

Cryptography in the Colophons of Old Printed Armenian Books

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Abstract: This article briefly and generally addresses the history of cryptography in Armenian written culture, presenting its most common types. The study then proceeds to analyse several of the more than a dozen ciphers found in the printed colophons of old Armenian books. It is primarily based on the decipherment of ciphers found in manuscript colophons, as well as on a synthesis of the experience of scholars who have worked on the description of old Armenian printed books and have conducted research in this field. Subsequently, an attempt is made to trace in manuscripts the origins of the numerical values attributed to terms found in colophons that denote specific numbers. However, this endeavour has not always been successful. In cases where the material available was insufficient to reach a definitive conclusion, logical analysis proved helpful. For those ciphers that have already been deciphered by others, the relevant sources are cited. In certain cases, it has been necessary to make corrections or propose alternative decipherments that seem more plausible. The absence of a source indicates that the cipher key has been identified by the author of the article.

Keywords: Printed Armenian Book, colophon, cryptography, manuscript, Printing House

Introduction

Encryption or cryptography comes from the Greek words κρυπτός – secret and γραφή – writing. It has an ancient history. Cryptography was used to covertly transmit specific written information in military, diplomatic, religious documents, etc. It has a history spanning around four thousand years. Its prototypes have been found in ancient Egypt, India, and Rome.¹

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¹ Bauer, P. Craig, *Secret History: The Story of Cryptology*, CRC Press, Taylor & Francis Group (second edition), 2021, 4-9.

Armenian manuscripts and lapidary inscriptions² contain encoded names, dates and other data on their creation and other related subjects. In the case of manuscripts, this practice is most common in colophons. The old printed Armenian books emerged as direct continuation of manuscripts, therefore, the colophons of books, like those of manuscripts, contain encrypted passages or are entirely coded.

The renowned French Armenologist M. Brosse³ was the first to draw attention to Armenian cryptography, having deciphered Zak'aria Vanec'i's ciphers (17th century). Following Brosse, G. Ter-Mkrtč'yan also addressed the subject of cryptography⁴. H. Ač'aryan was the first to attempt a systematic classification of Armenian cryptography, presenting it comprehensively alongside various decoding keys. This study was published as an appendix to the work *Armenian Scripts* («Հայոց գրերը»), under the title “Armenian Cryptography” («Հայերեն ծածկագրերը») ⁵. Cryptography was also referred to in the works of K. Łafadaryan⁶ and the historian A. Abrahamyan. In his book, Abrahamyan presented various types of cryptographic systems and provided the keys for deciphering texts written in them⁷. Further materials on this topic can be found in other books and articles published by Abrahamyan⁸. Of course various original examples of cryptographic writing are also preserved in manuscript catalogues.

² For cryptography in lapidary inscriptions, see Sałowmyan, Sowren, “Cackagrowt'yownə ew zardagrowt'yownə hay vimagerowm” [“Cryptography and Ornamentation in Armenian Lapidary Inscriptions”], *Lraber hasarakakan gitowt'yownneri*, no. 9 (1979), 61-77; Harowt'yownyan, Ė. Arsen, “Tat'ewi vank'i norahayt cackagirə ew nmanōrinak myows vimagerə” [“A Newfound Cryptogram of Tatev Monastery and Other Similar Inscriptions”], *VĖM hamahaykakan handes*, no. 3 (75), (July-September 2021), 147-162.

³ Brosset, Marie-Félicité., Variétés arméniennes, “Mélanges Asiatiques”, vol. V, St. Pétersbourg, 1868, 65-77.

⁴ Ter-Mkrtč'yan, Galowst (Miaban), “Nersisean cackagir” [“Nersisean Cipher”], *Ararat*, no. 1 (1888), 35-49; Ter-Mkrtč'yan, Galowst, “A'jic' jax growt'yown” [“Right-to-Left Writing”], *Šolakat'*, Book I, Valaršapat, 1913, 137-141.

⁵ Ač'aryan, Hrač'ya, *Hayoc' grerə [The Armenian Scripts]* (Vienna: Mxit'arist Press, 1928), 460-488 (reprinted Yerevan: Yerevan State University Press, 1984, 663-676).

⁶ Łafadaryan, Karo, *Avani erklezvyan cackagir arjanagrowt'yownə [The Bilingual Cryptography Inscription of Avani]* (Yerevan: Academy of Sciences of the Armenian SSR, 1945).

⁷ Abrahamyan, Ašot, *Haykakan cackagrowt'yown [Armenian Cryptography]* (Yerevan: Publishing House of Yerevan University, 1978).

⁸ Abrahamyan, Ašot, *Haykakan paleografia [Armenian Paleography]* (Yerevan: Publishing House of Yerevan University, 1948); Abrahamyan, Ašot, *Hay gri ew grč'owt'yan patmowt'yown [History of Armenian Writing and Script]* (Yerevan: HAYPETHRAT Publishing, 1959); Abrahamyan, Ašot, *Hayoc' gir ew grč'owt'yown [Armenian Writing and Script]* (Yerevan: Publishing House of Yerevan University, 1973). His articles are listed in Abrahamyan, *Haykakan cackagrowt'yown*, 6.

