

Dead Ends in Breaking an Unknown Cipher: Experiences in the Historiography of the Rohonc Codex

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Abstract

A close reading of unsuccessful breaking attempts of unsolved historical cryptograms (particularly, if they happened to be solved at a later moment) is more useful than it would be obvious at first glance. While the specific “solutions” offered by code breakers differ from each other, the attempts in the case of the Rohonc Codex, the Voynich manuscript, and other historical ciphers (or codes) exhibit surprising structural similarities. These attempts can be classified into promising and unpromising subcategories on structural grounds even when the final solution is not available. The paper aims at supporting this argument in a case study of the amateurish “solutions” of the Rohonc Codex, which include an old-Hungarian, a proto-Rumanian (11th century “vulgar Latin”) and an old Sanskrit script theory. A more convincing thread also emerges, details of which are in the process of being published.

This work has been supported by the Swedish Research Council, grant 2018-06074, DECRYPT - Decryption of historical manuscripts.

1 Introduction

As a result of the last decade, reliable literature on the Rohonc Codex became available in English (Láng 2010, Király and Tokai 2018). The history of this entirely enciphered 450 long source is described, the characteristics of its script are analyzed. Most recently a convincing

code breaking attempt is offered (Király and Tokai 2018), the continuation of which will be also submitted to the decisive journal of the history of cryptography, *Cryptologia*. However, much less attention is paid to the earlier, aborted attempts at breaking the code, which are accessible only in Hungarian.

2 The codex

The Rohonc Codex (also called Codex of Rohonc, and even: Codex Rohonczi) is a handwritten paper book filled with unknown sign-strings and more than 80 seemingly biblical illustrations. It consists of nearly 450 pages. The first and last few dozen leaves were detached from the book itself, thus rendering the original order of these pages as unknown. There is no title page. The small pages (3.9 x 4.7 inches / 10 x 12 centimeters) on average contain nine to fourteen lines of characters of some unknown origin, and eighty-seven illustrations altogether. The leather binding was attached to the pages in the 19th century, and thus it does not add anything about the early history of the book. At present, the book is kept in the library of the Hungarian Academy of Sciences (MS K 114).

What we know of its history dates back to 1838 only, when, as part of the thirty-thousand-book library of the late Hungarian magnate, Gusztáv Batthyány, it was incorporated into the collection of the Hungarian Academy of Sciences. Since no other information is available to us about its origin, the codex is named after the town of Rohonc (today Rechnitz, in Austria), the Batthyány family seat. However, since the Batthyánys had been amassing their book collection from a great array of sources through a succession of centuries, there is no proof that the codex is either Hungarian or Central European in origin.

Soon after it emerged, the mysterious codex earned considerable academic attention, but only as long as it could be considered a potentially valuable piece of old Hungarian writing. The initial enthusiasm soon died out, giving place to disappointment, skepticism and suspicion. By the end of the 19th century the academic public had decided to regard it as a forgery, and virtually no serious study was published on it until the turn of the 21st century.

3 The first attempts

The codex was first examined shortly after it was found by the Hungarian language historian, János Jerney. Judging by the watermark, he soon identified the paper as coming from 16th century Italy. This type of paper was indeed fairly common in early-modern Hungary. From the Biblical topic of the illustrations Jerney concluded that the author must have belonged to a Christian culture. He then went on to compare the writing to various Asian writings since it displayed some Eastern characteristics. Jerney was not yet tempted to regard the source as an ancient Hungarian document. Instead, he suspected that if the language was a natural one, it could have been written by Tartars, who had settled in medieval Hungary and become Christians. His theory was that the Tartars used their own Asian letters to write the Rohonc Codex or the original book that the codex was copied from. Jerney did not believe that the text was an imitation of an ancient Hungarian source or any other natural language. He did not think the purpose of the book had been to “deceive coming generations or to create a counterfeit just for the sake of a game”. He did toy with the idea of the text being a cipher though (Jerney 1844).

In the following years, a succession of scholars tried to identify the symbols, Hungarians and foreigners alike: Ferenc Toldy, Pál Hunfalvy, Josef Jireček from Prague, Bernath Jülg from Innsbruck, Alois Müller from Graz. Later, Mihály Munkácsy, the famous Hungarian painter, even took the codex with him to Paris to have it examined. The first systematic and published attempt at breaking the codex was by Kálmán Némäti, who started working on the book after it was brought back from its 18-month long sojourn in Paris.

