

The Algorithmic Method for Translating MS408 (Voynich).

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For the many scholars with an academic interest in translating manuscript MS408 for linguistic or informative research, here is a demonstration of the algorithmic translation method, using the proto-Romance theory expounded in the following papers:

1. Linguistic Missing Links: <https://ling.auf.net/lingbuzz/003737>
2. Linguistically Dating and Locating MS408: <https://ling.auf.net/lingbuzz/003808>
3. Consonants & Vowels, Castles & Volcanoes: <https://ling.auf.net/lingbuzz/004381>
4. The Language and Writing System of MS408 (Voynich) Explained: <https://doi.org/10.1080/02639904.2019.1599566>

To ensure clarity, portfolio 53 (right) has been used for this demonstration, as identification of the illustrated species of plant, Oblong-leaved Sundew (*Drosera intermedia*), is beyond doubt: see Figures 10 & 11. The two other European species of sundew (*D. rotundifolia* & *D. anglica*) have entirely different leaf forms: disc-shaped and linear-spatulate, respectively. The text for this page is generally quite clearly written and preserved, so correctly identifying the symbols was fairly straightforward. In accordance with the general theme of the manuscript, the page is concerned with the use of the plant as a medicinal and therapeutic substance for childbearing and childbirth.

We can see, from this example page, that the manuscript language is predominantly Latin, with a minority of words having originated from other sources and been incorporated. These subsequently survived in various Romance languages as their linguistic evolution saw them diverge. Running west to east geographically, the western Romance languages include Portuguese, Spanish, Catalan, Aragonese, Galician, French, Corsican, Occitan, Italian, Romansh and Ladin. The eastern Romance languages are the Romanian, Aromanian and Dalmatian groups. Basque has also borrowed many early Romance words, due to meme flow through geographical and cultural proximity, which is a useful point of reference for the archaic assimilation of some Latin words. As the manuscript originates from Ischia during the Crown of Aragon, it is primarily a combination of Latin and western Romance.

As with all Latin palaeography, the sentence structure used in the manuscript is often inversive and fragmented, so it becomes necessary to piece the sentences together in accordance with modern linguistic habits, by rearranging the words and using connectives to make sense of them. The process requires the application of time and intuition to arrive at reasonable interpretations of intended meaning.

The nine lines of text have here been digitally isolated to make them easier to read: see Figures 1 – 9. The symbol key, Figure 12, is first used to convert the manuscript symbols into Italic symbols. The translations then follow a simple algorithmic pattern of prioritisation: < Latin < Vulgar Latin < Archaic Western Romance < Western Romance < Eastern Romance < Other Languages. This is known scientifically as 'array priority queueing'. Thus, being the root language, Latin is always given top priority, followed by the other categories in sequence if necessary: i.e. in the absence of a higher priority representative. By deploying this simple method we know that all permutations have been optimally ordered and attenuated to arrive at the most plausible translations.

The words and their meanings were sourced by using a combination of prior knowledge and research by using the internet and books. In addition, there are various online search engines, dictionaries and translation tools for locating documents, phrases, words and

abbreviations, and for verifying their meanings or definitions. Due to the absence of punctuation, it is necessary to work out whether, or not, sequences of symbols are in fact phrases that require dividing into unit words. It is also worth noting that double consonants were abandoned during much of the Medieval period and only came back into use when writing systems became more formalized during the Early Modern Period, so it is sometimes necessary to try spellings with double consonants.

There is some evidence for literary creativity in the text. For example, the righthand parts of lines 6, 7 and 8 each begin with similar word forms: ‘aléna’ (to gasp), ‘a léona’ (the lioness), ‘aleion’ (friend), respectively (see Figures 6, 7, & 8). This suggests a level of visual and phonetic playfulness with word structure, which can often be seen in the manuscript.

Lines 1— 4: // la nasa éo eme ona o’ma // nor nais t éo æ i o’ma // æo eis é olas ona // a meo naus al a o’méia omon

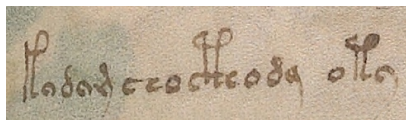


Fig. 1. Line 1. la nasa éo eme ona o’ma

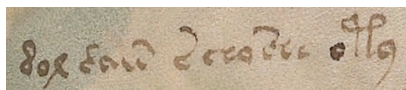


Fig. 2. Line 2. nor nais t éo æ i o’ma

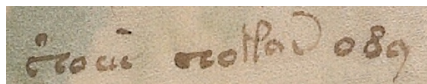


Fig. 3. Line 3. æo eis é olas ona

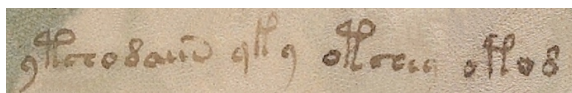


Fig. 4. Line 4. a méo naus al a o’méia omon

//1

la. Italian/French/Ladin: *the*.

nasa. (v. nassa) Latin: *snare, trap*. Italian/Catalan/Galician/Corsican: *trap*. [Basque: *trap*].