The Main Types of Armenian Cryptography

Many studies dedicated to cryptography have undertaken endeavours to categorise Armenian cryptography in ancient and medieval written sources. The initial classification was carried out by the linguist H. Ačaryan⁹. This was the subject of a more detailed study by the historian and source specialist A. Abrahamyan.

Armenian cryptographic systems may be categorised based on their formal characteristics and content. In terms of form, they are diverse and include the dot-comma cipher, the ring-dot cipher, the “rod cipher” (*gawazanagir*), the “brother cipher” (*elbayragir*), the “sum cipher”, (*gumaragir*) and others¹⁰. From a content-based perspective, Abrahamyan identifies four distinct categories of ciphers¹¹:

1. **Political** in nature, containing encrypted political information. Although such ciphers are relatively few in number, however, they are of significant value for source studies.

2. **Scribal** cryptography, in which information pertaining to scribes’ names and other bibliographic details, as well as the date of script are encoded.

3. **Artisanal** cryptography. Through **artisanal** cryptography, craftsmen encoded the secrets of their trade¹². In this manner, masters would transmit their specialised knowledge exclusively to their apprentices, as the secrets of the craft were regarded as a family monopoly and passed down from generation to generation. Such encrypted records are primarily found in compilations related to artisanal, chemical, and alchemical subjects. These methods were also used to protect potentially dangerous medical and chemical information from falling into wrong hands.

4. **“Enigmatic” cryptography**. In this manner, calendrical dates are encoded using value-bearing terms employed in the science of chronology, such as *hnptlūwū* (*hobelean*), *ṛḥlūyḥuṛ* (Olympiad), *ūnūnu* (*nonos*),

⁹ See not. 5.

¹⁰ For a more detailed discussion of these, see: Abrahamyan, Ašot, *Hayoc’ gir ew grč’owt’yown*, 244–279; and Abrahamyan, Ašot, *Haykakan cackagrowt’yown*, 1978. The connection between cryptography and contemporary art—specifically design—is addressed in A. Ačaryan’s article: see Ačaryan, Ani, “Haykakan cackagrowt’yan grafikakan aṛanjnhatkowt’yownnerə” [“Graphic Features of Armenian Cryptography”], *Telekagir*, no. 2 (Yerevan: 2019), 81–88.

¹¹ Abrahamyan, Ašot, *Haykakan cackagrowt’yown*, 6–10.

¹² An example of such a record is the text preserved in manuscript MM 3609 (Bžškan [Medical Book], 1833), on folios 28r and 49r–51r, which contains a collection of medical prescriptions. The key to deciphering the code is provided by the scribe (49v) (see Manowkian, Tat’ew, Harowt’yownyan, K’nar, “Erkow norahayt cackagir” [“Two New-found Cryptograms”], *Banber Matenadarani*, no. 25 (Yerevan: “Nairi” Publishing House, 2018), 218–231.

թրթաւկ/թրիթաւկ (*t'rt'ak* or *t'rit'ak*) and so on. Old printed Armenian books commonly feature "scribal" and "enigmatic" cryptograms in their colophons.

Cryptographic Colophons in Old Printed Armenian Books

Numerous encoded colophons and various types of text have been published in the works of the aforementioned scholars, in manuscript catalogues, and elsewhere. However, even today, new cryptographic data are still being encountered during the description of manuscripts. The key to some of these is known, while the key to others is not.

The series of ciphered texts found in manuscripts is supplemented by those found in old printed books. Some of them have been deciphered by experts, while others are still awaiting examination. Several of these have been deciphered in the course of this study (see below the texts and their decipherments).

As noted above, names of scribes, dates and places of manuscripts or printed books were encoded in particular. This practice served a protective function, so that those data should not be altered, falsified, erased or replaced with the name of someone else. Therefore, the authors of colophons encoded these details and included cautionary notes addressed to the reader. For example: «...եւ որ ոք յայս յանդգնի եւ ջնջէ, ինքն ջնջի ի կենաց գրոյն...»¹³ (“...and whoever dares to erase this, let he himself be erased from the Book of Life”). The scribe believed that by preserving his name, he would be worthy of the reader’s “mercy” (ողորմիս) — a plea that scribes consistently make at the end of colophons.

According to some scholars, the scribes were also engaging in a form of wordplay through the use of cryptoraphy¹⁴, while encouraging readers to explore and interpret the text. Those who managed to find the key were seen as intelligent, learned and sharp-minded: «Այս է փակագիր, իմաստունն իմանայ, անիմաստն զարմանայ»¹⁵ (“This is a cipher; the wise will understand it, the unwise will be astonished”).

In our opinion, the colophons in old printed Armenian books were mostly encoded by scribes not to conceal data but rather as a poetic device and a unique form of expression, reflecting the author’s intellectual flexibility and

¹³ See *Hayeren jeřagreri hiřatakaraner*, ԶԺ ըր (*Colophons of the 16th-century Armenian manuscripts*), compiled by Xač'ikyan, Lewon, Mat'ewosyan, Artařes, Łazarosyan, Arp'enik, vol. 1 (Yerevan: “Nairi” Publishing House, 2018), 182; also: Harowt'yownyan, Xač'ik, *Hayeren jeřagreri hiřatakaraner* [The Colophons of the Armenian Manuscripts] (Yerevan: “Tigran Mec” Publishing House, 2019), 187.