Kálmán Némäti (1855-1920), the ‘educator of the nation’ – as he called himself, had a life so unique that it should be described in a separate

monograph. He certainly did not belong to the institutionalized mainstream of the historiography of Hungarian literature. After giving up on educating the nation, he spent two years in an empty bear cave where, according to his entry in a biographical encyclopedia, “he wore underclothes and a monk’s habit made by his own hands; ate wild fruit and roots; and was often visited by the people of the land who would listen to his speech and give him wheat, fruit and bread” (Szinnyei, 1903, 954). Later, living on alms from his relatives like a “beggar-writer”, he published a long line of articles not only on the Khazars, the Turks and the origins of the Hungarian people, but also on a proposed reformation of the teaching of the alphabet in primary schools, and the laws of nutrition (he himself was a hardcore vegetarian). As for the Rohonc Codex, he correctly identified the writing as running from right to left, and incorrectly argued for the ancient Hungarian origin of the text. He published his views on his own. Besides, he submitted a manuscript typology to the Academy that listed and grouped the symbols of the codex, of which he had found almost 800. This high number of symbols made him suspect that the codex is a syllable-writing (Némäti 1884 and 1889).

Némäti’s research received some scholarly attention when he requested a grant from the Academy. The Committee of Linguistics took his proposal seriously and, according to the official record of the meeting on 12 November 1898, decided that they primarily needed a “palaeographic study in order to judge whether the manuscript is an ancient Hungarian source”. So they asked four palaeographers, experts on ancient writings, who, based on a variety of evidence, came to the conclusion that though the paper “was indeed from the first quarter of the 16th century, the writing on it is a later forgery.” Their main argument was

“it is impossible to encipher a text using 900 symbols because no man on Earth could possibly read such a text, not even the person who had created it. Handling an alphabet of 900 secret symbols is beyond the capacity of human memory. The words are not separated, making the text difficult, even impossible to read. Moreover, no corrections have been made, which is unheard of in a manuscript of this length.”

Two of these observations are simply incorrect: there are ciphers that use 900 symbols or more, and the codex does contain a number of corrections, deletions and strikethroughs. Still, these comments imply that the palaeographers did not believe Némäti's ancient Hungarian script hypothesis was correct. Instead, they examined whether the string of symbols could be a cipher. Though their arguments will be discussed later, the final conclusion of the Committee must be quoted here,

“All of these convinced the committee that Mr. Kálmán Némäti had been wasting his rare tremendous zeal on an impossible task, and that anyone encouraging him to continue this work would do a bad thing to him.” (strikethrough in the original record) (The records of the Committee of Linguistics).

When declaring the Rohonc Codex to be a forgery, the 12 November 1898 meeting of the Committee of Linguistics of the Hungarian Academy of Sciences silenced a long wave of attempts that were losing their initial fervor and were becoming more doubtful. The Academy's opinion actually discouraged the desire to break the codex for almost a century (with the exception of one attempt). Upon the arrival of the third millennium, however, many voices broke the silence.

4 The ancient Hungarian theory

In the last few decades, Attila Nyíri, was one of those who proposed a solution for the codex. Nyíri is neither a professional historian, nor a paleographer, instead he is an electrical engineer, but we should bear in mind that good insights in the codebreaking of historical texts often emerge from non-professional sources. In the late 1990's, when copies of the codex were not yet easily available, Nyíri used those two complete pages he had access to. He read the symbols of the codex as a prayer written with ancient Hungarian letters, i.e. a natural language. This means that he did not *correspond* the characters of the codex to the letters of the Hungarian language, but he simply *recognized* them as letters that could be read spontaneously (Nyíri, 1996). He happened to read the text upside down, something that he himself realized later, but it is not this mishap that proves him to be completely wrong. For one thing, Nyíri allowed for one letter (one sound) to correspond to several symbols, a method perfectly common in the case of ciphers, though

not so much in natural languages. For another, he read the same character as several different letters. He furthermore claimed that the order of the letters is sometimes jumbled up in the text. This method of decoding, nevertheless, drops to such an arbitrary level where every deciphering attempt is successful by nature, and thus any text can be read in any way.

Turning the page upside down, a few lines from the Rohonc Codex as Attila Nyíri reads it from right to left in “the ancient Hungarian language” sounds like this:

“Your God has arrived. Oh, the Lord is flying. There are the holy angels.

Oh, yes, them. Sung with decorous words, send the song, pour it.

The Lord is to come, I am flowing everywhere. Oh. The Lord is honored.

The peace of the Lord flies far. Those holy words...”