éo. Latin: *proceeds*.

eme. Latin: *to acquire*.

ona. Galician: *good, goodness*. [Basque: *good*].

o’ma. (abb. o’mater/mae/mare) Latin/Portuguese/Catalan. *of mother*. (oma) Ladin: *mother*.

//2

nor. Galician: *who*.

nais. French: *birth*.

t. (abb. terminus) Latin: *full-stop, period*.

A reasonable interpretation would be: *the snare plant is considered good for mothers with babies to be born, because it traps insects, so it contains nutritional goodness.*

//2 cont.

éo. Latin: *proceed*.

æ. Latin: *us, we*.

i. Latin: *go to*.

o'ma. (abb. o'mater/mae/mare) Latin/Portuguese/Catalan. *of mother*. (oma) Ladin: *mother*.

//3

æo. (v. eo) Catalan: *the*.

eis. Latin: *this, he*.

é. Latin: *from*

olas. (v. ollas) Latin: *cooking pots*.

ona. Galician: *goodness*. [Basque: *good*].

A reasonable interpretation would be: *the plant is considered good for mothers straight from the cooking pot.*

//4

a. Latin: *from*.

meo. Latin: *I pass*.

naus. (v. nauca/naucum) Latin: *bowl, nutshell-shaped*. v. noce/nuez. Italian/Spanish: *nut*.

al a. Italian/French: *to the*.

o'méia. Portuguese: *of the middle, of the mean*.

omon. (abb. homon) Latin: *person*. (abb. omone) Italian: *fat person*.

A reasonable interpretation would be: *I pass a bowl of the food to the person large in the middle (in mid-pregnancy).*

Lines 5—9: // olæ omor equea epe o nor alona doméon oméo dom o'ma // alionas odoas o ele onos é ais dolon aléna éi et nar // tonas omos doa méa omia éot olon a léona doléa // doméor nas doma élos ormæo emo aleion o a mo an // omor éor omeiet o t osor éon doma