¹⁴ Abrahamyan, Ařot, *Hayoc' gir ew grč'owt'yown*, 244.

¹⁵ Abrahamyan, Ařot, *Haykakan cackagrowt'yown*, 8.

creative potential. It also made the material more “mysterious”. In other words, these are scribal playful games. In the colophons of old Armenian printed books, cryptograms mainly appear in the form of “enigmatic” cryptography, and they are mostly written in verse.

Several cryptograms found in the colophons of old Armenian printed books are presented below:

1. Թիվ 108, Էջ 81 – **ԵՐԵՄԻԱ ՉԷԼԷՊԻ ՔԷՕՄԻՐՃԵԱՆ:**
ՏԵՂԵԱՑ ՏՆՕՐԻՆԱԿԱՆԱՑ...: Կ. Պոլիս, տպ.՝ Երեմիա Չելեբի
Բյոմնոքնյանի, 1678:

Էջ 61 ՅԻՇԱՏԱԿԱՐԱՆ
... ԷՀՊԱՊ Քրիստոսի թուէք
Եւ ՉԱՁ ԻՄ ի հայս յիշեցէ՛ք,
Ի բարեացդ խնդրի բարիքն,
Միշտ զբարին ՅԻՆԷՆ մի՛ խնայէք...
|62|... Ի տուրք Երուսաղէմ սա
Երգեցաւ ՊԷՅԱԶ ընծայեալ...:

No. 108, p. 81¹⁶ – **EREMIA Č'ĒLĒPI K'ĒŌMIWRČEAN;**
TEĻEAC' TNŌRINAKANAC'... [Ordination of Priors]. Constantinople, The
Printing House of Eremia Č'elebi K'yomowrčyan, 1678.

p. 61 Colophon
...Count 1678 of the Christian Era,
And mention 1127 of the Armenian Era,
Good is sought by good,
Always do not spare, 1678, the good...
|62|... This was praised in Holy Jerusalem
As presented [i.e. published] in 1114...

(YIŠATAKARAN

... ĒHPAP K'ristosi t'owēk,
Ew ZAĴ IM i hays yišec'ēk',

¹⁶ This information is taken from the bibliographic *Hay girk'ə 1512–1800 t't'* [*The Armenian Book in 1512–1800*], compiled by Oskanyan, Ninel, Korkotyan, K'narik, Savalyan, Ant'aram, (Yerevan: 1988) (hereafter cited as *Hay girk'ə*): book no. 108 on page 81. I verified the text using a photograph kept in the Rare Books and Manuscripts Department of the National Library of Armenia. The page numbers 61 and 62 are handwritten at the bottom of the photograph. However, the compilers of *Hay girk'ə* indicate that the pages of the colophon are 30 and 31.

I bareac'd xndri barik'n,
 Mišt zbarin YINĒN mi xnayēk'...
 |62|... I sowrb Erowsaḷēm sa
 Ergec'aw PĒYAZ əncayeal...)

In the first quatrain of the colophon, the date is encoded through the words «ԷՀՊԱՊ» (“ĒHPAP”), «ՉԱԶ ԻՄ» (“ZAJ IM”), and «ՅԻՆԵՆ» (“YINĒN”)¹⁷. In this system, each letter corresponds to a numerical value in the Armenian alphabet. Therefore, «ԷՀՊԱՊ» is calculated as follows: Է=7, Հ=70, Պ=800, Ա=1, Պ=800, which totals 7+70+800+1+800=1678. This is the year of Christ, the year we use today; it is counted from the birth of Christ.

The ciphers «ՉԱԶ ԻՄ» and «ՅԻՆԵՆ» signify the same date: Չ=6, Ա=1, Չ=900, Ի=20, Մ=200 (6+1+900+20+200=1127), and «ՅԻՆԵՆ» as Յ=300, Ի=20, Ն=400, Է=7, Ն=400 (300+20+400+7+400=1127). This is indicative of the Armenian Era¹⁸, which equates to 1678 AD (1127+551=1678).

In the second part of the colophon, the Armenian year is expressed by the word «ՊԷՅԱԶ» (“PĒYAZ”), where Պ=800, Է=7, Յ=300, Ա=1, Չ=6. In accordance with the aforementioned principle, the following conclusion can be deduced: 800+7+300+1+6=1114. Adding the difference of the Armenian Era (551) gives the year 1665¹⁹.

The cryptograms «Էխապապ» and «պէյազ» are also make sense in Turkish, meaning "friend" and "white" respectively²⁰.

