

Voynich Manuscript coding and decoding methods. Part 1.

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Abstract: The Voynich manuscript (VMS) is the book dated as 15th - 16th century, written using specific and smart coding methods. This article describes the methods how it was analyzed and how coding keys were founded. It is also shows the VMS author's method of coding.

Keywords: Voynich manuscript, code, codes, coding, decoding, decipher, VMS, key, keys, Kelley, Kelly, Dee, Trithemij, Trithemius.

1. Introduction

This is an ancient manuscript, familiar to many researchers of medieval riddles under the names "Voynich Manuscript" or "Voynich Manuscript" (also known in abbreviation - **VMS**, which I will use in the text), it was also called as the "book, which no one can read," because neither the language used for writing it or its author, nor place, nor even the date of writing was unknown.

Its current name the manuscript received from the name of one of the last owners - Michael Voynich (1865 -1930) - Polish revolutionary (pseudonym "Wilfred."), bibliophile and antiquarian, husband of well known writer Ethel Lilian Voynich.

Mysterious manuscript Voynich acquired for his collection in 1912. And although that did not affected the success in deciphering the manuscript, but finally influenced it future fate - in 1959 Voynich family heirs sold it to bookseller Hans Kraus, who in 1969 gave it to the library of rare books Benecke at Yale University, where it is still being held.

On the official website of the library of rare books Beinecke of Yale University [1] the manuscript description is the following:

Call Number: Beinecke MS 408 (Request the physical item to view in our reading room)

Alternate Title: Voynich Manuscript

Date: [ca. 1401-1599?]

Genres: Manuscripts

Botanical illustrations

Astronomical charts

Drawings

Hand coloring

Illustrations

Type of Resource: mixed material

Description: Parchment. ff. 102 (contemporary foliation, Arabic numerals; not every leaf foliated) + i (paper), including 5 double-folio, 3 triple-folio, 1 quadruple-folio and 1 sextuple-folio folding leaves. 225 x 160 mm.

Abstract: Scientific or magical text in an unidentified language, in cipher, apparently based on Roman minuscule characters.

Physical Description: 1 vol.

color illustrations

23 x 16 cm. (binding)

The main text and illustrations looks like image on Fig.1 (all the images of VMS pages were taken from VMS web-page of the library of rare books Beinecke at Yale University [1])

The most of plants on VMS pages are not exists.



Fig. 1 The typical VMS image of page containing plant (VMS page 11v in accordance with library page identification).

2. Initial approach and assumptions for further analysis.

- 1) **No stereotypes** - After reading some corresponding to VMS articles the decision was to start from zero - to try to avoid any stereotypes which can finally become to the

critical mistakes. Because of that you will not find a lot of citing links in this article.

- 2) **Trust to you own eyes** - that you can see re initial data re VMS:
- Well structured (you see botanical, astronomical, anatomical and pharmaceutical data). There are something similar to Avicenna's Canon.
 - Consist of encrypted and non-encrypted text
 - Consist of allegory images
 - Consist of Arabic numerical
 - Written clearly and using at least 4 different handwritings - 1x stenography like (for main text), 1x Latin gothic (in Astronomical part for zodiac constellations marking), 1x italic (for ciphering), 1x - ancient (probably "black English" like used for hornbooks - also for ciphering) - all are present on the 4r page (in accordance with library page identification).
 - Consist of the text in different colors
 - VMS is written on most expensive type of parchment

In more details - the manuscript is visually divided onto the following sections:

- Botanical - this is one of the most voluminous chapters the description and drawings of plants, the vast majority of which do not lend themselves to recognize even approximately.

- Astronomical - contains a charts on which the symbols of the sun, the moon, stars and zodiac constellations are used. Zodiacal part consists of 12 related images, among which there are no signs of Capricorn and Aquarius, but twice repeated signs of Angus and Taurus. In addition, the zodiacal section contains signatures in Gothic letters in the Latin alphabet, which are relatively easy to read and which relates to the corresponding months.

- Biological - a chart with with allegorical images of human organs - in the form of tanks and channels (swimming pools etc), filled with different colored liquids. In the channels

and in pools there are strange dames, or, as some calls them
- nymphs.

- Cosmological - Contains pictures and diagrams which are not
fully understandable.

- Pharmaceutical - section containing plants reduced
drawings on the background of some hypothetical pharmaceutical
vessels, which may indicate the section as a guide for the
compilation of certain herbal mixtures.

- Formulation - the last section, consisting of a rich set of
short text paragraphs, the beginning of each is indicated by
the image of a star. Others pictures that section does not
contains.

The first assumption was that VMS is not a fake.

If so - that means that the VMS author had the opportunity to
simply read without necessity to use the special complicated
cheats.

If so - the VMS author used the more-less easy coding method.

If so - the VMS author possibly left some hints for himself
and for other dedicated readers

3. Basic tasks for codes & keys investigation.

- 1) What ciphering methods were used in the time when VMS was
written?

The radiocarbon analysis of the VMS parchment was done by
University of Arizona and the result shows period 1404 -

1438 with the probability of 95% [2].