5 The Daco-Romanian hypothesis

Nyíri was no philologist, and he only had access to a limited section of the original text. These qualifications cannot be made in defense of that Romanian archaeologist who summarized her twenty years of studies of the Rohonc Codex in an eight-hundred-page book (Enăchiuc, 2002). Viorica Enăchiuc claims that the text is in Vulgar Latin, in other words, proto-Romanian, from the 11th century. She transcribed the complete string of symbols, provided the dictionary of this hitherto unknown language, published the complete reproduction of the codex without ever asking the library for permission to do so, and then translated the text to modern Romanian and French. Furthermore, in her voluminous book she also made room for studies in Romanian (and their French translations) on topics such as the “musical notes” and “musical content” of the codex, various maps of Dacia, and even the author's list of publications.

There was only one thing left out from this thick volume, something that is the basis of all successful solutions, namely the one-or-two-page code table that would reveal which symbols correspond to which letters in Enăchiuc's view. Her hints in the book seem to imply that we will only see this table when the “second volume” is

published. If the readers, however, attempt to create the table on his own, they will quickly find that the various symbols correspond to a different letter every time, carefully tailored to the meaning that Enăchiuc's Vulgar Latin text carries.

Throughout the twenty years she spent on studying the codex, the archeologist never realized she was reading the text the wrong way. She did notice that the symbols read from right to left, which is obvious from the facts that the text is aligned to the right, and that there are sometimes hyphens at the left end of the lines. Why she read the text from bottom up, however, is hard to explain. Even a relatively quick study of the text identifies coherent strings of characters that, when broken at the end of a line, always continue in the right end of the line below. Furthermore, there is a fairly conspicuous phenomenon where the end of a chapter or section produces a blank area at the bottom of a page, and not its top. Looking at these features, even the earliest researchers could correctly determine the direction of the writing, right to left, top to bottom, of the Rohonc Codex.

Equally bizarre is the fact that the Romanian researcher failed to notice that certain symbols always stand together, such as the frequent IO:O and several dozen other examples that she decodes as separate letters every time they occur. If they really were a string of separate letters, instead of carrying a meaning as a complex character, then they would be signs of such a high level of structure unmatched by any other language. (In other words, the number of letters that always stand together like q+u in Latin, are too high.) Enăchiuc also believes the second symbol of one specific digraph to be a sentence delimiter. If that were the case, all sentences would start with the same letter, i.e. the first symbol of this digraph. This weird feature of Vulgar Latin went unnoticed during the process of translation only because the same symbol is always translated by different letters. This is yet another method that enables the reader to translate any kind of ciphertext in any way she chooses.

All of these peculiarities make sense, naturally, once we glimpse into the reconstruction of the text and discover her motivation. In her rendering, the codex describes the centralized Blaki (early Romanian) state,

located between the Tisza and the Dniester rivers, at the peak of its glory in the 11th and 12th centuries, led by emperor Vlad. The codex contains speeches, prayers and songs in connection with this state, but mostly battle songs to inspire the 11th century Blaki youth to glorious victory over the Oghuz and the Hungarian people. The Oghuz, if I understand her correctly, are in fact the Pechenegs, who were allies of the Hungarians and posed a threat on the centralized Blaki state as well as the Byzantine Empire around the year 1100.

Let us read the transcript of the codex by the Romanian archeologist, Viorica Enăchiuc. It goes right to left, bottom to top in Vulgar Latin, i.e. in Daco-Romanian language,

“Deteti lis vivit neglivilu iti iti itia niteren

Titius suonares imi urast ucen” (Enăchiuc 2002, 22)

Chances are that the reader would not quite be able to read this in Vulgar Latin. Vulgar Latin, to the best of our knowledge, has no other surviving source, let alone a language book or dictionary. This does not bother Enăchiuc in the slightest, as she attaches a detailed dictionary where she assigns each word of this language to another word, usually Latin. For example, the Vulgar Latin ITI comes from the Latin “eo, ire, ivi, itum” word, which means go. The strange-looking NEGLIVLU is not listed in the dictionary, but could be the verb neglect, based on a similar-sounding word, the Latin “negligo”. SUONARES stands for the Hungarians, because it sounds like Hunor, a character in *Gesta Hungarorum*, an early history of the Hungarians written by the medieval Hungarian chronicler, Simon of Kézai. The Vulgar Latin lines above were translated to French by Enăchiuc and here you, the reader, can read them in English,

“In great numbers in the fierce battle, go without fear, go heroically!