2. Թիվ 296, էջ 220 – ԿԻՐԵՂ ԱՂԵՔՍԱՆԴՐԱՑԻ. ԳԻՐՔ ՊԱՐԱՊՄԱՆՑ: – ԱԹԱՆԱՍ ԱՂԵՔՍԱՆԴՐԱՑԻ. ԹՈՒՂԹ ԱՌԵՊԻԿՏԻՍՈՆ. – ԳՐԻԳՈՐ ՏԱԹԵԲԱՑԻ. ԼՈՒԾՍՈՒՆՔ Ի

¹⁷ For the key to these ciphers, see Akinean, Nersēs, *Eremia Ć'ēlēpi K'ēōmiwrčean. Keank'n ew grakan gorcownēowt'iwnə. Matenagrakan owsowmnasirowt'iwn*, [Jeremiah Chelebi Keomurchian. *Life and Literary Activity: A Bibliographical Study*] (Vienna: Mxit'aryan Printing House, 1933), 183, from which the following is also taken: *Armenian Book*, no. 108, p. 81, footnote; also see Abrahamyan, Ašot, *Haykakan cackagrowt'yown*, 267.

¹⁸ The Armenian Era begins on July 11, 552 AD and ends on July 10, 553 AD. Therefore, when converting a date given in the Armenian Era to the modern calendar, it is necessary to add 551 (if the date falls after Navasard) or 552 (if it falls before Navasard). However, since Armenian dates are often recorded without specific day and month, it is customary to add 551: see Abrahamyan, Ašot, *Hayoc' gir ew grē'owt'yown*, 112.

¹⁹ This is the year in which Eremia Ć'elepi K'eomowrčyan was in Jerusalem and composed the poems; however, it is part of the colophon.

²⁰ I would like to thank Ani Ž. Avetisyan, a researcher at the Matenadaran, for translating these words.

ՊԱՐԱՊՄՈՒՆՍ ՍՐԲՈՅՆ ԿԻՐՐՂԻ: Կ. Պոլիս, տպագր. Ասվածատուր
Կոստանդնուպոլսեցի, տպ. Ասվածատուր Կոստանդնուպոլսեցու, 1717:

Էջ ԺԴ. ԹԻԲ – Որ ենթ տասին կոյսըն թըլիկ ասացեալ,
Եռ յիսնաբար ընդ հարիւրի շարակցեալ,
Եւ Պորփիւրի ձայնիկն առ հուպ յարեցեալ,
Յեռապատկէն ոչինչ արտաքս ընկեցեալ,
Յորմէ գըտցի թիւ մատենիս տըպեցման:

no. 296, p. 220 – **KIWREL ALEK'SANDRAC'I; GIRK' PARAPMANC'. AT'ANAS ALEK'SANDRAC'I; T'OWLT' AՐ EPIKTIMON. – GRIGOR TAT'EWAC'I; LOWCMOWNK' I PARAPMOWNS SRBOYN KIWRĒI** [Cyril of Alexandria, *Book of Scholia*, Athanasius of Alexandria, *Letter to Epictetus*, Grigor Tat'ewac'i, *Commentary on the Scholia of St. Cyril*]. Constantinople: Printed by Asvacatowr Kostandnowpolsec'i, Printing House of Asvacatowr Kostandnowpolsec'i, 1717.

p. 14 Year - A number below ten called virgin,
Three multiplied by fifty, added to hundred,
And Porphyry's term added closely,
Nothing omitted from [it], multiplied by three,
By which the date of printing this book will be found.

(ՃԺ. “T'IW - Or ent' tasin koysən t'əwik asac'eal,
Er yisnabar ənd hariwri šarakc'eal,
Ew Porp'iwri jaynikn ar howp yarec'eal,
Yeřapatkēn oč'inč' artak's ənkec'eal,
Yormē gətc'i t'iw matenis təpec'man.)

K'narik Korkotyan interpreted this colophon as follows: in the first line, the number «կոյս» (“virgin”) ²¹ represents 9, and by placing the number 10 (“ent' tasin”) next to it, we get 910. In the second line, the phrase «են յիսնաբար» (“Er yisnabar”) is interpreted as $3 \times 50 = 150$; when 100 is added (“ənd hariwri šarakc'eal”), the result is 250. In Armenian manuscript tradition, the «Պորփիւրի ձայնիկն» (“Porp'iwri jaynikn”)²² is considered to represent the number 5. The phrase «Յեռապատկէն ոչինչ արտաքս ընկեցեալ»

²¹ In medieval Armenian literature, the numerical value of the word «կոյս» (“virgin”) is usually considered to be 7 (see Abrahamyan, Ašot, *Haykakan cackagrowt' yown*, 195, and elsewhere).

²² For the numerical value of the «Պորփիւրի ձայնիկն» (“Porp'iwri jaynikn”), see Abrahamyan, Ašot, *Hayoc' gir ew grč'owt' yown*, 175, and elsewhere.

(“Yerapatkēn oĉ’inĉ’ artak’s ənkec’eal”) means that nothing should be added to the sum of the three numbers; accordingly, $910 + 250 + 5 = 1165$. By adding the difference of the Armenian Era (551), we obtain the printing year, $1165 + 551 = 1716$ ²³.

