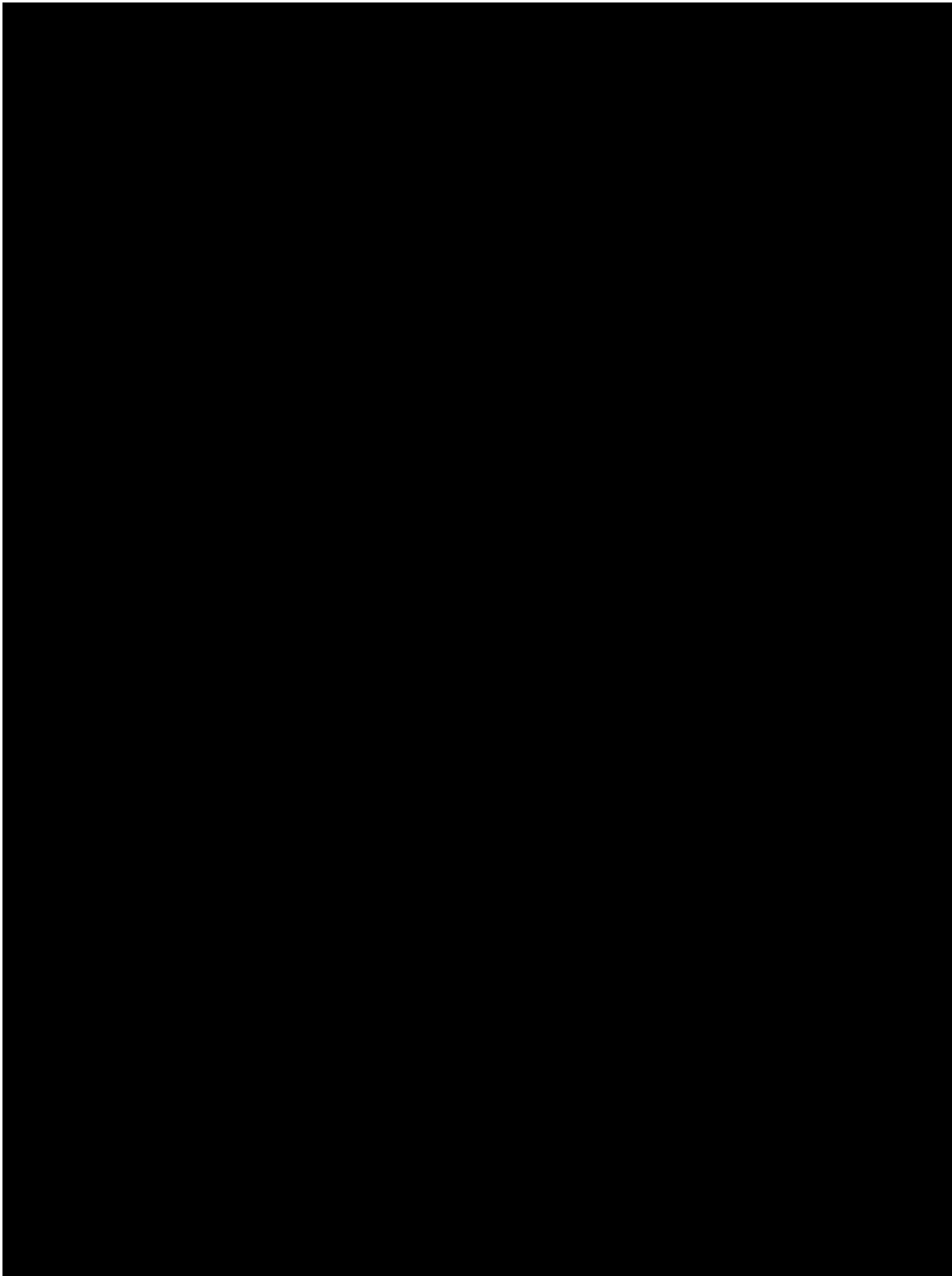


Fig. 61 Edward Bernard, 'Etymologicon britannicum' printed as an appendix to George Hicke's *Institutiones grammaticae Anglo-Saxonicae, Moeso-Gothicae, et Franco-Theotiscaae* (Oxford, Oxford University Press, 1689). (Original size: 22,8 × 18,5 cm). Shown at 80% of original size. *The British Library*.



Fig. 62 Armenian is printed with Greek types.

In the 'Etymologicon' Bernard proposed that the Germanic languages originated in an early form of the language of 'the Russians and Slavs', which itself originated in the languages spoken around the Black Sea and the Caspian Sea. Of these, he named the Cappadocians, Colchians, Iberians (i.e. Georgians), Armenians, and Scythians. Edward Bernard, 'Etymologicon britannicum' printed as an appendix to George Hickes's *Institutiones grammaticae Anglo-Saxonicae, Moeso-Gothicae, et Franco-Theotiscaae* (Oxford, Oxford University Press, 1689). (Original size: 22,8x18,5 cm). Shown at 200% of original size. The British Library.

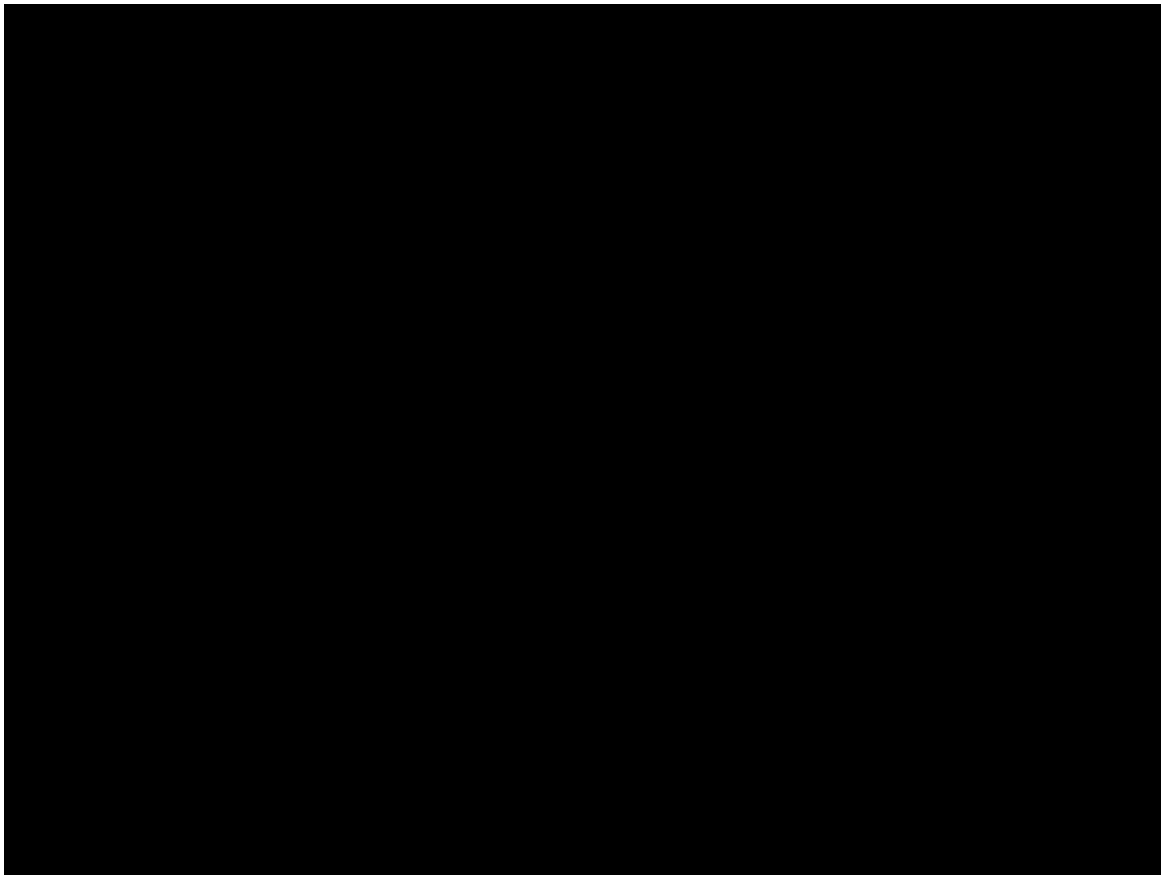


Fig. 63 Detail from *Orbis eruditi literaturam à caractere Samaritico hunc in modum favente Deo deduxit. Orbis eruditi* is one leaf displaying a comparative table of 29 alphabets to show the origin of writing. The table was engraved by the Dutch illustrator and artist Michael Burghers (1647/8–1727). (At the bottom right of the comparative table appears the inscription: MBurghers sculp.) Michael Burghers was a Dutch engraver, who settled in England on the taking of Utrecht by Louis XIV in 1672. He lived mostly at Oxford. Probably an engraving on copper.

The last column on the sheet displays Armenian characters.

Edward Bernard, *Orbis Eruditi* (Oxford, Oxford University Press, 1689). (Original size: 40,2 × 55 cm). Shown at 60% of original size. *The British Library*.

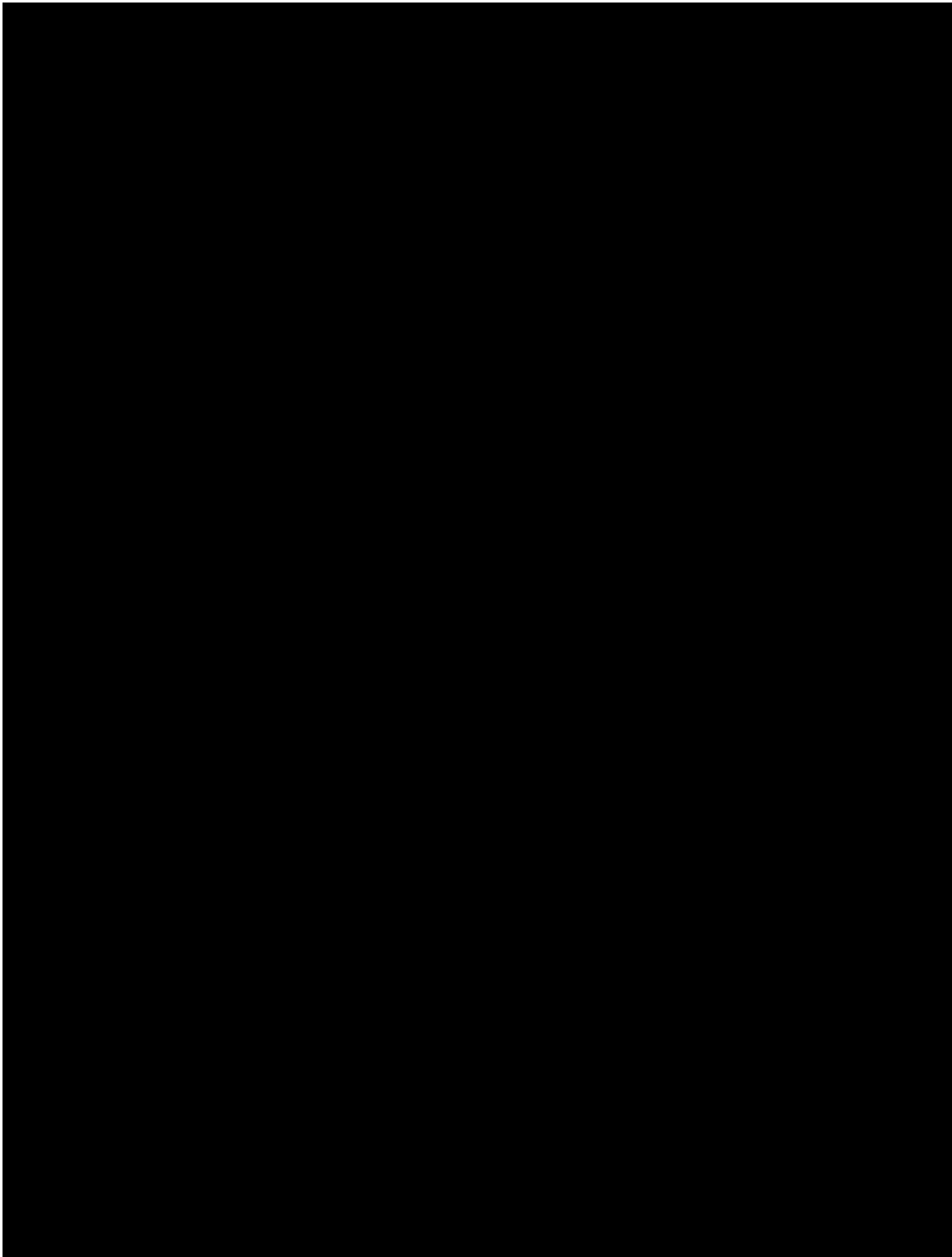


Fig. 64 William Guise, *Misnæ Pars: Ordinis primi Zeraim tituli septem* (Oxford, Oxford University Press, 1690). (Original size: 15,5 × 19,5 cm). Shown at original size. *The British Library*.

2.5.1 Attempts to supply Oxford University Press with Armenian types

Before 1672 university printers at Oxford¹⁸² and the press itself relied on other foundries to cast their types, a common practice among English printers.¹⁸³ Towards the end of the seventeenth century, the need for types to faithfully represent the Armenian script became compelling. The opportunity to equip the press with a range of oriental types arose from Fell's initiative to establish a type-foundry at the university press: in 1672 he acquired a considerable range of matrices from Holland¹⁸⁴ and hired a type founder; in 1676 he even employed a punch-cutter. The philologist Thomas Marshall, who in 1672 had assisted Fell in acquiring Dutch types and matrices first from Abraham Van Dijck, son of Christoffel Van Dijck (ca. 1600/05–1669), and then from the type founder Jacquet Vallet, managed to find two type founders for the press in Oxford as well. In August of that year the two type founders Jacquet Vallet and Harmen Harmensz, the latter a journeyman type founder at the Van Dijck foundry, arrived in England. However, the employment of these type founders was unfortunate for the press: Vallet died (he was in his 70s) a few months later, and Harmen Harmensz's skills were limited to casting types.¹⁸⁵ Fell's ambition to have at the press 'one who could cut letters' was fulfilled in February 1676, when the punch-cutter Peter De Walpergen (1646–1703) reached Oxford. Peter De Walpergen, who may have been born in Frankfurt, was probably found by Sir Leoline Jenkis who was in Holland to negotiate the Peace of Nijmegen.¹⁸⁶ The presence of a punch-cutter meant that it was finally possible to print every script with movable metal types instead of using woodblocks or other less successful expedients. Thus, when Armenian characters were required for printing William Guise's *Misnae pars: Ordinis primi zeraim tituli septem* [Fig. 64], published in 1690 by Edward Bernard,¹⁸⁷ De Walpergen cut punches for the work.¹⁸⁸ However, only seven punches of a Pica

182 Several printers had worked for the Oxford University before Fell established the Oxford University Press in the building of the Sheldonian Theatre in 1668–1669. Printing at the Oxford University began on August 1584. In that year, Joseph Barnes, a bookseller licensed by the Vice-Chancellor since 1573, was paid £ 100 to have a press in the University. However, a few years later (June 1586) the decree of the Court of Star Chamber limited printing to London, but authorised one press (and only one printer in charge of the press) in the universities of Cambridge and Oxford. Jason Peacey, 'Printers to the University 1584–1658' in Ian Gadd, Simon Eliot (eds.), *The history of Oxford University Press* (3 vols., Oxford, Oxford University Press, 2013), vol. 1, pp. 52–53, 54.

183 Martyn Ould, 'The workplace: places, procedures, and personnel 1668–1780' in Ian Gadd, Simon Eliot (eds.), *The history of Oxford University Press*, vol. 1, p. 213.

184 Fell obtained types from Holland through the philologist Thomas Marshall, a fellow of Lincoln since 1668. For information on the association between Thomas Marshall and John Fell, see: Richard L. Harris, 'George Hickes (1642–1715)' in Helen Damico (ed.), *Medieval scholarship. Biographical studies on the formation of a discipline* (New York & London, Garland, 1998), vol. 2, p. 20.

185 Ould, 'The workplace: places, procedures, and personnel 1668–1780', pp. 215–217. Vallet was the master type-founder and Harmensz the journeyman caster. Harmensz left for Holland in early 1673 and returned to England probably in 1674 and worked there for a year. *Ibid.*, pp. 216, 216 footnote 79, 217.

186 In 1671 De Walpergen contracted with the Dutch East India Company to be its punch-cutter, type founder and printer in Batavia (today's Jakarta). Carter, *A history of the Oxford University Press*, pp. 122–123.

187 For bibliographical information on Edward Bernard, see: Alexander Chalmers, *The general biographical dictionary* (London, Nichols, Son & Bentley, 1812), vol. 5, pp. 81–88.

188 Martyn Ould, *Printing at the University Press, Oxford 1660–1780* (Seaton, The Old School Press, 2018), vol. 2, p. 73.



Fig. 65 Detail from *Misnæ Pars* showing Arabic, Hebrew, Greek types, and the 7 Armenian types cut by De Walpergen for the publication. William Guise, *Misnæ Pars: Ordinis primi Zeraim tituli septem* (Oxford, Oxford University Press, 1690). (Original size: 15,5 × 19,5 cm). Shown at 200% of original size. *The British Library*.

Armenian in Bolorgir style were cut, corresponding to the number of characters needed to compose the few words in Armenian for *Misnae pars* [Fig. 65]. Having a punch-cutter in situ enabled the press to order a few characters, whenever a publication required just a handful of sorts instead of the whole set of types: this system was advantageous for the press since it was cheaper and time saving. Although the Armenian type is incomplete, this can be considered as the first known instance of punch-cutting and matrix-making of Armenian characters in England.¹⁸⁹

A second attempt was made by Edward Bernard, probably not satisfied with the expedient used in his 'Etymologicon britannicum' (1690). He wanted to obtain types specifically for Armenian and Cyrillic. In October 1694, with the support of another Delegate, Arthur Charlett, Master of University College, he persuaded the Delegacy of the Press to have Armenian and Cyrillic types cut for Oxford.¹⁹⁰ Bernard sought assistance from the linguist Henrich Wihelm Ludolf (1655–1712), who had spent several years in London in the 1680s. On 20 October 1694, Bernard wrote to Ludolf, who was then in Amsterdam after returning from Russia, about the Delegates' decision to purchase Armenian and Cyrillic types. Ludolf replied that he knew a punch-cutter in Amsterdam who would do the job proficiently and at a reasonable price. Bernard accepted Ludolf's offer of assistance and ordered the types on his recommendation. In September 1695 Ludolf arrived in England, he stayed in London for about a year and

189 In 1706 seventy-seven new Armenian characters were prepared for the Oxford University Press. The seventy-seven characters were shown for the first time in a 1768 broadsheet Specimen. According to Morison, as the punches are attributable to De Walpergen and few characters were used in *Misnae pars*, it is reasonable to assume that it was in Fell's plan to have an Armenian fount for the University of Oxford. Therefore, the Armenian fount is properly ranked as part of his gift and it must be credited to him. He also notices that there are two punches and matrices for each of the seven characters used in *Misnae pars*. Ould, 'The workplace: places, procedures, and personnel 1668–1780', pp. 217–218. Morison, *John Fell*, p. 157.

The Armenian punches and matrices in the 1706 Inventory and 1768 Specimen survive and both the seven punches cut ca. 1690 and those added later match De Walpergen's in workmanship. The second issue of the 1695 Specimen – *A specimen of the several sorts of letters given to the University by Dr John Fell* – does not include any Armenian printed example. Only at the end of the type specimen, the section: 'An account of the matrices, punchions, &c. given by Bishop Fell to the University of Oxford' records seven Armenian punches and matrices (Box of matrices no. XXXI), probably meaning seven of each. De Walpergen cut the other Armenian punches between 1690 and 1703, including new punches for the seven characters already cut ca. 1690. As the new matrices do not match the workmanship of the seven matrices made ca. 1690, it is thought someone else made them after De Walpergen's death in 1703 but before the inventory of 1706. The author is grateful to John Lane for this detailed information on the Armenian punches and matrices for the Oxford University Press and for bringing to her attention the information provided by Stanley Morison and Harry Carter on De Walpergen's Armenian characters. See: Morison, *John Fell*, p. 158. In presenting the 1768 University's specimen, Hart notes that the Armenian types were 'preserved as a curiosity ... worn and practically unworkable, owing to the scarcity of some and the absence of other characters'. Hart, *Notes on a century of typography at the University Press, Oxford 1693–1794*, p. 98. An incomplete character set also appears in the broadsheet: 'A specimen of the types attributed to Peter De Walpergen cut for the University of Oxford 1676–1702', printed at the University Press by Charles Batey in 1957. For instance: letters յ, հ and ղ are missing, and letter զ appears only in the old version used in *Misnae pars*. As noted by Carter in his edition of Horace Hart, some of the Armenian capital letters were made as two separate pieces of type. Harry Carter (ed.), *Notes on a century of typography at the University Press, Oxford 1693–1794* (Oxford, The Clarendon Press, 1970), p. 188.

190 Gerald Stone, *Slavonic Studies at Oxford: a brief history* (Oxford, Oxford University Press, 2005), p. 3.

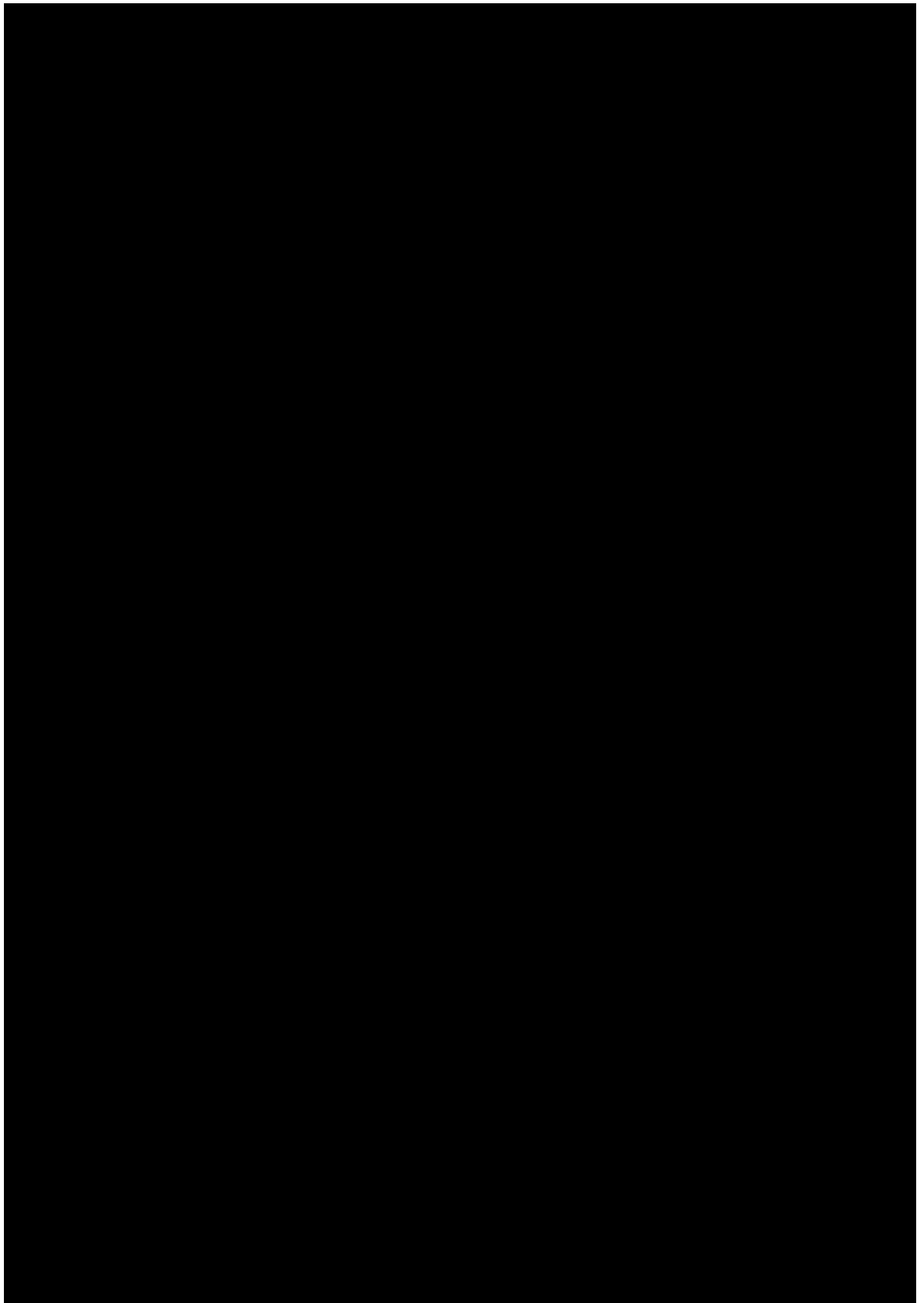


Fig. 66 Mosis Khorenaci, *Historiae Armenicae libri tres* (London, Whistonian, 1736).
(Original size: 19,5 × 27 cm). Shown at original size. *The Bodleian Library*.

then moved to Oxford, where he supervised the printing of his Russian grammar.¹⁹¹ Even though a letter from Arthur Charles to Thomas Tenison Archbishop of Canterbury mentions that ‘Mr Ludolfus is bringing for us out of Holland a Font of Slavonic and Armenian types, very elegantly cut, which I think will supply the only defect in our Imprimery’,¹⁹² it is unknown whether the Armenian type reached Oxford.¹⁹³ Therefore, this can only be considered as the first attempt to have an entire Armenian fount of type in England. Printers and scholars had to wait until 1730 to have a complete Armenian Bolorgir type cut and cast in England.

2.5.2 The first Armenian Bolorgir type in England

Up to 1720 very little was done in England towards the revival of good printing;¹⁹⁴ Oxford University reputedly owned ‘the best founts’ in the country, but these were almost entirely obtained from abroad.¹⁹⁵ Noteworthy were the attempts of Oxford University to obtain an Armenian movable metal type; it is even possible that Ludolf brought a fount of Armenian type to Oxford at the end of the seventeenth century. However, it is only in the eighteenth century that a complete set of Armenian movable type was cut and cast in England.¹⁹⁶ This was cut in London by William Caslon (1692–1766),¹⁹⁷ the leading English type founder and punch-cutter of the time.

In 1730 in London, William and George Whiston, sons of the natural philosopher and theologian William Whiston (1667–1752), published proposals for printing by subscription Mosis Khorenaci’s¹⁹⁸ *Historiae Armenicae libri tres* [Fig. 66]. A first printed edition of Khorenaci’s *Historiae Armenicae* was published in Amsterdam in 1695 in Armenian. However, the work of the two Whiston brothers became the first to have

191 Ibid. p. 3. Harry Carter observes that the preface to Ludolf’s Russian grammar of 1695 mentions a type for Armenian in progress. Harry Carter, *A History of the Oxford University Press* (Oxford, the Clarendon Press, 1975), vol. 1, p. 210. According to Lane, Ludolf’s mention of an Armenian type in progress could mean that the seven characters had been cut by De Walpergen ca. 1690 and that there was a plan to cut a complete Armenian fount for Oxford. He also notes that if the Oxford University press’s plan was to have the Armenian type cut by Johann Adolf Schmidt, who cut the Oxford’s Cyrillic, this was abandoned as Schmidt died in early May 1697. The author of is grateful to John Lane for the information provided.

192 Letter from Arthur Charles to Thomas Tenison, Archbishop of Canterbury (dated 19 March 1695). MS 942 – Miscellaneous Papers 85, Lambeth Palace Library, London.

193 Hamilton states that Cyrillic types were cut in Amsterdam for the Oxford University Press due to Bernard and Ludolf’s efforts. However, he makes no mention of Armenian types. Alastair Hamilton, ‘The Learned Press: Oriental Languages’, p. 406.

194 Reed, *A history of the Old English letter foundries*, p. 232. Reeds here refers to the careless and defective ways in which early eighteenth-century English printers printed Bibles, political pamphlets and works of literature. This is in striking contrast with the refined printing activity of William Caxton in England towards the end of the fifteenth century.

195 Ibid. p. 232.

196 This is the first known complete Armenian fount made available in England.

197 He was born at Cradley, Worcestershire in 1692. Caslon was apprenticed in London on 17 May 1706 to Edward Cookes, loriner (metalworker), who according to John Nichols specialised in the engraving of ornaments on gun barrels. From 1716, date of the establishment of the firm to 1719 Caslon’s name appears as an engraver of muskets in the records of the Board of Ordnance. James Mosley, ‘The early career of William Caslon’, *Journal of the Printing Historical Society*, 3 (1967), pp. 67–68.

198 He can be described as the ‘father of Armenian historiography’. He was a pupil of St. Maštoc’, the inventor of the Armenian alphabet, in the 5th century CE.

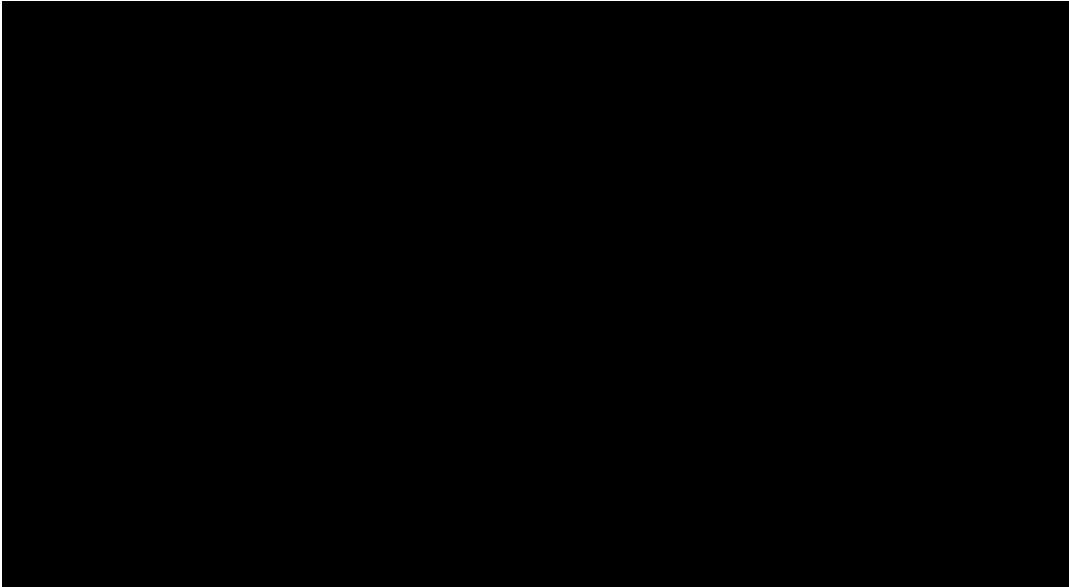


Fig. 67 Detail from *A specimen by W. Caslon* (London, 1734). (Original size: 35,7 × 43,6 cm). Shown at 150% of original size. *The British Library*.



Fig. 68 Two pages from Mosis Khorenaci, *Geography with fables* (Amsterdam, St. Ejmiacin and St. Sargis Press, 1669). (Original size: 7,8 × 10,5 cm). Shown at original size. *Worcester College Library, Oxford*. (In the colophon at the end of the book the date of completion is given as 20 January 20 1669, (18th of the month of Tre, ՌՃԺԸ [1118+551= 1669]). The Bologir type in the text is a Bourgeois (61mm/20 lines).

a translation of the Armenian text into another language.¹⁹⁹ Since this work was for scholars,²⁰⁰ they translated the text into Latin, but kept the Armenian version as well – Latin and Armenian texts were printed in parallel columns.²⁰¹ The work was published in 1736 by John Whiston (1711–1780), another Whiston brother. In the ‘Proposal for printing by subscription’, published at the end of William Whiston’s *Historical memoirs of the life of Dr. Samuel Clarke* in 1730,²⁰² the publishers had managed to obtain funds from several donors to cover the expenses of an Armenian metal type, which would be the first in England.²⁰³ Even though William Caslon is not mentioned either in the ‘Proposal for printing by subscription’ or in the preface to Mosis Khorenaci’s *Historiae Armenicae* (1736), the type used for the *Historiae Armenicae* appears in Caslon’s first known complete type specimen sheet²⁰⁴ dated 1734 [Fig. 67].²⁰⁵ This type specimen displays 27 different types,²⁰⁶ among them, there is a Pica Armenian and five other non-Latin founts.²⁰⁷

199 Maureen Farrell F.O.J., ‘The life and work of William Whiston’ (PhD thesis, Faculty of Technology of the University of Manchester, April 1973), chapter 5, p. 12. A history of Armenia was written by Khorenaci in 402 A.D. The book published in 1736 bears the title: *Historiae Armenicae libri tres*. It has three parts: the first one was about the state of Armenia from the dispersion of Babel to Alexander the Great; the second from Alexander the Great to 300 A. D., the third goes up to the middle of the fifth century. Ibid. p. 12.

200 See the list of subscribers in Mosis Khorenaci, *Historiae Armenicae libri tres* (London, Whistonian, 1736).

201 *Historiae Armenicae* included two appendices: Mosis Chorenensis’s Geographia and Epistolae duae Armenicae. The work is preceded by a list of subscribers. The work includes Armenian letters and numerals and a map of Armenia.

202 ‘Proposal for printing by subscription, *Mosis Chorenensis Historiae Armenicae Libri III. Accedit ejusdem Scriptoris Epitome Geographiae, Armeniacè ediderunt, Latinè verterunt, Notisque illustrarunt Gulielmus & Georgius, Gul. Whistoni, Filii*.’ Printed on two pages at the end of William Whiston (father), *Historical memoirs of the life of Dr. Samuel Clarke* (London, John Whiston, 1730).

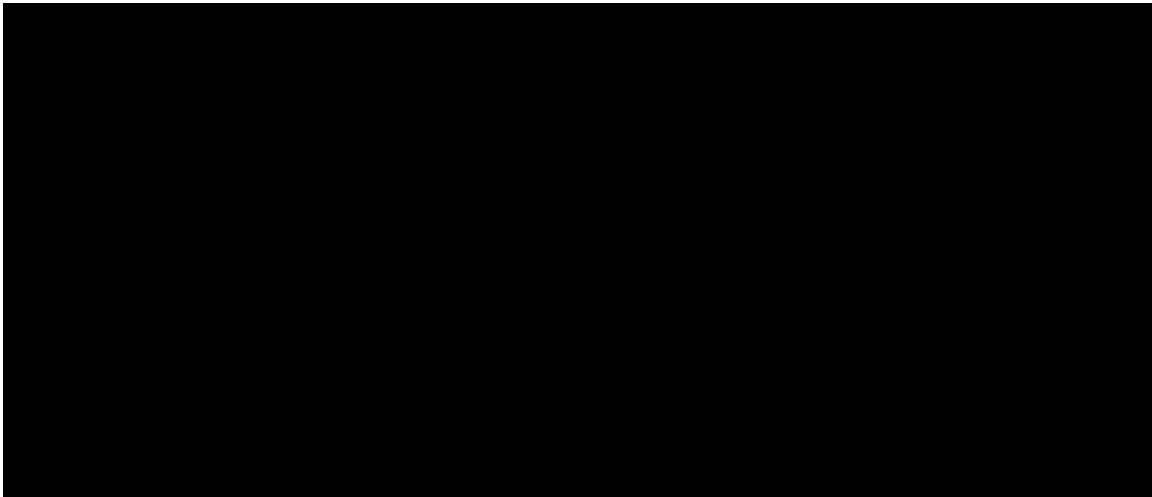
203 ‘We have been already enabled, by the kind contribution of several Gentlemen, whose bounty we hereby gratefully acknowledge, to defray the expence of *Armenian* types, which this nation did not before afford; in order to the introducing of the knowledge of this language, and to the more authentic publication of works wrote in it. [...] THIS Work shall be printed in Quarto, with the same Letter and Paper as the Specimen already published’. Whiston, *Historical memoirs*, ‘Proposal for printing by subscription, *Mosis Chorenensis Historiae Armenicae Libri III*. The separately published prospectus (dated March 19, 1729–30 [30 March 1730 by the modern calendar]) – the first showing Caslon’s Armenian types – was found in 2012 in the Rylands Library by John Lane. ‘Prospectus for Mosis Khorenaci, *History of Armenia* (1730)’. Pressmark UCC/1886.2. See: the post on ‘Armenian printing in London’ on the John Rylands library blog, *John Rylands library blog*. Retrieved from: <https://rylandscollections.wordpress.com/2012/06/18armenian-printing-in-london/>. Accessed on 18 December 2012. The web address is also included in John Lane’s unpublished addenda to *The Diaspora of Armenian printing, 1512–2012*. The author saw Lane’s addenda in October 2013 and his revised version in August 2014. She is very grateful to John Lane for sharing the documents with her and for other valuable information he provided.

204 Very few copies of this sheet are now extant.

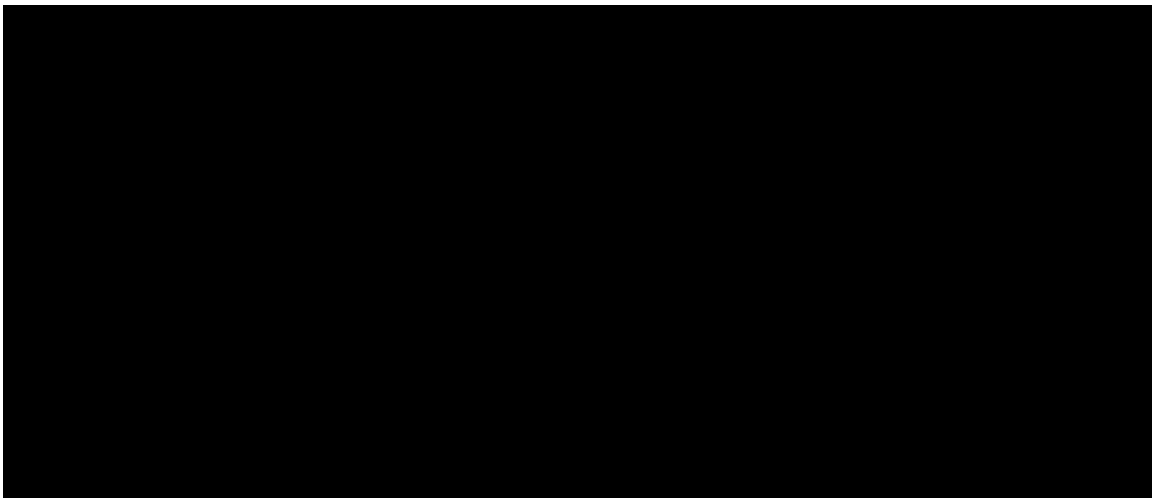
205 According to Puzzovio, Caslon cut his Pica Armenian in 1736. However, the Armenian appeared already in Caslon’s type specimen dated 1734. Reed states that Caslon’s Armenian for Whiston’s edition of *Mosis Chorenensis* was completed before 1734 (pp. 239–240), but he then contradicts his statement (p. 69) stating that the type was cut in 1736. Puzzovio’s and Reed’s incorrect historical information is rectified by Lane, who establishes that Caslon’s Armenian type was already cut in 1730 (see footnote 203 on p. 179 of this thesis). See: Puzzovio, ‘The story of the Armenian alphabet’, *Baseline*, 57, p. 40; and Reed, *A history of the old English letter foundries*, pp. 69, 239–240.

206 James Mosley, ‘Caslon, William, the elder (1692–1766), typefounder’, *Oxford Dictionary of National Biography* (3 January 2008). Retrieved from: <https://www.oxforddnb.com/view/10.1093/ref:odnb/9780198614128.001.0001/odnb-9780198614128-e-4857>. Accessed on 25 March 2019.

207 Of these 27 types, only three were not cut by Caslon: the Canon Roman, the English Syriac and the Pica Samaritan. Reed, *A history of the old English letter foundries*, pp. 240–241. The St. Bride Printing Library, London, holds the punches of Caslon’s Pica Armenian. James Mosley, ‘A specimen of printing types by William Caslon, London 1766’, *Journal of the Printing Historical Society* 16 (1981/1982), p. 29 no. 84.



a

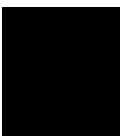


b

Fig. 69 a. CAVG. Detail from Mosis Khorenaci, *The History of Armenia* (London, Whistonian, 1736). Shown at 400% of original size. Worcester College Library, Oxford. b. WCHA. Detail from Mosis Khorenaci, *Geography with fables* (Amsterdam, Whistonian, 1669). Shown at 400% of original size. Worcester College Library, Oxford.

CAVG

WCHA



CAVG

WCHA



Fig. 70 CAVG is from *The History of Armenia* (London, Whistonian, 1736). WCHA is from Mosis Khorenaci, *Geography with fables* (Amsterdam, Whistonian, 1669). Both are shown at 400% of original size. Worcester College Library, Oxford.

Fig. 71 CAVG is from *The History of Armenia* (London, Whistonian, 1736). WCHA is from Mosis Khorenaci, *Geography with fables* (Amsterdam, Whistonian, 1669). Both are shown at 400% of original size. Worcester College Library, Oxford.

Analysis of the type

As pointed out by Lane, William Caslon's Armenian follows the Amsterdam tradition.²⁰⁸ During the seventeenth and towards the beginning of the eighteenth century Latin and non-Latin types produced in Holland gained a high reputation among European printers. This would explain Caslon's decision to look at the Armenian types cut by Christoffel Van Dijck. Caslon's Pica Armenian, here named WCHA, is close to Van Dijck's Bourgeois Armenian, named CAVG. CAVG was cut for Oskan (the printer of the 1668 Armenian Bible) by Christoffel Van Dijck and his son Abraham,²⁰⁹ and employed for the first time in Mosis Khorenaci's *Geography with fable*, published by Oskan in Amsterdam in 1669 [Fig.68]. Comparison between the printed page of Mosis Khorenaci's *Historiae Armenicae* (1734) and his *Geography with fable* (1669) makes possible an analysis of WCHA.

At first glance, the two types look very similar [Fig. 69], but closer examination reveals some differences. For example, in CAVG the joining of the diagonal strokes at the bottom of letter Է is smooth, whereas in WCHA it is pointed [Fig. 70]. In WCHA the stroke of the small loop of letter թ is wider and more dynamic than in CAVG [Fig. 71]. While Caslon's Armenian is not an exact copy of Van Dijck's WCHA, it is difficult to see it as an original design. This is one of many instances when the issue of originality can be raised. As Fiona Ross observes, 'the copying of successful type designs by punch-cutters has always existed. Copies of founts often masqueraded as original designs by dint of slight divergencies from their progenitors.'²¹⁰ For Caslon's design to be considered new, it would have to 'present an actual and demonstrable difference of outline and change when compared with any existing forms of type, or indeed of any existing form of portions of type.'²¹¹ There is insufficient evidence to verify its originality.

Caslon contributed to the advancement of printing with Armenian characters in England by cutting the first Armenian movable type in London. Since his work was of such high quality, the importation of foreign types almost ceased and his non-Latin types were not unfrequently exported to the continent.²¹² According to E. Chambers, Caslon's work 'surpasses anything of the kind done in Holland or elsewhere.'²¹³ The Armenian type continued to be shown in the specimen of the Caslon type foundry throughout the eighteenth century and it was sold to several printers in England. However, in the nineteenth century it seems that Caslon's Armenian type lost its popularity. This can be perceived from Byron's letter, written to Murray on behalf of the Mekhitarists in Venice (dated January 2, 1817):

²⁰⁸ Lane, *The Diaspora*, p. 129, 132.

²⁰⁹ Lane, *The Diaspora*, p. 86.

²¹⁰ Ross, *The printed Bengali*, p. 110.

²¹¹ Lucien Alphonse Legros and John Cameron Grant, *Typographical printing-surfaces* (London & New York, Longmans, Green, 1916), p. 119.

²¹² John Nichols, *Anecdotes of Bowyer* quoted in Mosley, 'A specimen of printing types by William Caslon, London 1766', p. 10 footnote 1.

²¹³ Ephraim Chambers, *Cyclopædia, or an Universal Dictionary of the Arts and Sciences* (London, W. Innis & others 1738), vol. 1, (Caslon's Specimen faces the article Letter on folio 24). A facsimile of Caslon's Specimen is published in Mosley, 'The early career of William Caslon', facing p. 66. See also Mosley's list of specimens in: Mosley, 'A specimen of printing types by William Caslon, London 1766', pp. 105-106.

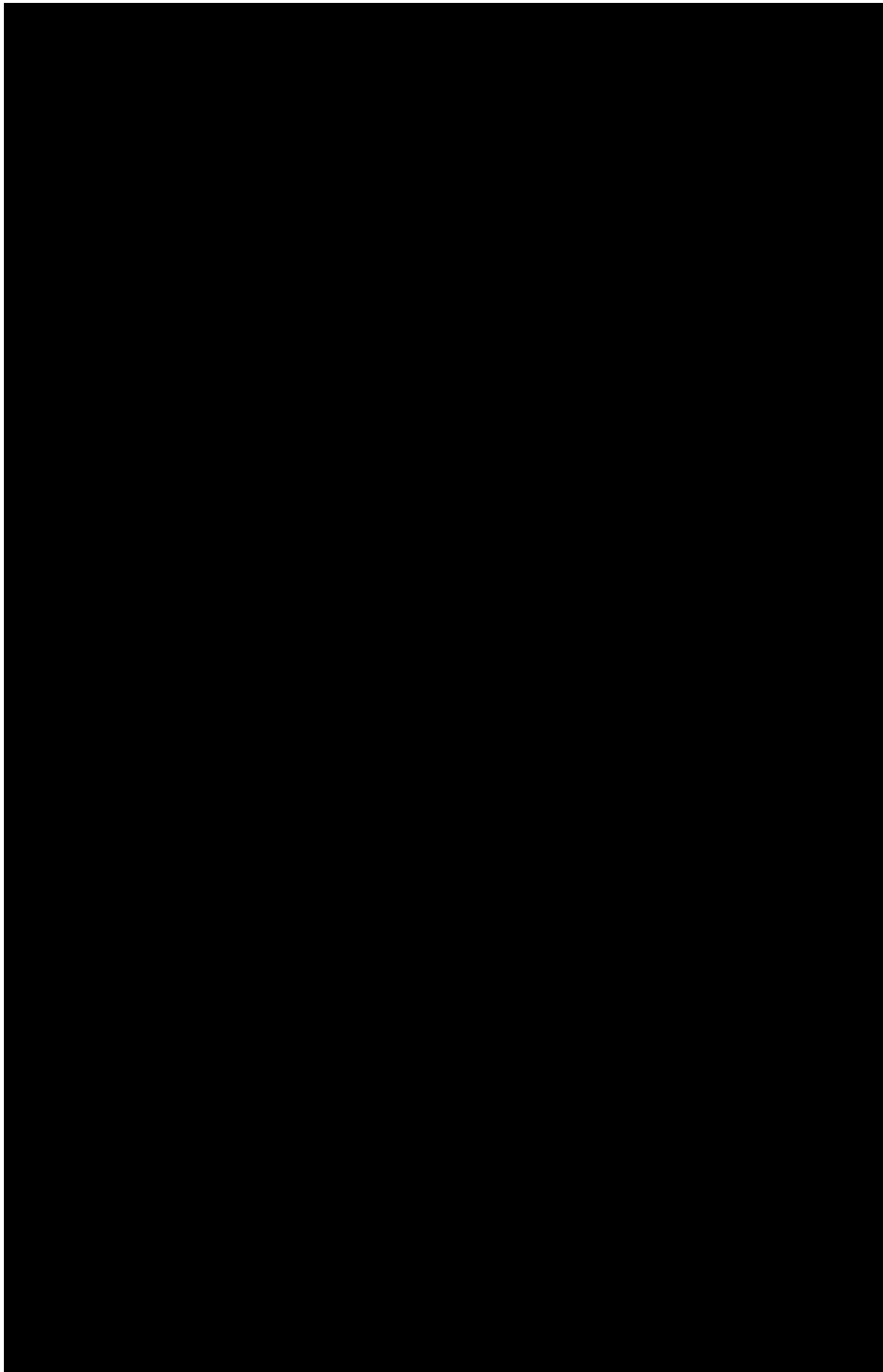


Fig. 72 Specimens of some of the Oriental and foreign type now in use at Gilbert & Rivington's (London, Gilbert and Rivington, printed for the British and Foreign Bible Society, 1875). (Original size: 11,7 × 18,2 cm). Shown at original size. *The Monotype Archives, Salfords.*

We want to know if there are any *Armenian types* or letterpress in England – at Oxford, Cambridge, or elsewhere? You know, I suppose, that, many years ago, the two Whistons published in England an original text of a history of Armenia, with their own Latin translation? Do those types still exist? And where? Pray enquire among learned acquaintance.²¹⁴

In nineteenth century-Europe Caslon's work on Armenian was almost forgotten. In England his Armenian type was superseded by the types produced by the Mekhitarist printing establishment and type-foundry in Vienna. From the mid-nineteenth century Mekhitarist types based on the Amsterdam design spread amongst English printers and few type-foundries. For example, by 1827 the type-foundry of Richard Watts acquired matrices for a small Armenian Bolorgir type from the Mekhitarist type-foundry in Vienna.²¹⁵ The fount appears also in Gilbert & Rivington's *Specimens of some of the Oriental and foreign type now in use at Gilbert & Rivington's*, who probably bought Watts's collection in 1871, and also in Clowes & Sons' *Specimen of foreign type* (1931)²¹⁶ after the type-foundry bought Gilbert & Rivington's types in 1908 [Fig. 72].²¹⁷ In 1894 the Cambridge University Press's Syndics authorised the purchase of Armenian type from Vienna.²¹⁸ This was probably the Armenian Bolorgir fount,²¹⁹ which appeared in the 1901 'Specimen of oriental founts' available for book composition at the University Press Cambridge [Fig. 73].

214 Byron's letter to Murray of January 2, 1817. Rowland E. Prothero (ed.), *The Works of Lord Byron: Letters and Journals*, (revised edition), vol. 4, (London, John Murray; New York, Charles Scribner's Sons, 1900), p. 42.

215 Lane, *The Diaspora*, p. 137.

216 See: Clowes & Sons, *Specimen of foreign type* (London, 1931) Armenian no. 1, p. 31.

217 Gilbert & Rivington did not take over Richard Watts press or foundry when he died in 1844. Indeed, Watts was succeeded by his son John Mavor Watts. The printing office and type-foundry seem to have remained with Watts until his office burnt down on 19 March 1870. From at least December 1870 Watts appears in imprints with two addresses: the one he began using immediately after the fire and another, which is the address of Gilbert & Rivington (an address they had been using since at least 1832). Watts continues to appear in imprints with these two addresses into 1871. In mid-1871 Gilbert & Rivington began appearing in colophons instead of Watts. According to Lane, Watts must have made some sort of agreement with Gilbert & Rivington in 1870 and probably formally sold his materials to them in 1871, but they might have had them de facto in 1870. William Wright, *Catalogue of Syriac manuscripts in the British Museum*, 1872 preface, signed 9 November 1872, p. xxxiii; 'Mr Mavor Watts printing office' *The Athenaeum*, 2213 (26 March 1870), p. 442. The author is grateful to John Lane for providing the information and for bringing to her attention both sources.

218 David McKitterick, *A History of Cambridge University Press: New Worlds for Learning, 1873–1972* (Cambridge, Cambridge University Press, 2004), vol. 3, p. 119.

219 Information is provided by the Monotype Company in Salfords when working on Series 638. The Armenian type from Cambridge University Press is described as a '12–D [Didot] on English body'. Handwritten note, 'New face Armenian', undated. Armenian Folder. Monotype Archives, Salfords, UK. Series 638 is discussed in Section 4.3 of this thesis.

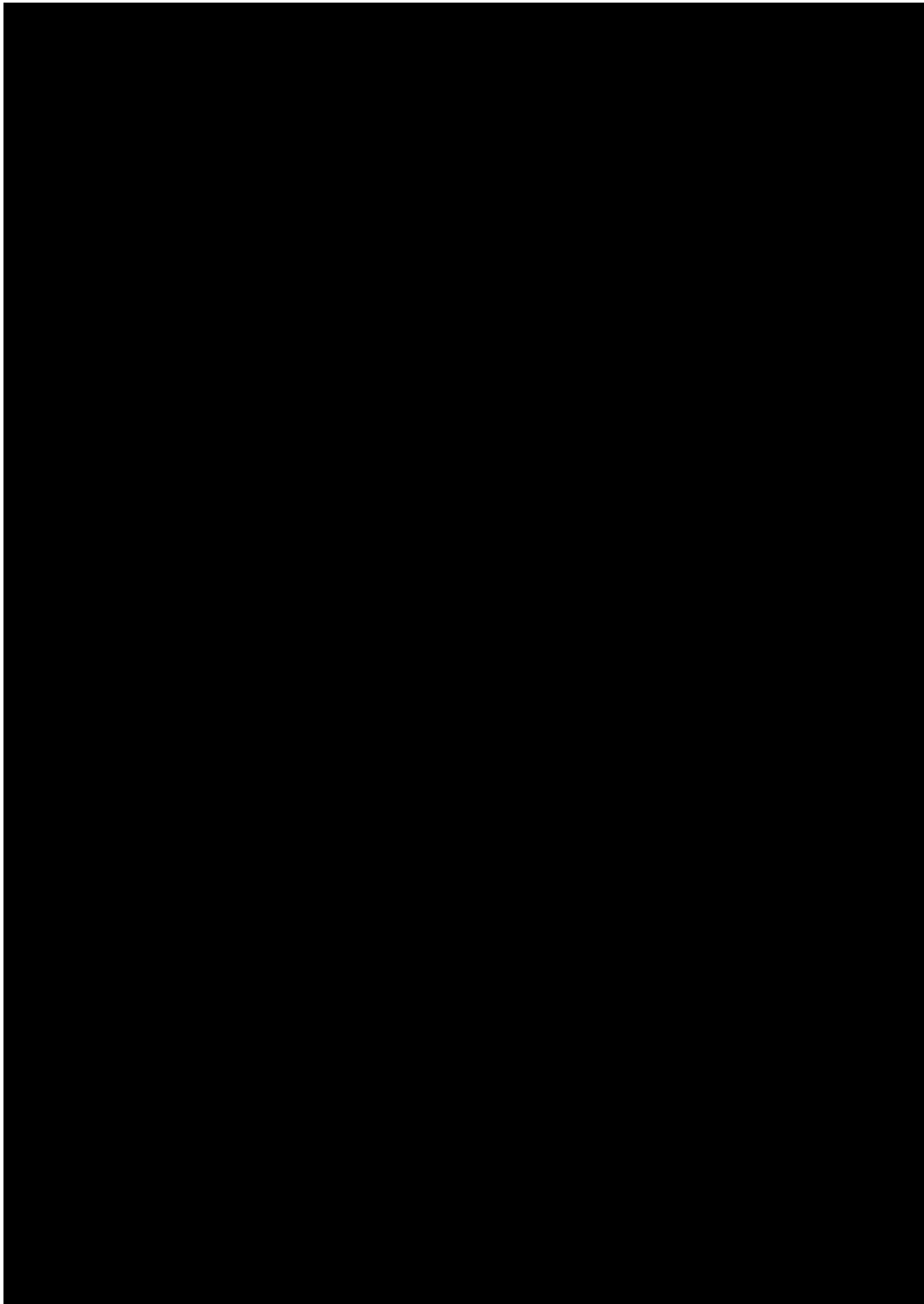


Fig. 73 Armenian types of Cambridge University Press. Two sizes of Armenian are shown, the smaller size is used next to a Latin typeface. *Specimens of Oriental Founts* (Cambridge, Cambridge University Press, 1933), (Original size: 14 × 19,8 cm) p. 26. Shown at original size. *The University of Reading library, Reading.*

3. The beginning of the Latinisation of the Armenian script and its spread

Latinisation is the adaptation or acquisition of Latin design features, such as proportions, x-height, and serifs, by other scripts.¹ The Latin typographic script became a point of reference for a number of other writing systems, including Cyrillic and Arabic, enabling them to depart from their traditional forms: besides borrowing stylistic details and proportions from the Latin script, the Latin alphabet has been used to substitute letters for other scripts.² In addition, the way a Latin typographic family is set up with bold and italic styles has been applied to other scripts.

Latinisation contributed to the reduction of cultural diversity:³ the adoption of the Latin typographic conventions into other scripts aimed to embrace the culture of the Western industrial countries, with detrimental consequences for the cultural identity of affected populations. Latinisation had been tied to social progress: for instance, alphabet reforms such as those introduced in Cyrillic and Turkish alphabets were made to introduce a degree of modernity into the social order of the Russian Empire and the new Republic of Turkey.⁴

3.1. Historical and political context in the second half of the nineteenth century

During the second half of the nineteenth century, the Armenian territory was split between two empires: Tsarist Russia in the east, and the Ottoman Empire in the west. The nineteenth century was a period of active contact between Armenians and Europeans, particularly French and Italians. A large number of Armenian students, sons of wealthy merchants of Constantinople, were sent to Europe to receive education. The first group went to the Mekhitarist Monastery in Venice, and other students arrived in Paris between 1839 and 1856; there they lived in the stimulating atmosphere of the French revolutions of 1830 and 1848, strongly influenced by the liberal context in which they found themselves. These young Armenian scholars returned to Constantinople with the wish for freedom from the Ottoman Empire.⁵

1 Puzzovio, 'The story of the Armenian alphabet', *Baseline*, 58, p. 43.

2 The reform of the Cyrillic alphabet – implemented by Peter the Great between 1708 and 1710 – and the reform of the Turkish alphabet introduced by Atatürk and officially adopted in November 1928 are evidence of the supremacy of the Latin script over other writing systems. See: Maxim Zukhov, 'The peculiarities of Cyrillic letterforms', *Typography papers*, 1 (1996), pp. 5–26, and Geoffrey Lewis, 'The new alphabet', *The Turkish language reform* (1999), pp. 27–39.

3 Interview with Hrant Papazian 'Calling mr Papazian', 24th April 2004. Retrieved from: <http://www.daidala.com/25apr2004.html>. Accessed in August 2016.

4 See: Zukhov, 'The peculiarities of Cyrillic letterforms', pp. 5–26; and Lewis, 'The new alphabet', pp. 27–39.

5 Anahide Ter Minassian, *Histoires croisées. Diaspora Arménie Transcaucasie 1890–1990* (Marseille, Editions Parentheses, 1997), p. 50.

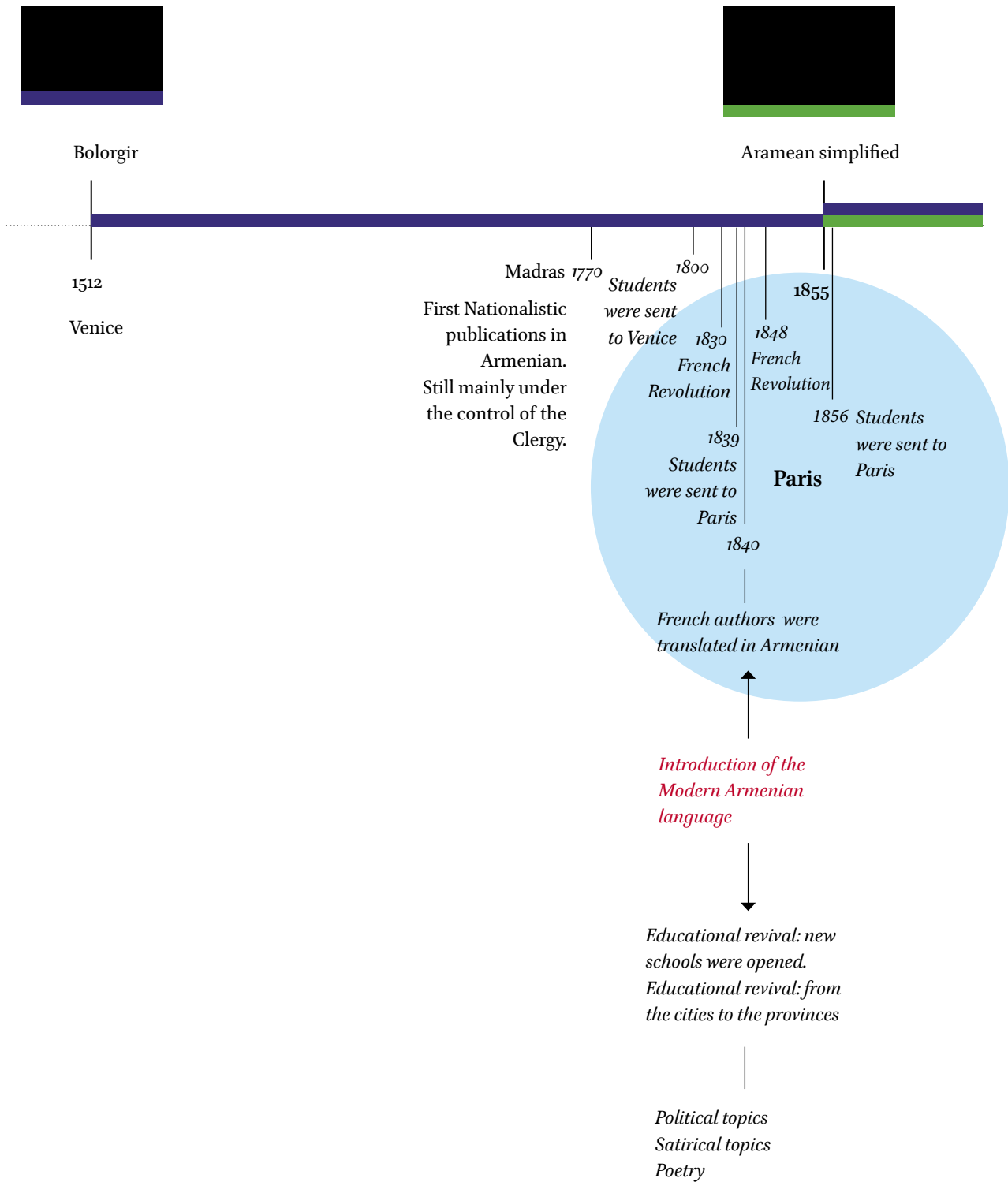


Fig. 1 Diagram describing the historical background in Paris in the nineteenth century and the change from the traditional Bolorgir to the new upright style in 1855. Diagram by the author.

In 1839 the ‘Hatt-i-Sharif Imperial Edict of Reorganization’ initiated the era of Tanzimat: a series of reforms were undertaken in an attempt to modernise the Ottoman Empire while preserving its power against nationalist movements.⁶ Moreover, ‘Hatt-i-Sharif’ attempted to integrate non-Muslim and non-Turks into the Ottoman society so as to control all citizens.⁷ In 1848 the Armenians of Constantinople gathered in protest, fighting for the cause of freedom and democracy.⁸

The assimilation of European revolutionary concepts and the attempt of Armenians to affirm their national identity coincided with the development of a modern Armenian language at the expense of the classical Armenian language, known as Grabar.⁹ With the introduction of the modern language, Armenian publications no longer restricted their content to religious or scholarly topics, but started to feature translations of European contemporaries, mainly French authors. Among Armenian readers, the publications of French writers (some of them also political activists) such as Victor Hugo, Eugène Sue, Alexandre Dumas, and Alphonse de Lamartine, were in great demand.¹⁰ New literary genres, such as satire, theatre, prose, and journalism were introduced.¹¹ The latter was most effective and a direct tool to spread literary, social, economic and political ideas among people.

The social upheaval against Ottoman hegemony combined with the influence of the French environment affected the Armenian typographic script, as this period witnessed the transition from the traditional Bolorgir style to the new upright Armenian and the introduction of Westernised features. The Bolorgir style became mostly associated with religious publications, such as the translation into Armenian of the Psalter and the Bible, or with educational titles, commissioned by clergymen even amongst the Diaspora to spread Catholicism among Armenians. Armenian pre-1840 journals were still controlled by the clergy,¹² who attached no importance to Armenian history and customs as a subject matter for the journals [Fig. 1]. However, as a consequence of the political changes of the nineteenth century, publications became more nationalistic and revolutionary, and their contents took a marked propagandist form. In their attempt to obtain freedom from the Ottoman hegemony, the Armenian Diaspora submitted to the influence of Western typographic features.

6 Hacikyan, *The heritage of Armenian Literature*, vol. 3, p. 13.

7 Ibid. p. 21.

8 Nalbadian, *The Armenian revolutionary movement*, p. 45.

9 For more information about Grabar and its evolution see: Hacikyan, *The heritage of Armenian Literature*, vol. 3, pp. 61–62.

10 Ibid. p. 65.

11 Claude Mutafian, *Arménie, la magie de l'écrit* [Exposition, Marseille, Centre de la vieille charité, 27 avril-22 juillet 2007], p. 365.

12 Nalbadian, *The Armenian revolutionary movement*, p. 35.

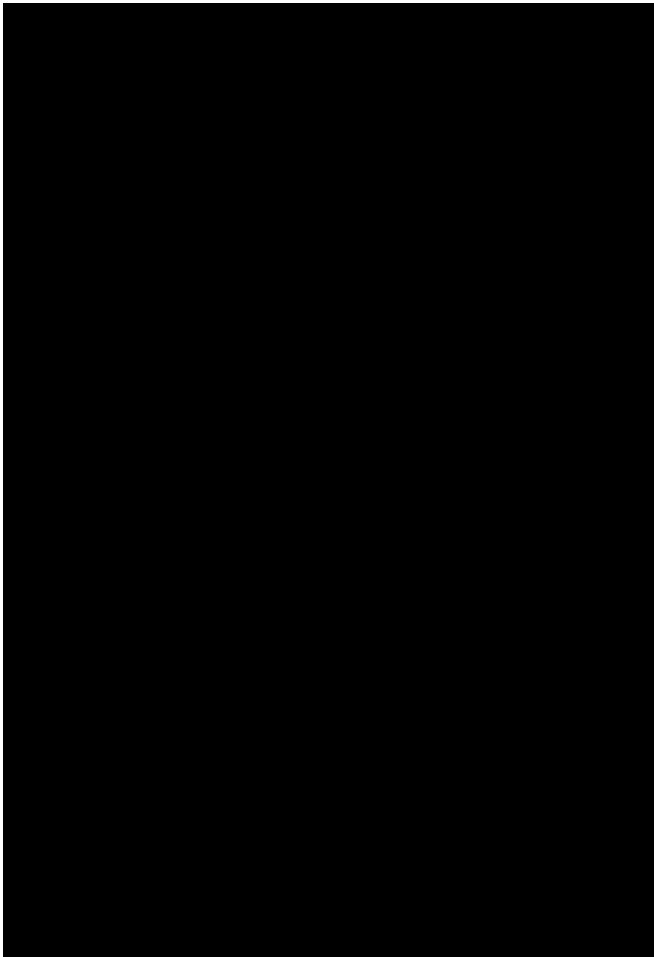


Fig. 2 Yovhannes Miwhêntisean, Յայտարարութիւն վասն նորակերպ քարտիչս (Announcement for the sake of the newly formed letters) (Constantinople, Printing House of Yovhannes Miwhêntisean, 1847). (Original size: 8,3 × 12,3 cm). Shown at original size. *The Mekhitarist Library in Vienna.*

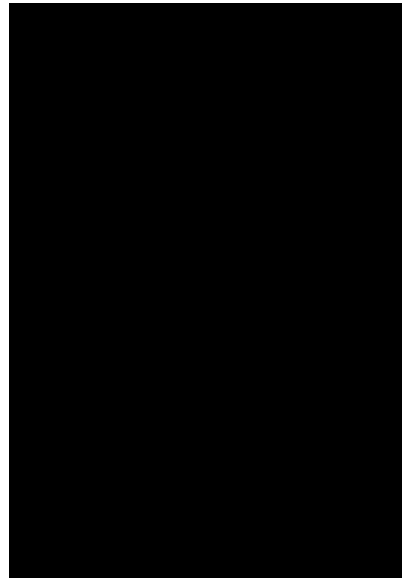


Fig. 3 Metal type unknown. Character 1 was part of an unsorted group of different cast types displayed at the Mekhitarist Museum in Vienna. Probably 19th century, hand cut. The upper part of the type body has been shaved away at an angle with a plane, ('bearded' to use the English word), so that it would not pick up ink and print by accident. *The Mekhitarist Museum in Vienna.*

3.2 The new and old forms

A noteworthy 16-page pamphlet¹³ in Armenian language entitled *Announcement for the sake of the newly formed letters* was published in 1847 in Constantinople by the Armenian publisher, printer, type founder and punch-cutter Yovhannes Miwhêntisean (1810–1891) [Fig. 2].¹⁴ In his youth, Miwhêntisean discovered his interest for crafts and music; at the age of fifteen he pursued an apprenticeship in jewellery and he managed to master this art to the extent of surpassing his teacher: Miwhêntisean's handcrafting skills earned him a reputation as 'chief goldsmith'.¹⁵

In about the year 1830 he obtained a position at the mint, but he soon left to work on his own to produce refined handicrafts. In 1839 he started his printing activity and even began to make 'steel typefaces in [his] free time'.¹⁶ His skill as a goldsmith enabled him to engage in the art of punch cutting and to establish his own type-foundry.¹⁷ Miwhêntisean did not restrict his activity to devising types and to printing publications, but he also contributed to the development of Armenian typography by writing his theory and principles on Armenian types.

In the *Announcement* Miwhêntisean points out that the printed form of lowercase letters in the Bolorgir style presents several impediments for printers, publishers and readers. He considers that a revision of the Bolorgir style would enable the production of low-priced books, increase the number of type-foundries that handled Armenian types, ease type-making and type founding, and finally encourage the establishment of Armenian printing houses.¹⁸ It is in this context that Miwhêntisean's *Announcement* deserves attention.

According to Miwhêntisean, a major deficiency in the lowercase letters of Armenian Bolorgir types was the fragility of some of the characters: for instance, letters լ, ը, զ and վ which have a long horizontal stroke attached to the descender that can break easily.¹⁹ The issue can be understood when looking at the cast type: for example, letter լ [Fig. 3] is kerned on the right in order to obtain even letter-spacing during composition.

13 On p. 1, Miwhêntisean refers to his announcement as the 'latest'. This implies that he had written at least one other before 1847.

14 Ohanis Mühendisoglu in Ottoman-Turkish. Born in Samatya (a quarter of the Fatih (capital) district of Istanbul, Turkey), Yovhannes was the son of Muhentis Gregor, a remarkable scientist and the assistant of the chief architect Grigor Balyan during the reign of Sultan Mahmud. Teodik [Teodoros Lapchinyan], *Tip u tar*, 2nd edn (Lisbon, Calouste Gulbenkian foundation, 2006), p. 77.

15 Ibid. pp. 77–79.

16 Ibid. p. 79. Translated from Armenian by Anna Talalyan, July 2016.

17 He set up his printing activity in the laundry house of the St. Jerusalem's Seminary in Uskudar (on the Anatolian shore of the Bosphorus). In 1843 the seminary closed and Miwhêntisean moved his typographic equipment to Constantinople. In that year, he was invited by the inspection board of the Imperial Printing House (Takvimhane Amire (Prince)) to cut and cast Turkish types (Ta'lig).

Miwhêntisean had a type-foundry (1882–3) in his apartment in Bera, in cooperation with Grigor Rafaelian. Because his place was not fitted for this purpose, he moved the type-foundry to Constantinople and passed it to St. Tamatian, who ran it for several years until the death of the master. Then Tamatian's sons continued the activity of the type-foundry, in cooperation with Khachik Gevorgian. Teodik, *Tip u tar*, pp. 78–79, 86. For information on Miwhêntisean's printing, publishing, and type founding activities see: Teodik, *Tip u tar*, pp. 77–87.

18 Yovhannes Miwhêntisean, *Յայտարարութիւն վասն նորակերտի տառիցս* (*Announcement for the sake of the newly formed letters*) (Constantinople, Printing House of Yovhannes Miwhêntisean, 1847).

19 Ibid. p. 3.



Fig. 4 In his *Announcement*, Miwhêntisean explains that to compose the word շըլըլըլիը with the old Bolorgir style properly, it was necessary to cut characters լըի at a smaller size.

Detail from Yovhannes Miwhêntisean,
Յայտարարութիւն վասն նորակերպի տառիցս
(Announcement for the sake of the newly formed
letters) (Constantinople, Printing House of Yovhannes
Miwhêntisean, 1847). (Original size: 8,3 × 12,3 cm).
Shown at original size. *The Mekhitarist Library in
Vienna*.

This means that by extending outside the block of type, the kern (the tail in լ) can be easily damaged. Kerning types were occurrent in other scripts too: for example, in the Latin script the kerned f was a common feature of nearly all types, roman or gothic. Since letter f was a fragile type, founders generally shaved the underside of the kern in case variations in the height of the next letter induced stresses that could break the metal.²⁰ The fragility of some of the Armenian characters might be explained by the lack of punch-cutting skills, but in the case of Miwhêntisean, who was a skilled punch-cutter, it is possible that he was not fully familiar with European punch-cutting and type founding techniques. Indeed, according to the first Armenian historian of Armenian printing Teodik, Miwhêntisean would have invented ‘a special tool, an entire equipment to easily and smoothly engrave Armenian letters on steel, with which he would mix copper and steel to easily extract matrices from moulds under high pressure and to then cast lead letters with those.’²¹ The innovation largely facilitated the processes of engraving and casting of typefaces, given that never in his life had Miwhêntisean studied or imitated the subtleties of European craft.²²

Miwhêntisean believed that the breaks of some Armenian sorts affected the quality of publications since there would be missing elements in the text. Additionally, the costs of publications would increase because the typographer needed to bear the cost of casting new characters to replace the broken ones.²³ In the *Announcement*, the author explains that another issue which lead books to be overpriced is caused by alternate characters (these are: ծոցազիր ‘Dzotsakir’ and փակազիր ‘Pagakir’ letters)²⁴ needed to be nested in the tailed letters to improve letter-spacing [Fig. 4]. Firstly, since the many alternates²⁵ increased the character set, the punch-cutter and the type founder had to carry out a considerable amount of work. Secondly, cutting small types and particularly tailed letters in a small size required competence.²⁶ For example, in a small punch the internal curves were particularly difficult to execute as it was necessary to cut deep enough into the metal.²⁷ Thirdly, Miwhêntisean believed that alternate characters influenced the composer’s pace of work and complicated the composing process.²⁸ If a composer was not familiar with the Armenian script he would be liable to make mistakes – either alternate characters would not be put in the right case after being used, or they would not be properly employed in combination with a tailed letter – and time would be spent on rearranging the types after a galley proof was done.

20 ‘Type held in the hand’. Retrieved from: <http://typefoundry.blogspot.com/2012/01/type-held-in-hand.html>. Accessed on 10 April 2019.

21 This needs further study.

22 Teodik, *Tip u tar*, p. 80. Translated from Armenian by Anna Talalyan, July 2016.

23 Miwhêntisean, *Announcement*, p. 3.

24 ‘Dzotsakir’ letters are: ի, իւ, կ, թ, ի, գ. These were cut in a smaller size to fit inside the tailed letters. The tailed letters are known as ‘Pagakir’ and are: զ, լ, ղ, ճ, զ, վ. Also the tailed letters were often cut in a smaller size to fit inside preceding tailed letters. For example in the word չըլլը. Since the pamphlet *Announcement* is written in Western Armenian language, transliteration is also made according to Western Armenian.

25 The first Armenian publication printed with movable type, the *Friday Book* (1512), uses alternate characters as a solution for letter-spacing. See Chapter 1.2.1 of this thesis.

26 Miwhêntisean, *Announcement*, p. 4.

27 See: Smeijers, *Counterpunch*, p. 100.

28 Miwhêntisean, *Announcement*, p. 4.

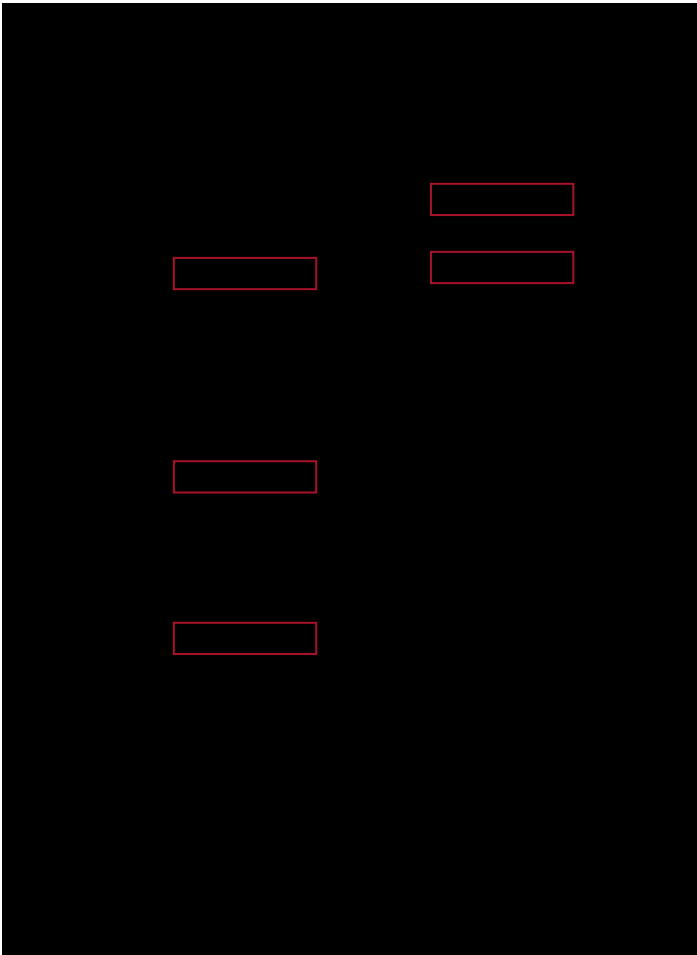


Fig. 5 Some letters in the new style (left column) and old styles (right column). The red rectangles emphasise letters լ, ղ, ճ, ի and զ in both styles. Letters լ and ղ in the new style have alternate characters. Miwhêntisean created alternates when letterforms were not satisfactorily designed. Yovhannes Miwhêntisean, *Յայտարարութիւն վասն նորակերպի տառերիս* (Announcement for the sake of the newly formed letters) (Constantinople, Printing House of Yovhannes Miwhêntisean, 1847). (Original size: 8,3 × 12,3 cm). Shown at original size. *The Mekhitarist Library in Vienna*.

In the nineteenth century, a major issue was the limited number of type-foundries selling Armenian types, and the existence of only a few printing establishments producing Armenian publications; only a few were able to sustain the costs of printing Armenian journals, which were in great demand at this time. Miwhêntisean explains that in order to print a large format journal in Armenian, a printing establishment had to purchase ‘many kilograms of letters’ in different type sizes and styles (Bolorgir, Notrgir, Erkat‘agir). This discouraged Armenians from setting up printing enterprises and precluded the circulation of useful publications that would have enhanced education amongst Armenians.²⁹

In the face of these difficulties, Miwhêntisean saw the need to revise the printed form of the lowercase letters of the Bolorgir style.³⁰ Not only did the pamphlet inform Armenians – mainly printers and publishers – but also requested its audience to comment upon his new Bolorgir Armenian type.

According to Miwhêntisean, his Bolorgir letters differ from those of a traditional Bolorgir type in abandoning the slant and in folding upwards the tail in letters like լ, ղ, ճ, ի and ղ [Fig. 5].³¹ He believed his type was not different from the previous style to the extent that it is unrecognisable. Moreover, in his *Announcement*, Miwhêntisean argues that since Armenians can read each other’s handwritings straightforwardly, Armenians should be able to interpret the forms of the new Bolorgir style with the same ease as the old one.³² However, Miwhêntisean’s view seems to overlook the fact that conventions in Armenian type were already established since the mid-seventeenth century³³ and that in the nineteenth century the types of the Mekhitarists in Venice (based on Van Dijck and Nicholas Kis’s types) were regarded by readers as superior to other founts and were considered the standard of the printed Bolorgir style.³⁴ Therefore, a vertical upright stance and the folding upwards of the tail would have appeared unconventional to readers.³⁵ On the other hand, the fact that he had written a pamphlet to express his concern about Armenian printing and publishing and that the purpose in publishing the *Announcement* was to receive the help and the advice of ‘intelligent skilled men’,³⁶ means that Miwhêntisean knew he needed to change readers conventions gradually. According to the Dutch type designer and educator Gerard Unger, ‘a typeface that may be perceived ... as having somewhat unconventional details can become accepted in a few years, with its unconventional aspect overlooked’.³⁷ Miwhêntisean did not impose his type on Armenians, but he did try to engage in a dialogue with his audience: he expected ‘patriotic individuals to give their opinion either personally or by writing’.³⁸

29 Miwhêntisean, *Announcement*, pp. 5–6.

30 He also aimed to revise the Notrgir and Erkat‘agir styles. However, this was to be done after the revised forms of the Bolorgir style were accepted by Armenians, p. 16.

31 Miwhêntisean, *Announcement*, pp. 8–9.

32 Ibid. pp. 10–11.

33 This is discussed in the previous chapters of this thesis.

34 See Chapter 2 of this thesis.

35 The right leaning of letterforms was representative of the Armenian script even in manuscript.

36 Miwhêntisean, *Announcement*, p. 15.

37 Gerard Unger, *Theory of type design* (The Netherlands, nai010 publishers, 2018), p. 64.

38 Miwhêntisean, *Announcement*, pp. 15–16.

3. THE BEGINNING OF THE LATINISATION OF THE ARMENIAN SCRIPT AND ITS SPREAD

The new and old typography are not excessively and contrarily different, and even though the new one might not be as beautiful as the old one, I expect it will please many people considering its benefits and conveniences.³⁹

As a punch-cutter, printer, publisher and owner of a type-foundry, Miwhêntisean had a business perspective on the matter: he did not attempt to change the form of the Bolorgir style to make it more appealing to Armenians, but he aimed to unburden type founders, printers and publishers from punch cutting, type founding and printing expenses by reducing the character set, and by making types more solid (by preventing kern letters from extending outside the block of type). Before Miwhêntisean, other printers and punch-cutters had managed to reduce the number of characters produced without deforming Armenian letters: an example is the type used by the Armenian printer Abgar Dpir Toxatec'i in the *Psalter* (1566).⁴⁰ The forms used by Toxatec'i were meant to be as faithful as possible to those of the latest Armenian manuscripts, whereas those of Miwhêntisean looked at Western typography rather than at Armenian printed convention and manuscript tradition.

We got the new letters by changing the Polorakir [or Bolorgir] letters a bit and borrowing a bit from the European typography.⁴¹

The fact that the pamphlet was published in Constantinople – a capital city in European style – can justify Miwhêntisean's preference for European founts. The Reorganization Edict (Tanzimat Ferman)⁴² of 1839 had opened a gateway for Western influence in the Ottoman socio-cultural life,⁴³ encouraging Constantinople to become one of the Ottoman cities to manifest modernisation and Eurocentric mindsets.⁴⁴ Also the façade of the city began to be reorganised based on Western urban design, aiming to reach the standards of the European capitals.⁴⁵ However, Constantinople neither achieved the splendour of Paris and Vienna nor a uniform Western appearance, since Turkish-Islamic buildings continued to exist.⁴⁶ Whether the contemporary façade given to Constantinople was meant to symbolise the renewal of the Ottoman Empire,⁴⁷ the new European façade given to the Armenian script stood for the modernisation of Armenian identity.

39 Miwhêntisean, *Announcement*, p. 10. Translated from Armenian by Nare Kalemkerian, July 2017.

40 See Chapter 1.2.3 of this thesis and particularly Fig. 34 on p. 48.

41 Miwhêntisean, *Announcement*, p. 7. Translated from Armenian by Nare Kalemkerian, July 2017.

42 The Edict was publicly announced in 1839.

43 In Constantinople there were quarters mainly inhabited by Europeans.

44 Ela Çil, Ayşe Nur Şenel, 'Collage of a changing city: nineteenth century Istanbul through the narratives of its administrators, travelers, and writers' in Salvatore Adorno, Giovanni Cristina, Arianna Rotondo (eds.), *Visibile invisibile: percepire la città tra descrizioni e omissioni* (Catania, Scrimm Edizioni, 2014), pp. 732–733.

45 Zeynep Çelik, *The Remaking of Istanbul* (Seattle and London, University of Washington Press, 1986), pp. 48, 156–157.

46 Ibid. pp. xvi, 77–81.

47 Ibid. p. xvi.

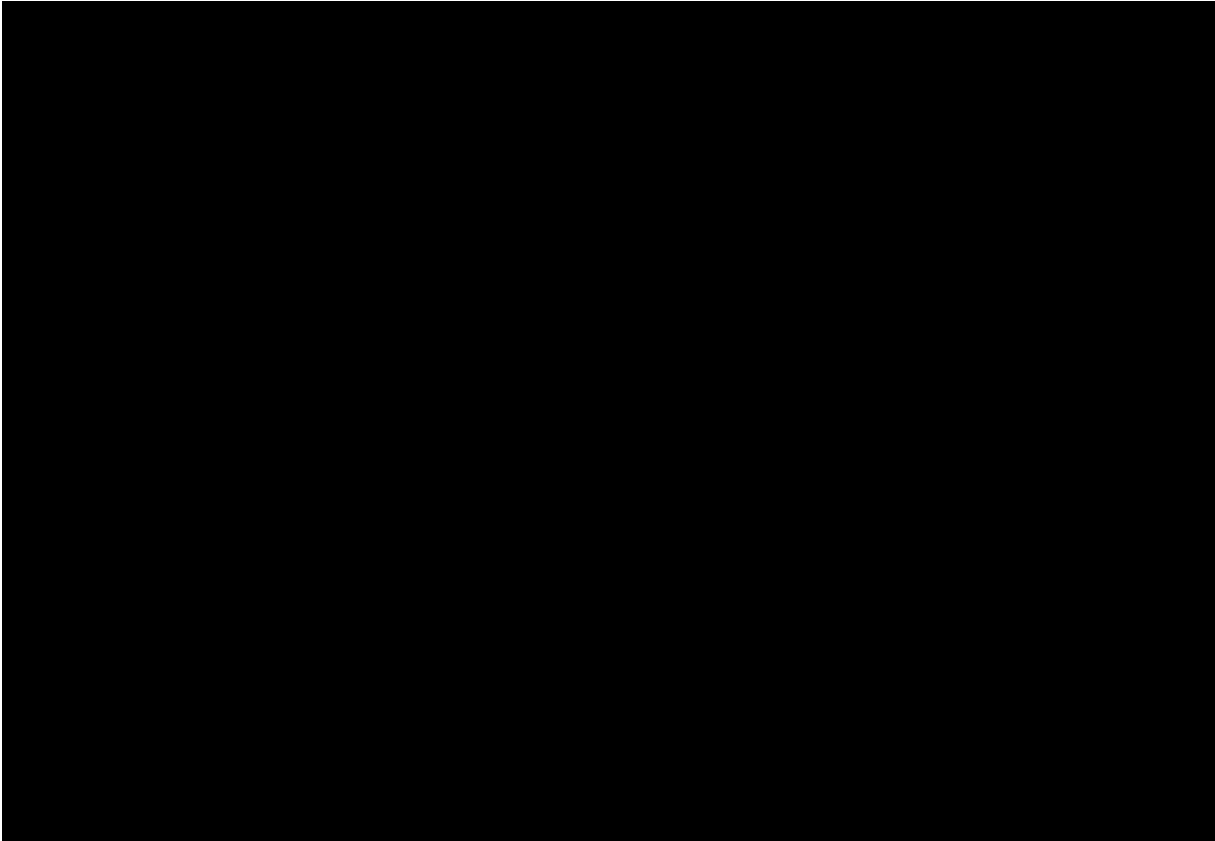


Fig. 6 Frontispiece from H. Peter V. Minasean, Արւեստագրութիւն, (Aruestagrut'iwn) (Specimens of calligraphy). Tuscan, textura, and what Nicolette Gray would describe as 'expressionist' lettering, letters that 'set out to make an impression to readers' [Nicolette Gray, *Lettering on buildings*, (London, The Architectural Press London), p. 72]. (Venice, Armeniaca S. Lazari typographia, 1834). (Original size: 41 × 28 cm). Shown at 40% of original size. *The British Library*.

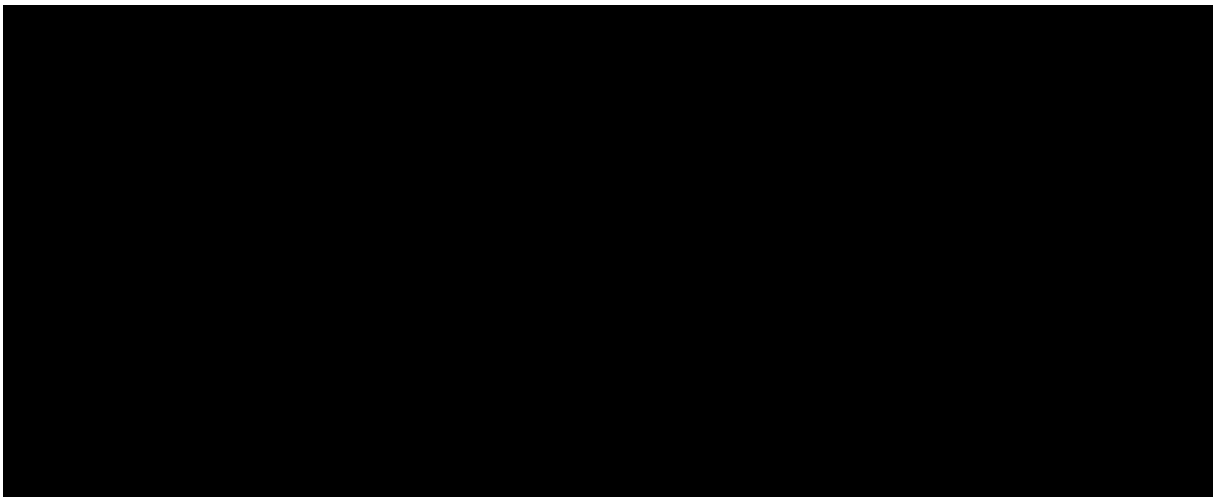


Fig. 7 Detail from H. Peter V. Minasean, Արւեստագրութիւն. This lettering exemplifies the departure from the traditional Bolorgir style. (Venice, Armeniaca S. Lazari typographia, 1834). (Original size: 41 × 28 cm). Shown at 60% of original size. *The British Library*.

Before publishing his *Announcement* in 1847, Miwhêntisean had made connections with individuals from other Armenian diasporic communities to share his ideas on ‘modernising’ the Armenian script and to show his new Bolorgir metal type. This is revealed by Miwhêntisean in the pamphlet (p. 15) when informing readers that the priest H. Peter V. Minasean from the Mekhitarist Congregation in Venice⁴⁸ visited his printing establishment in Constantinople, ‘advised and encouraged’ him to proceed revising the shapes of Armenian letters in Bolorgir style.⁴⁹ This fact emphasises that in the nineteenth century the Armenian Diaspora was a very close-knit group, with an active network between Armenian diasporic communities’ printing houses. Additionally, it indicates that Miwhêntisean’s view was shared by other individuals, even by the Mekhitarist printing and publishing house in Venice, which was the successor of the Amsterdam printing offices.

In 1834 the Mekhitarist Congregation in Venice published a specimen of calligraphy, produced by the priest Peter Minasean [Fig. 6]. The specimen, lithographically printed,⁵⁰ had Armenian, Latin, Arabic, Greek and Russian lettering. Here, Armenian letters were drawn in several styles, most of them imitating nineteenth-century European lettering [Fig. 7]. The new styles of Armenian, presented in the specimen from 1834, were meant to be used in books for title pages: this can be observed in Agathangelos’s *Ագաթանգեղոսի Պատմութիւն* (History of Armenia), published by the Mekhitarists in Venice in 1835 [Fig. 8]. The Armenian text in the frontispiece – the title of the book and the place of publication – is engraved in three different styles, but the rest of the book is printed with a traditional Bolorgir fount of type. Four years later, the Mekhitarists in Vienna also published a lithographic specimen of Armenian calligraphy, in which Armenian letters were based on nineteenth-century European styles [Fig. 9]. The Mekhitarists in Venice began to use Armenian letters in Tuscan style from 1846 for the title of their periodical *Bazmavep*⁵¹ (the first instance is in issue 1, January 1846) [Fig. 10],⁵² and Armenian type in Old English style for the subheading used in the front page for the year 1846 [Fig. 11].⁵³ It is likely that Miwhêntisean’s idea to revise the forms of the Bolorgir style was triggered by the emerging Armenian styles developed in the 1830s by both the Mekhitarists in Venice and Vienna for their title pages. He even seems to have borrowed from the lettering by the Viennese Mekhitarists some design features, such as the folding of the tails and the bulbous terminal attached to their end, identifiable in the Old English style that appears in their specimen published in 1839 [Fig. 12].

48 In the main text Miwhêntisean provided only the initials of an Armenian priest from Venice: V. H. P. M, rather than his full name. However, since in a footnote Miwhêntisean stated that it was V. H. P. M who created the rich calligraphy published in Venice in 1834, the author was able to identify the priest as H. Peter V. Minasean. Miwhêntisean, *Announcement*, p. 15.