Here we should not mix the date analysis for parchment and for manuscript itself, because parchment analysis gives us only the information when the animals which skins were used for parchment manufacturing were killed. The manuscript itself can be written later or even much later.

Means it is necessary to enlarge the possible period when VMS was written. My initial assumption was till ~ 1500. The assumption re 1500 was based on the information of average period of maximal aging of quality medieval paper before it was used - 10-15 years. As we are talking about parchment - the maximum aging is can be much lager. I used 45-50 years.

In that period were several methods commonly used - you will find the description below.

2) Where we should look for codes & keys?

Definitely not in the main text because it just coded by unknown alphabet.

That means somewhere in pictures.

There few possibilities to left a keys or instruction how to find it:

- a. In the images with masked letters
- b. In images captions
- c. In Latin letters scattered on the pages (if we know the order how to construct the words)
- d. Using identified numerical data

4. Analysis of the images to find the masked letters.

For the analysis was used a final handwritten page of the VMS

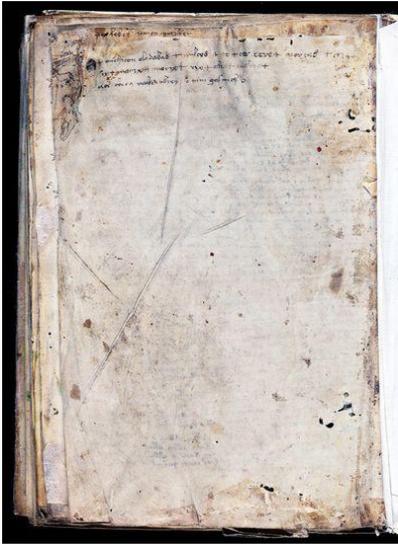


Fig. 2 The image of final handwritten page of VMS

In the top part of the page you can find the pictures and the text.

The reason to start the image analysis of the last handwritten page was the following - the images location and images compilation are very unusual in comparison with other parts of VMS.

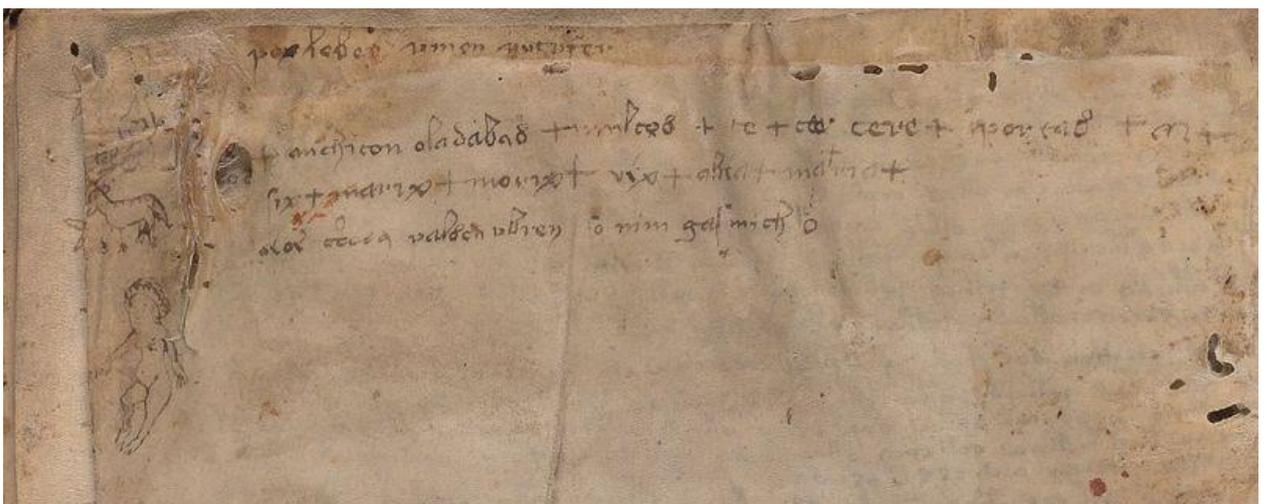


Fig. 3 The images and text on the final page of VMS.

Lets focus on the images first. The contrast was enhanced by image processing software [3].



That image looks like an animal like a Duck or a Dragon (D). The animal body consists of symbols similar to Latin letters like (from left to right) - F, E and L.

That image looks like a string of letters starting from turned and crossed by vertical bar letter V (V)

That image looks like an animal like Goat or Capricorn (C)

That image looks like Madame or Maiden (M).
Not Lady or Virgo (explanation is below)

Fig. 4 Images from the last page of VMS.

Why Dragon, Capricorn and Madame (or Maiden) titles were used?

Because other images with animal in VMS corresponds to zodiac constellations. The only concerning "Madame" there is a question.

If we follow the logics that all the images are corresponds to zodiac constellations the crossed V letter also should mention the constellation.

It was easily identified - as the sign of Ophiuchus, which lies on the side. Now crossed "U" letter is used for Ophiuchus, but in medieval period V letter was used.