We propose an alternative, more probable interpretation of this colophon, since the term «կոյս» (“virgin”) has been conventionally accepted in Armenian tradition as the numerical value of 7, rather than 9. A similar colophon is found in manuscript M7758, fol. 214r, in the right margin of the text. This colophon provides the numerical values of the ciphered words. According to this, the line «Որ ենթ տասին կոյսըն թըլիկ ասացեալ» (“A number called virgin below ten”²⁴) should be understood as follows: below the number 10, only 7 is to be taken. The phrase in the second line, «էն յիսնաբար» (“Three multiplied by fifty”), signifies 3×50 , to which 100 is added, which equals 250. Consequently, the calculation is as follows: $7 \times 3 \times 50 + 100 = 1150$. In the lines «Եւ Պորփիրի ձայնիկն առ հույ յարեցեալ, / Յեռապատկէն ոչինչ արտաքս ընկեցեալ» (“And Porphyry’s term added closely, / Nothing omitted from [it], multiplied by three”), (Porphyry’s term) (5) is to be multiplied by 3 (5×3) — without omitting (lit. casting away) anything («յեռապատկէն ոչինչ արտաքս ընկեցեալ» (“Nothing omitted from [it], multiplied by three”). Thereafter, adding this to the previously obtained 1150 equals 1165 of the Armenian Era, i.e./= 1716 AD, the year in which the printing commenced.

3. Թիվ 316, էջ 237 – **ՏՕՆԱՅՈՅՑ**: Կ. Պոլիս, տպագր. և տպ.՝ Սարգիս Դպրի, 1720:

²³ This signifies the date of the beginning of printing. For a deciphering of the year, see Korkotyan, K’narik, *Hay tpagir girk’ə Kostandnowpolsowm* (1567–1850 t’t’) [The Armenian Printed Book in Constantinople (1567–1850)] (Yerevan: 1964), 52–53.

²⁴ The source of this is the following passage of David the Invincible: եւթն թիւդ կոյս յի... Եւ կոյս՝ վասն զի ամենայն թիւ ի ներքոյ տասնեկիդ կամ ծնանի զոր կամ ծնանի յումերէ. իսկ եւթն ոչ ծնանի զոր ի ներքոյ տասնեկիդ եւ ոչ ծնանի յումերէ, որզոն, երկուք ծնանի զչորս ի ձեռն բազմապատկութեան, եւ երեք՝ զինն – “The number seven is called virginal... It is called virginal because all the numbers which are less than the number ten either generate a number or are themselves generated by some number; but seven neither generates any number which is below the number ten, nor generated by any number. For example, through multiplication two generates four and three generates nine.” *Definitions and Division of Philosophy by David the Invincible Philosopher*, translated by B. Kendall and R.W. Thomson (University of Pennsylvania Armenian Texts and Studies 5), Chico, California: Scholars Press, 1983, pp. 112 (Armenian text) -113 (English translation).

Էջ 13 Չնախնի վեհից թիւն առձայնեալ,
Որք հաւատոյ սակս ջոկ կազմեալ,
Տասն արկ ի նա եռապատկեալ,
Եւ մի ընդ քառ յիսունն զուգեալ:
Յորմէ ըստէպ գըտցես խուզեալ
Ըգթըւականն Հայոց կոչեալ,
Չի չէ թաքուն բանիւ ծածկեալ,
Այլ յոյժ դիւրին է յօրինեալ:

no. 316, p. 237 – **TŌNAC'ŌYC'** [Calendar of Feasts].
Constantinople, printed by Sargis Dpir, Printing House of Sargis Dpir, 1720.

p. 13 Calling the first number from the sublime ones,
Which form a group for the sake of faith,
Add to it ten multiplied by three
And joining to it one with four and fifty.
By which, if searched, you will quickly find
The date called Armenian,
For it is not concealed by hidden words,
But is arranged very easily.

(Znaxni vehic' t'iwn ar jayneal,
Ork' hawatoy saks jok kazmeal,
Tasn ark i na erapatkeal,
Ew mi and k'ar yisownn zowgeal.
Yormē əstēp gətc'es xowzeal,
Əzt'əwakann Hayoc' koč'eal,
Zi č'ē t'ak'own baniw cackeal,
Ayl yoyž diwrin ē yōrineal.)

This ciphered colophon was deciphered by the compilers of *The Armenian Book*, as they themselves indicate, with the assistance of A. Abrahamyan²⁵, who considers «Չնախնի վեհից թիւն» (“the first number from the sublime ones”) to be the Minor Armenian Era (or the chronology of Hovhannes Sarkavag) which is 1084. The expression «Տասն արկ ի նա եռապատկեալ» (“Add to it ten multiplied by three”) signifies 10×3 , while «Եւ մի ընդ քառ յիսունն զուգեալ» (“And joining to it one with four and fifty”) corresponds to $1 + 4 + 50 = 55$. Consequently, the total is calculated as

²⁵ See *Hay girk'ə...*, 238:

$1084 + 10 \times 3 + 1 + 4 + 50 = 1169$ of the Armenian Era, which equates to 1720 AD ($1169 + 551 = 1720$), i. e. the year of printing.