49 Ibid. p. 15.

50 Except for the introductory text of the specimen that is printed with Armenian movable metal types.

51 These were probably printed from either woodblock or copperplate. Letters show subtle irregularities in design: for example, in *Bazmavep* 1 (January 1846), the two U (second and fifth letters) differ in the width of their shadow, suggesting that the heading was not printed with movable type.

52 In *The Diaspora*, Lane claims that the Mekhitarists in Venice began to use Tuscan types for the title of the journal *Bazmavep* and Armenian types in textura (English style) for its subheading in 1848. Lane, *The Diaspora*, p. 194.

53 The design of letters is consistent throughout the two lines of text, suggesting that it was movable type.

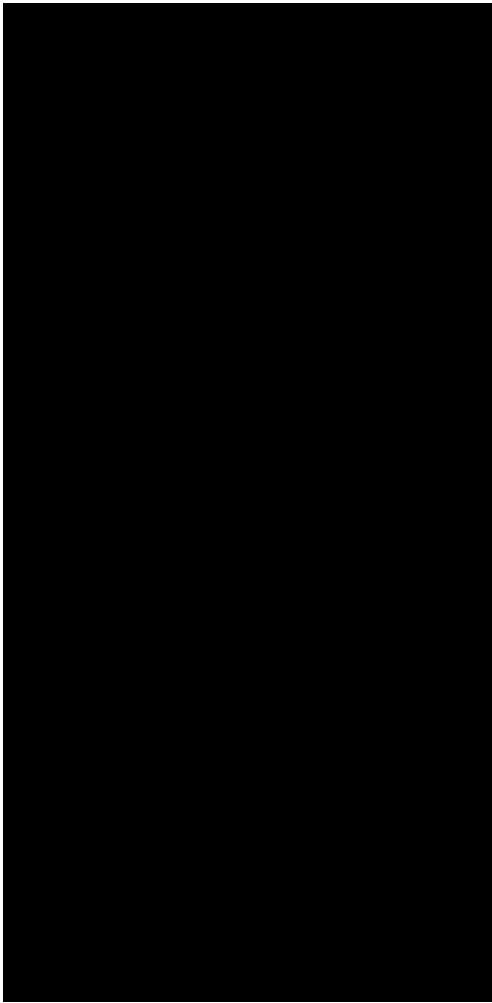


Fig. 8 Agathangelos, *History of Armenia* (Venice, Armeniaca S. Lazari typographia, 1862). The frontispiece, engraved, is dated 1835. The 1835 publication is the third edition. This work was first printed in 1709 in Istanbul by Grigor Marzuantsi; the second edition followed in 1822. The Armenian press on the island of San Lazzaro in Venice printed the revised and corrected text in 1835, 1862 and 1930. (Original size: 6,5 × 13,2 cm). Shown at original size. *The British Library*.

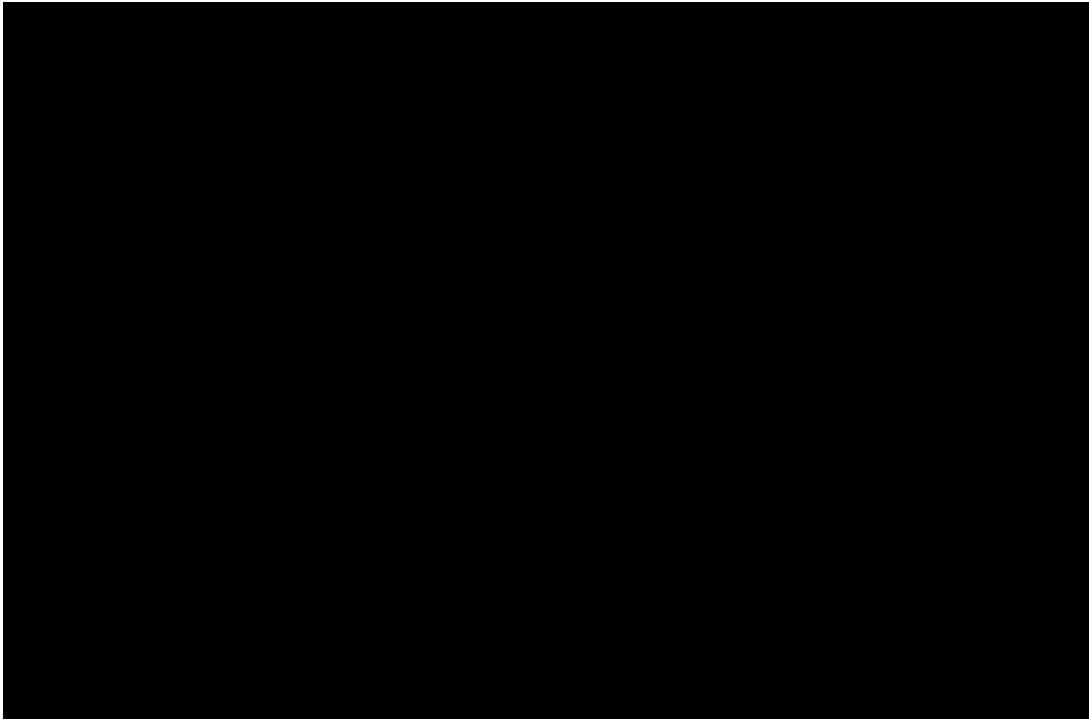


Fig. 9 Frontispiece from H. Alexander Palcheants, *Վայելչագրութիւն*, (Vayelch'agrut'iwn) (Specimens of calligraphy) (Vienna, the Mekhitarist Press 1838). (Original size: 47,9 × 31,6 cm). Shown at 30% of original size. *The Mekhitarist Library in Vienna.*

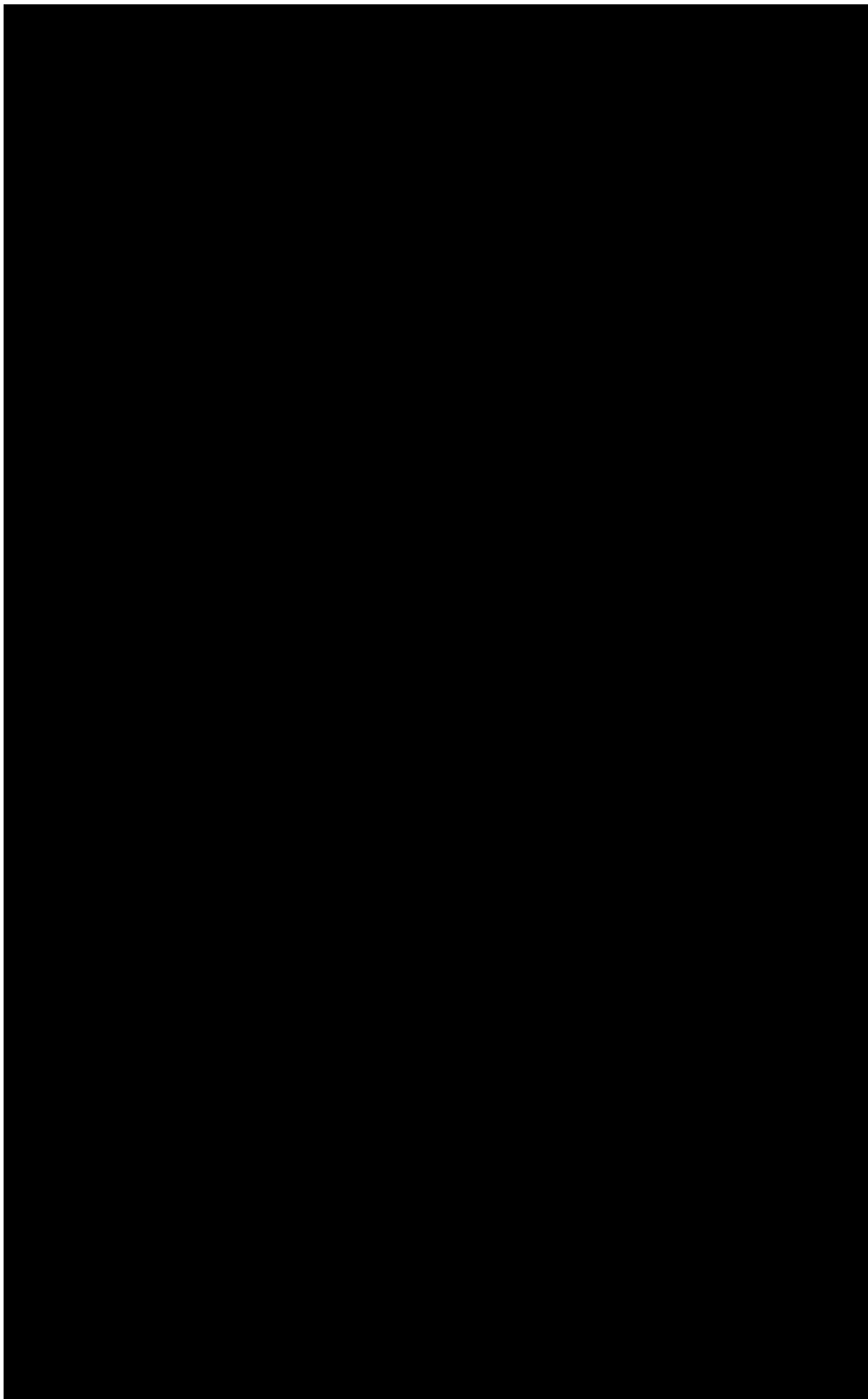


Fig. 10 *Bazmavep* (1 January, 1846). (Original size: 15,7 × 25,5 cm). Shown at 100% of original size. *The British Library*.

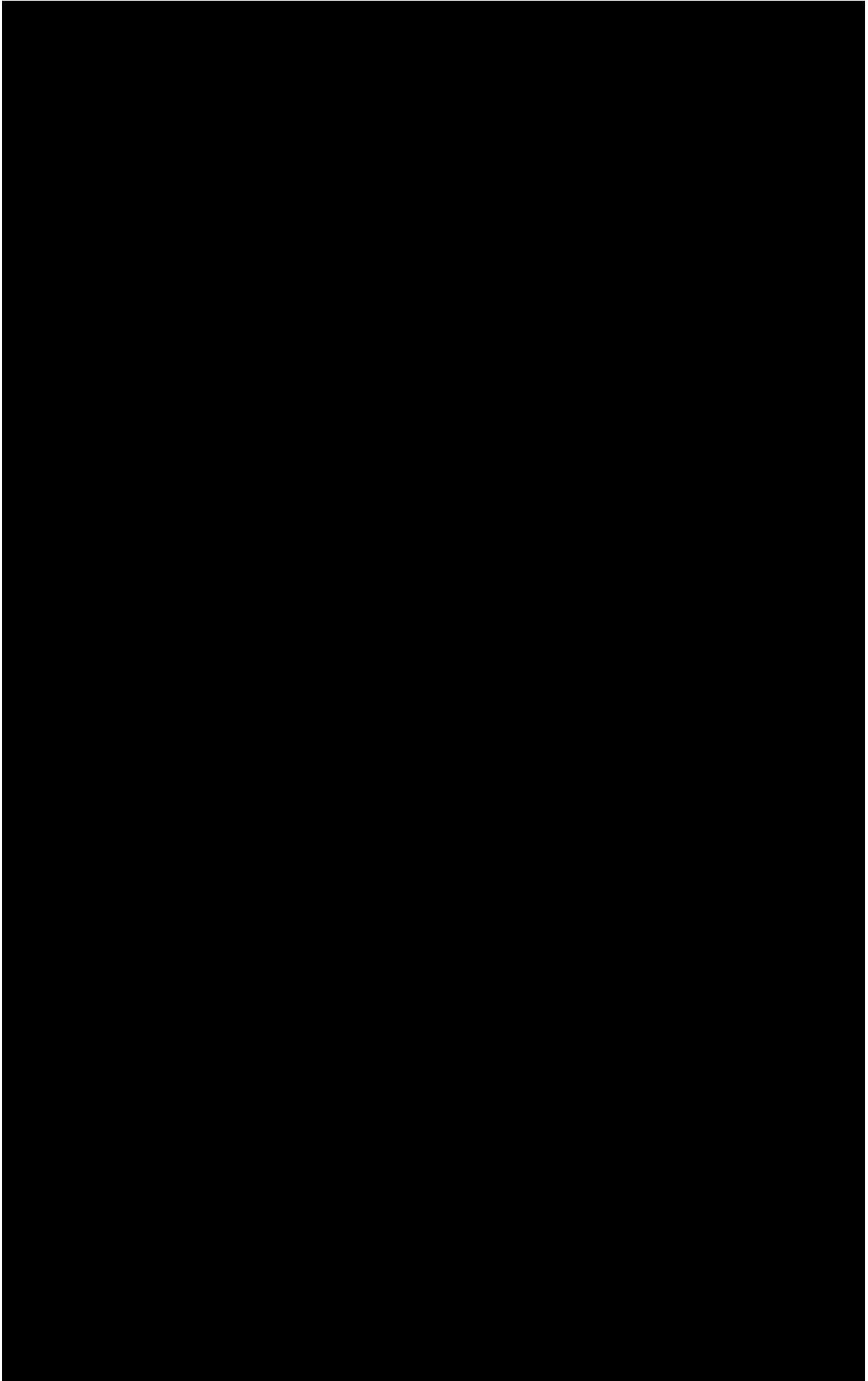


Fig. 11 *Bazmavep*, (title page) (Venice, The Mekhitarist Press, 1846). (Original size: 15,7 × 25,5 cm). Shown at 100% of original size. *The British Library*.

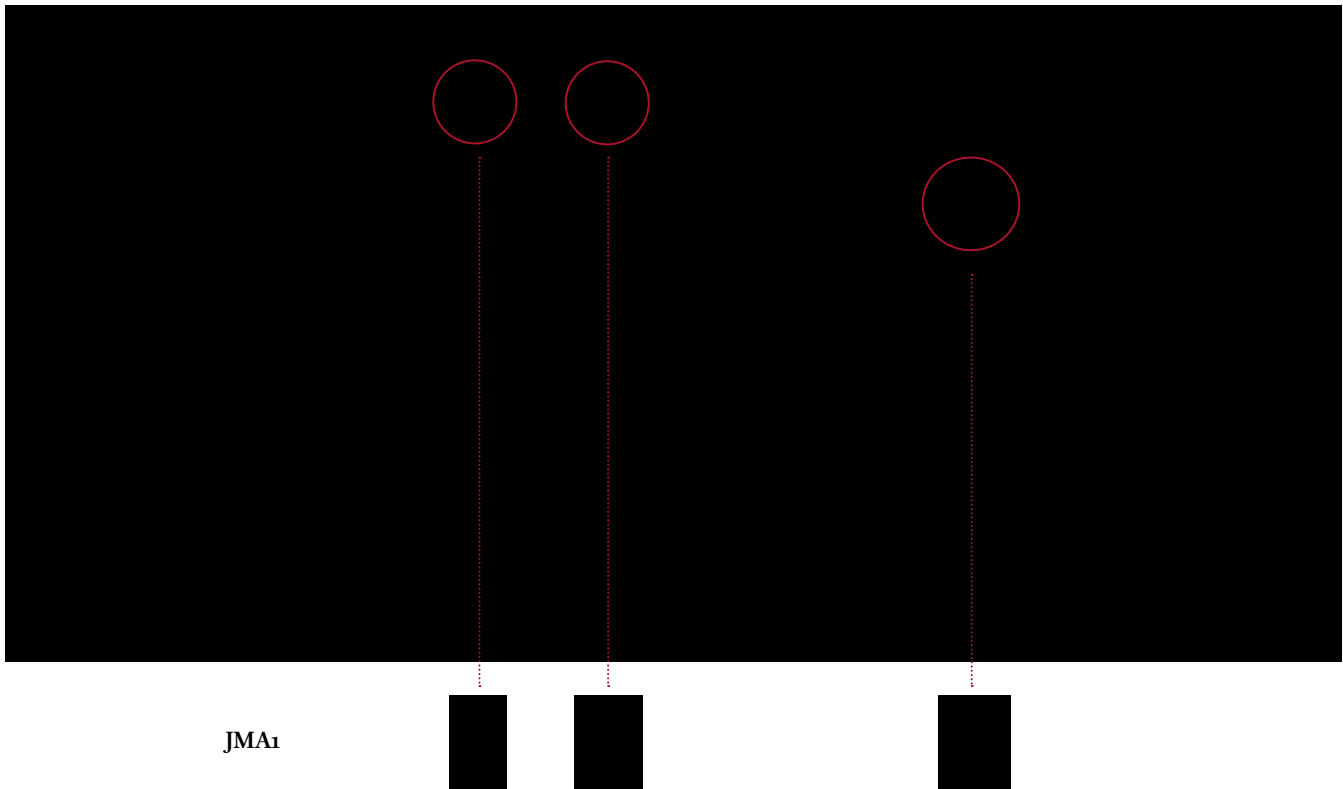


Fig. 12 Detail from H. Alexander Palcheants, *ψαγτεζααφρουθινῶν* (Specimens of calligraphy) (Vienna, the Mekhitarist Press 1838). (Original size: 47,9 × 31,6 cm). Shown at 70% of original size. *The Mekhitarist Library in Vienna*.

JMA₁: from Yovhannes Miwhêntisean, *Ἐαγγελισμὸς τῶν ἀνωμαλιῶν* (Announcement for the sake of the newly formed letters) (Constantinople, Printing House of Yovhannes Miwhêntisean, 1847). (Original size: 8,3 × 12,3 cm). Shown at 400% of original size. *The Mekhitarist Library in Vienna*.

ABA₁



JMA₁



Fig. 13 Top: Vertical proportions of ABA₁. Bottom: Vertical proportions of JMA₁. JMA₁ has short ascenders and descenders and a great base character height.

ABA₁: *Ἐαγγελισμὸς* (The Four Gospel) (Venice, Bortoli, 1759). (Original size: 10,5 × 15,6 cm). Shown at 300% of original size. *The Mekhitarist Library in Venice*.

JMA₁: from Yovhannes Miwhêntisean, *Announcement for the sake of the newly formed letters* (Constantinople, Printing House of Yovhannes Miwhêntisean, 1847). (Original size: 8,3 × 12,3 cm). Shown at 400% of original size. *The Mekhitarist Library in Vienna*.

Otherwise indicated, all images on pp. 204, 206 are shown: ABA₁ at 300% of original size and JMA₁ at 400% of original size.

Analysis of the type

The type Miwhêntisean proposed in 1847 – hereafter referred to as JMA1 – was cut upright at 7 pt size. JMA1 departs from the vertical proportions of traditional Bolorgir types⁵⁴ by shortening ascenders and descenders, and increasing the base character height [Fig. 13]. Additionally, JMA1 attaches serifs to the extremity of its vertical stems: the generally stubby serifs are placed on one side of stems, except for descenders that have serifs on both sides [Fig. 14]. Occasionally bulbous terminals appear in outstrokes of letters such as q, Է, Ն and ը [Fig. 15].

JMA1's capital letters, faithful to the manuscript tradition and to the old Bolorgir style, are placed within the vertical range of descenders and ascenders of lowercase letters [Fig. 16]. Instead of being squared and slanted, JMA1's shapes are rounded and upright. However, JMA1's letterforms still preserve features from the traditional Bolorgir style. For instance: the tail of Լ and termination of letters ն and ք are kept long to ensure legibility; the lower part of letter Ը in JMA1 extends below the baseline preserving its original shape of an arc open towards the left [Fig. 17].

Significant changes were made to the design of all tailed letters. For example, the structure of letters q, ղ, and վ is wholly altered: the dimensions of the bowl of q and of the arch and arm of ղ and վ are reduced to enable their tail to be folded upwards. In those cases, the tail ends with a bulbous terminal [Fig. 18]. Further alterations to tailed letters are worth noting: letter շ uses the shape of its corresponding capital letter, though maintaining the traditional lowercase proportions, and has the semicircular loop at the top modified into an oblique line [Fig. 19]. Also letter ա was modified to match the shape of its corresponding capital letter. Whereas in traditional Bolorgir types letter ա has three evenly spaced vertical lines joining at the bottom, in JMA1 they connect at the top – like Latin letter m and Armenian capital letter Պ. In JMA1 the three vertical stems of ա increase in length from left to right – the second stem is a thin stroke, and the third extends below the baseline as a descender [Fig. 20]. Other letters, such as յ, ղ and ղ depart from the traditional Bolorgir style: letter յ introduces a hook facing downwards at the top of its vertical stem [Fig. 21], and letters ղ and ղ are obtained by mirroring letter ղ [Fig. 22].

The printing of the pamphlet is low quality. This may have been caused either by broken or badly inked sorts, as evidenced in the serif of ն, the thin terminal stroke of the descender of Ը, the junction of the stem and tail of letter q, and the junction of the vertical stem and arch in ա, and ը [Fig. 23]. Readability is affected by discrepancies in the width of letters sharing a common basic structure, such as ի, տ, խ and Լ [Fig. 24]. Furthermore, whereas traditionally the base of letter Է was a horizontal line bending below the baseline, in JMA1 the base of the letter folds upwards above the baseline. Also the proportions of letter ք were modified: the bowl of letter ք looks particularly small to enable the horizontal crossbar to sit on the baseline [Fig. 25]. Finally, some letters look imbalanced using unconventional stroke modulation: for instance, letters ք and ժ appear unbalanced due to their thin strokes on the left side of their respective loops; similarly, letters տ and խ are imbalanced due to their thin middle vertical stems. The

54 For the sake of comparison, the traditional Bolorgir type used as reference is *The Four Gospel* (Միտարարսն) (Venice, Bortoli, 1759), representative of a high standard of quality.

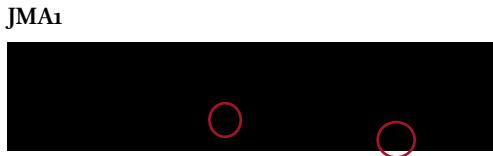


Fig. 14 Examples of serifs in JMA1, highlighted by red circles.



Fig. 15 Examples of letters with bulbous terminals.



Fig. 16 Proportions of the capital letters in JMA1, compared to those used in a traditional Bolorgir typeface.

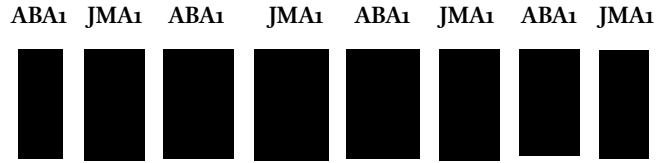


Fig. 17 Example of JMA1's letters maintaining features of the traditional Bolorgir style. The stem on the right side of letter ζ extends below the baseline, even though its upper part is designed at a vertical angle.

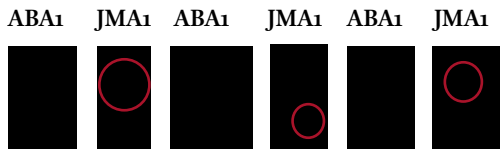


Fig. 18 Changes in the design of q, η and υ. Significant changes in JMA1's letters are marked with red circles: the narrowing of the bowl of q, the use of bulbous terminal in letter η and the narrowing of arm and arch of υ.

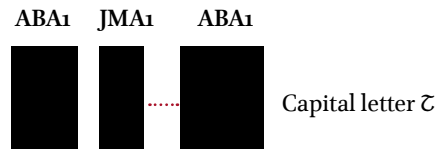


Fig. 19 New design of letter ζ in JMA1.

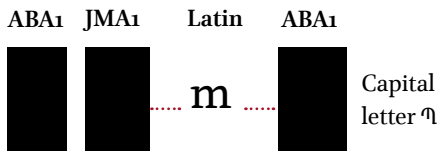


Fig. 20 New design of letter u in JMA1.

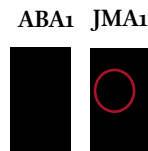


Fig. 21 The hook of letter j in JMA1 is marked with a red circle.

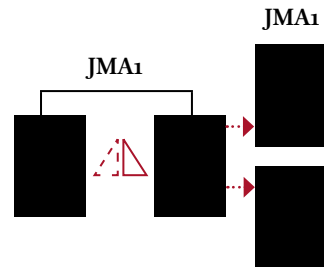


Fig. 22 Letters η and ρ (right) are obtained by mirroring letter ρ (left and middle).



Fig. 23 Broken or badly inked characters in JMA1. The missing parts are marked with a red circle.



Fig. 24 Width inconsistencies in JMA1.



Fig. 25 In JMA1, letter t has the base folding upwards above the baseline, and letter p has a small bowl. Traditionally, the loop of p reached the baseline while the crossbar was between the baseline and the line of the descender.

thin vertical stem in letter un is interrupted by a dot to probably avoid breaking the type right in its centre [Fig. 26].

The type used by Miwhêntisean in his *Announcement* reappeared in Constantinople in 1850 in *The Art of Longevity*⁵⁵ [Fig. 27] and in subsequent books published by him in 1856 [Fig. 28] and 1858 [Fig. 29]. Whereas the *Announcement* was composed entirely in JMA1, subsequent publications printed by Miwhêntisean used JMA1 to print only small portions of texts. An example is *The Art of Longevity*: composed in traditional Bolorgir characters, it has a short passage from the Bible printed in the foreword of the book in JMA1 [Fig. 30]. In this pamphlet, Miwhêntisean stated that the type (JMA1) was not yet satisfactory and that he hoped Armenians would comment upon the new forms and even improve them: Miwhêntisean's choice to compose the whole book in a traditional Bolorgir typeface suggests that JMA1 was considered unsuitable for extensive works.

In designing Armenian typefaces, Miwhêntisean aimed to introduce Western typographic conventions into the Armenian script and to depart from the traditional and authentic forms of the Bolorgir style. This is in striking contrast with his approach adopted for Arabic in the 1860s when designing the naskh typeface based on the handwriting of the Kazi Asker (the Supreme Judge) Mustafa Izzet Efendi, a noted calligrapher at the time.⁵⁶ According to Thomas Milo, the work on Arabic by Miwhêntisean was 'graphically extremely sophisticated',⁵⁷ and the first authentic Arabic type to finally abandon European influence on the Arabic script.⁵⁸

By pointing at what he saw as deficiencies of Armenian typefaces in the traditional style, and by turning to European typography for inspiration – for practical rather than aesthetic reasons – Miwhêntisean can be seen as the 1840s' herald of Latinisation. A significant step forward was to be taken by Čanik Aramean (1820–1879) in the 1850s.

55 Andreas Popovic, 'Արուեստը երկայնակեցնութեան', (*The Art of Longevity*) (Constantinople, Printing House of Yovhannes Miwhêntisean, 1850).

56 Thomas Milo, 'Arabic script and typography' in John D. Berry (ed.), *Language Culture Type* (New York, ATypI and Graphis, 2002), p. 122.

57 Ibid. p. 123.

58 Ibid. p. 121.

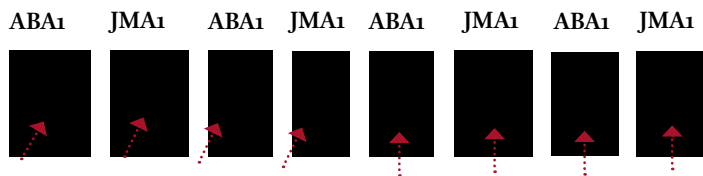


Fig. 26 Examples of inappropriate modulation of the stroke in JMA1. Differences between ABA1 and JMA1's strokes are pointed out by arrows.

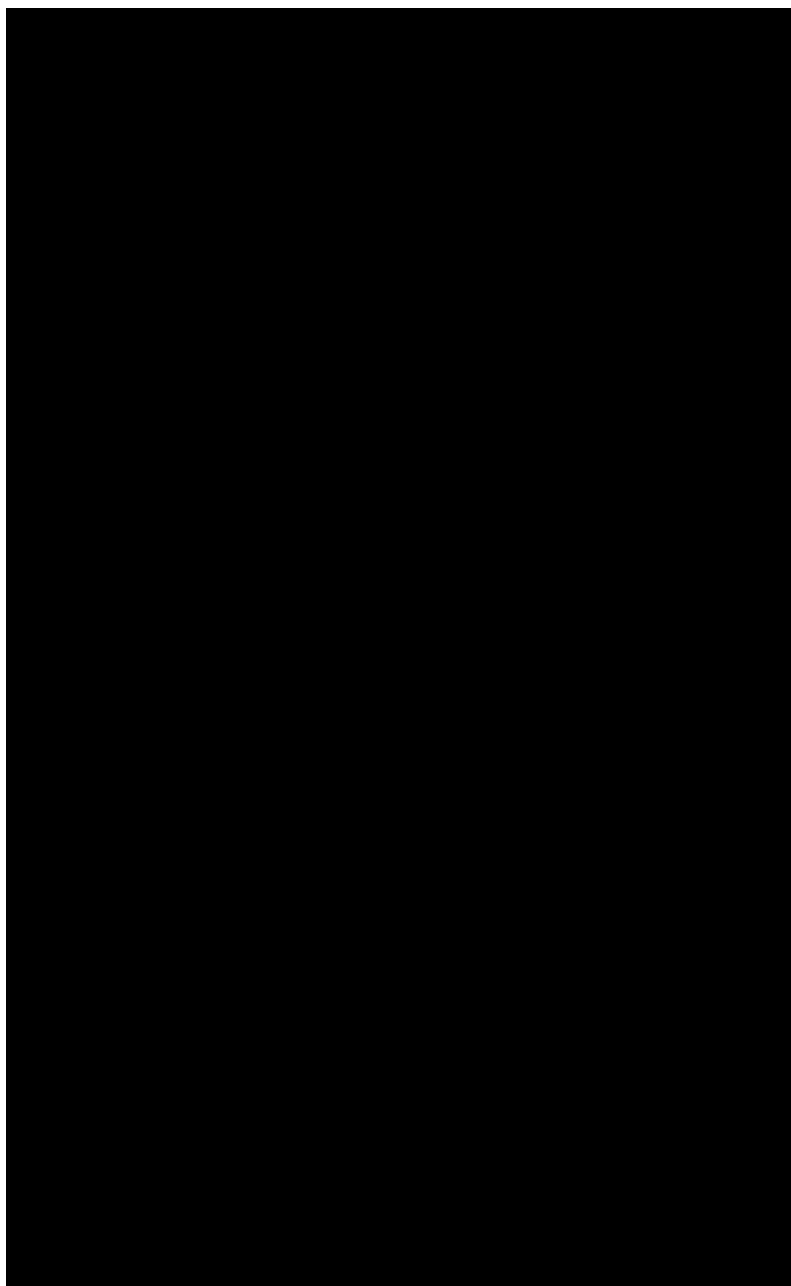


Fig. 27 Andreas Popovic', *Արուեստի երկարյնսկեպոյթեան* (The Art of Longevity) (Constantinople, Printing House of Yovhannes Miwhêntisean, 1850). Title page. (Original size: 10,4 × 16,9 cm). Shown at original size. *Digital collection of the Bayerische Staatsbibliothek (Bavarian State Library, Munich).*

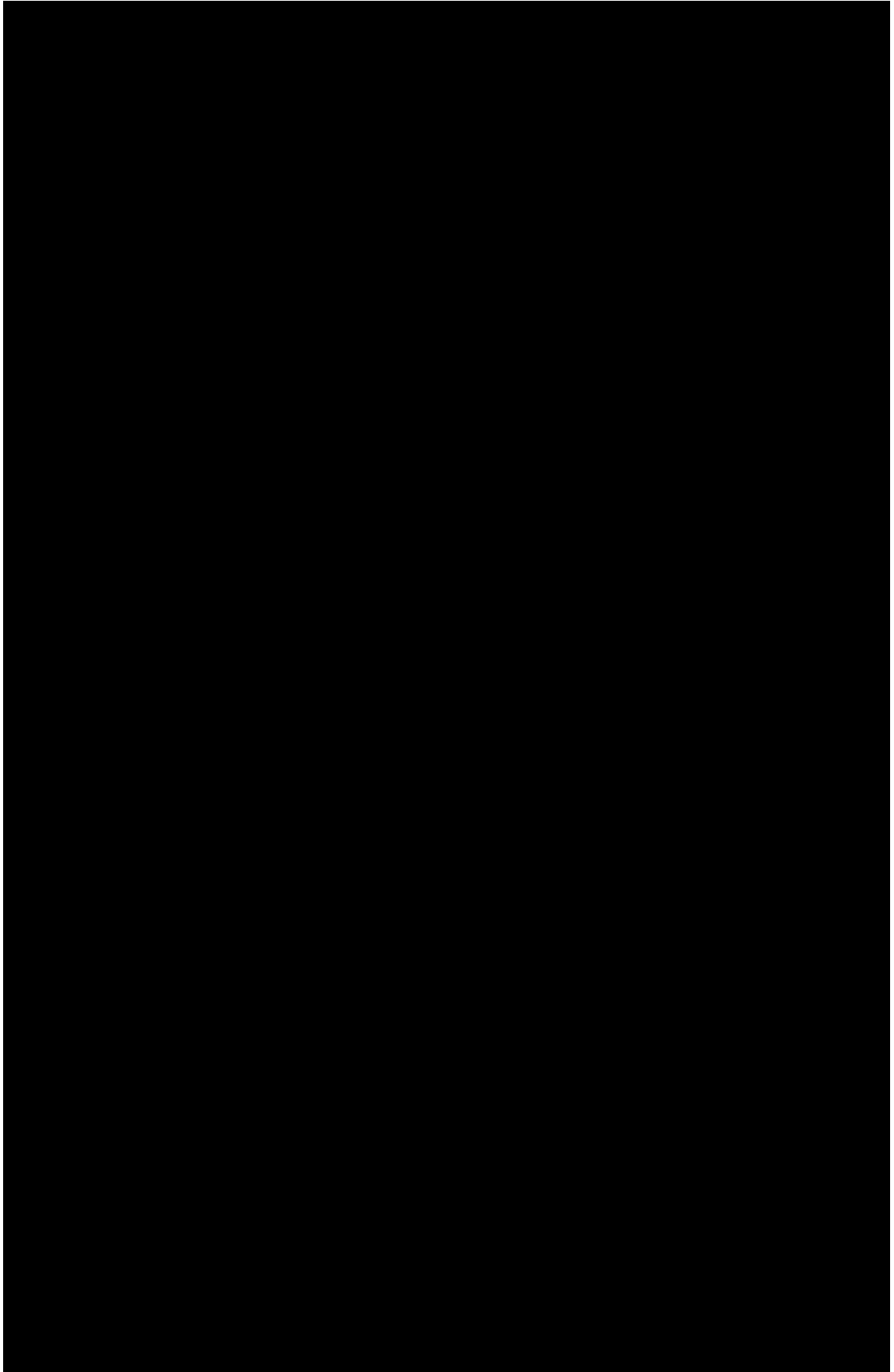


Fig. 28 Matt'ēos I (Catholicos of all Armenians), *Բարի Վարդ* (Kind Man)
(Constantinople, Printing House of Yovhannes Miwhêntisean, 1856).
(Original size: 15 × 23,2 cm). Shown at original size. *The British Library*.

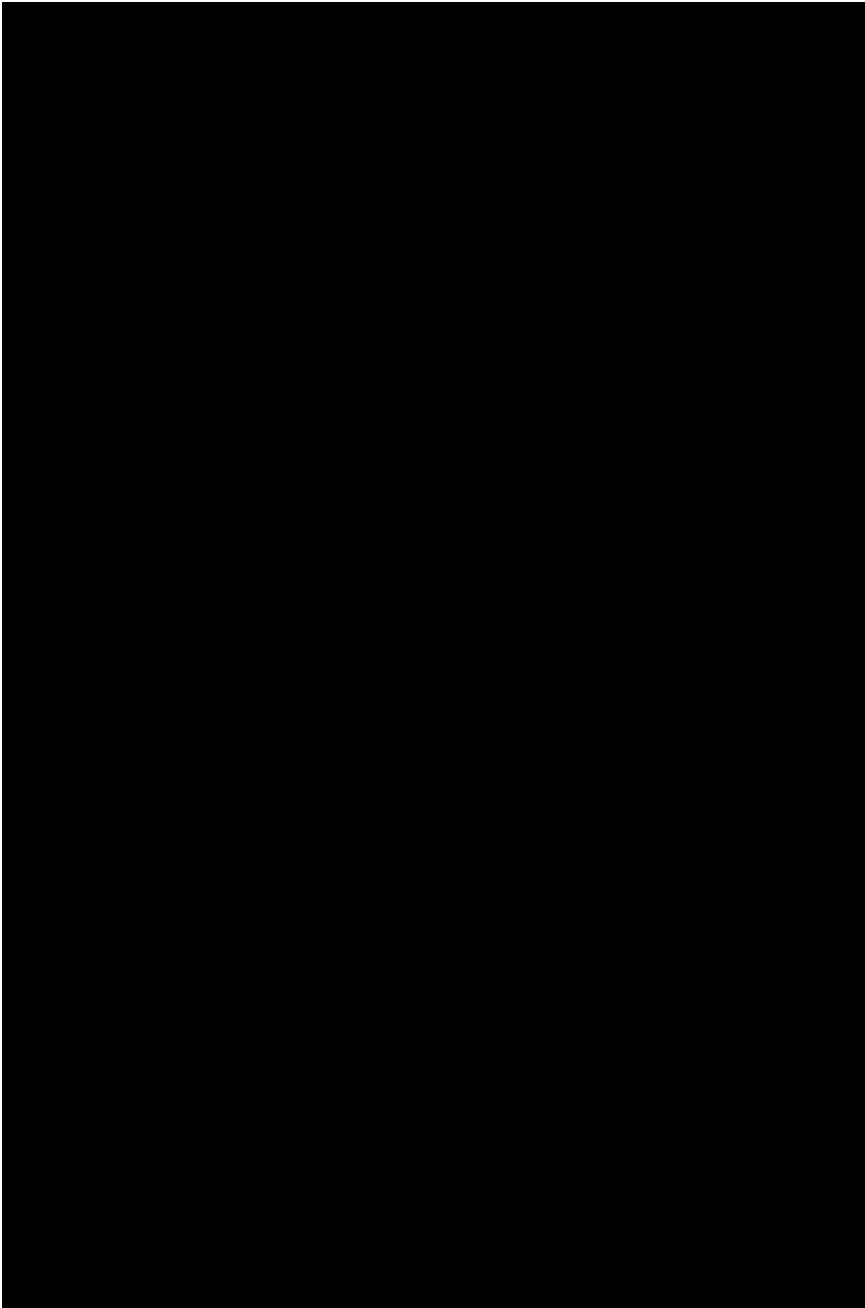


Fig. 29 Jean Baptiste Blanchard, *Սկզբունք դաստիարակութեան* (Education) (Constantinople, Printing House of Yovhannes Miwhêntisean, 1858). (Original size: 11,5 × 17,2 cm). Shown at original size. *The British Library*.

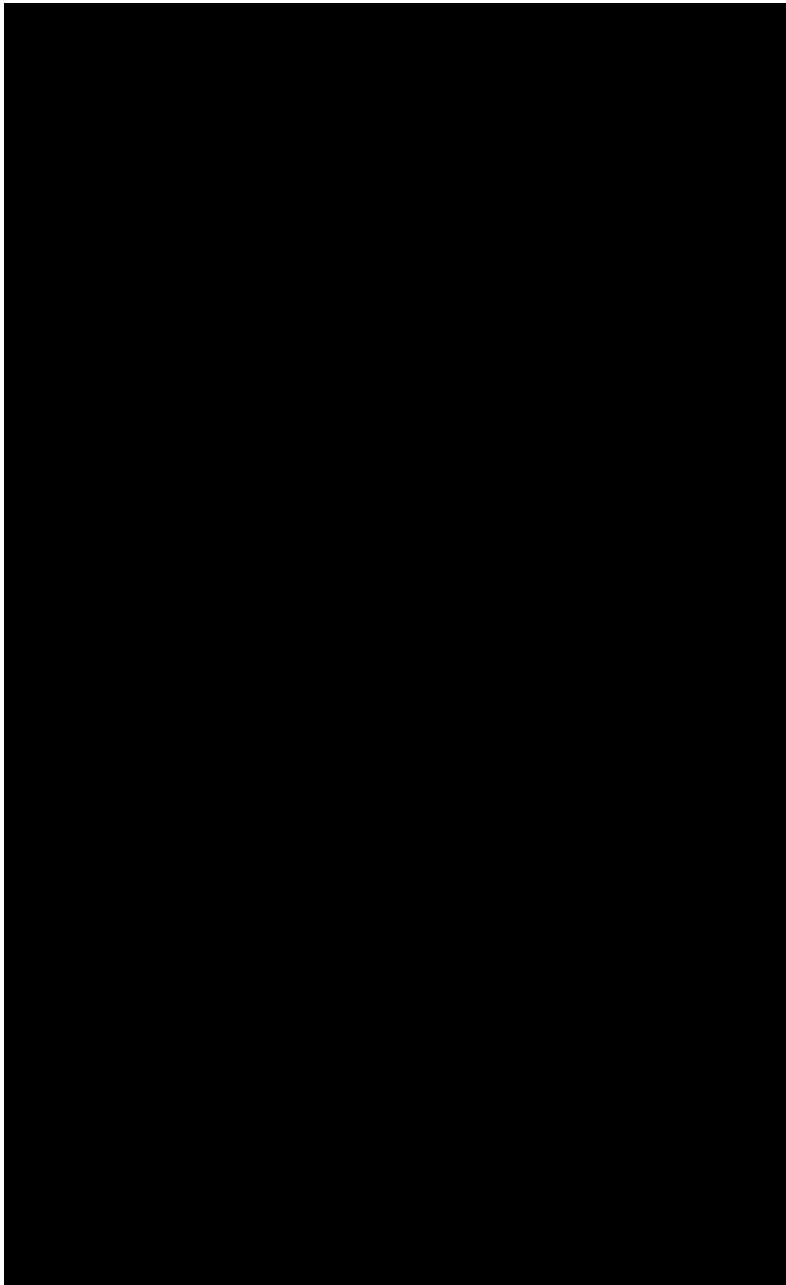


Fig. 30 Andreas Popovic', *Արուեստ երկայնակեցութեան* (The Art of Longevity) (Constantinople, Printing House of Yovhannes Miwhêntisean, 1850), p. 18. (Original size: 10,4 × 16,9 cm). Shown at original size. *Digital collection of the Bayerische Staatsbibliothek (Bavarian State Library, Munich)*.

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3.3 The significance of Čanik Aramean's printing establishment in Paris

Paris and Marseille were among the French cities where Armenian and foreign printing houses would print books and newspapers in the Armenian language. Armenian printing in France preceded that of Turkey by about thirty years: while the first Armenian printing house was established in Constantinople in 1567, Armenian printed books from 1538 could be found in Paris.⁵⁹

In 1633 the *Imprimerie Royale* (established during the reign of François I in 1538) began to print books in Armenian. However, the Armenian founts it produced in the nineteenth century did not bring any noteworthy innovation into the Armenian typographic field. They looked like copies of Sanlecque's 1633 Bolorgir type and of those confiscated by Napoleon from the *Propaganda Fide*⁶⁰ in the early 1800s. In the 1850s newly fashioned Armenian typefaces made their appearance in the printing establishment of Čanik Aramean in Paris. These new typefaces were designed according to European typographic conventions.

In his youth, Čanik Aramean (Izmit 1820–Haskeoy 1879)⁶¹ was trained in Constantinople as a tailor, combining his apprenticeship with the practice of typesetting. In 1846 he moved to Paris and in the 1850s he engaged in engraving and type founding, training at the famous Parisian publishing house Walder at 44 Rue Bonaparte.⁶² By January 1855 Aramean had already established his own independent publishing house.⁶³ This is indicated on the back cover of *La Colombe du Massis* by how readers should subscribe to the journal:

One can subscribe to: Paris, at the publishing house of the master Čanik Aramean, 38 Rue Saint Sulpice.⁶⁴

In the early nineteenth century the role of printers, booksellers and publishers started to become more specialised and distinct from each other. The role of publisher was no longer a position that was passed down through the family and that required a

59 Teodik, *Tip u tar*, p. 151, says 1537 but no doubt Teodik refers to Guillaume Postel's *Linguarum duodecim characteribus differentium alphabetum*, published in Paris in 1538. Postel's Armenian is discussed in Chapter 2.1 of this thesis.

60 The 'Sacra Congregatio de Propaganda Fide', which set up its own printing office in Rome in 1626, was printing in non-Latin types. For more information see: Archivio storico de 'Propaganda Fide'. Retrieved from: http://www.vatican.va/roman_curia/congregations/cevang/archivio/index.html. Accessed on 10 February 2016.

61 Izmit, a city in Turkey, was known as Nicomedia in antiquity; (not to be confused with Izmir, 'Smyrna' in Greek, a city in the western extremity of Anatolia). Haskeoy is a quarter on the northern bank of the Golden Horn in Beyoğlu, Istanbul.

62 Teodik, *Tip u tar*, p. 93.

63 Contrary to Teodik, who stated that Aramean only in 1859 had his own independent printing house in Saint Sulpice. Teodik, *Tip u tar*, p. 94.

64 'On souscrit: A Paris, chez M. D. Aram, 38 Rue Saint-Sulpice'. The Armenian version used next to the French: 'Տեղի ընկերագրութեան. Փարիզ, ի գրասնոցի պարոն ճ. Արամեան, ի Փարոցն Սէն-Սիլվիս'. See back cover of *La Colombe du Massis* (Paris, Remquet, 1855). Translated into English by the author.

3. THE BEGINNING OF THE LATINISATION OF THE ARMENIAN SCRIPT AND ITS SPREAD

background in printing.⁶⁵ Aramean was a publisher as well as a printer.⁶⁶ However, since he belonged to a family of tailors rather than printers,⁶⁷ he had to set up his own printing activity.

Aramean has been described as a prolific type maker: the historian Teodik estimated Aramean's creations to reach the impressive number of 73, including various Glxagir (majuscule) and Bolorgir (minuscule) founts.⁶⁸ However, the analysis of various publications that Aramean produced, particularly in Paris, reveals a rather limited creation of Armenian typefaces.⁶⁹ Furthermore, based on the evidence of the establishment of Aramean's publishing house in 1855, it is doubtful that he also became a skilled punch-cutter while training at Walder for four or five years. The printing historian Daniel Berkley Updike provides information on apprenticeships to becoming a master printer: he states that in France, in order to become master printer, it was necessary to first be an apprentice and then a journeyman. A minimum of three years was needed just to complete the apprenticeship, and it was recommended that pressmen should serve four years and compositors five. It is therefore unlikely that Aramean became both master printer and a skilled punch-cutter in such a short time.⁷⁰

Čanik Aramean's printing activity seems to have been quite substantial, and his printing of a high standard. However, his activity in Paris ended in 1861 due to significant financial losses caused by the large-scale expenditure incurred in the publishing of various works, forcing him to transfer his publishing house to Marseille in late 1862. Two years later, Aramean moved to Constantinople and was appointed as an inspector at the Royal Publishing House for eighty gold coins a month, publishing with the typefaces he had brought from France.⁷¹ A very active printer in Paris and Constantinople, Aramean also wrote on issues of national importance and educational matters.⁷²

Aramean has been regarded as the key figure in Paris of Latinisation of the Armenian script by John Lane and Carolyn Puzzovio.⁷³ However, for about a hundred years he was erroneously considered the designer of those typefaces that appeared in 1855 in the

65 Martin Lyons, *Books: A living history*, 1st edn (California, J. Paul Getty Museum, 2011), p. 131.

66 In the nineteenth century many printers were also publishers, but very few publishers were printers.

67 Teodik, *Tip u tar*, p. 92.

68 Ibid. p. 93.

69 The limited development of Armenian typefaces refers to text typefaces only. The research does not focus on typefaces used as headlines, as the Latinisation of the Armenian script was introduced into text typefaces, and specifically to lowercase letters.

70 Daniel Berkley Updike, *Printing types: their history, forms, and use* (2 vols., Massachusetts, Harvard University Press, 1962), vol. 2, pp. 247–248.

71 Teodik, *Tip u tar*, p. 94.

72 For further info see: Teodik, *Tip u tar*, pp. 94–95.

73 Puzzovio, 'The story of the Armenian alphabet', *Baseline*, 58, p. 34. Lane, *The Diaspora*, p. 200.

3. THE BEGINNING OF THE LATINISATION OF THE ARMENIAN SCRIPT AND ITS SPREAD

journal *La Colombe du Massis*,⁷⁴ and which today's type designers refer to as 'Aramean simplified typefaces':

As a result of his hard work he finally establishes a type-foundry and creates typefaces beautiful in typesetting and shape, yet different in type, which [have been] called after him to these days.⁷⁵

An article written by Čanik Aramean and published in *La Colombe du Massis* in 1856 with the title 'Newly fashioned Bolorgir typefaces'⁷⁶ demonstrates that the typefaces used in the journal were the work of various individuals and not Aramean's own achievement. After buying the matrices from various individuals – Vardapet Gabriēl Ayvazovsk'y, Yovhannes Miwhētisean and Fr Yovhannes Sorkowččean – Aramean only owned the exclusive right to use those typefaces.⁷⁷ However, this does not diminish Aramean's importance in spreading both the Latinisation of the script and the Westernisation of Armenian culture.

74 *La Colombe du Massis* and the Armenian typefaces used in this journal are discussed in Sections 3.4 and 3.5 of this thesis.

75 Teodik, *Tip u tar*, p. 94. Translated from Armenian by Anna Talalyan, July 2016.

76 Čanik Aramean, 'Newly fashioned Bolorgir typefaces', *La Colombe du Massis* (Paris, October 1856), pp. 190–192.

77 *Ibid.* pp. 190–192.

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3.4 Čanik Aramean's official announcement

Čanik Aramean made the introduction of his new Armenian typefaces an official matter. To this end, he chose to make an announcement in the first section of the first issue of *La Colombe du Massis* published in 1855, entitled 'Connaissances utiles'.⁷⁸ The statement was an invitation to readers to receive the new forms of Armenian letters and to familiarise themselves with them. He did not hide his intention of pursuing this endeavour (which indeed continued until 1858) and shed some light on his reason for taking that initiative.

For now, we wish that people who are not fluent in reading do not recoil from this innovation at once, but rather make the effort to read for a few days and will get used to it fairly soon. However, we have nothing to say to some amongst those people fond of old-fashioned ways who do not approve of the new shapes of these letters for the sole reason that they are new, because, as we have said earlier, in devising these new shapes our aim was not at all a vain love of ornamentation, but rather to give a useful and necessary improvement to our beautiful national Mesropian letters.⁷⁹

Aramean considered that letters in the Bolorgir style had completely deviated from the old Mesropian uncial letters: losing their roundness, they had assumed angular shapes and become smaller. In addition, as printing typefaces were based on the Bolorgir style from manuscripts written in the 12th, 13th and 14th centuries, he believed that Armenian letters were aesthetically poor, so they required amendments. Aramean described European typefaces as 'beautiful and regular'.⁸⁰ In comparison, he detected four main imperfections in earlier Armenian typefaces that merit quoting in their entirety:

First of all, the leaning forward – like the running-hand – of the Bolorgir typeface, instead of standing vertically (as stands the capital called uncial without leaning to one side or another). This posture not only imparts ugliness to the letters – especially when they are set next to capital, cursive or European letters – but also creates difficulties reading and tires one's eye; this is also known from the fact that the reader of the cursive letters of the Europeans tires quicker than the reader of Roman letters.

⁷⁸ The back cover of the first issue of *La Colombe du Massis* is dated 1 January 1855. However, it is possible that the journal appeared already at the end of 1854. Indeed, in the foreword of *La Colombe du Massis* the editor explains that '*La Colombe du Massis* paraîtra provisoirement à la fin de chaque mois'. *La Colombe du Massis* (Paris, 1855), p. 5. Additionally, there is a reference to the journal *La Colombe du Massis* in *Revue des deux mondes*, 16 (1854), p. 254. John Lane, who brought *Revue des deux mondes* to the author's attention, is of the opinion that a part of the first issue of *La Colombe du Massis* might have appeared in the last quarter of 1854. The author is grateful to John Lane for the information.

⁷⁹ *La Colombe du Massis* (Paris, 1855), p. 13. Translated from Armenian by Gagik Stepan-Sarkissian, July 2016.

⁸⁰ *La Colombe du Massis* (Paris, 1855), p. 12.

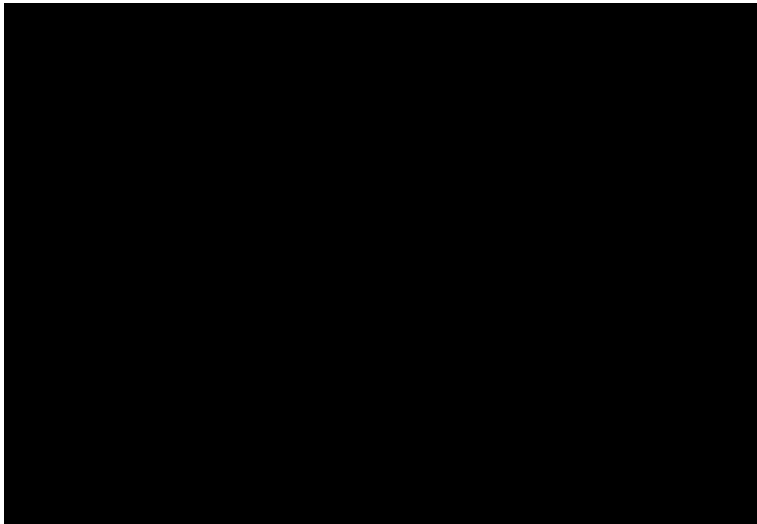


Fig. 31 Table comparing the shapes of the Armenian alphabet in the old and new styles.

Detail from *La Colombe du Massis* (Paris, Armenian Printing House Remquet, 1 January 1855), p. 13. (Original size: 26,1 cm × 34,1 cm). Shown at original size. *The British Library*.

Secondly, the angular shape of almost every letter, which although when set next to each other imparts a sort of uniformity, this uniformity being excessive does not convey comeliness, causes boredom and furthermore causes reading difficulty, especially to those learning to read, since almost all the letters appear to be similar to each other.

Thirdly, a number of letters being very similar to each other constantly get confused with each other, like those: ա, տ, գ, դ, զ, ղ, ս, so that complete novices read եղ as եզ, եղնիկ as եզնիկ, դաւիթ as գաւիթ, խստոր as խտտոր, դասիկոն as դոտիկոն, գաղտնագուշակ as գազանագուշակ, տուան as տուտն, նոտար as նստար, etc., whereas there are lettered⁸¹ ones who read Թեզբացի as Թեղբացի, Վազգէն as Վազդէն, Եղիփազ as Եղիփաղ, etc.

Fourthly, the difficulties encountered in printing because of a number of letters, so that it has become necessary to invent letters with shortened descenders to avoid creating a distance between them and 'tailed' letters such as գ, ը, լ, դ, շ, ջ, վ. Also, the excessive extension of upper and lower extremities of a number of letters, which creates a distance between them and adjacent letters and in cast[ing] these extremities do not protrude out of the width of the type metal, and if they do protrude out, they tend to break continually, in particular the letters ը and լ.

The slant of letters and the ease of breaking of tailed letters were already identified as Armenian script's deficiencies by Miwhêntisean in his *Announcement* (1847). However, it seems that Aramean's aim to revise the Bolorgir style was mainly to improve legibility and readability, rather than to save on printing and type founding expenses. Whereas Miwhêntisean had expressed concern about the forms employed in his new type style – compared to the old Bolorgir style his design was aesthetically inferior and needed refining – in *La Colombe du Massis*, Aramean considered his shapes and style – already endorsed by several individuals – to be satisfactory:

Therefore, in order to eliminate these four imperfections from our printing type, we were forced to convert them to these new shapes and we are pleased that those who understand art and possess an educated taste have already approved this style and have suitably understood and praised its comeliness and convenience⁸² [Fig. 31].

It is likely that Aramean read Miwhêntisean's *Announcement* and decided to endeavour to improve the forms of the Bolorgir style. Even though in the first issue of *La Colombe du Massis* (January 1855) Miwhêntisean's hard work is unrecognised, in the issue of

⁸¹ Meaning literate.

⁸² *La Colombe du Massis* (Paris, 1855), p. 13. Translated from Armenian by Gagik Stepan-Sarkissian, July 2016.

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October 1856 Aramean acknowledges Miwhêntisean as the first to aim to rectify the Bolorgir style, and the first to produce new-fashioned Armenian types and use them for printing:

Towards the end of this year, we came across a pamphlet entitled *Announcement for the sake of the newly formed letters*⁸³ printed in Constantinople and signed Y. Miwhêntisean. ... not only has he been the first amongst those who wanted to adapt the system of European typefaces to Armenian fonts, but also has undertaken great care and effort and has published them.⁸⁴

It was most unusual for editors to talk about the typefaces used by their publisher at the beginning of the first issue of their journals. This demonstrates the importance of the new typefaces used in *La Colombe du Massis*, and their significance for all Armenians.

83 The translation given by Gagik Stepan-Sarkissian is *Announcement upon the subject of newly fashioned typefaces*. However, for consistency, the author retained the translation used in Section 3.2 of this thesis.

84 Čanik Aramean, 'Newly fashioned Bolorgir typefaces' (October 1856), pp. 190–192.

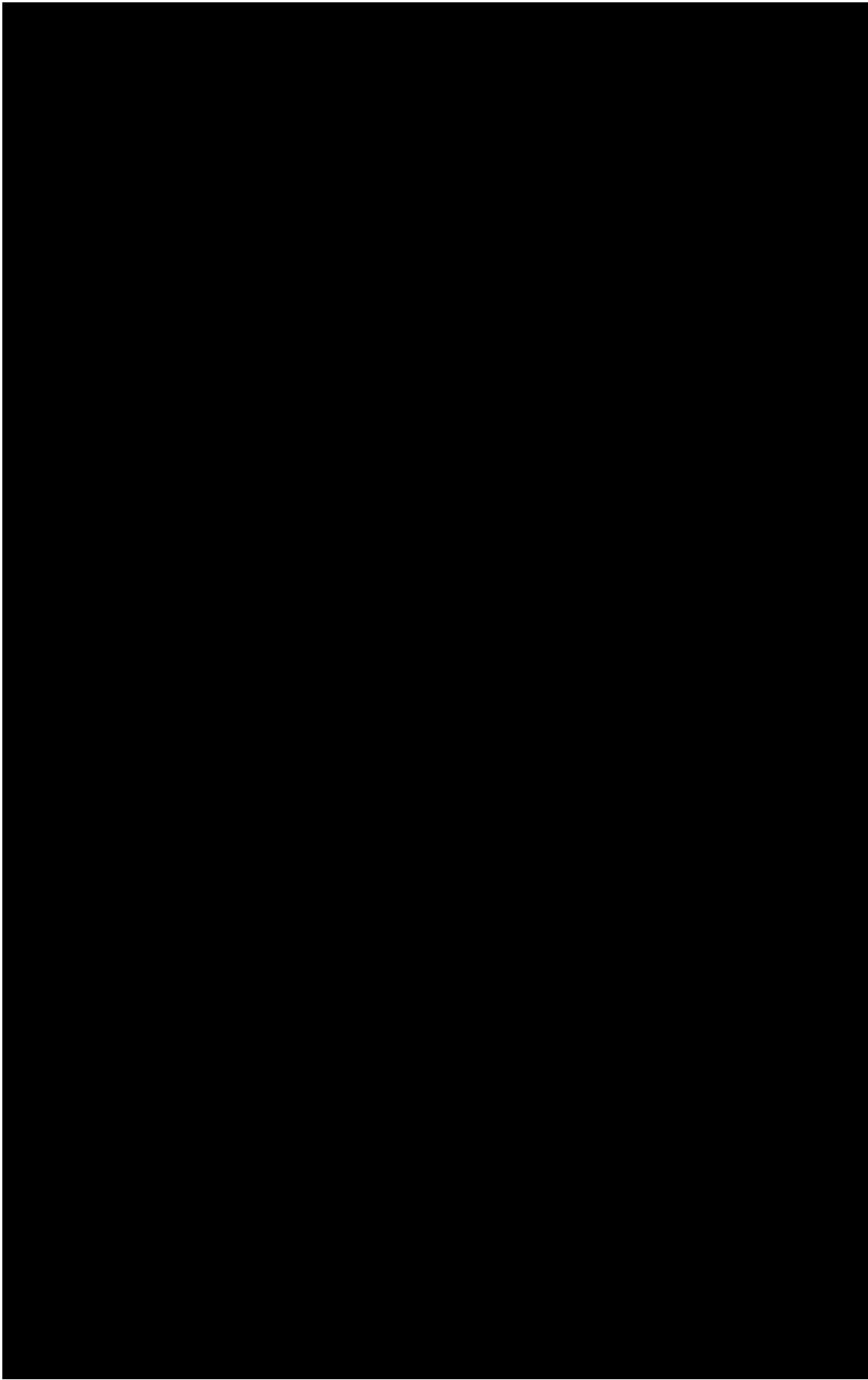


Fig. 32 *Arevelk'* (Paris, Armenian Printing House Walder, 1st August 1855),
p. 2. (Original size: 15 × 23 cm). Shown at original size. *The Nubarian Library*.

3.5 Aspects of Latinisation in the design of newly fashioned Armenian typefaces

France had a significant impact on the development of new Armenian typefaces: since the early eighteenth century, French, rather than Latin, had become the language of the educated classes almost all over the world, and ideas of the French Enlightenment were widely known and valued.⁸⁵ This required Armenian journals to be composed in two parallel columns presenting the French and the Armenian texts side by side, making it necessary to arrange Armenian next to the Latin script. In addition, the so called ‘classical’⁸⁶ types cut by the Didots in France in the early nineteenth century – types with light strokes in greater contrast to heavy strokes, and condensed type-forms to make letters appear taller and narrower – were predominant in France and soon became widely fashionable throughout Europe.⁸⁷ The new Armenian typefaces used by Čanik Aramean in the journal *La Colombe du Massis* were shaped following this French model.

Aramean’s activities with regard to new Armenian typefaces for *La Colombe du Massis* accord with Beatrice Warde’s later description of type as ‘the voice of the printed page’.⁸⁸ The creation of new types instigated by Aramean, whether for economic or political motives, certainly provided the journal with a distinctive voice.

3.5.1 Overview of the journal *La Colombe du Massis*

Paris saw the introduction of two Armenian journals in 1855: *Arevelk’ (East)* and *La Colombe du Massis (Maseac’ Aławni)*. *Arevelk’ (East)* – a fortnightly publication of liberal orientation, edited by Step’an Oskanian [Fig. 32]⁸⁹ – ceased after 2 years, but restarted in 1859 under the name *Arevtmuk’ (West)*. The journal was printed by Čanik Aramean at the Walder printing house and it provided general news and cultural information. Whereas *Arevelk’* was the first Armenian journal printed in Paris, *La Colombe du Massis (Maseac’ Aławni)*⁹⁰ was the first illustrated journal⁹¹ produced there. Established in the same year as *Arevelk’*, *La Colombe du Massis* – of reactionary and tsarist orientation⁹² – started as a monthly publication, to become fortnightly in 1861 [Fig. 33].

La Colombe du Massis was established in 1855 by Gabriēl Ayvazovsk’y, and also printed and published by Čanik Aramean at the following printing houses: Remquet,

85 Lyons, *Books: A living history*, p. 95.

86 Gerard Blanchard, ‘The typography of the French book’ in Kenneth Day (ed.), *Book typography 1815–1965 in Europe and the United States of America* (London, Ernest Benn Limited, 1966), p. 41.

87 Blanchard, ‘The typography of the French book’, p. 41.

88 Beatrice Warde, ‘On the choice of type faces’, *The Monotype Recorder*, XXXII, 1, New Series (1933), p. 5.

89 Amalya Kirakosyan, *Bibliography of Armenian journals (1794–1967)* (Yerevan, Al. Myasnikyan Republican Library, 1970), p. 554.

90 *The Dove of Massis*.

91 Manvel Avetik’i Babloyan, *Bibliography of Armenian journals (1794–1980)* (Yerevan, the SD Science Publishing, 1986), p. 29.

92 Gabriella Uluhogian and Boghos Levon Zekiyian, *Armenia: Imprint of a civilisation* (Venice, Skira, 2012), p. 378.

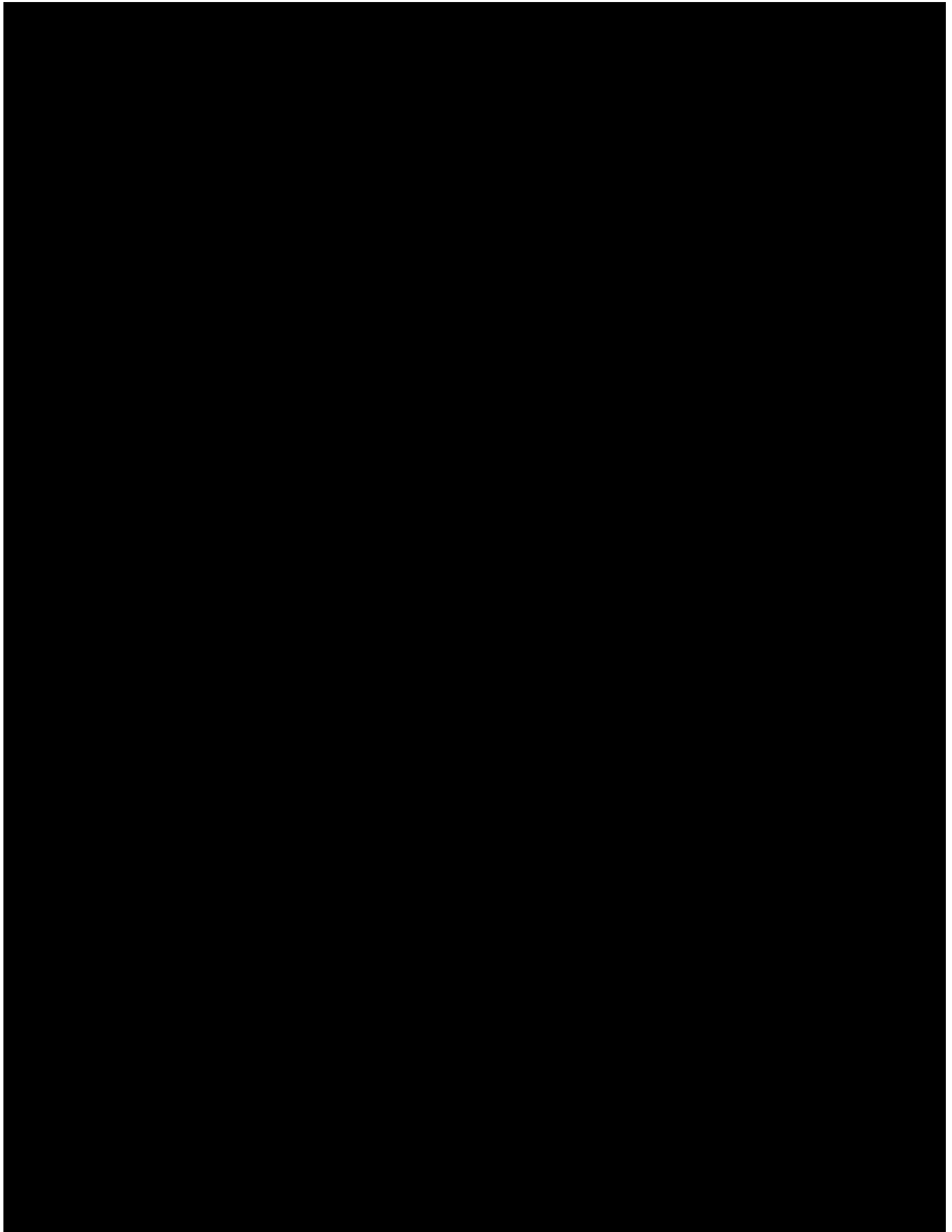


Fig. 33 A page from the first issue of *La Colombe du Massis* (1 January 1855) (Paris, Armenian Printing House Remquet, 1855), p. 5. (Original size: 26,1 × 34,1 cm). Shown at 70% of original size. *The British Library*.

Walder, and Ernst Meyer in Paris until 1858.⁹³ The journal was printed in modern Armenian, and the articles intended to inform Europeans about the Armenian situation were written both in French and Armenian in the Parisian publications. Each issue of the journal was structured into five sections to provide useful information about history, science, and literature regarding the moral and intellectual progress of Armenians. Furthermore, the journal provided interesting updates about Europe, presenting the feats of patriotic people, and offered a chronicle of Paris. The printing of the subsequent issues of *La Colombe du Massis* restarted in Theodosia (Crimea) by Khalipean Usumnaran in 1860, but ceased in 1865. However, the layout used in *La Colombe du Massis* remained almost unchanged from 1855 to 1865: the text was mainly based on a two-column grid and images were printed alongside the text [Fig. 34]. An exception was in 1861 with images and texts printed separately on different pages [Fig. 35]. The first page always had a horizontal image at the top occupying both columns, and the name of the journal was printed in ornamental capitals [Fig. 36]. The use of decorative frames and the incorporation of colour images in the 1856 publications were the only significant design changes in the layout of *La Colombe du Massis* [Fig. 37a and b].

93 Aramean was granted the right to print books using his own founts at Walder printing house, under the 'Aramean Publishing' trademark. Teodik, *Tip u tar*, p. 94. Translated from Armenian by Anna Talalyan, July 2016. The same provisions applied with Remquet and Meyer.

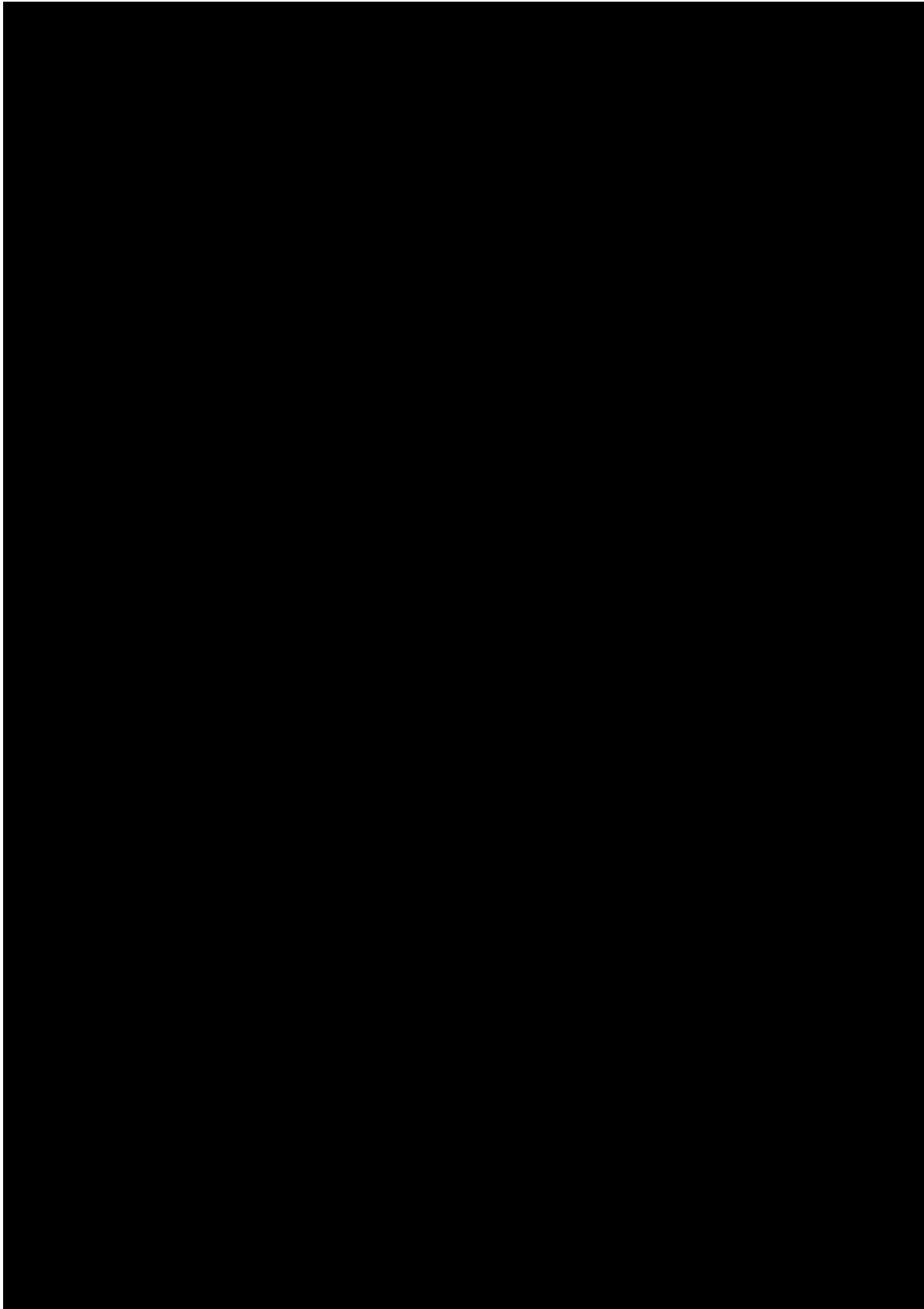


Fig. 34 *La Colombe du Massis* (Paris, Armenian Printing House Ernest Meyer, 1857), p. 83. (Original size: 21,6 × 30,6 cm). Shown at 70% of original size. The page is an example of the layout of the journal, where images are integrated within the text. *The British Library*.

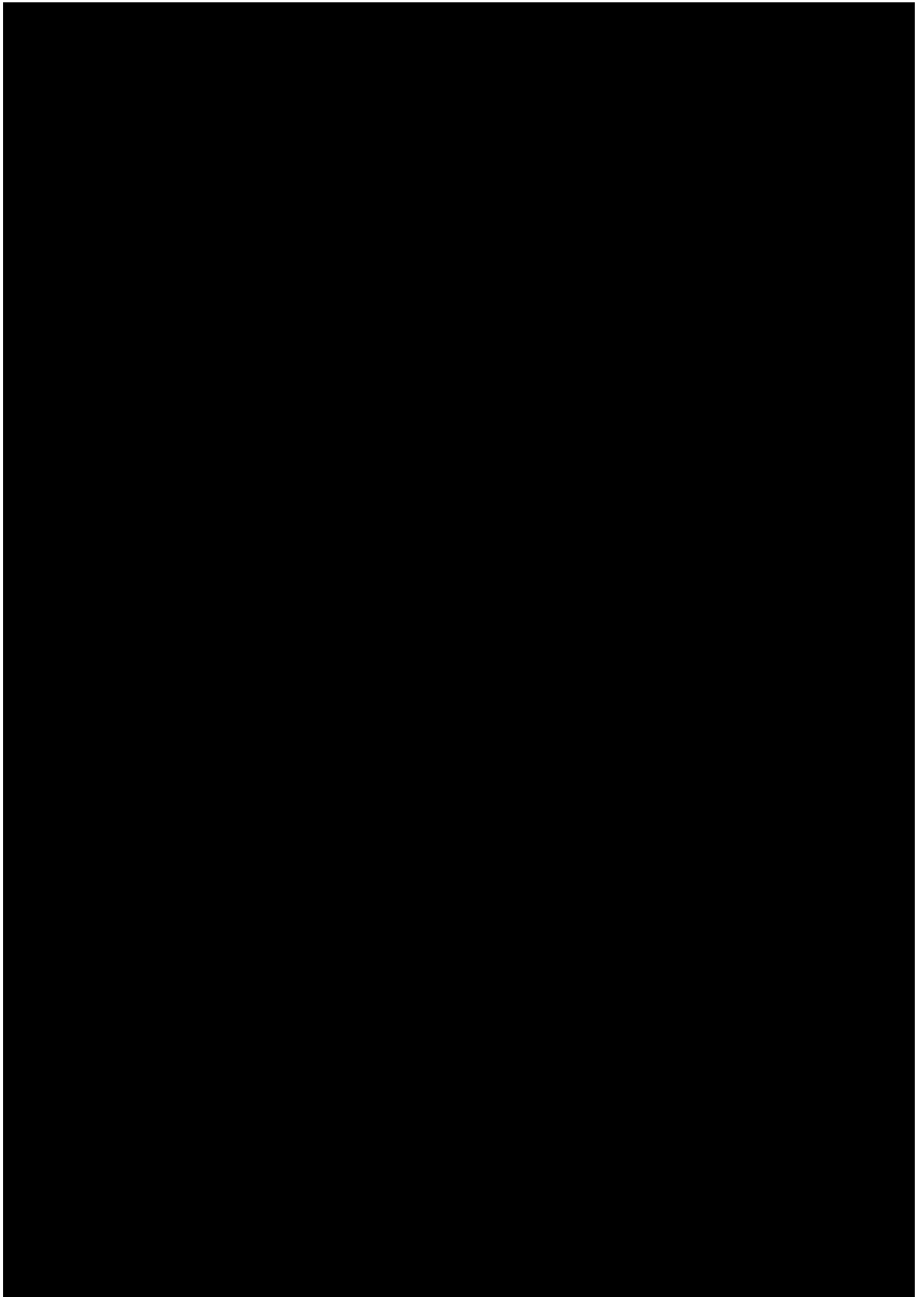
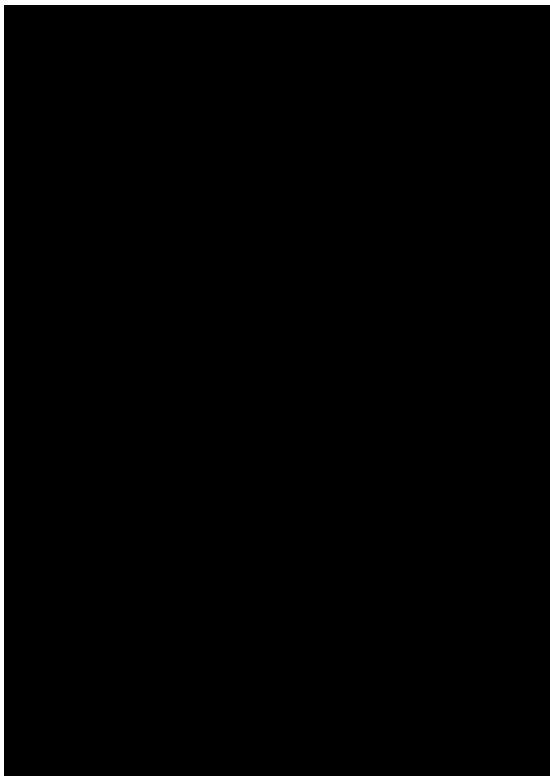


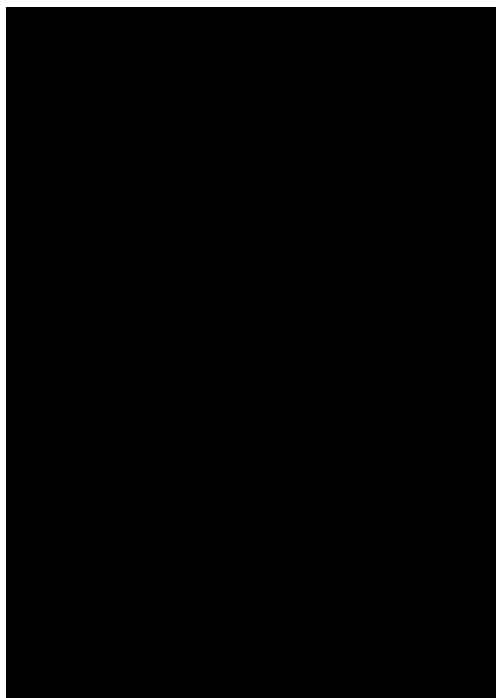
Fig. 35 Page from *La Colombe du Massis* (Theodosia, Kalipean Usumnaran, 15 January 1861). Unlike previous issues, as shown in Fig. 14, the images are displayed on a single page rather than integrated within the text. (Original size: 22,5 × 32 cm). Shown at 70% of original size. *The British Library*.



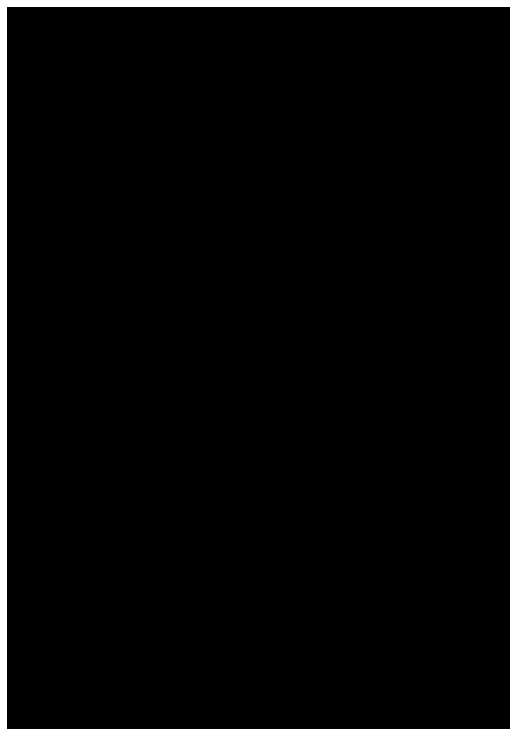
1855



1856



1857



1861

Fig. 36 Pages from *La Colombe du Massis*. The title pages of 1855 and 1856 were bound in volume 1858 and 1855 of *La Colombe du Massis*, respectively. All images are shown at 30% of original size. *The British Library*.

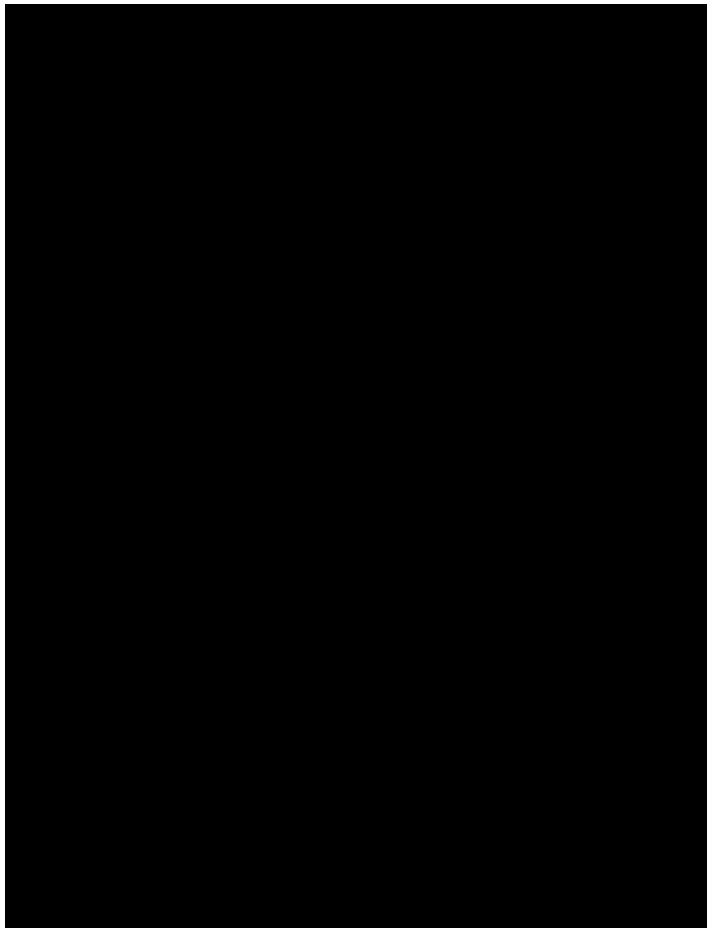
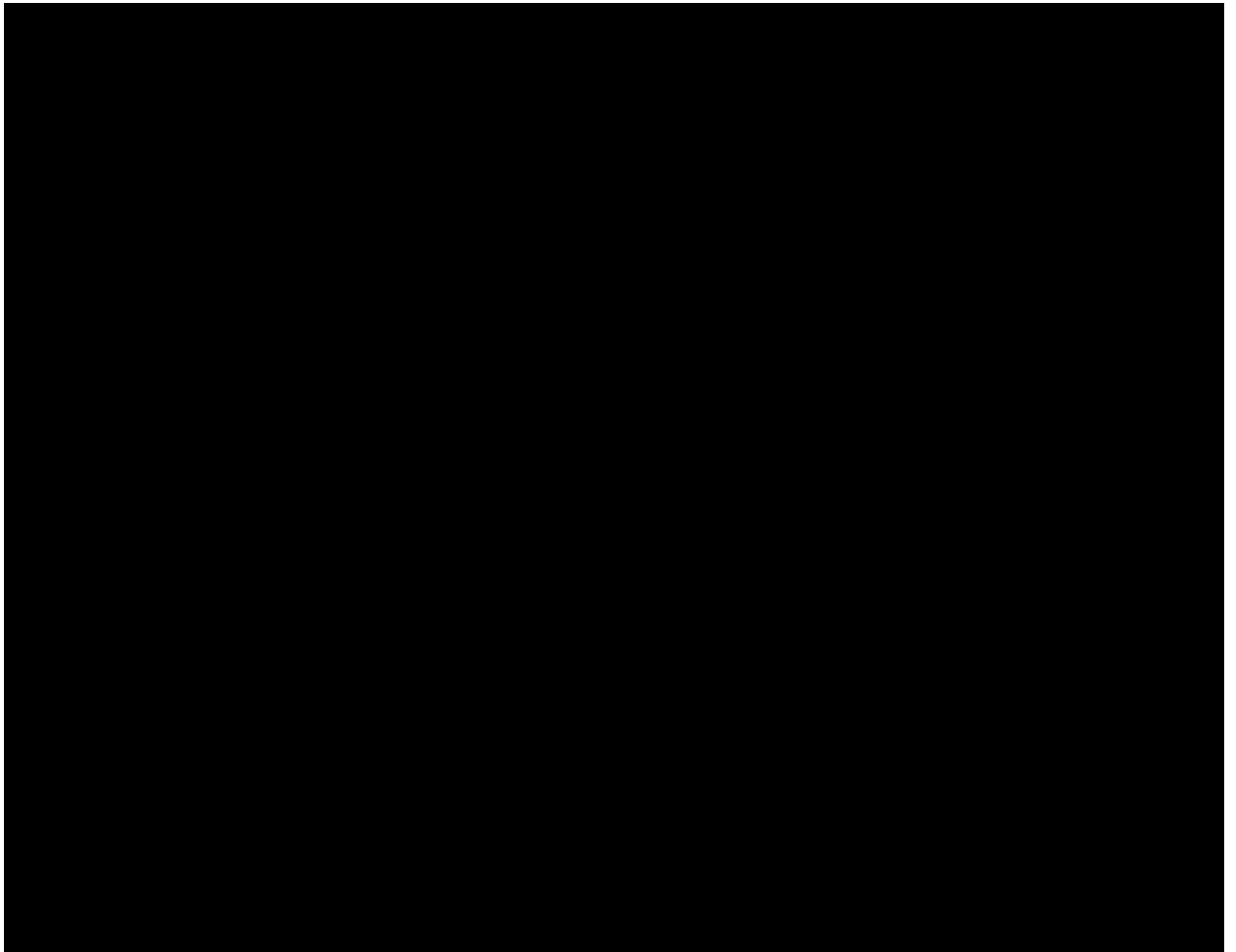


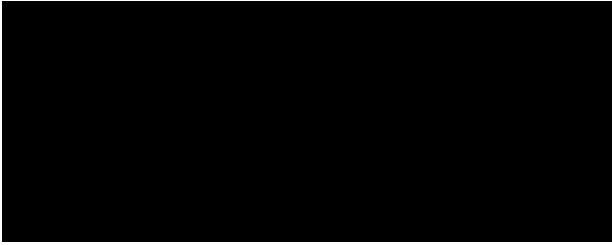
Fig. 37 a: top; **b:** bottom

Fig. 37a and b Pages showing the use of decorative frames (**b**) and inset in colour (**a**) in the journal dated 1856.

a *La Colombe du Massis*, 10, 'Tableaux de l'Europe. De la typographie.' (Paris October 1856). (Inset: between pp. 264–265) (Original size inset: 41x30,5cm).

b *La Colombe du Massis*, 8 (Paris, August, 1856) (Original size: 23,4 × 30,7 cm).

Both images are shown at 40% of original size.
The British Library.



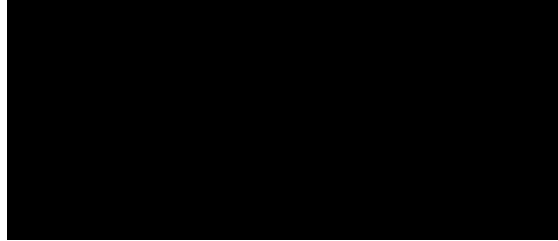
Vark' 11 pt



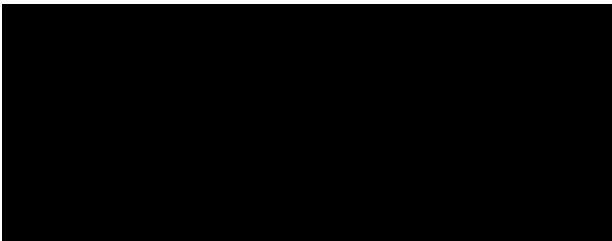
Masis 10 pt



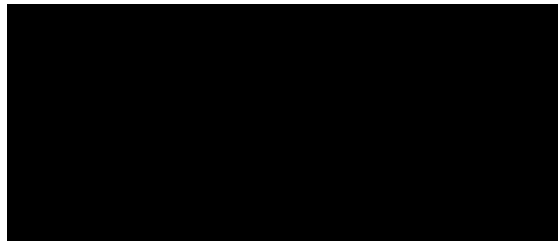
Arevelk' 10 pt



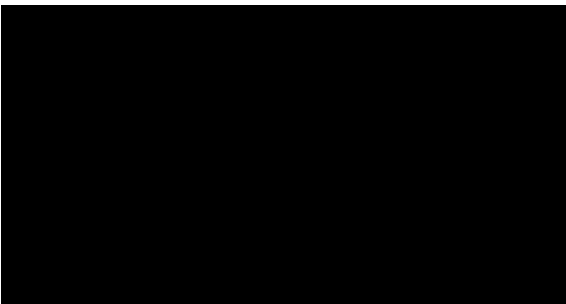
Ani 10 pt



Aršaloys 8 pt



CMA3 12 pt



CMA4 12 pt

Fig. 38 Details showing the various text typefaces used in *La Colombe du Massis* between 1855 and 1858. Excluding CMA3 and CMA4, the other typefaces shown are part of two type specimens presented by Aramean in the 1856's journal on pp. 190–192. Images are shown at their original sizes. *The British Library*.

3.5.2 Introduction of European typographic conventions to the design of Armenian typefaces

La Colombe du Massis used the Armenian typefaces Čanik Aramean commissioned: ‘Vark’, ‘Arevelk’, ‘Masis’, ‘Ani’, ‘Aršaloys’ and two other unidentified typefaces [Fig. 38], hereafter referred to as CMA₃ and CMA₄. Of the officially named typefaces, Ani, and Aršaloys will not be considered for analysis.⁹⁴ Within the scope of this chapter, the reason for selecting text typefaces from *La Colombe du Massis* is that the first official appearance of newly fashioned Bolorgir typefaces in that journal makes it possible to outline the progress of Latinisation over the period 1855–1858. Moreover, the typefaces Aramean used in the production of subsequent journals or books does not present any significant differences from those employed in *La Colombe du Massis*.

The typeface ‘Arevelk’, initially used in the journal *Arevelk* from which it took its name, was substantially modified in the third issue of that journal. This modified version, here designated as ADA₂, is subject to analysis rather than ‘Arevelk’.

⁹⁴ Aršaloys is similar to Vark’, and Ani does not present significant Latinised features.