I especially left Latin letters related to each constellation:

D, F, V, C and M. That partly explains the reason why the name "Madame" was used - this sequence can also give us some additional info, like date (for example), because these letters (excluding F) can be also used as roman numerals.

We knew that the date analysis gave us an approximate period of VMS writing as 1404 - 1438. Means 15th century.

"Madame" (not Lady or Virgo) - as "M" comes from the following assumption:

-if VMS author left the date and if we are talking about date corresponding with 15th century at list we should see the letter "M" - Millenium. The only image which can be related to "M" letter is the image of naked girl..

The letter looking like "F" we will investigate below.

Let's start to analyze each image in details.

Let's start from the Dragon. The dragon head is looking to the left with open mouth.



Fig. 5 Head of Dragon (original)

It is consist of a couple of visible roman letters



Fig. 6 Head of Dragon with masked letter.

The order how to read the text (same for all other images) - you should read it from the left to the right, but - **the upper letter (even if it is located in right position) has a priority in front to the bottom letter.**

Here we see the most upper letter is **V**.

Next (also on the top) is **I**.

Next is **V**.

Last is **A**

The word hidden here - **V I V A**

Now let's have a look to strange body of that animal...



Fig. 7 The part of Dragon body (original image)

It definitely consist of **L E** and most probably **X** (not F).

By the way - in that particular case the sign of letter "E" can be also similar to the letter "u", but in all other cases for letter "u" author used signs "V" or "U"



Fig. 8 The part of Dragon body with hidden text.

That means LEX

That is also gives us the right data for date analysis - **D X V C M = 500 10 5 100 1000**. Looks like incorrect writing of **1615...**

That strange order of roman numerals may also sign that not all of it we have to add in the sum, 2 of it - 10 and 5 can be subtracted... That gives us another date - **1 5 8 5**

Why 2 of its? **D, C, M** - have a graphical interpretation from related images of zodiac constellations. **X** and **V** are written as a letters.

First of all it is interesting what is the VIVA LEX meaning?

Let's try to understood of strange letters string.



Fig. 9 The string of masked letters.

My decoding (the resolution of the images from Yale unfortunately not enough for more precise analysis) will be:



OR



Fig. 10 and Fig. 11 The letters string with possible identification.

At list in my assumption that looks like V I A R I U S or V I A R I A S

There are also other candidates - VICARIU(A)S and ESQUIRIU(A)S

Now possible sentence here is "V I V A L E X V I A R I U(A)S"

Now our most interesting animal - Capricorn.



Fig. 12 The original image of Capricorn

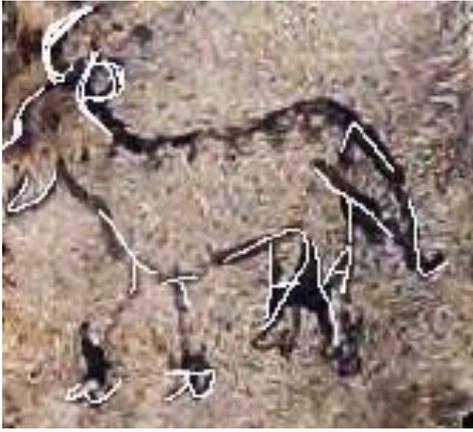


Fig. 13 The image of Capricorn with hidden letters

Looks like the name of the author -

C A L L Y A D V A R T E Y U S .

Simply - Edward Kelly...

But let's finalize our analysis.

The last figure - is Maiden.



Fig. 14 The original image of Madame or Maiden



Fig. 15 The image of Madame or Maiden with hidden letters

Let's read...

C R E A T Y O R

or



Fig. 16 The image of Madame or Maiden with hidden letters

C R E A Y T Y O R

We know that Kelley is died not later 1597.

VIVA LEX VIARIUS

EDWADRD KELLEY

CREATOR

1585

Of course this record can slightly vary, but in general it looks like one big riddle is resolved...

If my assumption is right (let's try to do your own investigation) - we can do the following conclusions.

The record should be investigated in more details using specific microscopy methods - UV, IR, DF ect.

5. Initial results.

- 1) The author possibly - Sir Edward Kelly (1555 - 1597) - well known English alchemist.
- 2) The manuscript was written in late 16th century.
- 3) The manuscript was written on the parchment which is 100 years older than author and for such cases the radiocarbon dating is not good enough.
- 4) The manuscript was written in England.
- 5) The language used is Latin and probably English

So, we possibly found the author, the date, the location where VMS were created and the language used for it writing.

6. References

1. Web-page of the library of rare books Benecke at Yale University

<http://brbl-dl.library.yale.edu/vufind/Record/3519597>

2. Explanation how radiocarbon dating for VMS was done
<http://voynich.nu/extra/carbon.html>

3. Adobe Photoshop CS6, Ver.13.0x64,
s/n 91198133282129530221.

The following operations were performed for contrast enhancement - autotone, autocontrast, automatic color contrast& manually set contrast level 200.

It was only a first part of analysis.