4. Թիվ 326, էջ 246 – **ԳԻՐԲ ԱՂՕԹԻՑ**: Կ. Պոլիս, տպագր.՝ Սարգիս դպրի, տպ.՝ Մարտիրոս Սարգսյանի, 1721:

էջ ՄԾԶ. Ի մատենիս աւարտման
Քեզ՝ Միածին աստուածաբան,
Մատուցանեմք յանվախճան
Փառք և պատիւ յաւիտեան:
Թըւական Հայկազեան
Եօթնեակ տասնիկ ի լրման,
Նաև երկեակ յոթելեան,
Տո՛ւր ի հաշիւն հազարեան,
Այն է թւական Արամեան:
Եւ թէ չկամիս որոնել,
Այլ պարգապէս տեսանել,
Կայ ի սկըզբան անարգել,
Բա՛ց և կարդա՛ ի գիտել:
Ի Սեպտեմբերի ԻԲ. (22): Վերջ:

no. 326, p. 246 – **GIRK' ALŌT'IC' [Prayer Book]**. Constantinople, printed by Sargis Dpir, Printing House of Martiros Sargsyan, 1721.

p. 256. In the end of this book
We offer forever
Endless glory and honour
To you, Only-begotten who speaks the Word of God,
The date of the Armenian Era is:
Altogether seven multiplied by ten,
Also two jubilees,
Add them to the number thousand:
This is date of the Armenian Era.
If you do not want to search,
But just to see,
It is freely placed in the beginning²⁶,
Open and read it in orred to know.
On September 22. End.

²⁶ I.e. on the title-page of the book.

(I matenis awartman
K'ez Miacin astowacaban,
Matowc'anemk' yavvaxčan
P'ark' ew patiw yawitean.
T'əwakan Haykazean
Eōt'neak tasnik i ləman,
Naew erkeak yobelea,
To'wr i hašiw hazarean,
Ayn ē t'wakan Aramean).

The expression «Եօթնեակ տասնիկ» (“seven multiplied by ten”) means 7×10 , «երկեակ յոբելեան» (“two jubilees”) corresponds to 2×50 , and «սոոր ի հաշիւն հազարեան» (“Add them to the number thousand”) indicates that 1000 should be added to these values. Consequently, the date is calculated as $(7 \times 10) + (2 \times 50) + 1000 = 1170$ of the Armenian Era, which equates to 1721 AD ($1170 + 551 = 1721$) and is the year of printing.

5. Թիվ 331, էջ 250 – **ԳԻՐԳ ԵՒ ՃԱՌ ՀՈԳԵՇԱԿ**: Կ. Պոլիս, տպագր.՝ Մարտիրոս Կոստանդնուպոլսեցու, տպ.՝ Սարգիս Դարի, 1722:

էջ 488 ... Այն, որ ասի՝ Հայոց թուիկ
Երկեակ բառիւ գրոցի այսիկ,
Թէ գոյ լեալ ոք հազիկ հարիկ,
Ըն եօթնեակ տասն, ամս և երկիկ՝
Ի Փետրվարի ԻԳ. (23): Վերջ:

no. 326, p. 246 – **GIRK' EW ČAR HOGESĀH** [Spiritual/Edifying Book and Sermon]. Constantinople, printed by Martiros Kostandnowpolsec'i, Printing House of Sargis Dpir, 1722.

p. 488 That which is called the year of Armenian Era
Should be found through those two words:
If anyone is thousand and hundred,
With seven multiplied by ten years and two,
On February 23. End.

(... Ayn, or asiundefined Hayoc' t'əwik
Erkeak bariw gətc'i ayswik,
T'ē goy leal ok' hazik harik,
Ən eōt'neak tasn, ams ew erkik
I P'etrvari IG. (23). Verj).

In this colophon, «հազիկ հարիկ» (the words *hauqap* “thousand” and *harpik* “hundred”, with the addition of the suffix *իկ*), represents 1100, and «եօթնեակ տասն» (“seven multiplied by ten”) corresponds to $7 \times 10 = 70$. By adding 2 (“two”), one arrives at 1172 of the Armenian Era, which equates to 1723 AD ($1172 + 551 = 1723$). It is evident that there is a one-year discrepancy between 1723, as indicated in the colophon, and 1722, as stated on the title page, since the title page records the year in which the printing commenced, whereas the colophon refers to the year of its completion.

6. Թիվ 350, էջ 263 – **ՍԻՄԷՈՆ** **ՋՈՒՂԱՅԵՑԻ:**
ԶԵՐԱԿԱՆՈՒԹԻՒՆ: Կ. Պոլիս, տպ.՝ Մարտիրոս Սարգսյանի, 1725:

Էջ 12 ... Տըպիկ սորա ի մերս թըւի
Յեկտի նէնոս հարիւրորդի,
Տասնեակ, ամուլ, յերկ յոբելի
Եվ մի քառեակ վերաբերի:

no. 350, p. 263 – **SIMEON JOWLAYEC'I.**
K'ERAKANOWT'IWN [GRAMMAR]. Constantinople, Printing House of
Martiros Sargsyan, 1725.

*p. 488 ... The printing of this, according to our era,
Is two *nēnos* and one hundred,
Ten, barren, two jubilees
And a four is added.*

(*Təpil sora i mers t'əwi
Yekti nēnos hariwrordi,
Tasneak, amowl, yerik yobeli
Ev mi k'areak veraberi*).