Advance thunderingly, to sweep away the Hungarians and win!” (Enăchiuc 2002, 674)

Elsewhere an encouraging speech is quoted, that was delivered at the forts of Inau, Transylvania, before the battle over the river Tisza against the Hungarians,

“A suoar noas suoar striol / inou iu oi iura fidi
tenis nitioi / inou nevi tenes sedani dit = / iu

elicen vasi abdi bini / sunar edo lidi sunar titi tisa
/ ti inou to veiki uti nititi acira / ti deti atr dira
sati sunara / ot nis tenen vi ulcer iurai sunar /
dica er uti veik iuku inou a roi / suoar osorai
suoar striool / isti is etia vi iker uti iti ser”
(Enăchiuc 2002, 8)

In English:

“In our defense, in defense of the Strei! Go to
Inau and swear!

Defend it with glory and defend the united
Ineu in continuum, completely.

Go together, I have pushed forward. Together
fight back the Hungarians; I encourage you to
fight over the Hungarians, not letting go of the
Tisza at your Ineu; push forward, to shine with
glory, by your bravado

stop the cruel tragedy caused by the
Hungarians.

To defend us strongly, swear to wound the
Hungarian.

Decide my lord, to push forward at Ineu with a
hawk’s cry again in defense, decide about the
defense of Strei in advance.

Go and now you will strike with greater force,
now that you go united.” (Enăchiuc, 2002, 669)

The reconstruction by Enăchiuc about the
centralized 11th century Romanian state and its
soldiers who would defeat the Hungarians over
and over raises a series of historical problems,
and little wonder that even Romanian historians
have criticized it (Ungureanu, 2003). Let us for a
moment accept this theory and assume that ever
since Roman times there had been a Romanian
state, and that its people spoke “Vulgar Latin”.
We will still find it impossible to accept
Enăchiuc’s rendering of the codex: she reads it
the wrong way, she decodes the same strings of
symbols into different sentences, and she makes
up a non-existent language that has sources
nowhere else.

Although a close study of the illustrations of
the codex is beyond the scope of this paper, we
must cite how the archaeologist identifies
emperor Vlad, his subjects and the ambassadors
arriving to the emperor from Byzantium in
images where every other researcher sees typical
Biblical scenes. There is an image, for example,

of Christ entering Jerusalem riding on a donkey,
with people laying their clothes in front of him, a
palm tree that people have taken the branches
off, and also the money changers being driven
out of the temple. This is entitled, “Vlad is
preparing for the alliance to be made with the
Byzantines against the 1064-65 conquest of the
Oghuz, the metropolitan archbishop of the Blak,
Sova Trasiu, blesses the warriors in the temple
with battle signs”. The Hail Mary, depicting
Mary, the winged angel and Joseph bears the
title, “Sova Trasio metropolitan archbishop is in
a wooden church with a bell tower, sending a
book to Jaroslav I, Prince of Kiev so they would
unite with the Blak in the war against the
Oghuz”, as Enăchiuc sees it. On the right, where
we see Joseph and the angel, she sees “the Prince
of Kiev, who, receiving the news, accepts the
alliance”. The adoration of the Magi, which, to
make things clear, also depicts the star of
Bethlehem, is seen by her as, “Vlad, head of the
Blak, is standing with Sova Trasiu metropolitan
archbishop and a general, receiving the envoy of
Byzantine emperor Constantine, in an army base
somewhere in the Sub-Carpathian region.” She
does not stray so far from the traditional
rendering in the obvious scene of the crucifixion,
“Vlad, governor of the Blak, wearing a helmet
and weaponry, is praying for victory at the foot
of the crucified Savior, before leaving for the
war against the Oghuz.” The arrest of Christ in
the Garden of Gethsemane, however, is actually
the meeting between the Goths, who were
crossing the Blak territories, and the Byzantine
army leaders, while Christ meeting Pilate is
indeed Vlad, Prince of the Blak, before the
Byzantine emperor Alexander I. The scene
depicting Christ wearing a crown of thorns
standing before Herod is explained as the Cuman
king receiving blessing from the Cuman high
priest. The king is about to leave for battle where
he is going to fight on the side of the Blak and
the Byzantines. The events unfolding around the
grave of Christ (the noli me tangere scene, the
empty cave with the angel) in Enăchiuc’s book is
the scene where the Goths are preparing to fight
back the invasion of the Pechenegs. All of these
illustrations are typical and unambiguous
depictions of Biblical scenes using conventional
iconographic symbols.