Text typefaces selected for analysis

Typefaces	Designer	point size	First appearance:		
			publication	year	
Vark’	Gabriël Ayvazovsk’y	11 point	<i>La Colombe du Massis</i>	1855	[Fig. 39]
Masis	Yovhannes Miwhêntisean (further improved by Ayvazovsk’y)	10 point	<i>La Colombe du Massis</i>	1855	[Fig. 40]
CMA ₃	Unknown	12 point	<i>La Colombe du Massis</i>	1857	[Fig. 41]
CMA ₄ (pp. 225–226)	Unknown	12 point	<i>La Colombe du Massis</i>	1858	[Fig. 42]
ADA ₂ (Based on Arevelk’)	Modified letters from Arevelk’ were designed by an anonymous French engraver under the direction of Čanik Aramean	10 point	<i>Arevelk</i> ’	1855	[Fig. 43]
CMA ₅ -IT	Unknown		<i>La Colombe du Massis</i>	1858	[Fig. 44]

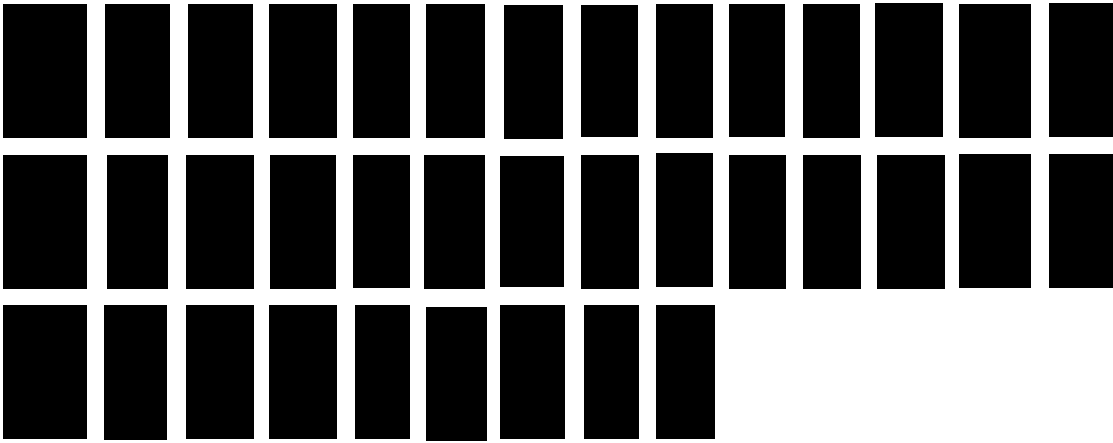


Fig. 39 Vark': lowercase letters.

Vark' was first used in *La Colombe du Massis* in 1855. The typeface was designed by the Reverend Vardapet Gabriël Ayvazovsk'y, and published under the Reverend Vardapet Sargis Têodorean's charge. Shown at 300% of original size. *The British Library*.

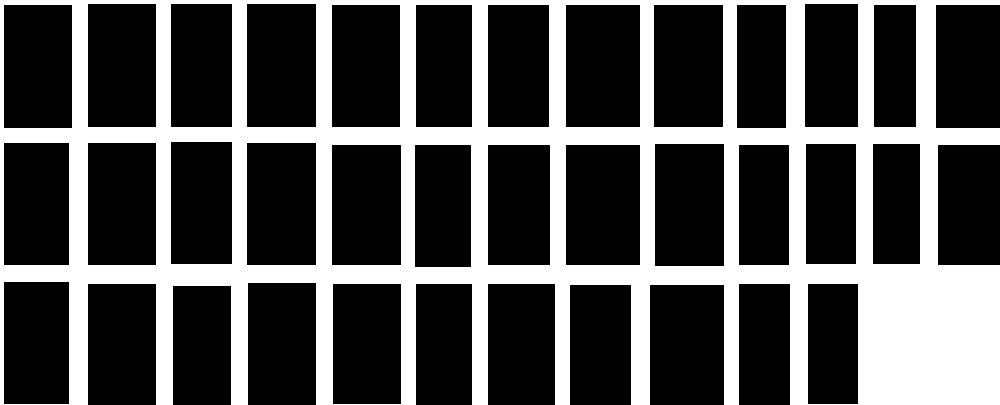


Fig. 40 Masis: lowercase letters.

Masis was first used in *La Colombe du Massis* in 1855. The typeface was designed by Yovhannes Miwhêntisean and further improved by Ayvazovsk'y. Shown at 300% of original size. *The British Library*.

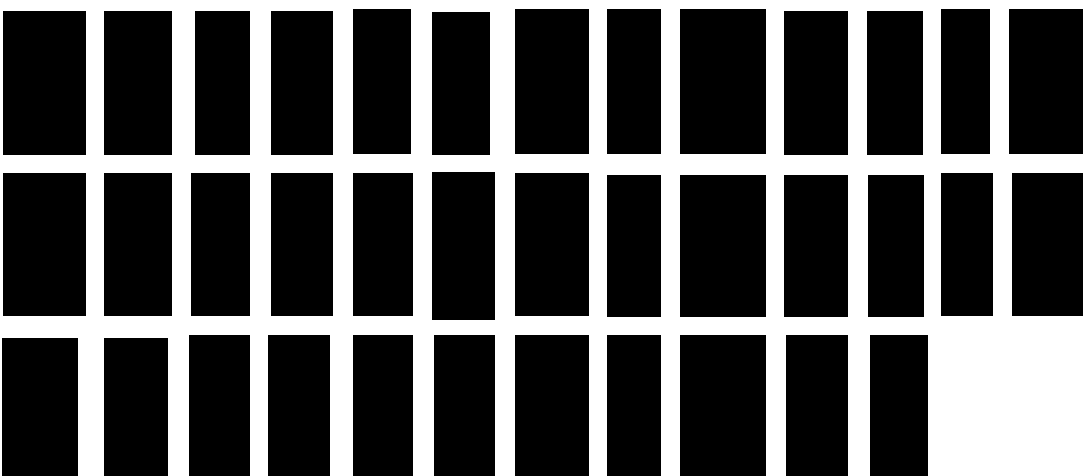


Fig. 41 CMA3: lowercase letters.

CMA3 was first used in *La Colombe du Massis* in 1857. The designer of this typeface is unknown. Shown at 300% of original size. *The British Library*.

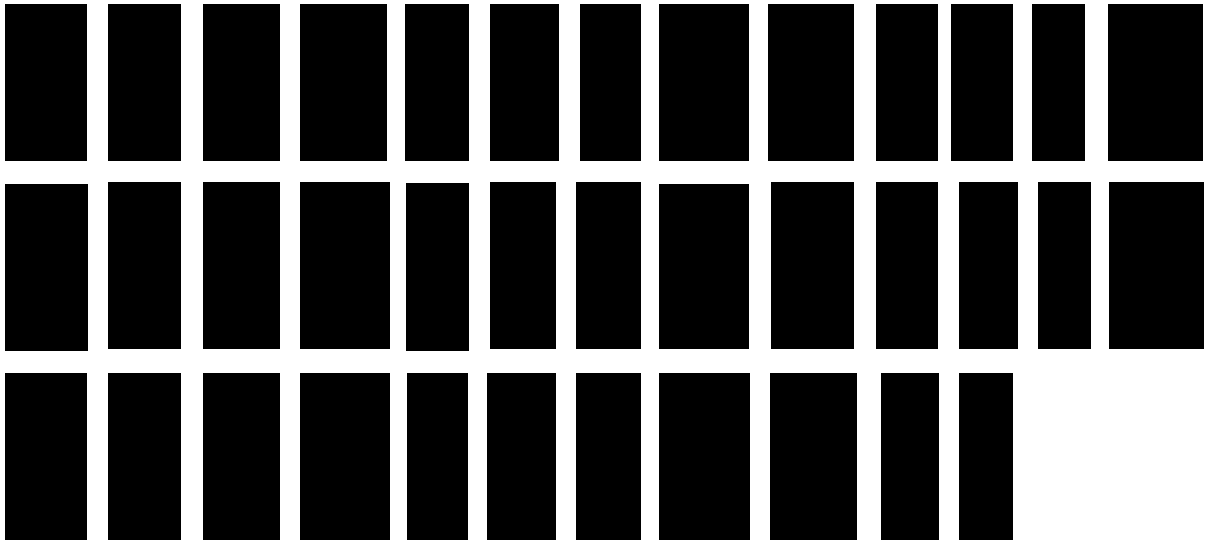


Fig. 42 CMA4: lowercase letters.

CMA4 was first used in *La Colombe du Massis* in 1858. The designer of this typeface is unknown. Shown at 300% of original size. *The British Library*.

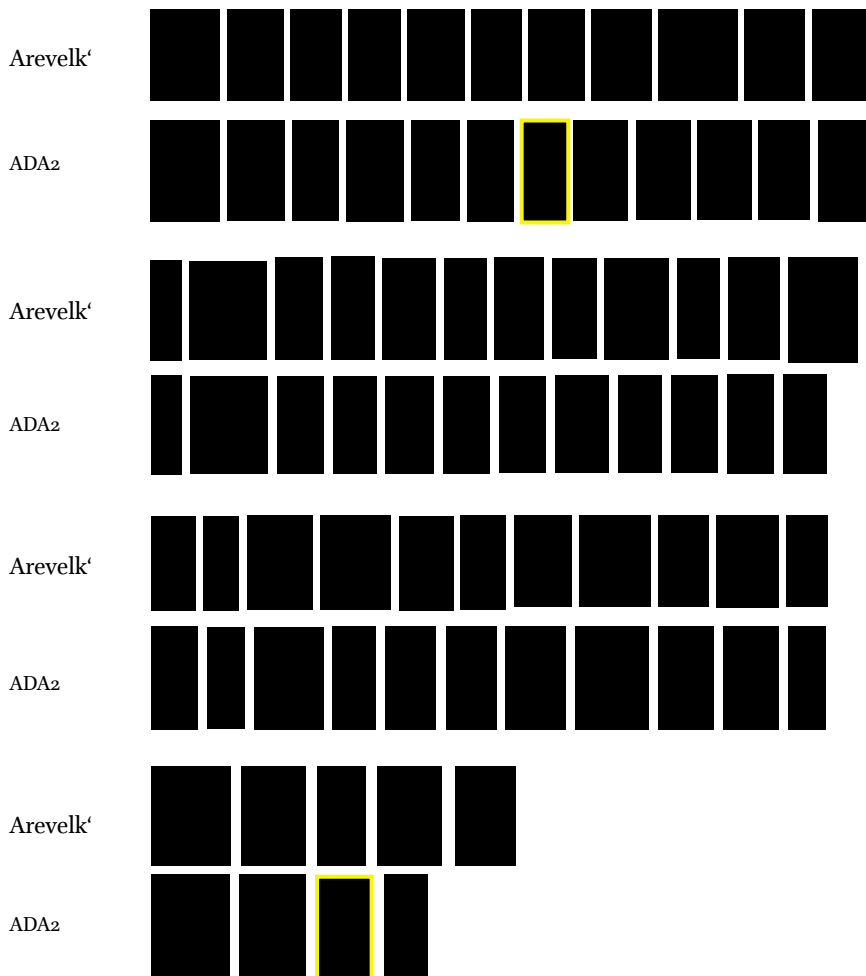


Fig. 43 ADA2 was based on Arevelk', designed by the Rev. Frère Yovhannes Sorkowččean of the Mekhitarist Order of Venice. ADA2 was first used in the third issue of the journal *Arevelk'* in 1855 and then in *La Colombe du Massis*. It was slightly modified by a French engraver under the direction of Aramean. Arevelk' was named after the journal *Arevelk'* by Aramean. The yellow rectangles are variations of their preceding shapes. Only lowercase letters are shown. Shown at 300% of original size. *The Nubarian Library*, and *the British Library*.

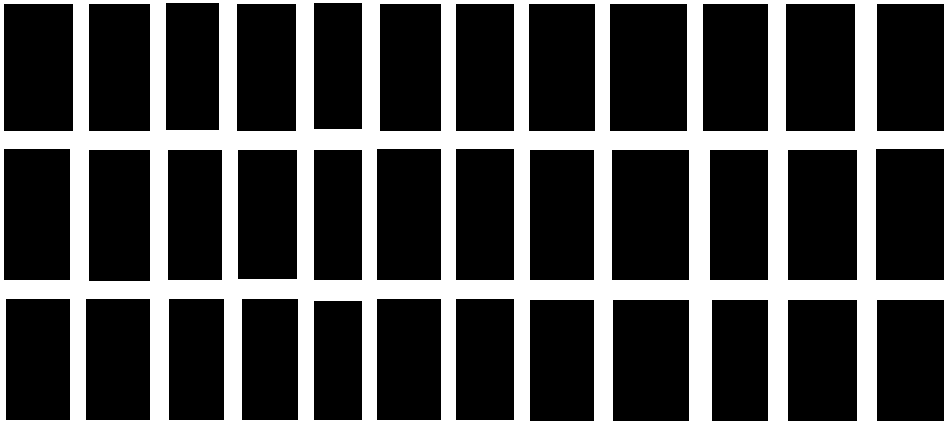


Fig. 44 CMA5-IT: lowercase letters.
It was first used in *La Colombe du Massis* in 1858. The designer of this
typeface is unknown. Shown at 300% of original size. *The British Library*.

The development of a hybrid typeface

Early in his career as a publisher, Čanik Aramean published the journal *Arevelk'*. In the first two issues, he made use of a slightly modified version of a traditional Bolorgir typeface that had been designed in Venice by Revd. Br. Yovhannes Sorkowččean of the Mekhitarist Order of Venice. This might have been an experiment with a view to saving lead by refraining from cutting new punches for the entire fount. Aramean chose to name this modified version *Arevelk'*. He also used *Arevelk'*, among other typefaces, in *La Colombe du Massis* in 1855. The typeface kept much of the angular appearance of traditional Bolorgir. However, in *Arevelk'* – from the third issue onwards – Aramean introduced a hybrid typeface, using *Arevelk'* as a starting point: a blend of new letter shapes, and old ones still based on the traditional Bolorgir style.⁹⁵

In ADA2 fourteen letters were modified, whilst the others remained unchanged in shape [Fig. 45a and b]. This resulted in an intermediate stage in the development of modern Armenian typefaces.

ADA2 presented some new features explaining the reasons for the new design, such as bulbous terminals at the end of letters ՚, յ, Վ, Ն and ց [Fig. 46], reduction in vertical and horizontal proportions of letters զ and հ [Fig. 47], and altered design of letters ք and և [Fig. 48]. However, the main challenge in ADA2 was the adoption of Latin letter *f* in the place of ք⁹⁶ [Fig. 49], and a different design for *q*, *η*, *ը* and *թ*.

Letters *q* and *η* were drawn based on զ by turning the stem of their descender into a shape curving first toward the left, and then toward the right. The upper part of these letters differed from զ only because *η* had a vertical stem on the left side and *q* a hook [Fig. 50]. The other two letter shapes *ը*, *թ* were emulating the design used in the corresponding capital letters [Fig. 51]. *թ* had its head rounded and the descender shortened up to the baseline, instead of being altered to imitate Latin letter *p* [Fig. 52]. The same design used for the head of *թ* was applied to the upper part of letter *ը* that however kept its vertical proportions unchanged. By rounding their upper part, these letters changed their point of entry and the direction of the strokes.

New sorts did not integrate well with those of the existing typeface: uneven stroke widths and different contrast between thin and thick strokes emphasised the differences between new and old shapes. Even the main stems of the new letter shapes varied in width, causing noticeable colour distinction in the printed page, as well as issues in spacing [Fig. 53].

Some of the design solutions attempted in ADA2 were not applied in subsequent Armenian founts, and this suggests that ADA2 was an experiment that Aramean did not pursue further. Aramean never made any official statement at the time of *Arevelk'*'s first appearance, whereas the typefaces used in *La Colombe du Massis* were covered by an announcement explaining the reasons for the new design.

⁹⁵ For the sake of comparison, the traditional Bolorgir type used as reference is from *The Bible* (Venice, Antonio Bortoli, 1733), representative of a high standard of quality.

⁹⁶ The Latin letter *f*, which was still used together with the traditional Armenian *ք* in *Arevelk'*, was used in CMA4 in *La Colombe du Massis* 1858, replacing the traditional shape of *ք*.

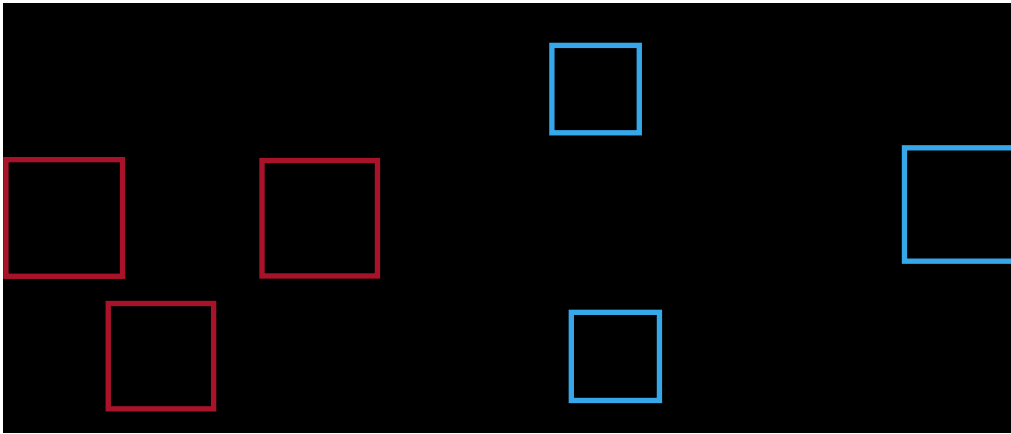


Fig. 45a Detail from the first issue from 1855.

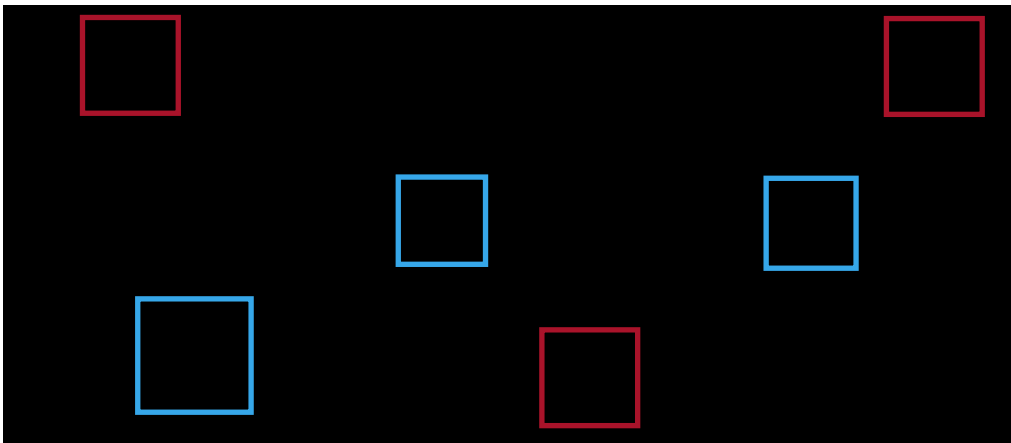


Fig. 45b Detail from the third issue from 1855.

Fig. 45a and b Examples showing differences and similarities between Arevelk' and ADA2 in the journal *Arevelk'*. Red squares show some of Arevelk' sorts that were used in ADA2, whereas blue squares mark some of the new shapes introduced in ADA2. Both images are shown at 400% of original size. *The Nubarian Library in Paris*.

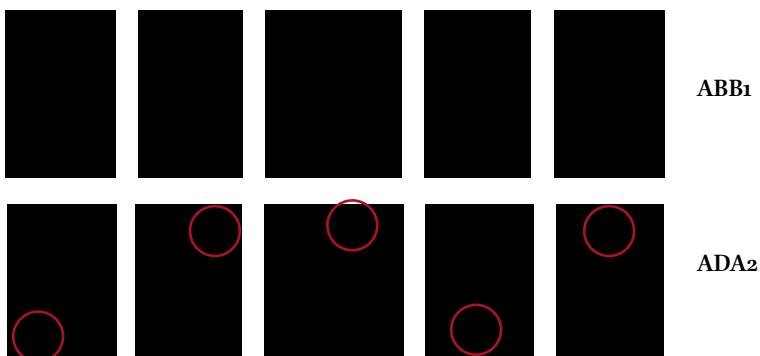


Fig. 46 Examples of letters with bulbous terminals. ABB1 is from Mekhitar, *The Bible* (Venice, Antonio Bortoli, 1733). (Original size: 22,4 × 32,1 cm). ADA2 is from the journal *Arevelk'*. Both ABB1 and ADA2 on pp. 236 and 237 of this thesis are shown at 500% of original size.

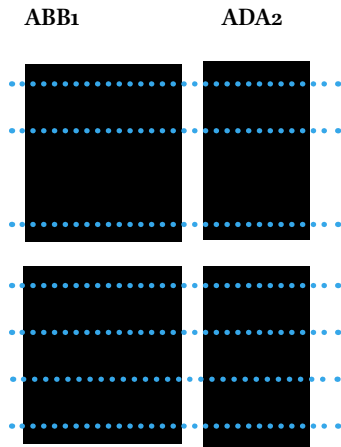


Fig. 47 Letters Է and զ modified their traditional vertical and horizontal proportions.

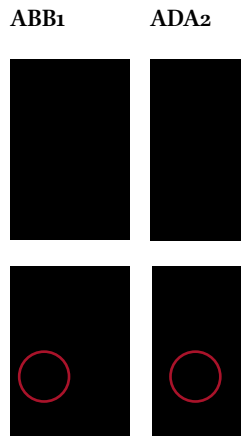


Fig. 48 In ADA2 letter Է was based on the design of Է. The circle indicates the unusual joining of stem and arch at the bottom of the letter Է.

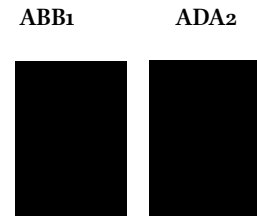


Fig. 49 The introduction of Latin letter f into the Armenian script.

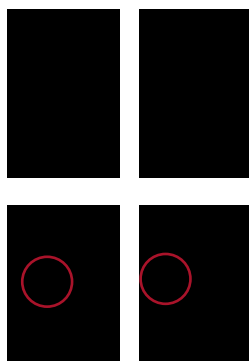


Fig. 50 The design of letters Գ and Է was unconventional. Their shapes were based on letter Զ. Differences on the left upper part of the letters are marked in red.

ABB1

ADA2

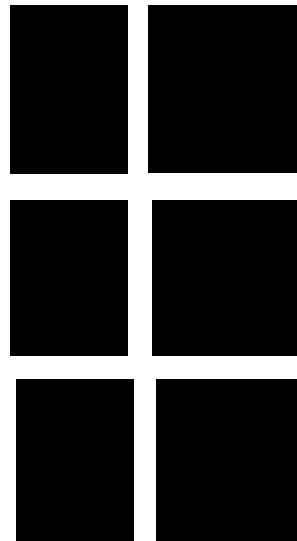


ABB1

ADA2

Model

Fig. 51 In ADA2, both letters Գ and Է were designed based on the shapes of capital Ը and Թ.

Letters shown as a 'Model' are from Mekhitar, The Bible (Venice, Antonio Bortoli, 1733). (Original size: 22,4 × 32,1 cm). Shown at 250% of original size.

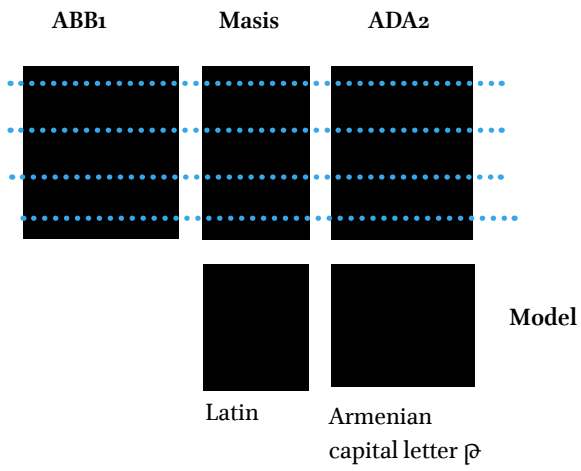


Fig. 52 Unlike upright Armenian typefaces, Թ used as model capital letter Թ instead of Latin p. All images are shown at 500% of original size.

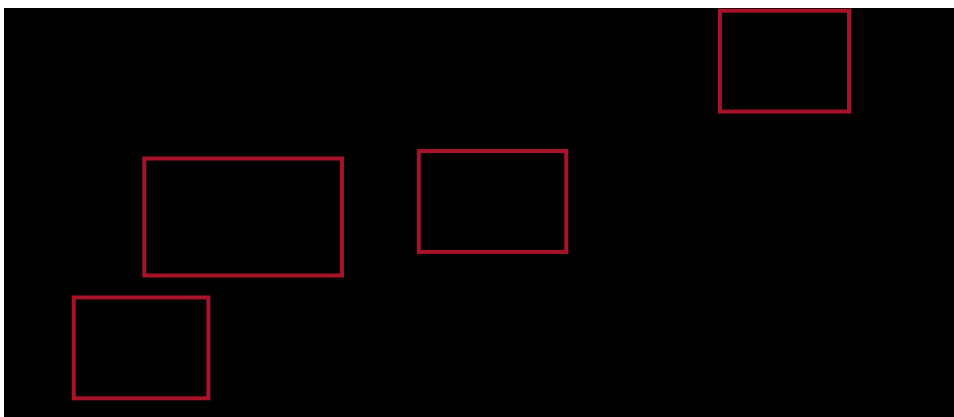


Fig. 53 Example of issues in letter-spacing are marked in red. Image shown at 400% of original size.

New style: from slanted to upright

In 1855 the slanted Bolorgir style, predominant in printing since the mid-sixteenth century and still recognisable in ADA2, was replaced in the journal by an upright style. Originally both in manuscripts and printing, Armenian letters in the Bolorgir style were drawn and designed at an angle of 16.5°, following the rules of contrast and ductus⁹⁷ produced by the use of a broad-nib pen [Fig. 54].

In 1855 the typeface named Vark', designed by the Reverend Vardapet Gabriël Ayvazovsk'y⁹⁸ and published under the charge of the Reverend Vardapet Sargis Têodorean in *La Colombe du Massis*, was drawn following the model of Latin roman typefaces by adopting a vertical axis [Fig. 55].

Changes in proportions

The shift from slanted to upright forced designers to change the proportions between ascender, base character height, and descender of Armenian typefaces. The ratio 1:1:1 (ascender : base character height : descender), typical of the traditional Bolorgir style [Fig. 56] was modified according to Western typographic principles. The base character height was increased, whereas ascenders and descenders were shortened.

The typefaces used in *La Colombe du Massis* were the work of different individuals living in different countries. Except for Masis, which was designed to a larger size than the Latin in *La Colombe du Massis*, the remaining typefaces were designed to match the point size of their Latin counterparts [Fig. 57]. These similarities point to the emergence of a common approach in setting the proportions of the different upright typefaces for *La Colombe du Massis*.

In Armenian, the length of ascenders and descenders is important to discern letter shapes that are visually alike and that could be easily confused, such as *n* and *ṛ*: like in the Latin script, long ascenders and descenders are important to discern one character from another, such as *h* and *n*.⁹⁹ Edik Ghabuzyan, head of the division for Saving and Creating Armenian Fonts at the National Book Chamber of Armenia, remarks: 'Text typeset with Armenian fonts that imitate Latin typefaces in proportions is inaccurate and difficult to read'.¹⁰⁰ In the case of Armenian letters, the length of ascenders and descenders should not be less than half of the length of the base character height. The four typefaces analysed show that the proportion between base character height, ascender and descender is still acceptable.

97 The ductus is the way in which a script is written, its speed and care of execution and form of letters. Michelle P. Brown, *A Guide to Western Historical Scripts from Antiquity to 1600*, 2nd edn (Toronto, University of Toronto press, 2002), p. 8 – Glossary terms.

98 Gabriël Ayvazovsk'y was born in 1812 in Theodosia. A devout Christian, he was an Armenian pedagogue, philologist, historian, writer, translator. In 1826 he moved to Venice to study at the Mekhitarist Congregation, to become a member and the general secretary in 1830. Between 1842 and 1856 he taught at the 'Murad Rafelian' and at the 'Samuelian Moorat' colleges in Paris, where he also founded the 'Haygazien' college in 1856. Ayvazovsk'y was the founder and the first editor of the journal *Bazmavep (Polyhistor)*, published by the Mekhitarist Fathers in Venice, between 1843 and 1848, as well as the founder of *La Colombe du Massis* in 1855. He died in Tiflis in 1880. Hovhannes Ayvazyan (ed.), *Who is Who. The Armenians* (Yerevan, Armenian Encyclopedia publishing house, 2007), vol. 1. Retrieved from: http://www.armenianlanguage.am/en/Encyclopedia_ayvazyan_ghasi. Accessed on 10 February 2016.

99 Lynne Watts and John Nisbet, *Legibility in children's books: a review of research* (Windsor, NFER, 1974), p. 31.

100 Edik Ghabuzyan, *Granshan: catalogue of typefaces from 2008–2010* (Yerevan, National Book Chamber of Armenia, 2011), p. 11.

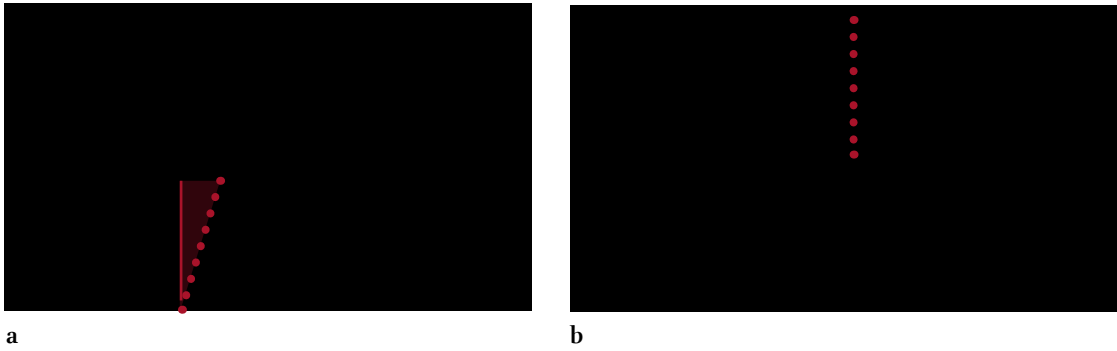


Fig. 54 Examples showing the differences between the axis of the new Armenian typeface (b) and the angle of the traditional Bolorgir style (a).
 a. ABB₁ is from Mekhitar, *The Bible* (Venice, Antonio Bortoli, 1733). Shown at 400% of original size. *The Mekhitarist Library in San Lazzaro, Venice*.
 b. Vark' is from *La Colombe du Massis* (1855). Shown at 400% of original size. *The British Library*.

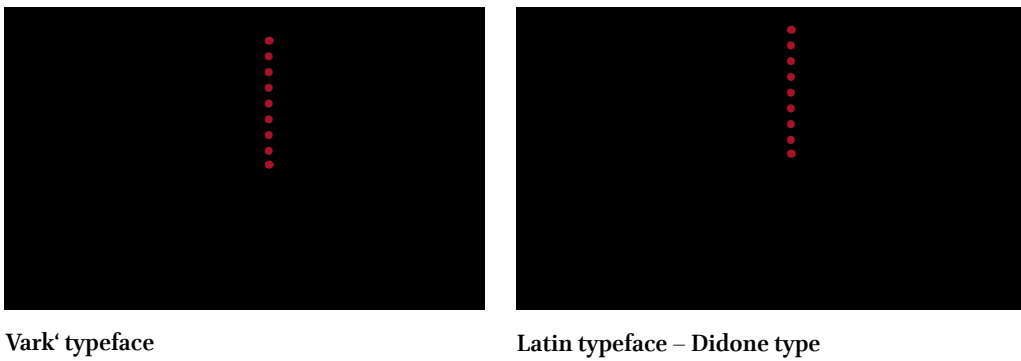


Fig. 55 The new Armenian typeface was drawn using a vertical axis to imitate Latin typefaces. From *La Colombe du Massis*, 1855. Images shown at 400% of original size.

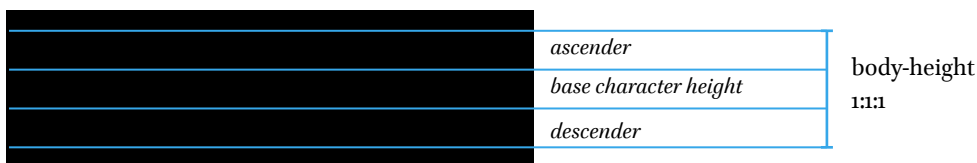


Fig. 56

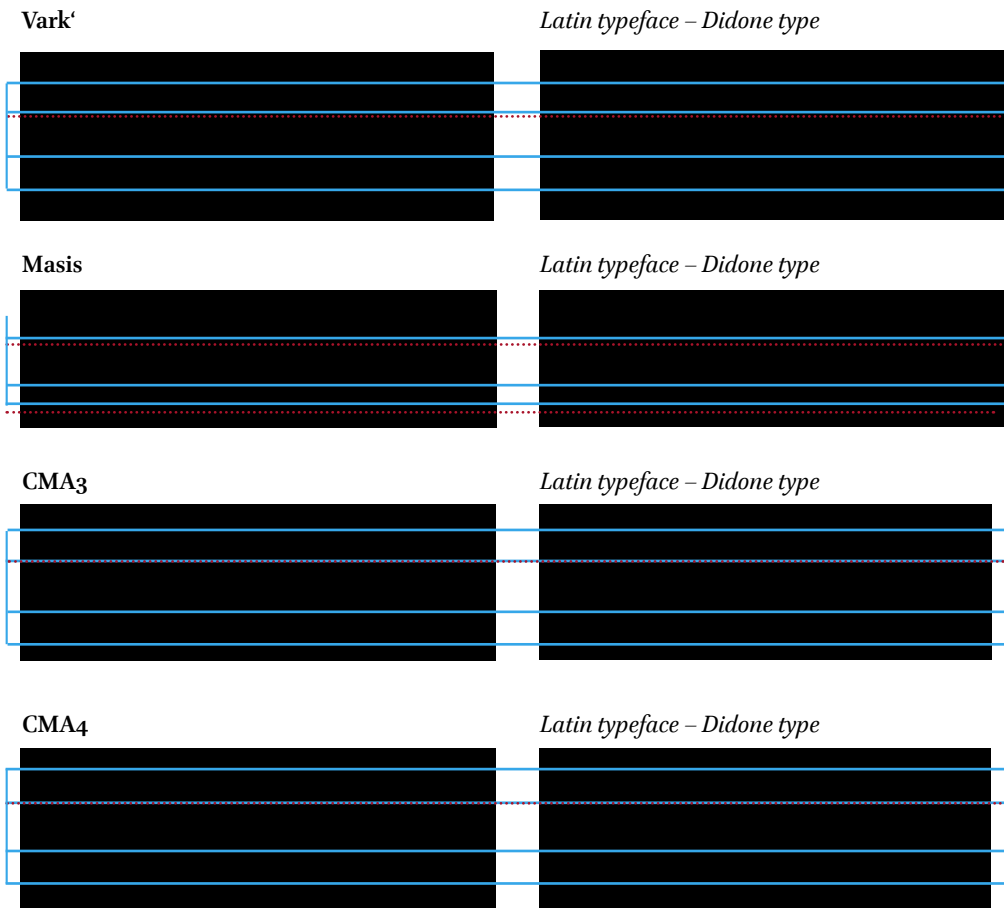


Fig. 57 The ratio 1:1:1, typical of the proportions of the traditional Bolorgir style, was modified for use with Latin typefaces. In the Armenian typefaces analysed, ascenders and descenders are shorter than the dimension of the base character height. Since typefaces CMA3 and CMA4 use the same proportions, they were probably cut by the same punch-cutter. From *La Colombe du Massis* (1855/1858). Images shown at 400% of original size.

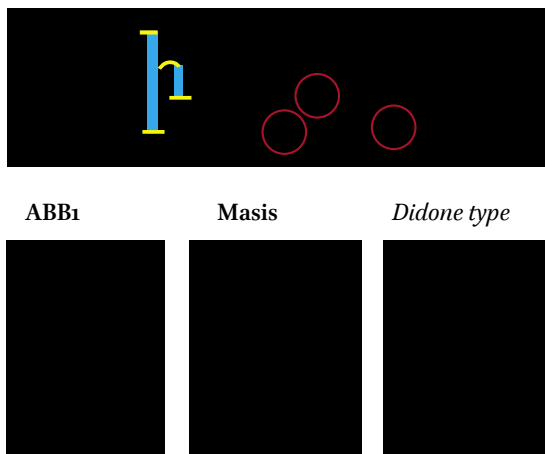


Fig. 58 The red circles mark the use of serifs in Masis, while the blue and yellow lines show the prominent contrast between thick and thin strokes. Image shown at 400% of original size.

Bottom: details showing more closely the similitude of serifs and great contrast between Armenian letter ρ in Masis and Latin n . Letter ρ has diverged from the model of the traditional Bolorgir style. Shown at 800% of original size.

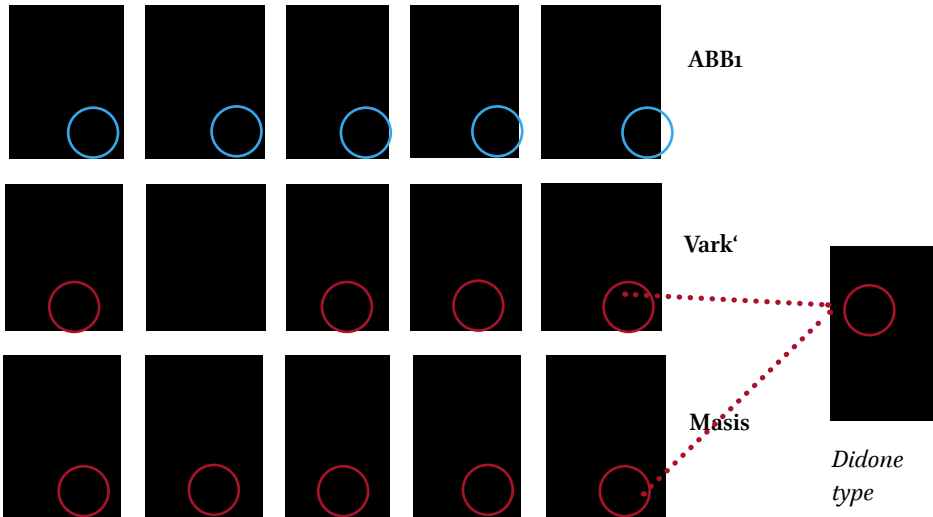


Fig. 59 Tailed letters: the red circles indicate bulbous terminals used to replace the long horizontal line attached to the extremity of the vertical stem (tail). The tail in the traditional Bolorgir style is marked by blue circles. Bulbous terminals were features taken from the Latin type. Images shown at 400% of original size.

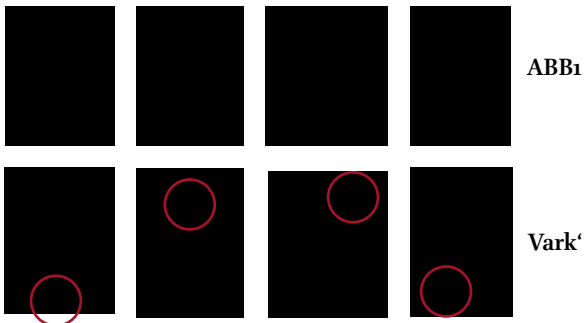


Fig. 60 Further examples of letters with bulbous terminals in Vark'. Images shown at 400% of original size.

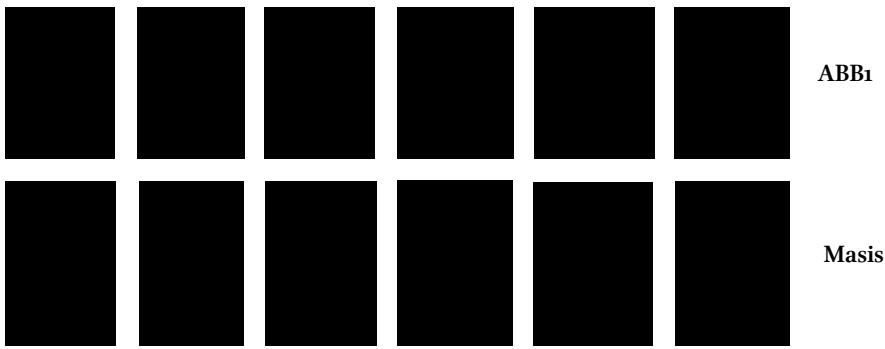


Fig. 61 In Masis, letters having similar shapes could easily be confused. Images shown at 400% of original size.

Aesthetic relationships: serifs, contrast and shapes

In *Book Typography 1815–1965* the French historian Gerard Blanchard (1966)¹⁰¹ wrote: ‘The aesthetic of the printed character is as much a function of an age’s intellectual and commercial organisation, as of its technical progress’. The second Armenian typeface published in *La Colombe du Massis*, the Armenian serif type Masis, was drawn to emulate the beauty seen in Didot typefaces; to imitate the delicacy of engraving, found in copperplate lettering, which shows a prominent contrast between vertical and horizontal strokes.

Masis was cut in 10 point size by the printer and type founder Yohannês Miwhêntisean in Constantinople, and further improved by Ayvazovsk’y.¹⁰² The typeface had a high contrast between thick stems and thin serifs; as in Latin typefaces, serifs were attached to the end of stems of letters on both sides [Fig. 58]. The great contrast between strokes certainly contributed to the elegance of the Armenian script, considering that the traditional Bolorgir style was characterised by low contrast and looked heavy and static.

Serifs were not the only feature used to strengthen the link between the Armenian and the Latin script types. For example, the tail of letters such as զ, ը, ի, ղ, վ was reduced and turned into a bulbous terminal [Fig. 59]. Vark’, which did not adopt serifs, was already using bulbous terminals, both on some of the ‘tailed’ letters and on the extension of upper and lower extremities of a number of letters such as յ, հ, ս, ց [Fig. 60]. It appears that Čanik Aramean, Miwhêntisean, and Ayvazovsk’y did not fully understand how stylistic details were applied to Latin letter forms, and they paid more attention to external factors than to the construction of Armenian letters. By means of stylistic details, new letterforms were designed, and issues, such as functionality of the script and recognisability of letter shapes, were progressively raised. The use of bulbous terminals in place of horizontal tails created confusion between letters that had similar shapes, such as զ and զ, ղ and ղ, վ and ի [Fig. 61]. To complicate the issue, the termination at the right side of the letters զ and ղ was shortened [Fig. 62].

The traditional construction of some Armenian letters was altered to such a degree that unusual solutions were adopted. For instance, the flat ending part at the right side of the letter ռ and the bottom horizontal bar of the letter է were turned into an arch with bulbous terminals in the serif typeface Masis [Fig. 63].

The relationship between vertical and horizontal proportions of some Armenian letters in all upright typefaces analysed so far was adjusted according to that of Latin types. Three letters had their body shortened: թ, հ and զ. The head of թ was brought down to the base character height and the width of the letter was reduced to the dimension of the Latin p. The size of the loop became equal to the upper space counter inside the bowl. The letter հ was reduced as well: the descender was eliminated and the width of the type narrowed. Finally, the head of letter զ was lowered to the base character height, and the tail shortened to the width of the upper bowl [Fig. 64]. Other letters, such as ս and ի, were reduced in width by respectively pulling inwards their arched outstroke and instroke, and attaching a bulbous terminal to their ascenders [Fig. 65].

101 Blanchard, ‘The typography of the French book’, p. 39.

102 Čanik Aramean, ‘Newly fashioned Bolorgir typefaces’ (Paris, October 1856), pp. 190–192.

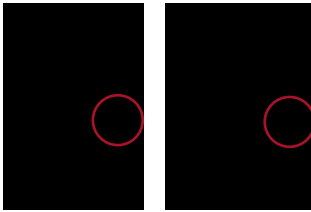


Fig. 62 Short termination in q and η. Masis is shown at 800% of original size.

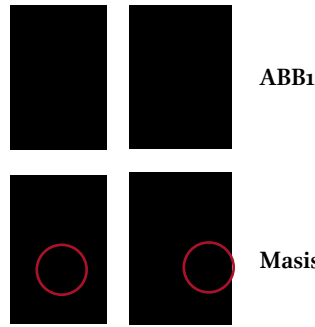


Fig. 63 The termination of t and n in Masis took different shapes. Images shown at 400% of original size.

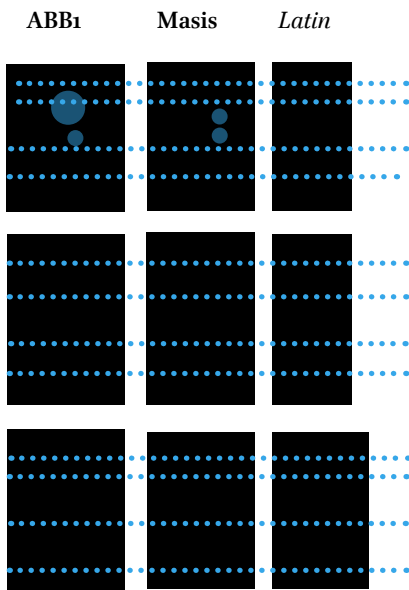


Fig. 64 In order to become similar to Latin letters, letters ρ, ϛ, and ϧ modified their traditional vertical and horizontal proportions. The blue circles mark the changes in dimensions of both the counter and the loop of letter ρ. Images shown at 400% of original size.

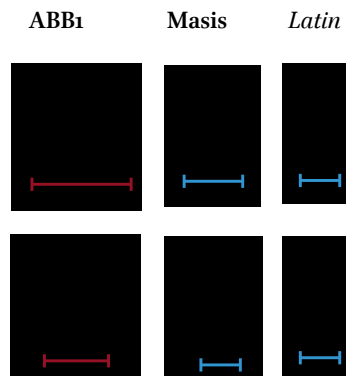


Fig. 65 The width of letters ū and ŷ was reduced to better match the width of the Latin letter u. The difference in length between the red and blue lines shows that the width of the new Armenian typefaces was closer to Latin types than to the traditional Armenian model. Images shown at 400% of original size.

The contours of other Armenian letters were modified to look homogenous, changing their ductus: for example, in Masis letter Է was obtained by flipping ք, and letter լ by inverting յ [Fig. 66]. Consequently, during the design process, features that promoted rapid and accurate letter discrimination were abandoned instead of being emphasised.

As a consequence of the new design, letters changed their ductus: in both upright typefaces Vark' and Masis, the instroke of letter շ changed from thick to thin by adding a half arch to the left side of the type [Fig. 67] and the shape of շ was completely reinvented, using an arch at the top of the letter instead of a triangular form, thus reducing the number of strokes needed to properly draw the letter shape [Fig. 68]. The letter Է, by modifying its proportions, decreased the number of strokes from three to two [Fig. 69].

Overall, the design of letters in both Armenian typefaces Vark' and Masis became very distinct from the conventional letterforms of the traditional Bolorgir. Thus sharp angular lines and junctions were replaced by new dynamic and rounded letterforms following the model of the Roman type in the Latin script. As a consequence, some Armenian letter shapes became almost identical to the forms used in the Latin alphabet. The letters ք and Է were minimised to be merely the Latin letter Գ having a thin horizontal line attached on the right side of the stem and a bulbous terminal at the end of the ascender respectively. Likewise, Գ was designed like Գ, and ք like a ք with a crossbar in the middle of the descending stroke. Other letters that borrowed from Latin letter shapes were Թ that took the shape of a ք but with a horizontal bar crossing the loop in the middle, and the Armenian letter Է that became like an Է [Fig. 70].

The complex structure of some Armenian letters, such as Զ and Ը, led to the interpretation of these shapes in different ways. The new solutions adopted were clearly an attempt to simplify the design and to find a correspondence with some of the shapes of the Latin counterparts. The typeface Vark', still maintaining some traditional aspects, dealt with the design of Զ and Ը in the same way as the slanted Bolorgir. However, in the serif typeface Masis, and subsequently in both CMA3 and CMA4, letter Զ was designed on the model of the Latin letter Զ, whereas traditionally the upper part of the letter has a triangular shape starting with an horizontal stroke, and the lower part is made by an horizontal straight stroke at the right and a bowl at the left. In Masis the upper part of letter Զ was an arch, with bulbous terminal, attached to the right side of the vertical stroke; in CMA3 and CMA4 the upper part of letter Զ was a diagonal stroke resembling the original triangular shape, joining centrally both the vertical stem and left arch [Fig. 71]. As the arch and stem at the base of the character are separated from each other, the

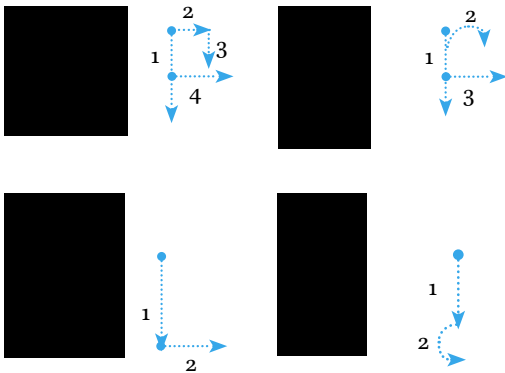


Fig. 66 The new design process used to create letters p and l altered their original ductus.



Fig. 67 Changes in the instroke of the letter.

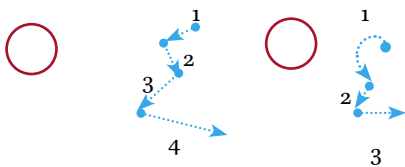


Fig. 68 Changes in the number of strokes in z due to the different shape used in the upper part of the letter, marked in blue.



Fig. 69 Changes in the ductus of letter eta. All images on this page are shown at 400% of original size.

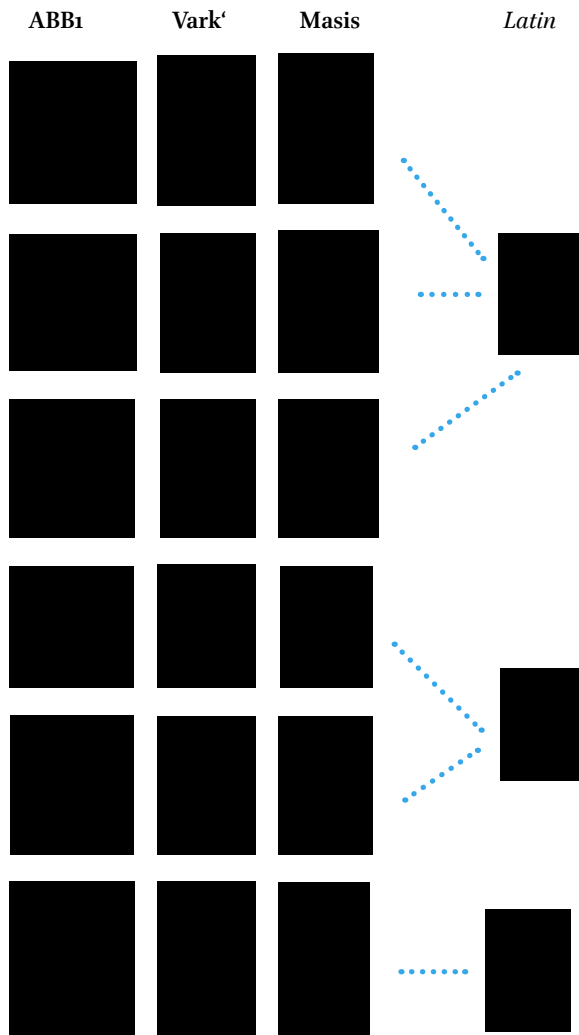


Fig. 70 Examples of letter shapes based on Latin letters. Images shown at 400% of original size.

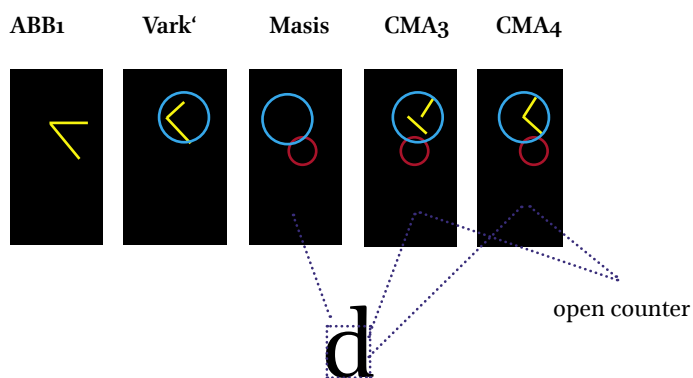


Fig. 71 Different design solutions were adopted for letter \grave{a} in the various upright typefaces. The blue circles mark the changes in the upper part of the letter, while the yellow lines show how the angular strokes were interpreted compared to ABB1. The shapes used to design the body in Masis, CMA3 and CMA4 typefaces were similar to Latin letter d. Images shown at 400% of original size.

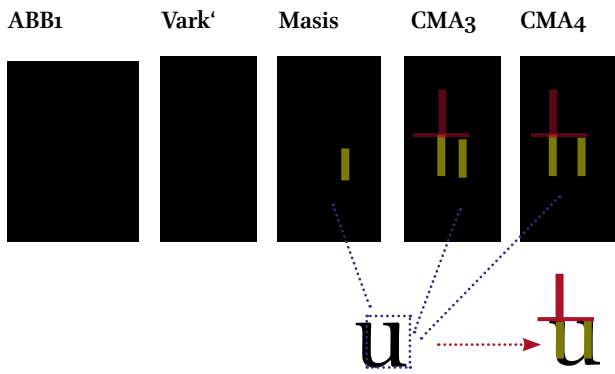


Fig. 72 The design of Ճ in Masis, CMA3 and CMA4 typefaces was based on the Latin letter u. Red and yellow lines show the new design. Images shown at 400% of original size.

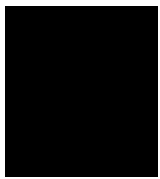


Fig. 73 Superimposition of the Armenian n from CMA4 typeface and Latin letter n shows that the two letters are an exact match. Images shown at 600% of original size.

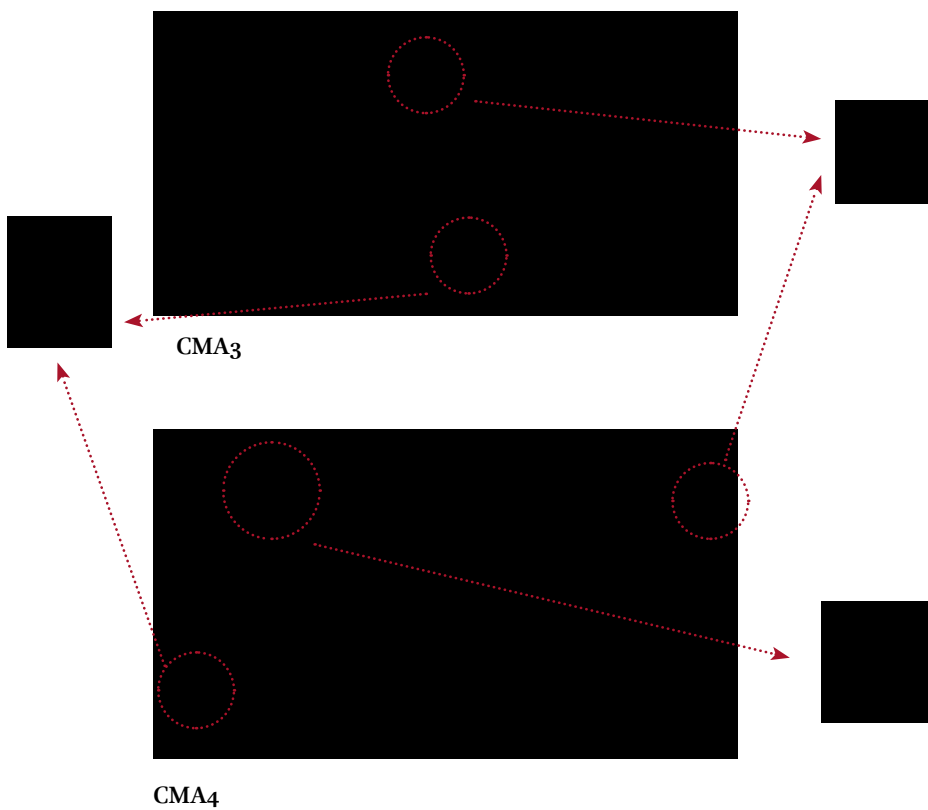


Fig. 74a The images show letters from the Latin alphabet imported into the Armenian script. Images shown at 400% of original size.

counter of letter ձ looks bigger than in other letters. Similarly, letter Ճ was designed to look like the Latin letter u, becoming more static in the typefaces CMA3 and CMA4 [Fig. 72].

The similarities of Armenian letter shapes to Latin forms become more obvious in CMA3 and CMA4. The matching of the body size with their Latin counterparts made it easy to use Latin proportions for the Armenian letters that were similar in shape to the Latin, as well as to substitute others with perfectly matching shapes such as ն, with the Latin counterpart (eg. letter n [Fig. 73]).

The connection with the Didot style was strengthened by the increase in stroke contrast in the Armenian script, and particularly by the changes in proportions, which allowed the use of sorts from the Latin Didot. Thus, Armenian letters were substituted with Latin sorts that presented similar aesthetic features: letter s was introduced to be used instead of ս, due to the similitude between the Armenian capital letter Տ and the Latin S. Letter f replaced փ due to some affinity in their design: both letters were made of a vertical stem with an horizontal crossbar, and were elongated either over the base character height – in the case of f – or under the baseline – in case of փ. Cases of phonetic correspondence between Armenian and Latin scripts were extremely rare. This explains why the Armenian letter ր was the only one to be replaced by its corresponding Latin letter r [Fig. 74a and b]. The substitution of Armenian letters with Latin sorts from the ‘Modern’ Didot typeface, as well as the integration of letters from the Latin alphabet into the Armenian script, strengthened the link with the Western world.

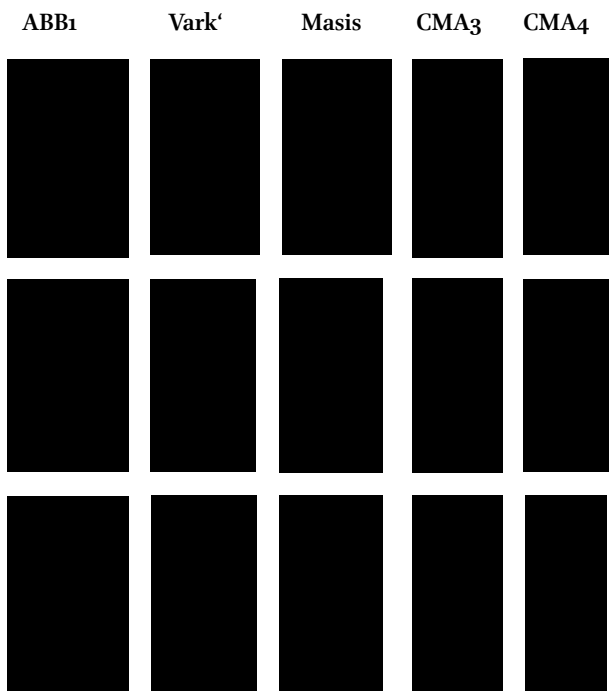


Fig. 74b The change in u, p, r letter shapes in the text typefaces of *La Colombe du Massis* over the years (1855/1858). Images shown at 400% of original size.



Fig. 75 Example showing the new Šlagir style. Detail from *Miscellany* (Salmast, 1853-1854). The informal Šlagir was a fluid cursive style with joined letters. Shown at 400% of original size. Matenadaran 5138, in Stone, *Album of Armenian paleography*, p. 490.

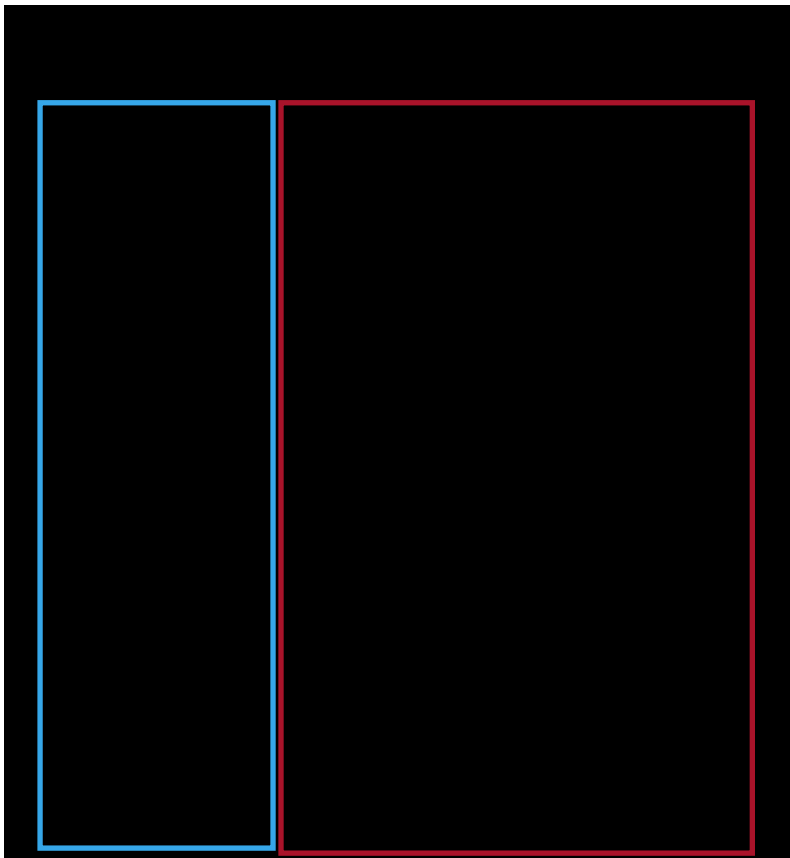


Fig. 76a Detail from Oskan Yerevanoz, the Armenian Bible (Amsterdam. St. Ejmiacin and St. Sargis Press, 1668). Shown at 100% of original size. *The Mekhitarist Library in San Lazzaro, Venice*.

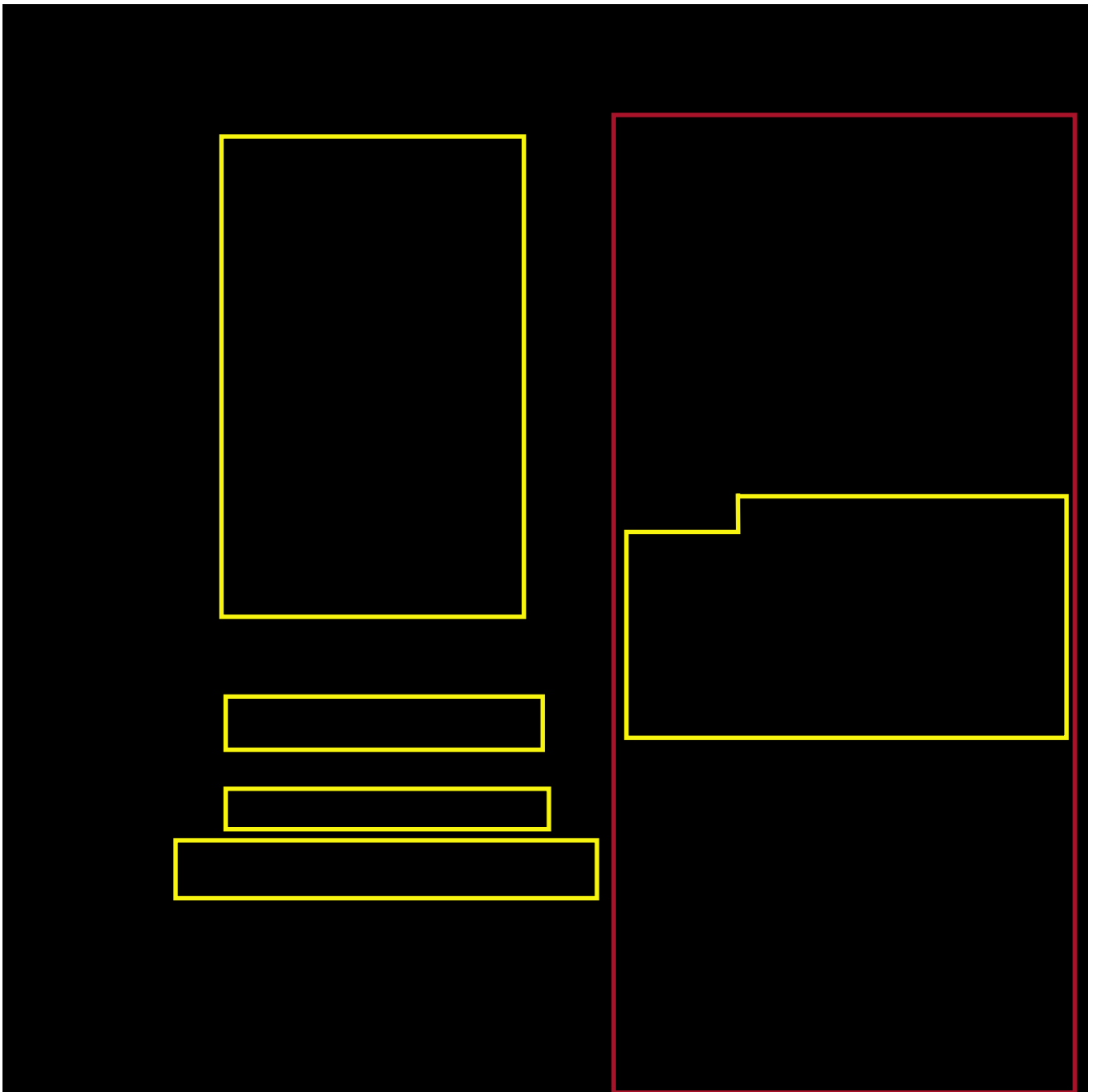


Fig. 76b Detail from ԼՆԼԿ (Light) (Constantinople, Aramean, 1874). (Original size: 22 × 24,5 cm). Shown at original size. *The Nubarian Library*.

Fig. 76a and b. Examples showing the complexity of the layout of journals compared to psalters. The layout of psalters [Fig. 76a] was very simple: the main text, marked with a red rectangle, was usually typeset in Bolorgir style, either on one or two columns, depending on the dimension of the page; where wide space at the margins of the page, marked with a blue rectangle, was kept for annotation. In the second image [Fig. 76b], the five yellow rectangles inside the red ones, show that journals needed to display various information, and that different typographic styles could help to establish hierarchy within the page.

Introduction of a new style: the Italic

Another innovation was the introduction of capital and lowercase letters in Italic style. In manuscript tradition, there were two cursive styles: Šlagir (շղազիր) and Notrgir. Šlagir (շղազիր)¹⁰³ was an informal style, introduced in the early fifteenth century [Fig. 75].¹⁰⁴ Contrary to Notrgir, a cursive and notary style,¹⁰⁵ Šlagir was a fluid cursive with joined letters. In printing, the Notrgir was used to annotate texts in the left and right margins, while the Šlagir was never produced as movable type due to its complexity.

The typographic requirements necessary to organise information in journals were different and more complex than those required for layouts in books [Fig. 76a and b]. The new Armenian Italic style introduced in the mid-nineteenth century was used to improve hierarchy in Armenian journals. It performed the same function as the Italic in the Latin script: it was used for in-sentence emphasis in texts and to work as subheadings in articles. Prior to the mid-nineteenth century, Armenian journals composed in Bolorgir types would use the Notrgir style to emphasise words. However, when the upright style was introduced, traditional Bolorgir slanted typefaces began to be used as Italic, instead of Notrgir types. After the introduction of Armenian Italic typefaces – similar to those employed in the Latin script – it became rare for slanted Bolorgir types to be used for in-sentence emphasis in texts [Fig. 77a, b and c].

The new Armenian Italic typeface introduced by Aramean in *La Colombe du Massis* in 1858, is here designated as CMA5-IT. Since there were no suitable traditional models to follow, CMA5-IT was designed based on Latin Italic used in *La Colombe du Massis* in 1858. CMA5-IT emulates the vertical proportions of the Latin Italic type: like the new Armenian upright style, the Armenian Italic has a wide base character height, and short ascenders and descenders [Fig. 78].

CMA5-IT was cut at an angle of 19°, rather than at the conventional 16.5° angle of traditional Bolorgir types. [Fig. 79]. CMA5-IT, like the new serif upright typefaces, was influenced by the ‘Classical’ European ‘Didot’ style: it was a high contrast typeface [Fig. 80], with extremely thin instrokes and outstrokes [Fig. 81]. The contrast in CMA5-IT relates to the pointed flexible pen, common to nineteenth century’s typefaces, rather than to the broad-nib pen used in the Bolorgir style. Additionally, similarly to Latin letters r, c, s and y, letters like հ, Ն, յ, ս and գ have bulbous terminals [Fig. 82]. Other similarities between CMA5-IT and the Italic typeface of the Latin script are: the width of letters such as ա, է, վ, թ and գ based on the width of Latin letter a to ensure consistency between Armenian and Latin letters [Fig. 83]; the adoption of the shape of the Latin letter p to represent թ [Fig. 84].

¹⁰³ Stone, *Album of Armenian paleography*, pp. 5, 74.

¹⁰⁴ *Ibid.* p. 20.

¹⁰⁵ *Ibid.* p. 104.

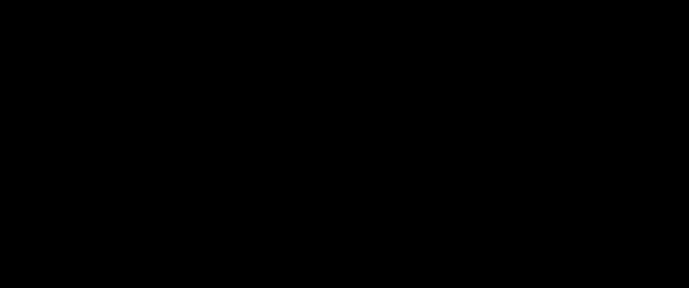


Fig. 77a Slanted Bolorgir style. Detail from *La Colombe du Massis* (Paris, 1855). Shown at 200% of original size.



Fig. 77b Notrgir style. Detail from *Մեղու* (Mehu) (Constantinople, 1856). Shown at 150% of original size. *The Nubarian Library, Paris.*

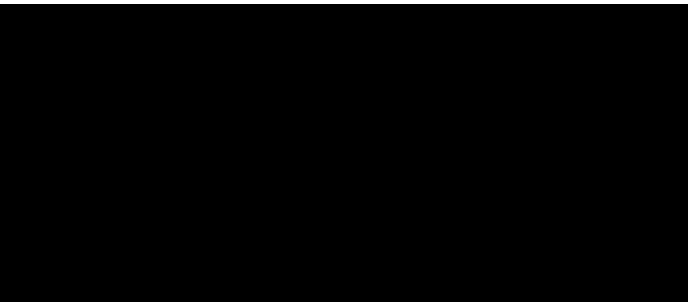


Fig. 77c New Armenian Italic CMA5-IT. Detail from *La Colombe du Massis*. Paris, 1858. Shown at 200% of original size.

Fig. 77 a, b and c Different Armenian typographic styles to provide emphasis within text.

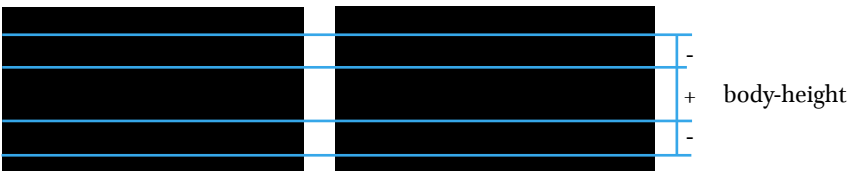


Fig. 78 Relationship between base character height, descender and ascender in CMA5-IT compared to the proportions used in the Latin Italic typeface from *La Colombe du Massis*. Shown at 400% of original size.

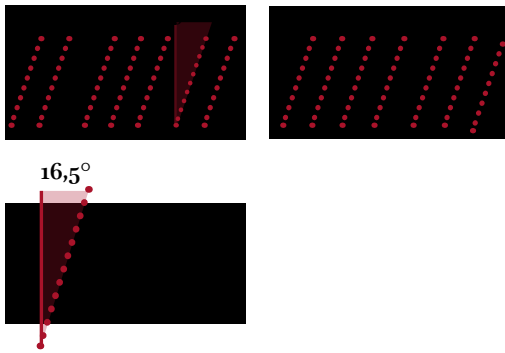


Fig. 79 The angle of slope of the new Italic style was the same as the Latin Italic counterpart, rather than the one in the traditional Bolorgir style. Shown at 400% of original size.

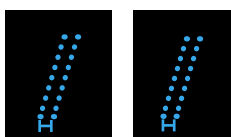


Fig. 80 The contrast between heavy strokes and hair lines in CMA5-IT (left) is the same as in the Latin Italic (right). Shown at 400% of original size.

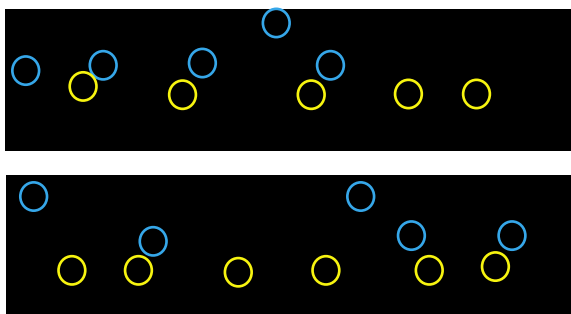


Fig. 81 The blue circles indicate the hair lines of instrokes and the yellow circles the outstrokes in both scripts. Shown at 400% of original size.

CMA5-IT



Latin Italic

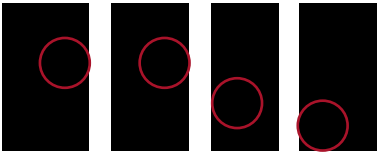


Fig. 82 The circles indicate the similarities between the bulbous terminals used in CMA5-IT and the Didone Latin typeface. Shown at 400% of original size.



Fig. 83 The lines in red mark some of the Armenian letters that were designed using the width of the letter a. Shown at 400% of original size.

ABA1

CMA5-IT *Latin*
type



Fig. 84 The traditional size of the loop of letter p̄ is reduced, and the resemblance of p̄ with p is evident. Shown at 400% of original size.

Since CMA₅-IT was designed according to the vertical proportions of Latin Italic, Armenian letters that looked similar to Latin forms were simply replaced with sorts from the Latin typeface. For example, Latin letters **n** and **u** were used in CMA₅-IT in place of **ն** and **ւ** [Fig. 85]. The criterion used in CMA₄ to substitute characters **ք**, **ր**, **ւ** with **f**, **s**, and **r** was also adopted in CMA₅-IT [Fig. 86].

Other letters were designed in accordance with the shapes of CMA₃. For example, the tail of letters **լ**, **զ**, **ղ**, **վ** are folded upwards and have a bulbous terminal, [Fig. 87] and the ending stroke of letter **է** has an arched shape [Fig. 88]. In addition, **ձ** and **ճ** are both slanted versions of upright typefaces: **ձ** of CMA₃ and **ճ** of Masis [Fig. 89].

CMA₅-IT was influenced by European conventions and enabled letters from the Latin alphabet to be incorporated into Armenian typefaces. The design of Italic Armenian typefaces is further evidence of the Latinisation of the Armenian script.

CMA5-IT Latin Italic CMA5-IT Latin Italic



Fig. 85 Armenian letters that had similarities with shapes of the Latin alphabet were replaced with sorts of the Latin Italic typeface. Shown at 400% of original size.

ABB1 CMA4 CMA5-IT

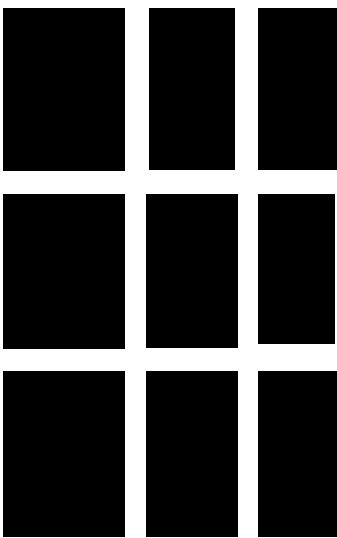


Fig. 86 CMA5-IT follows the example of the upright style CMA4: letters ք, ր and ս are replaced by Latin letters f, r, and s. Images shown at 400% of original size.

ABB1 CMA3 CMA5-IT

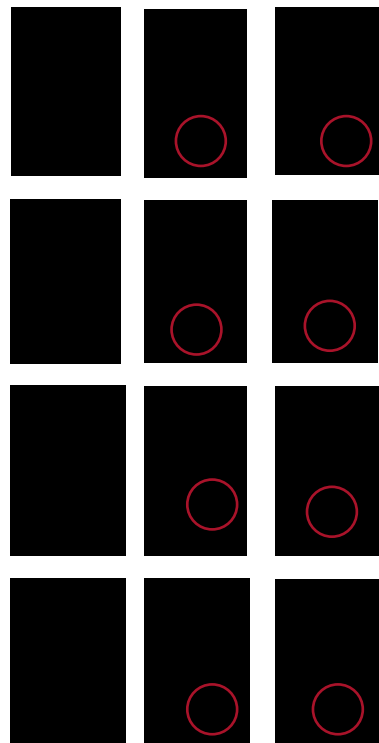


Fig. 87 The outstroke of letters լ, գ, ղ, վ was drawn following the features used in CMA3 typeface, rather than following the shapes of the traditional Bolorgir style. Images shown at 400% of original size.

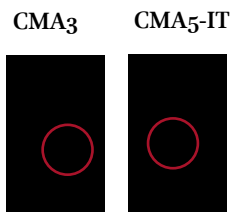


Fig. 88 Another feature from CMA3, used in CMA5-IT. Shown at 400% of original size.

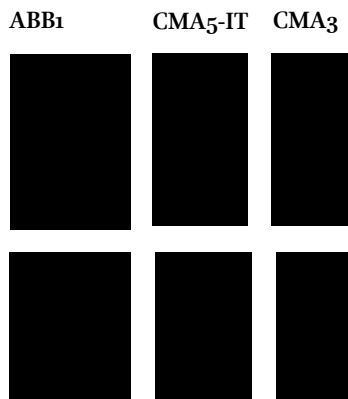


Fig. 89 CMA5-IT Letter shapes \grave{a} and \grave{c} are based on the design of \grave{a} and \grave{c} used in the upright typefaces CMA3 and Masis. Thus, arch and stem at the base of letter \grave{a} are kept separated like in the upright typeface. Letter shape \grave{a} recalls the shape of Latin letter d , while \grave{c} of letter u . Shown at 400% of original size.

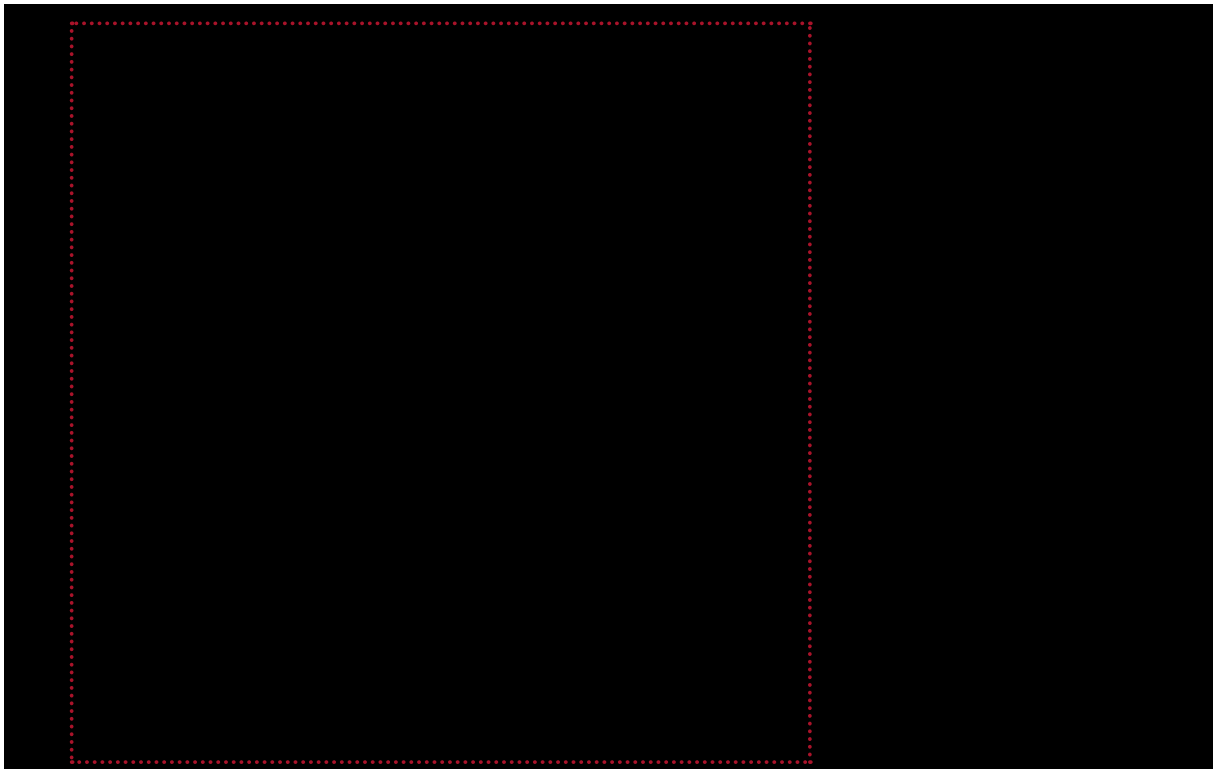


Fig. 90 Johann Joachim Schröder, *Thesaurus linguae armenicae antiquae et hodiernae* (Amsterdam, 1711), p. 1. Shown at 150% of original size.

Գլխագիր Բոլորգիր շղագիր Հինաիտիրց Նոտրագիր
 Capital letter Round script Running Old Notrgir
 Bolorgir hand or Italic. Šlagir

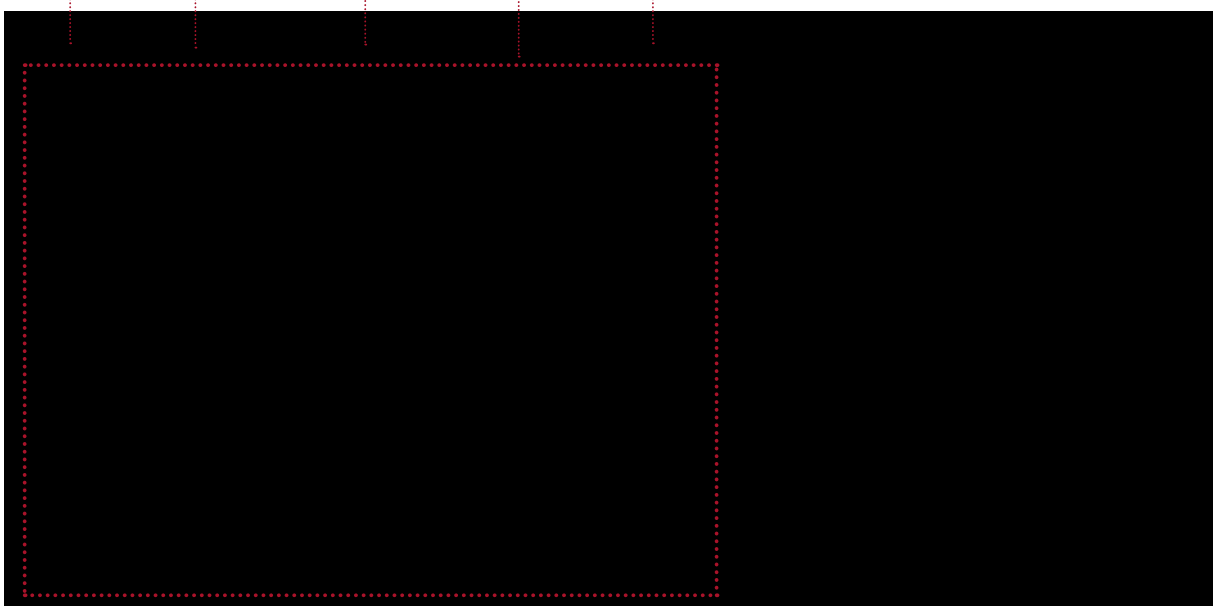


Fig. 91 Armenian letters. Detail from: Čanik Aramean, *Դասարան հայկապն յանկանց* (Lesson of instructions for the Armenian school) (Paris, Aramean printer at the printing house of Walder, 1860), p. 11. (Original size: 16,4 × 23,5 cm). Shown at 150% of original size. *The Bibliothèque Nationale de France.*

Redefining conventions of the Armenian script

In the second half of the nineteenth century, for the first time the traditional Armenian styles known as Erkat'agir, Bolorgir, Šlagir, and Notrgir were radically altered in printing. The earliest references to the Armenian script classification in printing appeared in the early grammars of Armenian in Western language by Francesco Rivola, Clemente Galano, Johann Joachim Schröder and others.¹⁰⁶ The passage of the 'De Orthographia' at the beginning of Schröder's *Thesaurus linguae armenicae antiquae et hodiernae*¹⁰⁷ shows an alphabet table of four different script types. The table created by Schröder has three main headings: Majuscula, Minuscula and Cursiva. The script types grouped under the Majuscula were Picta, characterised by pictorial or floral figures, and Ferrea (Iron), known as Erkat'agir, from the iron pen used to write on parchements. Both were used for titles in Armenian books and for initial capitals. The Notrgir style was grouped under the heading Cursiva, whereas the Bolorgir was classified as Rotunda¹⁰⁸ [Fig. 90]. During the second half of the nineteenth century the traditional Armenian script classification was modified based on the new Armenian typefaces introduced by Aramean. The new classification was suggested by Aramean in the schoolbook *Դասարանի հայկապի ծանկանյ* (1860).¹⁰⁹ Čanik Aramean's table divided script types into five groups: Glxagir (Majuscule), Bolorgir, Šlagir, Hinaioirts' (Old), and Notrgir. The novelty was that the slanted Bolorgir style was grouped under Hinaioirts' (Old), whereas the new upright style was put under the heading Bolorgir. In the table, the Italic style was classified as Šlagir, which in manuscript tradition was an informal style with connecting letters. The new Italic style was named Šlagir, even though it was a cursive style without joined letters, similar to Latin Italic typefaces rather than to Armenian handwriting [Fig. 91].

The outcome of the sequence of alterations to the Armenian script introduced by Latinisation can be summed up along the following lines: the process was extensive, to the extent that hardly any letter of the traditional script was left untouched. The influence of the Latin script was significant, not only in the substitution of Latin letters when there was a phonetic correspondence, but also in the case of shape similarities. Throughout this early period of Latinisation, Armenians may well have experienced Aramean's types as the imposition of a completely new alphabet, which they would have to learn and adopt in order to be able to read in their own language. Some might even have considered that Armenian identity was being lost.

¹⁰⁶ See: Stone, *Album of Armenian paleography*, pp. 13–21. According to Stone, the various Armenian styles may have been already discussed in handbooks for scribes. However, these were manuscripts from the twelfth to the fifteenth centuries. Stone, *Album of Armenian paleography*, p. 16.

¹⁰⁷ Johann Joachim Schröder, *Thesaurus linguae armenicae antiquae et hodiernae* (Amsterdam, 1711), pp. 1–6.

¹⁰⁸ Stone, *Album of Armenian paleography*, p. 18.

¹⁰⁹ *Lesson of instructions for the Armenian school*. Title translated into English by the author.

3. THE BEGINNING OF THE LATINISATION OF THE ARMENIAN SCRIPT AND ITS SPREAD

3.6 Perception and criticism of the new Armenian style in the second half of the nineteenth century

Čanik Aramean's official announcement in 1855 and the works he printed and published in Paris in the new fashioned Bolorgir style provoked negative reactions. As early as 1861, A. P. Aghanur – a donor to the Union Haykienne of Java and defender of the use of classical language – wrote a lengthy letter to Apraham Mouradian, the editor of the Armenian journal *Pariz*. Established in 1860, *Pariz*¹¹⁰ was published by Čanik Aramean and printed in a serif upright typeface. In his letter Aghanur rebuked the editor of *Pariz* for supporting the new Armenian upright style and expressed his concern for the Armenian script, language and identity. Aghanur's letter certainly affected the editor: not only did he publish Aghanur's letter in *Pariz*, but he also changed publisher¹¹¹ and restored the classical Bolorgir style in all subsequent issues.

Aghanur deemed the introduction of new Armenian typefaces imitating European typographic styles to be an 'issue of national importance'.¹¹² His letter, whilst addressed to the editor, was intended for *Pariz*'s readers.

Dear Editor of *Paris* [*sic*]¹¹³ Newspaper, ... I feel it necessary to honestly state my viewpoint here since our approach to progress may be different from how you define or perceive it. The subject matter of this letter is the transformation of our original, simple, yet refined typefaces to some approximation of the German-style typefaces that are commonly used nowadays.¹¹⁴

Aghanur's letter (dated 10 May 1861, Batavia)¹¹⁵ was published in parts on 20 December 1861 in issue 57 of *Pariz*,¹¹⁶ and in issues 58¹¹⁷ and 59.¹¹⁸ Aghanur neither discussed the

110 According to Kéram Kévonian, *Pariz* was distributed in Bombay, Calcutta and Batavia. Kéram Kévonian, 'Raden Saleh, peintre de Mariam Haroutunian' *Archipel*, 62 (2001), p. 103.

111 *Pariz* changed publisher six months after Mouradian had received Aghanur's letter. The first issue with the new publisher is n. 55, dated 22 November 1861.

112 Apraham Mouradian (ed.), *Pariz*, 57 (Paris, Thunot Publishing House, 20 December 1861), p. 2. Translated from Armenian by Anna Talalyan, July 2016.

113 The translator Anna Talalyan uses 'Paris' instead of italic and she translates the newspaper's name Paris instead of *Pariz*.

114 Mouradian (ed.), *Pariz*, 57 (Paris, 20 December 1861), p. 2. Translated from Armenian by Anna Talalyan, July 2016.

115 Batavia was the name of the capital city of the Dutch East Indies and corresponds to the present day city of Jakarta (the present Indonesian capital city).

116 On pp. 2-3. Kévonian mentions that in the journal *Pariz* (20 December 1861) A. P. Aghanur defended the use of the classical language and criticised the characters of Aramean, whose form imitates that of Latin letters. Kévonian, 'Raden Saleh, peintre de Mariam Haroutunian', p. 122. The author is grateful to Dr Boris Adjemian, Director of the Nubarian Library in Paris, for helping the author to identify Aghanour's letter published in issues 58 and 59.

117 Apraham Mouradian (ed.), *Pariz*, 58 (Paris, 3 January 1862), pp. 3-4.

118 Apraham Mouradian (ed.), *Pariz*, 59 (Paris, 17 January 1862), pp. 2-3.

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shapes of the new Armenian typefaces nor intended to compare them against the old letterforms to demonstrate the advantages of the traditional Bolorgir style. Instead, he warned Armenians of the adverse consequences that Latinised Armenian typefaces would have on Armenian identity. While Aghanur acknowledged the good intentions behind the production of nineteenth-century Latinised Armenian typefaces, he pointed out that Armenians' enthusiasm for novelty and admiration for the style of European founts were the main factors behind the changes of the Bolorgir style.¹¹⁹

The European typefaces are a trend timely created to encourage the rest to use those newly-cast letters, while our modest Mesropian typefaces are deemed archaic, though those are typefaces of a truly Armenian spirit, typefaces that were created by a nation respected for so many centuries, typefaces that have never been inopportune.¹²⁰

Aghanur considered that publishers were responsible for altering Armenian typefaces according to their personal preferences. He mostly expressed his disapproval of the Mekhitarist Printing and Publishing House in Venice for starting a 'revolution in the Armenian typefaces'.¹²¹ On the one hand, he considered it had been acceptable for the Mekhitarists to introduce European-style calligraphy to embellish their Armenian publications in the 1830s – but only for Armenian book titles and journal headings and produced by means of engraving. On the other hand, he objected to the Mekhitarists' promotion of Latinised Armenian founts: they encouraged Armenians to produce newly fashioned Bolorgir typefaces, and publishers to use them for their Armenian publications.¹²²

Every nation has a script ... their eyes are accustomed to since childhood and school years. ... If it were at the publisher's discretion to alter the typefaces for personal preference driven by best intentions to perfect them, it would caused Babylonian chaos to read them.

... We cannot accept either the change or the preaching that has led to this 'amendment' [the design of new fashioned Bolorgir typefaces], since it yields no tangible results unless you want to accustom your eyes to the script of European books¹²³

Aghanur acknowledged that the forms of the traditional Bolorgir style were not completely satisfactory, and that for the sake of readability and legibility they required refinement. However, he believed that new fashioned Bolorgir typefaces were not an adequate solution: by changing the shapes of the traditional Bolorgir, the new upright style failed to improve legibility of letters sharing similar basic structures, such as n

119 Mouradian (ed.), *Pariz*, 57 (Paris, 20 December 1861), p. 2.

120 Ibid. p. 2. Translated from Armenian by Anna Talalyan, July 2016.

121 Ibid. p. 2.

122 Ibid. p. 2.

123 Ibid. p. 2. Translated from Armenian by Anna Talalyan, July 2016.

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and Է; q and ր; ռ and ը; ք and Թ; չ and շ; and զ and ղ, and even created additional difficulties for Armenian readers. Moreover, letters of the new Bolorgir types were so different from those of the traditional style that readers and scholars would have to learn another alphabet.¹²⁴ To support his point of view, Aghanur quoted Mariam Haroutunian (1777/81–1864), a Batavian philanthropist well known in the community of Java and a donor of the Union Haykienne of Java:¹²⁵ ‘as if two languages weren’t enough for us (meaning classical Armenian and new Armenian), two national scripts were invented for us [namely old and new Bolorgir style].’¹²⁶ The new style of Armenian letters was influenced by European typefaces as much as the new Armenian language (ashkharhabar) was adopting new words from European languages.¹²⁷

Stronger objections were raised about the use of the new Armenian upright style for education, considering it highly unsuitable for pupils. An extreme solution to the issue of the new style and language was proposed by Aghanur: to burn all school textbooks in vulgar Armenian.