The year is decoded through the following words in the colophon: «Յեկտի» (“Yekti”) is commonly accepted as representing 2²⁷, while «նէնոս» (“nēnos”) is typically assigned to 480²⁸. The phrase «յեկտի նէնոս հարիւրորդի» (“Yekti nēnos hariwrordi”) is thus deciphered as $2 \times 480 + 100 = 1060$. The word «ամուլ» (“barren”) is probably equivalent to 0, whereas «յերկ յոբել» (“two jubilees”) means 2×50 . The expression «տասնեակ ամուլ

²⁷ See Abrahamyan, Ašot, *Hayoc' gir ew grč'owt'yown*, 175.

²⁸ Ibid.

յերկ յոբելի»²⁹ (“Tasneak, amowl, yerck yobeli”) therefore equals to $10 + 0 + 2 \times 50 = 110$. The phrase «և մի քառեակ վերաբերի» (“Ev mi k’areak veraberi”) indicates that 4 should be added: $110 + 4 = 114$. Consequently, the total calculation is $(2 \times 480 + 100) + 10 + 0 + (2 \times 50) + 4 = 1174$ of the Armenian Era, i.e. 1725 AD ($1174 + 551 = 1725$).

7. Թիվ 368, էջ 279 – **ԵՐԵՄԻԱ ՄԵՂՐԵՑԻ: ԲԱՌԳԻՐՔ ՀԱՅՈՑ:** – **ՎԱՐԴԱՆ ԱՇԽԱՐՀԱԳԻՐ: ԱՇԽԱՐՀԱՅՈՑ:** Կ. Պոլիս, տպ.՝ Մարտիրոս Սարգսյանի, 1728³⁰:

Էջ 576 ... Ոլոմպիաթ թիւրն կալեալ,
Իւրով ինքեամբ լինի կըրկնեալ
Եւ յօնսեայի թիւրն զուգեալ,
Կըրկին զնոսա հոգնապատկեալ,
Թըրիթականով նա միացեալ,
Երրորդեկանն վերա բերեալ:

no. 368, p. 279 – **EREMIA MELREC’I. BAĠGIRK’ HAYOC’**
[*Armenian Lexicon*. **VARDAN AŞXARHAGIR. AŞXARHAC’OYC’**
[*Geography*]. Constantinople, printed by Martiros Sargsyan, 1728.

p. 576 ... The number Olympiad is taken
And multiplied by itself,
And adding the number *yōnseayi*,
Multiplying them once more,
It being joined to *t’ərit’ak*,
Adding three jubilees.

(Olompiat’ t’iwən kaleal,
Iwrov ink’eamb lini kərkneal
Ew yōnseayi t’iwən zowgeal,
Kərkin znosa hognapatkeal,
T’ərit’aknov na miac’eal,
Erryobealeann vera bereal).

²⁹ The term «յոբել» (“yobel”) is an abridged form of «յոբելեան» (jubilee) which means a 50-year period.

³⁰ The year 1728, indicated on the title page, marks the commencement of the printing, while according to the colophon the printing was completed in 1729.

The number «ոլմպիաթ» (“Olompiat’”) is accepted as 4^{31} ; «Իւրով ինքեամբ լինի կրրկնեալ» (“Iwrov ink’eamb lini karkneal”) means multiplication by itself, i.e., 4×4 . «Յօնսեա» (“yōnseay”) is equivalent to 3^{32} . The interpretation of the third and fourth lines («Եւ յօնսեայի թիւն զուգեալ / Կրրկին զնոսա հոգնապատկեալ») (“Ew yōnseayi t’iwēn zowgeal, / Karkin znosa hognapatkeal”) is that 3 is to be multiplied by the same 4. In the following line, the term «թրիթակ» (“T’arit’ak”) ³³ corresponds to 1000. In the final line, «երրյոբեան» (“erryobelean”) ³⁴ signifies 3×50 . «Թրիթակնով նա միացեալ» (“T’arit’aknov na miac’eal”) means adding 1000, and «երրյոբեանն վերայ բերեալ» (“Erryobeleann vera bereal”) means adding $3 \times 50 = 150$. As a result, the cipher is deciphered as follows: $(4 \times 4) + (3 \times 4) + 1000 + 150 = 1178$ of the Armenian Era, which equated to 1729 AD ($1178 + 551 = 1729$).

8. Թիվ 398, էջ 310 – **ՏԱՂԱՐԱՆ ՓՈԹՐԻԿ**: Կ. Պոլիս, տպագր. և տպ.՝ Մարտիրոս Մարգարյանի, 1732:

Էջ 152 Չկենդանակերպն երկոտասան,
Եռ երեսնեա զամենեսեան,
Դի՛ր ընդ նոսին և հինգ քըսան,
Բարա՛ ըն-ա ճէ Զա. լըման:

no. 398, p. 310 – **TALARAN P’OK’RIK** [*Little Anthology*]. Constantinople, printed by Martiros Sargsyan, Printing House of Martiros Sargsyan, 1732³⁵.

p. 576 Twelve signs of the zodiac,

³¹ This term entered Armenian literature from the *Chronicle* by Eusebius of Caesarea. It is also found in medieval sources where it simply denotes the number four, Abrahamyan, Ašot, *Hayots Gir yev Grchutyun*, 127.

³² For the numerical value of the cipher «Յօնսեա / յօնսայ / հօնսայ», see Abrahamyan, Ašot, *Hayots Gir yev Grchutyun*, 172, 175.