6 The Sanskrit theory

Perception is gravely influenced by a priori
nationalistic expectations, a fact not only

illustrated by the work of Enăchiuc. Turán, the journal specializing on research on the early history of Hungary published the solution of Dr. Mahesh Kumar Singh. Dr. Singh is from India, and at the same time a descendant of the Hunnish royal family – as he himself claims. The accounts of the chief editor of the journal inform us, how Dr. Mahesh started browsing through an earlier edition of the journal, reading in English without a pause the facsimile of the mysterious Rohonc Codex (Turán, 2004-2005, 6-7), as if the language was familiar to him. The chief editor of the Turán, despite contrary advice from some fellow editors, published the first 24 pages of the Singh transcript, along with its Hungarian version (Singh, The Rohonc Codex, 2004-2005).

The following are a few lines from the Rohonc Codex as read by Dr. Mahesh Kumar Singh, from left to right, top to bottom, in Old Indian script, in Sanskrit:

“Oh, Lord, the people here are very poor, sick and hungry, / give them skills and strength to satisfy their needs / provider, do not harden your heart / do not take your hand from this needy people / their needs that they desire for themselves / grant these to them for their sake / whenever you help them these people / that they may find this help perfect.”

Credit should be given to the journal Turán for publishing a reader’s letter in a subsequent issue with a detailed refutation that argues, like we do with regard to Nyíri and Enăchiuc, that the Singh decoded the same strings of symbols in different ways: one digraph was for example interpreted in eleven different ways, and one other, longer string of symbols had four meanings in four different places within the text (Varga, 2005).

7 Systematic attempts

The list of attempts at decoding the Rohonc Codex is not yet finished. The following ones are relevant because of the method applied in them, tools that a professionals would also use. And although they were considerably more successful than the attempts described so far, they have modestly refrained from thinking they were a full solution. The first such attempt is that of lieutenant colonel Ottó Gyürk, who became known in 1969 as the person who deciphered the numbers in the encrypted diary of the novel writer, Géza Gárdonyi (the script of the diary was cracked by Gábor Gilicze, then a university

student). Having successfully transcribed the secret text, Gyürk felt confident enough to have a go at breaking the Rohonc Codex too (Gyürk 1970). Studying the continuous strings of symbols that broke up at the end of the lines, as well as the incomplete lines and pages, he quickly realized that the text goes from right to left, top to bottom. He also correctly identified the double line that often appeared on the left side of the page as a hyphen. This symbol is familiar to researchers studying handwritten texts from the 16th to 19th centuries, but we must remember that Gyürk was not a philologist. Following the procedure that proved to be successful with Gárdonyi’s diary, Gyürk went on to try and identify certain strings of symbols as numbers. He confesses to spending years on creating tons of systematic statistics, yet he could not achieve any more results. His method, which focused on studying the patterns and statistics of (groups of) symbols was the first in the history of the Rohonc Codex that was promising.

A similar, but computerized analysis was carried out by Miklós Locsmándi, who published his results in the same 2004 issue of Turán that also contained the Singh-transcript. Locsmándi apparently received less support from the editor (Locsmándi, 2004-2005). He realized fairly quickly that the language of the codex is a constructed one and he was willing to let go of the early Hungarian script theory, a feature somewhat alien to the journal Turán. He distinguished between the simple and the complex symbols, a real achievement in itself, because neither Némäti, nor Nyíri, nor Enăchiuc seem to have recognized that certain symbols always stand together and must be translated as one unit. Locsmándi then examined the frequency of the symbols, to find out if they represented letters, syllables or perhaps complete words. He drew attention to a queer feature of the codex, namely that the text contained repetitions that were too frequent. “The language of the text probably uses a small number of simple basic units,” he concluded. This structure is strongly characteristic of “prayers of litany, perhaps charms from the folk tradition” which suits the proposition based on the illustrations that the codex is the prayer book of a religious, perhaps sectarian movement. Locsmándi, however, did not produce the real solution either.

8 Epilogue

Finally, in 2010, after a ten-year pause, another important step was made on the road paved by Gyürk and Locsmándi. Gábor Tokai and Levente Zoltán Király started cooperating on the code of the codex, which led finally to a common series of articles, the first of which have been published in *Cryptologia*. This is however, a different story, which is – in contrast to the earlier, aborted attempts – accessible for the wider public.

Csaba Varga 2005. “A Rohonczi Kódex M K Singh-féle olvasatának ellenőrzése” (Checking M K Singh's transcript of the Rohonc Codex), *Turán*, 198-202.

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