We insist that the natural sweetness and pleasure of Grabar (classical Armenian) and its style would be totally lost under the impact of new Armenian. There will also be many cases when the meaning will not be correctly perceived by everyone, especially on such high-level topics as morality or politics. We will lose the borderline between literate and illiterate ways of writing; ... The current state of education within our nation is at risk to lapse into chaos if we decide to universally use plebeian typefaces in printing, which will mean actualizing the wish for retrograde thinking and an attempt to teach dialectal writing to public. ... It would be a great patriotic favour, in our opinion, if school textbooks in the vulgar new Armenian found everywhere ... were collected and burnt.¹²⁸

124 Mouradian (ed.), *Pariz*, 57 (Paris, 20 December 1861), p. 2.

125 Thanks to Kévonian’s article ‘Raden Saleh, peintre de Mariam Haroutunian’, the author was able to identify that the quote in Aghanur’s letter was by Mariam Haroutunian. Kévonian, ‘Raden Saleh, peintre de Mariam Haroutunian’, p. 122.

126 Mouradian (ed.), *Pariz*, 57 (Paris, 20 December 1861), p. 2. Translated from Armenian by Anna Talalyan, July 2016.

127 Mouradian (ed.), *Pariz*, 58 (Paris, 3 January, 1862), p.3. Aghanur explained that: ‘Very often I can understand the meaning of a translated word only thanks to the original meaning in the European language, something I am sure my gifted Armenologist friend would have difficulty with (or even wouldn’t understand it at all), as he doesn’t speak any European language. Thus, I believe the only way to resolve the issue is to define and approve such terms which would reveal the precise meanings of European words, especially since, and we shouldn’t deny it, there is a lack or absence of certain equivalents in Armenian.’

128 Mouradian (ed.), *Pariz*, 57 (Paris, 20 December 1861), p. 3. Translated from Armenian by Anna Talalyan, July 2016.

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Burning books is a form of censorship, an action taken against cultural, religious, or political matters.¹²⁹ In this instance, Armenians resisted the temptation: they took no brutal actions against school textbooks in vulgar Armenian. Further criticism of the new Armenian Bolorgir type and language used in textbooks was expressed by Mr. Tovmassian, a teacher of the National College in Izmir (Smyrna):

The illustrated alphabet book for children that was printed in Paris has reached my hands. It saddens me to say it cannot be considered of any use for our college as it does not comply with our norms and regulations.¹³⁰

Presumably the illustrated alphabet book mentioned by Tovmassian was Aramean's *Դասարանի հայկալիսի ծանկանից*. The book was printed at the Armenian Printing House Walder and published by Čanik Aramean in Paris in 1860. The argument was that exposing pupils to 'fashionable' nineteenth-century Armenian type styles would create a generation of Armenians unfamiliar with the traditional Bolorgir style. They would have to learn an alphabet based on European conventions.

Aghanur believed that the new upright style would soon prove a passing fashion, unlikely to last. He had already noticed that *La Colombe du Massis* had progressively abandoned the new styles when transferring from Paris to Theodosia (Crimea).¹³¹ He assumed that other journals would follow the move of *La Colombe du Massis*. *Pariz* was another example of reversion to the Bolorgir style: after receiving Aghanur's letter, the editor decided to leave Čanik Aramean and to publish his journal at Thunot Publishing House, which had always been faithful to the traditional Armenian style.¹³² Thus, under the latter publisher, *Pariz* would be composed in traditional Bolorgir style only.

The anxiety provoked by the introduction of new Armenian typefaces and the new language, both emulating European aspects, arose from Armenians who believed that departing from their tradition and from the past would put their identity, traditions and values at risk. Aghanur's letter is evidence of this concern. Armenian identity,

129 An emblematic example is the well known burning of books under the Nazi regime on 10 May 1933, when a group of university students led by the Propaganda Minister Joseph Goebbels gathered at the Berlin's Opernplatz (Opera House Square) to burn books from the Institute for Sexual Research and Jewish libraries in a bonfire. Other examples are: China and Spain. In China, a counsellor of the Emperor She Huang proposed the destruction of all books that aimed for a return to the past. His proposal was made in 213 BCE. In Spain, the Spanish cardinal Jiménez de Cisneros (1436/38–1517) founder of the university of Alcalá burned Islamic books in Granada. See: Rebecca Knuth, *Burning books and levelling libraries* (Westport, Praeger, 2006), p. 114; and Fernando Báez, *A universal history of the destruction of books* (New York, Atlas & Co., 2008), pp. 18–19, 208–209.

130 Mouradian (ed.), *Pariz*, 57 (Paris, 20 December 1861), p. 3. Translated from Armenian by Anna Talalyan, July 2016. Schoolbooks in ashkharhabar were already rejected from Armenian schools as early as 1830s. An example is a spelling book in ashkharhabar, printed by the ABFM, rejected by the schools of the Armenians in Smyrna. In the case of Aramean's schoolbook (1860), Aghanur's letter does not mention whether the book was refused merely because it was in ashkharhabar, or also because it was printed with Latinised Armenian typefaces. *The Missionary Register* (1839), p. 83.

131 Aghanur here refers to *La Colombe du Massis* dated 1861, since in 1860 the journal was still printed entirely with fashionable Armenian typefaces.

132 Armenian publications printed by Thunot were in old Bolorgir style. The fact that this publishing house never printed in the new Armenian style is evidence that Thunot never worked with Aramean, and that the publishing house was contrary to the new style.

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already threatened by the Ottoman Empire and the Russian Tzar traditions, could further be uprooted by European culture. The alteration of shapes from the traditional Bolorgir style had been so extensive that authenticity was at risk of being lost. Thus, by 1861 Latinisation had begun to affect the Armenian script to the extent that it would influence the design of subsequent typefaces.

The Latinisation of Armenian typefaces initiated in the 1840s by Miwhêntisean in Constantinople¹³³ and implemented by Čanik Aramean in Paris in 1855 presented similarities to the reform introduced by the Russian Tsar Peter the Great on the Cyrillic alphabet between 1708 and 1710. Peter chose the secular path for education and soon added Latin, French and German to the curriculum of his School of Mathematics and Navigation, founded by Charter in 1701. Slavonic grammar and spelling were added only later.¹³⁴ The first similarity between Armenian and Cyrillic reforms lies in their purpose: to integrate with European culture. The other similarity was that the structures of alphabets and the restyling of letterforms were based on the shapes of Latin letters. Both scripts were clearly influenced by the proportions, shapes of serifs, contrast, and the form of the characters of contemporary Roman typefaces: the Cyrillic alphabet was based on the features of the old-style Dutch (Baroque) Roman, whereas the Armenian was based on the (Classical) Didone Roman style. The changes in the Cyrillic were certainly more radical than in the Armenian script: the reform introduced Cyrillic lowercase letters to a previously unicameral script with no separate upper and lowercase letters and dropped seven letters from the original alphabet, decreasing the number of characters to 38.¹³⁵ In contrast, although some Armenian lowercase letters were replaced by Latin types (letters f, s, r were introduced to replace the Armenian shapes ք, տ and ը), none were eliminated from the alphabet.

The reform of Cyrillic was forcibly introduced during the reign of Tsar Peter the Great, and consequently, was unchallenged. Conversely, the future of the Armenian script and alphabet was determined mainly by the choices made by publishers and printers.

133 See Section 3.2 of this chapter.

134 Geoffrey Hosing, *Russia and the Russians* (London, the Penguin Press, 2001), chapter four: 'Peter the Great and Europeanization'.

135 For more information on the reform of Cyrillic type see: Yefimov Vladimir, 'Civil type and Kis Cyrillic' in John D. Berry (ed.), *Language Culture Type* (New York, ATypI and Graphis, 2002), pp. 128–147. Zukhov, 'The peculiarities of Cyrillic letterforms', pp. 5–26.

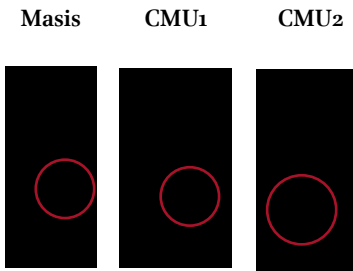


Fig. 92 Contrary to Masis, in CMU1 and CMU2 the bottom part of letter t is a semicircle extending below the baseline. In CMU1 and CMU2 the design of letter t is similar to the form used in early printed types. Shown at 500% of original size.

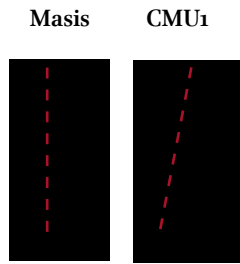


Fig. 93 Unlike Masis, in CMU1 the stroke of the ascender in letter r is shortened and sloped. Shown at 500% of original size.

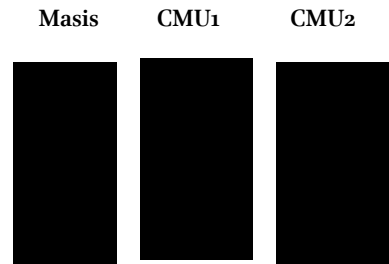


Fig. 94 In CMU1 and CMU2 the height (vertical dimension) of p was increased to enlarge the counter of the loop. Also in CMU1 and CMU2 serifs were abandoned. Shown at 500% of original size.

3.7 The spread of the new upright style in the Armenian Diaspora

La Colombe du Massis ceased in 1858, but restarted in Theodosia in 1860 to be published for five consecutive years. There, the journal was printed and published at the Press of Khalipean Usumnaran and in 1861 it became a biweekly publication.¹³⁶ Whereas issues of *La Colombe du Massis* published in 1860 were printed entirely with nineteenth-century fashionable Armenian typefaces,¹³⁷ in issue 1861 the printer began to progressively reintroduce the traditional Bolorgir style. Issues of the journal published in 1862 were mostly composed in Bolorgir types: Usumnaran still used upright typefaces, even though these appeared just sporadically. The reversion to the former Bolorgir style was not the only step towards the traditional style made by the printer in the journal: in 1861 Usumnaran introduced two upright Bolorgir typefaces – hereafter referred to as CMU₁ and CMU₂ – in which letterforms revert from Latinised shapes to manuscript traditions. For example, in both CMU₁ and CMU₂ the bottom part of letter է is not an arch as in Masis, but a semicircle extending below the baseline, similar to the shape of է in early printed types [Fig. 92]. Additionally, in CMU₁ the stroke of the ascender in letter հ is shortened and sloped [Fig. 93]. In CMU₁ and CMU₂ the height (vertical dimension) of թ is increased to enlarge the counter of the loop. However, whereas in CMU₁ the vertical stem of թ extends below the baseline, in CMU₂ it stops there. Another element that is indicative of a step-back to the traditional Bolorgir style is the forsaking of serifs in designing both CMU₁ and CMU₂ [Fig. 94]. Also, the folding upwards of the horizontal stroke in tailed letters, which Aramean had introduced in his Armenian typefaces, was abandoned completely to follow the typographic conventions of former Bolorgir typefaces, thus enhancing similarities with letterforms from manuscripts from the fourteenth and fifteenth centuries.

Շանիկ Արամյան was the sole publisher of Armenian journals in Paris until November 1861, when *Pariz* began to be published by Thunot. Between *La Colombe du Massis* and *Pariz*, Aramean issued the journal *Arevtmuk' (West)* (1859) – the continuation of the former *Arevelk'* – still edited by Step'an Oskanian. The front page of *Arevtmuk'* indicates that the journal was distributed in Paris, Constantinople, Izmir and Egypt: this is an example of how using new Armenian typefaces in journals ensured that the new Bolorgir style was visible by a wide audience, increasing its chances of becoming the model for the design of subsequent Armenian typefaces.

In order to understand the extent of the spread of fashionable Armenian typefaces introduced by Aramean and the future of the new and old Bolorgir styles, it is necessary to observe the Armenian typefaces employed in various Armenian journals by their

¹³⁶ *La Colombe du Massis* started as a monthly publication.

¹³⁷ Two of them closely imitating Vark' and Masis.

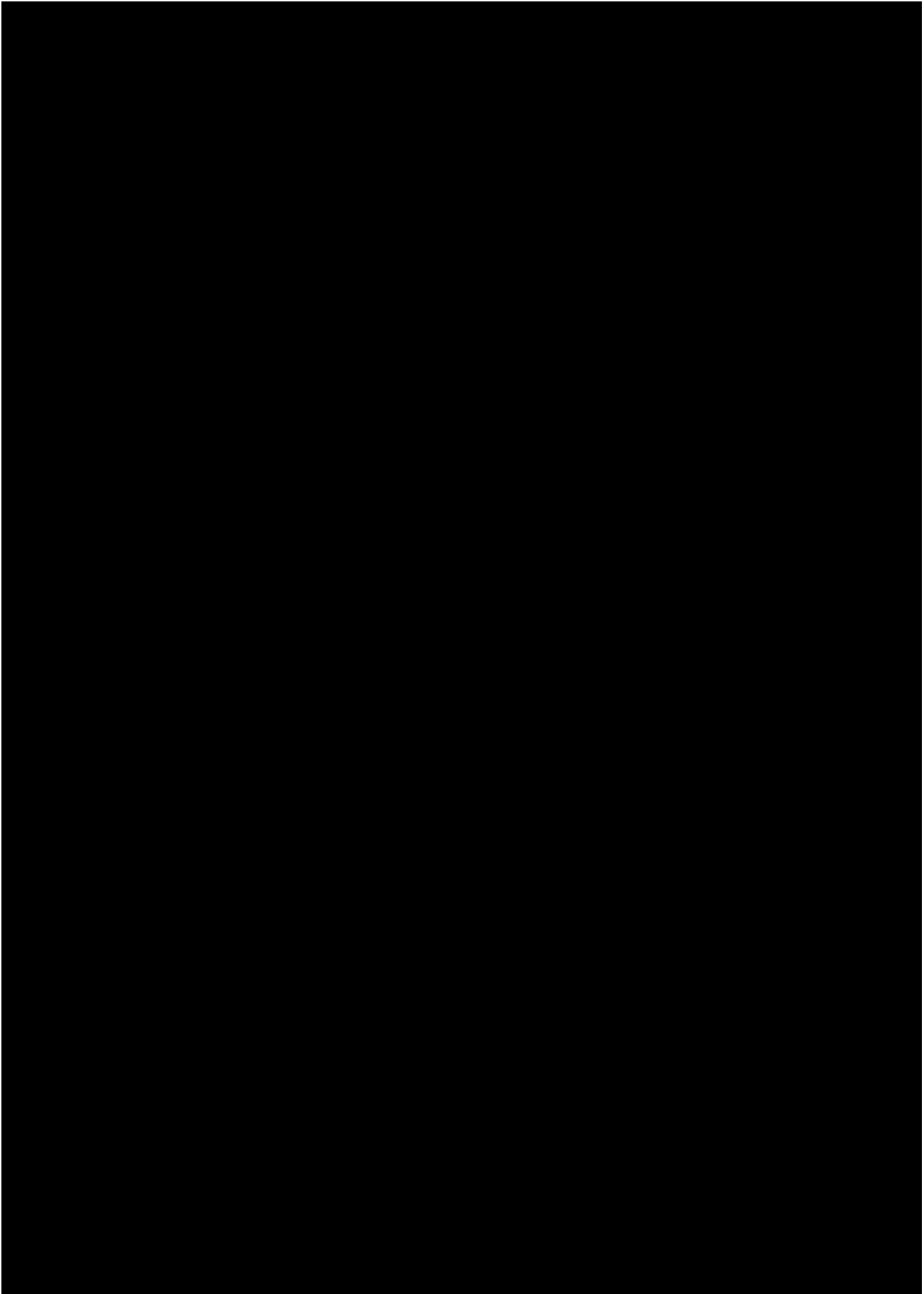


Fig. 95 Արմենիա (Armenia), (Marseille, 1887). (Original size: 29 × 41 cm). Shown at 60% of original size. *The Nubarian Library, Paris.*

respective publishers, after Aramean.¹³⁸ After the first appearance of *Pariz*, other Armenian journals came into existence in France. The general practice adopted by publishers consisted of composing and printing main texts with traditional Bolorgir types while using Latinised Armenian types only occasionally. This is well illustrated by *Արմենիա* (Armenia) – edited, printed and published by Portgoukalian in Marseille in 1885 [Fig. 95] – and *Anahit* – printed and published by Printing House Morris père et fils in Paris in 1898 [see Appendix A, p. 442].

In *Armenia* the upright Bolorgir style appears as footnotes, to compose short paragraphs, and particularly to highlight words within a text; in *Anahit* the new Italic introduced by Aramean is used in between words, and an upright Bolorgir typeface is used to compose footnotes (this is CMU02) [see Appendix A, p. 443].

A similar trend can be observed in other Armenian journals published in Paris, such as the scientific and literary journals *Hamalsaran* (1899) – published at the Hamalsaran Publishing House – and *Azat Khosk' (Freedom of Speech)*, published by the Imprimerie Arménienne (1901). Both journals were mostly composed in the traditional Bolorgir style, but still used nineteenth century-Latinised Armenian typefaces: the new Italic style for subheadings and to emphasise words (and not upright) in *Hamalsaran* [see Appendix A, p. 444], and an upright Armenian typeface for subheadings and for the journal's subscription information on the back page in *Azat Khosk'* [see Appendix A, p. 445]. It seems that other publishers and printers in France partially followed the path begun by Aramean in Paris: on the one hand, they remained faithful to the traditional Bolorgir style; on the other, they did not reject the new Armenian styles based on European conventions. While they did not find the Latinised Bolorgir style suitable for extensive texts, they used upright and italic Armenian typefaces as secondary styles.¹³⁹

Similar typographic choices – text mostly composed in a traditional Bolorgir typeface and new fashionable Armenian typefaces used sporadically for short passages to create a visual contrast – were adopted by other publishers for their journals among different diasporic communities. For example, the journal *Ararat* (1868 and 1874) in Moscow [see Appendix A, p. 446], *Handes Amsorea* (1890) published by the Mekhitarists in Vienna [see Appendix A, p. 447], and *Paros* (1897) in Cairo [see Appendix A, p. 448].

Constantinople proved to be very traditionalist since journals, such as *Metu* (1856) [see Appendix A, p. 449], *Žiažan* (1866) [see Appendix A, p. 450] and *Hnč'ak* (1887) [see Appendix A, p. 451], used only traditional Bolorgir and Notrgir typefaces. An exception was the publications produced by Čanik Aramean, who arrived in the capital of the Ottoman Empire in 1865.¹⁴⁰ According to Teodik, Aramean bore significant financial

138 Fourteen Armenian journals were published in Paris between 1855 and 1901. Besides *La Colombe du Massis* and *Arevelk'*, the author analysed: *Արևմուտիկ (Arevmutk' (West))* 1859, *Փարիզ (Pariz)* 1860, *Անահիտ Anahit* 1898, *Բանասեր (Banaser) (Philologist)* 1899, *Համալսարան (Hamalsaran) (University)*, (the author saw the 1900 edition but not the previous year, 1899), *Ազատ խոսք (Azat Khosk' (Freedom of speech))* 1901. The author saw also *Հնչակ Hnč'ak* (the Istanbul edition 1888, Athens 1898 London 1901, Paris 1904, but not the Paris 1891). When possible, the author analysed early issues of journals. For a full list of Armenian journals printed in Paris see: Kirakosyan, *Bibliography of Armenian journals (1794-1967)*, p. 554.

139 The fact that publishers had nineteenth-century Armenian typefaces available but deliberately chose to use them only as a secondary style indicates their preference for the old Bolorgir style.

140 In 1862 he had moved to Marseille.

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losses due to the expenditures incurred by the publication of Armenian works in Paris.¹⁴¹ However, it is more likely that after his typefaces were decried in *Pariz* in 1861, editors gradually distanced themselves from Aramean and avoided entrusting him with new projects.

Despite the throwback to the Bolorgir style, Čanik Aramean persisted in publishing with modern Armenian typefaces. As soon as he was appointed as an inspector at the Royal Publishing House in Constantinople in 1865, Aramean began publishing several Armenian books using his own typefaces and he would continue using them even to compose journals.

The aim of Čanik Aramean to replace the forms of the old Bolorgir style by introducing new Armenian typefaces, imitating European conventions, was not realised. However, his impact on the production of subsequent Armenian typefaces should not be underestimated. Interest in the types he had produced did not vanish: Aramean's son readily found a purchaser for them in Constantinople. Furthermore, the Mekhitarists in Vienna included in their collection of types a great variety of Armenian typefaces that departed from the traditional Bolorgir style. Therefore, while traditional Bolorgir typefaces continued to exist, the new Latinised Armenian styles seem to have gradually been integrated into nineteenth-century Armenian culture.

¹⁴¹ Teodik, *Tip u tar*, p. 94.

4. Armenian types for the new technologies of the 20th century

The beginning of the 20th century saw the massive emigration of Armenians to parts of the Middle East (mainly Lebanon and Egypt) and, particularly, to the United States. This flow was amplified in the wake of the 1915 Genocide and the annexation by Russia of independent Armenia (formed in 1918), which was incorporated into the Soviet Union (1920). As a result, new Diaspora communities were formed or existing ones expanded. Among these communities scattered throughout the world, the Armenian press became essential to inform Armenian readers about the situation in their homeland, and to shape public opinion. In America ‘the existence of a vigorous press [was] important both to a small community of [Armenian] people and to political parties. The lack of a press presence was sorely felt.’¹ Not only did the Armenians in the US embark on the difficult task of establishing an enduring Armenian press there, but also contributed to the progress of both Armenian printing and typeface production by adopting the new type-making and typesetting technologies developed towards the end of the nineteenth century by Linotype and Monotype: those of hot-metal.

4.1 The beginning of type-making as an industrial process

Whereas at the beginning of the nineteenth century important typographic innovations came from Europe, from the middle of the nineteenth century it was America that led the way towards new type-making and typesetting technologies.²

Printing techniques in European printing establishments had hardly changed over about 400 years, and types continued to be composed by hand. At the beginning of the nineteenth century the industrial revolution had an impact on printing and other trades particularly in Europe, the USA and England. A major innovation was the mechanisation of the printing process resulting on the improvement in the speed of printing production, particularly useful for the newspaper and periodical trades. During the nineteenth century more than a hundred attempts were made to produce composing machines, until a labour-saving composing machine – the Linotype – became available: in July 1886 the Blower Linotype machine developed by Ottmar Mergenthaler was installed at the New York Tribune. This represented a turning point in the evolution of the printing industry.³

1 Thomas Charshafjian, ‘Trial and Triumph: how the Hairenik was born’, *The Armenian review. A special series on the 80th anniversary of Hairenik*, XXXII, 1–25 (May, 1979), p. 11.

2 Michael Twyman, *The British Library guide to printing* (London, the British Library, 1998), p. 75.

3 Lawrence Wallis, *A concise chronology of typesetting developments 1886–1986*, 2nd edn. (Worcestershire, Severnside Printers Limited, 1991), p. v.

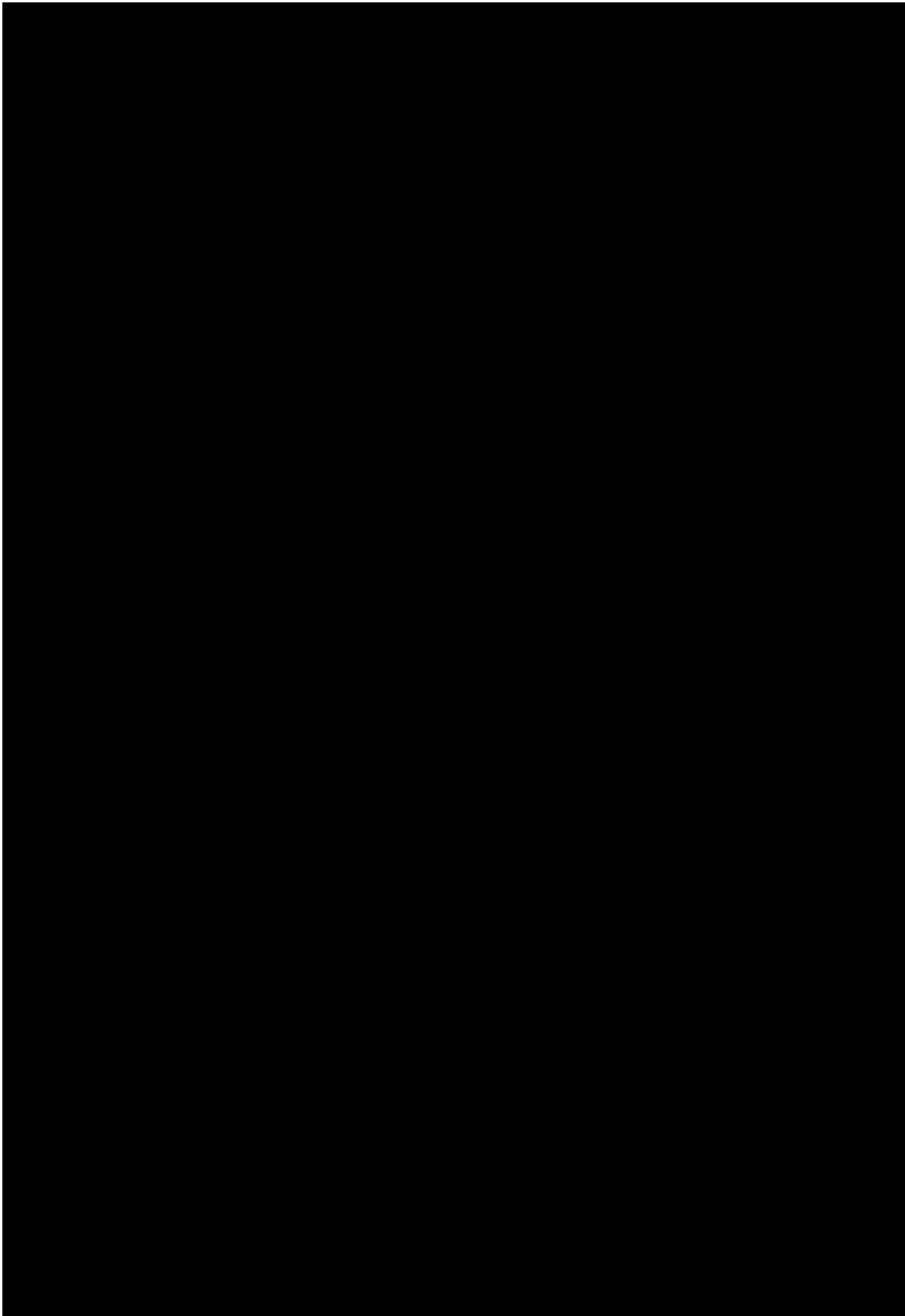


Fig. 1 The Linotype composing machine. This machine produced types suitable for high-speed rotary presses, enabling efficient newspaper composition and printing. From 'The new model 16 Linotype', *The Linotype Bulletin*, Special Number (New York, Mergenthaler Linotype Company, April 1916), p. 196. (Original size: 23,6 × 31,2 cm). Detail shown at 100% of original size.

The Linotype was a hot-metal linecasting machine that would ‘produce a bar or slug of type from a line of assembled and justified matrices’;⁴ it had keyboard, matrix magazine and caster in one unit [Fig. 1]. Matrices were assembled in line by the keyboard operator, and when each line was complete, this was cast as a single piece of metal ‘the slug’.⁵ Matrices were then automatically redistributed to set the next line. Where a hand compositor could compose about 1000 letters per hour – manual justification and distribution of types inevitably reduced the speed of his work – the Linotype machine could generally be worked at a speed of nine to 10,000 ens⁶ per hour, possibly more. Therefore, composition by the Linotype could be done six times faster than by hand composition; and labour costs of composition were reduced by forty to sixty per cent with a Linotype machine.⁷ Beyond these significant advantages, the change of technology transformed the practice of type design. For centuries crafting types had relied on punch-cutters: in order to create types, punch-cutters were required to design letterforms proficiently and to represent them at their correct dimensions on steel, then strike them on the copper.⁸ At the beginning of his *Manuel typographique*, Fournier le Jeune explains that only those individuals with a high level of expertise in punch cutting were to undertake the task of designing founts:

... si le Graveur n’a pas les talens requis, le Fondateur & l’Imprimeur, qui rendent son ouvrage, l’un sur le métal, l’autre sur le papier, sans qu’aucun des deux puisse y rien changer, ne font que perpétuer son ignorance, & deshonorer l’Imprimerie.⁹

Since mechanised typesetting introduced a new type manufacturing process, skilled punch-cutters were no longer needed to design typefaces due to the mechanisation of punchcutting by means of the pantograph.¹⁰ The meticulous work carried out on counterpunches’ and punches’ small surfaces by an individual was replaced by large letter drawings (letters were several inches high)¹¹ made by draftsmen in a company’s drawing office, using a pencil and a ‘series of specially-designed curves of the form of logarithmic spirals’.¹² The initial source for these drawings were either existing types or new letter drawings provided by external designers, which needed to be redrawn

4 Legros and Grant, *Typographical printing-surfaces*, p. 421.

5 Since a Linotype was a direct-entry device, it was the operator who decided the end-of-line while matrices were falling into the assembling area. The operator could insert wedge-shaped spacebands between words by pressing the spacebar key. Alice Savoie, ‘International cross-currents in typeface design: France, Britain and the USA in the phototypesetting era’ (PhD thesis, University of Reading, 2014), p. 211.

6 Half of an em.

7 Henry Franks, ‘Mergenthaler Linotype machines’ (10 September, 1896), p. 81.

8 Fournier le Jeune, *Manuel typographique* (Paris, Barbou, 1764), vol. 1, p. 2.

9 Ibid. p. 3, ‘... if the punchcutter lack the necessary skill, the founder and the printer who render his work, the one on metal and the other on paper, neither being in the least able to alter it, will only be giving permanent proof of his ignorance and dishonouring printing.’ Harry Carter, *Fournier on typefounding* (London, 1930) repr. in James Mosley (ed.), *The Manuel Typographique Of Pierre-Simon Fournier le jeune*, vol. 3 (Darmstadt, 1995), p. 21.

10 Walter Tracy, *Letters of Credit: A View of Type Design* (London, 1986), p. 35.

11 The process of translating a design into alphabet drawings to produce Linotype hot-metal matrices is explained in Thomas Dreier, *The power of print, and men* (New York, Mergenthaler Linotype Company, 1936), pp. 97–99.

12 Legros and Grant, *Typographical printing-surfaces*, p. 210.

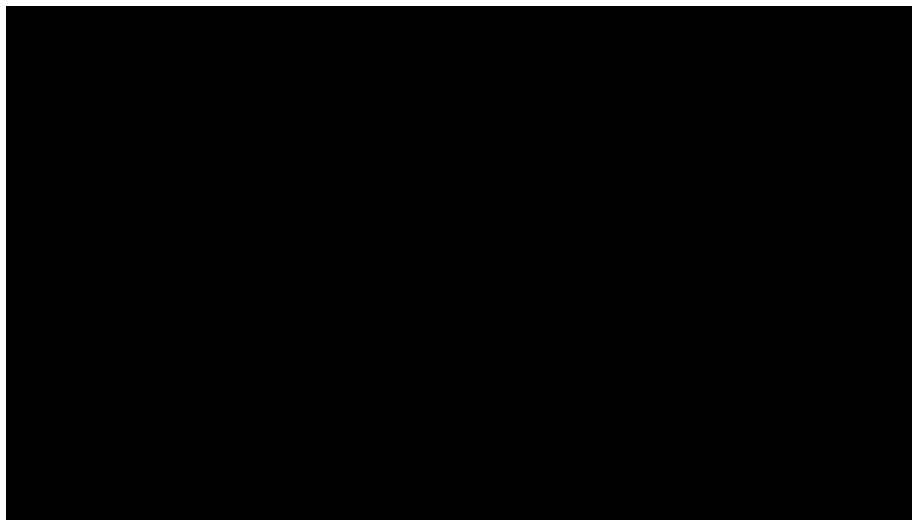


Fig. 2 A Linotype slug. The Linotype was a composing machine that casted a slug from a line previously assembled, and justified matrices at a single operation of casting.

Image from: Mergenthaler Linotype Company, *The big scheme of simple operation* (New York, Mergenthaler Linotype Company, 1923), p. 10. (Original size: 22 × 25,6 cm). Detail shown at 100% of original size.

on paper by draughtsmen following the technical requirements imposed by the type-making processes. In case of the Mergenthaler Linotype Company (MLCo), after drawings were done, a pattern – a relief character shape on a brass plate – was created by means of a pantograph; the pattern was then used to guide the punch cutting machine to cut a reduced copy of the character in steel. The resulting punch was then used to produce matrices. Punch cutting, which had been a craft for over four hundred years, was transformed into an industrial process, and ‘designing’ and ‘manufacturing’ became two separate activities.¹³ Moreover, since there was a division of work into different departments and offices within the type-making process, typeface design became a collaborative process.

As a supplement to machine sales, MLCo sold types in the form of matrices: the Linotype machine composed with matrices – small brass units having characters indented in the edges; types would be automatically cast into a solid slug by the machine only after the keyboard operator had assembled the matrices in line [Fig. 2].¹⁴ Thus, the emergence of mechanical composition threatened the typesetting trade.

Following the introduction of composing machines in English printing establishments,¹⁵ concerns regarding the loss of printers’ businesses and unemployment were raised particularly in England in the early 1890s. The introduction of the Linotype in England caused an increase in unemployment and casual work in the print industry,¹⁶ thus worsening the adverse employment situation that arose from the trade depression of 1894–96. The objection of the Typographic Association¹⁷ to composing machines in England manifested itself in its strong opposition to the printing industry’s aim to employ cheap labour, underpaid boys, girls and women to work on machines.¹⁸ Furthermore, the Association had introduced a policy of control to restrict entry into the printing trade and prevent surplus labour.¹⁹

Opposition to the Linotype in England during the 1890s is evidenced by the relative number of machines installed in its printing establishments across the world: whereas in America and Canada by 1896 in total there were more than 5000 Linotype machines in use, only 800 were at work in England.²⁰ Even though the impact of the Linotype on printers’ businesses was perceived outside England too, it raised fewer concerns. For example, in 1896 the Australian printer Henry Frank, with regard to compositor’s unemployment due to the introduction of the Linotype, expressed an optimistic view for the future of the printing industry:

13 Richard Southall, *Printer's type in the twentieth century* (London and New Castle, the British Library and Oak Knoll Press, 2005), p. 19.

14 Mergenthaler Linotype Company, *The big scheme of simple operation* (New York, Mergenthaler Linotype Company, 1923), p. 5.

15 The first mention of machine composition in the extant Bradford Typographical Society (B. T. S.) was at a meeting held in 1868. David A. Preece, ‘Social aspects and effects of composing machine adoption in the British printing industry’, *Journal of the Printing Historical Society*, 18 (1984), p. 2.

16 Preece, ‘Social aspects and effects of composing machine’, p. 7.

17 1849–1890.

18 John Child, *Industrial relations in the British printing industry* (London, Allen and Unwin, 1967), pp. 114–116.

19 Preece, ‘Social aspects and effects of composing machine’, p. 7.

20 Franks, ‘Mergenthaler Linotype machines’, p. 78.

Many may think that the introduction of linotype machinery will be a very serious blow to the compositor, and thus be the means of throwing many men out of employment. ... Introduction of a labor-saving machinery has, no doubt, at first hurt the employees, but it is only a matter of time when matters equalise, and there is employment for the willing worker.²¹

However, the introduction of the Linotype did not only have an impact on the practice of type design and on printing businesses. It directly influenced decisions of making non-Latin typefaces for hot-metal technology: in the Armenian context producing typefaces was no longer dependent on individual printers or publishers, but on machine manufacturers. The overarching and economic objective of Linotype – to create and develop a market for their machines – led the Company to take on the design of only those non-Latin typefaces that would generate sufficient demand for Linotype machines.

²¹ Franks, 'Mergenthaler Linotype machines', pp. 82–83.

4.2 The beginning of Armenian mechanical composition

Immediately before the first World War, and precisely 400 years after the first Armenian printed book was published in Venice, a new typesetting technology was made available for Armenian: that of hot-metal. In its early years the Mergenthaler Linotype Company²² – first established in Brooklyn, New York in 1886 – focused merely on the Latin script; at the dawn of the twentieth century the company broadened its interest to include non-Latin types. Armenian was among the first non-Latin scripts to be produced for Linotype composition: the first Hebrew and Greek typefaces were produced in 1900, the first Russian in 1904, Arabic in 1911, and Armenian in 1912.²³ A new market opportunity for the MLC²⁴ was offered by the new wave of Armenians that emigrated to the US after the Armenian massacres of 1895–1896 in the Ottoman Empire.²⁵ Among those Armenians immigrants, representatives of various important revolutionary parties²⁶ had established themselves in various cities in America, and made use of the Press to express their political ideologies and to contribute to the cause of Armenian’s liberation²⁷ by covering national and international news.²⁸ Due to the growing interest in the Armenian press, newspapers were established, such as *Hairenik* in Boston (1899), and *Gotchnag* (1900)²⁹ and *Yeritasard Hayastan* (1903) in New York.³⁰

22 The Linotype Company was first established in Brooklyn, New York in 1886 – with the aim of distributing the Linotype composing machine invented by Ottmar Mergenthaler – under the name Mergenthaler Printing Company. It was renamed Mergenthaler Linotype Company in 1890. This name remained until the company merged with the German Hell GmbH in 1990. Alice Savoie, ‘International cross-currents in typeface design: France, Britain and the USA in the phototypesetting era’ (PhD Thesis at the University of Reading, 2014), p. 55. The Linotype Company had branches under different names in different countries, such as the US, Germany, the UK, Italy, etc.

23 See: Frank Romano, ‘Year typefaces’, *History of the Linotype Company*, (New York, RIT Press, 2014) pp. 421–425. According to Titus Nemeth, the first Arabic hot-metal type for Linotype composition appeared in 1911. Titus Nemeth, *Arabic type-making in the machine age, the influence of technology on the form of Arabic type, 1908–1993*, (Leiden, Brill, 2017), p. 52.

24 As a consequence of the exodus of the three near-Eastern groups to the US, 30,000 Syriac Christians, 22,000 Armenians and 300 Turks lived in New York. Federal Writer’s Project, *New York panorama: a comprehensive view of the metropolis* (New York, Random House, 1938), p. 117.

25 The Turkish massacres in the last decades of the nineteenth century drove Armenians and Syriac Christians to America. In 1896, when Sultan Abdul Hamid II permitted his own nationals to leave the empire, a number of Turks also emigrated to the USA. Federal Writer’s Project, *New York panorama*, p. 116.

26 Vartan Matiossian, ‘The First Historian of Armenian Printing’, *The Armenian weekly* (1 September, 2012), p. 25. In the article (pp. 24–27) Matiossian includes an English translation of Teodik’s ‘Armenian Printing in America (1857–1912)’ written in Armenian. The Armenian text was translated into English by Vartan Matiossian. For the original text in Armenian, see: Teodik, *Tip u Tar* (2006), pp. 186–188.

27 Matiossian, ‘The First Historian of Armenian Printing’, p. 25.

28 Previously periodicals focused mainly on literary topics. See: Kevork B. Bardakjian, *A reference guide to modern Armenian literature, 1500–1920* (Detroit, Wayne State University Press, 2000), p. 152.

29 The publication of the newspaper Կոճնակ (Gotchnag or Koč’nak) (*Church Bell*) began on 15 December 1900 by Herbert M. Allen. It was published in New York until 1968. Matiossian, ‘The First Historian of Armenian Printing’, pp. 26, 27 note 5.

30 Երիտասարդ Հայաստան (Yeritasard Hayastan), (*Young Armenian*). It was started by Stepan Sabah-Gulian in 1903 as the organ of the Social Democratic Hnchakian Party. *Yeritasard Hayastan* ceased publication in the late 1990’s. Ibid. pp. 26, 27 note 6.



Fig. 3 Armenian No. 1 and No. 2. Detail from Mergenthaler Linotype Company, *Specimen Book of Linotype Faces* (New York, Mergenthaler Linotype Company, 1939), p. 88o. (Original size: 19 × 26,3 cm). Shown at 140% of original size.

Armenian newspapers in the US began either to side with one political party – an editor would endorse a party’s candidates and in return would receive financial support for his paper – or they were established and owned by the political party itself. The fact of receiving funding ensured the longevity of newspapers.³¹ The demand for Armenian hot-metal type in the US was met by the extensive growth of the Armenian press there. This is in stark contrast to the situation in Europe:

There would be no demand for Armenian machines in Europe except in Turkey and perhaps Greece and Egypt. We certainly would not suggest cutting these faces until the Russian, French and Greek faces are absolutely complete.³²

Despite the geographic limitation of the potential market for Linotype Armenian machines, the MLCo in New York focused on US prospective customers and proceeded with Armenian for the linecasting machine. According to the database of Linotype pattern drawings compiled by the Museum of Printing in Haverhill, the sources for the first Armenian hot-metal typefaces – slanted (Armenian No. 1) and upright (Armenian No. 2) [Fig. 3] – were two foundry types provided to Mergenthaler by Gotchnag Publishing House.³³ However, the database provides only information on the type sizes provided by Gotchnag as 10pt and 24pt. In order to obtain more specific information on the actual typefaces used by Mergenthaler, it is necessary to refer to printed issues of the newspaper *Gotchnag*, set with foundry types. In those issues, the main text is in a slanted Bolorgir type and subtitles appear in capital letters only [Fig. 4]. Since Armenian No. 2 is a ‘serif’ typeface and printed issues of *Gotchnag* – set with foundry types – were printed using ‘sans serif’ typefaces only, Mergenthaler based the design of Armenian No. 2 on a different source, probably a typeface used by another newspaper.³⁴

Gotchnag was a weekly Armenian religious and literary newspaper,³⁵ established in New York in 1900 by Rev. Herbert M. Allen³⁶ (Harpout³⁷ 1865 – Shishli³⁸ 1911) with

31 Attempts to establish newspapers in Armenian language in the US prior to 1898 failed. See: Charshafjian, ‘Trial and Triumph: how the Hairenik was born’, p. 11.

32 Letter from Charles W. Thullen to the Mergenthaler Linotype Company, New York (dated 10 July 1908). Box 2614, Armenian Folder no. 93. Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA.

33 The database of Linotype pattern drawings compiled by the Museum of Printing in Haverhill. 10 Δ 146: Armenian No. 1 with Armenian No. 2.

34 It is likely that it was the publishing house Gotchnag that provided Mergenthaler with a different source. A MLCo’s memorandum ‘Department memorandum. Armenian’ (dated 4 November 1943) states that the Armenian No. 2 drawings (for 10 Δ 146) were made ‘following the style of some 24pt Armenian types also furnished by Gotchnag Publishing Company’. Box 3614, Folder Data on the origin of typefaces. Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA.

35 Federal Writer’s Project, *New York panorama*, pp. 117–118.

36 Allen was an Armenian who left Harpout c. 1880–1885 to study in America. After a short stay in Van (today’s Turkey), he returned to America where he attended a theological course at Bangor Seminary. In 1893 he married and decided to travel again to Van, but eventually with his wife Ellen R. Ladd resided in the US. His stay in New York was rather short since in 1903, on being invited to become the editor of *Avedaper*, he moved to Turkey. *The Orient*, no. 41 (Constantinople, 25 January 25 1911), p. 1.

37 A small city of Turkey, mainly populated by Armenians.

38 A district of Istanbul, Turkey.

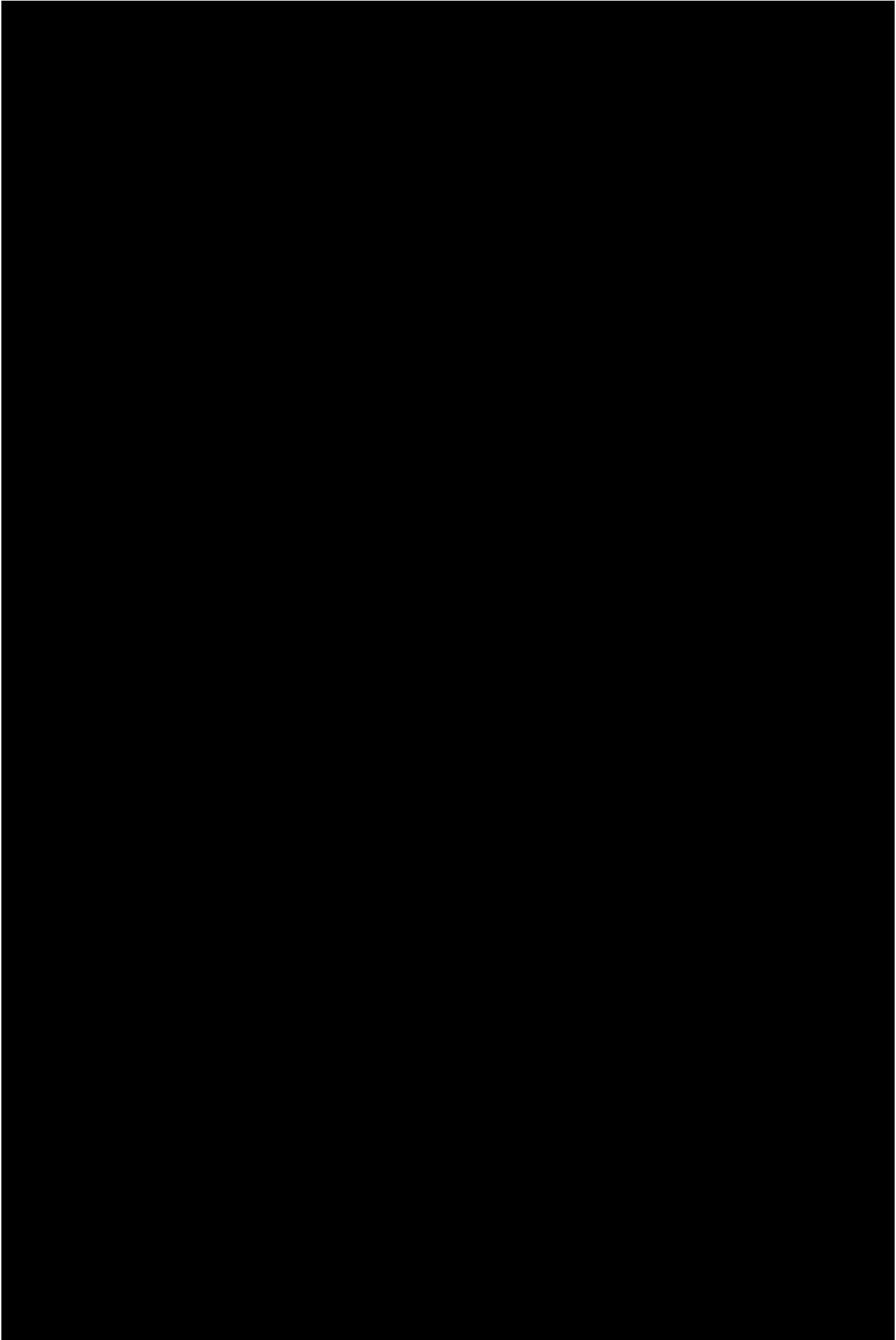


Fig. 4 *Gotchnag*, 10 (Boston, February 1901). Shown at 80% of original size.
The National Library of Armenia, Yerevan.

the support of the Home Missionary Society. After Allen's departure in 1903, Luther Jacobian took on the publication of *Gotchnag*. From 1911 Mergenthaler worked in collaboration with Luther Jacobian to develop the first Armenian Linotype machine and he possibly provided feedback on the design of letterforms before starting the production of brass plates,³⁹ as described in a letter dated March 1916: 'Jacobian ... formerly worked with us [Linotype] in adapting the Armenian language to the Linotype'.⁴⁰ Even though such information does not specify Jacobian's actual contribution, *Linotype Bulletin* VIII 1912 reveals that Jacobian provided 'valuable assistance ... in the preparation of the [Armenian] keyboard layout'.⁴¹ Collaboration between client and manufacturer would have been a prerequisite for a successful outcome: Mergenthaler had neither the necessary expertise nor the motivation to develop Armenian types without a prospective customer.

In April 1912 *Linotype Bulletin* VIII acknowledged that Mergenthaler had 'recently cut the punches and completed the matrices for the composition of Armenian on the Linotype' and that 'a new Linotype equipped with this face has been installed by the Manhattan Linotyping Company, New York, ... and for the first time the Armenian language is now being set on a composing machine'.⁴² The matrices of Armenian mentioned in *Linotype Bulletin* VIII were without any doubt the 10 pt size, in two styles:⁴³ Slanted (No. 1) and Upright (No. 2). Not only is this recorded in Haverhill's database, but the dates of execution and approval of the letter-drawings also corroborate it. Indeed, the drawings for the 10 pt size began in January 1911 and finished about a year later [Fig. 5a and 5b]; there were no other sizes produced or matrices executed until 1915. The letter written on 22 August 1913 by the Linotype and Machinery in London to Norman Dodge, manager at MLCo in New York, is further evidence: 'with reference to the Armenian 10pt which you have already cut For newspapers 12pt. would be morely [*sic*] likely to be wanted than the 8pt. and that we [Linotype] should cut the 12pt. first and follow it with the 8pt.'. ⁴⁴

Observation of the letter-drawings for the 10 pt Armenian has revealed that besides the two typefaces in slanted Bolorgir style and serif upright style, Linotype Mergenthaler also created drawings for an Armenian upright sans serif type [Fig. 6a].

39 Brass plates are master patterns engraved with a pantograph machine.

40 Letter from General manager's office Linotype in New York to M. H. Sandol, Manager at the Hairenik Press in Boston (dated 1 March 1916). Box 2614, Armenian Folder no. 93, Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA.

41 Mergenthaler Linotype Company, 'Armenian composition on the Linotype', *The Linotype Bulletin*, VIII, 4 (April 1912), p. 54.

42 Ibid. p. 54.

43 (Matrix information: 10Δ146). Information from the Linotype faces's drawings database compiled by the Museum of Printing in Haverhill, Massachusetts. The database is reproduced in: Frank Romano, *History of the Linotype Company* (New York, RIT Press, 2014), pp. 329–420. The author is grateful to Larry Oppenberg for providing the list of Armenian Linotype faces and other relevant information prior to her visit to the Museum of Printing in Haverhill, Massachusetts.

44 Letter from W. Lock (L&M) to Norman Dodge (dated 22 August 1913). Box 2614, Armenian Folder no. 93, Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA.

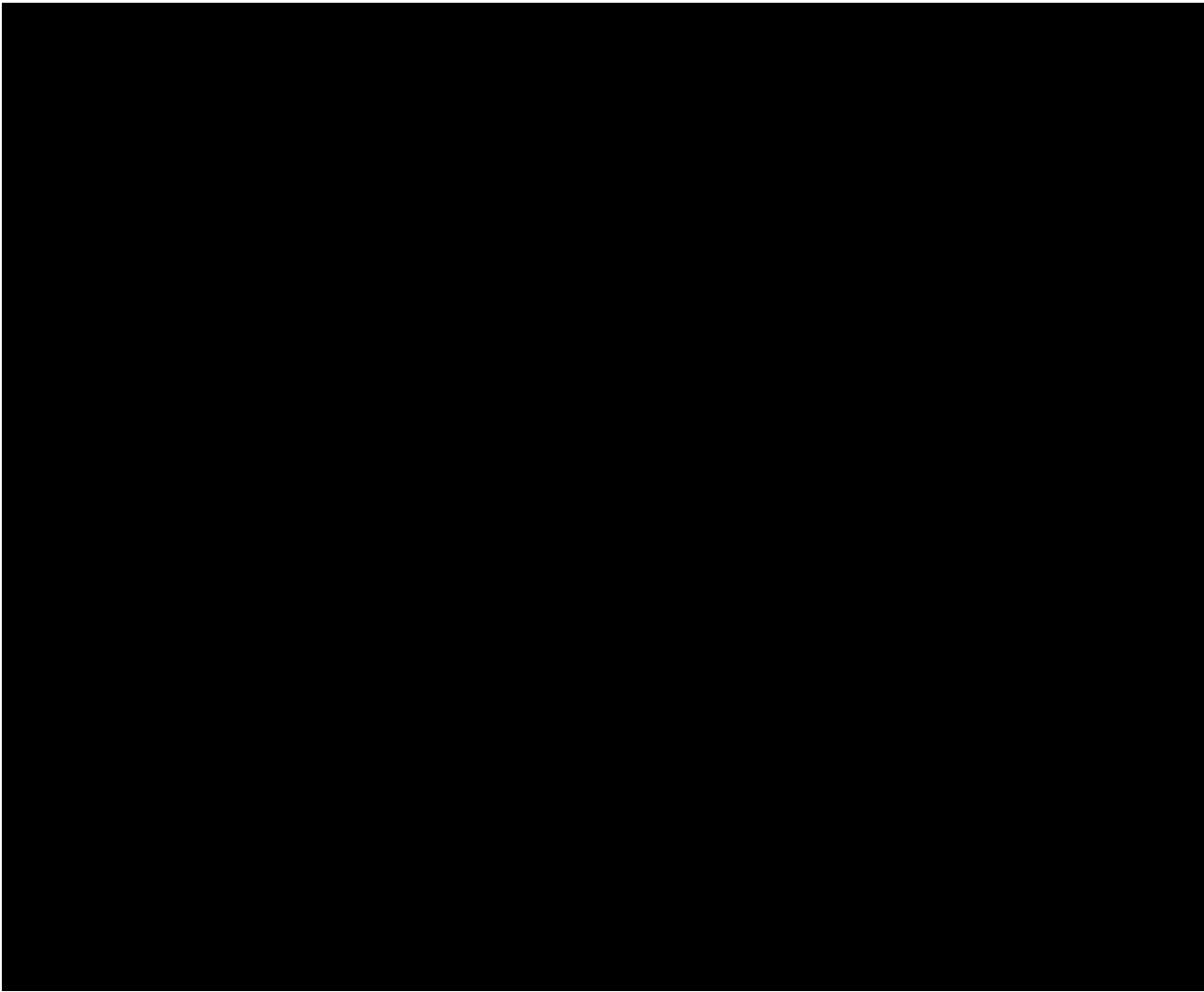


Fig. 5a Letter-drawing of letter *u*: Linotype Armenian No. 1 at 10 pt size (1911). (Original size: 35,3 × 42,3 cm). Detail shown at 40% of original size.
The Museum of Printing in Haverhill, MA.

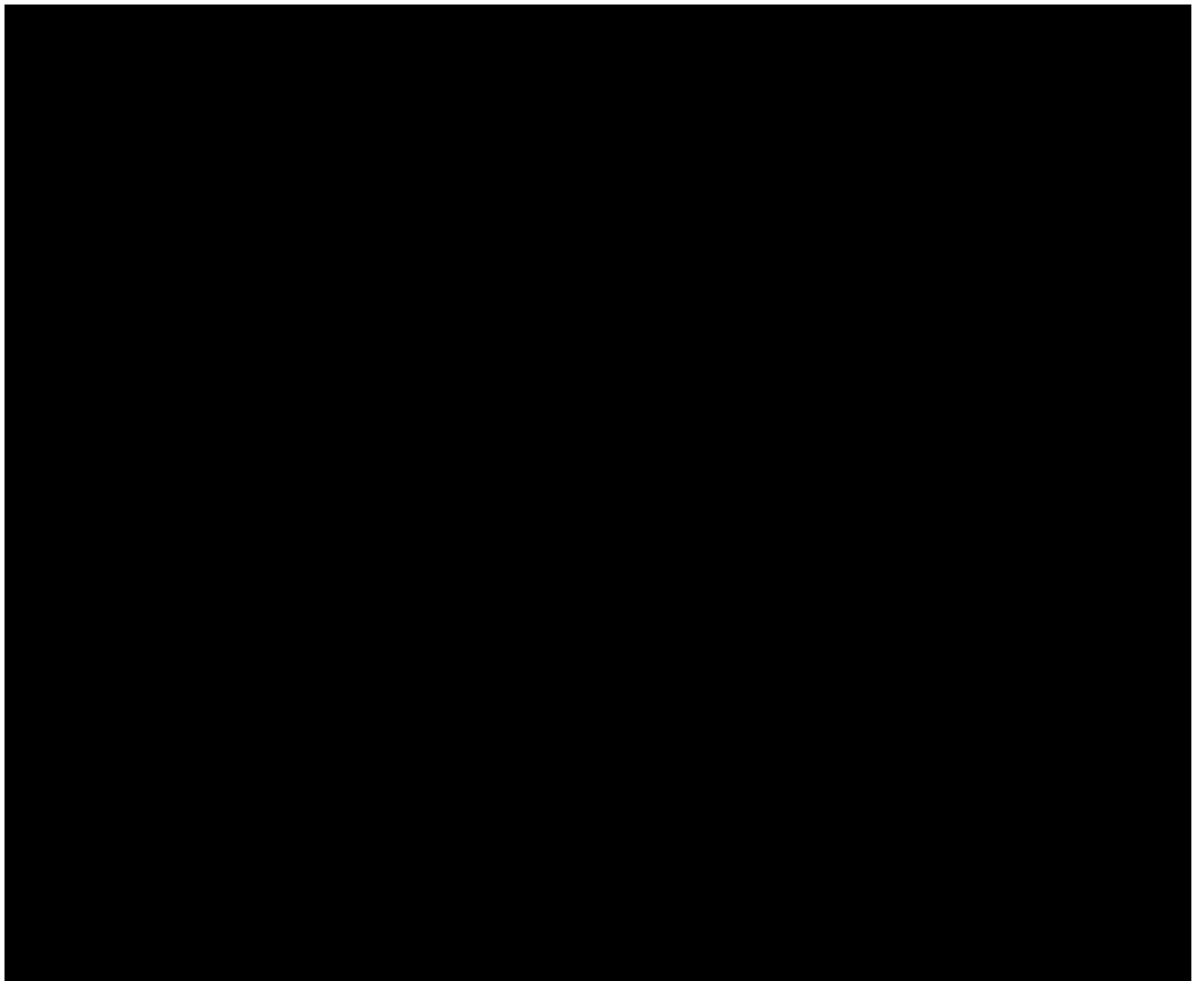


Fig. 5b Letter-drawing of letter u: Linotype Armenian No. 2 at 10 pt size (1911). (Original size: 35,3 × 42,3 cm). Detail shown at 40% of original size.
The Museum of Printing in Haverhill, MA.

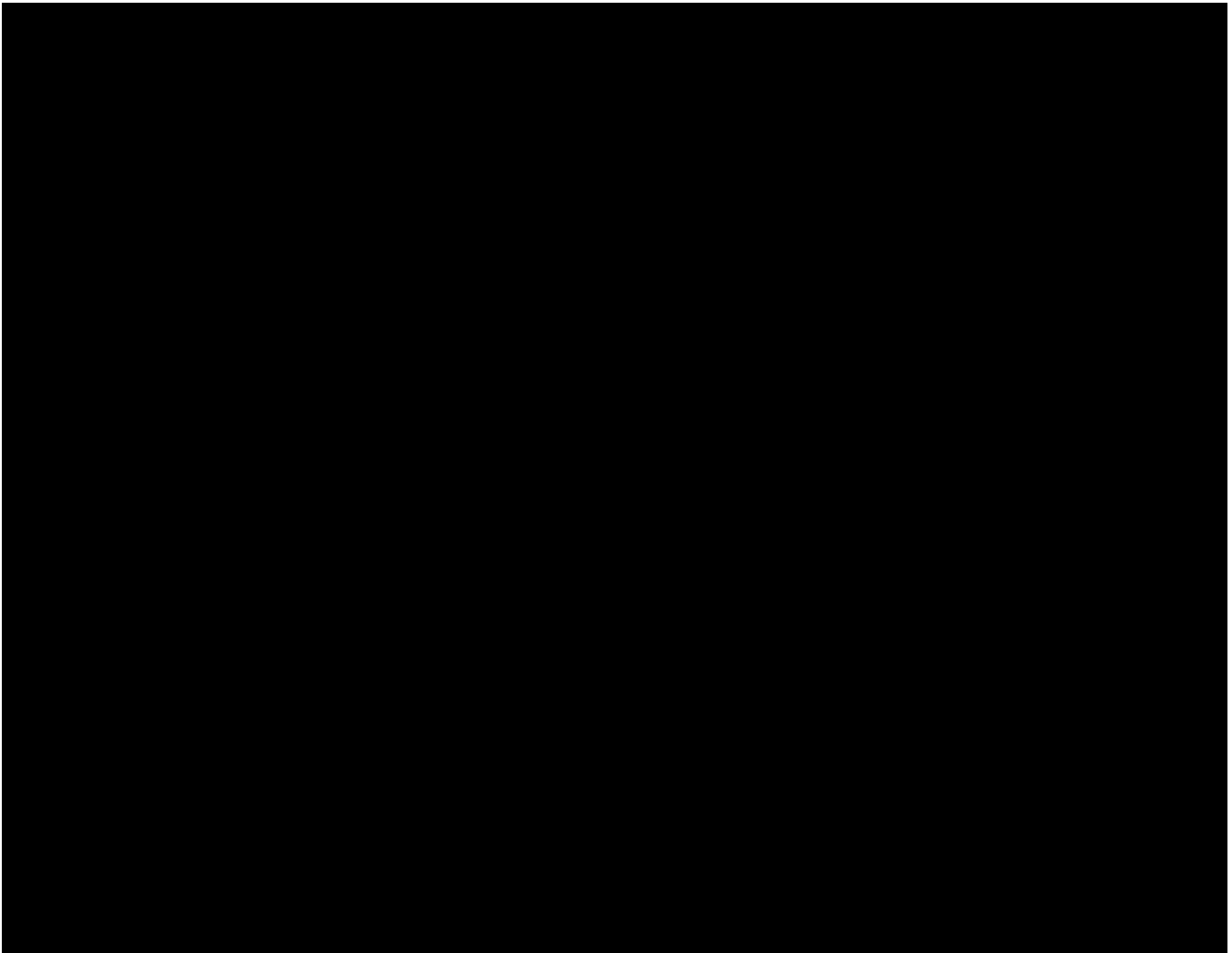


Fig. 6a Letter-drawing of letter u: 10 pt 'Armenian Reference' (1911). There are some anomalies: the drawing would typically be dimensioned in numerous places and have as reference a 'Δ number'. (Original size: 35,3 × 42,3 cm). Detail shown at 40% of original size. *The Museum of Printing in Haverhill, MA.*

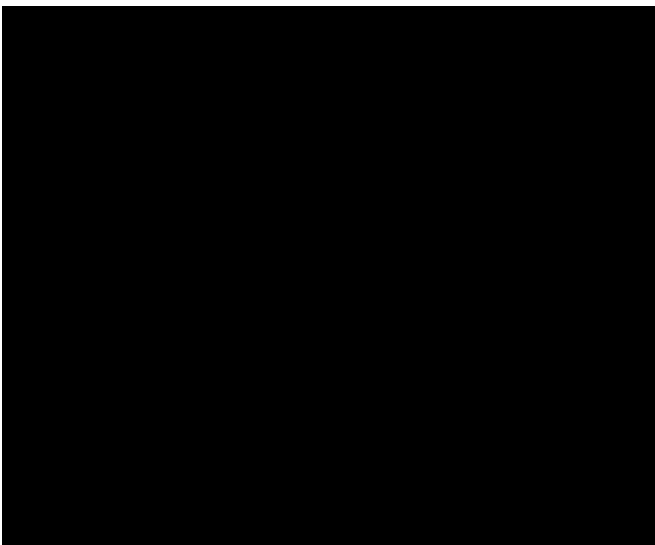


Fig. 6b Detail from letter-drawing of letter d: 10 pt 'Armenian Reference' (1912). Title block filled by the artist and approval initials by the supervisor. (Original size: 35,3 × 42,3 cm). Detail shown at 40% of original size. *The Museum of Printing in Haverhill, MA.*

The fact that this sans upright typeface was never produced is demonstrated by the following observation: the letter-drawings do not have a matrix number assigned – they are instead identified as ‘Armenian Reference’; furthermore, since draughtsmen did not give any technical data, these drawings were never used to produce matrices. The letter-drawings for the ‘Armenian Reference’ began and finished at the same time as the slanted (No. 1) and upright (No. 2), and they were also approved [Fig. 6b]. The term ‘Reference’ was to be found on Linotype’s drawings for other scripts as well, but its meaning is unclear. According to Dr Vaibhav Singh, the term ‘Reference’ could refer to ‘letters drafted for engraving keytops In Devanagari the reference design is actually an odd thin low-contrast type (if not entirely monolinear). Such designs may have been modified/simplified for reasons of convenience but I have not come across any documentation to back it up.’⁴⁵ Also Larry Oppenberg, who worked at the Linotype’s letter drawing office, is not familiar with the term ‘Reference’ on Linotype letter drawings.⁴⁶ This suggests that the name ‘Reference’ was not used to indicate typefaces that the Company had decided not to manufacture, and that it is unlikely that these drawings were created to develop an Armenian typeface at 10pt. Since archival information on the development of Armenian for the Linotype machine is quite fragmentary and practically non-existent before 1913, considerations about the ‘Armenian Reference’ at 10pt can be based on pattern drawings only, but there is not enough evidence to draw definitive conclusions.

Despite the striking increase in speed and efficiency, ‘there existed considerable disadvantages for non-Latin typesetting, for which purpose the composing machines had never been designed.’⁴⁷ The inadequacy of this technology for non-Latin scripts, because it was built on Latin typographic principles, had made it very hard to adapt some non-Latin scripts to the technical limitations of the mechanical typesetters.⁴⁸

⁴⁵ Email from Dr Vaibhav Singh to the author (dated 07 July 2019).

⁴⁶ This suggests that ‘Reference’ was not used to indicate typefaces that were not manufactured. Email from Larry Oppenberg to the author (dated 17 July 2019).

⁴⁷ Ross, *The printed Bengali*, p. 135.

⁴⁸ Such as the inability to kern, and the limited number of characters to be placed on a 90 keys keyboard.

No. 1
(Bolorgir)

No. 2
(Upright)

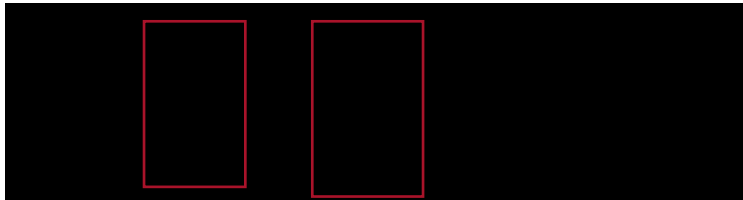


Fig. 7 Wide blank spaces, such as between խ and օ, and ա and ի, in both Armenian No. 1 and No. 2. Detail from Mergenthaler Linotype Company, *Specimen Book of Linotype Faces* (New York, Mergenthaler Linotype Company, 1939), p. 88o. (Original size: 19 × 26,3 cm). Shown at 300% of original size.



Fig. 8 A two-letter matrix.

No. 1
(Bolorgir)

No. 2
(Upright)

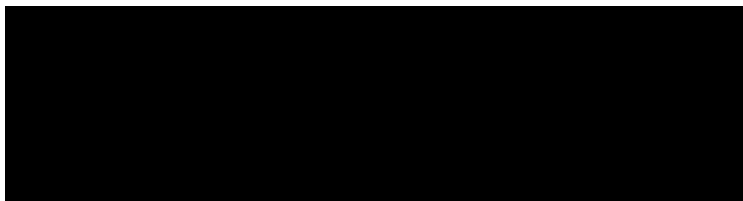


Fig. 9 Armenian No. 2 is taller and wider than No. 1, despite No. 1 being the primary style. Detail from Mergenthaler Linotype Company, *Specimen Book of Linotype Faces* (New York, Mergenthaler Linotype Company, 1939), p. 88o. Shown at 300% of original size.

No. 1
(Bolorgir)

No. 2
(Upright)



Fig. 10a Fig. 10b Fig. 10c Fig. 10d Fig. 10e

Fig. 10a, b, c, d, e Examples of letters showing alterations in proportions. Detail from Mergenthaler Linotype Company, *Specimen Book of Linotype Faces* (New York, Mergenthaler Linotype Company, 1939), p. 88o. Shown at 300% of original size.

4.2.1 The hot-metal Linotype Armenian No. 1 and No. 2

Mergenthaler recognised that the difficulties of adapting Armenian to the Linotype machine were ‘owing to the multiplicity of characters in the alphabet and the fact that there are two kinds of lower case in the font’.⁴⁹ The first hot-metal typefaces produced for Armenian mechanical composition, namely Armenian No. 1 and No. 2, were inferior typefaces in terms of design in comparison to earlier Armenian foundry types.⁵⁰

In hand-composition traditional Bolorgir typefaces could have a substantial number of alternate letters,⁵¹ cut at a smaller size to fit inside the tailed letters, to improve letter-spacing; in Linotype hot-metal composition there could be no kerned characters since matrices were lined up next to each other prior to casting. Hence, alternate characters were pointless in Armenian typefaces for the Linotype machine, and would have enlarged the character set unnecessarily.⁵² Moreover, the inability of the Linotype machine to kern resulted in occasional wide blank spaces, such as between *ւ* and *օ*, and *ու* and *ի*, in both Armenian No. 1 and No. 2 [Fig. 7].

Another drawback appeared when two-letter matrices were required, as the same character in its variant styles (eg. Regular and Italic, or Regular and Bold) had to be duplexed, meaning that they had to occupy the same matrix and therefore needed to be of the same width [Fig. 8]. As a consequence of the Latinisation of the Armenian script,⁵³ two styles were to be found in Armenian founts: ‘the style of body is called ... ‘Polor’ [Bolorgir] and the Italic in certain lines as of the ‘Aramian’ [Aramean] style’.⁵⁴ This implied that characters in Armenian Slanted and Upright styles would be duplexed to obtain two-letter matrices, in a similar way to Roman and Italic styles in Latin typefaces. Duplexing Armenian Slanted and Upright styles modified the proportions of some characters in both Armenian typefaces: the uppercase and lowercase letters in Armenian No. 2 (Upright) were taller and wider than those of No. 1 (Bolorgir); the expected hierarchy of styles was therefore not followed, as the letterforms of the Bolorgir were smaller than its secondary style [Fig. 9]. Furthermore, some letters were made wider: for example, the bottom horizontal part and top horizontal bar of letter *է* were radically elongated [Fig. 10a].⁵⁵ On the other hand, other letters were narrowed. For instance, the lower bowl of capital *Մ* was condensed in order to accommodate its arched in-stroke to the left [Fig. 10b], whereas the dimension of the arch at the right

49 Mergenthaler Linotype Company. ‘Armenian composition on the Linotype’, *The Linotype Bulletin*, VIII, 4 (April 1912), p. 54.

50 If compared to the Armenian typefaces produced and sold by the Mekhitarist Press in Vienna and Venice since their establishment, as discussed in Chapter 2 of this thesis.

51 Such as letters with short and long tails and those with short and long descenders. See chapter 1 of this thesis, particularly Meghapart; and chapter 3: ‘the old and the new forms’.

52 Thus a basic character set of 39 characters, excluding ligatures, was used for lowercase letters in Bolorgir style in Armenian Linotype typefaces.

53 See Chapter 3 of this thesis.

54 The association between Italic and the upright Armenian style is due to the fact that the Bolorgir style was in the primary position (Roman in the Latin script) and the Aramean in the secondary (Italic in the Latin script). Letter from Linotype and Machinery to Norman Dodge, manager at the Mergenthaler Linotype Company in New York (dated 22 August 1913). Box 2614, Armenian Folder no. 93. Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA.

55 See for example Fig. 63 on p. 244 of this thesis.

side of the stem of letter *p* was reduced to enable the middle horizontal bar to elongate properly on the right [Fig. 10c]. The other major problem was that some typographic features, necessary to clearly discern letter shapes, were modified. For example, the tails of letters *p*, *l* and *η* were reduced [Fig. 10d]. The difference in width between the arch of letters *h* and *l* in typeface No. 1 is evidence that width adjustments were also made in the letters of the Bolorgir style (No. 1) [Fig. 10e].

In 1913 *Hairenik*, another important Armenian publishing house in the US, commissioned Mergenthaler Linotype in New York to prepare matrices for composing Armenian on a Model 8 machine. *Hairenik* was owned by the Armenian Revolutionary Society, and had printing offices in sixteen large cities throughout the world. If the machines worked properly in *Hairenik* in Boston, it was thought that they would be soon installed also at their offices in California, Constantinople and possibly many others.⁵⁶ Not only the worldwide presence of *Hairenik*, but also Mergenthaler's prospect of expanding its market to Europe encouraged the Company to go forward with the design of Armenian typefaces. Indeed, favourable responses to the potential of Armenian composition were gathered by Linotype & Machinery and Mergenthaler Setzmachinen-Fabrik Berlin in 1913 via their Turkish and Russian agents: interest in Armenian hot-metal composition was expressed by printers in Tiflis, Constantinople, and Italy.⁵⁷ In September 1913 the Mergenthaler Company informed Mergenthaler Setzmachinen-Fabrik Berlin that:

There is a substantial future for the Linotype machine in Armenian composition, and we are quite prepared to make faces for which there will be a demand.⁵⁸

However, the company was not ready to start immediately with the design of new Armenian typefaces. Some decisions were to be taken before proceeding with the design; for instance, the body size, the design of letterforms, and the keyboard arrangement. The design had to meet the taste of the Armenian Diaspora, and be particularly suitable for Armenian printing offices in Europe. Several examples were sent from Linotype & Machinery and Mergenthaler Setzmachinen-Fabrik Berlin to Linotype Mergenthaler in New York, showing the 'popular' Armenian typefaces [Fig. 11a and 11b].

Also the sizes of the Armenian typefaces that *Hairenik* had commissioned from Mergenthaler – 8 pt and 12 pt – needed to be suitable for Armenian composition by

⁵⁶ Letter from Mergenthaler Company to Mergenthaler Setzmachinen-Fabrik Berlin (dated 18 September 1913). Box 2614, Armenian Folder no. 93. Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA.

⁵⁷ Letter from Linotype and Machinery to Norman Dodge, manager at the Mergenthaler Linotype Company in New York (dated 22 August 1913). Box 2614, Armenian Folder no. 93. Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA.

⁵⁸ Letter from Mergenthaler Company to Mergenthaler Setzmachinen-Fabrik Berlin (dated 18 September 1913). Box 2614, Armenian Folder no. 93. Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA.

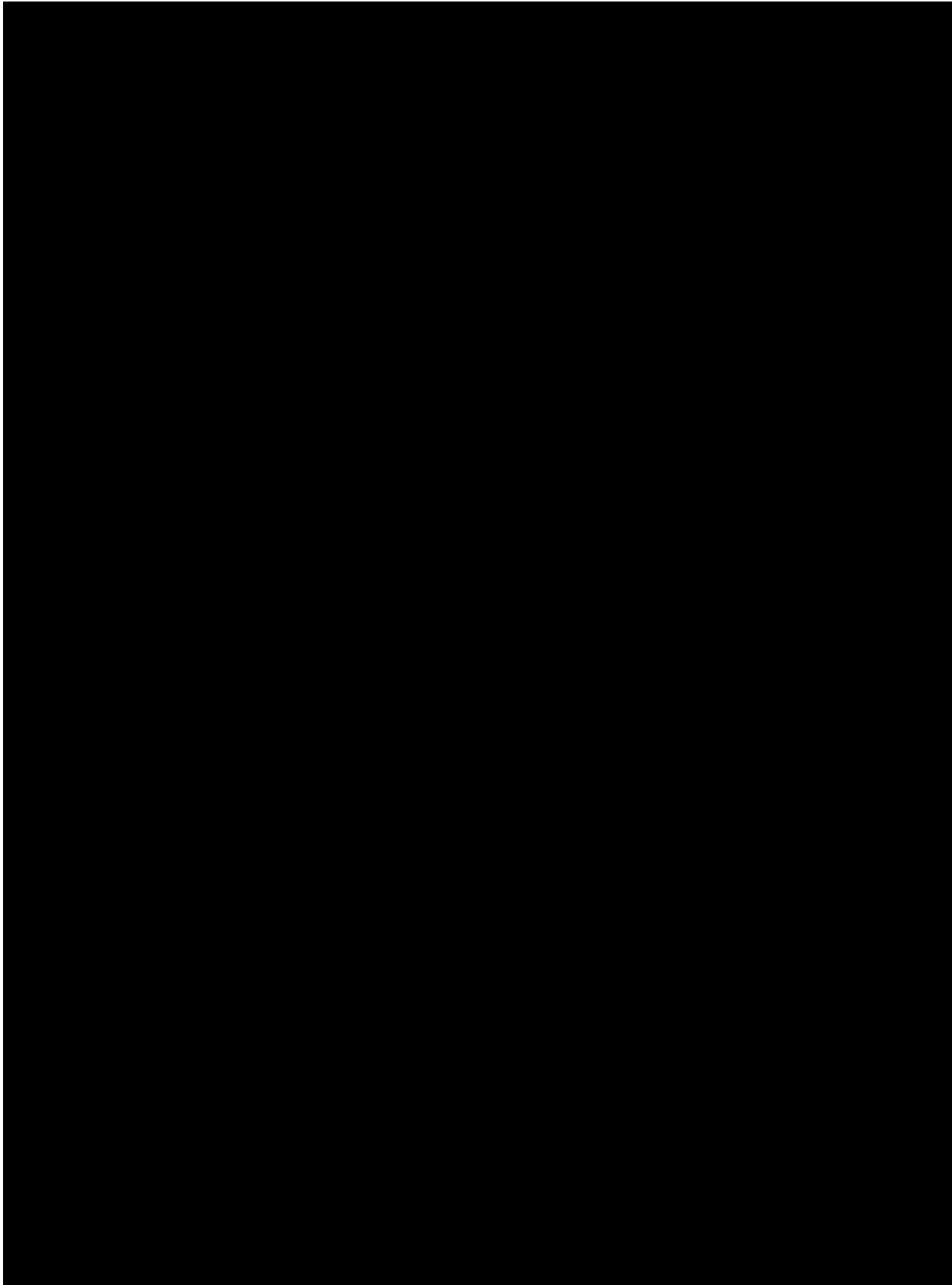


Fig. 11a Cutting from a newspaper, showing the popular Armenian typefaces in Constantinople. The Armenian text is composed with 12 pt and 8 pt Bolorgir typefaces. (Original size: 20,5 × 32,0 cm). Detail shown at original size. Attachment to Linotype & Machinery's letter, addressed to Norman Dodge, dated 22 August 1913. Box 2614, Armenian Folder no. 93. *Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA.*

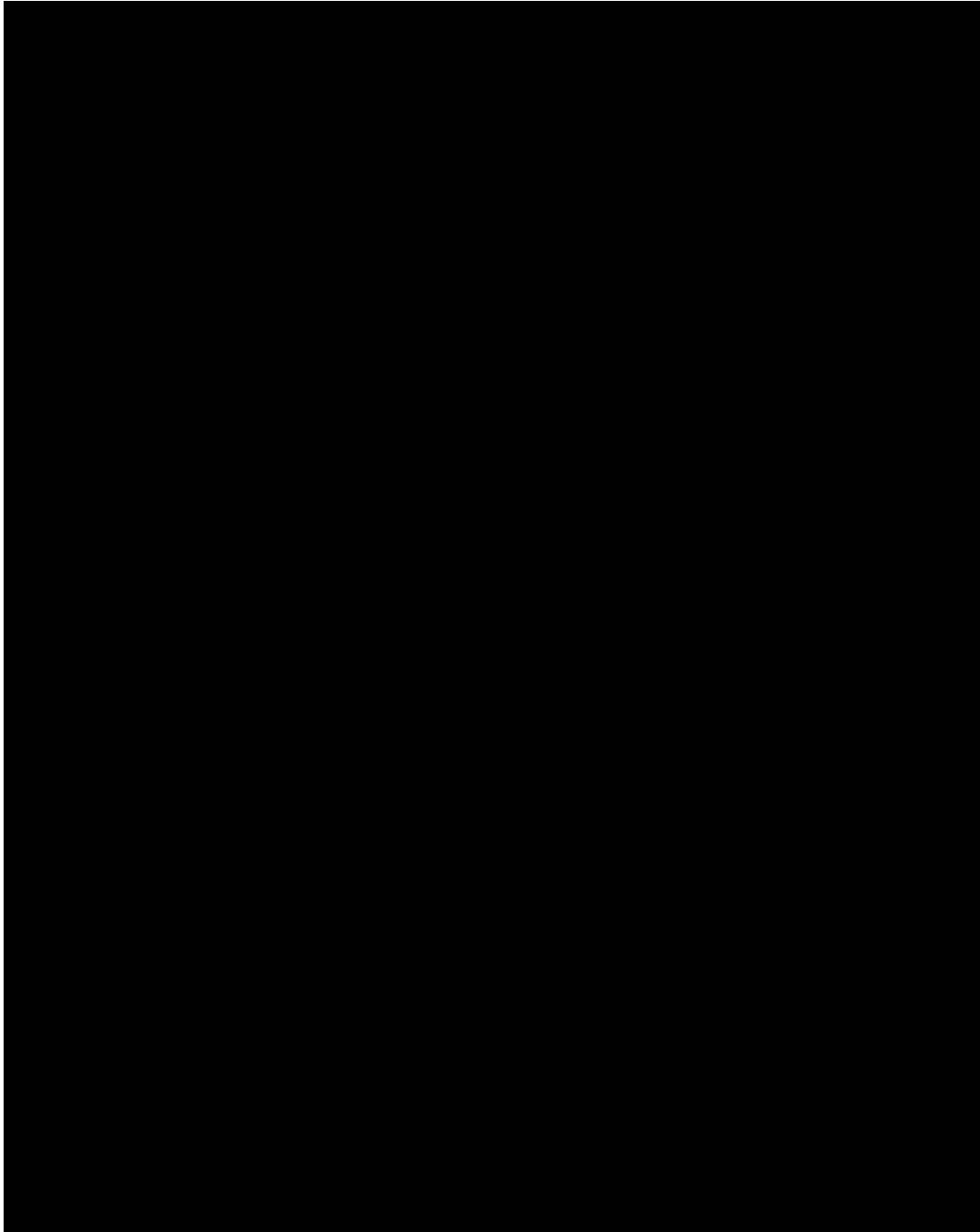


Fig. 11b Specimen submitted by Mr Martirosiantz from Tiflis. This example shows an Armenian Bolorgir typeface at 10 pt. (Original size: 14,3 × 18 cm). Shown at original size. The specimen was sent by Mergenthaler Setzmachinen-Fabrik Berlin to Linotype Mergenthaler in New York. Attached to a letter from Mergenthaler Setzmachinen-Fabrik Berlin to Linotype Mergenthaler in New York (dated 27 August 1913). The specimen was supplied to Setzmachinen-Fabrik Berlin by the Bureau Linotype, St Petersburg. Box 2614, Armenian Folder no. 93. *Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA.*



Fig. 12 Between 1915 and 1916 Armenian No. 1 and No. 2 were cut at 6 pt, 8 pt and 12 pt size using the pattern drawings of the 10 pt size. Mergenthaler Linotype Company, *Specimen Book of Linotype Faces* (New York, Mergenthaler Linotype Company, 1939), p. 88o. (Original size: 19 × 26,3 cm). Shown at 140% of original size.

other printing offices too. Whereas 12 pt seemed to be the most widely used size to compose newspapers in Constantinople,⁵⁹ Mr Martirosiantz – the owner of the largest Armenian printing office in Tiflis – was of a different opinion. Indeed, Martirosiantz suggested that the most common size for newspapers was 10pt, and only occasionally 8 pt and 12 pt, and that 12 pt was mostly used for bookwork.⁶⁰ Yet still, different information was provided by the Società Linotype Italiana,⁶¹ which reckoned that 9pt, 10 pt, and 12 pt were the ordinary sizes for booknotes, pamphlets as well as for other publications, and that 8 pt was the smallest size used for the composition of secondary texts, such as annotations and footnotes. The fact that the 10pt size was widely used to compose newspapers might have led Mergenthaler to choose its existing Armenian No. 1 and No. 2 in 10 pt size, rather than a foundry type, to be the blueprint for the design of new Armenian typefaces requested by Hairenik. In this way, Linotype would have been able to offer a wider range of sizes to its new customers. Nevertheless, the type specimens sent to the New York office by its agents in Europe showed founts that did not differ significantly from Armenian No. 1 and No. 2 in 10 pt size. If Mergenthaler Linotype had used one of these foundry types to cut new Armenian typefaces for hot-metal composition – considering that draughtsmen would have to modify the design of foundry types in order to adapt them to the machine, thus straying from the original – the Company would have obtained something very similar to the existing Armenian No. 1 and No. 2. According to Chauncey H. Griffith, Vice President of Typographic Development at MLCO, when creating letter-drawings from foundry types or new artwork ‘not only are the physical proportions and significances of every stroke seen and interpreted but also the purpose and the striving of the designer are set down in cold mathematical language’.⁶²

In 1915 and 1916 the 10 pt pattern drawings made for the first Armenian text-typefaces were used in the US by Mergenthaler Linotype to cut other sizes in both Upright and Bolorgir styles for newspaper typesetting⁶³ [Fig. 12].⁶⁴ However, before proceeding with the cutting of matrices, Linotype had to develop an Armenian-English keyboard for the Armenian typefaces to be cast on slugs for composition on a Quick Change Model 8 and Model 9 Linotype machines.

59 Letter from Linotype and Machinery to Norman Dodge, manager at the Mergenthaler Linotype Company in New York (dated 22 August 1913). Box 2614, Armenian Folder no. 93. Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA.

60 ‘Translation of a letter received from the Bureau Linotype, St. Petersburg of 25th August 1913’, attached to a letter from Mergenthaler Setzmachinen-Fabrik Berlin to Mergenthaler Linotype Company in New York (dated 27 August 1913). Box 2614, Armenian Folder no. 93. Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA.

61 Established in 1911.

62 C. H. Griffith directed the manufacture of Linotype matrices for twenty years. Cited in Dreier, *The power of print, and men*, p. 98.

63 Besides Armenian No. 1 and Armenian No. 2 at 12 pt (12 Δ 184) – manufactured in 1916 – matrices (12 Δ 170): Armenian No. 1 with No. 3 caps and No. 4 lowercase were manufactured in 1915. See: Box 3614, Folder Data on origin of typefaces. ‘Department memorandum. Armenian’. Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA.

64 New types were cut in 12 pt, 8 pt and 6 pt size.

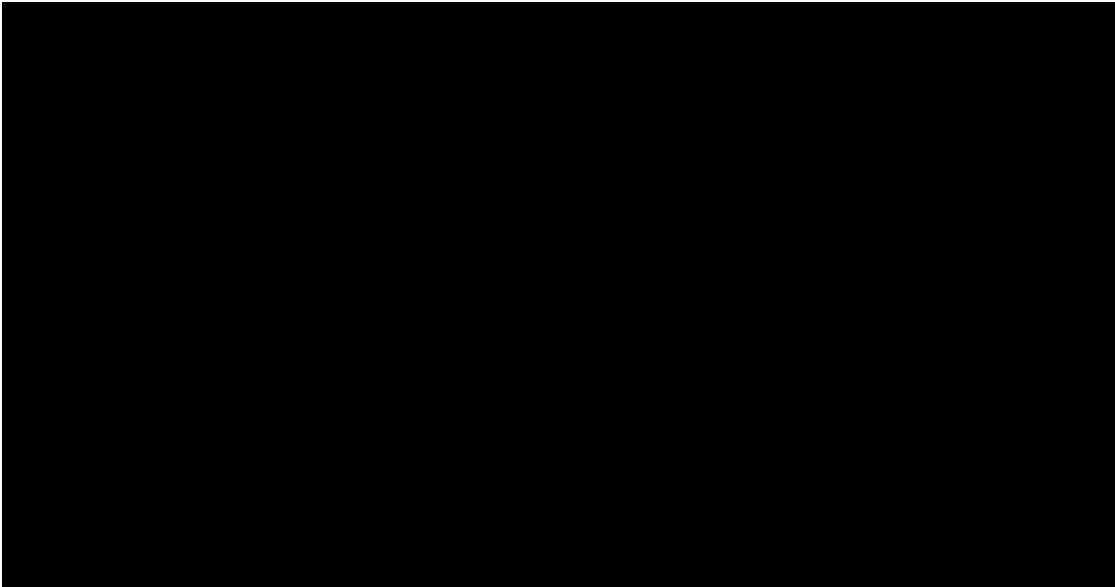


Fig. 13 Armenian Linotype keyboard (1912). The Armenian keyboard for the Linotype machine was based on the principle of the standard Linotype keyboard: 90 keys, in six rows. (However, Armenian display typefaces manufactured by Linotype in 1929 would run in the 34 channel auxiliary magazine). To the left are the keys of the lowercase letters, and to the right those of the capitals. Between them are keys for figures, punctuation symbols, and some modifier letters, etc. The letters on the left are considered to be the most frequently used. *The Linotype Bulletin*, VIII, 4 (New York, Mergenthaler Linotype Company, April 1912), p. 54.

4.2.2 Devising a standard English-Armenian keyboard

By August 1914 *Hairenik* was composed almost entirely on a Quick Change Model 8 three magazine Linotype, including most of the display advertising.⁶⁵ This kind of machine (corresponding to the English Model 4 Linotype) was capable of using the two-letter matrix, and could be made either as a simplex, duplex, or triple machine, meaning that it could be provided with one, two, or three magazines with their matrix equipment. The main feature of this machine was the facilitation of quickly changing from one font to another, enabling the operator to change typefaces, sizes, and styles in a few seconds. Armenian composition on the Quick Change Model 8 and on Model 9⁶⁶ for use in America and Europe required the development of an Armenian-English keyboard.⁶⁷

While in 1912 Mergenthaler Linotype had difficulties in devising an Armenian keyboard for their first Linotype machine for Armenian composition, the creation of an Armenian-English keyboard turned out to be even more challenging. In December 1913 an Armenian-English keyboard was developed by Mergenthaler Linotype in collaboration with *Hairenik*. Here, the arrangement of Armenian letters differed almost entirely from the one used in the 1912 Armenian keyboard devised under the direction of Luther Jacobian (Gotchnag): most of the characters had been reorganised, thus occupying different channels. While the 1912 Armenian keyboard [Fig. 13] had 113 characters arranged on 90 channels, with no pi characters or sorts on the side board,⁶⁸ the 1913 English-Armenian keyboard [Fig. 14] accommodates 182 characters. Among these, 115 were for the composition of Armenian. The arrangement of both English and Armenian letters on the same keyboard resulted in Armenian ligatures and three capital letters (ՄՆ ՎՆ ԱՆ Ղ Ղ Ֆ. These were characters no: 40, 41, 42, 43, 60, 61, 81) running as pi characters [Fig. 15]. In *Hairenik*'s keyboard layout, Latin letters were arranged according to phonetic correspondence with Armenian letters rather than according to the sequence of the English standard Linotype keyboard layout. The unusual arrangement of Latin letters was due to the fact that it was devised according to *Hairenik*'s preferences. In a letter dated 1 March 1916, Mergenthaler Linotype highlighted to the Manager of *Hairenik*, M. H. Sandol the importance of establishing a standard Armenian keyboard to enable Armenian composition on a Model 9 four-magazine quick-change Linotype.⁶⁹

65 Mergenthaler Linotype Company, 'Specimens received', *The Linotype Bulletin*, XI, 4 (August 1914), p. 20.

66 These were released nearly at the same time.

67 Legros and Grant, *Typographical printing-surfaces*, p. 432.

68 Characters that occur less frequently are kept on the side board rather than assigned to a magazine channel; these characters are called pi characters.

69 Letter from General manager's office Linotype in New York to M. H. Sandol, Manager at the *Hairenik* Press in Boston (dated 1 March 1916), Box 2614, Armenian Folder no. 93, Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA. Model 9 four-magazine quick-change Linotype was equipped with four interchangeable superimposed magazines, each one controlled from the standard Linotype keyboard of ninety keys. As each matrix was of the two-letters pattern, it was possible to compose any of 720 different characters from the one keyboard. In addition, any character of infrequent use might be set into the matrix line by hand, and would, after casting, automatically return to the pi-box. Any face could be set continuously, or all the faces could be mixed in the same line of composition.