³³ For the numerical value of the word ‘Tritak / Trtak,’ see Abrahamyan, Ašot, *Hayots Gir yev Grchutyun*, 172, 175.

³⁴ «Երրյոբեան = եռյոբեան» is composed of the roots «երր / եռ» (3) and «յոբեան» (50). For the term «յոբեան» see note [citation] no. 29.

³⁵ As we can see in the colophon, the year of publication is given as «Ռա Ճէ Զա» (“Ra Čē Ja”) (1180 of the Armenian Era, which equated to 1731 AD). In the title, the year 1732 has been retained according to the bibliographic *Hay Girke*, in order to avoid confusion (p. 310). We had no opportunity to verify this, since it is the only copy and is kept in the Mkhitarist Library in Vienna (VML) and does not have a title page. Most likely, an error occurred, since this colophon was also copied by the compilers of the bibliography (p. 311).

Three times thirty [makes] all,
Put with them five times twenty
And make totally one thousand one hundred eighty.

(Zkendanakerpn erkotasan,
Er eresnea zamenesean,
Dir ənd nosin ew hing k'əsan,
W ara' əRā ČĒ Ja. ləman).

So «զկենդանակերպն երկոտասան» (“Twelve signs of the zodiac”) simply denotes, the number 12. Presumably this number is multiplied by 3×30 («եռ երեսնեսա») (“Three times thirty”), and then 100 (“five times twenty” i.e., 5×20) is added, making $12 \times (3 \times 30) + (5 \times 20) = 1180$ of the Armenian Era, which is 1731 AD ($1180 + 551 = 1731$), the year of publication.

9. Թիվ 451, էջ 357 – **ՏԱՂԱՐԱՆ: – ՊԱՆՉԱՐԱՆ:** Կ. Պոլիս, տպ.՝ Աստվածատուր Կոստանդնուպոլսեցու, 1740:

Բ. Էջակարություն, Էջ 144

Թիւ. Չուրն յորելեան երկիցս կրրկնեալ,
Ընդ ՃԷ. գրրին Գիմ մի դասեալ,
Եւ ըԶ. (6) ի վանկն ընդ այնց հաշուեալ,
յԱյբէն ցըՔէն քանի տես լեալ (1189):

no. 398, p. 310 – **TALARAN** [Collection of Odes]: – GANJARAN [Hymnary]. Constantinople, printed by Astvacatowr Kostandnowpolsec'i, 1740:

B. Pagination, p. 144

Year. Multiplying eight jubilees by two,
Placing three alongside one hundred and seven,
And counting them with six syllables,
[Multiplied by the letters] from *Ayb* to *K'ē*, see what number this makes (1189).

(Zowt'n yobelea erkic's kərkneal,
Ənd ČĒ. gərin Gim mi daseal,
Ew əZ. (6) i vankn ənd aync' hašoweal,
yAybēn c'əK'ēn k'ani tes leal (1189)).

The first line of the colophon, «Չուրթն յոբելեան»³⁶ երկիցս կրրկնեալ» (“Zowt’ n yobelean erkic’s kərkneal”), is deciphered as follows: $8 \times 50 \times 2 = 800$. The second line, «ԾԷ.» (“ČĒ.”), contains two types of ciphers simultaneously: the letter «Ծ» (“Č”) corresponds to its numerical value, 100, while «Է» (“Ē”) does not represent its usual numerical value of 7. Instead, it stands for «Հ» (“H”), which represents 70. This is a type of cryptographic substitution³⁷ in which, instead of the tens value, the corresponding unit from the same series is used. In other words, instead of «ԾՀ» (“ČH”), the colophon has «ԾԷ» (“ČĒ”). Thus, «Ընդ ԾԷ. գրրին Գիմ մի դասեալ» (“Ēnd ČĒ. gərin Gim mi daseal”) signifies $170 + 3 = 173$. «ՅԱյբեն ց’աԿ’են» (“yAybēn c’əK’ēn”), the number of letters in the Armenian alphabet, is 36, which, when multiplied by 6 (“Զ”), gives 216 ($6 \times 36 = 216$). Adding all these together, we obtain the year indicated by the printer: 1189; $(8 \times 50 \times 2) + 170 + 3 + (6 \times 36) = 800 + 173 + 216 = 1189$ of the Armenian Era, which corresponds to 1740 AD ($1189 + 551 = 1740$).

Conclusion

We examined a number of ciphered colophons found in old Armenian printed books. Some of these had been deciphered by experts in the study of old printed books. Where further clarification was required, we proposed alternative decipherments that seemed more plausible. Furthermore, we also tried to decipher colophons that were previously undeciphered.

This study suggests that in Armenian old printed books, which continued the traditions of manuscript culture, the use of cryptography was not chiefly aimed at preserving or concealing information. Rather, it was employed as a creative device—a scribal wordplay. It reflects the flexibility and ingenuity of the creator’s mind, as well as the limits of what is possible; in this way, the topic also becomes more enigmatic.

³⁶ See note [citation] 29.

³⁷ For information on the substitution cipher, see Abrahamyan, Ašot, *Hay gri ew grč’owt’yan patmowt’yown*, 203–206.

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