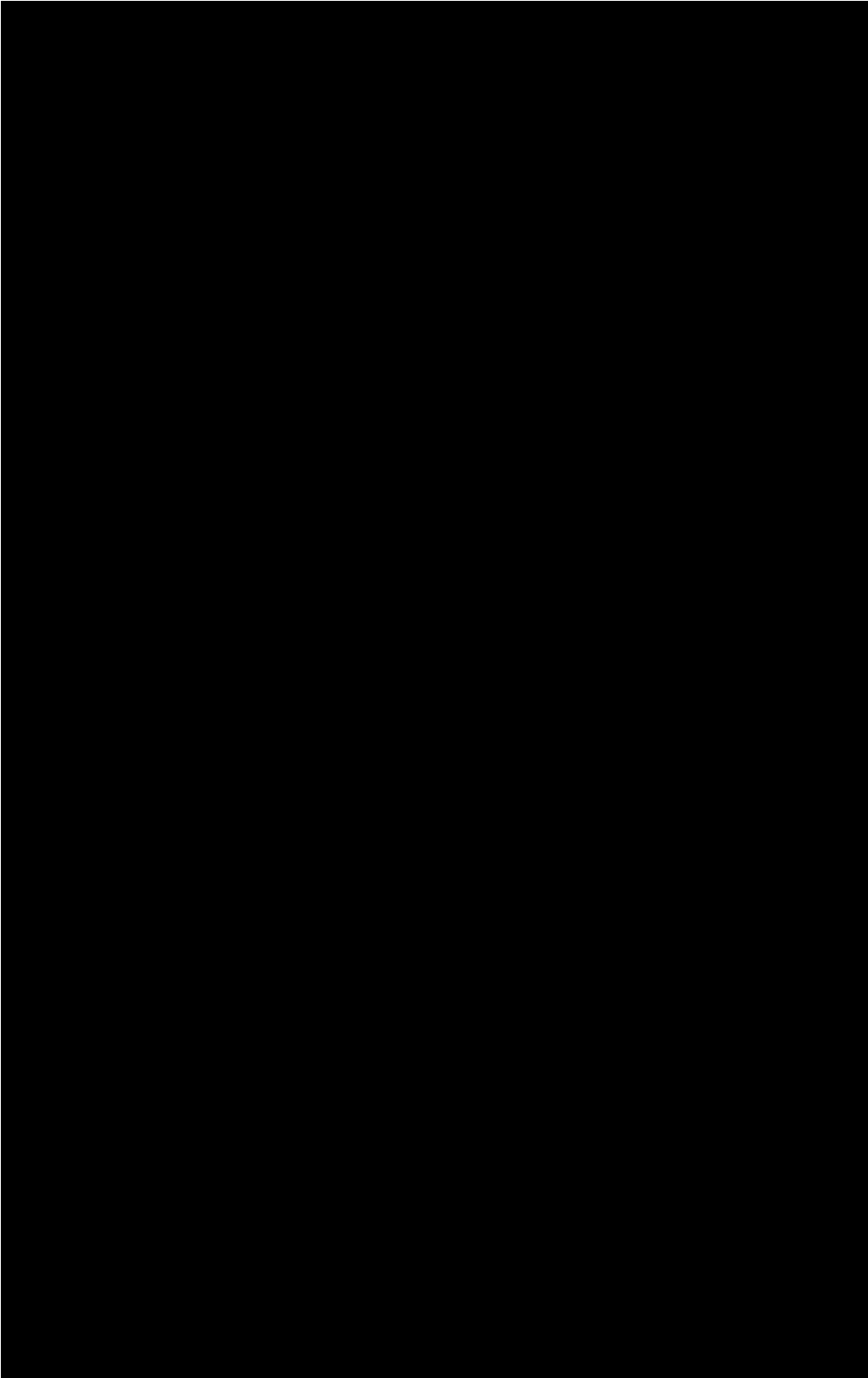


Fig. 14 Armenian English keyboard (1913) made for the Hairenik Press. (Original size: 46 × 29 cm). Shown at 50% of original size. Box 2614, Armenian Folder no. 93. *Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA.*

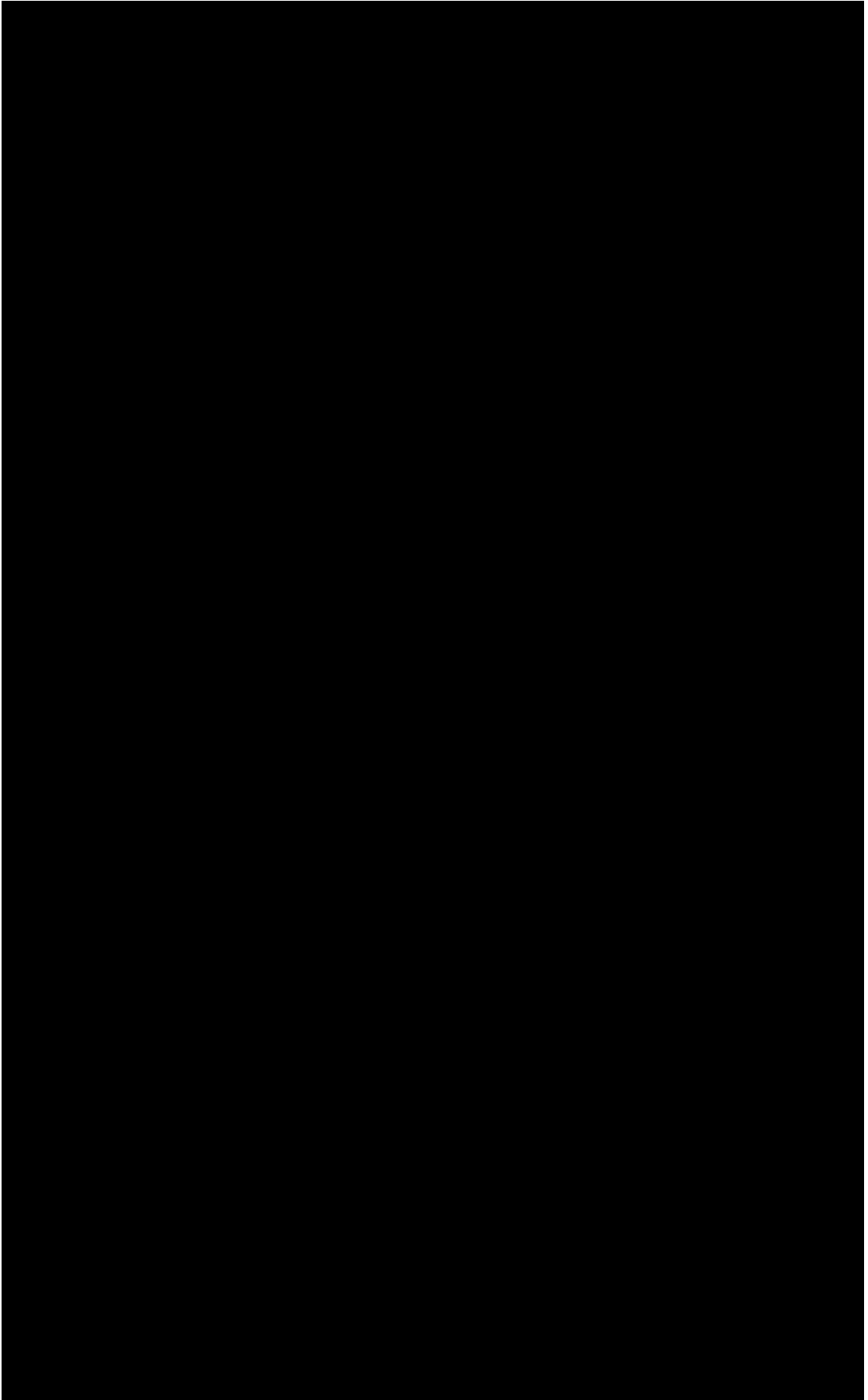


Fig. 15 Armenian matrix chart. (Original size: 26 × 15,7 cm). Shown at 90% of original size. Box 2614, Armenian Folder no. 93. *Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA.*

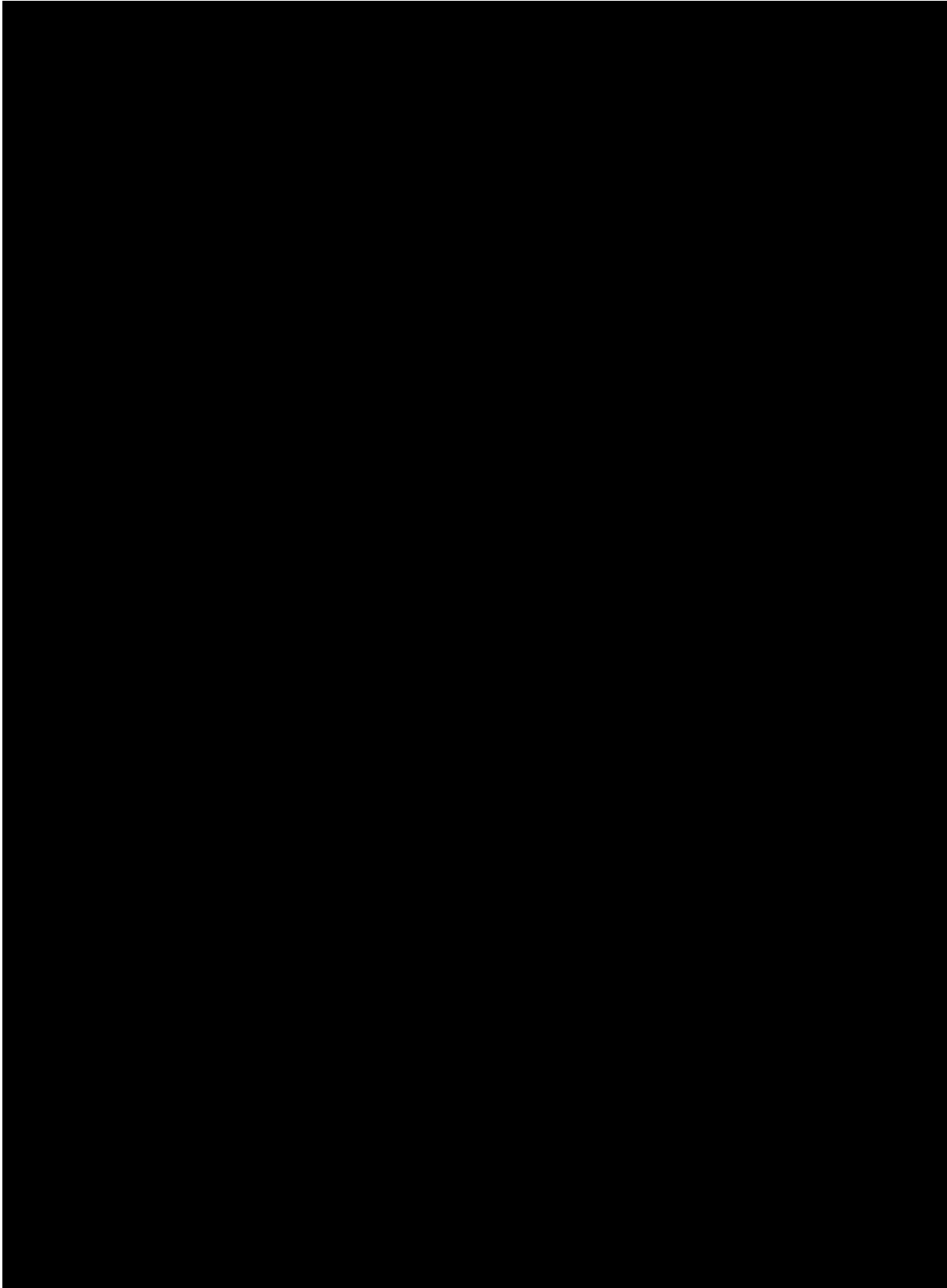


Fig. 16 Armenian English keyboard (undated). The 'fac-simile' shows Gotchnag and Hairenik's proposals. Gotchnag solution is in black, whereas that of Hairenik is in red. (Original size: 27 × 21 cm). Shown at 80% of original size. Box 2614, Armenian Folder no. 93. *Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA.*

You as practical business men will readily understand that we cannot design a new keyboard diagram for the accommodation of every new type face that may be manufactured in future years. To do so would create endless confusion for operators, and impose a heavy burden of expense not only upon ourselves, but upon Armenian publishers as well. The English keyboard has become standardized, so that it is known to more than 30,000 operators in all parts of the world, and to secure uniform service from Armenian operators the keyboard for your language must likewise conform to a fixed standard.⁷⁰

The letter's reference to 'a new keyboard' implies that the customer – namely Hairenik – wanted a different keyboard from the 1915 version, tailored to its specific requirements, for the Model 9 four-magazine quick-change Linotype. In order to establish a standard Armenian keyboard Linotype decided to collaborate with its two main customers in the US: Gotchnag and Hairenik. Linotype's lack of knowledge of the Armenian script must have motivated such collaboration. The two proposals on a Linotype keyboard for Armenian (undated) suggest that at an early stage Gotchnag and Hairenik had worked with Mergenthaler Linotype on the English-Armenian keyboard, separately [Fig. 16]. This produced two different outcomes: whereas the Gotchnag layout was approved by Linotype – even though it was not yet satisfactory – the new solution proposed by Hairenik was a failure and could not be used. Hairenik's layout consisted of revising the 1913 Linotype Armenian-English keyboard layout, mainly by changing the combination of punctuation, modifiers and numerals on the central part of the keyboard [Fig. 17]. Such an unsatisfactory outcome led Linotype to doubt Hairenik's abilities to develop a standard layout for the Armenian keyboard and to rely on Jacobian (Gotchnag). However, in order to maintain a good relationship between Linotype and Hairenik, Chauncey H. Griffith encouraged Sandol to co-operate with Jacobian on the project:

Mr Jacobian, who formerly worked with us in adapting the Armenian language to the Linotype, will call the first of next week and confer with you regarding a standard layout for the Armenian keyboard. Mr. Jacobian is an expert Linotype operator, and has operated an Armenian machine for five years. His experience particularly qualifies him to discuss this important question. You will assist in advancing the interest of Armenian publishers and Armenian literature very materially by co-operating with Mr. Jacobian in this work. We sincerely hope in your interest that you will be kind enough to do so.⁷¹

⁷⁰ Letter from General manager's office Linotype in New York to M. H. Sandol, Manager at the Hairenik Press in Boston (dated 1 March 1916), Box 2614, Armenian Folder no. 93, Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA.

⁷¹ Ibid.

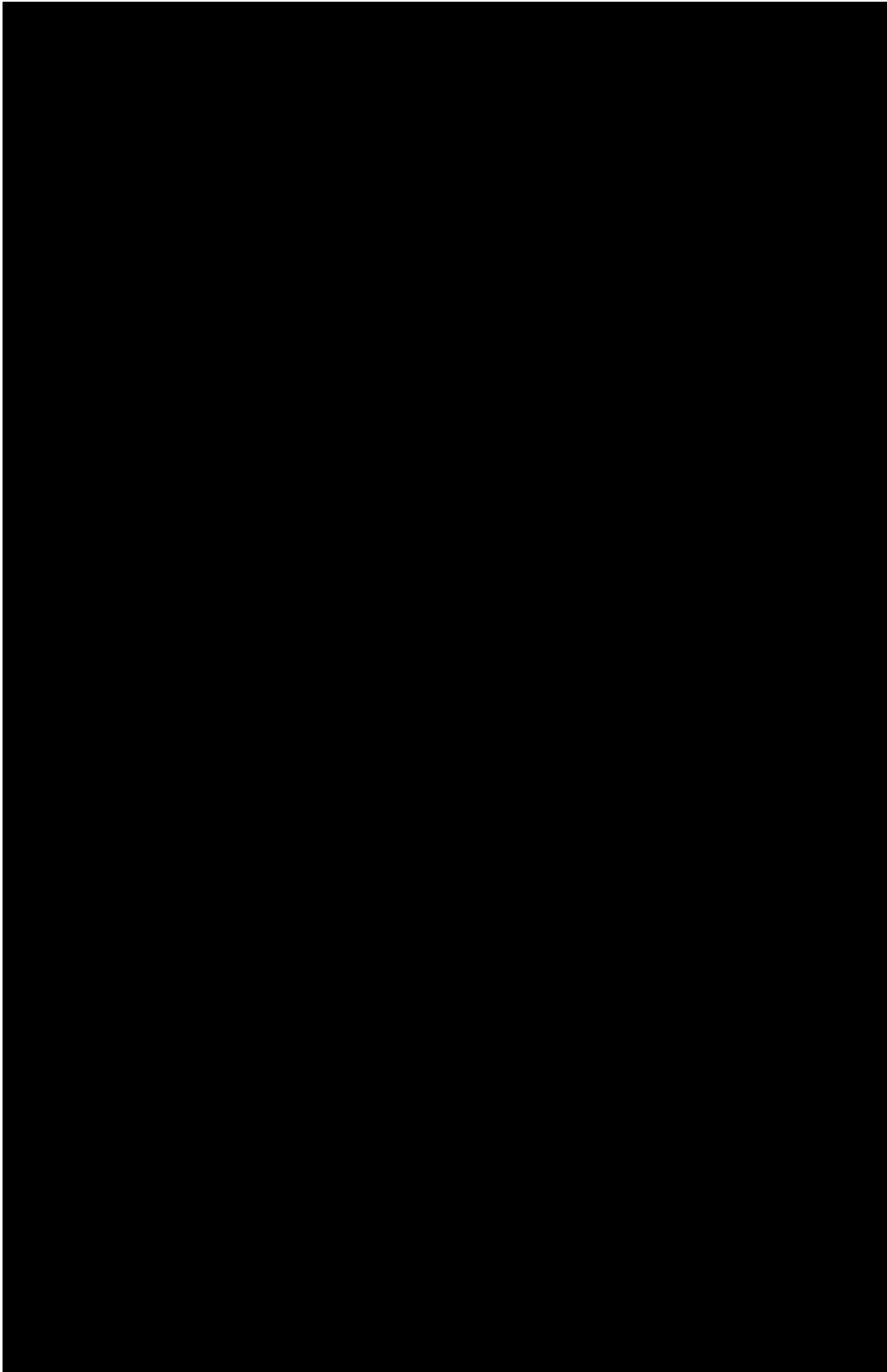


Fig. 17 The unsuccessful layout suggested by Hairenik was based on the 1913 Linotype Armenian-English keyboard layout. Changes were made on the combination of punctuation, modifiers and numerals. (Original size: 21,5 × 13,9 cm). Shown at original size. Box 2614, Armenian Folder no. 93. *Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA.*

The importance of devising a standard Armenian-English keyboard and the technical issues Linotype encountered can be appreciated in Chauncey H. Griffith's letter to Hairenik:

... we have encountered serious obstacles in trying to adapt the new keyboard arrangement to this machine. After a series of experiments it has been found that many of the characters do not combine well, and others are too wide or too thin to run in the channels designated. We expected to produce some of the larger Armenian faces during next years or so, and also according to our agreement with you we will make a suitable 14-point face during the present year, and for these reasons it becomes necessary for us to decide upon a standard Armenian keyboard that will accommodate not only the faces now in use, but those of the larger sizes which all be manufactured in the future.⁷²

Indeed, the following remarks were made by MLCo directly on the Armenian-English layout keyboard: in 14pt the matrices no. 10 and 38 would touch together and therefore, 10 and 27 could be exchanged; matrix Ղ (no. 61) and matrix Ֆ (no. 80) – which in the 1913 Hairenik's layout were on the side board (pi characters) – could run in channel 77 and in channel 78, respectively. Matrices no. 84 and 85 were to be swapped. Additionally, matrices Ճ, Ձ and Ջ were to be left out to run as pi characters [Fig. 18].⁷³

The new Armenian layout was approved by Hairenik and Jacobian in March 1916 [Fig. 19]: 'with reference to keyboard diagram on your model 9 Linotype, [I] will say that it has been arranged in accordance with the plan decided upon you [Hairenik] and Mr Jacobian'.⁷⁴ However, a few months later, Morehouse wrote to Griffith pointing out some mistakes on the English-Armenian keyboard: channel 53 showed character ՚ (no. 96) and character 9 (no. 106), but on channel 39 character ՚ (no. 96) appeared again. Moreover, a customer had complained that he had received two lots of no. 96, but no matrices of no. 90. In order to give both parentheses, Morehouse informed Griffith that it would be advisable to place on button no. 53 character 90 combined with 106: '96 is the left parenthesis and no. 90 is the right'.⁷⁵ However, in his description, Morehouse had incorrectly mistaken character no. 96 with character no. 89 [Fig. 20].

72 Letter from General manager's office Linotype in New York to M. H. Sandol, Manager at the Hairenik Press in Boston (dated 1 March 1916). Box 2614, Armenian Folder no. 93. Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA.

73 Linotype Armenian-English keyboard layout 'Diagram no. 90' (undated). Box 2614, Armenian Folder no. 93. Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA.

74 Letter from Mergenthaler Linotype to Hairenik (dated 30 March 1916). Box 2614, Armenian Folder no. 93. Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA.

75 However, in the amended standard Armenian keyboard, character 89 appears correctly on channel 47. Letter from Morehouse to Griffith (dated 3 June 1916). Letter from Mergenthaler Linotype to Hairenik, (dated 30 March 1916).

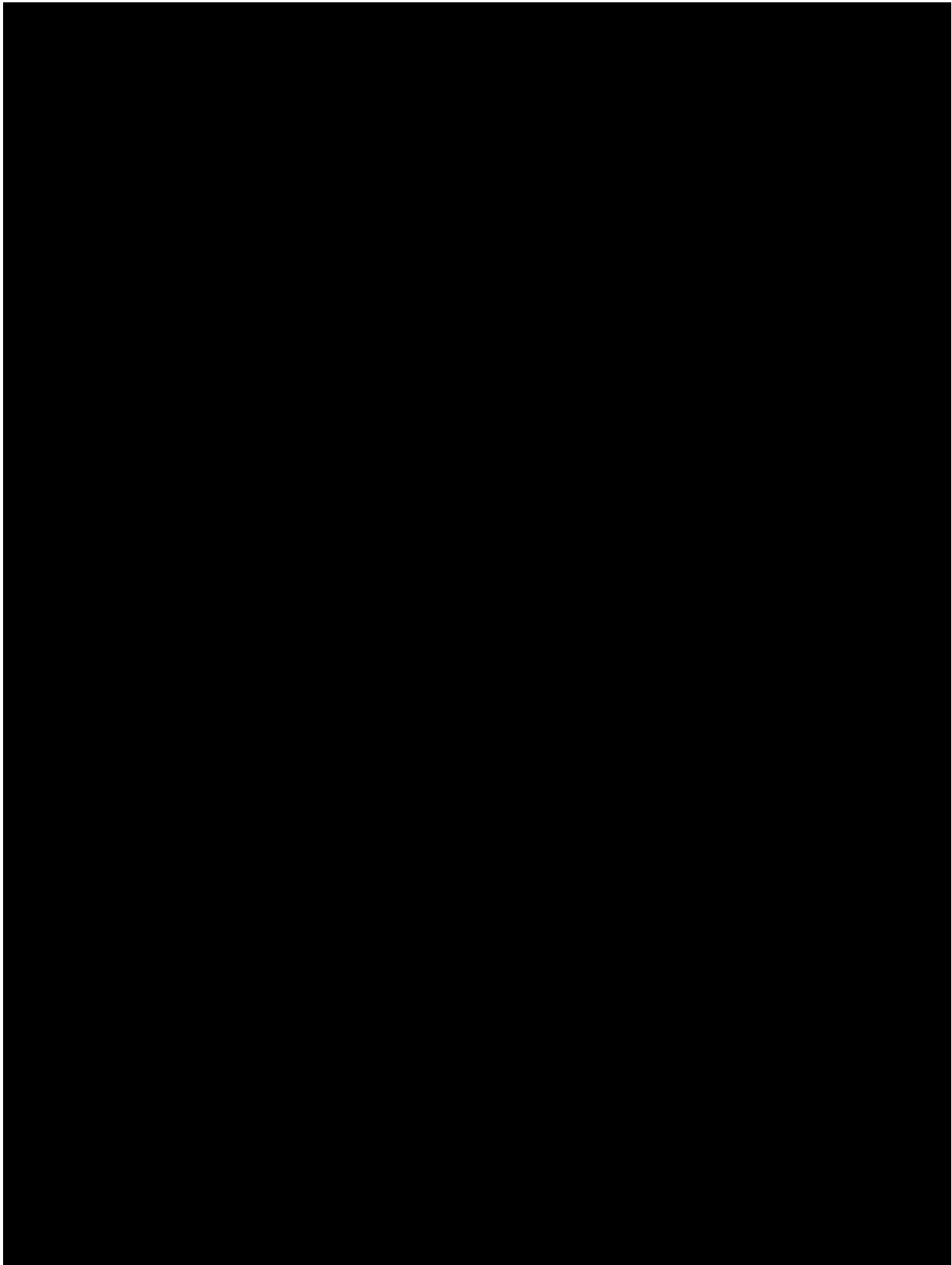


Fig. 18 Linotype Armenian-English keyboard layout showing MLC_o comments and suggestions. (Original size: 27 × 21 cm). Shown at 80% of original size. Box 2614, Armenian Folder no. 93. *Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA.*

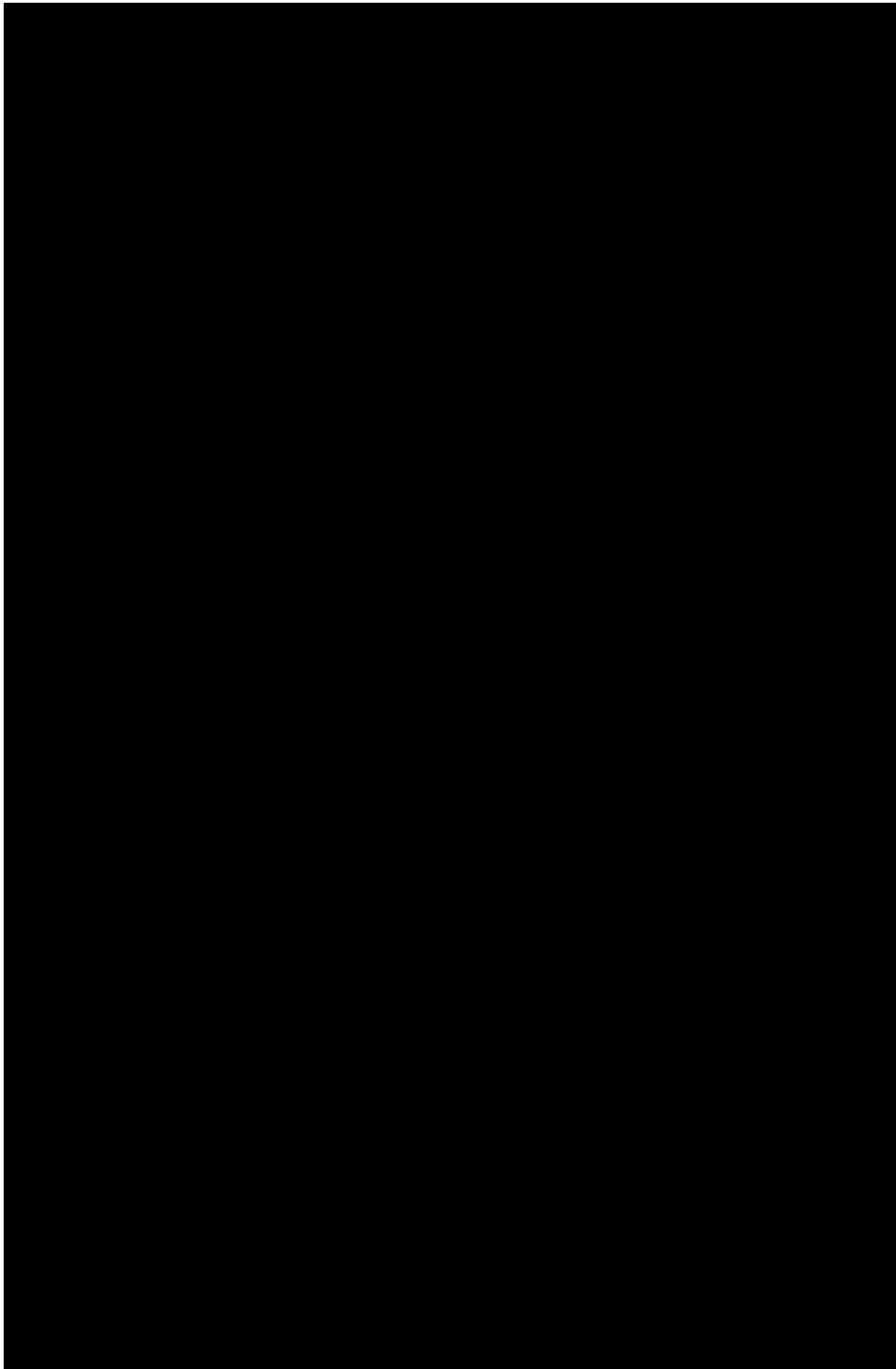


Fig. 19 The third option on the keybuttons is the approved layout.
1) Gotchnag original layout (undated), but approved when Hairenik suggested a version that was unsuccessful.
2) Hairenik layout, approved on December 1913.
(Original size: 39 × 26 cm). Shown at 50% of original size. Box 2614, Armenian Folder no. 93. *Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA.*

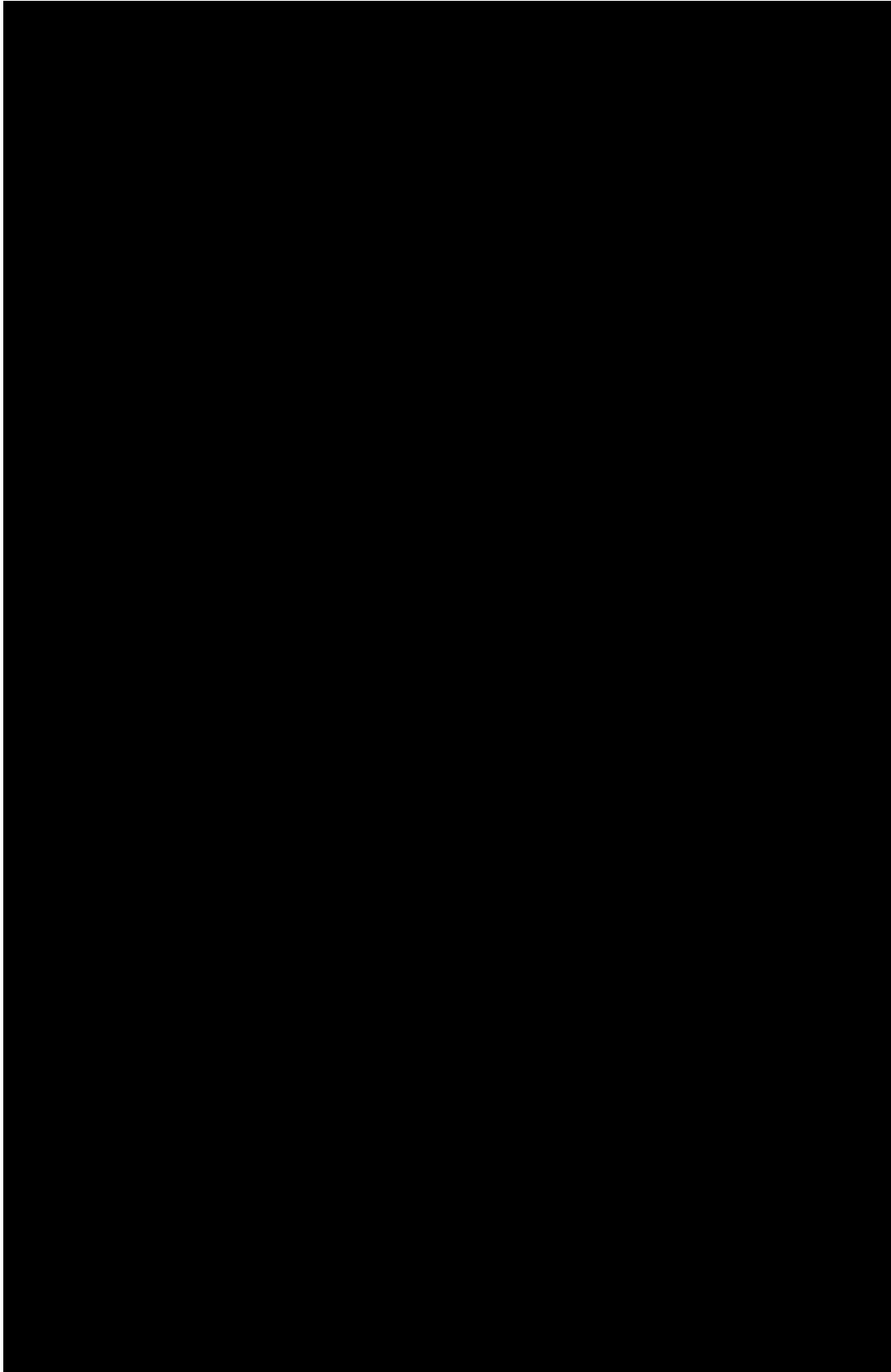


Fig. 20 The 1916 approved layout, corrected. (Original size: 46 × 29 cm). Shown at 50% of original size. Box 2614, Armenian Folder no. 93. *Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA.*

The difficulties encountered by Linotype in devising a standard Armenian-English keyboard for the Linotype machine demonstrates that Armenian and other non-Latin scripts were extremely difficult to adopt to the Linotype machine, as this was designed for the Latin script. In terms of quality, Armenian No. 1 and No. 2 were inferior typefaces compared to those of previous foundry types, mainly due to the technical limitations of the Linotype. Despite this, Linotype Armenian had a significant impact on the design of subsequent Armenian typefaces.⁷⁶

⁷⁶ The relative success of the Linotype Armenian founts was due mainly to the importance of the newspaper trade in the USA, Egypt, the Middle East, and Armenia. According to Reginald Orcutt, twelve Linotype machines for Armenian composition were operative at Armenoprent, the Government Printing Office in Yerevan, Armenia. Its publications would have reached a wide public, therefore establishing these typefaces as a standard for Armenian printing. Reginald Orcutt, *Merchant of Alphabets* (New York, Doubleday, 1945), p. 169.

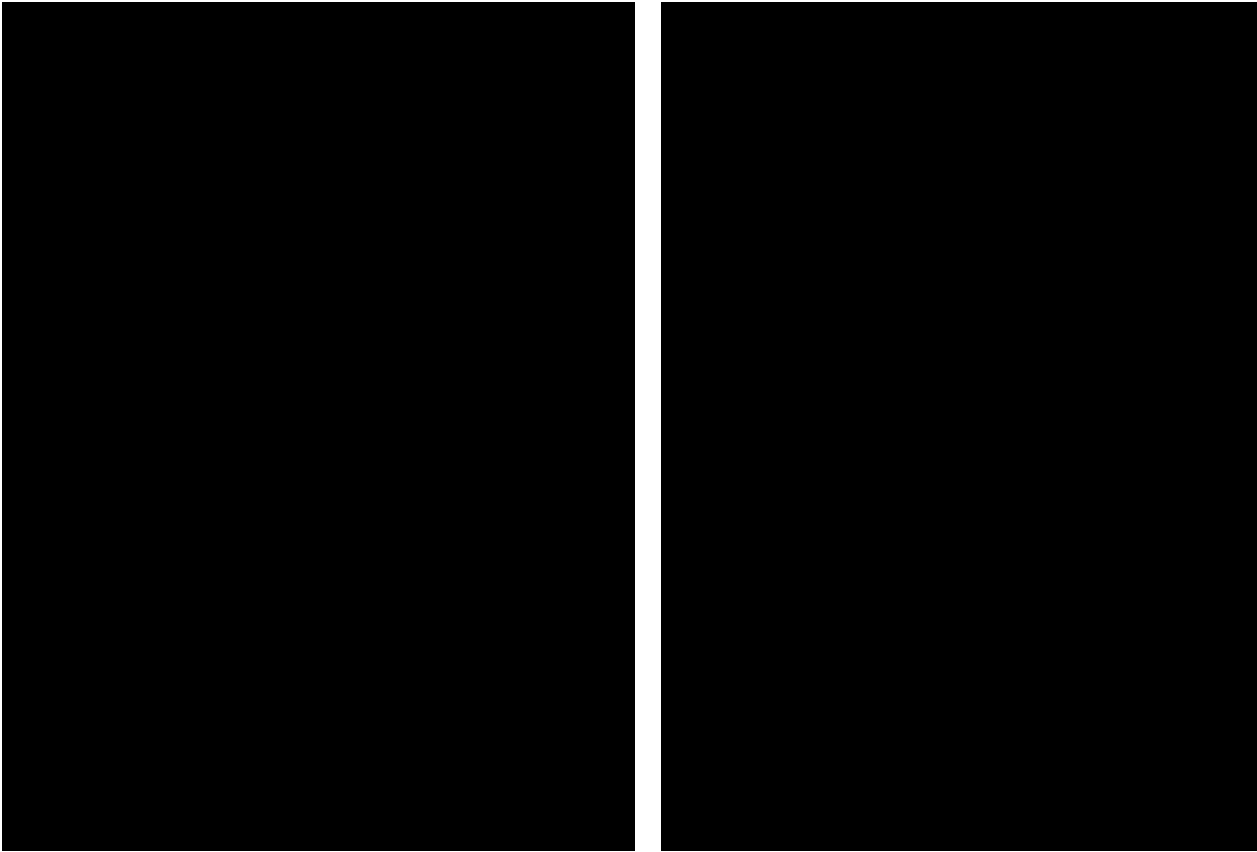


Fig. 21 The Monotype system consisted of two different parts: a keyboard and a caster which work independently. This caster machine cast individual letters, rather than a line of text as one elongated slug as the Linotype did.

Image from *The Monotype System. A book for owners and operators of Monotypes* (Philadelphia, Lanston Monotype Machine Co., 1912), p. I, II.

4.3 The development of the first Monotype Armenian typefaces for hot metal composition, Series 638

At the beginning of the 20th century the Linotype's hot-metal competitor, the Monotype,⁷⁷ became the other major system for mechanical composition.⁷⁸ The Monotype system consisted of two different parts: a keyboard and a caster which worked independently [Fig. 21]. According to Legros and Grant, the distinguishing features of the Monotype were 'the division of the composition and the casting into two processes, generally carried out by separate human supervision and separate machines', and the fact that every letter was 'cast successively as the final result of a series of operations'.⁷⁹ The Monotype system had several advantages over the linecasting machine, for example corrections and changes were easier with loose type than with slug-cast material, and different weights of the same typeface could be devised more appropriately with the Monotype system, since there was no need for 'duplexing'.⁸⁰ Even though the Monotype system offered more flexibility than the Linotype in designing typefaces, the Monotype was not free from mechanical constraints: indeed, individual characters required to be designed according to 'the 18 unit system'. The width of the widest character was divided into eighteen parts – namely 'units' – and these were used to set the widths of the other characters in the design.⁸¹ Thus, when matrices were arranged in fifteen rows of fifteen each (a 15x15 arrangement)⁸² in the matrix-case to cast types on a Monotype caster, all the characters in a row needed to be of the same width value. A significant aspect of Monotype composition was the ability to kern.

77 Invented by Tolbert Lanston (1844–1913), the Monotype method of composition was patented in 1887 and first exhibited in 1889. John Seybold, *Fundamentals of modern composition* (Pennsylvania, Seybold Publications Inc., 1977), p. 44.

78 According to Judy Slinn, at the beginning of the 20th century the Monotype Corporation was expanding internationally. Indeed, in 1901 and 1904 Monotype machines were acquired by printers in Australia, India, New Zealand, and South Africa. See: Judy Slinn, Sebastian Carter and Richard Southall, *The history of the Monotype Corporation* (UK, Printing Historical Society and Vanbrugh Press, 2014), pp. 48–49.

79 Legros and Grant, *Typographical printing-surfaces*, p. 392. In the Linotype the slug was cast at a single operation of casting. The separation of the keyboard from the casting machine entailed the development of a counting mechanism. The counting mechanism recorded the size of the characters and the number of justifying spaces, to justify lines of type. Thus, with the Monotype system the spacing was 'mathematically accurate and the length of the line exact'. The keyboard perforated holes in a paper ribbon which was then mounted onto the casting machine; holes in the tape indicated which location in the matrix case was to be accessed during casting operation. *The Monotype System. A book for owners and operators of Monotypes* (Philadelphia, Lanston Monotype Machine Co., 1912); Seybold, *Fundamentals of modern composition*, p. 46.

80 See: Seybold, *Fundamentals of modern composition*, p. 56.

81 Southall, *Printer's type*, p. 35.

82 Commonly, the matrix case in the early machines consisted of a 15x15 arrangements of characters, a total of 255, of which 13 were fixed spaces. Later machines had a larger matrix case. *The Monotype System*, p. 10.

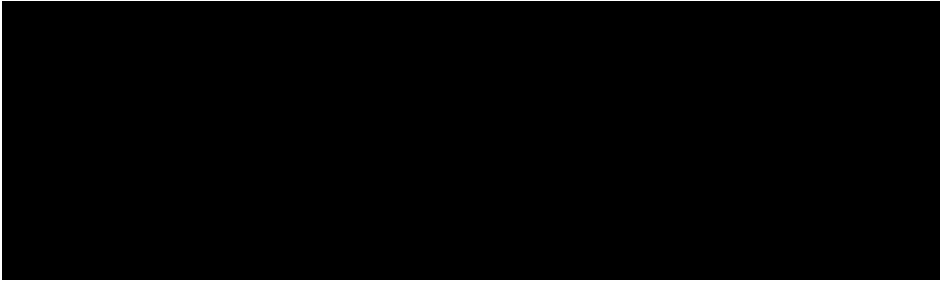


Fig. 22 Times New Roman Series 327-11 pt by Monotype. From the *Specimen Book of Monotype non-Latin faces* (Salfords, Monotype Company). Shown at 300% of original size.

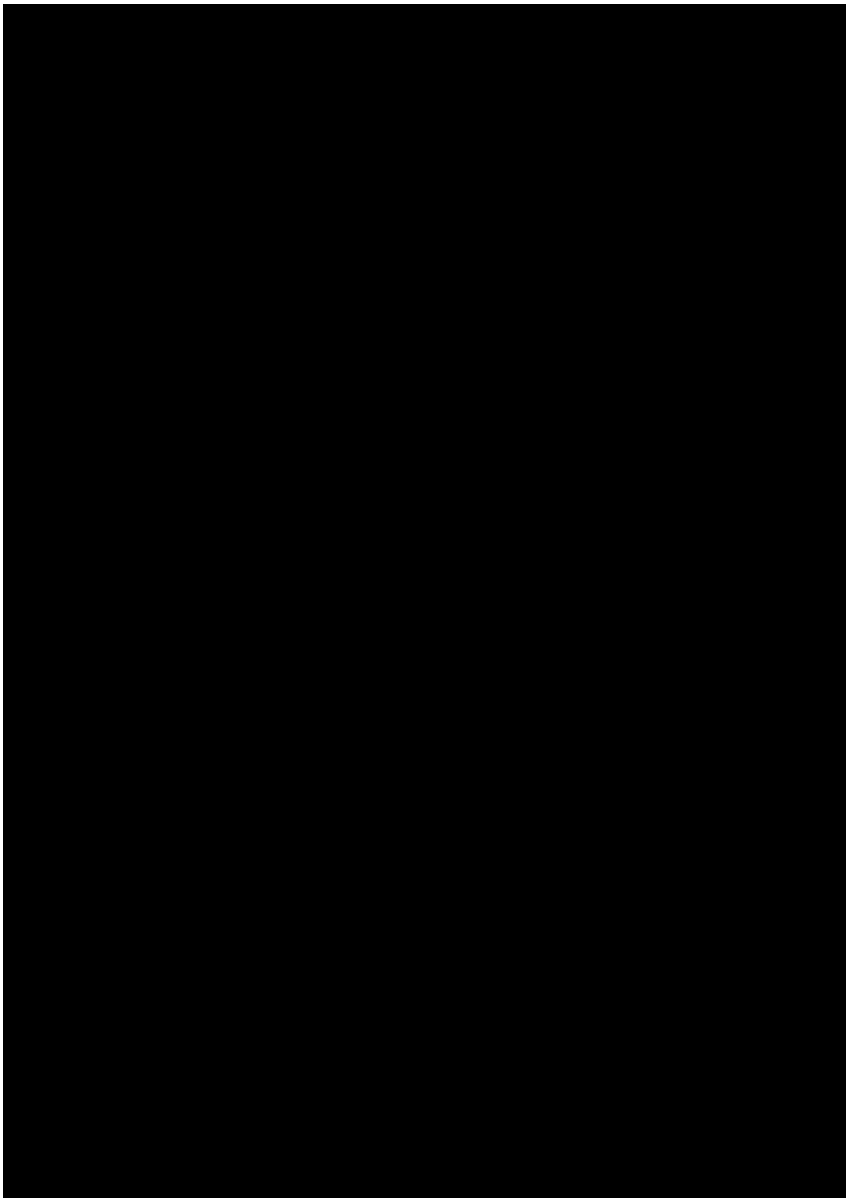


Fig. 23 Armenian types of Cambridge University Press. Two sizes of Armenian are shown, the smaller size is used alongside a Latin typeface. From *Specimens of Oriental Founts* (Cambridge, Cambridge University Press, 1933). Shown at 80% of original size. Folder Series 638. *The Monotype Archives, Salfords*.

The Linotype composing machine was particularly suitable for newspaper production and commercial printing,⁸³ whereas the Monotype system was better suited for fine printing.⁸⁴ In September 1957 Mr L. Pitsi – the chief of the Printing House Ceuterick⁸⁵ in Louvain⁸⁶ – who specialised in scholarly printing, requested the British Monotype company⁸⁷ rather than Mergenthaler Linotype US to manufacture and supply matrices for the composition of Armenian.

The request from L. Pitsi comprised an Armenian typeface in the traditional Bolorgir style only, in different sizes: 7 ½ pt and 9 pt for notes, and a 12pt, to correspond with Series 327-11D⁸⁸ [Fig. 22]. This prospective client provided some typeface examples to Monotype as models for the new design.⁸⁹ It would appear that L. Pitsi had a high regard for the Armenian typefaces produced by Linotype in 1912, and it was his intention to have something very similar from Monotype.⁹⁰

Before considering the manufacturing process, Monotype needed to determine the design of the new Armenian. The British company was not keen to copy the Linotype Armenian, and prepared a different proposal for the client, basing the design on the Armenian typefaces of Cambridge University Press (C.U.P.)⁹¹ [Fig. 23]. However, when the Corporation presented the new proposal [Fig. 24], L. Pitsi asked Monotype to simplify the design of the uppercase letters by using those of Linotype as a basis. Furthermore, very important aspects, such as ‘Kerned Sorts’ and ‘Short Descenders’, which the Monotype Type Drawing Office (TDO) had wisely suggested, were considered superfluous by the client although commonly used in movable type to cope with composing issues.⁹² Monotype agreed with all the remarks made by L. Pitsi, and prepared a second proof.

83 See: Ross, *The printed Bengali*, p. 162.

84 Alice Savoie, *International cross-currents in typeface design*, p. 61.

85 The Printing House Françoise Ceuterick was established in Louvain (60 rue Vital Decoster) in 1804. It specialised in scholarly, scientific, and religious publications. In 2000 Ceuterick was taken over by the Orientalist Printing Press (Peeters Publishing House) in Louvain.

86 The town of Louvain (or Leuven) in Belgium, at the east of Brussel, has a longstanding Orientalist tradition. The Louvain Catholic University, founded in 1425, was considered the most prominent university in Belgium. Belgium gained importance at the beginning of the 20th century when anti-clerical laws had forced Catholic congregations to emigrate from different parts of Europe. [Catholic University of Leuven. Retrieved from: Encyclopedia Britannica. <https://www.britannica.com/topic/Catholic-University-of-Leuven>; Roland Lardinois, *Scholars and Prophets: Sociology of India from France in the 19th-20th Centuries* (New Delhi, Social Science Press, 2013), p. 161.

87 The Lanston Monotype Corporation Ltd was founded in 1897 in Salfords, Surrey, UK.

88 D=Didot. Monotype Series 327 is Times New Roman.

89 The examples include: the booklet – *Une lettre de Sérapion de Thmuis aux disciples d'Antoine* (A. D. 356) by R. Draguet, printed with Linotype Armenian in both Slanted and Upright (Roman and Italic) and published by the Imprimerie Orientaliste L. Durbeq (Louvain, 1951) – and a specimen of Linotype Armenian. Furthermore, L. Pitsi recommended as a reference the book *Thesaurus of Venice*, published in 1836 by the Mekhitarists in Venice. This would have been easily accessible from London, Cambridge and Oxford. See: Letter ‘Note pour la Monotype’, from L. Pitsi to Monotype (dated 6 September 1957). Armenian Folder. Monotype Archives, Salfords, UK.

90 Letter from L. Pitsi to Monotype (dated 6 September 1957). Armenian Folder. Monotype Archives, Salfords, UK.

91 The typeface used by the Cambridge University Press was purchased from the Mekhitarist Press in Vienna ca. 1894. This was a well executed and a well known typeface. The model used for this type was Kis's. Monotype did not reveal the source to its client.

92 Letter from C. A. Poore to the TDO (dated 9 October 1958). Armenian Folder. Monotype Archives, Salfords, UK.

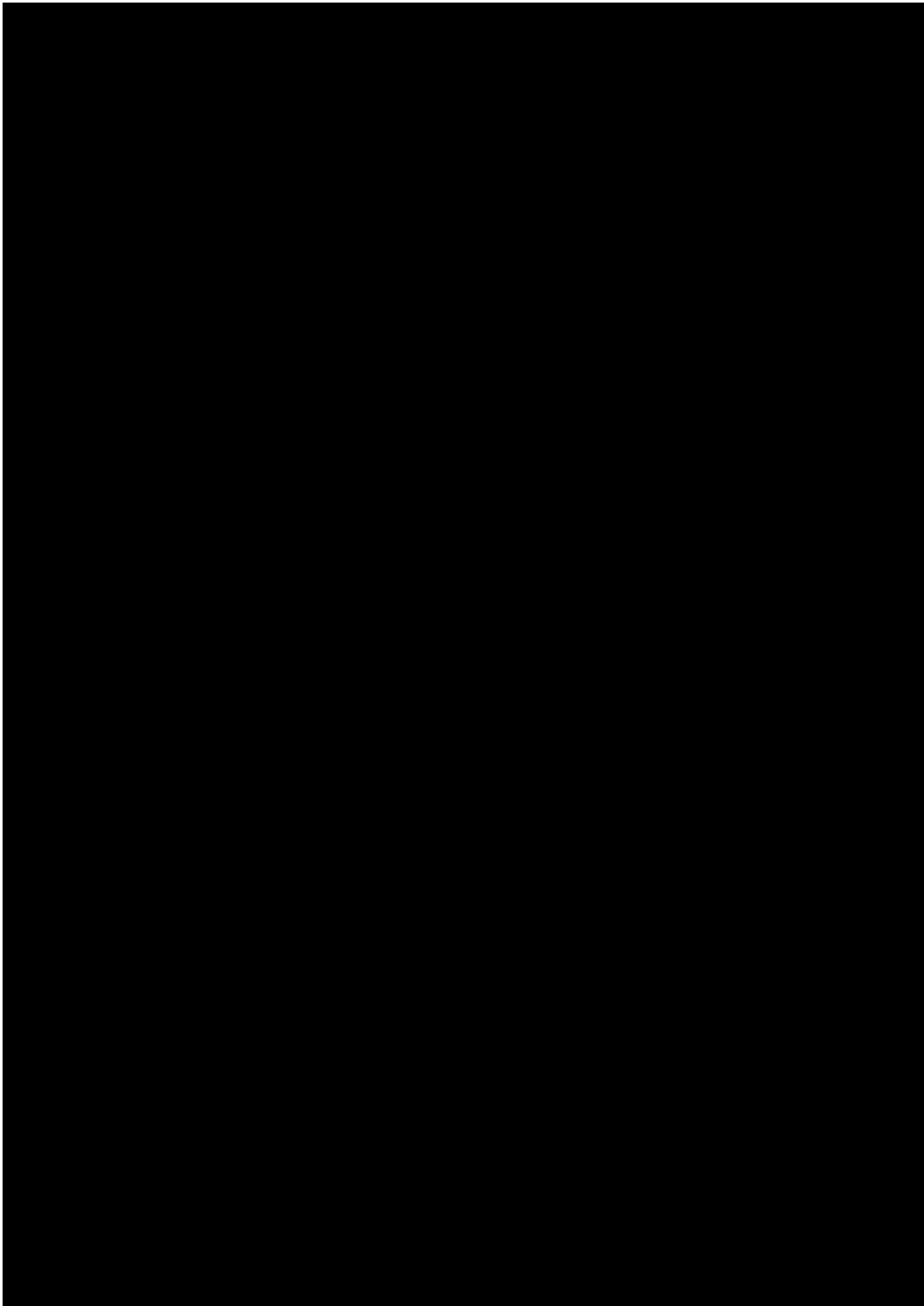


Fig. 24 A C.U.P. proof prepared by Monotype. The new proposal to be sent to Pitsi for comments was a C.U.P. proof, similar to the one shown here. (Original size: 18 × 25,3 cm). Shown at 80% of original size. Folder Series 638. *The Monotype Archives, Salfords.*

The Monotype Type Drawing Office received specific instructions from Dreyfus, Fellows, and Lequint at Monotype about how the next proof should be sent to the Printing House Ceuterick, confirming its requirements and the sizes needed: lowercase letters, including ligatures, had to be cut up from a specimen sheet of the C.U.P. and the uppercase letters photographed from the Linotype specimen.⁹³ Once the pasted-up document was completed, they had to make a photostat copy of the whole so that the Belgians would not be aware of the pieced-together nature of the document [Fig. 25].⁹⁴ Monotype's mistrust of its client stemmed from the fact that, besides Linotype, there were other small enterprises to compete with. As it happened, in March 1958 Monotype received another apparently urgent order for the development of an Armenian typeface for the German market. The client, Rheingold-Verlag from Mainz, intended to expand its Monotype installation and to specialise in a number of oriental languages.⁹⁵ Due to the urgency of the request, Monotype considered producing the Armenian typeface already in progress, commissioned by the Belgium customer, for the German client as well.⁹⁶ However, after only four months, John Dreyfus, Typographic Adviser to the Monotype Corporation, was informed that Rheingold-Verlag had turned to have Armenian matrices cut by another firm: Schmid Nürnberg. It would seem that it was a frequent practice for customers to buy bronze blanks from Monotype and to have them engraved elsewhere, when prices for special matrices were too high or the delivery time was too long.⁹⁷

In January 1959 the photographic proof [Fig. 26] was ready and sent to Ceuterick for review. The Belgian printing house recruited Canon Draguet⁹⁸ to comment on the Armenian proof. Monotype had previously worked with Canon Draguet on the development of an Ethiopian typeface, but not to their satisfaction. His critique of the Armenian designs was mainly superficial and inconclusive. For example, he stated: 'The specimen is not satisfactory; the ligatures and strokes are not clear on the proof; all the characters do not line properly; do the characters overhang to the left and to the right as it is the case for Arabic?'⁹⁹ He suggested the adoption of the Linotype typeface to avoid overhangs, but to reduce the space between the Linotype characters in making them less inclined, and to make the capital letters more upright without compromising the design.¹⁰⁰ Canon Draguet, though an eminent orientalist, was not a particularly well-qualified judge as to the suitability and quality of Armenian types.

93 At the early stage of the Armenian project Monotype directly approached Linotype & Machinery (UK) to request slugs of their Linotype Armenian capitals. See the next section of this chapter.

94 Letter from Glenn Barrett to the TDO (dated 1 August 1958). Armenian Folder. Monotype Archives, Salfords, UK; and Letter from C. A. Poore to the TDO (dated 9 October 1958). Armenian Folder. Monotype Archives, Salfords, UK.

95 Letter from Glenn Barrett to the TDO (dated 17 March 1958). Armenian Folder. Monotype Archives, Salfords, UK.

96 Letter from Glenn Barrett to the Secretary, the Typographical Committee (dated 28 March 1958). Armenian Folder. Monotype Archives, Salfords, UK.

97 Letter from Glenn Barrett to the Secretary, the Typographical Committee (dated 8 August 1958). Armenian Folder. Monotype Archives, Salfords, UK.

98 René Draguet [known as Canon Draguet] (1896-1980) was a Belgian Canon, professor of fundamental theology at the Catholic University of Louvain, orientalist, patrologist, member of the Royal Academy of Belgium.

99 Letter 9696 (dated 23 January 1959). Armenian Folder. Monotype Archives, Salfords, UK.

100 Ibid.

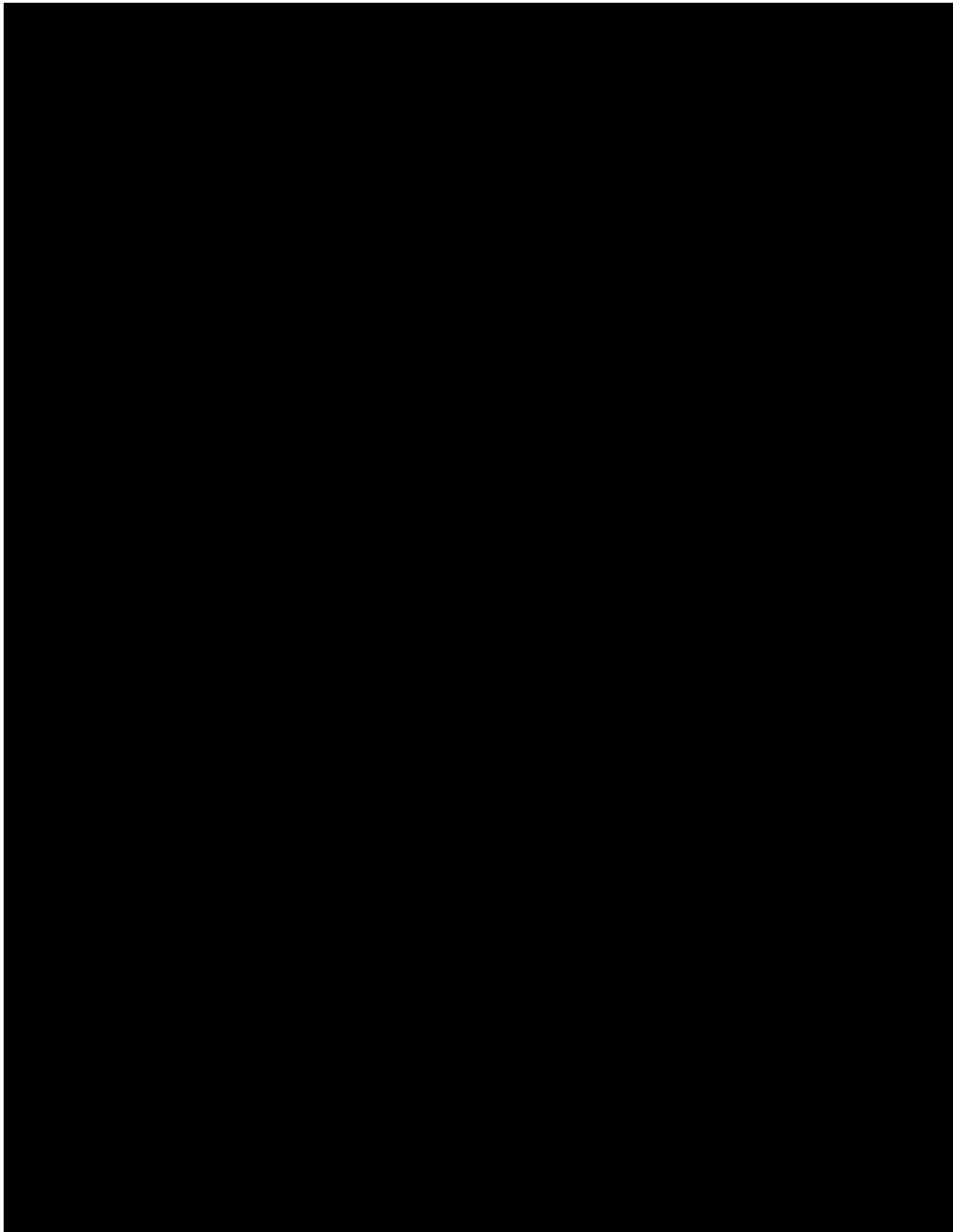


Fig. 25 The pasted-up document. (Original size: 13,8 × 17,9 cm). Shown at original size. Folder Series 638. *The Monotype Archives, Salfords.*

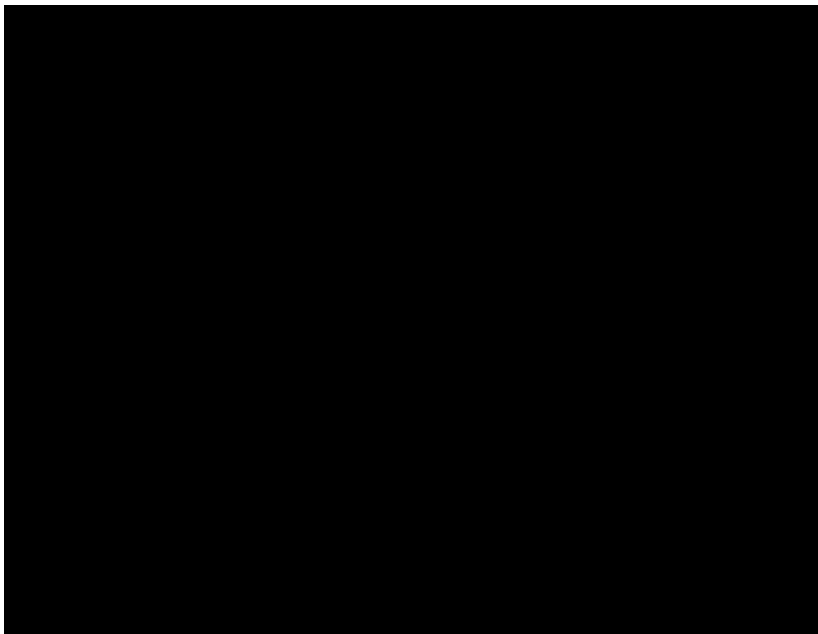


Fig. 26 Monotype Armenian. Photographic proof (second proof) sent to Ceuterick and commented on by Canon Draguet. (Original size: 10,8 × 8,3 cm). Shown at original size. Folder Series 638. *The Monotype Archives, Salfords*.

Times New Roman



CVB



Fig. 27 Proportions of Monotype Times New Roman and a traditional Bolorgir typeface.



Fig. 28 The Armenian and Latin typefaces were aligned at the baseline. Detail from Mosis Khorenaci, *Historiae Armenicae libri tres* (London, Whistonian, 1736). (Original size: 19,5 × 27 cm). Shown at 200% of original size. *The Bodleian Library*.



Fig. 29 Armenian and Latin were aligned to the top-line. Detail from Francesco Rivola, *Grammaticae Armenae libri quattuor* (Milan, Tipografia del Collegio Ambrosiano, 1624). (Original size: 15 × 21,5 cm). Shown at 200% of original size. *The British Library*.



Fig. 30 The top line of the Armenian was aligned to the capital line of the Latin. Detail from Antoine Vitré, *Lingarum orientalium Hebraicae, Rabbinicae, Samaritanae, Syriacae, Armenicae alphabeta* (Paris, 1636). (Original size: 16,4 × 21,2 cm). Shown at 200% of original size. *The Cambridge Library*.



Fig. 31 Monotype alignment of Armenian and Latin is at the top. Trial proof of Armenian 638-10D (Bolorgir style) and Bodoni Series 135-11D. Detail from early proof of 18 trial matrices (probably dated July 1960). (Original size: 20,9 × 27,7 cm). Shown at 200% of original size. Folder 638. *The Monotype Archives, Salfords*.

At this early stage, the project did not merely involve the design aspect. Another matter, related to the initial request to cut an Armenian in 12 pt to correspond with Series 327-11D, needed particular attention. The Type Drawing Office had immediately raised the issue of creating an Armenian for use with Series 327-11D, making clear that it was an impracticable operation, due to the length of ascenders and descenders.

To mix Armenian with a Latin design and maintain alignment was exceedingly difficult; and Series 327 for the Latin face could hardly have been more unfortunate in this respect.¹⁰¹

Times New Roman has very short ascenders and descenders in relation to the large x-height, whereas the lowercase letters of the Armenian script have a small base character height with long ascenders and descenders [Fig. 27]. Mr C. A. Poore, Works Manager at Monotype, suggested to the TDO that the Armenian could be aligned with the baseline of the lowercase x-height as in text composed by the Linotype.¹⁰² In hot-metal composition, mixing Armenian with a Latin design without compromising the alignment was a very difficult task.¹⁰³ There were precedents in printing showing different approaches: for example, Armenian and Latin were aligned to the top-line (the distance between top-line and baseline constitutes the base character height) [Fig. 28], or the top-line of the Armenian was aligned to the capital line of the Latin [Fig. 29], or even the consideration of the ascenders as the alignment reference [Fig. 30]. Monotype used the top-line approach, aligning Armenian and Latin to the top-line rather than to the base-line [Fig. 31]. This solution is evidence of Monotype's experience in non-Latin typefaces and its attention to the nature of the Armenian script.

The interest of new customers from Austria, Lebanon and Egypt for Armenian, urged the Monotype Matrix Department (SFM)¹⁰⁴ in Frankfurt to start in March 1960 with the preparatory work of Armenian Series 638-10D in Bolorgir and Upright styles.¹⁰⁵ However, the data provided by Monotype were inadequate to start the production of matrices.¹⁰⁶ Consequently, it was likely that issues would show up in the course of the production or even at job completion, particularly considering that the new hot-metal technology was built on Latin typographic principles, and as such, had its own limitations. In order to cope with the difficulties related to the correct interpretation of the design of the typeface, SFM undertook the task to clarify the requirements for

¹⁰¹ Letter from C. A. Poore to the TDO (dated 9 October 1958). Armenian Folder. Monotype Archives, Salfords, UK.

¹⁰² Ibid.

¹⁰³ For instance, in the case of Linotype, the alignment of roman and Armenian could be achieved for uppercase letters and figures but not for lowercase letters. Letter from Walter Tracy to Mike Parker (dated 25 March 1965). Box 9940, Walter Tracy correspondence 1961–1965 Folder A. Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA.

¹⁰⁴ Its German designation being, Setzmaschinen-Fabrik Monotype Gesellschaft M. B. H.

¹⁰⁵ Monotype stated that the design of an Armenian Upright style for Series 638 could have been useful for future customers, although Ceuterick did not require it. Letter from Paul Lequint, probably to the TDO (dated 18 March 1960). Armenian Folder. Monotype Archives, Salfords, UK.

¹⁰⁶ Letter from Paul Lequint, probably to the TDO (dated 18 March 1960). Armenian Folder. Monotype Archives, Salfords, UK.

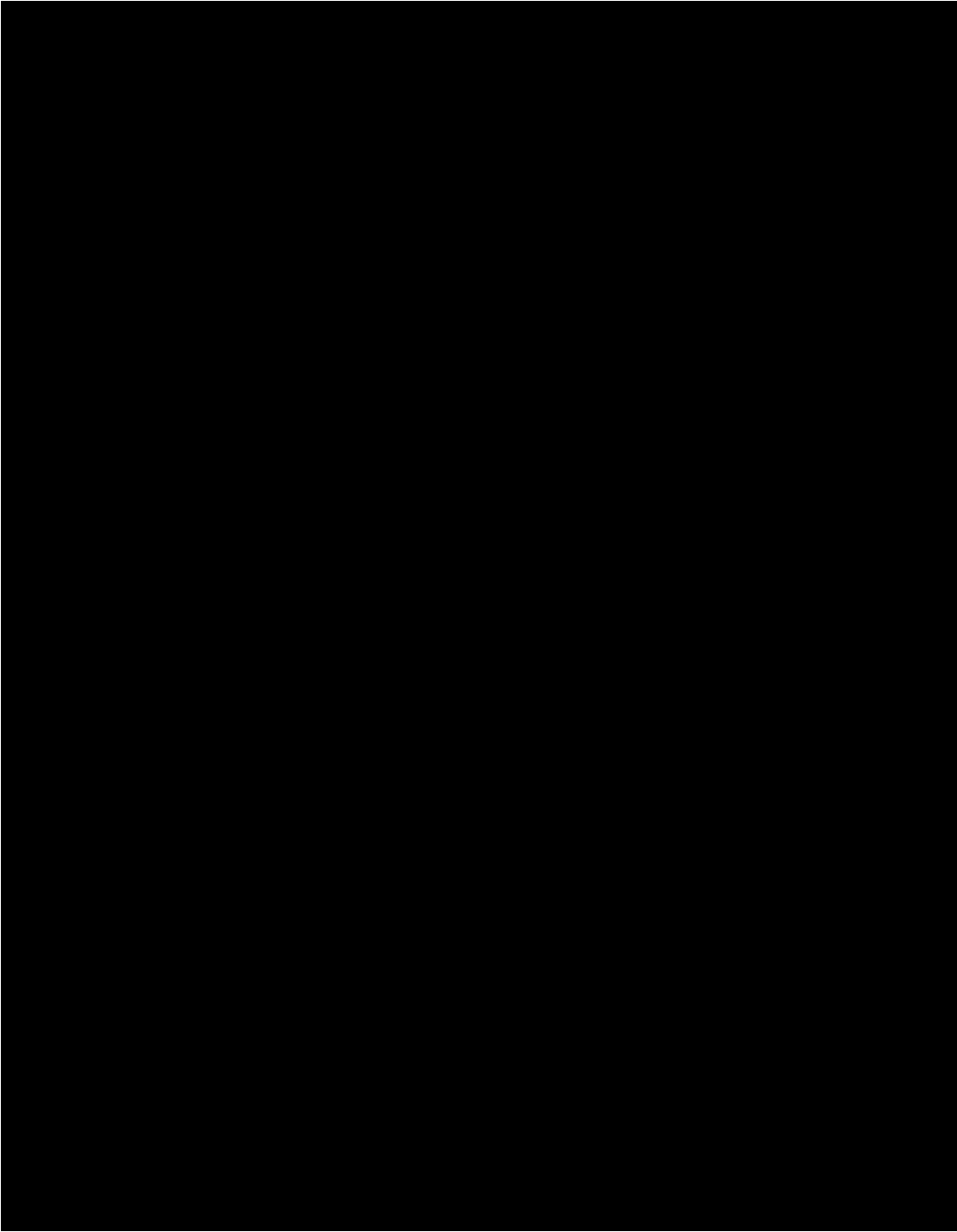


Fig. 32 Detail from a proof showing the 18 trial matrices cut by SFM, (probably dated July 1960). A,B,C display Armenian 638-10D in its different styles, together with Bodoni (Series 135) at 11 pt size. (Original size: 20,9 × 27,7 cm). Shown at original size. Folder 638. *The Monotype Archives, Salfords.*

- A. Bodoni S135-11 with Armenian 638-10D
- B. Bodoni S135-9 with Armenian 638-10D
- C. Bodoni S135-10 with Armenian 638-10D
- D, E, F display the different styles of Armenian 638-10D
- D. Armenian 638-10D Bolorgir style
- E. Armenian 638-10D Upright style
- F. Armenian 638-10D Gothic style

Armenian, without informing John Dreyfus and therefore the TDO. To do so, SFM collaborated with Mr. Fermanian, a native Armenian and a former compositor at the Ullstein Publishing Company in Berlin, one of the largest publishing establishments in Germany. SFM not only discussed grammar requirements for the Armenian with Fermanian, but also made suggestions regarding the design. Thus, in July 1960, SFM sent proofs of the 18 trial matrices to Monotype in Salfords, displaying some characters in a 'Gothic design', contrary to the instruction given. Furthermore, SFM took the liberty of preparing the trial proofs by typesetting Armenian with Bodoni (Series 135) instead of Times New Roman, which had been requested by the client.¹⁰⁷

The reaction of Monotype in Salfords to this trial proof reveals that the design proposal of using the lowercase Armenian letters from Cambridge University Press for Series 638 was abandoned and that the initial customer's request to create something similar to the Linotype was accepted instead:

They do not seem to have followed Linotype in some cases: second letter, first line seems to be some design they have cooked up! third letter, second line seems more ... the newspaper than Linotype.¹⁰⁸ The five letters in the third line (Gothic according to SFM). If these are the only characters with alternative design there may be ... [a reason] for adding them to the font – but if all lower-case are required that would be another Series number¹⁰⁹ [Fig. 32].

Despite Monotype's comments, the five characters of the Slanted styles and the eight characters in Upright style proposed by the Matrix Department were retained and included into Trial No. 1, produced by SFM with new 27 characters [Fig. 33a and 33b].

The Type Drawing Office had some technical comments related to kerning, and some design criticism of Trial No. 1. The TDO managed to raise issues of interest regarding the design of some lowercase letters and to provide suggestions for improvement. In the Bolorgir typeface the most significant were: the horizontal stroke on the right of η was too short, the top right of letter ϑ was too rounded. In the Upright the final stroke through the bowl of letter ϑ was not horizontal, and letter q had two serifs at the bottom of the main stroke [Fig. 34].¹¹⁰ However, the comments were only addressed internally and not to the Matrix Department in Frankfurt, neither to their customers, who were waiting for comments on Trial No. 1.¹¹¹ Monotype was concerned that the matrices produced by SFM were not based on the design that the client and its consultant Draguet wanted, and decided to co-ordinate the criticisms of Canon Draguet

¹⁰⁷ Letter from SFM to the Monotype Corporation in Salfords (dated 13 July 1960). Armenian Folder. Monotype Archives, Salfords, UK.

¹⁰⁸ The newspaper is $\mathcal{U}j\mathcal{h}j$ (*Alik*) (Theran, 5 November 1959).

¹⁰⁹ Handwritten internal letter to Miss D. Weller (dated 18 July 1960). Armenian Folder. Monotype Archives, Salfords, UK.

¹¹⁰ Letter from the TDO to the Secretary, the Typographical Committee (dated 5 December 1960). Armenian Folder. Monotype Archives, Salfords, UK. More comments on the design were given by the TDO on Trial No. 1.

¹¹¹ Letter from John Dreyfus to Miss D. Weller (dated 7 December 1960). Armenian Folder. Monotype Archives, Salfords, UK. 'I do indeed agree with you that we should for the moment ignore works comment on this proof.'



Fig. 33a On the left: five trial letters in Armenian 638-10D Bolorgir (slanted) style; on the right: eight trial letters in Armenian 638-10D Upright style. These letters are from a proof showing the 18 trial matrices cut by SFM, (probably dated July 1960). (Original size: 20,9 × 27,7 cm). Shown at 200% of original size. Folder 638. *The Monotype Archives, Salfords.*

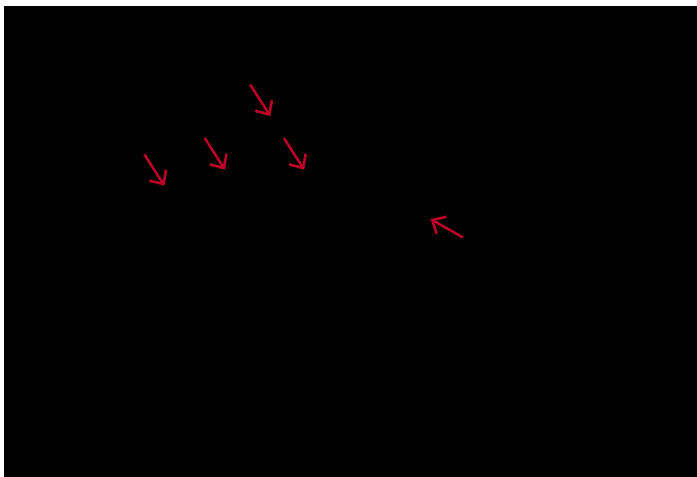


Fig. 33b Detail from Trial No. 1 (dated 12 January 1960). (Original size: 15,2 × 25,3 cm). Shown at 200% of original size. Folder 621–650 hot-metal proof. *The Monotype Archives, Salfords.*

Fig. 33a, b Despite Monotype's comments, the five letters in Armenian 638-10D Bolorgir (slanted) style, shown in (Fig. 33a), were part of the 40 letters shown in (Fig. 33b). On (Fig. 33b) they are marked by the author with red arrows.

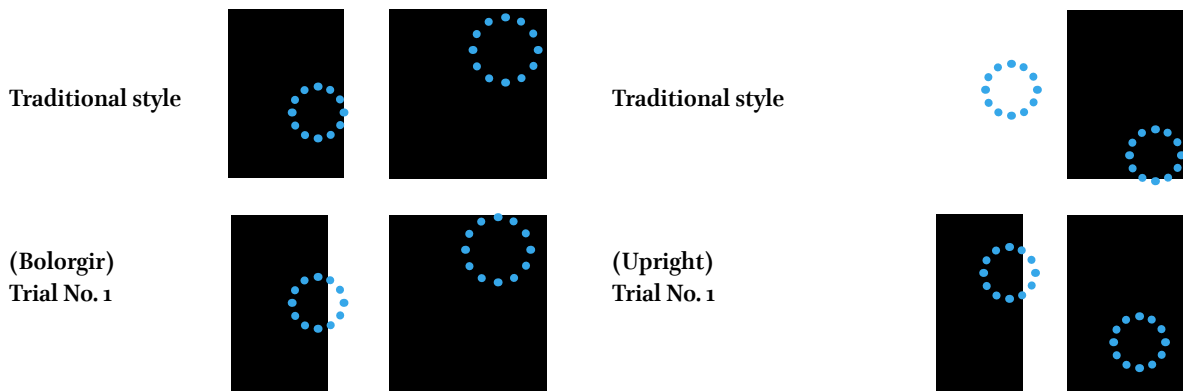


Fig. 34 Some significant design issues raised by the TDO on Trial No. 1.

and the other prospective customers¹¹² before passing any information to the Matrix Department in Frankfurt.¹¹³ It was clear that Monotype wanted to prevent SFM from ignoring the client's request once again, and was eager to regain control of the typeface development process.

Comments by customers on Trial No. 1 were positive, despite the issue of the poor design of some letter shapes raised previously by the TDO. Canon Draguet had very few remarks on the design, and he shared the TDO's view that the horizontal stroke attached to some letters should be heavier and more visible. He also advised on characters that had not yet been designed, but which needed to be clearly distinct, such as: ր and ր; զ and զ; ն and ն [Fig. 35].¹¹⁴ The comments from the prospective Lebanese customers Simonian and Adjamian were even more positive. The face was considered to be satisfactory and the design acceptable. Simonian's only remark was about the Upright style where the tail of q was missing [Fig. 36].¹¹⁵ When a second proof¹¹⁶ with the complete Armenian character set was ready for client approval, it appears once again that the Matrix Department in Germany had ignored most of the comments relating to the design of the Armenian. Indeed, by comparing Trial No. 1 and Trial No. 2 it is possible to see that the design of the 40 characters in Trial No. 1 was left untouched in the subsequent trial [Fig. 37]. However, Simonian approved the design of all the Armenian characters shown on copy of Trial No. 2, and requested Series 638 in 12 and 8 pt as well.¹¹⁷

The lack of collaboration between the Matrix Department and other departments hindered the subsequent development of this typeface and of further sizes. SFM was reluctant to ask the Type Drawing Office for advice.¹¹⁸ When the development of the 8pt size started in 1962, the problem faced by the SFM in casting matrices for the 10pt came to light: the Matrix Department revealed that they had considerable difficulties with the long horizontal stroke of characters such as ըրը¹¹⁹ and that therefore they had to set Trial No. 2 by hand [Fig. 38].¹²⁰ It was necessary to find a solution as hand insertion was not acceptable. SFM suggested providing duplicate matrices on a wider unit value for the first or second letter of the clashing pair [Fig. 39a and 39b].¹²¹

112 The prospective customers were the Lebanese publishing houses of Simon Simonian (known as 'Sevan' Publishing House), and Pèrè Adjamian.

113 Letter from Paul Lequint (dated 8 December 1960). Armenian Folder. Monotype Archives, Salfords, UK.

114 Letter from Glenn Barrett to the Secretary, the Typographical Committee (dated 29 December 1960). Armenian Folder. Monotype Archives, Salfords, UK.

115 Letter from F. E. Cole to the Secretary, the Typographical Committee (dated 14 February 1961). Armenian Folder. Monotype Archives, Salfords, UK.

116 Trial No. 2 (dated 7 September 1961).

117 Letter from Stanley Morison probably to the TDO (dated 30 November 1961). Armenian Folder. Monotype Archives, Salfords, UK.

Monotype decided to approve Trial No. 2 and to supply matrices to the Lebanese customer as soon as possible, although they had not received any comments from Draguet.

118 Letter from Paul Lequint, probably to the TDO (dated 12 February 1962). Armenian Folder. Monotype Archives, Salfords, UK.

119 Ibid.

120 Letter from H. Faulkner to the TDO (dated 12 January 1962). Armenian Folder. Monotype Archives, Salfords, UK.

121 Letter from SFM to Paul Lequint (dated 15 February 1962). Armenian Folder. Monotype Archives, Salfords, UK.



Fig. 35 Kis's types are here used to represent Draguet's comment. According to Draguet, letters having similar shapes could have been easily confused.

Details from Schröder Johann Joachim,
Thesaurus linguae armenicae (Amsterdam,
1711). Images shown at 200% of original size.

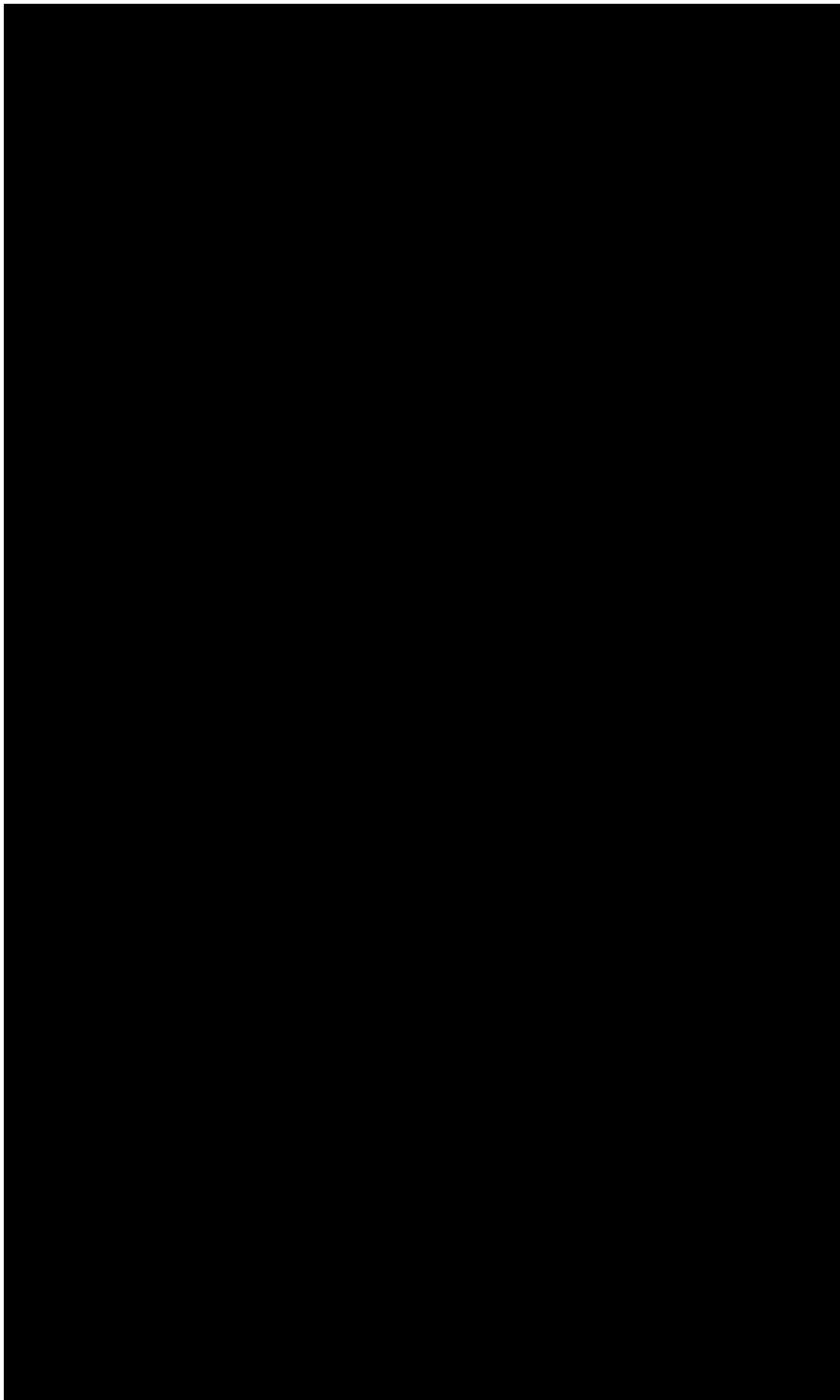


Fig. 36 Series 638-10D, Trial No. 1 (dated 12 January 1960). Comments were made by Simonian directly on the proof. (Original size: 15,2 × 25,3 cm). Shown at original size. Folder 621-650 hot-metal proof. *The Monotype Archives, Salfords*.

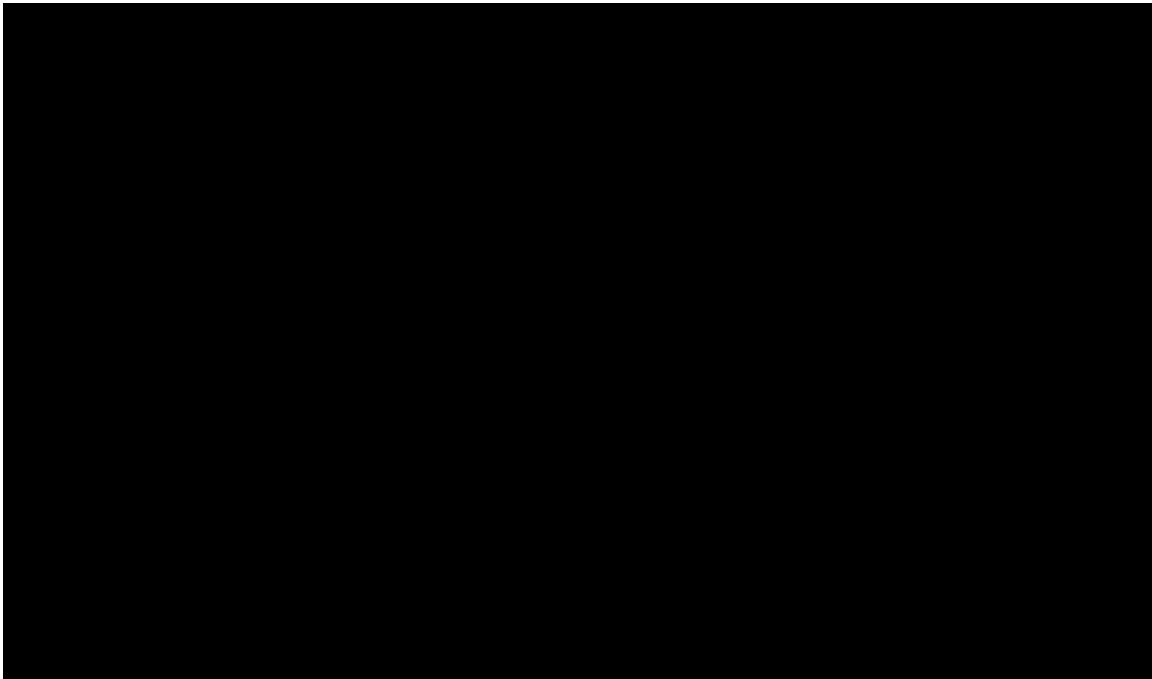


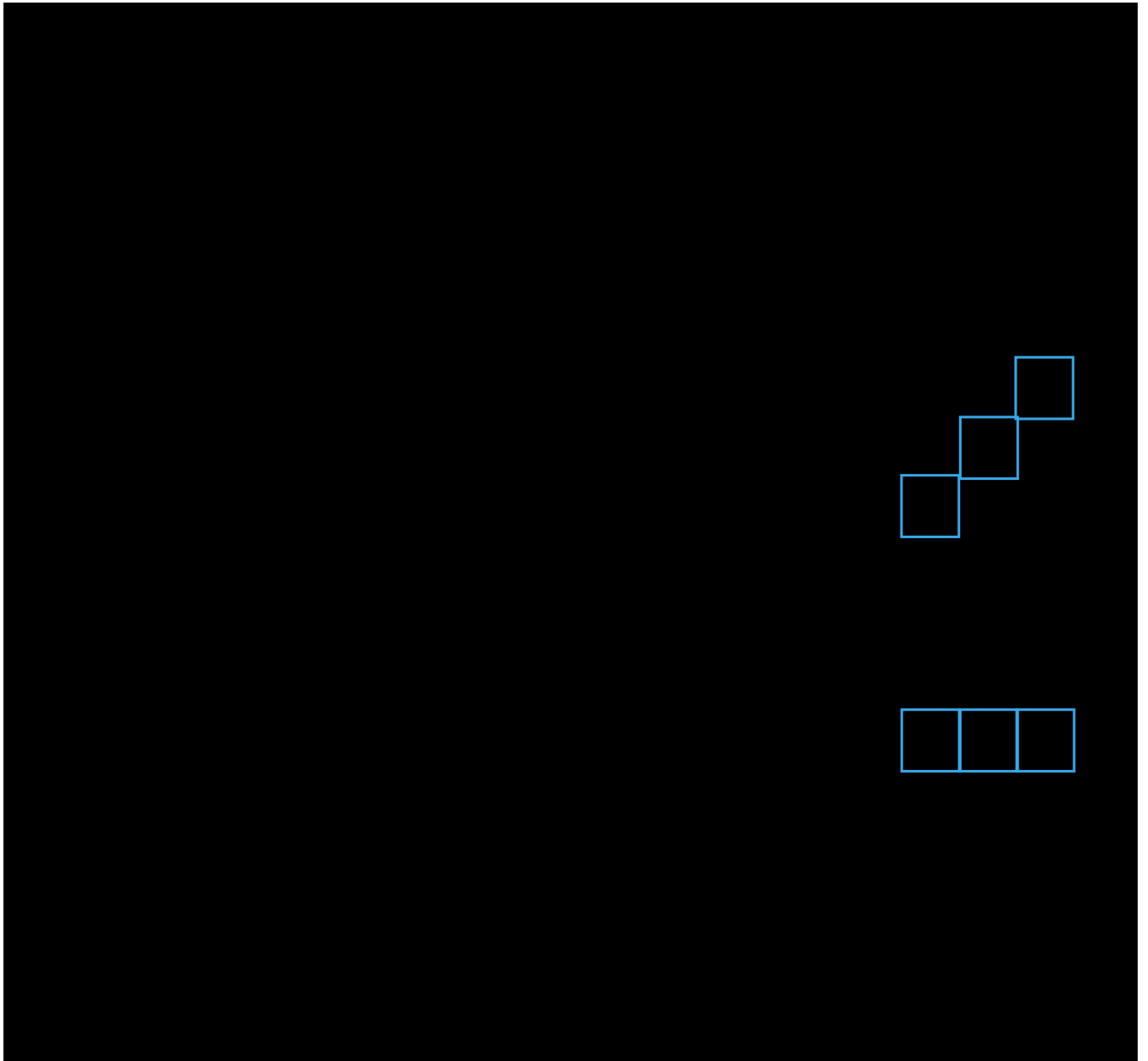
Fig. 37 Detail from Series 638–10D, Trial No. 2 (dated 7 September 1961). (Original size: 16,2 × 24,3 cm). Shown at original size. Folder 621–650 hot-metal proof. *The Monotype Archives, Salfords.*



Fig. 38 Before Trial No. 2 was ready, the TDO had already pointed out to SFM the issue of clashing between these combinations of characters:

1. Characters 68/70
2. Characters 46/50
3. Characters 50/50
4. Characters 56/49
5. Characters 56/65

Detail from Series 638–10D, Trial No. 2 (dated 7 September 1961). Shown at 200% of original size. Folder 621–650 hot-metal proof. *The Monotype Archives, Salfords.*



Monotype Armenian's Matrix Case Arrangement for Series 638 (dated 27 February 1962). Characters having duplicate matrices are highlighted in blue. (Original size: 32,9 × 20,3 cm). Shown at 80% of original size. Folder 638. *The Monotype Archives, Salfords.*

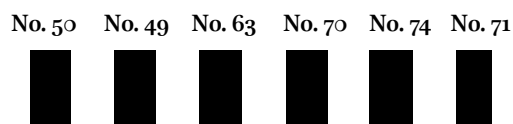


Fig. 39a Duplicate matrices were made for characters (No. 50, 49, 63, 70, 74, 71) to be used when preceded by No. 50. From Series 638-10D, Trial No. 2 (dated 7 September 1961). Shown at 200% of original size. Folder 621-650 hot-metal proof. *The Monotype Archives, Salfords.*

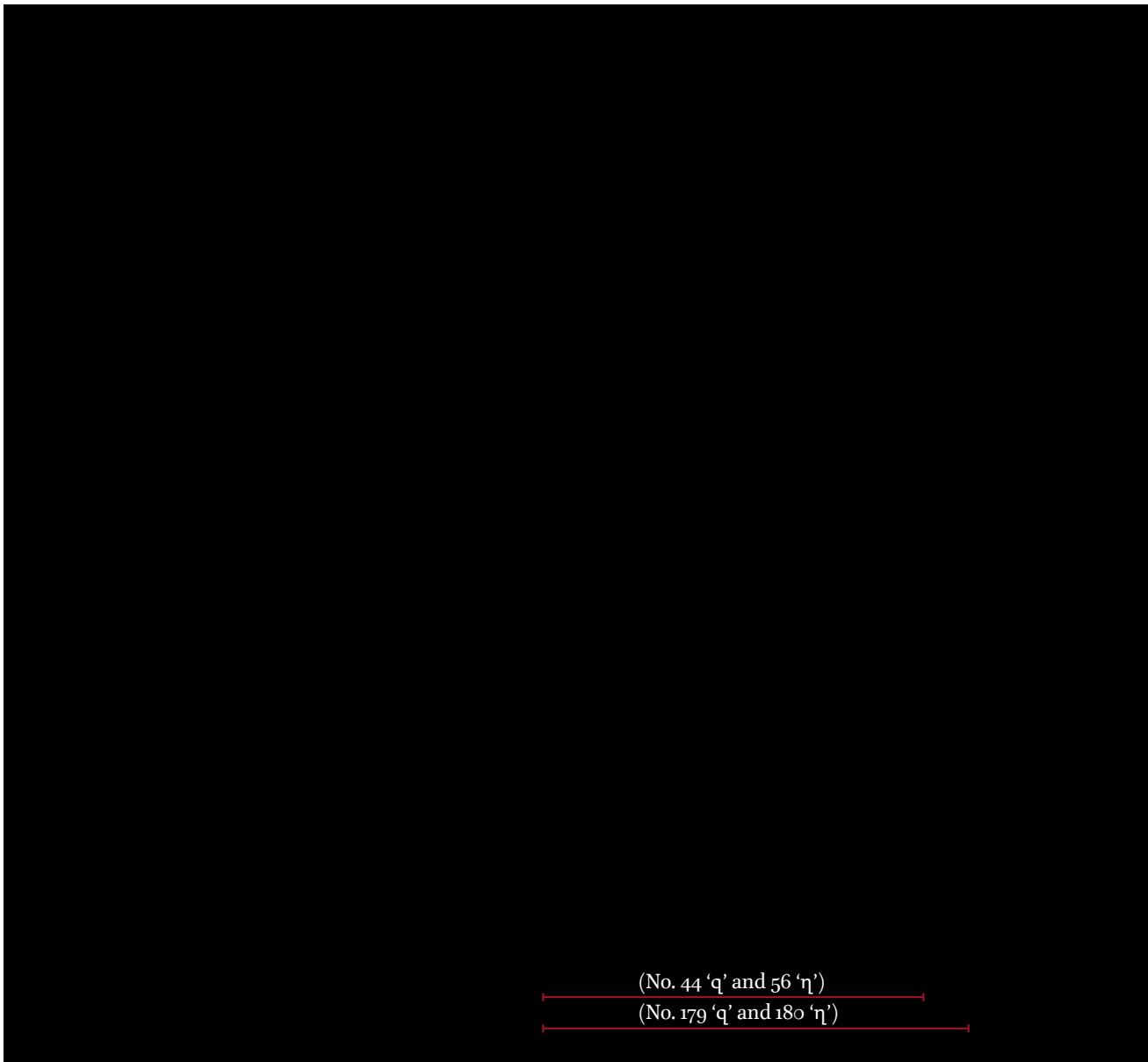
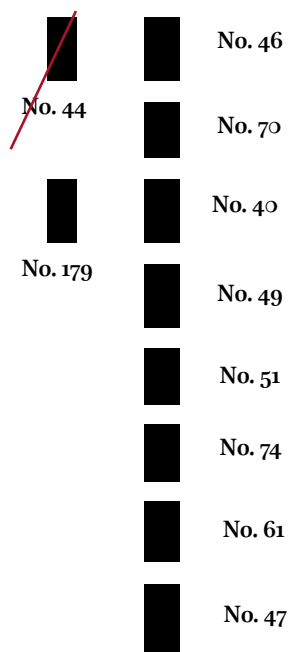


Fig. 39b Top: Pattern drawing of characters (No. 44 and 56) shows also the design of characters (No. 179 and 180). The red lines highlight the different unit value used in (No. 44 and 56) and (No. 179 and 180). (Original size: 34,5x31,8cm). Shown at 50% of original size. *The Monotype Archives, Salfords.*

Duplicate matrices on wider unit values were made for characters (No. 44, 56, 68). Thus, (No. 179, 180, 181) should have been used in place of (No. 44, 56, 68) when followed by (No. 40, 46, 47, 49, 59, 51, 61, 63, 65, 70, 71, 74).

Right: For example (No. 179) should be used instead of No. 44 when followed by (No. 46, 70, 40, 49, 51, 74, 61, 47). From Series 638–8D, Trial No. 1 (dated 19 April 1962). (Original size: 15,1 × 25,3 cm). Shown at 200% of original size. Folder 621–650 hot-metal proof. *The Monotype Archives, Salfords.*



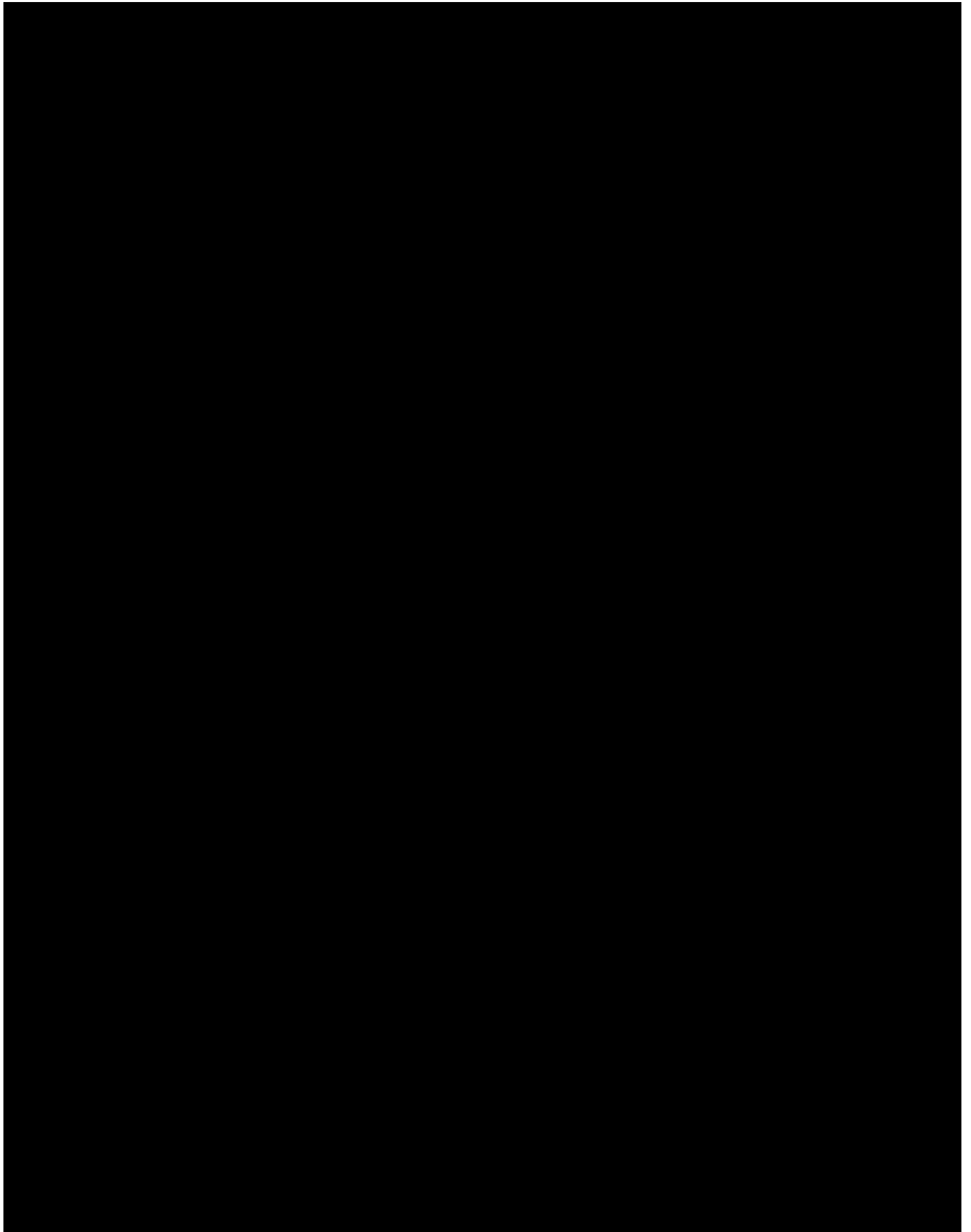


Fig. 40 Armenian Series 638 by Monotype. From the *Specimen Book of Monotype non-Latin faces* (Salfords, Monotype Corporation Ltd.). Shown at 80% of original size. *The Monotype Archives, Salfords.*

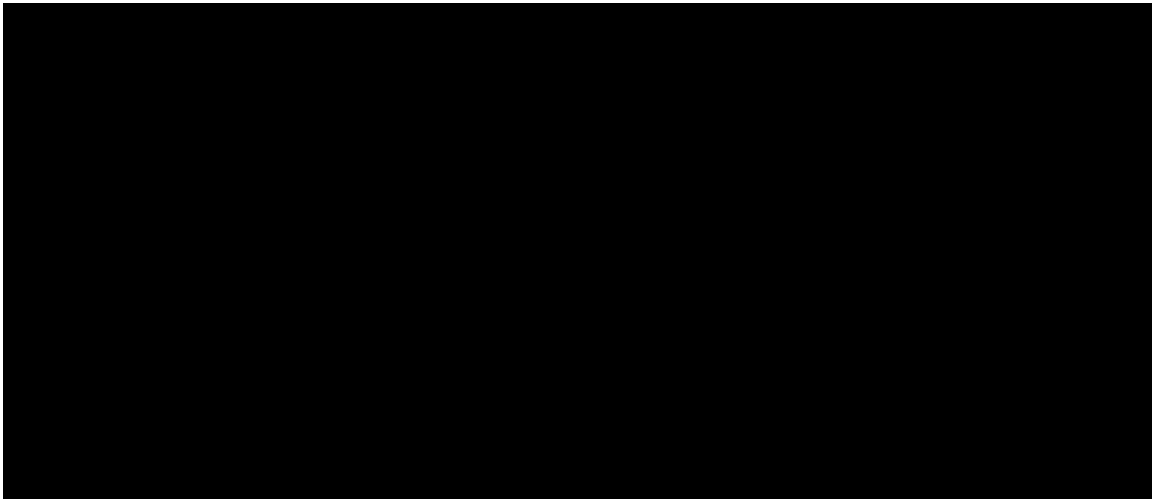


Fig. 41a Detail of Trial No. 2 (dated 7 September 1961). (Original size: 15,1 × 25,3 cm). Shown at 140% of original size. *The Monotype Archives, Salfords.*

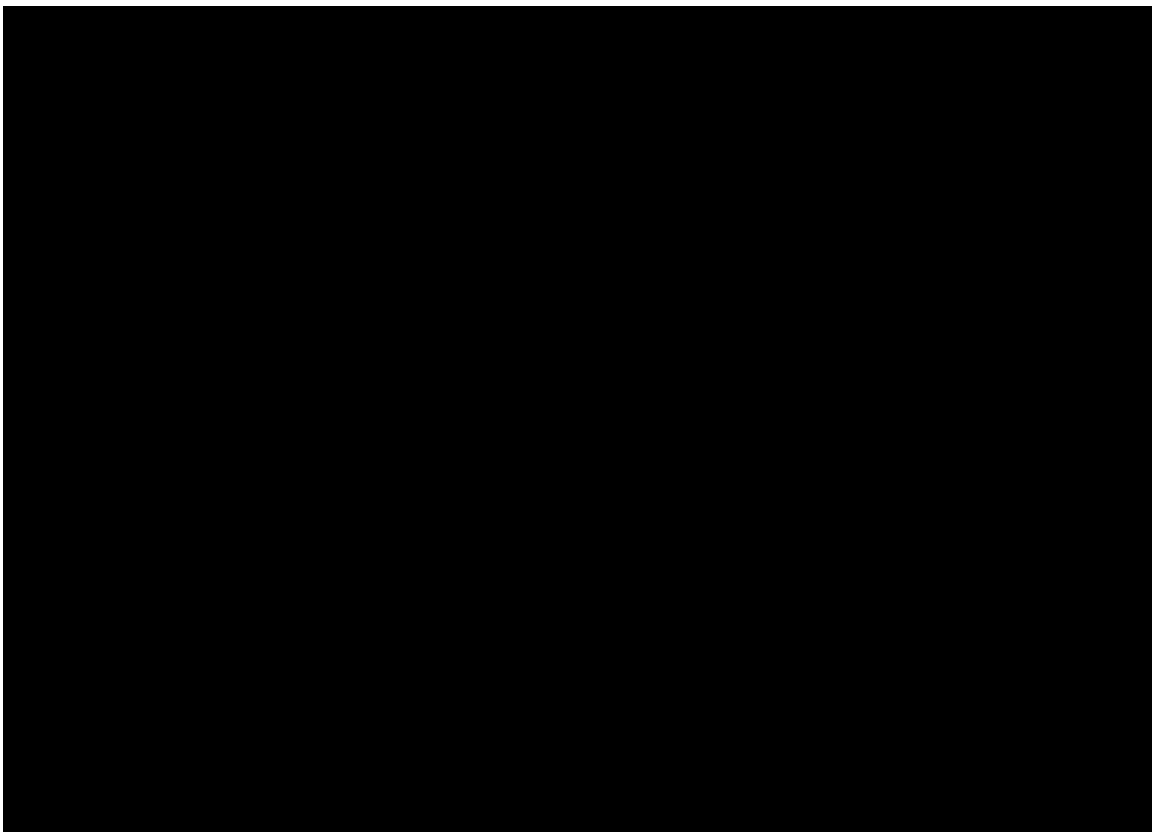


Fig. 41b Linotype Armenian characters. The twelve characters marked on Trial No. 2 by Monotype (**Fig. 41a**) were compared against those of the Linotype Armenian (**Fig. 41b**). (Original size: 16,2 × 24,3 cm). Shown at original size. Folder 638. *The Monotype Archives, Salfords.*

In March 1962 Monotype released Series 638 in Upright and Bolorgir styles in 10 pt size [Fig. 40].¹²² However, in April 1963 the Lebanese customer, Simonian, who had approved the design of all the Armenian characters on Trial No. 2 in November 1961, sent new comments on the project to Monotype. He was not satisfied with some Armenian characters of Series 638. He believed that some letterforms were not properly designed, affecting the quality of the typeface [Fig. 41a and 41b]. The reason for his change of opinion on the typeface is unclear. It is likely that using the typeface for a year enabled him to identify mistakes that he had not recognised from a mere proof. However, Monotype's reaction to Simonian's corrections lead to another possible interpretation: Simonian may have resented the extent to which the design diverged from Linotype's. Monotype was 'not prepared to make amendments for the sake of matching a competitor's typeface'.¹²³

A significant problem evident in Series 638, particularly in the Bolorgir, is the inappropriate proportions of letters, not necessarily determined by the constraints of the unit-width system, as displayed in character թ and զ. The head of թ is too narrow, whereas the tail of զ is shortened to the width of the upper bowl on its left side, causing an excessive bend over the right upper part of the letter [Fig. 42]. Another negative aspect of this typeface, which affects both styles, is the unusual stroke modulation that makes some letters look unstable and unfamiliar to Armenian speakers, as shown in ճ in the Bolorgir and թ in the Upright style [Fig. 43].

Despite the width constraints, Series 638 did not fully exploit the advantage of kerning offered by the Monotype system. This is particularly noticeable in the Upright style where letters have evident gaps, such as between ի – a tailed letter – and its successive letter [Fig. 44]. In some cases, in order to avoid kerning issues after tailed letters, some inelegant modifications are made to the design of letterforms such as Վ [Fig. 45].

Overall, it is surprising that Monotype used the Linotype Armenian, instead of a foundry type as a model. Despite the advantages of the Monotype system over the Linotype, the resulting design of Monotype Series 638 can be considered both unexpected and unsatisfactory, when compared to the Linotype Armenian and especially in comparison to earlier foundry types. The development of Series 638 raises some interesting issues regarding the complexities of composing and printing in Armenian, the quality of Armenian typefaces in the 20th century, and the impact of readers' preferences on the typographic development of the script.

One of the main problems of the Linotype Armenian was the inappropriate proportions of certain characters due to the limitations of the machine, and not only caused by the requirements of duplexing. However, one major issue in the Monotype Armenian Series

¹²² See: the *Monotype Newsletter*, 65 (March 1962), p. 5. According to the Monotype's index card for Series 638 a last proof for 8, 10 and 12 pt was done on 29 March 1962. Monotype Archives, Salfords, UK.

¹²³ Letter from E. A. Firmage to Harris (dated 3 April 1963). Armenian Folder. Monotype Archives, Salfords, UK.

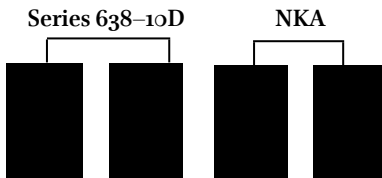


Fig. 42 Inappropriate proportions of letters.

Series 638-10D (Slanted). Detail from *Monotype Newsletter* no. 65, (March 1962). (Original: 21,4 × 27,9 cm). Shown at 300% of original size.

NKA is from Johann Joachim Schröder, *Thesaurus linguae armenicae* (Amsterdam, 1711). Images shown at 200% of original size.

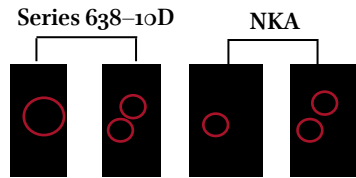


Fig. 43 Unusual stroke modulation.

Series 638-10D (Slanted). Detail from *Monotype Newsletter*, 65 (March 1962). (Original: 21,4 × 27,9 cm). Shown at 300% of original size.

NKA is from Johann Joachim Schröder, *Thesaurus linguae armenicae* (Amsterdam, 1711). Images shown at 200% of original size.

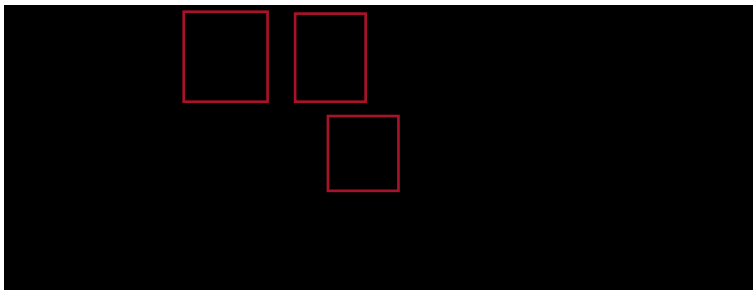


Fig. 44 Kerning issue in Series 638-10D (Upright). Detail from *Monotype Newsletter*, 65 (March 1962). (Original: 21,4 × 27,9 cm). Shown at 300% of original size. *The Department of Typography and Graphic Communication of the University of Reading.*

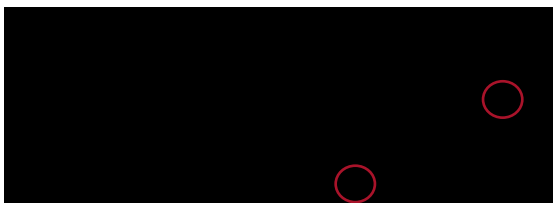


Fig. 45 Missing tails in letters ɥ and q in Series 638-10D (Upright). Detail from *Monotype Newsletter*, 65 (March 1962). Shown at 300% of original size.

638 was the inability to take advantage of the major benefit provided by the Monotype system: kerning. Another problem was the proportions of letters, some probably caused by rigidity of the unit-width system. Regardless of the technical aspects, the lack of cooperation between the Monotype Matrix Department and the Monotype Type Drawing Office significantly affected the development of the typeface. In any event, Monotype Series 638 cannot be considered superior to the Linotype Armenian typeface.

The introduction of new technologies¹²⁴ increased the production of copies of existing successful typefaces rather than inspiring original designs. Copying foundry type designs was normal practice for mechanical casting; customers would often request companies to copy the designs created by founders of movable type for hand-composition.¹²⁵ Therefore, the tendency of Monotype customers to seek a copy of the Linotype Armenian may not have been unusual.

The Linotype Armenian was deemed by the Diaspora to be the model of Armenian typeface excellence. This is highly surprising if one considers the rich heritage of Armenian culture and its associated wealth of manuscript tradition. From the case of the Monotype hot-metal typeface development, one may infer that the reaction of readers to printed material had a major role in determining the acceptance or the refusal of new standards in Armenian type design.

¹²⁴ The electrotyping of matrices in 1850 is an early example of technology that involved the infringement of copyrights.

¹²⁵ Fiona Ross, *The printed Bengali*, p. 171.

4.4 Business relationship

The different systems developed by Monotype and Linotype for their composing machines made the two companies natural competitors in the composing and printing trade, despite them targeting different market segments. This did not deter them from entering friendly cooperative agreements on several occasions:¹²⁶ the internal correspondence between Mergenthaler Linotype (MLCo) and Linotype & Machinery (L&M) in September and October 1958 about the development of an Armenian typeface by Monotype in Salfords (Series 638) shows the nature of such cooperation between Monotype and Linotype, and reveals some information about non-Latin typeface protection for hot-metal technology.

As mentioned in the previous section, on receiving the Type Drawing Office's proposal in 1958, Monotype's prospective customer for Armenian, L. Pitsi – chief of the Printing House Ceuterick¹²⁷ in Louvain, required the Company to simplify the design of the uppercase letters by using those of the Linotype Armenian No. 1 as a basis.¹²⁸ Following that request, John Dreyfus – Typographic Adviser to the Monotype Corporation – decided to approach L&M in London, with a view to clarifying the question of the reproduction rights of Linotype Armenian's design, as well as requesting Linotype to supply slugs, specimen sheets and other manufacturing information. These would spare the TDO from having to draw the capital letters from mediocre material while speeding up the whole project.

The business was transacted between Dreyfus and Walter Tracy, as they were both in the UK. Instead of reaching out directly to MLCo that had been in charge of developing Armenian typefaces for Linotype since early 1900s, Dreyfus broached the subject with the manager of the L&M, Walter Tracy. Dreyfus's choice to contact Tracy may be justified by the fact that Monotype and Linotype were both in England (London), thus ensuring a more straightforward communication between the two companies. On the other hand, Dreyfus might have been persuaded to approach L&M instead of MLCo, supposing that Tracy's 'personal cordial private ... relationship'¹²⁹ with him would make the deal easier for Monotype.

Their personal relationship did not deter Tracy from attempting to 'steal' Monotype's customer. Dreyfus had revealed to Tracy that the request for an Armenian typeface came from a particular customer in Belgium, who specialised in scholarly

126 The co-operation between Monotype and Linotype was not exclusive. For example, at the close of 1957 Monotype Corporation in Salfords obtained from Deberny & Peignot the rights to reproduce for Monotype composing machines the Univers family's text sizes, up to and including 14pt. Southall, *Printer's type in the twentieth century*, p. 107.

127 The Printing House Françoise Ceuterick was established in Louvain (60 rue Vital Decoster) in 1804. It specialised in scholarly, scientific, and religious publications. In 2000 Ceuterick was taken over by the Orientalist Printing (Peeters) in Louvain.

128 See Section 4.3 of this chapter.

129 Letter from Walter Tracy to Jackson Burke (dated 17 September 1958). Box 9911, Non Roman scripts Folder. Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA.

publications,¹³⁰ and Tracy wrote to Jackson Burke, the Director of Typographic Development at MLC: 'I did not mention to Dreyfus that Tage [Bolander] has written to our Belgium Office urging them to make approaches to the Monotype customer, whom they should know, describing the facilities available.'¹³¹

Since Dreyfus pointed out that he did not expect Monotype to make many other sales of the forthcoming Armenian project, Tracy promptly suggested that Dreyfus should advise his customer to obtain Armenian composition from a suitably-equipped Linotype user either in Europe or in the East. Dreyfus doubted that the customer would have been inclined to have the Armenian job handled by a printing establishment in the East, due to the difficulty of getting work of a 'tolerable standard' there.¹³² Moreover, it was most unlikely that the customer would install a Linotype machine for the purpose: it was expected that a printing house specialised in scholarly publications would be attracted by the quality printing offered by the Monotype machine, which was the 'only existing type-casting and setting machine capable of high class printing'.¹³³ This would also explain the Belgian customer's choice to approach Monotype instead of Linotype.

The fact that Dreyfus and Tracy were both actively involved in establishing the Association Typographique Internationale (ATypI)¹³⁴ meant that they had already been able to share views on issues related to unauthorised reproduction of typefaces.¹³⁵ The purpose of ATypI was to 'unite all those who, being professionally concerned with the art of typography, were agreed on the need to keep the art alive, and to protect its basic principles against the development of new techniques which might threaten them'.¹³⁶ One of the main objectives of ATypI was to establish among members a code of authors' rights in typographic material, with the intention to have it recognised and adopted

130 Ibid.

131 Ibid.

132 Ibid.

133 'Prospectus for sale of shares in the Lanston Monotype Corporation'. December 1897, in Judy Slinn, Sebastian Carter and Richard Southall, *History of the Monotype Corporation* (Printing Historical Society and Vanbrugh Press, 2014), p. 27.

134 Charles Peignot established the Association Typographique Internationale (ATypI) in 1957. Dreyfus and Charles Peignot met in 1948. Southall, *Printer's type*, p. 107.

135 On June 1956 thirty leading figures in the field of printing and the graphic arts met in Paris to study the possibility of forming an International Typographical Union on a non profit-making basis (today ATypI). On that occasion, a provisional committee, with members from England, France, Holland, Italy and Switzerland was set up to draft statutes and to prepare for the convening of a Constitutive Assembly. John Dreyfus, Walter Tracy and Stanley Morison became the English members to take part in the committee. *Notice* (undated). Copyright Folder. The Monotype Archives, Salfords.

136 *Notice* (undated). Copyright Folder. The Monotype Archives, Salfords.

internationally.¹³⁷ Thus, in dealing with the reproduction rights for the Armenian No. 1, Dreyfus and Tracy had to act in accordance with the principles established by ATypI.

Dreyfus explained to L&M that Monotype was willing to pay for all material Linotype would supply, as well as for the favour shown in the transaction as a mark of appreciation of cooperation, but it did not intend to pay for any reproduction rights for the Armenian No. 1 – as the design was over 30 years old. Even though Tracy was aware that Dreyfus reference to 30 years was ‘in regard to the draft rules for the type face protection now before A.T.I.’,¹³⁸ he was of the opinion that there was a ‘practical difference between a roman typeface done 30 years ago and subject to change of fashion and popularity during the years, and an Oriental script, which however long ago it might have been produced, remains the only and constant version – as saleable now as it ever was.’¹³⁹

Monotype would have been able to copy the Armenian No. 1 (and also No. 2) without the need to pay MLCo for any reproduction rights. Tracy considered that a 30-year protection would have been justifiable for Latin typefaces, but was relatively short for non-Latin scripts types, particularly for those like Linotype Armenian No. 1 and No. 2 that were still very popular among readers and also the only hot-metal typeface on the market. However, Dreyfus thought that this was ‘probably academic in this case since M.L.Co. probably worked in the first place on the basis of existing Armenian foundry type.’¹⁴⁰

Jackson Burke, Director of Typographic Development at MLCo, supported Tracy’s opinion on Armenian:

In my opinion our ‘control’ of the Armenian design rests in our having done the work we have on it. We have and can make available the materials which will save Monotype Corporation time and money. Monotype’s payment should recognize this fact and not be any ‘mark of appreciation of cooperation.’¹⁴¹

¹³⁷ Prior to the establishment of ATypI, protection against unauthorised reproduction of typefaces could be made under two international conventions: the Paris Convention for the Protection of Industrial Property (1883), which enabled non-nationals to protect a new typeface design for up to 15 years, and the Hague Convention concerning the International Deposit of Industrial Design (1934), which also offered 15 years of protection from unlawful copies in Egypt, West Germany, Belgium, Monaco, Morocco, the Netherlands, Switzerland, Spain, Surinam, Tunisia, Vietnam, France, Indonesia, Lichenstein, Italy and East Germany.

Criteria for protection were novelty and originality. However, the lack of clarity on such terms had made it very difficult to convey when a typeface can be considered original and new. In the 1983 ATypI meeting in Frankfurt, the committee drafted some guidelines for the trade and courts of law, suggesting definitions for new and original as well as proposing a number of parameters that characterised originality. See: Edward Gottschall, ‘The State of the Art in Typeface Design Protection’, *Visible Language*, XIX, 1 (Winter, December 1985), pp. 149–155

¹³⁸ ATypI.

¹³⁹ Letter from Walter Tracy to Jackson Burke (dated 17 September 1958). Box 9911, Non Roman scripts Folder. Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA.

¹⁴⁰ Ibid.

¹⁴¹ Letter from Jackson Burke to Walter Tracy (dated 8 October 1958). Box 9911, Non Roman scripts Folder. Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA.

Despite the rivalry between Monotype and Linotype, there was a well-settled cooperation between them. There were precedents showing that both companies had exchanged materials, such as the 'facilities' (probably slugs) Linotype had made available to Monotype to produce Bell Gothic (Monotype Series 619). However, this was a commercial transaction, rather than a friendly cooperation. According to MLCo, the Armenian transaction would have to take place in a similar, professional way.¹⁴² Linotype had to act with caution towards Monotype's request concerning the Linotype Armenian typefaces, considering that:

There is a possibility that we (which may include MLCo) might find ourselves in the position of making a comparable request to Monotype for the right to imitate their version of Thai, or even of some other script such as Gujarati.¹⁴³

At the time L&M, dealing with its Sales Department's urgent request to complete the production of the Britannia sans-serif family for the Royal Thai Embassy in London, needed to quickly complete matrices for the composition of Siamese and to begin working on Gujarati matrices. This demanding schedule compelled L&M to find a solution that would enable the Company to save time and to meet all the deadlines: to ask Monotype for its facilities of Thai and Gujarati was probably L&M's most reasonable option.¹⁴⁴

A month after Dreyfus had approached Tracy, L&M and MLCo had not reached a decision to proceed with the negotiations regarding Armenian type development. What delayed the operation was Burke's indecision on the method of payment: his initial thought on the Armenian transaction was that MLCo could provide Monotype the needed materials on a charge basis similar to the Bell Gothic transaction, but also apply an additional charge on a per character basis. However, charging the Armenian project on a per character basis might not have been in Linotype's favour if dealing with Monotype to receive support for a Siamese (Thai) typeface, due to the larger Thai character set.¹⁴⁵

Tracy's reply to Dreyfus in October 1958 suggests that MLCo and Monotype would have not reached an early agreement about the manufacturing of Armenian, and that despite Burke's willingness to share its Armenian materials with Monotype, he was also of the opinion that it would be in Linotype's best interest, if Monotype's customer used existing Linotype facilities.

¹⁴² Ibid.

¹⁴³ Letter from Walter Tracy to Jackson Burke (dated 17 September 1958). Box 9911, Non Roman scripts Folder. Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA.

¹⁴⁴ Letter from Walter Tracy to Jackson Burke (dated 14 October 1958). Box 9911, Non Roman scripts Folder. Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA.

¹⁴⁵ Ibid.

Jackson agrees with me that it would seem best from all points of view for your customer to get his Armenian composition from a Linotype-equipped house; and he points out that such composition could, for example, be done in the United States. He is inclined to agree with your request in principle, but cannot yet state the form in which agreement would be given because this subject is one of several non-roman matters he needs to discuss with a number of Mergenthaler people who are at present abroad.¹⁴⁶

A favourable reception by Monotype's customer to use existing Linotype facilities would have enabled MLCo to remain the sole vendor of Armenian No. 1 and No. 2, thus perpetuating its control on the market for Armenian hot-metal composition. The work on Armenian Series 638 began without MLCo's Armenian material and without obtaining permission to copy Armenian No. 1 and No. 2. Dreyfus's notification to L&M that Monotype would produce Armenian typefaces similar to those of MLCo, and that MLCo's Armenian design was more than 30 years old and a copy of existing foundry types, was sufficient to protect Monotype from Linotype's possible future claims.

The business relationship between L&M and Monotype can be seen as an example of fair practice. However, there have been several cases where fairness was not a significant concern. To copy popular types from previous or existing foundry types was common practice among hot-metal composing machine makers, particularly at the beginning of mechanical composition.¹⁴⁷ However, there are many precedents for this sort of action, in which punch-cutters stole and copied the design of successful types. Southall pointed out that 'from Gutenberg onwards new technologies for producing text have always begun by trying to match the appearance of the existing product. The typefounders themselves, when they had occasion to copy or steal one another's designs, had normally done so by electrotyping: a process that delivered exact copies of types without any drawing at all, but whose product was matrices rather than punches.'¹⁴⁸ Widespread in the 1840s, the practice of electrotyping – which consisted in using the galvanoplastic process to produce matrices, without the need of punch cutting – saw an increase in deliberate actions to plagiarise successful designs.¹⁴⁹ According to Ross, the greatest example of copying existing type designs by means of electrotyping is the Imperial and Government Printing Establishment at Vienna (Kaiserlich-Koenigliche Hof- und Staats-Druckerei) in the mid-nineteenth century.¹⁵⁰

146 Letter from Walter Tracy to John Dreyfus (dated 14 October 1958). Box 9911, Non Roman scripts Folder. Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA.

147 As John Dreyfus pointed out in *Visible Language*, 'new composing systems rarely lead to new text types until the new systems have become firmly established'. John Dreyfus, 'A turning point in type design', *Visible Language*, XIX, 1 (Winter, December 1985), p. 21.

148 Southall, *Printer's type*, p. 27.

149 Ross, *The printed Bengali*, p. 111.

150 Ross, *The printed Bengali*, p. 111.

The K.K. Hof- und Staats-Druckerei was established on 18 September 1804 under the Emperor Franz I and gained a worldwide reputation in the 1840s and 1850s under the direction of Alois Auer von Welsbach (1813–1869).¹⁵¹ Auer's overarching objective was to raise the Establishment from a period of decay caused by the unfortunate management of Auer's predecessor. To do so, he reorganised the imperial printing by carrying out some important changes, such as: the casting of old and new types according to a new typometrical system¹⁵² he introduced, the establishment of punch cutting, galvanoplastic, photography and chemotypy departments, and the publishing of several oriental works.¹⁵³ Printing in any of the languages used on the whole globe were done by 'copying and cutting punches after documents of different centuries, and countries, in order to have the same printed similar to the originals'.¹⁵⁴ Auer's concern for originality and for professional ethics was secondary to owning a substantial collection of foreign types that would enable the Austrian imperial printing to surpass the reputation of the *Propaganda Fide* and the *Imprimerie Nationale*. Ross noted that:

For some curious reason the K.K. Hof- und Staats-Druckerei considered itself exonerated from any charge of professional misconduct. ... It copies for its own use only, and does not permit any galvanic production or copies to be used elsewhere. ... But it failed to mention by what authority the Staats-Druckerei obtained the right to copy founts even for its own use.¹⁵⁵

At the London Exhibition in 1851, the K.K. Hof- und Staats-Druckerei was awarded the only Council Medal, and the Medal for typography, in recognition of the 'novelty of invention or new application of a known principle'.¹⁵⁶ The K.K. Hof- und Staats-Druckerei was distinguished for its 'new processes in typography, galvanoplastic, and chemytypic printing; for the variety of their Oriental types, and perfect execution of the punches, as well as for the general excellence of the numerous specimens exhibited in stereotyping, electrotyping, printing, and bookbinding'.¹⁵⁷ The jury was particularly impressed by the K.K. Hof- und Staats-Druckerei's 'beautiful' and 'rich' collection of oriental types: more than a hundred different sorts – either engraved or cast – as well as typographic plates obtained by means of the galvanic process¹⁵⁸ were exhibited in 1851.¹⁵⁹ However, none of K.K. Hof- und Staats-Druckerei's types presented at the exhibition were original designs. In order to appreciate the potential of technological innovation in the production of typefaces,¹⁶⁰ Auer encouraged comparisons between

151 Auer was appointed director of the K.K. Hof- und Staats-Druckerei in 1841. Alois Auer, *Geschichte der K.K. Hof- und Staats Druckerei in Wien* (Vienna, K.K. Hof- und Staats-Druckerei, 1851), pp. 200, 204.

152 A system that enabled calculating and measuring accurately the height, breadth and thickness of each letter. The system was based on the Viennese 'thumb'. Auer, *Geschichte*, p. 206.

153 Ibid. pp. 206, 208.

154 Ibid. p. 208.

155 Ross, *The printed Bengali*, p. 116.

156 Alois Auer, *Der polygraphische Apparat der K.K. Hof- und Staatsdruckerei zu Wien* (Vienna, K.K. Hof- und Staats-Druckerei, 1853), p. 48.

157 Auer, *Der polygraphische*, p. 50.

158 Auer, *Der polygraphische*, p. 48. This process enabled the Establishment to produce matrices for all languages in copper. From electrotyped matrices 'million of copies may be printed without any appearance of wear and tear'.

159 Ibid. p. 48.

160 Therefore the faithfulness of the replicas.

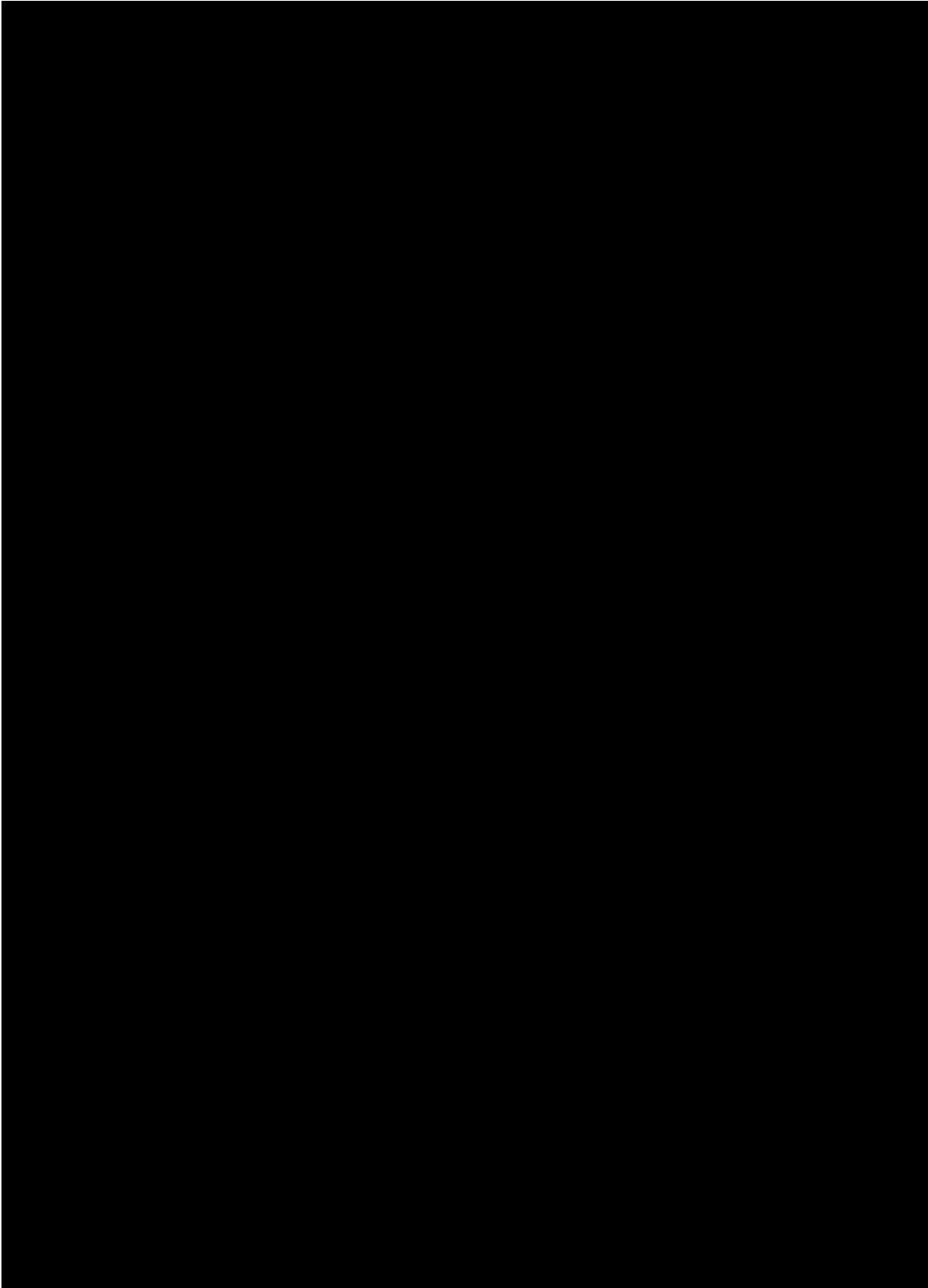


Fig. 46 Auer's *Sprachenhalle*, 'Die Schriftzeichen des gesammten Erdkreises' (Vienna, 1849). (Original size: 80 × 57 cm). Shown at 30% of original size. *The British Library*.

K.K. Hof- und Staats-Druckerei's types and their original models.¹⁶¹ Among the specimens presented at the London Exhibition, noteworthy is Auer's large folio imprint *Sprachenhalle*, produced from 1844 to 1847 [Fig. 46]. *Sprachenhalle* was meant to form a contribution to the study of comparative philology and the progress in the field of non-Latin typesetting. However, this can be considered an example of publication that shows the wealth of a nation and its cultural and geographic dominance.¹⁶² The sheets forming the second section contains the text of the Lord's Prayer printed in 206 different non-Latin types.¹⁶³ For Armenian, the K.K. Hof- und Staats-Druckerei reproduced the Armenian type (Colonel Antiqua) owned by the Mekhitarist Congregation in Vienna, as well as using the 'Lord's Prayer' from the Mekhitarists to typeset the text in classical and vernacular languages [Fig. 47].¹⁶⁴

The K.K. Hof- und Staats-Druckerei increased its repertoire of Armenian typefaces in its *Schriftproben* from 1910, by presenting different sizes and styles of Armenian typefaces. Once again, none of these are original designs, as text typefaces in Bolorgir style and the various Display types are based on typefaces owned by the Mekhitarists in Vienna [Fig. 48].

The unauthorised copies of the Mekhitarists' Armenian typefaces by the Austrian imperial press did not exceed the reputation of their original models.¹⁶⁵ Indeed, the establishment kept supplying Armenian typefaces worldwide well into the twentieth century. Even though the Armenian types of the K.K. Hof- und Staats-Druckerei did not influence the design of subsequent Armenian typefaces, the Establishment has the credit of experimenting with new technology in the field of non-Latin typography.

The example of the K.K. Hof- und Staats-Druckerei shows that progress in technology has encouraged copies of existing typefaces rather than original designs, and that type-makers may consider it acceptable to plagiarise successful designs when these are produced for a different printing technology. The practice to plagiarise competitors' typefaces would intensify with the development of hot-metal and phototypesetting technologies.

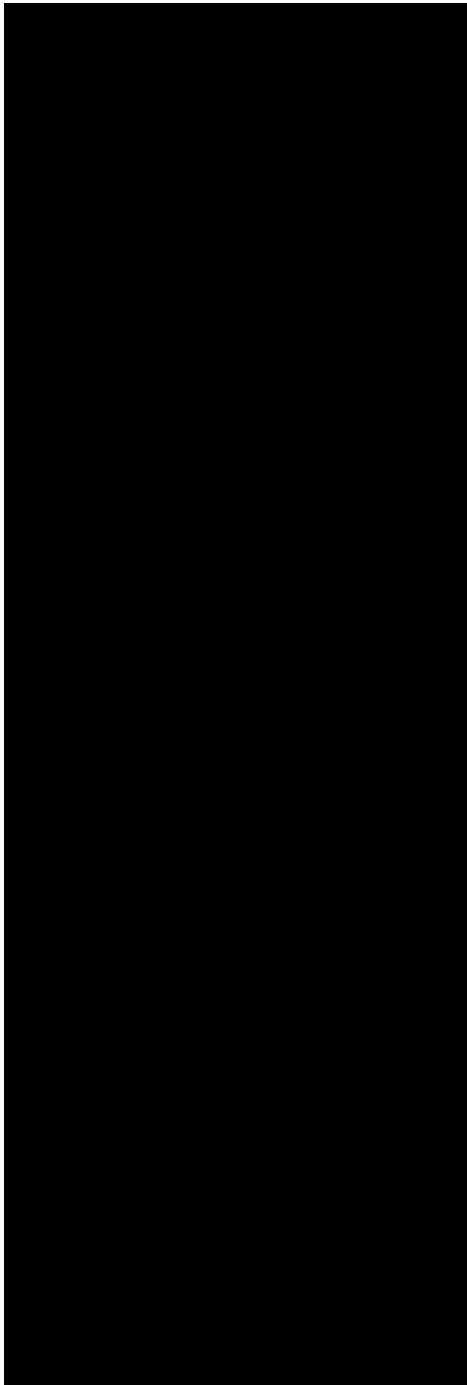
161 Ross, *The printed Bengali*, p. 114.

162 Ross, *The printed Bengali*, p. 117.

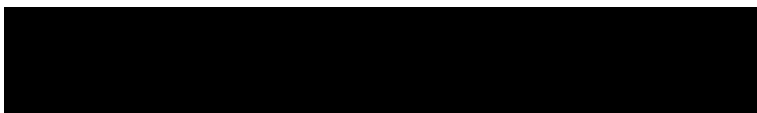
163 The second section of *Sprachenhalle* is entitled: 'Die zweite Abtheilung, das Vater Unser in mehr als 206 Sprachen und Mundarten, enthält die von mir neuerdings gesammelten verbesserten Vater-Unser in den Völkern eigenthümlichen Schriftzügen mit der der betreffenden Aussprache und wörtlichen Uebersetzung'.

164 Armenian also appeared in Auer's *Sprachenhalle* on sheet A of 'Die Schriftzeichen des gesammten Erdkreises'.

165 In order to find some information on the 1840s and 1850s K.K. Hof- und Staats-Druckerei's Armenian typefaces, the author studied some documents from 'Alois Auer, Direktor der k. k. Staatsdruckerei' and 'Auer, Alois 1839–1857' held at the Austrian Staats Archive. However, among these documents it was neither possible to find any information on the K.K. Hof- und Staats-Druckerei's Armenian typefaces nor on the Armenian typefaces owned by the Mekhitarists in Vienna.



a



b

Fig. 47 The 'Lord's Prayer' in Armenian with transliteration in Latin characters and translation in German. The Armenian typeface in (a) is based on the Mekhitarists' typeface that appears in (b).

a Detail from Auer's *Sprachenhalle*, 'Die Schriftzeichen des gesammten Erdkreises' (Vienna, 1849). (Original size: 80 × 57 cm). Shown at original size. *The British Library*.

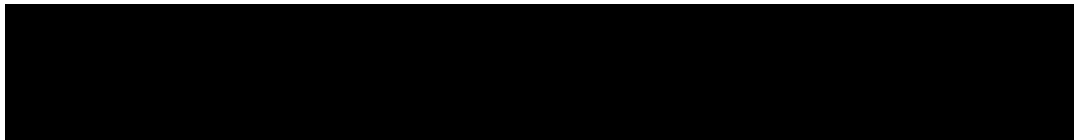
b Detail from *Eine Skizze der literarischtypographischen Thätigkeit der Mechitaristen-Congregation in Wien* (Wien, Druck und Verlag der Mechitharisten-Congregations-Buchdruckerei, 1898). (Original size: 14 × 20 cm). Shown at original size. *The Austrian National Library, Vienna*.



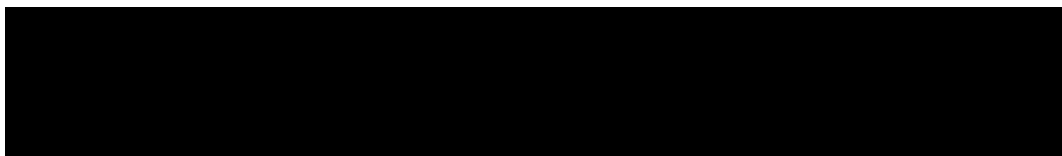
a



b



a



b

Fig. 48 Some examples showing that the K.K. Hof- und Staats-Druckerei's text typefaces in Bolorgir style and display types were based on typefaces owned by the Mekhitarists in Vienna.

a Details from *Schriftproben* (Vienna, K.K. Hof- und Staats-Druckerei 1910). (Original size: 14,1 × 29,7 cm). Shown at original size. *The Austrian National Library, Vienna*.

b Detail from *Eine Skizze der literarischtypographischen Thätigkeit der Mechitaristen-Congregation in Wien* (Wien, Druck und Verlag der Mechitaristen-Congregations-Buchdruckerei, 1898). (Original size: 14 × 20 cm). Shown at original size. *The Austrian National Library, Vienna*.

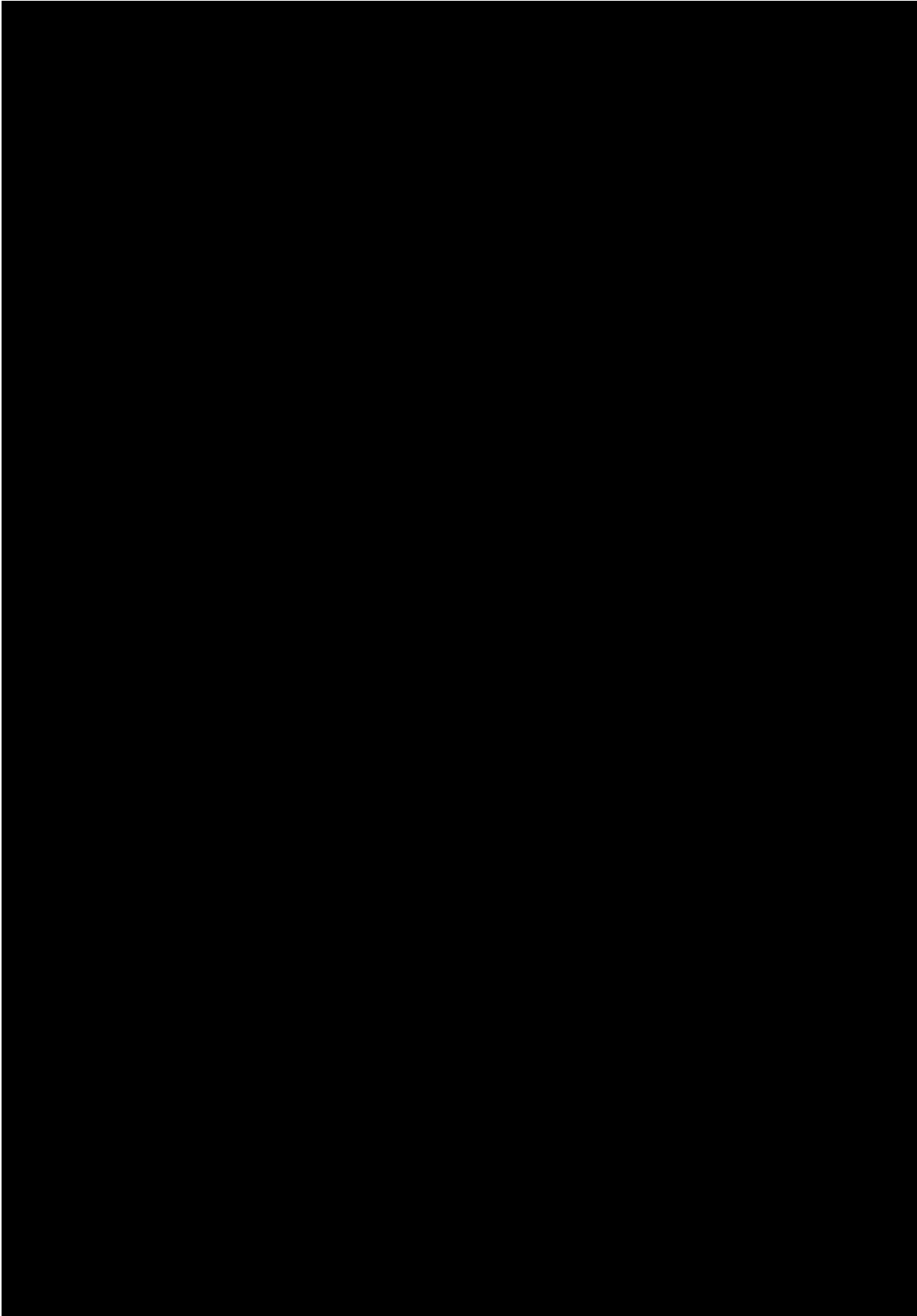


Fig. 49 Onnik Awetisean, Հայ ցուպագրական նոր ծանրագիրը (Beirut, Atlas, 1968). (Original size: 16,8 × 24,3 cm). Shown at original size. *The British Library*.

4.5 Onnik Awetisean endeavours in Armenian type design

A pamphlet entitled *Հայ փայտագրական նոր ծանրագիրը* (New lowercase letters for printing in Armenian), written by the artist Onnik Awetisean (1898–1974), was published in Beirut in 1968 using an innovative Armenian typeface he had designed [Fig. 49]. The pamphlet summarises the studies that Awetisean began in 1936 and that were first published in his noteworthy book on the modernisation of Armenian typefaces, *Փորձ ժը փայտագրական փաստերու բարեփոխութեան և արդիականացման*,¹⁶⁶ published in Cairo in 1946 by the Executive Body of the Armenian National Fund [Fig. 50]. The 1946 publication is extensive – a book of about 150 pages containing information on Armenian writing, type, typography, observations on the shortcomings of Armenian typefaces, and Awetisean’s experiments on reforming the printed letters of the Bolorgir style [Fig. 51]. The 1968 pamphlet (16 pages) was specifically prepared to display the new types and to promote its sale and use among Armenians in Diaspora and Soviet Armenia.¹⁶⁷ Awetisean’s typeface is noteworthy as it is representative of the attempt to reform Armenian printed letters in the 1920s in Soviet Armenia and the Diaspora, as well as of the struggle for Armenians to keep pace with new type-making technologies.

Onnik Awetisean was born in 1898 in the town of Brusa (Bursa) in Turkey, but moved to Constantinople in his childhood. In 1921 he moved to Vienna to study painting and etching by aquafortis at the Vienna State Institute of Graphic Arts, and in 1925 he went to Rome, where he graduated at the Academy of Arts two years later. About 1928 he moved to the Middle East – first to Syria and Palestine – and then to Egypt.¹⁶⁸ For health reasons he moved to Cyprus in 1936, where he worked as a teacher for five years, while taking part in the artistic life of Nicosia. It was during his stay in Cyprus that Awetisean embarked on the reform of Armenian printing types.¹⁶⁹ Awetisean’s interest in amending the Bolorgir style was stimulated by the 1932 initiative of the Armenian government¹⁷⁰ to further the progress of Armenian culture. The Armenian government saw in the reformation of the shapes of the traditional Bolorgir style the possibility to lower the cost of printing and to improve the appearance of Armenian books.¹⁷¹ In

166 (P’ordz më hay tbagrakan tareru barep’okhut’e’an ew ardeakanats’man). *An essay on the improvement and modernisation of Armenian typographic characters.*

167 The Armenian Soviet Socialist Republic (Armenian SSR) was established in December 1920, when the Soviets took over control of the short-lived First Republic of Armenia (formed in 1918). The Second Republic of Armenia was established in 1991.

168 In 1929 the Egyptian government purchased one of his engravings for the Cairo State Museum of Modern Art, while he participated at various exhibitions in Cairo, Los Angeles, Alexandria, and Bucharest; his artistic achievement was praised in articles in local Arabic, French, Italian and Armenian press.

169 Onnik Awetisean, *Փորձ ժը փայտագրական փաստերու բարեփոխութեան և արդիականացման* (Cairo, Executive Body of the Armenian National Fund, 1946), pp. 7–9. For more information on the life and artistic activity of Awetisean, see: Onnik Awetisean, *Peintres et sculpteurs arméniens du 19eme siècle à nos jours* (Cairo, Amis de la Culture Arménienne, 1959), pp. 321–324.

170 The Armenian Soviet Socialist Republic.

171 Awetisean, *Փորձ ժը փայտագրական փաստերու բարեփոխութեան և արդիականացման*, p. 18.

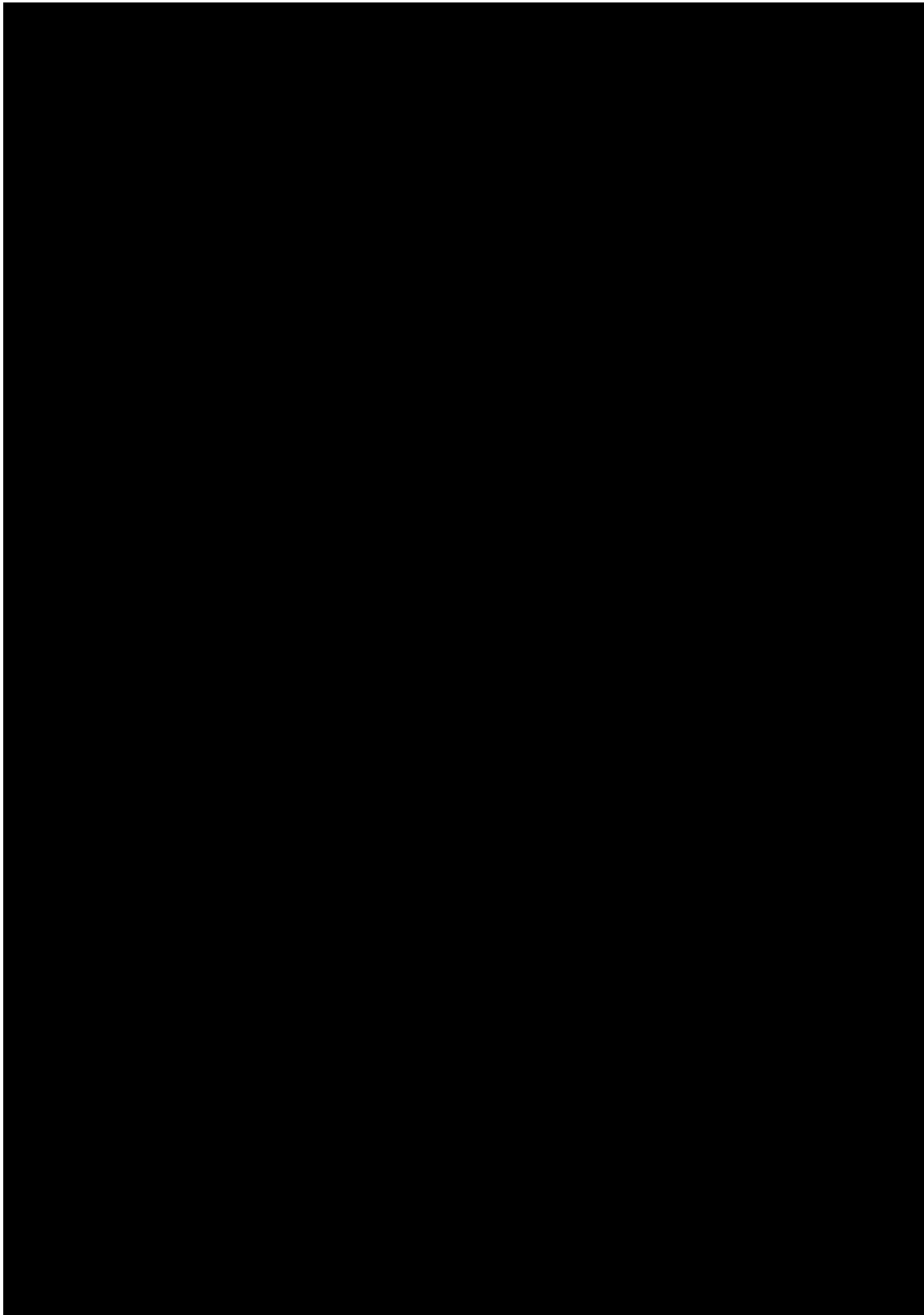


Fig. 50 Փորձ ՆՐ ԿԱՍՏԱՆԿԱՆ ԿԱՍՏԱՆԿՐՈՒ ՔԱՐԵՎՈՒՄԻՅԱՆ և ԱՐԴԻՒՍԿԱՆԱԿՆԻՍՆԻ (Cairo, the Executive Body of the Armenian National Fund, 1946). (Original size: 18,7 × 26,6 cm). Shown at 80% of original size. *Bibliothèque Nationale de France, Paris.*

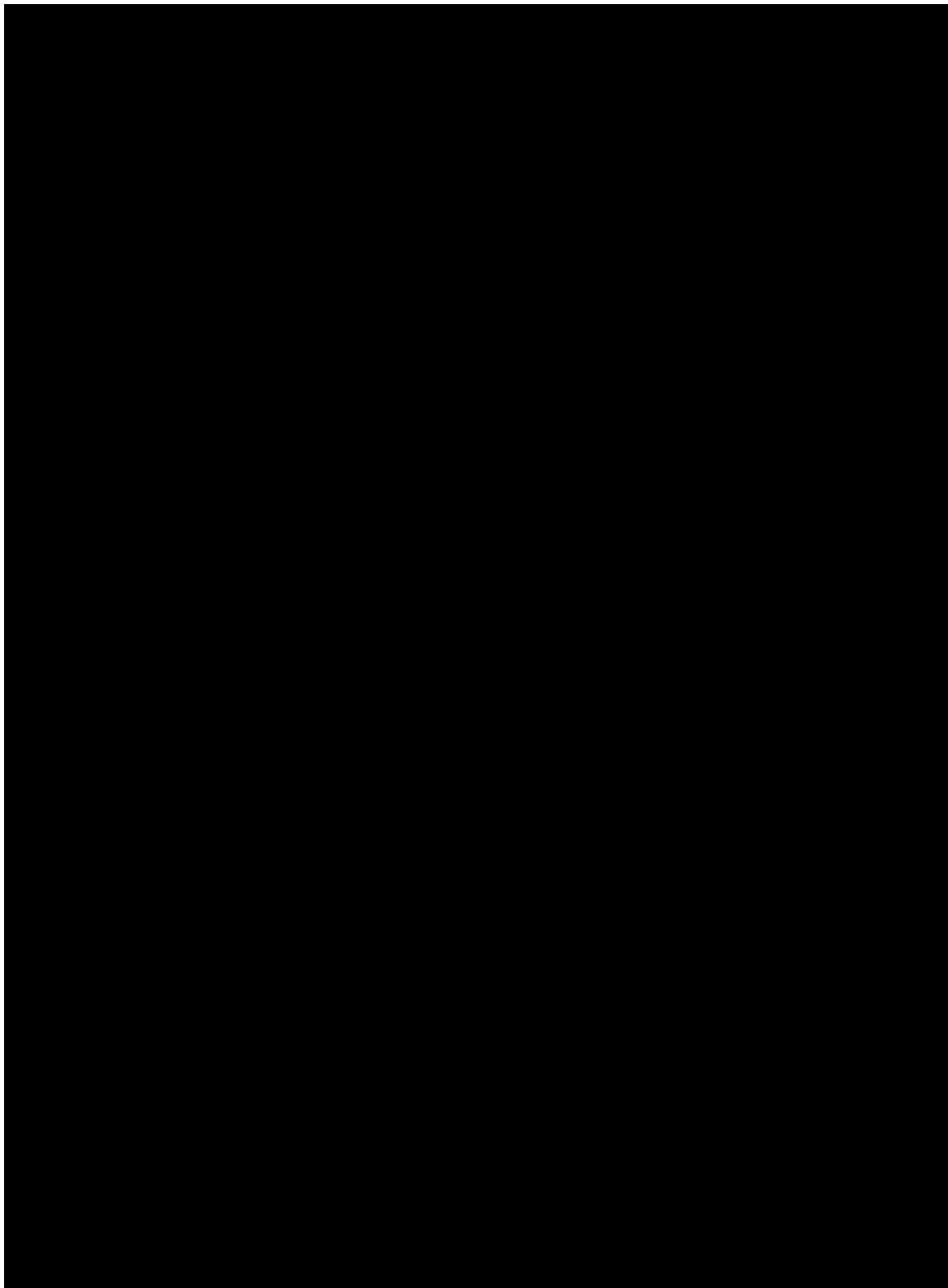


Fig. 51 Awetisean's experiments on reforming the printed letters of the Bolorgir style. Փորձ յն զպագրական զտոճոճ բարեփոխութեան և արդիականացման (Cairo, the Executive Body of the Armenian National Fund, 1946). (Original size: 18,7 × 26,6 cm). Shown at 80% of original size. *Bibliothèque Nationale de France, Paris.*

order to find a successful design solution, in 1932 the Armenian government had invited Soviet Armenian and Diaspora's type specialists and artists to propose their ideas.¹⁷² However, since none of the proposed solutions were accepted by the government,¹⁷³ in 1938 Awetisean sought to design a typeface that would successfully comply with the Armenian government's expectations of a design that would improve the standard of Armenian books and advantageous for printing.

The directives of the Nineteenth Congress of the Communist Party (1952) foresaw that in the Soviet Union printing had to develop 'to ensure a significant growth of the publication of fiction and scientific literature, textbooks, journals and newspapers ... and to improve ... publishing and book design.'¹⁷⁴ According to the Soviet Armenian publishing house 'Haypoligraph',¹⁷⁵ amending the forms of the Bolorgir style would support the directions of the Communist Party and contribute to Moscow's program of elevating the masses through education and the arts:

Taking into account the huge role and importance of books in the development of our society, the party and the government are struggling to enrich the spiritual culture in our country. The party of Lenin-Stalin gives great importance to literature. Our literature is entitled to help the people in the creation of communism. The publication of more books, as mentioned in the decree of the Central Congress, is one of the main pillars of further development and culture, science and technology. Polygraphy¹⁷⁶ plays an important role in the aforementioned matter The promotion of typographic refinements in Armenian publishing, the economizing of the production means and the development of publishing art ... is one of the main conditions of meeting the main demands.¹⁷⁷

¹⁷² Ibid. p. 18.

¹⁷³ Awetisean, *Փորձ ՆՐ Կրկագրական*, p. 18. Awetisean did not participate to the 1932 general invitation. However, in *Փորձ ՆՐ Կրկագրական Կատերու Բարեփոխութեան և արդիականացման* he pointed out the work of the artist L. Yaghubian of Yerevan that was initially considered interesting by the Armenian press and intelligentsia. Yaghubian's reform on Armenian letters was refused by the Armenian government since 'letters were not legible ..., [they] were the fusion of eventuality and arbitrariness and did not have any justification but the groundless promise of economizing/saving [space] by 33–45%'. M. Eric, *Հայերեն Կատերի Բարեփոխությունը, Յերեկան, Արկարարական*, (Reform of Armenian letters), 2nd edition (Yerevan, Tekhnikan Massanerin, 1934), p. 3. Translated from Armenian by Emma Nemishalyan, July 2018.

¹⁷⁴ A. Shahverdyan, Kh. Samvelyan, *Հայերեն Կրկագրական Կատերի Բարեփոխման Ալբոմ: Բարեփոխված և այժմ օգտագործվող Կրկագրական Կատերի Համար* (Album for editing Armenian printing letters. For improved and currently used printed letters) (Yerevan, Soviet Armenian Culture Ministry, 1953), p. 3. Translated from Armenian by Emma Nemishalyan, July 2018.

¹⁷⁵ The name was translated from Armenian by Emma Nemishalyan, July 2018.

¹⁷⁶ In this context, the term 'polygraphy' refers to printing rather than to 'the polygraphic industry and production'. The polygraphic industry unites enterprises, such as associations and printing houses, and the printing house of the USSR State Committee for Publishing, Printing and Book Trade (Goskomizdat of the USSR). F. J. M. Feldbrugge, G. P. Van Den Berg, William B. Simons (eds.), *Encyclopedia of Soviet law* (Dordrecht, Martinus Nijhoff Publishers, 1985), p. 607.

¹⁷⁷ Shahverdyan, Samvelyan, *Հայերեն Կրկագրական Կատերի Բարեփոխման Ալբոմ*, p. 3. Translated from Armenian by Emma Nemishalyan, July 2018.

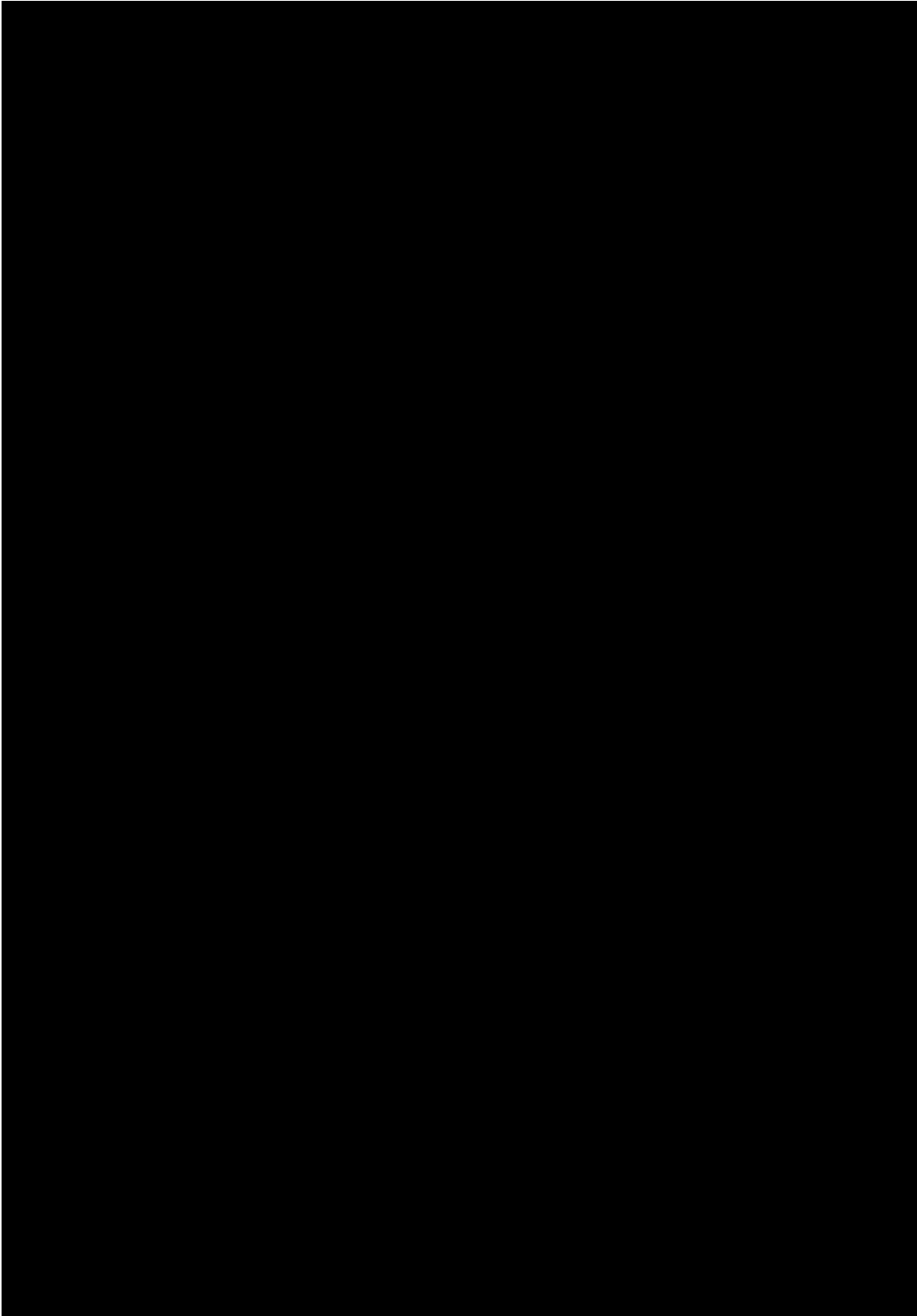


Fig. 52 Onnik Awetisean, Հայ ցուպագրական նոր ժանրագիրը (Beirut, Atlas, 1968). (Original size: 16,8 × 24,3 cm). Shown at original size. *The British Library*.

Encouraged by Armenians' favourable reception of the 1946 publication on modernising the Armenian printing type, Awetisean decided to make amendments to his earlier designs and to attempt new solutions. In October 1958 he participated in the 'New Fonts' competition organised by the Soviet Armenian Culture Ministry, where not only did he receive a special mention but also the local state publishing press recommended that the Soviet Armenian Culture Ministry buy his types under certain terms and conditions. However, the initiative of the local state publishing press did not materialise. Despite the unsuccessful outcome in Soviet Armenia, the positive opinion of various Armenians in the Diaspora encouraged Awetisean to produce his new forms of Armenian lowercase and uppercase letters as cast metal types.¹⁷⁸ At first, Awetisean tried to cast his types at several European type-casting firms, which refused the project because it would be unprofitable,¹⁷⁹ then he approached several punch-cutters in Cairo and in Beirut. Also there, Awetisean's efforts were unsuccessful. However, his types were finally produced at 10pt size in the 1960s:

Craftsmen in Beirut put forward difficult terms. And thus we were wasting time and the years rolled by Until, recently, with the encouragement and assistance of one of our art-loving friends, the Aleppo-based famous ophthalmologist and intellectual Dr Robert Jebejian, it became possible to accomplish the task of engraving the punches (poinçons) and making the matrices, thanks to the enthusiastic and persistent efforts of the Aleppo-based Armenian master engraver, Mr Vardavar Cholakian.¹⁸⁰

In 1968 the typeface – hereafter referred to as OA1 – complete with lowercase and uppercase letters, numbers, punctuation signs and modifier symbols, could be ordered from Youssef Abboud Bazerdjian¹⁸¹ at his Fonderie de Caractères Typographiques in Beirut, Lebanon [Fig. 52].¹⁸² According to Awetisean, his new lowercase letters were

¹⁷⁸ Awetisean, *Հայ փայտագրական նոր ծանրագիրը* (Beirut, Atlas, 1968), p. 6.

¹⁷⁹ It is possible that Monotype was among those European type-casting firms that refused the project. In November 1967 Fonderie Typographique Orientale in Beirut had agreed with a printer in Lebanon to place an order for a Monotype, subject to the Monotype Corporation in Salfords manufacturing a new Armenian fount. This new equipment was to be installed in Mardiros Vartanian Printing House and the new Armenian typeface was to be 'completely different' from Series 638. As correspondence between Monotype and Fonderie Typographique Orientale held at the Monotype archives does not provide information about the new design, nor the designer's name, it is difficult to ascertain that Mardiros Vartanian aimed for OA1 to be available as hot-metal type. However, since Awetisean's pamphlet *Հայ փայտագրական նոր ծանրագիրը* (New lowercase letters for printing in Armenian) was printed with Awetisean's types and published in 1968 just few months after Mardiros Vartanian requested Monotype to manufacture a new typeface, since Fonderie Typographique Orientale was based in Beirut, and since Awetisean's types were unquestionably 'completely different' from Monotype Armenian Series 638, it is probable that the new typeface was that of Awetisean. However, Monotype did not fulfil Fonderie Typographique Orientale's request. Letter from E. A. Vesey to J. Abboud (dated 23 November 1967); and letter from E. A. Vesey to J. Abboud (dated 5 December 1967). Armenian Folder. Monotype Archives, Salfords, UK.

J. Abboud was Manager for the Middle East at the Fonderie Typographique Orientale, Beirut.

¹⁸⁰ Awetisean, *Հայ փայտագրական նոր ծանրագիրը*, p. 7.

¹⁸¹ Youssef Abboud (or J'Abboud) Foundry, established in Beirut in 1939, produced three typefaces for composing French, six Arabic and four Armenian founts. Retrieved from: *Typography & Civilisation*, 'Les imprimeries missionnaires'. Retrieved from: http://www.typographie.org/gutenberg/liban/liban_3.html. Accessed in June 2019.

¹⁸² Awetisean, *Հայ փայտագրական նոր ծանրագիրը*, p. 16.

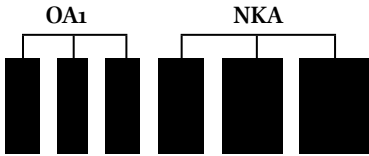


Fig. 53 In OA1 the tail of lowercase letters յ and լ were reduced and letter յ was narrowed.

OA1 is from Onnik Awetisean, Հայ Կապուցարանի ան յոր ծանրագիրը (Beirut, Atlas, 1968).

NKA is from Johann Joachim Schröder, *Thesaurus linguae armenicae* (Amsterdam, 1711).

Images shown at 200% of original size.

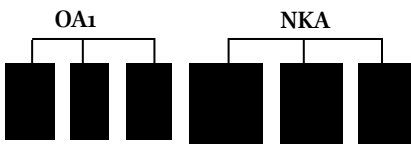


Fig. 54 Some OA1 characters were transformed into 'short letters'.

OA1 is from Onnik Awetisean, Հայ Կապուցարանի ան յոր ծանրագիրը (Beirut, Atlas, 1968).

NKA is from Johann Joachim Schröder, *Thesaurus linguae armenicae* (Amsterdam, 1711).

Images shown at 200% of original size.

devoid of the shortcomings that hindered – in terms of legibility, typography and authenticity – the Bolorgir style, the Latinised Armenian typefaces introduced by Čanik Aramean and also other lowercase letters currently used in Armenian printing.¹⁸³ Awetisean described his new lowercase letters as:

A new graphic system for printing, with a ratio proportion of 1–2–1¹⁸⁴ and its own special rules of construction, proportions and rhythm, consisting of a number of reformed letter forms, a different distribution of their heights, special proportions of oblique, wide and narrow letters, etc. However, at the same time, that system remains faithful to the general style and aspect of Armenian writing, without making any radical changes to the already existing letter-images. For this reason the new lowercase letters, despite being a novel and original typeface, is capable of being read at first sight
....¹⁸⁵

OA1 was at least 20% more economical in space than other traditional Bolorgir founts.¹⁸⁶ In order to obtain this result Awetisean chose to devise OA1 as an upright style, and to eliminate the rigidity in lowercase letterforms of the Bolorgir style by rounding off the square edges. According to Awetisean, angular forms required a wide space between letters when composing, whereas the rounded ones would save space. In his typeface Awetisean made also changes to the vertical proportions of some letterforms, as well as to the widths of others: for example, he reduced the tail of lowercase letters լ and ՚ and narrowed letter յ [Fig. 53]; shortened drastically letters թ, ռ, and շ by eliminating their descender. Thus, letters թ, ռ and շ, deprived of their descending stroke, were transformed into ‘short letters’ [Fig. 54].¹⁸⁷ Amendments of lowercase letters were not arbitrary, but based on a frequency count he had obtained by estimating the number of occurrences of Armenian letters per 10,000 characters of text.¹⁸⁸ For instance, by narrowing letters լ and ՚ and յ, Awetisean had managed to increase the frequency of the narrow letters (10,35%) while decreasing that of the wide ones (4%).¹⁸⁹ These amendments would enable composers to fit more text on a page. The frequency count criterion was also applied to give a more distinct rounded aspect to the alphabet: by rounding letters ա – the most frequent lowercase letter in Armenian¹⁹⁰ – ո, դ and others, OA1 managed to have a frequency of 21,05% for angular letters and 78,95% for rounded ones [Fig. 55].¹⁹¹ Other noticeable changes were made on the basic structure of letters such as դ, գ, and ռ to improve legibility: thus դ was

183 Awetisean, Հայ տպագրական նոր ծանրագիրը, p. 12.

184 (ascender : base character height : descender)

185 Awetisean, Հայ տպագրական նոր ծանրագիրը, p. 12.

186 Ibid. p. 13.

187 Terminology used by Awetisean to describe letters without ascender and descender, such as ա.

188 Awetisean, Փորձ յիջ տպագրական փառերու բարեփոխութեան և արդիականացման, p. 33, fig. 1.

189 Ibid. p. 104.

190 According to Awetisean, ա is a high frequency letter (14,60%) which means that in an Armenian writing one in every seven letters is an ա. Ibid. p. 105.

191 Ibid. p. 104.

Height -----
Short -----

Medium -----

Height -----
Width -----
Narrow -----
Medium -----
Large -----
Form -----
Corner -----
Round -----
Slant -----
(Italic)

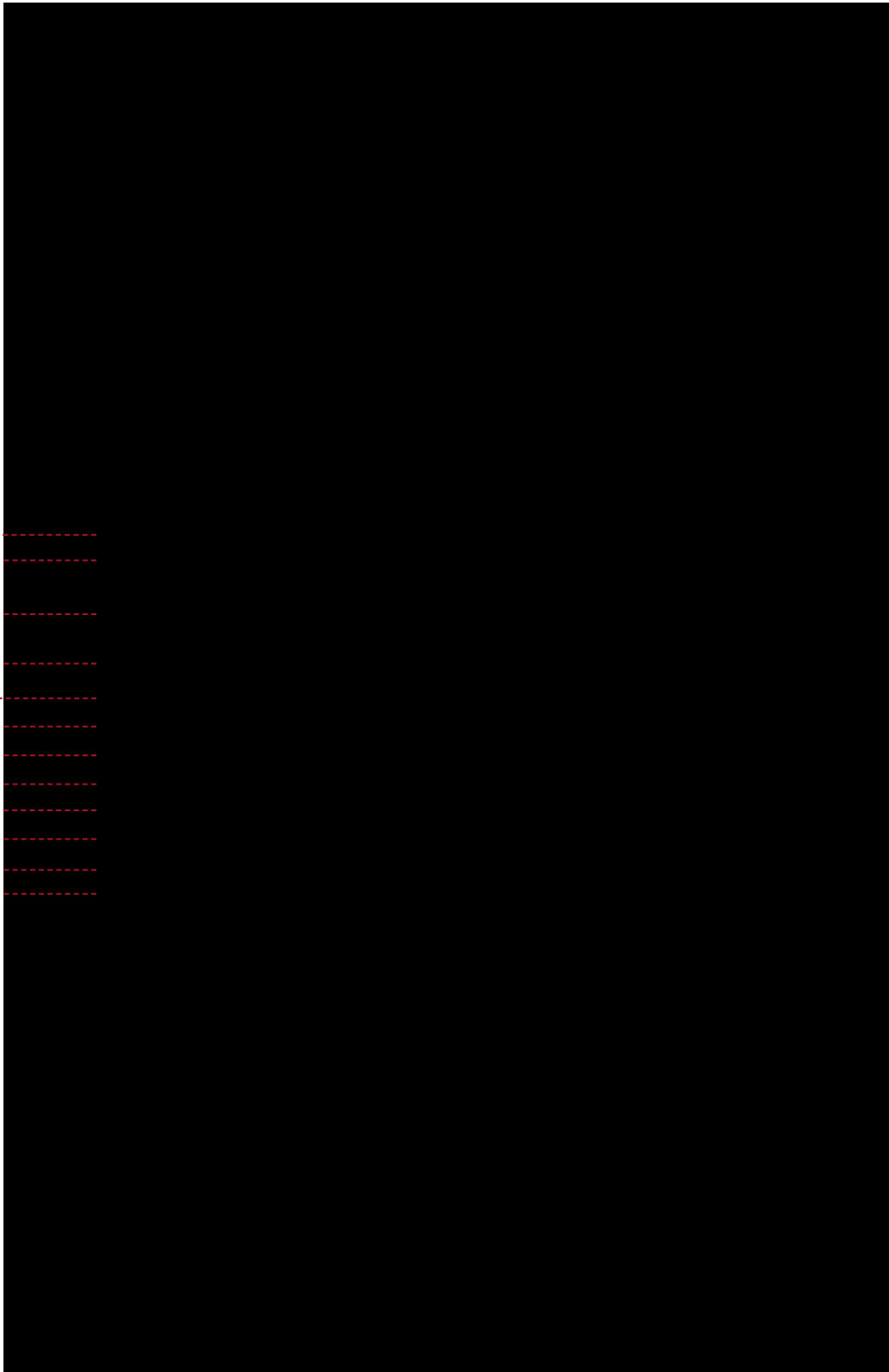


Fig. 55 The frequency count criterion devised by Awetisean. Detail from Փորձ ՆՂ ԿԱԿԱԳՐԱԿԱՆ ԿՍՈՒԵՐՈՒ ՔԱՐԵՎԻՊԻՍՈՒԹԵԱՆ և ԱՐԴԻՍԿԱՆԱՍՅՈՒՆ (Cairo, the Executive Body of the Armenian National Fund, 1946). (Original size: 18,7 × 26,6 cm). Shown at 80% of original size. *Bibliothèque Nationale de France, Paris.*

On the left is the translation in English of the main headings. Translated into English by the author.

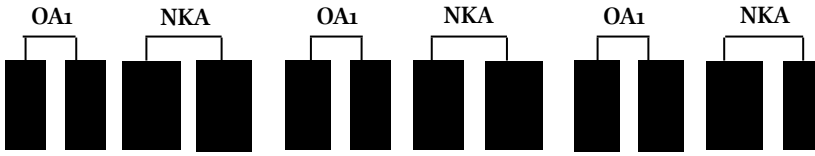


Fig. 56 In OA1 noticeable changes were made on the basic structure of some letters.

OA1 is from Onnik Awetisean, *Հայ Գրագրական Ինք Տանրագիրը* (Beirut, Atlas, 1968).

NKA is from Johann Joachim Schröder, *Thesaurus linguae armenicae* (Amsterdam, 1711).

Images shown at 200% of original size.

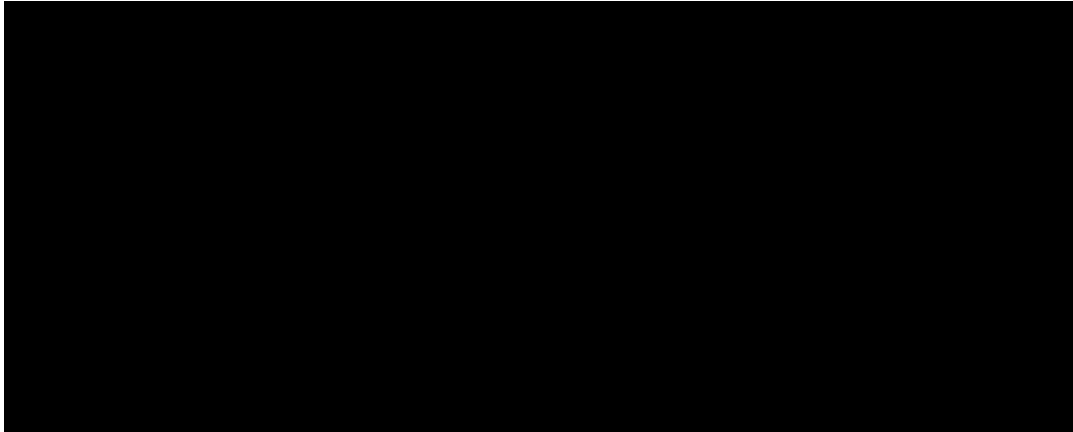


Fig. 57 In OA1 there are differences in letter widths and inconsistencies in stroke widths. OA1 is from Onnik Awetisean, *Հայ Գրագրական Ինք Տանրագիրը* (Beirut, Atlas, 1968). Shown at 200% of original size.

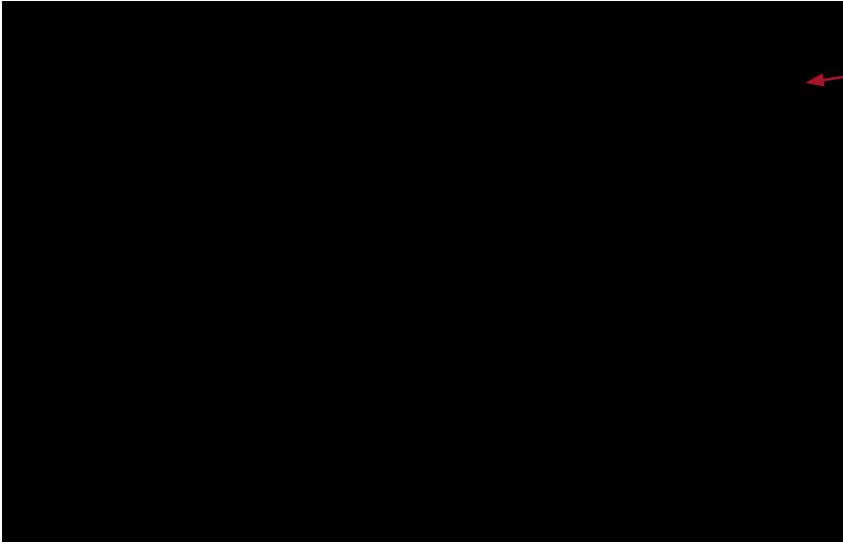


Fig. 58 The painter Onnik Awetisean with his wife Anahid, his mother, and his sister Sirvart (Saroukhan) at a family gathering in Cairo on 9 October 1955. In the picture there are: Awetisean, Saroukhan and Neredian families, and Saroukhan's neighbours.

Awetisean's sister, Sirvart, married the Egyptian Armenian cartoonist Alexander Saroukhan in 1927. Alexander Saroukhan was also a friend of Onnik Awetisean, having met at Vienna in 1924. In 1956 Saroukhan's daughter, Seta, got married to Garo Neredian. Retrieved from: flickr, 'Krikor and family, Cairo 1955'; photo uploaded by ring.william on February 2011. <https://www.flickr.com/photos/20025484@N06/5444631350/>.

distinct from ղ, q from զ and ն from ռ [Fig. 56]. Overall, differences in letter widths and inconsistencies in stroke widths affected legibility and therefore readability as it altered the conventional texture of a page composed in Armenian type. Furthermore, its letterforms were unconventional compared to Bolorgir typefaces [Fig. 57]. For these reasons, OA1 cannot be considered a high quality typeface.

Linotype's comments on Awetisean's typefaces

Awetisean [Fig. 58] understood the pivotal role of readers in determining the success of his new lowercase letters. Hence, at the end of his pamphlet *New lowercase letters for printing in Armenian* (1968) he appealed to the Soviet Armenian authorities to consider the reformed letters, to compare them with others and judge them with 'a spirit of progressive taste';¹⁹² he asked them to use the new lowercase letters in various publications, particularly in newspapers, thus readers would slowly become acquainted with the new forms.¹⁹³ Since most of Armenian Diaspora's newspapers were composed with hot-metal Linotype machines,¹⁹⁴ in 1968 Awetisean approached Hrant Gabeyan (born 1937) – salesman at the Linotype's Middle East Liaison Office (MELO) – to produce slugs of his new Armenian typeface (OA1).¹⁹⁵ However, Gabeyan¹⁹⁶ at MELO and Tracy at L&M considered OA1 'not a very desirable typeface' and decided to reject Awetisean's request.¹⁹⁷ As Nemeth pointed out, '[Gabeyan's] initiatives went beyond regular customer relations and sales duties, and comprised reviews of typefaces, quality checks of marketing material, and generally help with language and local customs'.¹⁹⁸

In 1970 Awetisean revisited the MELO office to show a new Armenian design: Gabeyan was so impressed that he decided to support Awetisean's endeavours to produce Linotype matrices of his new typeface [Fig. 59a and 59b]:

¹⁹² Awetisean, Հայ գրատարակման նոր ժանրագիրը, p. 14.

¹⁹³ Ibid. pp. 14–15.

¹⁹⁴ Letter from Hrant Gabeyan to Arthur Walker (dated 31 December 1970). Folder 17G Armenian, in Folder 17_01 Non Roman General. The Non-Latin Type Collection of the Department of Typography & Graphic Communication at Reading University.

¹⁹⁵ Letter from Hrant Gabeyan to Walter Tracy, (dated 9 October 1970). Folder 17G Armenian, in Folder 17_01 Non Roman General. The Non-Latin Type Collection of the Department of Typography & Graphic Communication at Reading University.

¹⁹⁶ Hrant Gabeyan was born in Cairo, and was the son of two Armenians who emigrated to Egypt to escape the 1915 Armenian genocide. He spoke Arabic, French and Armenian fluently. In 1960 he was employed as a salesman by the Egyptian firm Antoine Homsy, thus entering the printing trade; in 1965 he was hired by Linotype to represent the company in Egypt and Sudan. Nemeth, *Arabic type-making in the machine age*, pp. 191–192.

¹⁹⁷ Letter from Hrant Gabeyan to Walter Tracy (dated 9 October 1970). Folder 17G Armenian, in Folder 17_01 Non Roman General. The Non-Latin Type Collection of the Department of Typography & Graphic Communication at Reading University.

¹⁹⁸ Nemeth, *Arabic type-making*, pp. 192–193.

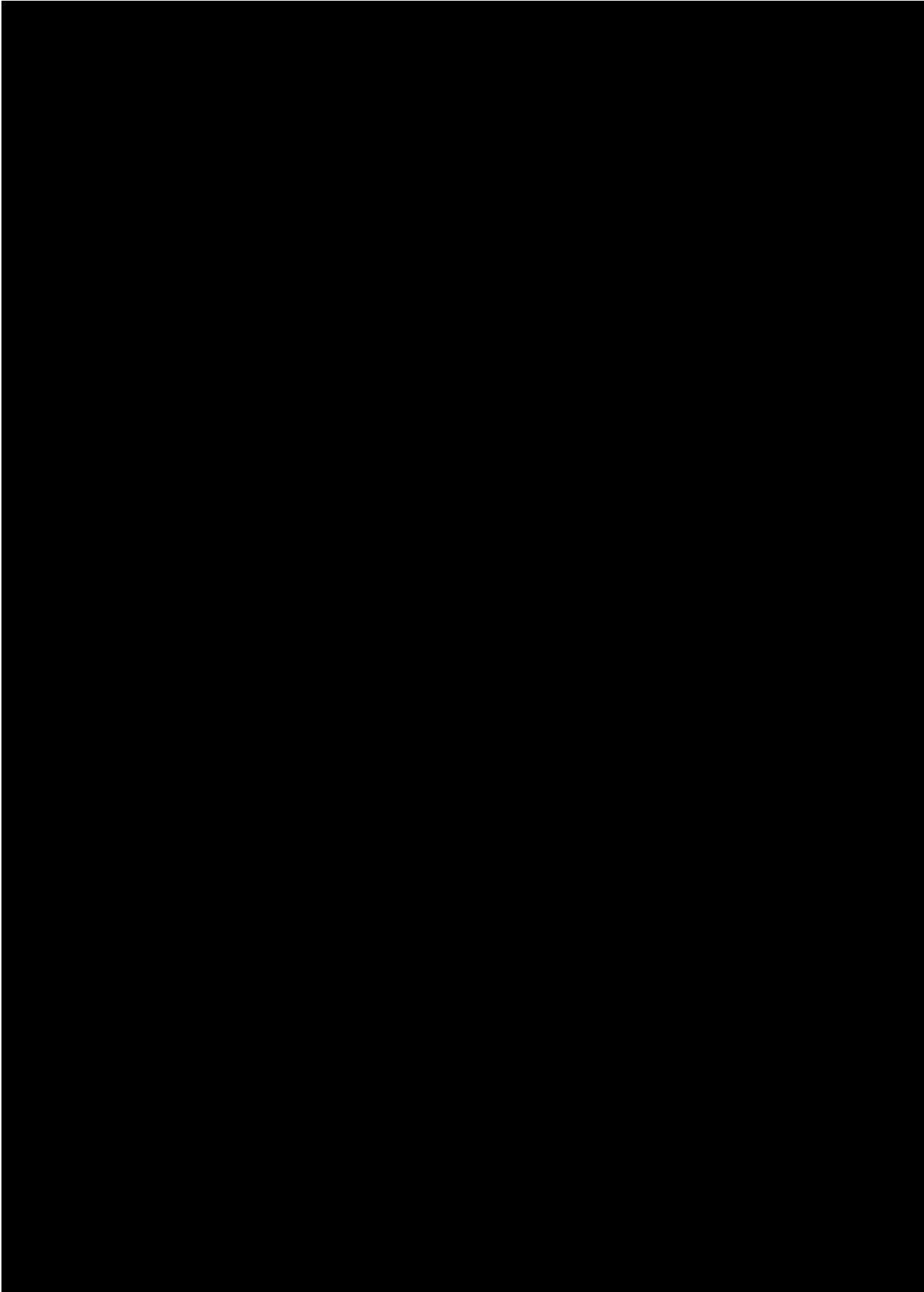
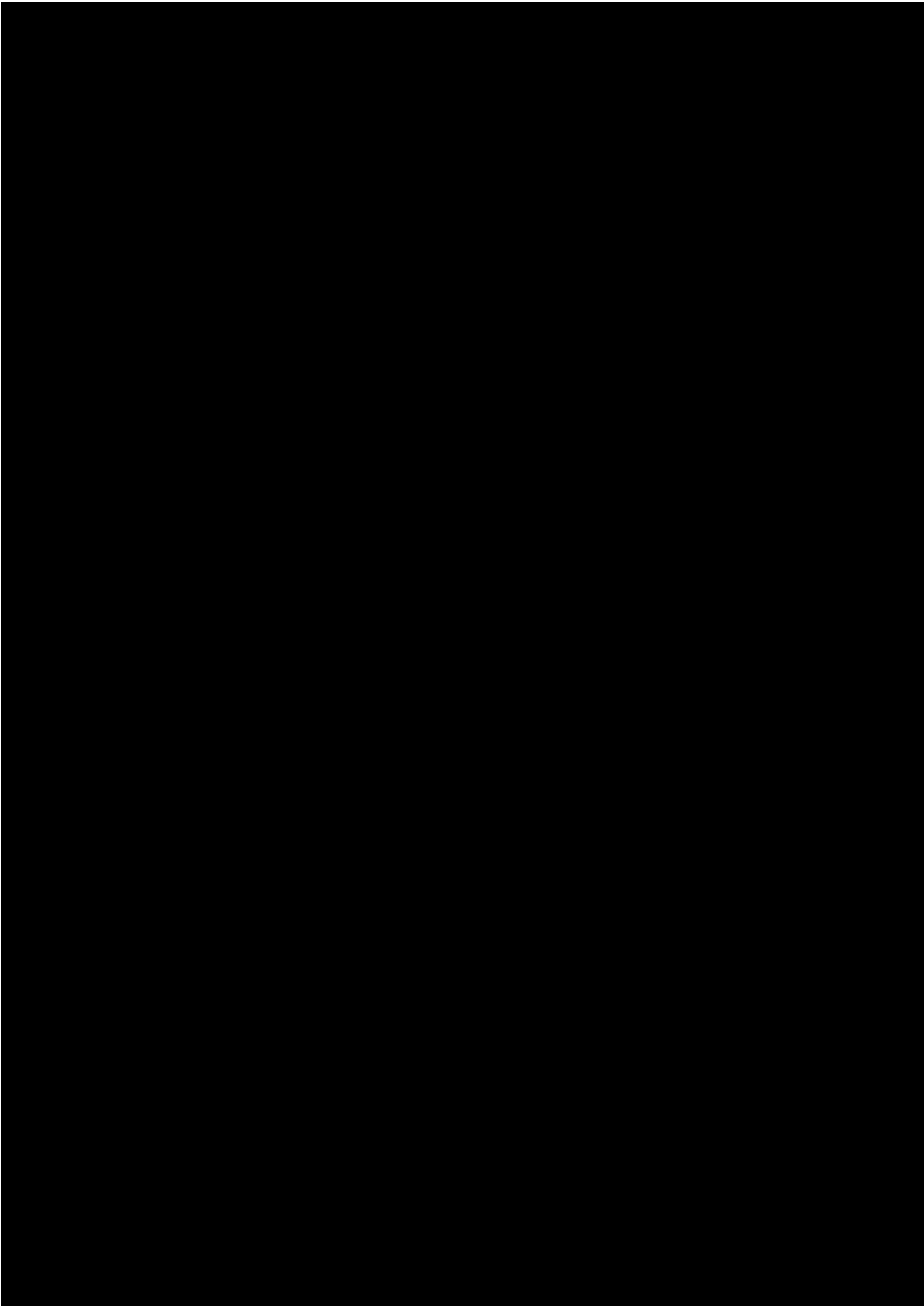


Fig. 59a Armenian typeface presented by Awetisean to Gabeyan: the document marked as A (**top**) is based on the upright typeface used in Awetisean's Հայ գրականության նոր ծանրագիրը (Beirut, Atlas, 1968). The one marked as B (**right**) is the Italic version of A (**top**). (Undated). (Original size: 21 × 29,7 cm). Shown at 80% of original size. Folder 17G Armenian, in Folder 17_01 Non Roman General. *The Non-Latin Type Collection of the Department of Typography & Graphic Communication at the University of Reading.*



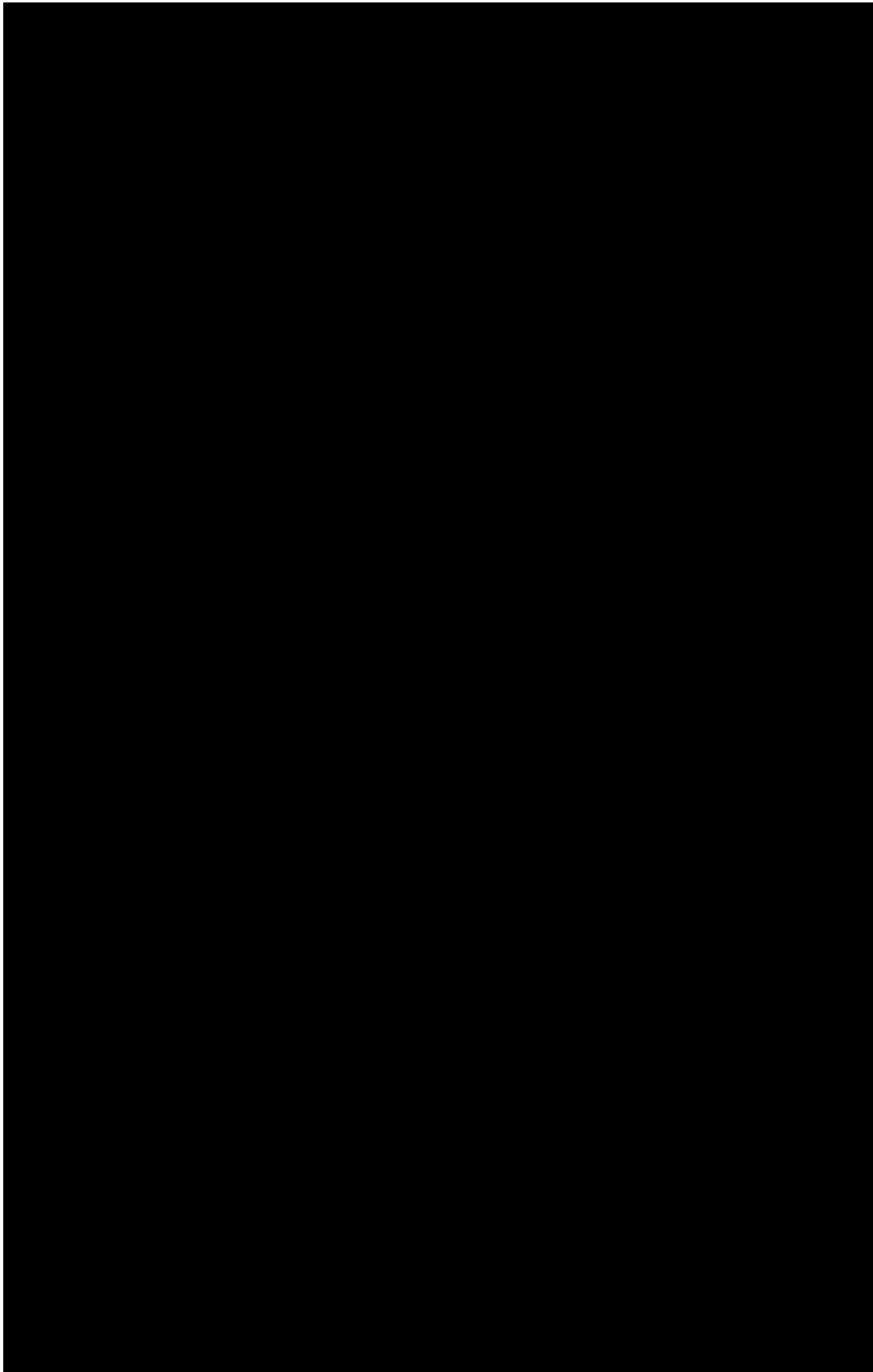


Fig. 59b According to Hrant Gabeyan these were proofs sketched on graph paper to find the best design solution to fit the Linotype technology and the market potentiality. (Undated). (Original size: 32,3 × 20,6 cm). Shown at 70% of original size. Folder 17G Armenian, in Folder 17_01 Non Roman General. *The Non-Latin Type Collection of the Department of Typography & Graphic Communication at the University of Reading.*

Avedissian [*sic*] ... showed me another typeface which could be considered as the Italic (B) of the previous one (A), to which he also made some alterations. I must say that he has succeeded in having a new Armenian typeface free of confusing characters, clear and desirable, specially in its Italic forms which I personally think is superb. ... I explained to Mr. Avedissian [*sic*] all our manufacturing problems and the costly procedures of preparing proper punches and suggested that he finds a benefactor who would finance. At the same time I asked him to collect letters from well known Armenian printers, saying that it is a desirable typeface and that if Linotype matrices of that typeface are available they will buy them.¹⁹⁹

When in October 1970 Gabeyan wrote to Walter Tracy about Awetisean's new typefaces, he had already met with Awetisean's benefactor (more precisely his representative) and was already in possession of a letter of support, signed by the ten best Armenian Linotype customers [Fig. 60]. The benefactor had promised to provide every assistance for the manufacture of Awetisean's typeface, and even proposed to bring a few other Armenian typefaces into Linotype matrices. Since at least 30 founts could be sold during the first two years, and all manufacturing expenses were to be supported by a benefactor, Gabeyan was convinced that L&M would accept to manufacture this new design.²⁰⁰ However, the letter of support signed by ten renowned printers based in Lebanon was not particularly helpful. Its last part says:

We declare that if your Company manufacture Linotype matrices of Mr. Avedissian's design, to start with the upright style and the italic in 10pt. we believe that this project will be met with great satisfaction and we will seriously consider to have them.²⁰¹

The printers who had signed the letter neither promised to purchase matrices of Awetisean's type nor Linotype machines; L&M would have expected Gabeyan to approach the English Company only if the manufacture of matrices would lead to machines sales. Before embarking on the manufacture of a new typeface, L&M had to think carefully firstly about 'the sale returns', secondly about 'the present heavy commitments of [the] matrix department'.²⁰² The matrix department was under pressure due to the several requests from overseas territories – India in particular – and from its domestic market too. Gabeyan needed to justify the manufacturing of new

199 Letter from Hrant Gabeyan to Walter Tracy (dated 9 October 1970). Folder 17G Armenian, in Folder 17_01 Non Roman General. The Non-Latin Type Collection of the Department of Typography & Graphic Communication at the University of Reading.

200 Ibid.

201 Letter from Walter Tracy to Hrant Gabeyan (dated 20 October 1970). Folder 17G Armenian, in Folder 17_01 Non Roman General. The Non-Latin Type Collection of the Department of Typography & Graphic Communication at Reading University.

202 Letter from Walter Tracy to Hrant Gabeyan (dated 14 October 1970). Folder 17G Armenian, in Folder 17_01 Non Roman General. The Non-Latin Type Collection of the Department of Typography & Graphic Communication at Reading University.

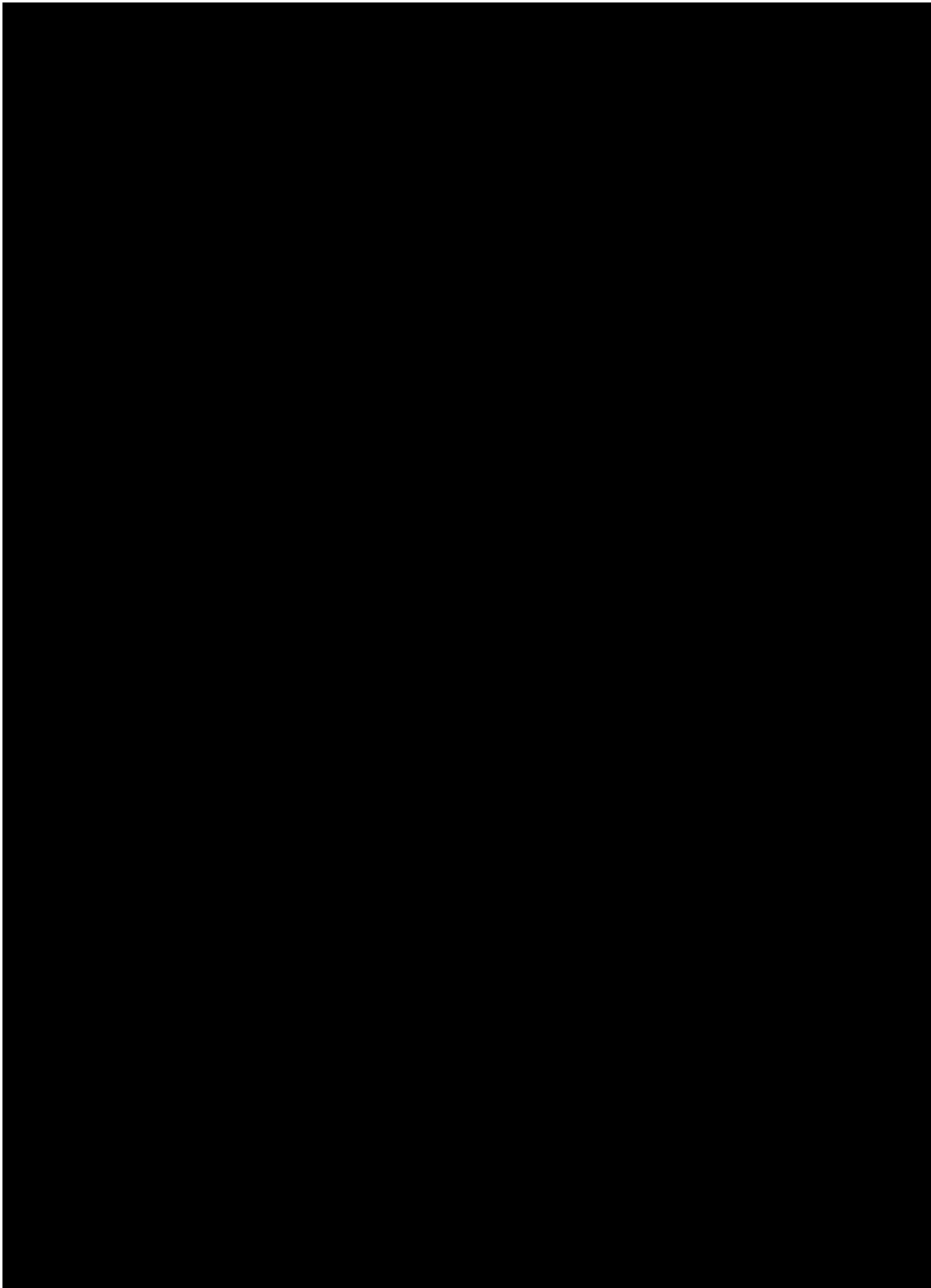


Fig. 60 Copy of the letter of support sent from Awetisean to Linotype (dated 17 October 1970). The back of the letter has the signatures of the 10 best Armenian Linotype customers. (Original size: 21,3 × 29,7 cm). Shown at 70% of original size. Folder 17G Armenian, in Folder 17_01 Non Roman General. *The Non-Latin Type Collection of the Department of Typography & Graphic Communication at the University of Reading.*

Armenian matrices in order to convince L&M to take on this new commitment.²⁰³ But instead, he pointed out to L&M that it was unlikely that Armenian printers would order a Linotype machine only because a new typeface was made available, and that Armenian printers could not always afford to buy new machines and preferred to purchase second-hand ones.²⁰⁴ As a Linotype salesman, Gabeyan was aware that for the company the sales of matrices were ‘regarded merely as adjuncts to the more valuable sales of machines.’²⁰⁵ However, his persistence can be seen in the reply given to Walker:

I am aware of all the present heavy commitments of our Matrix Department as well as the sales return we expected before we embark on the manufacture of a new product, but the fact which encouraged me to give some importance to this typeface was that a wealthy Armenian is sponsoring the project and is willing to pay, if not all, most of the expenses involved in the preparation of a successful, well developed Armenian typeface.²⁰⁶

With regard to the quality of Awetisean’s design, it is interesting that Gabeyan considered the italic a ‘successful’ typeface even though letter widths and proportions were atypical, as they were based on the frequency count criterion Awetisean had used in OA1. The italic typeface looked unconventional compared to historical models, as OA1 and its amended design. Why Gabeyan would describe Awetisean’s amended upright types as not ‘equally satisfactory’ to the design of the italic²⁰⁷ is explained by him:

In 1970, I described Avedissian’s Italic as superb,²⁰⁸ and I still do, because most of the newspapers and the books I read during those years, were set in Italic, so I got used to, like every other Armenian outside Armenia, to read Italic more than the Upright style, and that generation started preferring Italic out of habit. ... If in 1970, I judged Avedissian’s typeface as being superb, I think I was right, because it was a far better Italic typeface than the one we used to have ... and which was common and almost the only one used by most typesetters.²⁰⁹

203 Letter from Arthur Walker to Hrant Gabeyan (dated 21 October 1970). Folder 17G Armenian, in Folder 17_01 Non Roman General. The Non-Latin Type Collection of the Department of Typography & Graphic Communication at Reading University.

204 Letter from Hrant Gabeyan to Arthur Walker (dated 31 December 1970). Folder 17G Armenian, in Folder 17_01 Non Roman General. The Non-Latin Type Collection of the Department of Typography & Graphic Communication at Reading University.

205 John Dreyfus, ‘A turning point in type design’, *Visible Language*, XIX, 1 (Winter, December 1985), p. 16.

206 Letter from Hrant Gabeyan to Arthur Walker (dated 31 December 1970). Folder 17G Armenian, in Folder 17_01 Non Roman General. The Non-Latin Type Collection of the Department of Typography & Graphic Communication at Reading University.

207 Letter from Hrant Gabeyan to Walter Tracy (dated 20 October 1970). Folder 17G Armenian, in Folder 17_01 Non Roman General. The Non-Latin Type Collection of the Department of Typography & Graphic Communication at Reading University.

208 See letter from Hrant Gabeyan to Arthur Walker (dated 9 October 1970). Folder 17G Armenian, in Folder 17_01 Non Roman General. The Non-Latin Type Collection of the Department of Typography & Graphic Communication at Reading University.

209 Email from Hrant Gabeyan to the author (dated 30 May 2018).

As it is possible to observe from Gabeyan's words, his appreciation for the Italic in 1970 was from the viewpoint of an Armenian reader rather than a professional type-designer; indeed, the latter may have well found certain unconventional elements in the design that a reader would have ignored.²¹⁰ More importantly, Gabeyan's comment is evidence that the success of a typeface does not necessarily imply that its design is of the best quality.

Due to the limited potential market for Armenian Linotype machines, the unpromising sales prospect of Awetisean's matrices,²¹¹ and the insignificant number of matrices of Armenian No. 1 and No. 2 (text sizes: 8 pt, 10 pt, 12 pt) sold by Linotype & Machinery in the US annually,²¹² L&M considered it unprofitable to produce Awetisean's typeface for hot-metal composition. However, before rejecting the project, L&M considered the possibility of manufacturing Awetisean's typeface for photocomposition, specifically for the VIP machine: the first photocomposing machine to be controlled by a programmable minicomputer.²¹³ If VIP filmstrip matrices could be ready in eighteen months to two years' time, the production of this typeface would create a market opportunity for Armenian VIP machines.²¹⁴ However, the data collected by Gabeyan were even more discouraging than those for hot-metal: 'the potential sale of phototypesetting machines of the VIP type was nil, except for the two Americas'.²¹⁵

Awetisean's endeavours to produce Linotype matrices of his new typeface provides insights into the Linotype company's attitude towards the development of the Armenian script. Despite Linotype's refusal to develop Armenian founts for either hot-metal and phototypesetting in the 1970s²¹⁶ – due to the lack of demand for its machines among Armenian printers – the contribution of the Armenian Diaspora in Lebanon and Cairo towards the development of Armenian typefaces for emerging phototypesetting technologies merits a place into the history of Armenian type design.

210 Gabeyan also remarks in his email correspondence with the author that: 'whatever opinion I give in this letter should be considered purely as a 'reader's opinion'. Email from Hrant Gabeyan to the author, (dated 30 May 2018).

211 The prospect was of thirty founts in MELO territories only, over a five-year period. Letter from Hrant Gabeyan to Arthur Walker (dated 31 December 1970). Folder 17G Armenian, in Folder 17_01 Non Roman General. The Non-Latin Type Collection of the Department of Typography & Graphic Communication at Reading University.

212 Three to five thousand. Letter from Walter Tracy to Arthur Walker (dated 21 October 1970). Folder 17G Armenian, in Folder 17_01 Non Roman General. The Non-Latin Type Collection of the Department of Typography & Graphic Communication at Reading University.

213 Southall, *Printer's type in the twentieth century*, p. 92.

214 Letter from Walter Tracy to Arthur Walker (dated 21 October 1970). Folder 17G Armenian, in Folder 17_01 Non Roman General. The Non-Latin Type Collection of the Department of Typography & Graphic Communication at Reading University.

215 Ibid. 'Except for the two Americas' reads ambiguously, but the point is the low expectation of sales.

216 This will be further discussed in the next section of this chapter.

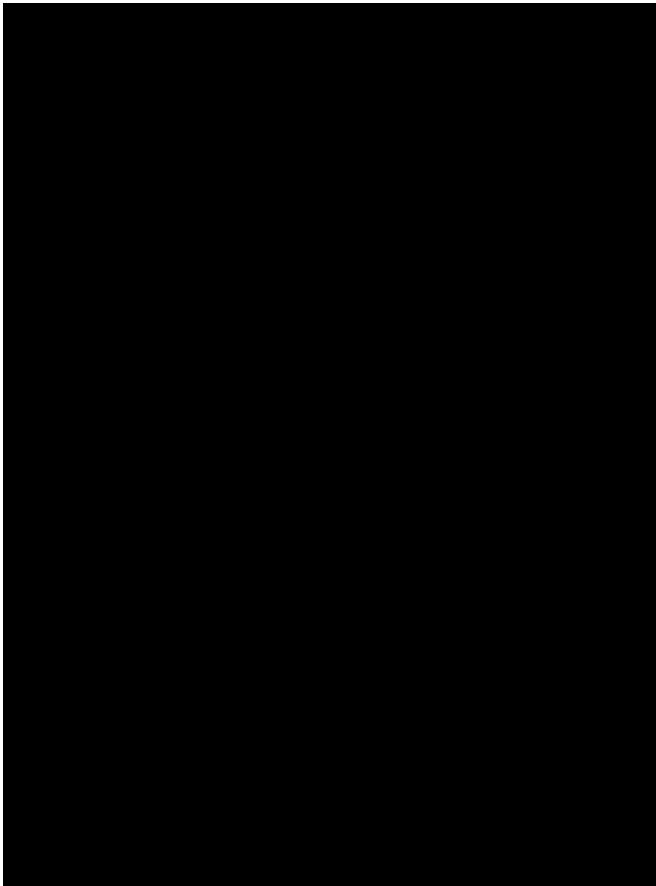


Fig. 61 'The Monophoto' 400/8 Filmsetter. Image retrieved from: <https://www.circuitousroot.com/artifice/letters/phototypesetting/monophoto/monophoto-400-8/index.html#monophoto-400-8-filmsetter>. Accessed on 20 August 2019. Originally from the brochure: *'Monophoto' 400/8 Filmsetter* (The Monotype Corporation, 1974).

4.6 Transition to filmsetting

At the beginning of the 1960s direct-photography photocomposition, a new technology for composing type – known also as filmsetting – gained significant attention.²¹⁷ Filmsetting consisted in composing ‘characters in the sequence required onto film or photographic paper for the purpose of transferring to sensitized plates and printing without the intervention of type.’²¹⁸ As Alice Savoie pointed out, the ‘advent of the photo-matrix marked the start of the dematerialisation of type’:²¹⁹ the three dimensional object – the lead type – was abandoned to become a two-dimensional image on film.²²⁰ It only was at the end of the 1970s that it became possible to compose Armenian on a filmsetter machine.

4.6.1 Armenian on the Monophoto

The first Monophoto Filmsetter – produced in the UK by the Monotype Corporation – had entered the market in 1957;²²¹ about twenty years later, the State Committee for Publishing Houses, Printing Plants, and the Book Trade in the Soviet Union (Goskomizdat)²²² approached Monotype requesting the manufacture of an Armenian typeface for the Monotype’s Monophoto filmsetter 400/8 [Fig. 61].²²³

The Monophoto Filmsetter²²⁴ was a direct adaptation of the Monotype caster.²²⁵ Seybold categorised the Monophoto as a ‘first generation’ phototypesetter,²²⁶ explaining that ‘... although ... [it exposed] type images on photographic film or paper rather than to cast type or slugs from molten metal, ... [it did] not differ substantially from their hot metal progenitors.’²²⁷ A light, film, lens and mirrors were used in place of the molten

217 Southall, *Printer’s type in the twentieth century*, p. 79.

218 James Moran, ‘Filmsetting – Bibliographical Implications’, *The Library*, Fifth Series, XV, 4 (London, December 1960), p. 231.

219 Alice Savoie, ‘International cross-currents in typeface design’ (PhD thesis, University of Reading, 2014), p. 107.

220 Ross, *The printed Bengali*, p. 180. Also the manufacturing process and the material used to produce film were different from those employed in hot-metal.

221 Sebastian Carter, ‘The Morison years and beyond 1923–1965’, *The Monotype Recorder*, Centenary issue, New Series, 10 (1997), p. 24. The first Monophoto filmsetter was installed in 1957 in South Africa. In the same year it was also installed in Brussels while four machines were shipped to the US. The first commercial installation of the machine in Europe was in Essex in February 1958 at Photoprint Plates Ltd. Andrew Boag, ‘Monotype and phototypesetting’, *Journal of the Printing Historical Society*, New Series 2 (London, Winter 2000), p. 63.

222 An abbreviation for: Государственный комитет по делам издательств, полиграфии и книжной торговли СССР, (Transliteration: Gosudarstvenny komitet po delam izdatelstv, poligrafii i knizhnoy trgovli SSSR), (Translation into English: Printing houses of the USSR State Committee for Publishing, Printing, and the Book Trade.) The State Committee for Publishing, Printing and Book Trade replaced the Press Committee of the USSR Council of Ministers in 1972. Goskomizdat controlled and supervised the publishing and printing industry and it was responsible for ‘the level of the political ideas in works of the press’ in USSR territories. Ed. Feldbrugge, Van Den Berg, Simons, *Encyclopedia of Soviet law*, p. 607.

223 The exact date the Armenian typeface was commissioned from Goskomizdat is unknown.

224 The Monophoto (1955) was originally known as the Rotophoto, developed in 1949 by the British Monotype’s George Westover. Seybold, *Fundamentals of modern composition*, p. 74.

225 Ibid. p. 74.

226 First generation phototypesetters were also known as photomechanical.

227 Seybold, *Fundamentals of modern composition*, p. 72.

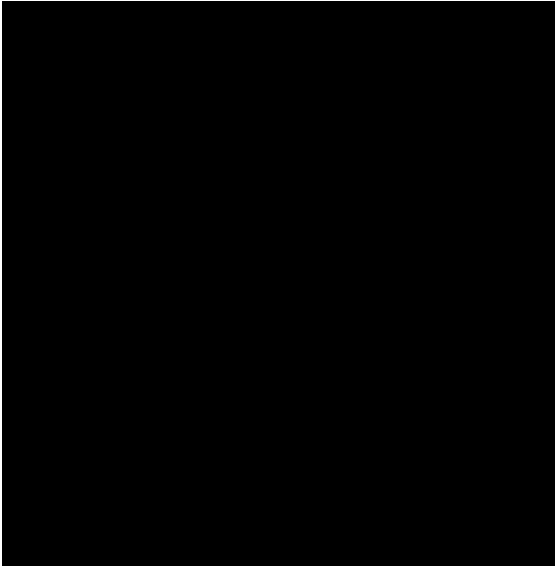


Fig. 62 A film matrix for Monophoto Arrarat Bold inclined. (Undated). Each matrix measured 0.2 of an inch square. *The Monotype Archives, Salfords.*

metal mechanism. The Monophoto had a keyboard unit, where a paper tape was prepared and justification was made – similarly to hot-metal Monotype machines. This tape guided the camera unit, where there was a matrix case.²²⁸ A film matrix case was similar to the case of a monotype caster and characters transparent against an opaque background were used instead of matrices struck from punches [Fig. 62]. Film matrices were arranged in unit rows as in a hot-metal matrix case; in a filmsetter's case, film matrices were initially arranged in 15 rows each of 17 columns, from 1963 onwards they were in 16 rows each of 17 columns,²²⁹ meaning that there were a total of 272 characters available.²³⁰ A single lens enabled the enlargement of the image, producing sizes in a range of six to twenty-four points. A set of mirrors moving across the line established when a character needed to be 'laid down' according to its indicated width. Width and spacing information influenced the movements of a set of mirrors that stepped across the line.²³¹

The Monophoto 400/8 was released in 1974, it featured a wider matrix case – 20 rows of 20 matrices – and used 8-channel paper tapes and an 8k computer. Compared to their predecessors the Monophoto 400/8 relied more on electronic than on mechanical components, a factor that led Seybold to classify the Monophoto 400/8 as a 'second-generation' typesetter.²³²

Designs of Monotype's early film matrices were derived from the Company's hot-metal typefaces rather than from original artwork.²³³ A similar approach was used at the beginning of hot-metal composition, when successful foundry types were selected as models for designing early Monotype hot-metal typefaces. Monotype justified its choices by saying that 'in any period of technical transition, 'recognizability' is of great practical importance...'.²³⁴ Therefore, it was indispensable for the new medium of filmsetting to adapt familiar hot-metal designs.²³⁵ Monotype had an highly conservative attitude towards the development of early non-Latin typefaces for the Monophoto Filmsetter: indeed, the first Bengali, Devanagari, Gujarati, Sinhalese, Tamil and Arabic typefaces created for filmsetting used their hot-metal Monotype's precursors as a point of reference.²³⁶ In this context, it is striking that the Armenian typeface produced by Monotype for the Monophoto Filmsetter was 'based on original designs submitted

228 Ibid. p. 74.

229 Ibid. p. 74.

230 Boag, 'Monotype and phototypesetting', p. 60.

231 Seybold, *Fundamentals of modern composition*, p. 75.

232 Boag, 'Monotype and phototypesetting', pp. 66–67.

233 *The Monotype Recorder*, Special number dedicated to the users of 'Monophoto' Filmsetter, XLII, 2 (Spring 1961), p. 1.

234 Ibid. p. 15.

235 Besides this, it was cheaper, easier, and faster to adapt existing artwork than to initiate new designs. *The Monotype Recorder*, Filmsetting in focus, XLIII, 2 (Summer 1965), p. 12.

236 Savoie, 'International cross-currents in typeface design', p. 397.

by the customer'²³⁷ – the Goskomizdat – instead of Series 638.²³⁸ The new Armenian typeface to be devised for the Monophoto 400/8 was 'Arrarat', probably designed by the Armenian artist Ch. Y. Samuelian in Soviet Armenia.²³⁹ The Arrarat fount was to be produced in film in upright and slanted styles, both in light and bold weights. Series 812 corresponds to the Arrarat light weight and Series 813 to the Arrarat bold weight.²⁴⁰

The process of matrix-making for direct-photography photocomposing machines was quite straightforward in comparison to the laborious process of matrix-making for metal type. Indeed, in direct-photography the procedure consisted of producing small character images on the matrix²⁴¹ by photographing large character images, known as 'character masters'. However, since Monotype masters, known as '10-inch drawings', were larger than the artwork provided by Goskomizdat,²⁴² the Type Drawing Office needed to increase letters' dimensions from the original artwork:

To bring body to 110.7 requires an enlargement of 227.78. This gives an asc/desc of 99.3. To bring asc/desc to 102 requires an enlargement of 233.94%. This gives a body of 113.7.²⁴³

In designing founts for filmsetting the designers not only had to cope with optical distortions, but also to control the problems caused by photography. Adrian Frutiger, the designer of 'Monophoto' Univers²⁴⁴ and 'Monophoto' Apollo explained: 'the trouble of photography is that the amount of light from a constant source passing through a small and a large aperture will not be in proportion to the sizes of the apertures. In other words, if the area of a W in the proportion 1:100, the amount of light from a constant flash will be 1:200 The result on paper is that the dot appears to shrink and the W to swell. Where the strokes of the W meet and there are concentrations of weight, the light will spread and eat into the counters, exaggerating the heaviness of the letter.

237 Internal document: 'Specification for new fount', from Robin Nicholas to the TDO (dated 28 June 1977). Box 14, Designers' Original Artwork, Armenian Arrarat Originals Folder. The Monotype Archives, Salfords.

238 According to an internal memorandum from J. B. L. (perhaps John Latham) to J. Palms dated 28 June 1977, Armenian 638 was to be manufactured for the Monophoto Filmsetter for the State Committee for Printing, Yerevan. However, Monotype decided not to proceed with the project. See attachment to the letter dated 28 June 1977. This may suggest that Monotype Series 638 was not a successful typeface.

239 The Monotype Archive does not have original artwork for this typeface. However, other artwork for Armenian typefaces sent from Goskomizdat to Monotype were signed by the artist Ch. Y. Samuelian.

240 The development of Arrarat began in June 1977 with Arrarat 812 and Arrarat Bold 813 upright, whereas the Bold inclined started only in July 1979. Drawings for Series 812 and 813 were probably given to Monotype at different stages; indeed, drawings for Arrarat Bold Inclined were made available to Monotype Salfords only on June 1979. There is no date stating the end of the project.

241 Southall, *Printer's type in the twentieth century*, p. 86.

242 Monotype masters were larger than artwork used elsewhere. An example is the ITC faces, characterised by a relatively large x-height and tight fitting, and by artwork smaller than Monotype masters. The International Typeface Corporation (ITC) was established in 1970 by Aaron Burns (formerly of The Composing Room, a well-known New York type shop), Ed Rondthaler (founder of Photo-Lettering, Inc.) and famed graphic designer Herb Lubalin in New York aiming to licence its typefaces to manufacturers of composition machinery. See: David Saunders 'Two decades of change', *The Monotype Recorder*, Centenary issue, New Series, X (1997), p. 32; Savoie, 'International cross-currents in typeface design', p. 141.

243 Note in pencil on paper, entitled 'Armenian Aararat [*Sic*]'. There is no signature on the (undated) note.

244 This was first designed for the Lumitype machine.

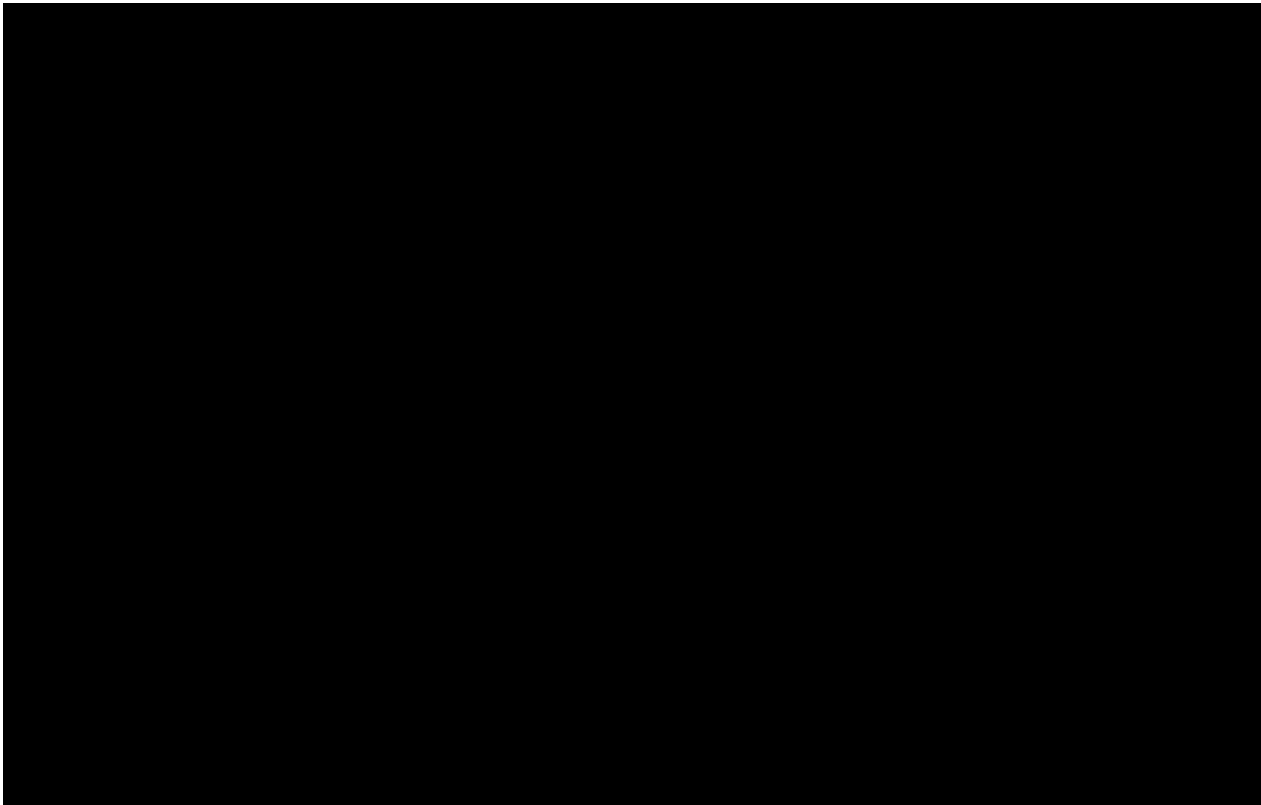


Fig. 63 Drawings of lowercase letters for Arrarat Armenian Bold inclined featuring spikes outside of corners and traps inside of corners. Shown at original size. Box 14, Designers' Original Artwork, Armenian Arrarat Originals Folder. *The Monotype Archives, Salfords.*

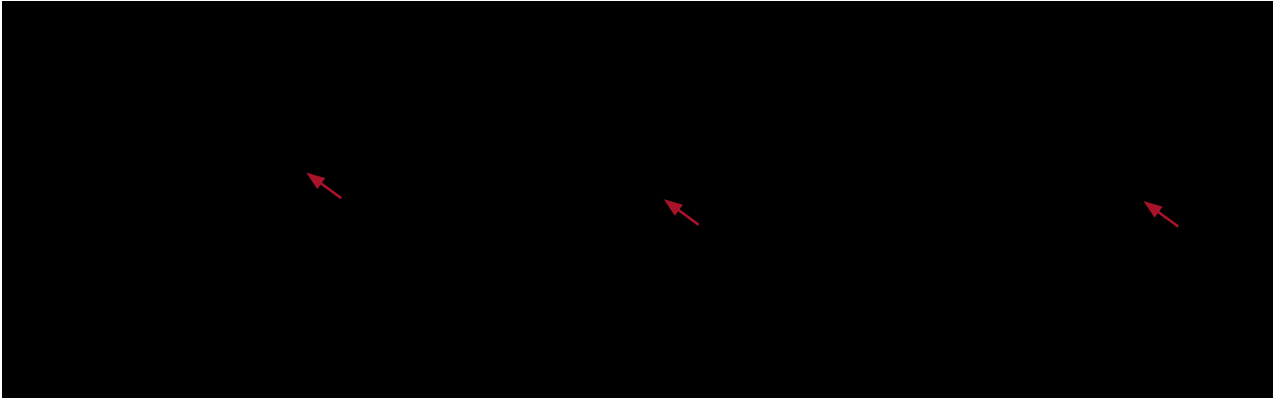


Fig. 64 Detail showing some letters from Series 812-B at 24 pt, Armenian Arrarat Regular, (undated). The red arrows emphasise the round loop in թ, the extremely low horizontal bar in ք, the angular appearance of յ. (Original size: 29,7 × 21 cm). Shown at original size. Armenian Folder. *The Monotype Archives, Salfords.*



Fig. 65 Letters from Series 812-B at 24 pt, Armenian Arrarat Regular (undated). The length of ascenders and descenders in Series 812-B is excessively short. Consequently, letters sharing a similar basic design structure, such as ղ and ղ, հ and ք, կ and վ, cannot be easily distinguished. Letters ղ and ղ are also not very well distinguished due to the short horizontal stroke. Right: the length of ascenders and descenders was excessively short in relation to the base character height. (Original size: 29,7 × 21 cm). Shown at original size. Armenian Folder. *The Monotype Archives, Salfords.*

To compensate for this the dot has to be drawn large, the strokes of the W thinned and the crotches of the counters opened up to give the appearance of even weight.²⁴⁵ Thus, also letterforms for Series 812 and 813 featured spikes outside of corners to prevent them from rounding off, and traps inside of corners to enable light and ink to spread out without compromising the intended design [Fig. 63].²⁴⁶

Both series 812 and 813 are strikingly different from previous foundry-types, and from Linotype no. 1 and no. 2 and also Monotype Series 638. Firstly, the upright style in Series 812 and Series 813 is more faithful to the letterforms of the traditional Bolorgir style, and even in comparison to the upright typefaces that can be found in the Mekhitarist type specimens of the twentieth century. Despite the atypical design used for some letters, such as the round loop in թ, the extremely low horizontal bar in ք, the angular appearance of յ, the Arrarat (Series 812 & 813) upright letters are recognisable [Fig. 64]. This does not imply that the Arrarat design can be considered to be of high quality; indeed, the lengths of ascender and descender were excessively short in relation to the base character height and it is likely that at small sizes the vertical proportion of ascender, base character height, and descender decreased the legibility of characters such as ղ and ճ, ի and ռ, կ and վ, that share a similar basic design structure and could therefore easily be confused with each other [Fig. 65].

Beatrice Warde, in her article entitled 'Type design in the new cold-type age', had explained that for the first time in history '... an entire series (of sizes) of a new face [could] be thought of as comprised in one set of master letters'.²⁴⁷

When adapting hot-metal typefaces for the Monophoto, a single master drawing could be used to produce a range of composing sizes from 6 pt to 24 pt. However, in order to obtain a result that was as close as possible to those of hot-metal typefaces – the proportions of metal fonts were often modified from size to size, to provide its customers non-linear scaling of the same typeface – three optical sets were made available for composition of sizes from 6 pt to 24 pt, namely set A, B, and C. The A-set was usually used for composition sizes from 6 pt to 7 pt, the B-set for 8 pt to 12 pt, and the C-set for 14 pt to 24 pt. Most of the typefaces for the Monophoto would be produced as set A and B only.²⁴⁸ Series 812 and 813 were made available as B-set only, thus using the same master negatives and the same film-matrices for composition of sizes from 6 pt to 24 pt. Using one set for a wide range of sizes meant that small details that were important for legibility may well disappear when composing texts at small sizes. This can be seen in Trial no. 1 of Series 813-B at 24 pt, Armenian Arrarat Bold: tails in letters like յ and զ, and horizontal terminations in letters such as ղ, ռ and վ are so short at 24 pt that at 6 pt they probably would disappear [Fig. 66].

While Armenian upright and slanted styles for hot-metal composition and letterpress had been conceived as two separate and independent typefaces, in Arrarat, upright

²⁴⁵ *The Monotype Recorder*, Filmsetting in focus, XLIII, 2 (Summer 1965), p. 14.

²⁴⁶ Thereby ameliorating the inevitable aspect of halation.

²⁴⁷ Beatrice Warde, 'Type design in the new cold-type age', *Printing in Britain*, Supplement, (September 1963), p. 10.

Quoted in: *The Monotype Recorder*, Filmsetting in focus, XLIII, 2 (Summer 1965), pp. 12–13.

²⁴⁸ Savoie, 'International cross-currents in typeface design', p. 269.

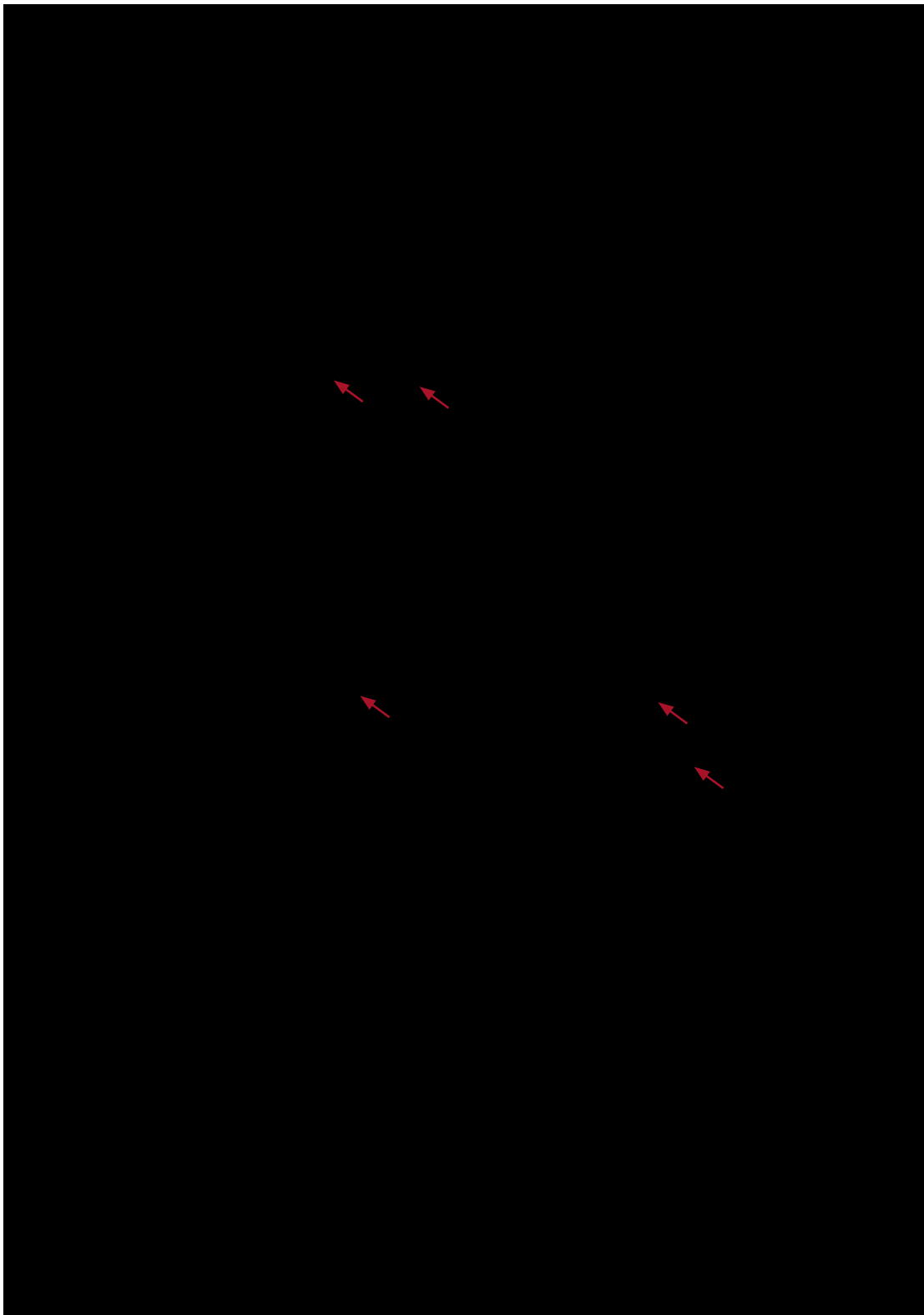


Fig. 66 Trial No. 1 for Series 813-B at 24 pt, Armenian Arrarat Bold (dated 21 June 1978). The red arrows point out some of the features that affect legibility and that could probably disappear when composed at small sizes. (Original size: 21 × 29,7 cm). Shown at 70% of original size. Armenian Folder. *The Monotype Archives, Salfords.*

and inclined were designed in such a way that they shared the same basic design characteristics. Thus, the inclined style worked as a secondary style, based on the design of the upright Arrarat style rather than on a traditional Bolorgir typeface [Fig. 67]. In this context, it emerges that in the 1970s in Soviet Armenia, Armenian upright typefaces were more desirable than those in the slanted Bolorgir style. Such preference is also confirmed by Gabeyan's memories:

In Soviet Armenia, ... the Upright style [was used] more than the Italic, but [Soviet Armenian] printed matters, newspapers, magazines and books, were not much available in the Diaspora, where the Italic version was used more than the Upright style.²⁴⁹

The two-dimensional nature of filmsetting and the fact that it became possible to design a typeface 'without any reference to the behaviour of steel, ... to the limitations of metal casting ..., no need to allow for 'bevel' ...²⁵⁰ had eliminated what Johannes Miwhêntisean and Čanik Aramean described in the nineteenth century as a 'major deficiency' in the lowercase letters of Armenian Bolorgir types: the fragility of some characters. In metal type, letters having a long horizontal stroke attached to the descender such as ի, ղ and ճ could easily be damaged since part of their horizontal stroke hung outside the block of type to kern to the right. Miwhêntisean and Aramean's solution was to modify the design of Armenian letters that exceeded the block of type. Filmsetting could finally overcome the problem and preserve the shapes of the traditional Bolorgir style. However, in the Monophoto, where character widths still needed to be allocated according to a specific unit row, Armenian forms were not totally freed from mechanical constraints.

Despite the lack of information about a potential market for the Arrarat typeface and filmsetters for typesetting Armenian, it is evident that there was a positive prospect of sales and that Monotype was eager to expand its market to the USSR. Towards the end of the twentieth century Armenian typefaces for phototypesetting were developed under the aegis of the State Committee for Publishing Houses, Printing Plants and the Book Trade in the Soviet Union, rather than of Armenians in Diaspora. A significant potential market for founts for phototypesetting composition was an essential prerequisite to the acceptance of a project by the two leading companies of Linotype and Monotype in the field of typography for reasons of financial viability. Compared to the Armenian founts owned by the Mekhitarists in Venice and Vienna in the eighteenth century, the design of Arrarat for the Monophoto Filmsetter is not of a high quality. However, Series 812 and 813 would be adapted in 1989 by Monotype for the Lasercomp. While Monotype contributed to the development of original Armenian typefaces in the filmsetting era, Linotype considered that it could not justify the investment that would be required to add Armenian founts to its 1970s collection of non-Latin typefaces.

²⁴⁹ Email from Hrant Gabeyan to the author, (dated 30 May 2018).

²⁵⁰ Beatrice Warde, 'Type design in the new cold-type age', *Printing in Britain*, Supplement (September 1963), p. 10.

Quoted in: Ross, *The printed Bengali*, p. 193.

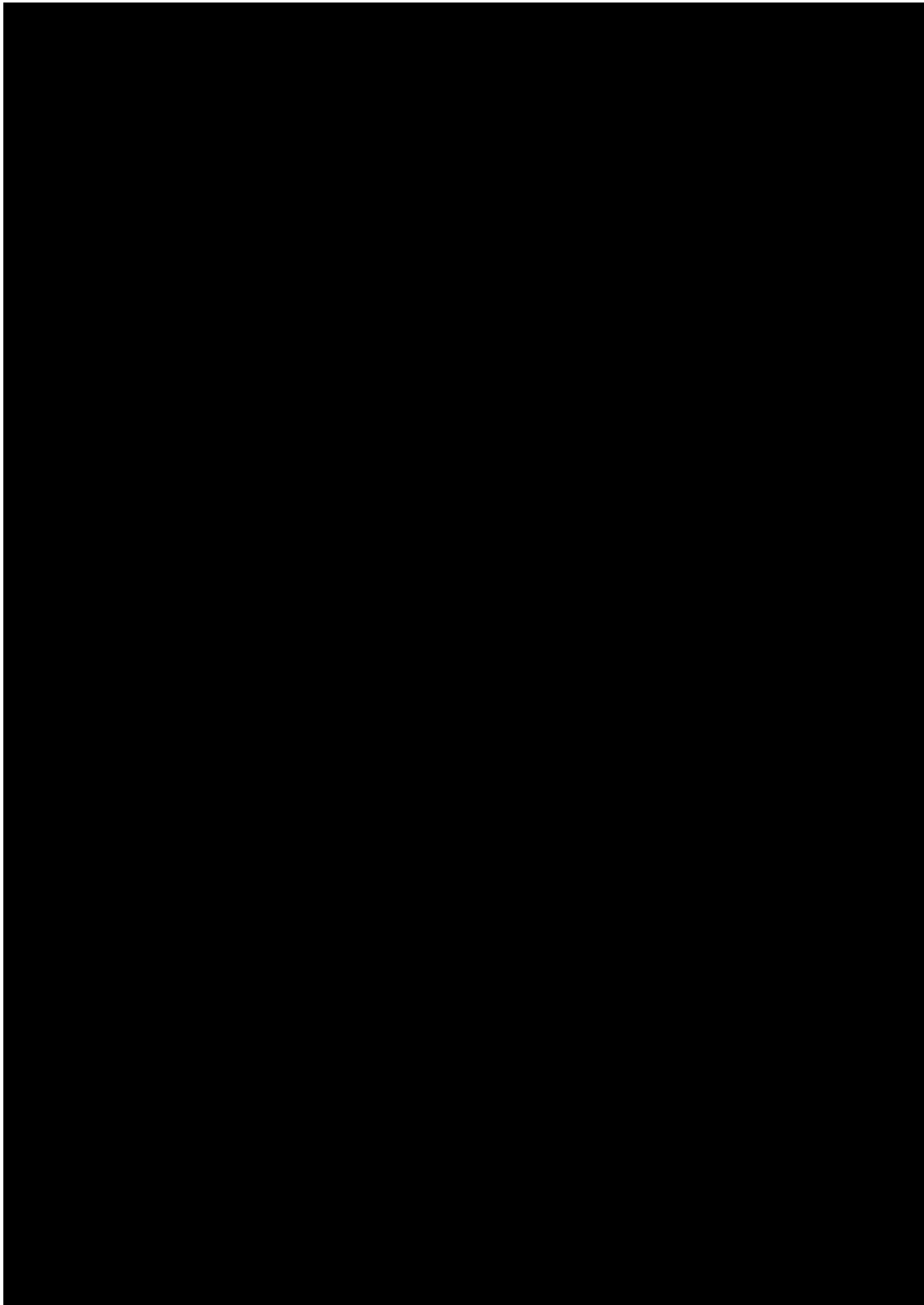


Fig. 67 Series 812-B at 24 pt, Armenian Arrarat Italic and Regular (undated). The inclined style is designed as a secondary style, based on the design of the upright Arrarat style rather than on a traditional Bolorgir typeface (Original size: 29,7 × 21 cm). Shown at 70% of original size. Armenian Folder. *The Monotype Archives, Salfords*.

4.6.2 Linotype's interest in Armenian typefaces for phototypesetting in the late 1970s

In February 1977 Walter Tracy at Linotype Paul Limited considered the possibility of producing Armenian No. 1 (from MLCo's artwork 12 Δ 184) as a VIP fount, since there was a good chance for a VIP sale in Iran.²⁵¹ The fount was to be made by the MLCo in four months and at a cost of 2,000 dollars if it was possible to provide customers with a 54-unit counting program.²⁵² MLCo would also have to produce friskets and key buttons, but Linotype Paul was to take care of the hyphenation program. Hrant Gabeyan, who was employed at Linotype until the end of 1979 – but stopped his activities with Linotype-Paul in 1978²⁵³ – was in charge of developing the Armenian hyphenation program. Gabeyan recalls:

..., [I was] involved in the Armenian hyphenation program, ..., but the sales director, Arthur Walker judged that it was not worthwhile to develop a computer-aided Armenian due to lack of prospects. I do not recall the outcome of the exchange of telexes between Walter Tracy and Mike Parker concerning Armenian on the VIP, and I once more say that I do not think that the VIP has had Armenian, first because there was not enough market potential and second they had a lot of other fish to fry.²⁵⁴

Gabeyan's recollection that the development of Armenian founts for the VIP machine was not pursued is validated by the internal correspondence between MLCo, Linotype Paul, Linotype Italia, and the Los Angeles office, between June and August 1977 with regard to a prospect of selling phototypesetting machines for Armenian in California and Italy. Linotype departments discussed the feasibility of installing machines at the Mekhitarists in Venice²⁵⁵ and at the publishing house Armin Graphic Services in Glendale,²⁵⁶ where its Armenian work was typeset by a Los Angeles subcontractor on Compugraphic equipment.²⁵⁷ However, the market prospects in both Italy and California proved to be illusory, as did the prospects for Armenian No. 1 for VIP for the Iranian market.

251 Letter from Walter Tracy, to Mike Parker (dated 21 February 1977). Folder 17G Armenian, in Folder 17_01 Non Roman General. The Non-Latin Type Collection of the Department of Typography & Graphic Communication at Reading University.

252 Letter from Mike Parker to Walter Tracy (dated 25 February 1977). Folder 17G Armenian, in Folder 17_01 Non Roman General. The Non-Latin Type Collection of the Department of Typography & Graphic Communication at Reading University.

253 From 1975, Gabeyan's responsibilities were reduced with the Linotype Group, as he had to handle at the same time Klett/Interpart in Germany and Compugraphic in the USA. Email from Hrant Gabeyan to the author (dated 30 May 2018).

254 Email from Hrant Gabeyan to the author (dated 30 May 2018).

255 Letter from Mike Parker to Adriano Pateri (dated 16 August 1977). Box 9940, Linotype Italia Folder. Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA.

256 Martin Boothman (Linotype Sales Director) met Mr Armin at the ANPA show in Anaheim (California) in 1977. Armin was a publisher of various monthly magazines and publications for the Armenian community in Southern California and the Spanish, Italian, English and Arabic publishing market there.

257 Letter from Martin Boothman to Mike Parker (dated 20 June 1977). Box 9940, Linotype Italia Folder. Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA.

Similar to hot-metal technology, where the sales of matrices were ‘regarded merely as adjuncts to the more valuable sales of machines’,²⁵⁸ the production of non-Latin typefaces for phototypesetting also relied on their potential market. Indeed, as Mike Parker pointed out, ‘... we [MLCo] are prepared to manufacture Armenian for Linocomp or V-I-P if this ... [would] lead to an order.’²⁵⁹ Gabeyan recalls the Linotype Corporation’s attitude towards the development of Armenian typefaces as follow:

... Linotype was always reluctant to develop Armenian typefaces. When I finished preparing the data for the Arabic character selection as well as the line justification softwares, I thought of creating a line justification software for Armenian, but Arthur Walker, the sales director and Walter Tracy were fully against, as there was no potential market. Anyway, there isn’t much to be done in line justification for Armenian; it’s very elementary, but they were against.²⁶⁰

In the 1970s, the lack of a significant potential market for Armenian for Linocomp and VIP machines compelled the company to abandon any Armenian project and to focus instead on more profitable scripts. The lack of a potential market for Linotype hot-metal and phototypesetting machines for Armenian typesetting²⁶¹ in that period meant that the Armenian Diaspora was left with no choice but to continue using hot-metal Linotype Armenian No. 1 and No. 2 well into the 1980s when they were adapted by Linotype Paul in the UK and Linotype Mergenthaler GmbH in Germany for the digital typesetter, the CRTronic 200.²⁶²

258 John Dreyfus, ‘A turning point in type design’, *Visible Language*, XIX, 1 (Winter, December 1985), p. 16.

259 Letter from Mike Parker to Henry Dierkopf (dated 15 July 1977). Box 9940, Linotype Italia Folder. Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA.

260 Email from Hrant Gabeyan to the author (dated 30 May 2018).

261 The sales figures of the matrices delivered to Russia began to decline considerably in 1936 due to the increased production of matrices in Russia. In 1935 the Russian government repaired some broken Linotype machines using self produced spare parts and began to produce their own matrices by copying Linotype’s existing designs. This also affected the sales of Armenian matrices. ‘Mastering of the Linotype by the factory of Max Holz was a great victory for Soviet mechanical engineering along the lines of printing machinery manufacture and at the same time a superfluous demonstration that any machine no matter how complicated, could be built by our factories from our own materials and by our engineers and workmen. The successful development of manufacturing the Linotype impelled the company to produce a greater quantity and variety of the matrices, which are used with this machine.’ Furthermore, the article ‘On some questions concerning the manufacture of Linotype matrices’ states that the Russian government was to manufacture Armenian ‘Roman’ and ‘Italic’ matrices at 10pt in 1938, (30 founts). M. Dorohin, ‘On some questions concerning the manufacture of Linotype matrices’, *Poligraficheskoe Proizvodstvo*, no. 10 (October 1938). Translated from Russian into English by J. M. for the Linotype Corporation in 1938. Box N3627, Russia Folder 792. Mergenthaler Linotype Collection, Archives of the Smithsonian National Museum, Washington DC, USA.

See also: Letter from (unknown) to C. H. Griffith (dated 30 November 1938). Box N3627, Russia Folder 792. Mergenthaler Linotype Company Records, Archives Center, National Museum of American History, Smithsonian Institution, Washington DC, USA.

In 1949 in Leningrad the Russian government even produced the Linotip, a machine similar to Linotype.

262 According to Seybold this was a third generation phototypesetter machine: ‘A third-generation typesetter is one which does not in fact expose type directly from photographic masters but reproduces them electronically on the face of a cathode ray tube ...’ Seybold, *Fundamentals of modern composition*, p. 119.

Conclusion

This thesis set out to explore how the traditional Bolorgir style of typography underwent changes over the centuries and to analyse the reasons behind this evolution. The paucity of reliable published narratives on Armenian typography have made this study highly dependent upon the analysis of primary sources, and therefore on archival research. The conventions, traditionalism, Latinisation and modernity in Armenian text typefaces from 1512 to 1977 have been investigated through the study of documents and the analysis of selected key typefaces, which are representative of the development of Armenian founts and therefore influenced the design of subsequent Armenian typefaces.

Since the analytical dimension of the research has involved the use of case studies, it has been pivotal to establish criteria for selecting key typefaces. Thus, each typeface analysed in this thesis was considered representative of a certain stage of development of Armenian typefaces and most of them even had an identifiable influence on subsequent developments.

As explained in the introduction, the investigation has followed an approach established by Fiona Ross in Bengali type considering ‘each significant development in ... type design within its historical context and attempts to identify the influences behind the styling of ... typefaces, appreciating the constraints imposed by technical or artistic limitations, typographic fashions, and even linguistic ignorance and misinformation.’¹

The first research question was to identify the historical and political factors that impacted upon the evolution of the Armenian typographic script. For centuries, the development of Armenian typefaces was influenced by the historical and political situation in the homeland – until independence in 1991, Armenia was a nation without a country – and particularly on the Armenian Diaspora. The Armenian Diaspora contributed on the one hand to preserving their script throughout centuries, on the other to modernising it as an indication of social progress. In the context of Armenian typefaces, preservation and modernisation are both expressions of cultural identity. At different stages in history, the traditional forms of printed Bolorgir typefaces were modified to look modern and Western; the first and major step towards the modernisation of the Armenian typographic script was taken in the second half of the nineteenth century by the Armenian punch-cutter, printer and publisher Yovhannes Miwhêntisean in Constantinople, and soon after by the Armenian printer and publisher Čanik Aramean in Paris.

The changes to the Armenian script that occurred in the mid-nineteenth century did not coincide with a transition in type-making processes, but with the replacement of classical Armenian with the modern Armenian language, with the contact between

¹ Ross, *The printed Bengali*, p. 1.

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Armenians and Europeans and in a context of a rising sense of national identity within the Armenian Diaspora. Despite the roles of cultural identity, and the political and geographical location, economic factors also shaped the evolution of Armenian typefaces.

The second research question related to the significance of the first Armenian printing establishment of Čanik Aramean in Paris in 1850s. The standard forms of printed Armenian, well established since the sixteenth century, in the second half of the nineteenth century underwent significant changes based on the visual structure of the Western forms, styles, and proportions. This radical transformation is known as Latinisation. Whereas Miwhêntisean introduced the Latinisation of the Armenian script by publishing his new upright Armenian typeface in his pamphlet *Announcement for the sake of the newly formed letters* in 1847 in Constantinople, Aramean's printing establishment was the first to use Latinised Armenian typefaces extensively in its publications.

The printer and publisher Čanik Aramean was also responsible for commissioning different individuals to design the newly fashioned Armenian typefaces he employed in *La Colombe du Massis* – the first illustrated Armenian journal printed in Paris. It is in the first issue of this journal that Aramean made the introduction of these new typefaces a formal matter by presenting their potential advantages to readers. By introducing these new Armenian typefaces – imitating European conventions – he aimed to replace the forms of the Bolorgir style. Aramean was accountable for implementing newly fashioned Armenian typefaces, using them to compose publications and thereby contributing to their diffusion. It is in this context that Aramean can be considered as a key figure of Latinisation.

The third research question was to evaluate the extent to which Western typographic trends influenced the design of Armenian typefaces. An analysis of the typefaces used in *La Colombe du Massis* made it possible to outline the progress of Latinisation over the period 1855-1858. The newly fashioned Armenian typefaces departed from the traditional forms of the Bolorgir style to use the Latin typographic script as a point of reference. Besides borrowing stylistic details and proportions from the Latin script, the design of letters became very distinct from the conventional letterforms of the traditional Bolorgir. Thus the axis shifted from slanted to upright, and sharp angular lines and junctions were replaced by new dynamic and rounded letterforms following the model of the Roman type in the Latin script. As a consequence, some letters became almost identical to the forms used in the Latin alphabet. The Latinisation process was extensive: hardly any letter of the traditional script in its typographic rendition was left untouched. The influence of the Latin script was significant, not only in the substitution of Latin typeforms when there was a phonetic correspondence, but also in the case of shape similarities. Further evidence of the Latinisation of the Armenian script was the introduction of the Armenian Italic style. An Armenian Italic type influenced by European conventions, designed according to the vertical proportions of a Latin

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Italic type and incorporating letters from the Latin alphabet into Armenian typefaces, appeared in 1858 in *La Colombe du Massis*. Throughout this early period of Latinisation, Armenians were faced with the imposition of a completely new alphabet, which they would have to learn in order to be able to read in their own language. Some even considered Armenian identity at risk.

Finally, the fourth research question called for the exploration of the effect of technological developments in type-making on the design quality of Armenian typefaces. The twentieth century saw changes in type-making and typesetting technology, and in the role of punch-cutters and type foundries. The development of Monotype Armenian Series 638 highlighted the complexities of composing and printing in Armenian, the issue of quality of Armenian typefaces in the twentieth century, and the impact of readers' preferences on the typographic development of the script. One of the main problems of the Linotype Armenian founts was the inappropriate proportions of certain characters due to the limitations of the Linotype machine, not only caused by the requirements of duplexing. However, one major issue in Monotype Series 638 was the inability to take advantage of kerning, the major benefit provided by the Monotype system. Another problem was the proportions of letters, some probably caused by the rigidity of the unit-width system. Regardless of the technical aspects, the lack of cooperation between the Monotype Matrix Department and the Monotype Type Drawing Office significantly affected the development of the typeface. In any event, Series 638 cannot be considered superior to the Linotype Armenian typeface. The Linotype Armenian was deemed by the Diaspora to be the model of Armenian typeface excellence. This is particularly striking considering the rich heritage of Armenian culture and its wealth of manuscript tradition. However, the reaction of readers to printed material had a major role in determining the acceptance of new standards in Armenian type design.

Mechanised typesetting not only had an impact on the design quality of Armenian founts, but it also directly influenced decisions of creating Armenian founts for hot-metal technology: the development of Armenian typefaces was no longer dependent on individual printers or publishers, but on machine manufacturers. Also in the 1970s concern for profitability and market demand played a key role in decision making about Armenian typefaces.

Until now there are numerous and substantial gaps in existing historical sources of the period starting from the mid-nineteenth century to the turn of the millennium. The history of Armenian typefaces since 1840 has been neglected by researchers. This has led to a gap in the knowledge of the development of the Armenian typefaces in the nineteenth and twentieth centuries. It is in this context that unexplored primary sources have formed the basis of this research; its resulting findings are among its most original contributions to the field.

As stated in the introduction, the analysis of different primary sources in libraries and archives established that the most accessible and valuable documents to provide

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information on nineteenth-century Armenian typefaces are published journals issued in the Armenian Diaspora. Journals were the most effective means of reaching the general public. They therefore provide valuable contextual information, and also data in the form of types used to enable a comparative analysis of the relevant types and their use. Thus, it has been possible to provide substantial new historical evidence about the development of printed Bologir types in the second half of the nineteenth century, including the motives behind Latinisation of the Armenian script, its extent, the individuals involved, and readers' reactions to Latinisation.

This thesis not only presents new evidence, it also rectifies incorrect historical information. For example, Čanik Aramean was not the designer of the typefaces he used in *La Colombe du Massis* and in other Armenian publications, as the typefaces were the work of various individuals. However, this does not diminish Aramean's importance as a key figure of Latinisation.² Furthermore, this thesis has shed light on the importance of the Armenian publisher, printer, type founder and punch-cutter Yovhannes Miwhêntisean as the 1840s' herald of Latinisation.

Twentieth-century Armenian typographic primary sources identified were gathered from different locations in the UK and in the US. Valuable insight was gained by cross-referencing different primary sources in the case of documents emanating from competing type-making businesses. This has shed some light on Linotype and Monotype business relationships with regard to the design of founts; the exchange of correspondence between Walter Tracy at Linotype & Machinery (L&M) and John Dreyfus at Monotype Salfords at the early stages of the Monotype Series 638 project has also provided some insight into the issue of typeface copyright during the 1960s and raised the issue of plagiarism in the context of Armenian typefaces. Whereas the business relationship between L&M and Monotype can be seen as an example of fair practice, there have been several cases where fairness was not a significant concern. A principal example of copying existing type designs by means of electrotyping is the Imperial and Government Printing Establishment at Vienna in the mid-nineteenth century. In the context of Armenian typefaces, plagiarism would become widespread practice towards the end of the twentieth century with the emergence of personal computers.

Substantial hitherto uncovered evidence is described for the first time, as exemplified by the development of Linotype Armenian No. 1 and No. 2 in 1912, the importance of devising an Armenian standard keyboard and the difficulties encountered, the development of Monotype Armenian 638, and Series 812-B and 813-B for the Monophoto Filmsetter 400/8. Furthermore, hitherto unrecognised Armenians that contributed to the development of Armenian typefaces have been identified and credited, for example Onnik Awetisean and Hrant Gabeyan.³

As shown, this study has led to new important discoveries on the development of Armenian typefaces in the nineteenth and twentieth centuries. So far, typographic research has privileged the sixteenth, seventeenth and, to some extent, the eighteenth

² Some important insights about Čanik Aramean were shared at the ATypI conference in Montreal in 2017.

³ Hrant Gabeyan was interviewed by email and provided further information on Linotype Armenian in the 1970s.

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century, rather than more recent periods. However, it tended to focus on the history of Armenian printing rather than that of typefaces. Consequently, in this thesis the extensive discussion of Armenian printing types from 1512 to 1840 has made significant original contributions. In order to discuss Latinisation and modernity in Armenian text typefaces, it was pivotal to understand the typographic conventions of the printed Bolorgir style since its inception in printing. Aspects such as design quality of Armenian typefaces, the lack of innovation into the Armenian typographic field before 1840, and the impact that the Mekhitarists in Venice had on the development of subsequent Armenian types have been argued in this thesis. This study has shown that the earliest Armenian typefaces created in Venice for the first known Armenian printed books – FJM1 for the *Friday Book* (1512) and PAT1 and PAT2 for the *Psalter* (1565–1566) – are of low design quality, but they are representative of the transition between manuscript and movable types. Moreover, by scrutinising the Armenian types cut by highly skilled craftsmen, such as Robert Granjon in Rome and Christoffel Van Dijck in Amsterdam, this thesis has determined that the skills of the punch-cutter are an essential condition for obtaining a high level of quality. However, the elegance of a type depends not only on the punch-cutter's skill, but also on the quality of the manuscript used as a model to develop the types.

This study has established that from the second half of the seventeenth to the mid-nineteenth century Bolorgir typefaces lacked originality. Not only is this because the starting point used by punch-cutters was a printed typeface instead of a manuscript, but also because the Mediaen Armenian type cut by Van Dijck for the Oskanian printing office had become widespread and well received by Armenians. This thesis has pinpointed two cases of interest. In 1684, Nicholas Kis created Armenian types by copying existing ones from Van Dijck, with some revisions and replacements. Around 1734 William Caslon produced a type that was very similar to Van Dijck's Bourgeois Armenian, raising doubt of originality in his case.

In the nineteenth century the Mekhitarist Fathers, established in Venice and Vienna, imitated the designs of successful existing founts: they made use of Kis's work as the model for their types, but with some variations. Vienna differed from Venice as to the variations they applied, making the respective types identifiable. This thesis has provided further valuable insight into the preference for Bolorgir types for scriptural and scholarly works in the first half of the nineteenth century, noting the impact that the Mekhitarists in Venice had on the development of subsequent Armenian types. Mekhitarists' text types were considered 'superior to every other in finish and beauty',⁴ and therefore they became the standard against which to evaluate the quality of subsequent Armenian Bolorgir types. Even though the Amsterdam types were widely established amongst Armenians and recognised by readers as the conventional representation of the Bolorgir in printing, they did not prevent printers from looking for something different.

4 *Thirtieth annual report of the American Board of Commissioners for Foreign Missions* (September 1839), p. 63.

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This thesis has established that since the second half of the nineteenth century, changes to the Armenian typographic script have had an enormous impact on the development of subsequent Armenian typefaces: Aramean's aim to replace the forms of the Bolorgir style by introducing new Armenian typefaces, imitating European conventions, was not fully realised. While traditional Bolorgir typefaces continued to exist, 'newly fashioned Armenian typefaces' have gradually become integrated into Armenian culture in the nineteenth and twentieth centuries. However, in the twenty-first century traditional Bolorgir typefaces have progressively disappeared: upright Armenian typefaces, drawn following European conventions, have become the standard style. According to Hrant Gabeyan: '... since the independence of Armenia, and especially with the Internet, the numerous TV channels, the availability in the Diaspora of books in general but mainly school books typeset and printed in Armenia, the upright style has been adopted and the slanted has been left behind, ... which I consider as a positive evolution. Since 1990, type-designers in Armenia and others, following their predecessors, have created a large variety of typefaces, most of them in upright style, which have enriched the Armenian repertoire.'⁵ Gabeyan's comments are open to questions: can the fact that the slanted style has been left behind, be considered a positive evolution? Has the upright style enriched the Armenian repertoire or has it weakened Armenian identity? This thesis aims to contribute to the understanding of the current discipline by bringing substantial unexplored information and filling gaps in the historical record. However, there is room for further research and for filling remaining gaps. This study ends with Monotype Armenian Series 812–B and 813–B for the Monophoto Filmsetter, a project that represents the transition of Armenian typefaces from hot-metal to filmsetting. Further developments merit exploration in depth that is outside the scope of this thesis.

Finally, this thesis aspires to be an invaluable source of information for researchers and scholars in the field of Armenian typography and type design worldwide, but also to be an example for other researchers engaging with non-Latin scripts, such as Arabic, where cultural identity has been a contributing factor to Latinisation. As it aims to be internationally accessible, it is important that this study is available in English. Since this thesis provides an understanding of the Armenian typographic culture through different type-making and typesetting technologies, it aims to be useful also to practitioners. Pieces of evidence have been viewed in their historical context, but also interpreted from the prospective of a type designer. Current discipline needs to be informed by historical research: past and present cannot be separated, and research and practice need to work side by side.

⁵ Email from Hrant Gabeyan to the author (dated 30 May 2018).

Bibliography

Published sources

- A specimen of the several sorts of letters given to the University by Dr John Fell.*
Oxford: Theatre, 1695.
- Abel-Rémusat, J. P. 'Rapport sur les travaux du conseil de la *Société Asiatique*, et sur l'emploi des Fonds pendant l'année 1824, fait dans la Séance Générale du 29 Avril 1824', *Société Asiatique. Discours et rapports lus dans la Séance Générale annuelle du 29 Avril 1824* (Paris, 1824), 13–49.
- Adalian, Rouben Paul. *From humanism to rationalism*. Atlanta: Scholars Press, 1992.
- Aghaian, Eduard Bagrati. *Mesrop Mashtots*. Yerevan: Yerevan University Press, 1986.
- Albonesi, Teseo Ambrogio. *Introductio*. Pavia: 1539.
- American Board of Commissioners for Foreign Missions. *The Missionary Herald*, XX, 3 (March 1824).
- . 'Western Asia: new founts of types for the Mission Press', *The Missionary Herald*, XXIII, 11 (November 1827), 343–344.
- . *The Missionary Herald*, LXXX, 8 (August 1884).
- . *Twenty-seventh annual report of the American Board of Commissioners for Foreign Missions* (1836).
- . *Thirtieth annual report of the American Board of Commissioners for Foreign Missions* (September 1839).
- Anderson, Rufus. *History of the Missions of the American Board of Commissioners for Foreign Missions to the oriental churches*. Boston: Congregational Publishing Society, 1872), vol. 1.
- Aramean, Čanik. 'Newly fashioned Bolorgir typefaces', *La Colombe du Massis* (Paris, October 1856), 190–192.
- Asiatic Society of Paris, *The Asiatic journal and monthly register for British India and its dependencies*, XX (London, August 1825), 211–212.
- Aslanian, Sebouh David. *From the Indian Ocean to the Mediterranean*. California: University of California Press, 2011.
- . 'A reader responds to Joseph Emin's Life and adventures: notes toward a 'History of Reading' in late eighteenth century Madras', *Handes Amsorya* (January–December 2012), 363–418.
- . 'Port cities and printers: reflections on early modern global Armenian print culture', *Book history*, 17 (2014), 51–93.
- . 'The Early Arrival of Print in Safavid Iran: new light on the first Armenian printing press in New Julfa, Isfahan (1630-1650, 1686-1693)', *Handes Amsorea* (2014), 383–468.
- Auer, Alois. *Geschichte der K.K. Hof- und Staatsdruckerei in Wien*. Vienna: K.K. Hof- und Staats-Druckerei, 1851.
- . *Der polygraphische Apparat der K.K. Hof- und Staatsdruckerei zu Wien*. Vienna: K.K. Hof- und Staats-Druckerei, 1853.

BIBLIOGRAPHY

- Awetisean, Onnik. Հայ տպագրական նոր ծանրագիրը. (New lowercase letters for printing in Armenian). Beirut: Atlas, 1968.
- . Փորձ ծր տպագրական գիտելիքի բարելավման և արդիականացման. (An essay on the improvement and modernisation of Armenian typographic characters). Cairo: Executive Body of the Armenian National Fund, 1946.
- . *Peintres et sculpteurs arméniens du 19eme siècle à nos jours*. Cairo: Amis de la Culture Arménienne, 1959.
- Azdarar* (Tira [16 October], 1794).
- Babloyan, Manvel Avetik'i. *Bibliography of Armenian journals (1794-1980)*. Yerevan: the SD Science Publishing, 1986.
- Bagster, Samuel and Sons. *The Bible of every land: a history of the Sacred Scriptures in every language and dialect into which translations have been made*. London: Samuel Bagster and Sons, 1848.
- Báez, Fernando. *A universal history of the destruction of books*. New York: Atlas & Co., 2008.
- Bardakjian, Kevork B. *A reference guide to modern Armenian literature, 1500–1920*. Detroit: Wayne State University Press, 2000.
- Bernard, Auguste. *Histoire de l'Imprimerie Royale du Louvre*. Paris: Impr. impériale, 1867.
- Bigmore, E. C. & Wyman, C. W. H. *A Bibliography of Printing*. Cambridge: Cambridge University Press, 2014, vol. 1.
- Blanchard, Gerard. 'The typography of the French book' in Kenneth Day (ed.), *Book typography 1815–1965 in Europe and the United States of America*, 39–80. London: Ernest Benn Limited, 1966.
- Blanning, Timothy Charles William. *The Eighteenth century: Europe 1688-1815*. Oxford: Oxford University Press, 2000.
- Boag, Andrew. 'Monotype and phototypesetting', *Journal of the Printing Historical Society*, New Series 2 (London, Winter 2000).
- Brown, Horatio. *The Venetian printing press*. London: John C. Nimmo, 1891.
- Brown, Michelle P. *A Guide to Western Historical Scripts from Antiquity to 1600*, 2nd edn. Toronto: University of Toronto press, 2002.
- Brunet, Jaques Charles. *Manuel du libraire et de l'amateur de livres*. Bruxelles: Société Belge de libraries, 1839, vol. 4.
- Buchanan, Claudius. *Christian researches in Asia*. Boston: Samuel T. Armstrong, 1811.
- Carfora, Lelio. 'Degli studi Orientali in Italia', *Il progresso delle scienze, lettere ed arti*, XIX, 37 (1838), 85–94.
- Carter, Harry. *A History of the Oxford University Press*. Oxford: the Clarendon Press, 1975, vol. 1.
- . *Fournier on typesetting* (London: 1930) repr. in James Mosley (ed.), *The Manuel Typographique of Pierre-Simon Fournier le jeune*. Darmstadt: 1995, vol. 3.
- . *A view of early typography up to about 1600*. Reprinted with an introduction by James Mosley. London: Hyphen Press, 2002.
- Carter, Sebastian. 'The Morisons years and beyond 1923–1965', *The Monotype Recorder*, New Series, 10 (1997), 14–25.

BIBLIOGRAPHY

- Catalogus librorum impressorum bibliothecae Bodleianae in Academia Oxoniensi*. Oxford: Academic Press, 1843, vol. 3.
- Çelik, Zeynep. *The Remaking of Istanbul*. Seattle and London: University of Washington Press, 1986.
- Cercle de la librairie (France). *Bibliographie de la France, ou Journal général de l'Imprimerie et de la librairie*, 45 (Paris, 6 November 1824).
- . *Bibliographie de la France, ou Journal général de l'imprimerie et de la librairie*, 47 (Paris, 20 November 1824).
- Chalmers, Alexander. *The general biographical dictionary*. London: Nichols, Son & Bentley, 1812, vol. 5.
- Chambers, Ephraim. *Cyclopædia, or an Universal Dictionary of the Arts and Sciences*. London: W. Innis & others, 1738, vol. 1.
- Charshafjian, Thomas. 'Trial and Triumph: how the Hairenik was born', *The Armenian review. A special series on the 80th anniversary of Hairenik XXXII*, 1–25 (May 1979), 11–19.
- Chaudhuri, Kirti N. *The trading world of Asia and the English East India Company: 1660–1760*. Cambridge: Cambridge University Press 1978.
- Chaudhury, Sushil and Kévonian, Kéram. *Les Arméniens dans le commerce asiatique au début de l'ère moderne*. Paris: Éditions de la Maison des sciences de l'homme, 2008.
- Child, John. *Industrial relations in the British printing industry*. London: Allen and Unwin, 1967.
- Church Missionary Society. 'Survey of the Protestant missionary stations throughout the world', *The Missionary Register* (February 1828), 57–58.
- . *The Missionary Register* (1839).
- Çil, Ela and Şenel Ayşe Nur. 'Collage of a changing city: nineteenth century Istanbul through the narratives of its administrators, travelers, and writers' in Salvatore Adorno, Giovanni Cristina, Arianna Rotondo (eds.), *Visibile invisibile: percepire la città tra descrizioni e omissioni*, 732–743. Catania: Scrimm Edizioni, 2014.
- Cirbied. *Grammaire de Denis de Thrace*. Paris: Éverat, 1830.
- Clair, Colin. *A history of European printing*. London & New York: Academic Press, 1976.
- Clarke, Adam. *A bibliographical dictionary*. London: W. Baynes, 1803.
- Coakley, James F. 'Homan Hallock, punchcutter', *Printing History* 45, XXIII, 1 (2003), 18–41.
- Cowe, S. Peter. 'Church and Diaspora: the case of the Armenians', *The Cambridge History of Christianity*. Cambridge: Cambridge University Press, 2006, vol. 5.
- Curtin, Philip D. *Cross-cultural trade in world history*. Cambridge: Cambridge University Press, 1984.
- d'Audebert de Ferussac, Andre Etienne. *Bulletin général et universel des annonces et des nouvelles scientifiques*, IV (Paris, 1823).
- de Clerq, Jan; Swiggers, Pierre and Van Tongerloo, Louis. 'The linguistic contribution of the Congregation de Propaganda Fide' in Mirko Tavoni (ed.), *Italy and Europe in Renaissance linguistics*, 439–457. Ferrara: Franco Cosimo Panini, 1996.

BIBLIOGRAPHY

- Der-Nersessian, Nerses: 'Due antiche edizioni Armene di Venezia' in Scilla Abbiati (ed.), *Armeni, Ebrei, Greci stampatori a Venezia*, 39–48. Venice: Casa Editrice Armena, 1989.
- Devrikyan, Vardan G. 'Preparation works and printing of the first Armenian publication of the Bible', *Fundamental Armenology*, 1 (3) (2016), 434–460.
- Diringer, David. *The alphabet: A key to the history of mankind*. London: Hutchinson's scientific and technical publications, 1949.
- Dreier, Thomas. *The power of print, and men*. New York: Mergenthaler Linotype Company, 1936.
- Dreyfus, John. 'A turning point in type design', *Visible Language*, XIX, 1 (Winter, December 1985), 11–22.
- Egan, Bartholomew. 'Notes on Propaganda Fide printing-press and correspondence concerning Francis Molloy, O. F. M.', *Collectanea Hibernica*, 2 (1959).
- Eisenstein, Elizabeth. *The printing revolution in early modern Europe*. New York: Cambridge University Press, 2012.
- Eric, M. Հայերէն գրատեղի բարեփոխութիւնը, Յերեւան, Արդարագրութիւն - Մեխնիկական Մասնաձեռնարկ. (Reform of Armenian letters). 2nd edn. Yerevan: Tekhnikan Massanerin, 1934.
- Fathers Richard and Giraud. *Dizionario universale delle scienze ecclesiastiche*. Naples: Stabilimento tipografico e calcografico di C. Batelli e Comp., 1847, vol. 6.
- Feldbrugge, F. J. M.; Van Den Berg, G. P.; B. Simons, William (eds). *Encyclopedia of Soviet law*. Dordrecht: Martinus Nijhoff Publishers, 1985.
- Federal Writer's Project. *New York panorama: a comprehensive view of the metropolis*. New York: Random House, 1938.
- Fitzsimmons, Michael P. *From Artisan to Worker. Guilds, the French State, and the organization of labor, 1776–1821*. New York: Cambridge University Press, 2010.
- Fournier le Jeune. *Manuel typographique*, 2 vols. Paris: Barbou, 1764, vol. 1.
- Franks, Henry. 'Mergenthaler Linotype machines' (10 September, 1896), 74–83.
- Franzosini, Edgardo. *Sotto il nome del cardinale*. Milan: Adelphi, 2014.
- Ghabuzyan, Edik. *Granshan: catalogue of typefaces from 2008–2010*. Yerevan: National Book Chamber of Armenia, 2011)
- Gaskell, Philip. *A new introduction to bibliography*. Oxford: Clarendon Press, 1972.
- Ghougassian, Vazken. 'The Quest for Enlightenment and Liberation: The case of the Armenian community of India in the late eighteenth century' in Richard G. Hovannisian and David N. Myers (eds.), *Enlightenment and Diaspora: the Armenian and Jewish cases*, 241–264. Atlanta: Scholars press, 1999.
- Gottschall, Edward. 'The State of the Art in Typeface Design Protection', *Visible Language*, XIX, 1 (Winter, December 1985), 149–155.
- Grendler, Paul F. 'The Roman Inquisition and the Venetian Press, 1540-1605', *The Journal of Modern History*, XLVII, 1 (March 1975), 48–65.
- Guilday, Peter. 'The Sacred Congregation de Propaganda Fide (1622–1922)', *The Catholic Historical Review*, VI, 4 (January 1921), 478–494.
- Hacikyan, Agop J. *The heritage of Armenian Literature*, 3 vols. Detroit: Wayne State University Press, 2005, vol. 3.

BIBLIOGRAPHY

- Haiman, György. *Nicholas Kis: a Hungarian punch-cutter and printer 1650–1702*. S. Francisco: Jack W. Stauffacher, The Greenwood Press, John Howell Books, 1983.
- . *Nicholas Kis: a Hungarian punch-cutter and printer 1650–1702*, (booklet printed in recognition of the *Tricentenary of the printing of Nicholas Kis Tófalusi's Amsterdam Bible*, Debrecen, Hungary, 25–27 April 1985). S. Francisco: The Greenwood Press, 1985.
- Haines, Mrs F. E. H. *Jonas King, missionary to Syria and Greece*. New York: American Tract Society, 1879.
- Hamilton, Alistair. 'The Learned Press: Oriental Languages' in Ian Gadd, Simon Eliot, and W. Roger Louis (eds.), *The history of Oxford University Press*, pp. 399–418. Oxford, Oxford University Press, 2013), vol. 1.
- Hansard, Thomas Curson. *Typographia*. London: Baldwin, Cradock, and Joy, 1825.
- Harris, Richard L. 'George Hickes (1642–1715)' in Helen Damico (ed.), *Medieval scholarship. Biographical studies on the formation of a discipline*, 19–32. New York & London: Garland, 1998, vol. 2.
- Hart, Horace. *Notes on a century of typography at the University Press, Oxford 1693–1794*. Oxford: The Oxford University Press, 1900.
- . Carter, Harry (ed.), *Notes on a century of typography at the University Press, Oxford 1693–1794*. Oxford: The Clarendon Press, 1970.
- Henkel, Willi. 'Die Druckerei der Propaganda Fide im Dienste der Glaubensverbreitung (II)', *Communicatio Socialis*, IX, 3 (1976), 217–232.
- Hewsen, Robert H. 'In search of Armenian nobility: five Armenian families of the Ottoman Empire', *Journal of the Society for Armenian Studies*, 3 (1987), 93–117.
- Hosting, Geoffrey. *Russia and the Russians*. London: the Penguin Press, 2001.
- Hutt, Allen. *The changing newspaper. Typographic trends in Britain and America 1622–1972*. London: Gordon Fraser, 1973.
- Imprimerie Royale. *Spécimen typographique de l'Imprimerie Royale*. Paris: Imprimerie Royale, 1845.
- Jones, Pamela M. *Federico Borromeo e l'Ambrosiana*. Milan: Vita e Pensiero, 1997.
- Journal Asiatique*, II (Paris, 1823).
- Kalemkiar, P. Gregoris. *Eine Skizze der literarischtypographischen Thätigkeit der Mechitaristen–Congregation in Wien*. Wien: Druck und Verlag der Mechitharisten–Congregations–Buchdruckerei, 1898.
- Kévonian, Kéram. 'Raden Saleh, peintre de Mariam Haroutunian' *Archipel*, 62 (2001), 91–126.
- Kévorkian, Raymond. H. *Catalogue des 'incunables' arméniens (1511–1695) ou chronique de l'imprimerie arménienne*. Genève: Patrick Cramer, 1986.
- . 'Le livre imprimé en milieu arménien ottoman aux XVIe–XVIIIe siècles', *Revue des mondes musulmans et de la Méditerranée*, 87–88 (September 1999), 173–185.
- . 'Armenian publishing and the quest for modernity (16th–19th centuries)' in Valentina Calzolari and Michael E. Stone (eds.), *HdO: Armenian philology in the modern era. From manuscript to digital text*, 122–133. Leiden: Brill, 2014.
- Kirakosyan, Amalya. *Bibliography of Armenian journals (1794–1967)*. Yerevan: Al. Myasnikyan Republican Library, 1970.

BIBLIOGRAPHY

- Khorenaci, Mosis. *Historiae Armenicae libri tres*. London: Whistonian, 1736.
- Knuth, Rebecca. *Burning books and levelling libraries*. Westport: Praeger, 2006.
- Kurkjian, Vahan. *A history of Armenia*. New York: Armenian General Benevolent Union of America, 1959.
- La Colombe du Massis* (Paris, 1855).
- Lane, John. *The Enschedé type specimens of 1768 & 1773*. The Netherlands: the Enschedé Font Foundry, 1993.
- . ‘The types of Nicholas Kis’, *Journal of the Printing Historical Society*, 18 (1983/1984), 47–79.
- . *Early type specimens in the Plantin-Moretus Museum*. Delaware and London: The Oak Knoll Press and the British Library, 2004.
- . *The Diaspora of Armenian printing, 1512-2012*. Amsterdam: Special Collections of the University of Amsterdam, 2012.
- Langlois, Victor. *The Armenian monastery of St. Lazarus–Venice*, (translated by Frederick Schröder). Venice: Printing office of St. Lazarus, 1874.
- Lardinois, Roland. *Scholars and Prophets: Sociology of India from France in the 19th-20th centuries*. New Delhi: Social Science Press, 2013.
- Laud, William. *The autobiography of Dr. William Laud, Archbishop of Canterbury and Martyr*. Oxford: J. H. Parker, 1839.
- Lawson, Alexander. *Anatomy of a typeface*. New Hampshire: David R. Godine, 1990.
- Legros, Lucien Alphonse; Grant, John Cameron. *Typographical printing-surfaces*. London & New York: Longmans, Green, 1916.
- Lewis, Geoffry. ‘The new alphabet’, *The Turkish language reform* (1999), 27–39.
- Lyons, Martin. *Books: A Living History*, 1st edn. California: J. Paul Getty Museum, 2011.
- Lowry, Martin. *Nicholas Jenson and the rise of Venetian publishing in Renaissance Europe*. Oxford: Blackwell, 1991.
- Maksoudian, Krikor. *The origin of the Armenian alphabet and literature*. New York: St. Vartan Press, 2006.
- Mann, Stuart. *Armenian and Indo-European (historical phonology)*. London: Luzac & Co. Ltd., 1963.
- Matioossian, Vartan. ‘The First Historian of Armenian Printing’, *The Armenian weekly* (1 September, 2012), 24–27.
- McKitterick, David. *A History of Cambridge University Press: New Worlds for Learning, 1873–1972*. Cambridge: Cambridge University Press, 2004, vol. 3.
- Mergenthaler Linotype Company. ‘Armenian composition on the Linotype’. *The Linotype Bulletin*, VIII, 4 (April 1912), 54–55.
- Mergenthaler Linotype Company. ‘Specimens received’. *The Linotype Bulletin*, XI, 4 (August 1914), 20.
- Mergenthaler Linotype Company. *The big scheme of simple operation*. New York: Mergenthaler Linotype Company, 1923.
- Miller, Peter N. ‘Making the Paris Polyglot Bible: humanism and orientalism in the early seventeenth century’ in Herbert Jaumann (ed.), *Die europäische Gelehrtenrepublik im Zeitalter des Konfessionalismus*, 59–85. Wiesbaden: Harrassowitz Verlag, 2001.

BIBLIOGRAPHY

- Milo, Thomas. 'Arabic script and typography' in John D. Berry (ed.), *Language Culture Type*, 112–127. New York: ATypI and Graphis, 2002.
- Minassian, Anahide Ter. *Histoires croisées. Diaspora Arménie Transcaucasie 1890–1990*. Marseille: editions Parentheses, 1997.
- Miwhêntisean, Johannes. *Յայտարարութիւն վասն նորակերպ րատիպս*. (Announcement). Constantinople: Printing House of Johannes Miwhêntisean, 1847.
- Morison, Stanley. *Four centuries of fine printing*. London: Ernest Benn Limited, 1949.
- . (with the assistance of Carter). *John Fell, the University Press and the 'Fell' types*. Oxford: The Clarendon Press, 1967.
- Moran, James. 'Filmsetting – Bibliographical Implications'. *The Library*. Fifth Series, XV, 4 (London, December 1960), 231–245.
- Mosley, James. 'The early career of William Caslon', *Journal of the Printing Historical Society*, 3 (1967), 66–81.
- . 'A specimen of printing types by William Caslon, London 1766', *Journal of the Printing Historical Society* 16 (1981/1982), 3–113.
- Mouradian, Apraham (ed.), *Pariz*, 57 (Paris, 20 December 1861).
- . *Pariz*, 58 (Paris, 3 January 1862).
- . *Pariz*, 59 (Paris, 17 January 1862).
- Mutafian, Claude. *Arménie, la magie de l'écrit*. [Exposition, Marseille: Centre de la vieille charité, 27 avril–22 juillet 2007].
- Nalbandian, Louise. *The Armenian revolutionary movement: The development of Armenian political parties through the nineteenth Century*. California: University of California Press, 1975.
- Nemeth, Titus. 'Arabic type-making in the machine age: the influence of technology on the form of Arabic type, 1908-1933'. (PhD thesis). Reading, University of Reading, 2013.
- . *Arabic type-making in the machine age, the influence of technology on the form of Arabic type, 1908–1993*. Leiden: Brill, 2017.
- Nersessian, Vrej. *Catalogue of early Armenian books 1512–1850*. London: the British Library, 1980.
- . *The Bible in the Armenian tradition*. Los Angeles: The J. Paul Getty Museum, 2001.
- Nichanian, Marc. 'Enlightenment and historical thought' in Richard G. Hovannisian and David N. Myers (eds.), *Enlightenment and Diaspora: the Armenian and Jewish cases*, 87–124. Atlanta: Scholars press, 1999.
- Omont, Henri. 'Alphabets Grecs et Hébreux publiés à Paris au XVIe siècle', *Bulletin de la Société de l'histoire de Paris et de l'Ile-de-France* (Novembre–Décembre 1884), 174–184.
- Oshagan, Vahé. 'From Enlightenment to Renaissance: the Armenian experience' in Richard G. Hovannisian and David N. Myers (eds.), *Enlightenment and Diaspora: the Armenian and Jewish cases*, 145–180. Atlanta: Scholars press, 1999.
- Orengo, Alessandro. 'L'Owrbat'agirk' ('Il Libro del Venerdi') e gli inizi della stampa Armena', *Egitto e vicino Oriente*, 34 (2011), 225–236.
- Ould, Martyn. 'The workplace: places, procedures, and personnel 1668–1780' in Ian Gadd, Simon Eliot, and W. Roger Louis (eds.), *The history of Oxford University Press*, 193–242. Oxford: Oxford University Press, 2013, vol. 1.

BIBLIOGRAPHY

- . *Printing at the University Press, Oxford 1660–1780*. Seaton: The Old School Press, 2018, vol. 2.
- Outram, Dorinda. ‘The Enlightenment’. New York: Cambridge University Press, 2013. Ուրբատագիրք. (Owrbat’agirik). Venice: D.I.Z.A., 1512.
- Panossian, Razmik. *The Armenians*. New York: Columbia University Press, 2006.
- Papazian, Hrant. ‘Latinization: Prevention and cure’, *Spatium Magazin für typografie*, 4 (2004), 10–20.
- Peacey, Jason. ‘Printers to the University 1584–1658’ in Ian Gadd, Simon Eliot (eds.), *The history of Oxford University Press*. Oxford: Oxford University Press, 2013, vol. 1, pp. 51–77.
- Pehlivanian, Meliné. ‘Mesrop’s heirs: The early Armenian book printers’ in E. Hanebutt-Benz, D. Glass, G. Roper et al. (eds), *The Middle Eastern languages and the print revolution*, 53–92. Westhofen: Wva-Verlag Skulima, 2002.
- . ‘Les lettres arméniennes dans les éditions européennes (XV–XVII siècle)’ in Claude Mutaflan (ed.), *Arménie, la magie de l’écrit*, 332–336. Paris: Somogy, 2007.
- Peignot, Gabriel. *Dictionnaire raisonné de bibliologie*. Paris: Chez Villier, 1802, vol. 2.
- Porter, Ray. *The Enlightenment*. New York: Palgrave, 2001.
- Pozza, Neri. ‘L’editoria Venicena da Giovanni Spira ad Aldo Manuzio’ in Neri Pozza (ed.), *La stampa degli incunabuli nel Veneto*, 9–36. Vicenza: Neri Pozza Editore, 1984.
- Preece, David A. ‘Social aspects and effects of composing machine adoption in the British printing industry’, *Journal of the Printing Historical Society*, 18 (1984), 1–35.
- Prime, E. D. G. *Forty years in the Turkish Empire; or, memoirs of Rev. William Goodell*. New York: Robert Carter, 1878.
- Puzzovio, Carolyn. ‘The story of the Armenian alphabet. Part 1: historical summary’, *Baseline*, 57 (2009), 34–43.
- . ‘The story of the Armenian alphabet. Part 2: recent developments’, *Baseline*, 58 (2010), 34–43.
- Reed, Talbot Baines. *A history of the Old English letter foundries*. London: E. Stock, 1887. *Revue des deux mondes*, 16 (1854).
- Rivola, Francesco. *Vita di Federico Borromeo*. Milan: Dionisio Gariboldi, 1656.
- Romano, Frank. *History of the Linotype Company*. New York: RIT Press, 2014.
- Roscoe, William. *The life and pontificate of Leo the tenth*, 4 vols. London: Cadell & Davies, 1806, vol. 2.
- Ross, Fiona. *The printed Bengali character and its evolution*. Surrey: Curzon Press, 1999.
- Ross, Fiona and Shaw, Graham. ‘An unexpected legacy, and its contribution to early Indian typography’ in John D. Berry and John Randle (eds.), *Type and typography*, 169–182. New York: Mark Batty Publisher, 2003.
- Shaw, Graham. *Printing in Calcutta to 1800*. London: The Bibliographical Society, 1981.
- Scholderer, Victor. ‘Printers and readers in Italy in the fifteenth century’, in D. E. Rhodes (ed.), *Fifty essays in fifteenth- and sixteenth-century bibliography*, 202–215. Amsterdam: Menno Hertzberger, 1966.
- Schröder, Johann Joachim. *Thesaurus linguae armenicae antiquae et hodiernae*. Amsterdam: 1711.

BIBLIOGRAPHY

- Schütz, Edmond. 'The Oscanian and Vanandian type-faces of the Armenian Printing Office in Amsterdam: (Christoffel Van Dijk–Nicholas Kis Of Tótfalu and their forerunners)', *Acta Orientalia Academiae Scientiarum Hungaricae*, XLII, 2–3 (1988), 161–220.
- Schwartz, Khathryn A. 'Did Ottoman Sultans ban printing?', *Book history*, 20 (2017), 1–39.
- Seth, Mesrovb Jacob. *History of the Armenians in India*. London: Luzac & co., 1897.
- . *Armenians in India*. New Delhi: Asian Educational Services, 2005.
- Seybold, John W. *Fundamentals of modern composition*. USA: Seybold Publications, 1977.
- Shahverdyan, A.; Samvelyan, Kh. Հայերենի դասագրքային տարբերակների համար: Բարելավված և այժմ օգտագործվող դասագրքային տարբերակների համար. (Album for editing Armenian printing letters. For improved and currently used printed letters). Yerevan: Soviet Armenian Culture Ministry, 1953.
- Sivazliyan, Baykar. 'Venezia per l'oriente: la nascita del libro Armeno' in Scilla Abbiati (ed.), *Armeni, Ebrei, Greci stampatori a Venezia*, 23–38. Venice: Casa Editrice Armena, 1989.
- Slinn, Judy; Carter, Sebastian and Southall Richard. *The history of the Monotype Corporation*. UK: Printing Historical Society and Vanbrugh Press, 2014.
- Smeijers, FRED. *Counterpunch*. London: Hyphen Press, 2011.
- Smyrniaios, Anthony L. 'Manuals of conversion: Protestant missionary schoolbooks in Greece during the 19th century', *History of Education & Children's Literature*, III, 1 (2008), 117–140.
- Société Asiatique (Paris, France). 'Nouvelle. Société Asiatique. Séance du 2 Juin 1823', *Journal Asiatique*, II (Paris, June 1823), 376–380.
- . *Société Asiatique*, II (March 1823), 183–185.
- Somalian, Placido Sukias. *Quadro della storia letteraria di Armenia*. Venice: Tipografia Armena di S. Lazzaro, 1829.
- Southall, Richard. *Printer's type in the twentieth century*. London and New Castle: The British Library, Oak Knoll Press, 2005.
- Stone, Michael E.; Kouymjian, Dickran and Lehmann, Henning. *Album of Armenian paleography*. Denmark: Aarhus University Press, 2001.
- Stone, Gerald. *Slavonic Studies at Oxford: a brief history*. Oxford: Oxford University Press, 2005.
- Strauss, Johann. 'Who read what in the Ottoman Empire (19th–20th centuries)?', *Middle Eastern Literatures*, 6 (2003), 39–76.
- Strohmeier, Virgil B. *The importance of Teseo Ambrogio degli Albonesi's selected Armenian materials for the development of the Renaissance's perennial philosophy and an Armenological philosophical tradition*. Yerevan: The Publishing House of the NAS RA, 1998.
- Tejirian, Eleanor H.; Simon, Reeva Spector. *Conflict, conquest, and conversion: Two thousand years of Christian Missions*. New York: Columbia University Press, 2012.
- Teodik [Teodoros Lapchinyan]. *Tip u tar*, 2nd edn. Lisbon: Calouste Gulbenkian foundation, 2006.
- The Athenaeum*, 2213 'Mr Mavor Watts printing office' (26 March 1870).

BIBLIOGRAPHY

- the British and Foreign Bible society. 'Letters from the Rev. Dr. Pinkerton' (Paris, 14 February 1825), *The twenty-first report of the British and Foreign Bible Society*. (London, 1825).
- The Mekhitarist Fathers. *Bazmavep* 1 (January 1846).
- The Monotype System, A book for owners and operators of Monotypes*. Philadelphia: Lanston Monotype Machine Co., 1912.
- The Monotype Newsletter*, 65 (March 1962).
- The Monotype Recorder*, XLII, 2. Special number dedicated to the users of 'Monophoto' Filmsetter (Spring 1961).
- The Monotype Recorder*, XLIII, 2. Filmsetting in focus (Summer 1965).
- The Monotype Recorder*, New Series, 10. Centenary issue (1997).
- The Orient*, 41 (Constantinople, 25 January 1911).
- Tinto, Alberto. *La tipografia Medicea Orientale*. Lucca: Maria Pacini Fazzi Editore, 1987.
- Tiraboschi, Girolamo. *Storia della letteratura italiana*. Milan: Società tipografica de' classici italiani, 1824, vol. XIV and vol. XV, tome 8, part i and part ii.
- Toomer, Gerald. J. *Eastern wisdom and learning: The study of Arabic in Seventeenth-century*. Oxford: Clarendon Press, 1996.
- Tosh, John. *The pursuit of history*. New York: Routledge, 2015.
- Todd, Henry John. *Memoirs of the life and writing of the right Rev. Brian Walton, D. D. Lord Bishop of Chester, editor of the London Polyglot Bibles*. London: Rivington, 1821, vol. 1.
- Tracy, Walter. *Letters of Credit: A View of Type Design*. London: 1986.
- Twyman, Michael. *The British Library guide to printing*. London: the British Library, 1998. Massachusetts: Harvard University Press, 1962.
- Uluhogian, Gabriella; Zekiyan, Boghos Levon. *Armenia: Imprint of a civilisation*. Venice: Skira, 2012.
- Uluhojyan, Gabriella. 'A new development for Armenian studies in Italy: the Ambrosian Academy in Milan', *Journal of Armenian Studies*, 1 (2016), 161–169.
- Unger, Gerard. *Theory of type design*. The Netherlands: nai010 publishers, 2018.
- Updike, Daniel Berkley. *Printing types: their history, forms, and use*, 2 vols.
- van Lint, Theo Maarten; Meyer, Robin. *Armenia: masterpieces from an enduring culture*. Oxford: Bodleian Library, 2015.
- Vervliet, Hendrik D. L. *Sixteenth-century printing types of the Low Countries*. Leiden: Brill; Hes & De Graaf, 1967.
- . *Cyrillic & Oriental typography in Rome at the end of the sixteenth century: an inquiry into the later work of Robert Granjon (1578–90)*. Berkeley: Poltroon Press, 1981.
- . *The palaeotypography of the French Renaissance*, 2 vols. Leiden: Brill, 2008.
- Vickers, Adrian. *A History of Modern Indonesia*. Cambridge: Cambridge University Press, 2005.
- Vladimir, Yefimov. 'Civil type and Kis Cyrillic' in John D. Berry (ed.), *Language Culture Type*, 128–147. New York: ATypI and Graphis, 2002.
- Wallis, Lawrence. *A concise chronology of typesetting developments 1886–1986*, 2nd edn. Worcestershire: Severnside Printers Limited, 1991.

BIBLIOGRAPHY

- Warde, Beatrice. 'On the choice of type faces', *The Monotype Recorder*, XXXII, 1, New Series (1933), 5–10.
- . 'Type design in the new cold-type age'. *Printing in Britain*, Supplement, (September 1963). Quoted in: *The Monotype Recorder*, XLIII, 2. Filmsetting in focus, (Summer 1965); Ross, Fiona. *The Printed Bengali Character and Its Evolution*. Surrey: Curzon Press, 1999.
- Watts, Lynne; Nisbet, John. *Legibility in children's books: a review of research*. Windsor: NFER, 1974.
- Wilkinson, Robert J. *Orientalism, Aramaic, and Kabbalah in the Catholic Reformation*. Leiden: Brill, 2007.
- Whiston, William (father). *Historical memoirs of the life of Dr. Samuel Clarke*. London: John Whiston, 1730.
- Wordsworth, Christopher. *Scholae Academicae: some account of the studies at the English universities in the eighteenth century*. Cambridge: The University Press, 1877.
- Wright, William. *Catalogue of Syriac manuscripts in the British Museum*, 1872 preface, signed 9 November 1872.
- Zarbhanalean, Garegin. Պատմություն հայկական տպագրության սկզբնաւորութեանն յինչ առ յնչ. (The history of Armenian printing). Venice: The Mekhitarist Press, 1895.
- Zhorobian, Hovannes. 'Response de M. Zohrab, Doctor arménien, à une Brochure publiée par M. Cirbied', *Journal Asiatique*, III (September 1823), 169–190.
- Zorzi, Marino. 'I libri antichi a stampa nelle raccolte della biblioteca Marciana' in Scilla Abbiati (ed.), *Armeni, Ebrei, Greci stampatori a Venezia*, 17–22. Venice: Casa Editrice Armena, 1989.
- Zukhov, Maxim. 'The peculiarities of Cyrillic letterforms', *Typography papers*, 1 (1996), 5–26.

Unpublished sources

- Lane, John. 'Addendum' to *The Diaspora of Armenian printing, 1512-2012*. 2014.

PhD theses and MA Dissertations

- Conidi, Emanuela. 'Arabic types in Europe and in the Middle East, 1514–1924: challenges in the adaptation of the Arabic script from written to printed form'. PhD thesis, University of Reading, 2018.
- De Baerdemaeker, Jo. 'Tibetan typeforms: an historical and visual analysis of Tibetan typefaces from their inception in 1738 up to 2009'. PhD thesis, University of Reading, 2009.
- Farrell F.O.J., Maureen. 'The life and work of William Whiston'. PhD thesis, Faculty of Technology of the University of Manchester, April 1973.
- Grigoryan, Metaksya. 'Beginnings of early Armenian printing in Venice and Rome in the sixteenth century: reconsideration of research frameworks and contexts'. MA dissertation, Budapest, Central European University Department of History, 2014.

BIBLIOGRAPHY

- Privratsky, Bruce G. 'A History of Turkish Bible Translations'. University of Tennessee, PhD thesis, April 2014.
- Roper, Geoffrey. 'Arabic printing in Malta 1825–1845: its history and its place in the development of print culture in the Arab Middle East'. PhD thesis, Durham, Durham University, 1988.
- Savoie, Alice. 'International cross-currents in typeface design: France, Britain and the USA in the phototypesetting era'. PhD thesis, University of Reading, 2014.
- Sousa, Miguel. 'A brief history of Armenian typeface design'. PhD thesis, University of Reading, 2005.
- Teunisse, Stephanie. 'Bernhard von Breydenbach's *Pilgrimage to the Holy Land* (1488)'. MA dissertation, Leiden University, 2015.

Online sources

- Archivio storico de 'Propaganda Fide'. [http://www.vatican.va/roman_curia/congregations/cevang/archivio/index.html]. Accessed on February 2016.
- Ayvazyan, Hovhannes (ed.). *Who is Who. The Armenians*. Yerevan: Armenian Encyclopedia publishing house, 2007), vol. 1. [http://www.armenianlanguage.am/en/Encyclopedia_ayvazyan_aghasi]. Accessed on 10 February 2016.
- 'Die Buchdruckerei (1811–1998)'. [<http://mechitharisten.org/die-wiener-mechitharisten/die-wienermechitharisten-buchdruckerei/>]. Accessed in February 2017.
- Encyclopaedia Britannica*. [<https://www.britannica.com/topic/Dutch-East-India-Company>]. Accessed in April 2018.
- Enciclopedia Iranica*. [<http://www.iranicaonline.org/articles/bagratids-dynasty>]. Accessed on 24 April 2019.
- Interview with Hrant Papazian 'Calling mr Papazian', 24th April 2004. [<http://www.daidala.com/25apr2004.html>]. Accessed in August 2016.
- John Rylands library* (blog). [<https://rylandscollections.wordpress.com/2012/06/18armenian-printing-in-london/>]. Accessed on 18 December 2012.
- Kouymjian, Dickran. 'Revolution or Evolution? The Armenian Book from Manuscript to Print', paper presented at the UCLA conference: 'Port Cities and Printers: Five Centuries of Global Armenian Print', November 10 2012, p. 4. [<https://modernarmenianhistory.history.ucla.edu/print-conference-schedule-november-10-2012/>]. Accessed in April 2018.
- . 'The making of the Armenian manuscript: An Overview', Paper conference presented on 14 October 2011 at the Maison du Séminaire, Nice: 'The Making of the Oriental Book'. [https://www.academia.edu/38231420/Dickran_Kouymjian_The_Making_of_the_Armenian_Manuscript_An_Overview_paper_presented_at_the_conference_The_Making_of_the_Oriental_Book_organized_by_COMSt_Comparative_Oriental_Manuscript_Studies_in_Nice_France_Oct._2011]. Accessed in April 2020.
- Mosley, James. 'A guide to the present location of typographical punches, matrices, drawings, type specimens and archives', *Typefoundry* (blog). [<http://typefoundry.blogspot.com>]. Accessed on 1 May 2018.

BIBLIOGRAPHY

- . ‘Caslon, William, the elder (1692–1766), typefounder’, *Oxford Dictionary of National Biography* (3 January 2008). [<https://www.oxforddnb.com/view/10.1093/ref:odnb/9780198614128.001.0001/odnb-9780198614128-e-4857>]. Accessed on 25 March 2019.
- Ouzounian, Agnès. (Translation by Alexis Pernsteiner), ‘Ուրբաթագիրք (Venice, 1512): From the manuscript to the first printed book’. Paper conference presented on 10 November 2012 at the UCLA conference: Port Cities and Printers: Five Centuries of Global Armenian Print. [<https://www.fresnostate.edu/artshum/armenianstudies/500th-anniversary/>]. Accessed in July 2018.
- The *Asiatic Society*, (Regulation of 1822, § I art. 1 to 3). [<https://www.college-de-france.fr/site/bibliotheques-archives/bibliotheque-de-la-societe-asiatique.htm>]. Accessed in December 2018.
- The Italian Renaissance*. [http://www.newworldencyclopedia.org/entry/Italian_Renaissance]. Accessed on 6 January 2019.
- The Sheldonian Theatre*. [<https://www.admin.ox.ac.uk/sheldonian/history/>]. Accessed on 10 April 2019.
- The Unicode Standard. [<http://unicode.org/standard/standard.html>]. Accessed on 17 August 2018.
- Treccani, *Tipografia Vaticana*. The online encyclopedia: [<http://www.treccani.it/enciclopedia/tipografia-vaticana/>]. Accessed on 16 May 2018.
- ‘Type held in the hand’, *Typefoundry* (blog). [<http://typefoundry.blogspot.com/2012/01/type-held-in-hand.html>]. Accessed on 10 April 2019.
- Typography & Civilisation*, ‘Les imprimeries missionnaires’. [http://www.typographie.org/gutenberg/liban/liban_3.html]. Accessed in June 2019.
- White, Matthew. ‘The Enlightenment’, (The British Library, 21 June 2018). [<https://www.bl.uk/restoration-18th-century-literature/articles/the-enlightenment>]. Accessed on 30 November 2018.

Records

The Non-Latin Type Collection of the Department of Typography & Graphic Communication at the University of Reading

Non Roman General. Folder 17_01, Folder 17G Armenian

- Letter from Hrant Gabeyan to Walter Tracy (dated 9 October 1970).
- Letter from Hrant Gabeyan to Arthur Walker (dated 9 October 1970).
- Letter from Walter Tracy to Hrant Gabeyan (dated 14 October 1970).
- Letter from Walter Tracy to Hrant Gabeyan (dated 20 October 1970).
- Letter from Hrant Gabeyan to Walter Tracy (dated 20 October 1970).
- Letter from Arthur Walker to Hrant Gabeyan (dated 21 October 1970).
- Letter from Walter Tracy to Arthur Walker (dated 21 October 1970).
- Letter from Hrant Gabeyan to Arthur Walker (dated 31 December 1970).

BIBLIOGRAPHY

Letter from Walter Tracy, to Mike Parker (dated 21 February 1977).
 Letter from Mike Parker to Walter Tracy (dated 25 February 1977).

**Mergenthaler Linotype Company Records, Archives Center,
 National Museum of American History, Smithsonian
 Institution, Washington DC, USA**

Box 2614, Armenian Folder no. 93

Letter from Charles W. Thullen to the Mergenthaler Linotype Company, New York
 (dated 10 July 1908).
 Letter from W. Lock (L&M) to Norman Dodge (dated 22 August 1913).
 Letter from Linotype and Machinery to Norman Dodge, manager at the Mergenthaler
 Linotype Company in New York (dated 22 August 1913).
 'Translation of a letter received from the Bureau Linotype, St. Petersburg of 25th August
 1913', attached to a letter from Mergenthaler Setzmachinen-Fabrik Berlin to
 Mergenthaler Linotype Company in New York (dated 27 August 1913).
 Letter from Mergenthaler Company to Mergenthaler Setzmachinen-Fabrik Berlin
 (dated 18 September 1913).
 Letter from General manager's office Linotype in New York to M. H. Sandol, Manager
 at the Hairenik Press in Boston (dated 1 March 1916).
 Letter from Mergenthaler Linotype to Hairenik (dated 30 March 1916).
 Letter from Morehouse to Griffith (dated 3 June 1916).
 Linotype Armenian-English keyboard layout 'Diagram no. 90' (undated).

Box 3614, Data on the origin of typefaces Folder

'Department memorandum. Armenian' (dated 4 November 1943).

Box 9940, Walter Tracy correspondence 1961–1965 Folder A

Letter from Walter Tracy to Mike Parker (dated 25 March 1965).

Box 9940, Linotype Italia Folder

Letter from Mike Parker to Henry Dierkopf (dated 15 July 1977).
 Letter from Martin Boothman to Mike Parker (dated 20 June 1977).
 Letter from Mike Parker to Adriano Pateri (dated 16 August 1977).

Box 9911, Non Roman scripts Folder

Letter from Walter Tracy to Jackson Burke (dated 17 September 1958).
 Letter from Jackson Burke to Walter Tracy (dated 8 October 1958).
 Letter from Walter Tracy to Jackson Burke (dated 14 October 1958).

Box N3627, Russia Folder 792

M. Dorohin, 'On some questions concerning the manufacture of Linotype matrices',
Poligraficheskoe Proizvodstvo, no. 10 (October 1938). Translated from Russian into
 English by J. M. for the Linotype Corporation in 1938.

BIBLIOGRAPHY

Letter from (unknown) to C. H. Griffith (dated 30 November 1938).

The database of Linotype pattern drawings compiled by the Museum of Printing in Haverhill.

Monotype Archives, Salfords, UK

Monotype's index card for Series 638.

Armenian Folder

Letter 'Note pour la Monotype', from L. Pitsi to Monotype (dated 6 September 1957).

Letter from Glenn Barrett to the Secretary, the Typographical Committee (dated 28 March 1958).

Letter from Glenn Barrett to the TDO (dated 1 August 1958).

Letter from Glenn Barrett to the Secretary, the Typographical Committee (dated 8 August 1958).

Letter from C. A. Poore to the TDO (dated 9 October 1958).

Letter 9696 (dated 23 January 1959).

Letter from Paul Lequint, probably to the TDO (dated 18 March 1960).

Letter from SFM to the Monotype Corporation in Salfords (dated 13 July 1960).

Handwritten internal letter to Miss D. Weller (dated 18 July 1960).

Handwritten note, 'New face Armenian', undated.

Letter from the TDO to the Secretary, the Typographical Committee (dated 5 December 1960).

Letter from John Dreyfus to Miss D. Weller (dated 7 December 1960).

Letter from Glenn Barrett to the Secretary, the Typographical Committee (dated 29 December 1960).

Letter from F. E. Cole to the Secretary, the Typographical Committee (dated 14 February 1961).

Letter from Stanley Morison, probably to the TDO (dated 30 November 1961).

Letter from H. Faulkner to the TDO (dated 12 January 1962).

Letter from Paul Lequint, probably to the TDO (dated 12 February 1962).

Letter from SFM to Paul Lequint (dated 15 February 1962).

Letter from E. A. Firmage to Harris (dated 3 April 1963).

Letter from E. A. Vesey to J. Abboud (dated 23 November 1967).

Letter from E. A. Vesey to J. Abboud (dated 5 December 1967).

Copyright Folder

Notice (undated).

Box 14, Designers' Original Artwork, Armenian Arrarat Originals Folder

Internal document: 'Specification for new fount', from Robin Nicholas to the TDO (dated 28 June 1977).

BIBLIOGRAPHY

Internal memorandum from J. B. L. (perhaps John Latham) to J. Palms
(dated 28 June 1977).

Manuscripts

Lambeth Palace Library, London

Letter from Arthur Charles to Thomas Tenison Archbishop of Canterbury (dated 19
March 1695). MS 942 – Miscellaneous Papers 85.

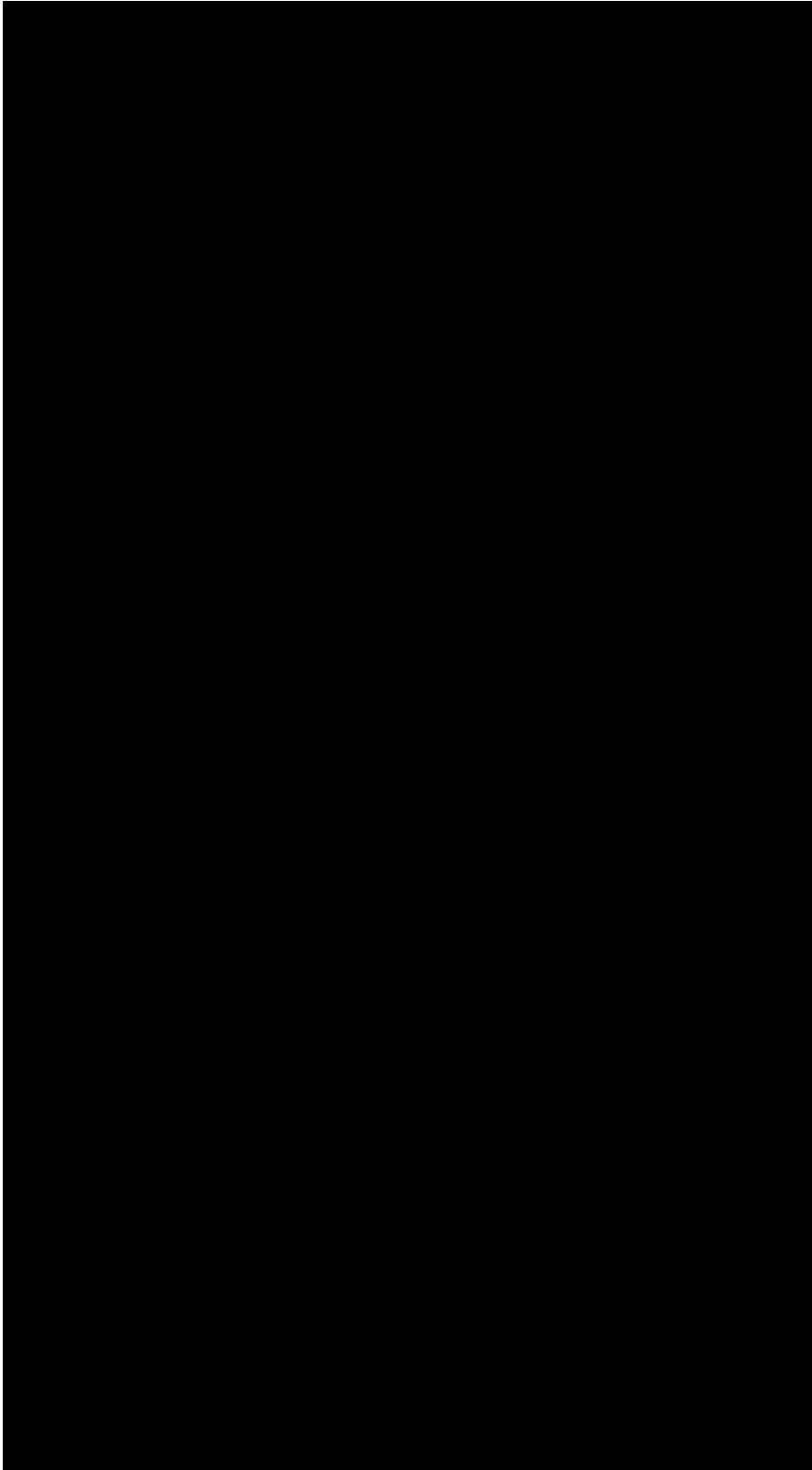
Other

Email from Hrant Gabeyan to the author (dated 30 May 2018).

Email from Dr Vaibhav Singh to the author (dated 7 July 2019).

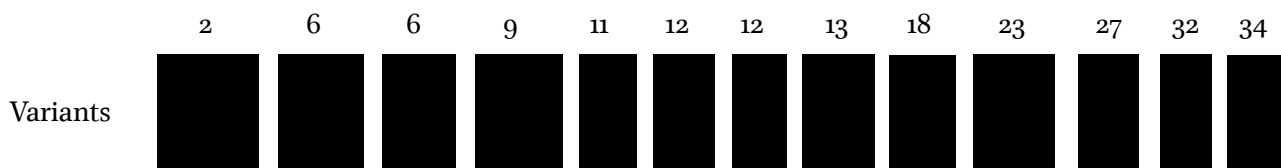
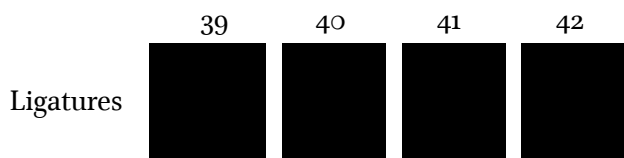
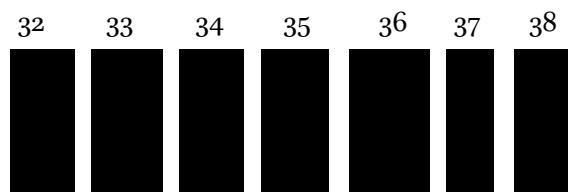
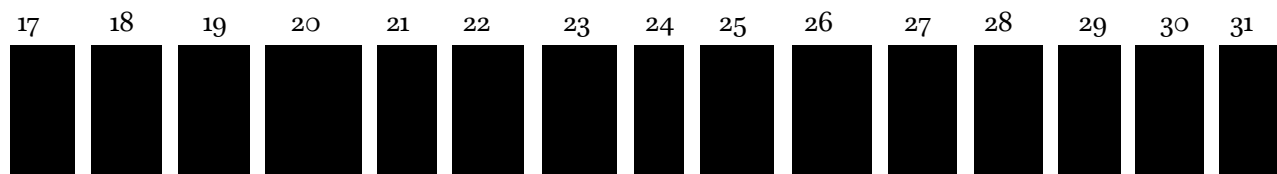
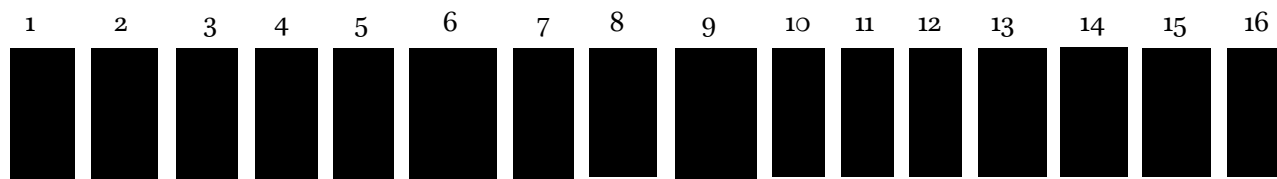
Email from Larry Oppenberg to the author (dated 17 July 2019).

BIBLIOGRAPHY

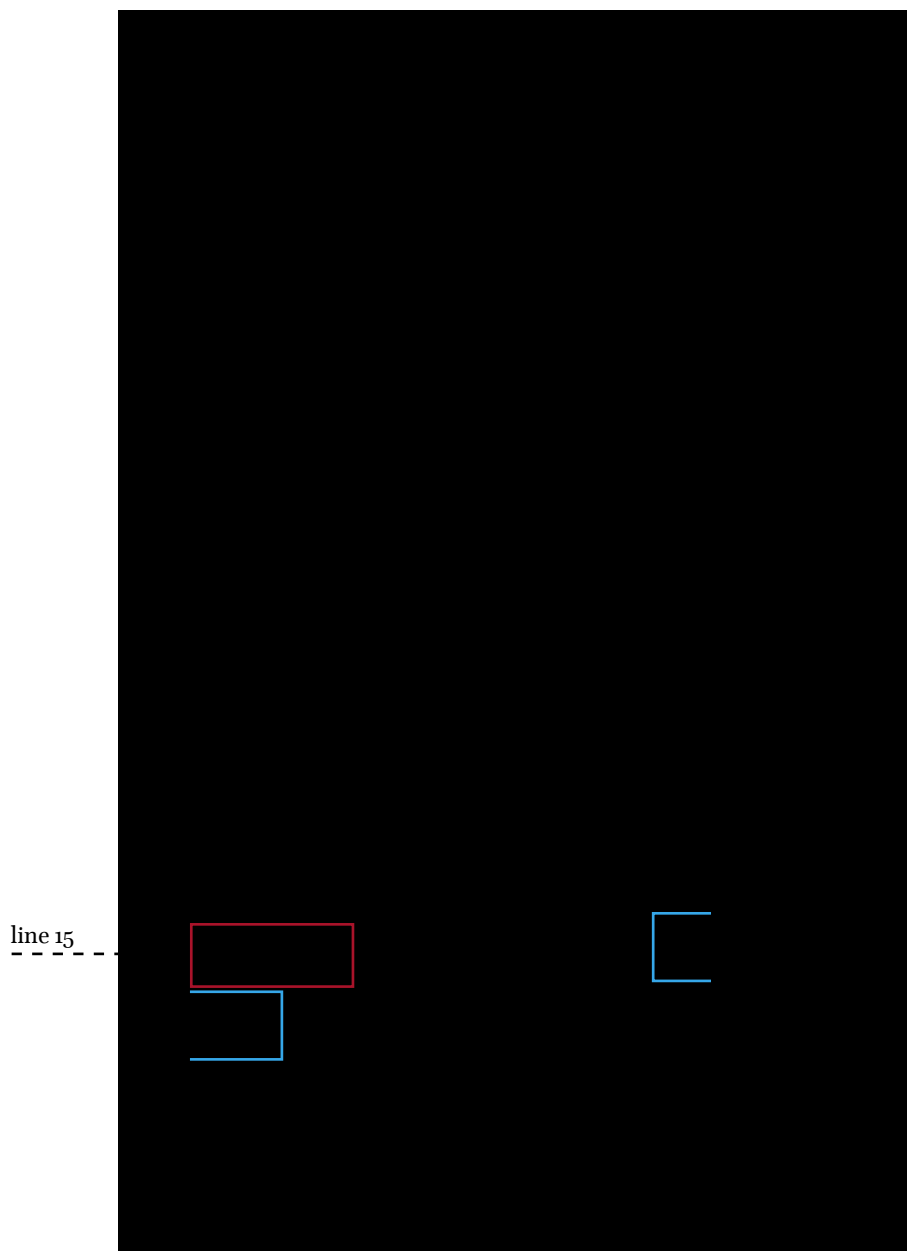


Detail of an *Hmayil* (Armenian prayer scroll). Scribe: Mat'os, 1706–7. (Original size: 577 × 7,62 cm). Bodleian Library MS. Arm. g. 4. Image from Maarten van Lint & Robin Meyer, *Armenia, masterpieces from an enduring culture* (Oxford, Bodleian Library, 2015), p.128.

APPENDIX A

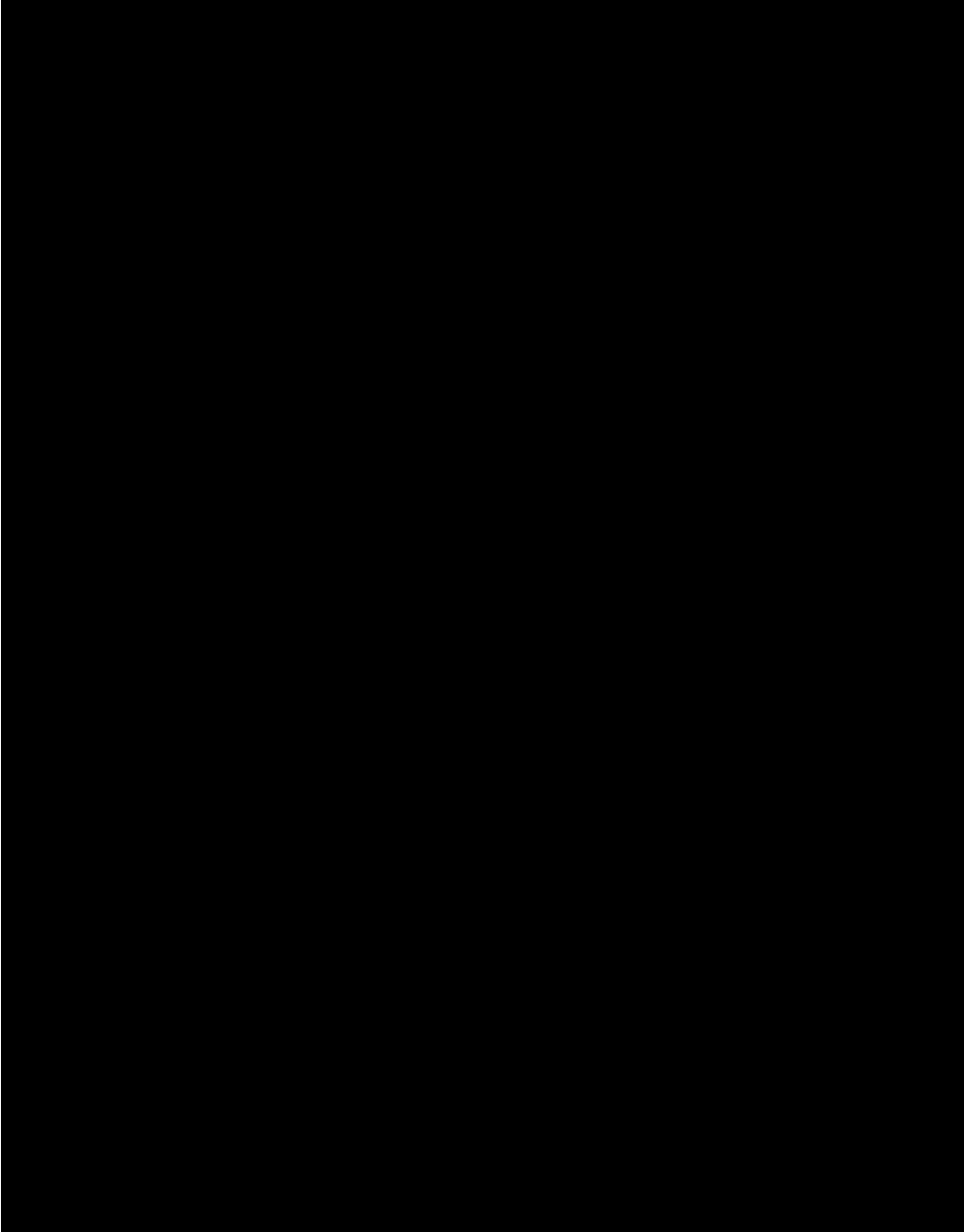


A synopsis of the 55 characters – lowercase letters – used by Meghapart in the Friday Book. Among the 38 lowercase letters, there are two letters (no. 6 and 12) with three versions each and nine letters (no. 2, 9, 11, 13, 18, 23, 27, 32 and 34) with two versions each. Therefore there is a total of 13 variants. The different versions of character p are not considered as variants. Indeed, the variation presented in the design of p might have been a mere consequence of the spread of the ink. *Friday Book* (Venice, D.I.Z.A, 1512). Shown at 200% of original size. *National Library of Armenia (the World Digital Library)*.



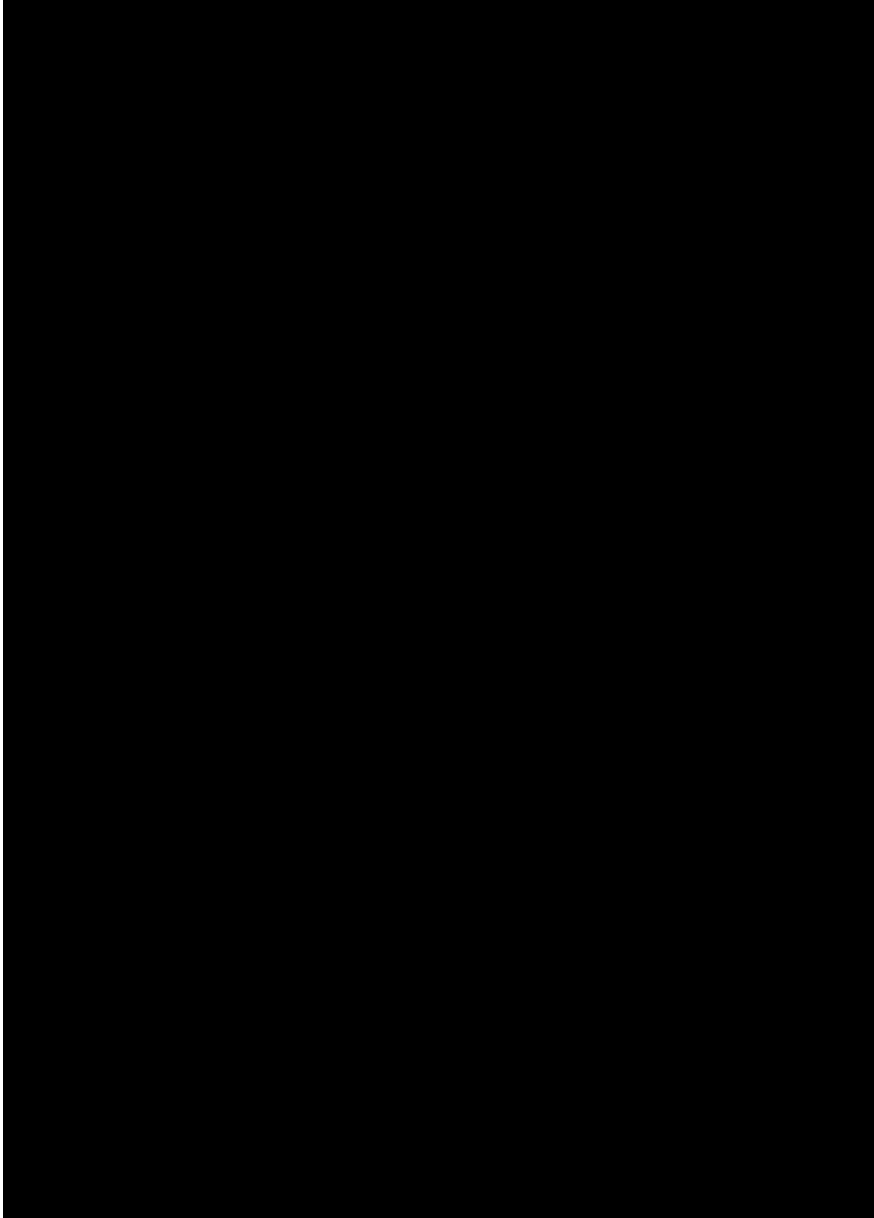
The different forms of ζ and their use in the text of the *Friday Book*. For example in line 15 the rigid version of ζ – in the red rectangle – is used in between words, whereas the calligraphic form – in the blue rectangle – is employed to easily recognise the beginning of a word.

Friday Book (Venice, D.I.Z.A, 1512), (folio 4). (Original size: 11 × 16,5 cm). Shown at original size. *National Library of Armenia (the World Digital Library)*.

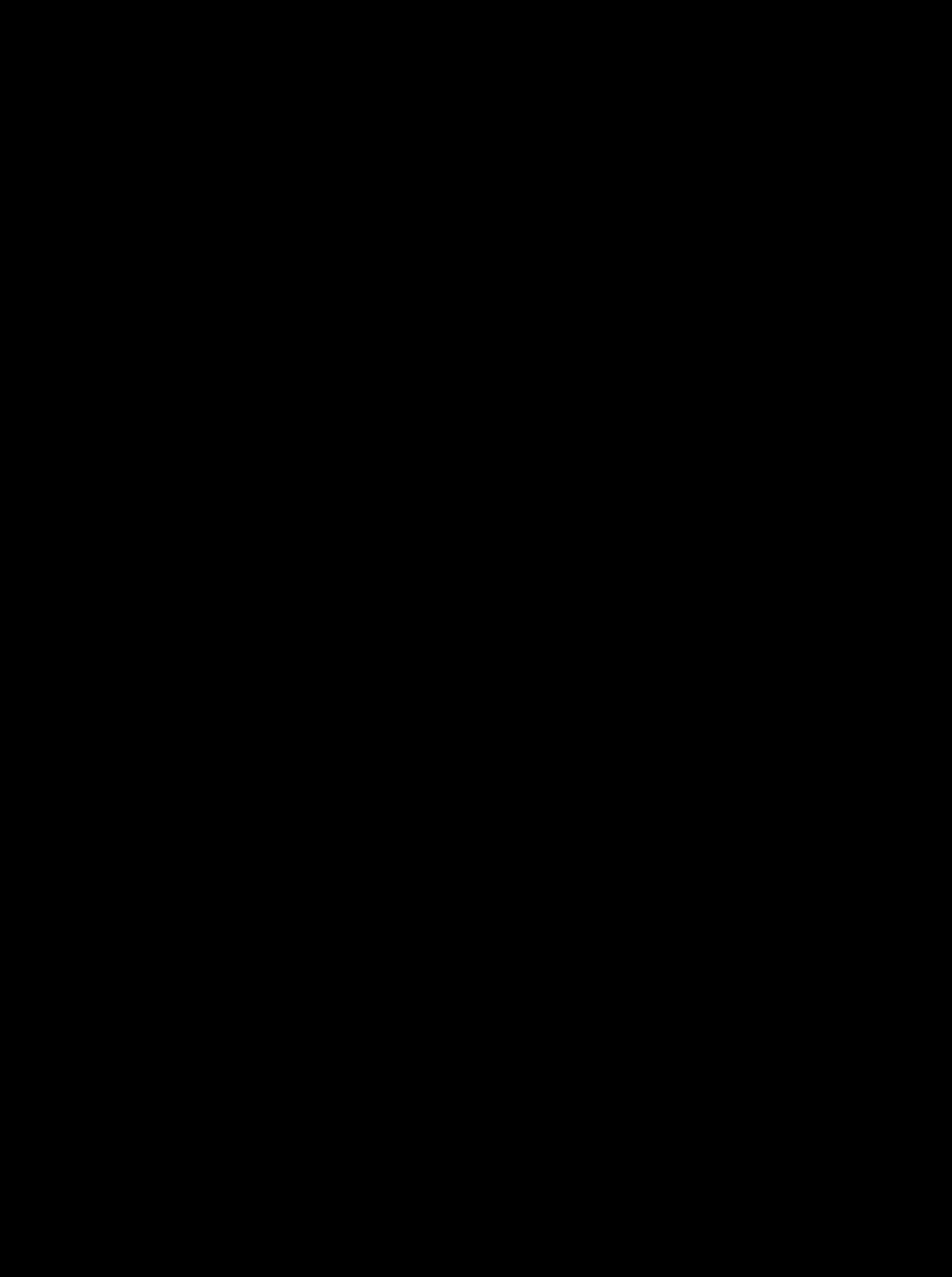


The *Yisus vordi* (Jesus the son) printed by Hovhannes Ankyuratsi in Venice in 1643.

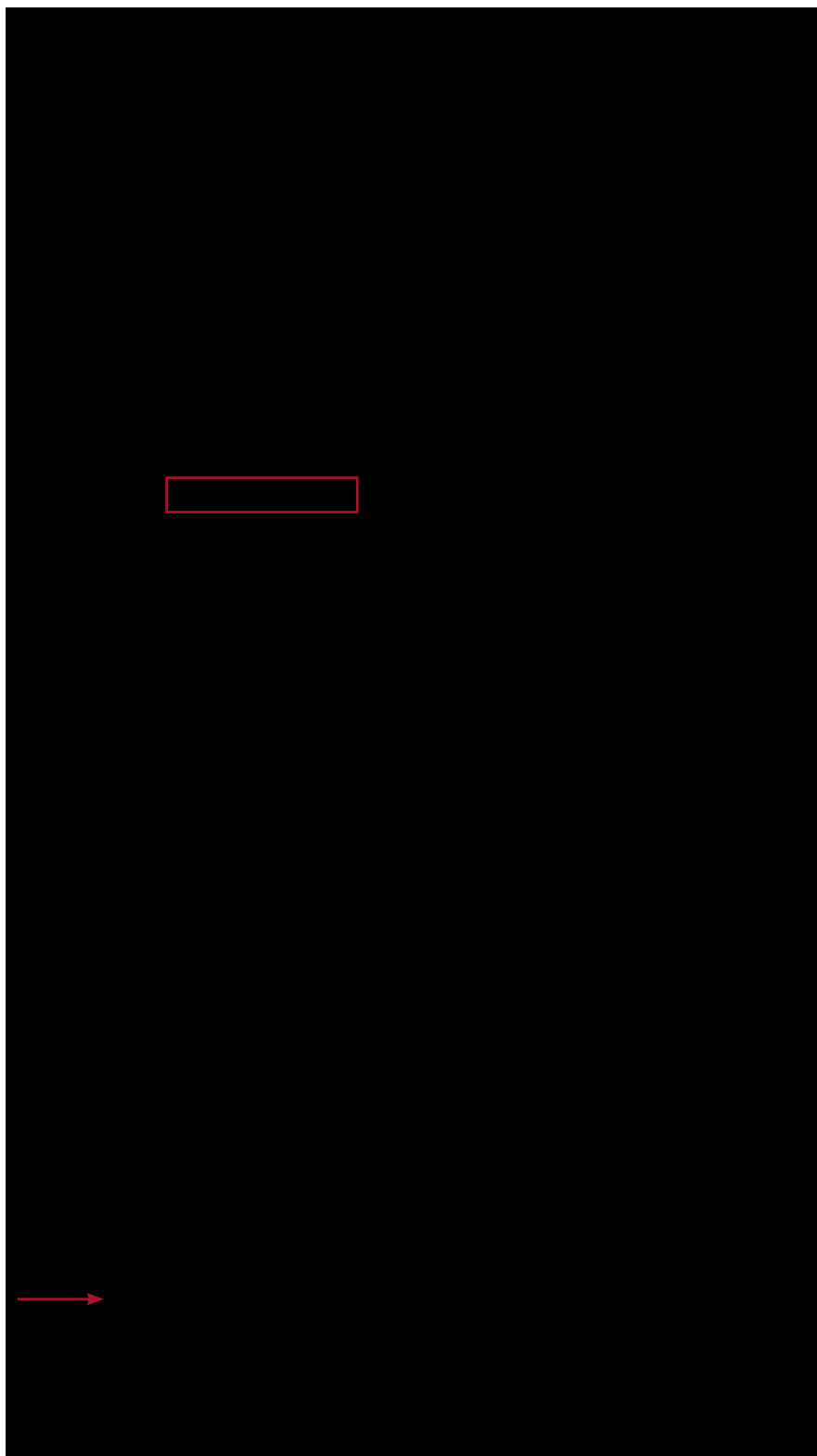
Nersēs Šhnorhali, *Yisus vordi* (Venice, 1512). (Original size: 11 × 16 cm). Shown at original size. *The Fundamental Scientific Library of the Academy of Sciences (Endangered Archives Programme)*.



The *Yisus vordi* (Jesus the son) printed by the Italian publisher Joan (Giovanni) Battista Bovis in 1660.
Nersēs Šhnorhali, *Yisus vordi* (Venice, 1660). (Original size: 10,5 × 15 cm). Shown at original size. *The Fundamental Scientific Library of the Academy of Sciences (Endangered Archives Programme)*.

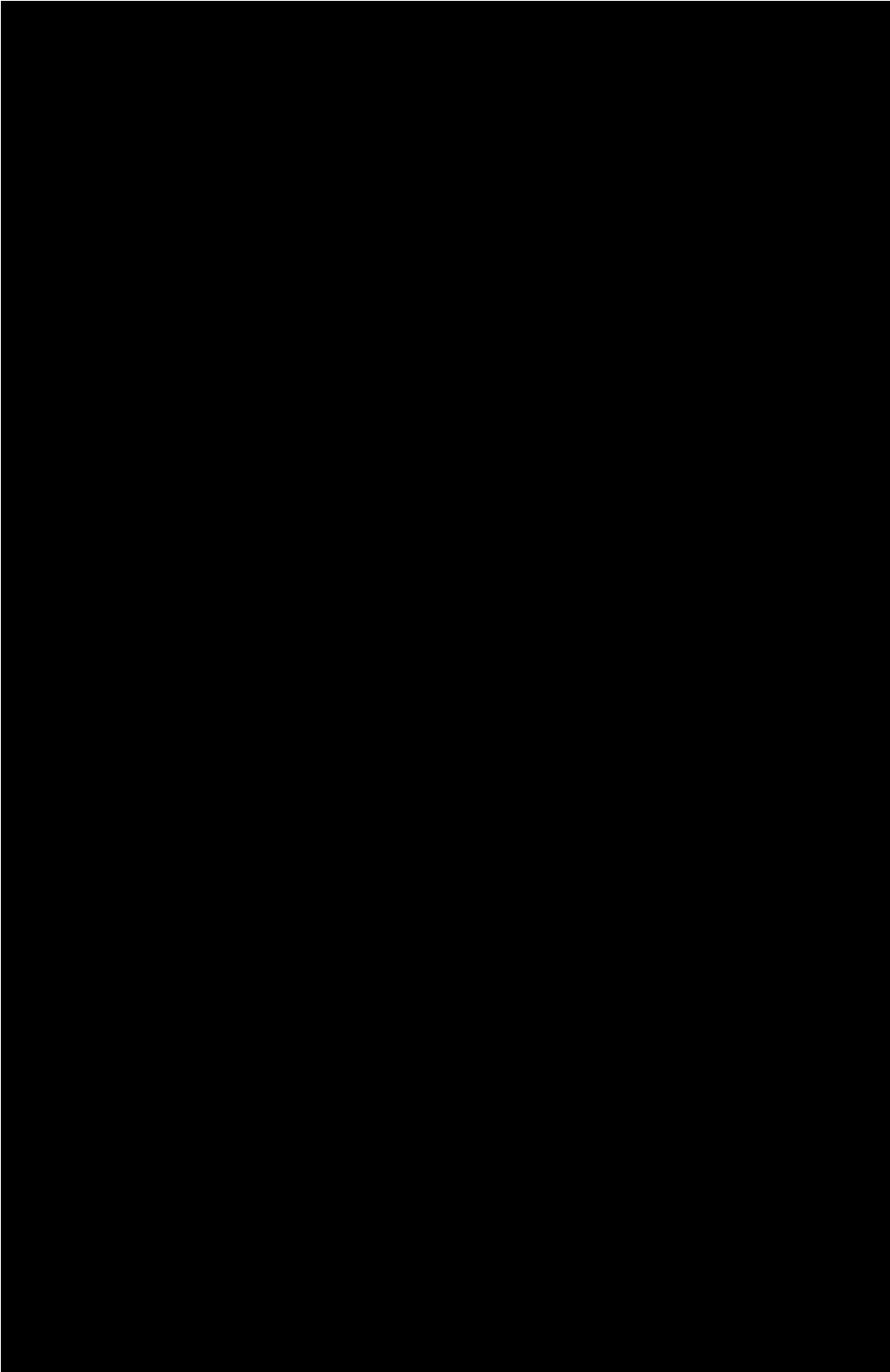


Անահիտ (Anahit) (Paris, November 1898). (Original size: 20,5 × 27,5 cm). Shown at 70% of original size. *The Nubarian Library, Paris.*



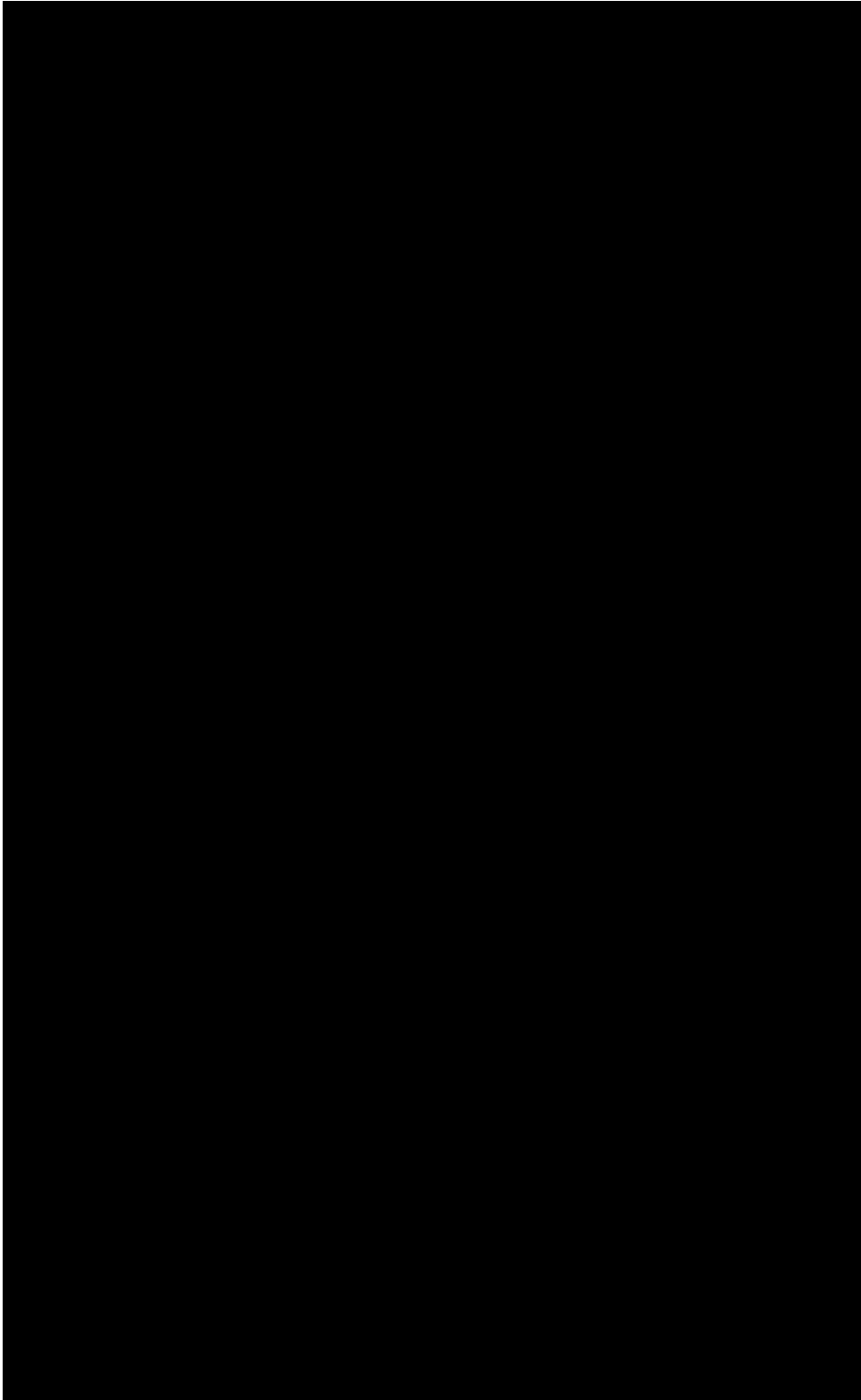
Detail from Անահիտ. The rectangle emphasises the new Italic introduced by Aramean. Here, this was used in between words. The arrow indicates the upright Bolorgir typeface (CMU02), already used by Usumnaran in *La Colombe du Massis*. This was used in Անահիտ to compose footnotes.

Անահիտ, (Anahit) (Paris, November 1898). (Original size: 20,5 × 27,5 cm). Shown at 70% of original size. *The Nubarian Library, Paris*.

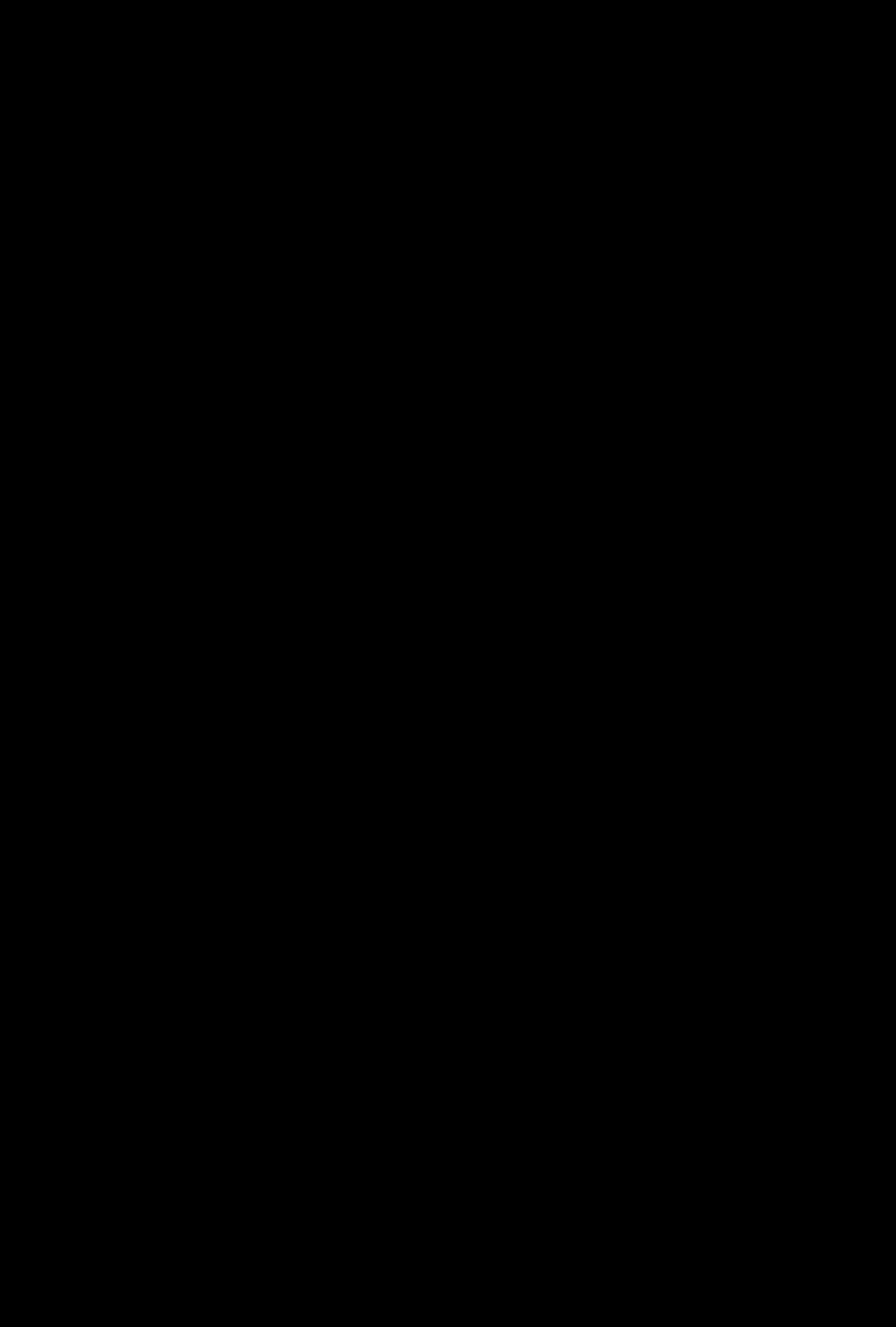


Համալսարանը was mostly composed in the traditional Bolorgir style, but still used nineteenth century-Latinised Armenian typefaces: the new Italic style introduced by Aramean was here used for subheadings and to emphasise words.

Համալսարանը, (Hamalsaran) (Paris, 1899). (Original size: 13,5 × 21 cm). Shown at original size. *The Nubarian Library, Paris.*

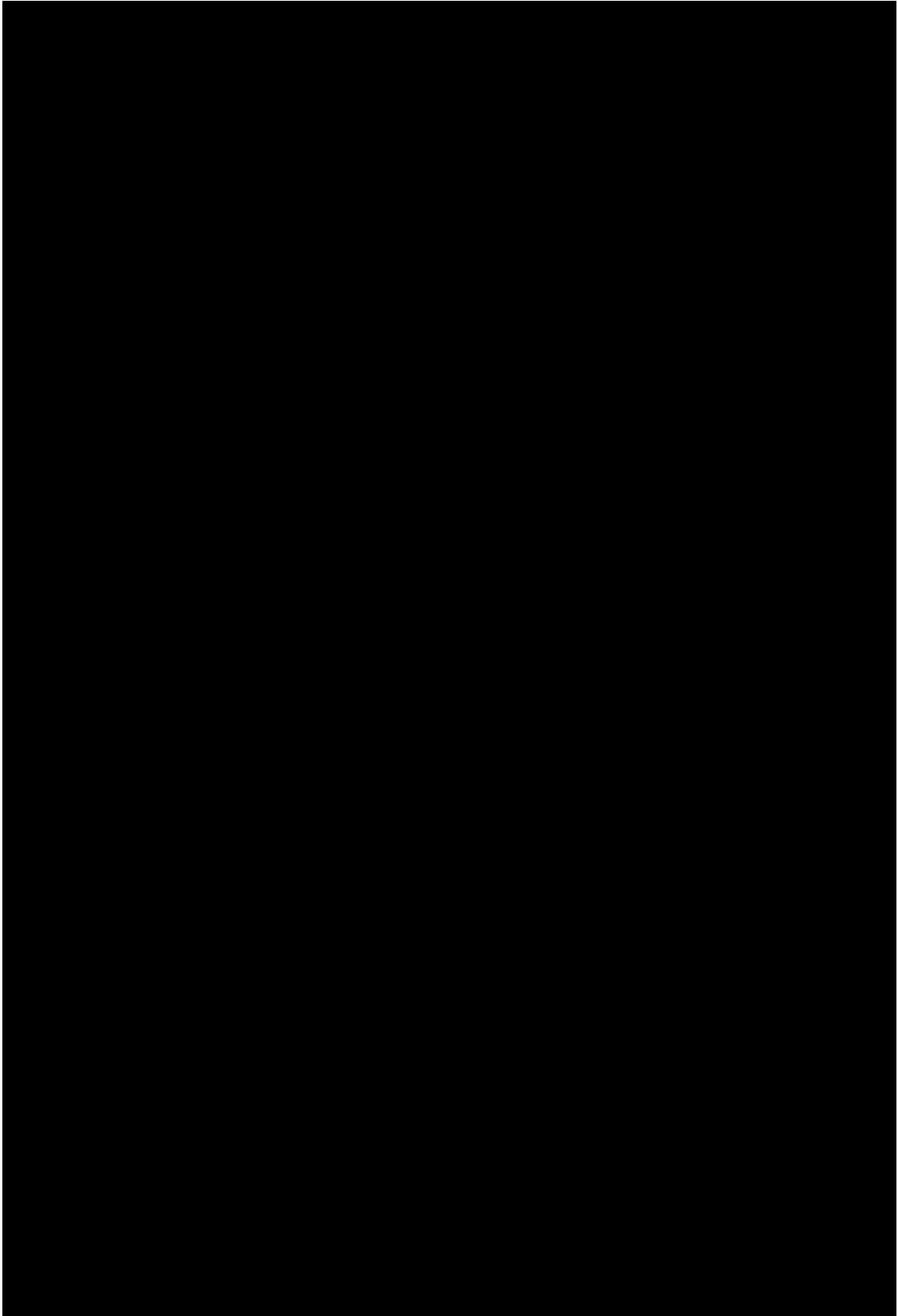


The journal's subscription information on the back page of *Կարա խոսի*. This was composed using upright Armenian typefaces. *Ազատ խոսի* (Azat Khosk') (Paris, 1901). (Original size: 13 × 20 cm). Shown at original size. *The Nubarian Library, Paris*.



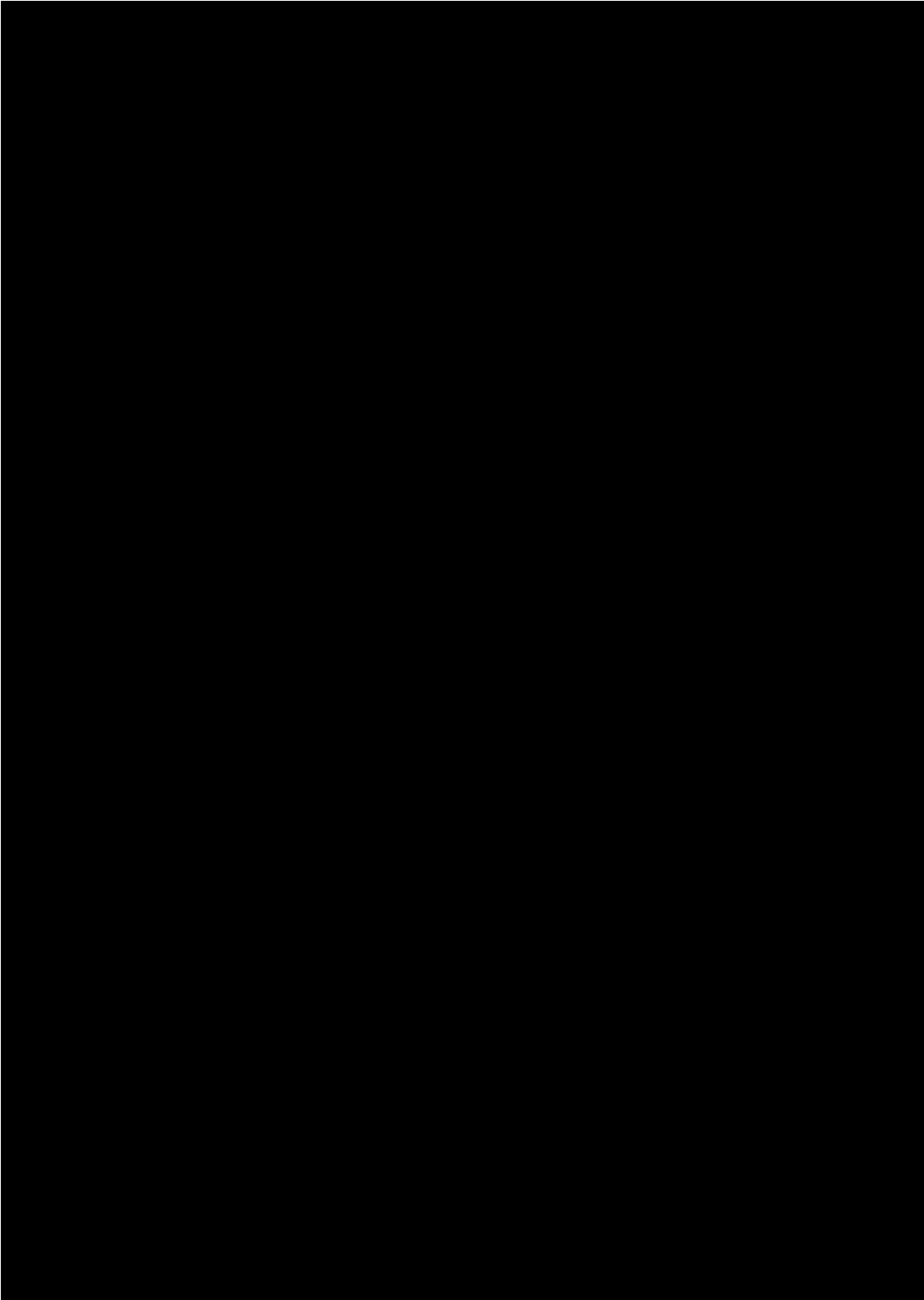
The text was mostly composed in a traditional Bolorgir typeface. New fashionable Armenian typefaces were used sporadically for short passages.

Արարատ (Ararat) (Moscow, 1868). (Original size: 19,5 × 29,5 cm).
Shown at 70% of original size. *The Nubarian Library, Paris.*



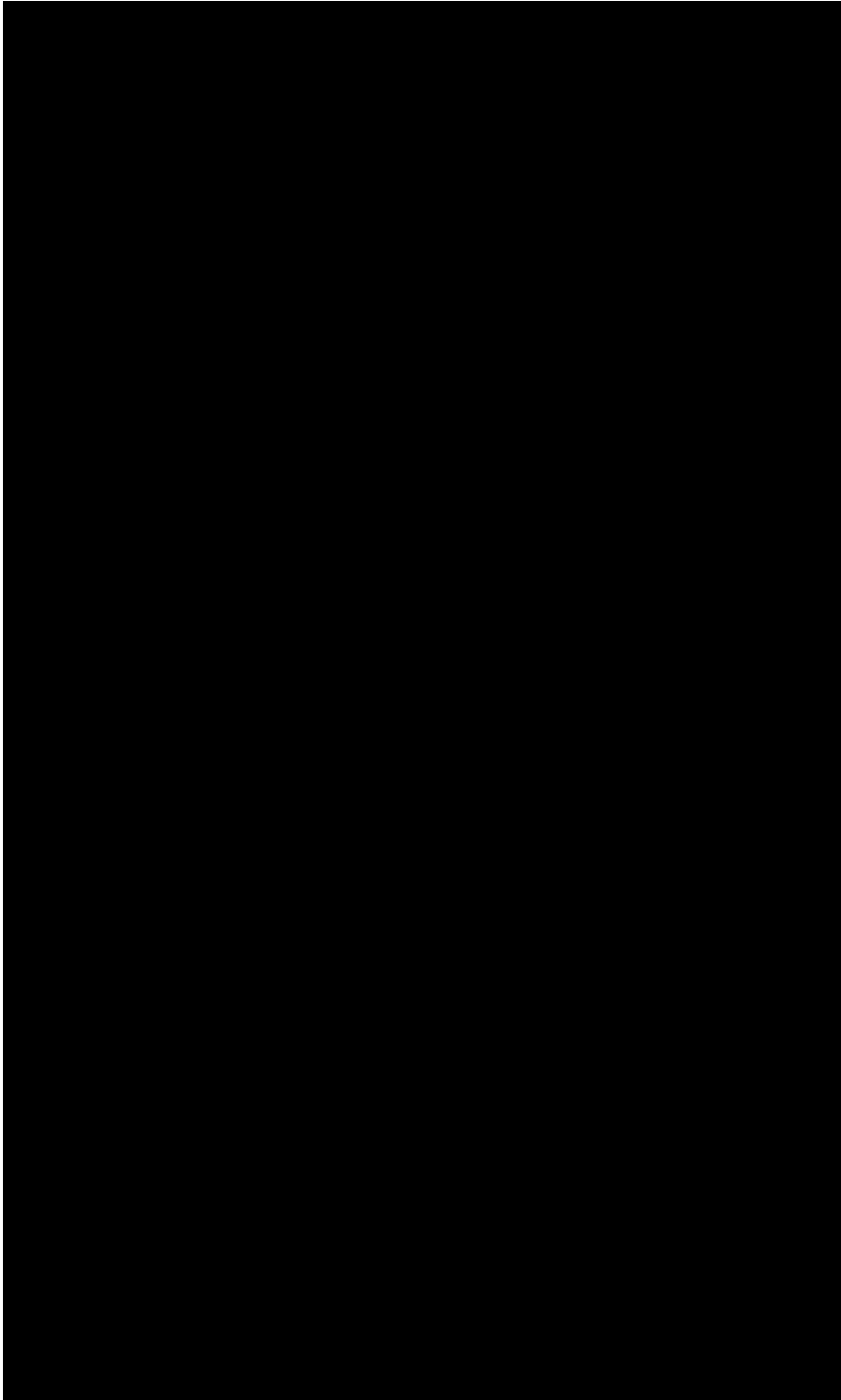
The text was mostly composed in a traditional Bolorgir typeface. New fashionable Armenian typefaces were used sporadically for short passages.

Հանդես Ամսօրեայ (Handes Amsorea) (Vienna, 1 January 1890). (Original size: 21,5 × 30 cm). Shown at 70% of original size. *The Mekhitarist Library, Vienna.*

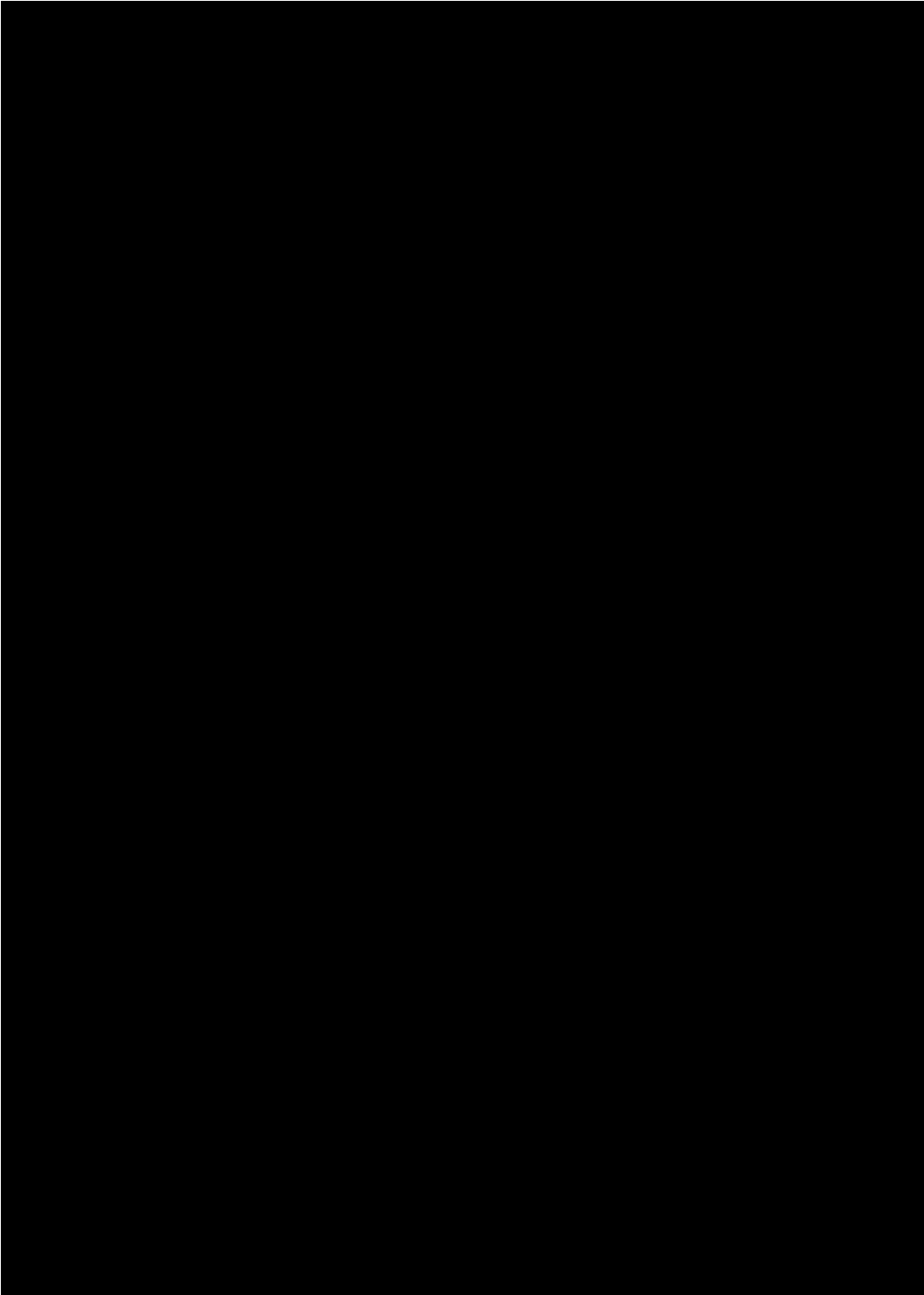


The text was mostly composed in a traditional Bolorgir typeface. New fashionable Armenian typefaces were used sporadically for short passages.

Փարոս (Paros) (Cairo, 22 May 1897). (Original size: 30 × 43 cm).
Shown at 50% of original size. *The Mekhitarist Library, Vienna.*

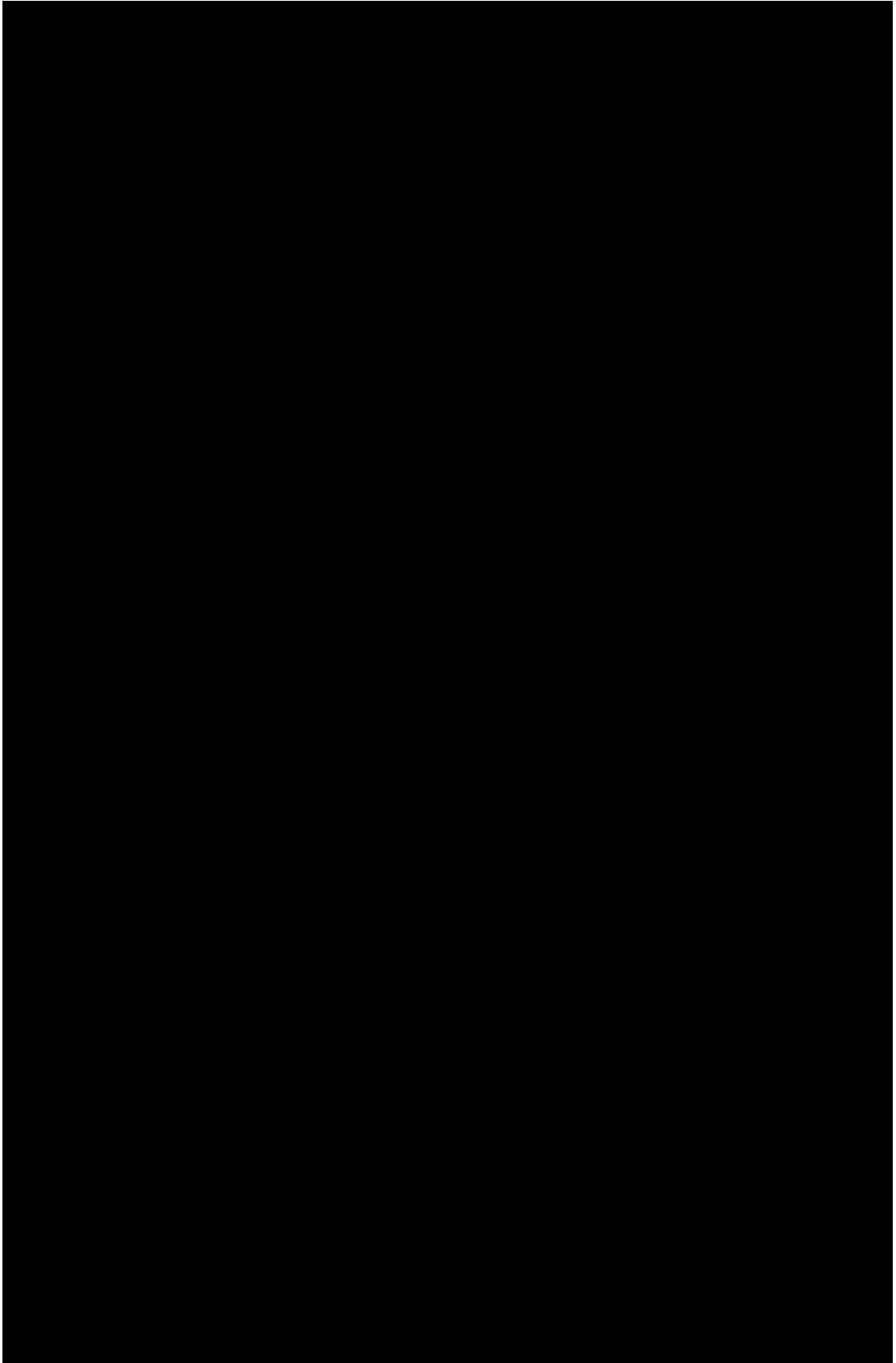


Ἰκτῆρ used only traditional Bolorgir and Notrgir typefaces.
Ἰκτῆρ (Metu) (Constantinople, 15 September 1856). (Original size:
11,3 × 18,8 cm). Shown at original size. *The Nubarian Library, Paris.*



Detail from *δημιδου*. This journal is composed in traditional Bolorgir typefaces.

δημιδου (Žiažan) (Constantinople, 1 October 1866). (Original size: 29,8 × 44,5 cm). Shown at 70% of original size. *The Nubarian Library, Paris.*



Հնչուկ used only traditional Bolorgir and Notrgir typefaces.
Հնչուկ (Hnč'ak) (Constantinople, 30 October 1887). (Original size:
14,5 × 22,2 cm). Shown at original size. *The Nubarian Library, Paris.*