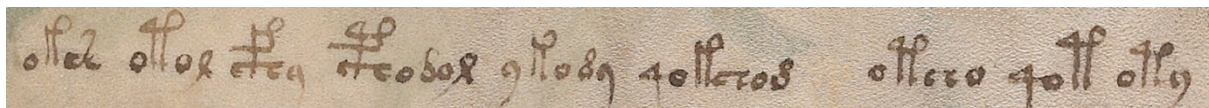


Fig. 5. Line 5. olæ omor equea epe o nor alona doméon o'méo dom o'ma

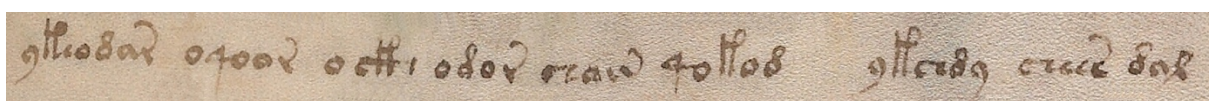


Fig. 6. Line 6. alionas odoas o ele onos é ais dolon aléna éi et nar

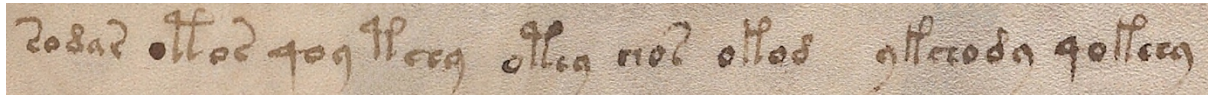


Fig. 7. Line 7. tonas omos doa méa omia éot olon a léona doléa

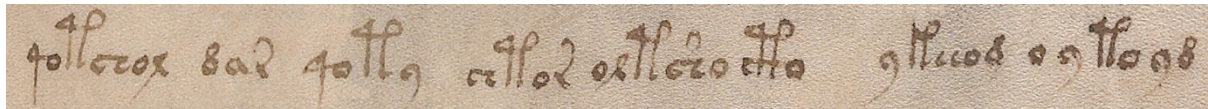


Fig. 8. Line 8. doméor nas doma élos ormæo emo aleion o a mo na

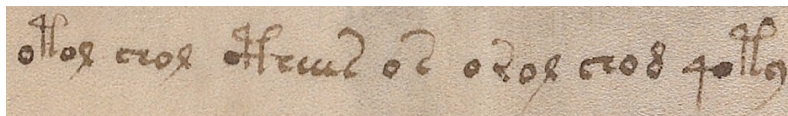


Fig. 9. Line 9. omor éor omeiet o t osor éon doma

//5

olæ. (v. olae) Latin: *a little, small amount*.omor. (abb. omori/umore/humor) Latin: *essence, substance*.eque a. Italian: *is adequate*.epe. Old Italian: *belly, abdomen*.o nor. Galician: *of who*.alona. Italian: *to halo, protect*.doméon. Spanish: *controlling*.o'méo. Latin: *of passing*.dom. Latin: *family*.o'ma. (abb. o'mater/mae/mare) Latin/Portuguese/Catalan. *of mother*. (oma) Ladin: *mother*.

A reasonable interpretation would be: *a little of the remedy is adequate for controlling the belly of the pregnant mother with a protective halo*.

//6

alionas: Latin: *to pursue, confront*.odoas. (v. odias) Latin: *anger, dislike, hatred*.o ele: Portuguese: *of she*.onos. (abb. sonos) Latin: *talking, speaking*.é ais. Portuguese: *is there*.dolon. French: *to smooth, to reduce*.aléna. Italian/Catalan: *to gasp, to breathe*.éi et. Latin: *and it*.nar. (cont. luna/lunar) Latin/Catalan/Galician/Portuguese: *lunacy, night madness*. [nar.Romansh: *madness*. Arabic: *fired, enflamed, heated*].

A reasonable interpretation would be: *To remove her anger we talk her through it, to help reduce the delirium of night madness by breathing deeply*.

//7

tonas. Latin: *loud noises*.omos. (abb. somos) Galician/Portuguese: *to be, created, made, exist*.doa. Portuguese: *of pain*.méa. Latin: *my, mine*.omea. Latin: *my love*.éot. Latin/Greek: *it is*.olon. (abb. holon) Latin/Greek: *merged, together, whole*.a léona. Portuguese/Spanish: *the/a lioness*. [Basque: *the lioness*].doléa. Latin: *suffer*.

A reasonable interpretation would be: *she makes loud noises from the pain and my love it is merged for the suffering lioness*.

//8

doméor. Italian: *dominating*.nas. Portugues/Galician: *in the, at the*.doma. Latin: *house, room, chamber*.élos. Old Portuguese: *anus, vulva, nether-regions*.ormæo. (v. ormao) Latin/Greek: *excited, aggravated*.emo. Latin: *I acquire, I procure*.aleion. Latin/Greek: *ally, friend*.o a. Portuguese: *or in*.mo. Italian: *now*.an. Latin: *or, instead, rather, perhaps, also*.

//9

omor. (abb. omori/umore/humor) Latin: *essence, substance*.éor. Latin: *this*.ome. Old Portuguese: *person*.uit. (contraction of 'obliviscator') Vulgar Latin: *to forget, ignore*.o. (abb. opus) Latin: *work*.t. (abb. testamento) Latin: *will, desire*.osor. Vulgar Latin: *Devil, Demon, Vulcan*.éon. Latin/Portuguese: *spirit, entity*.doma. Latin: *house, room, chamber*.

A reasonable interpretation would be: *when the room is dominated by the labour contractions the remedy is an ally to forget the will of the Devil's spirit is in the house*.

So, in precis, the complete page may be interpreted thus:

The Snare Plant is considered good for a pregnant woman because it is a trap for goodness. It is best given straight from the cooking pot, by passing a bowl to the childbearing mother as a protective halo for her growing belly. A little of the remedy is also good for controlling the pregnant belly by removing anger during night madness, by assisting with deep breathing as we talk her through it. And, when the mother is crying like a lioness with the pain of labour contractions, and this dominates the birthing chamber, the remedy becomes a friend in helping to forget the work of the Devil.

In the Medieval period people had no scientific understanding of plants and nutrition. Instead, they made naïvely logical connections between plant characteristics and their supposed medicinal properties. In the case of the sundew, they knew that it ensnared insects, so they believed that the plant held a bounty of goodness inside. We now know, of course, that the plant merely supplements its own nutrition by consuming insects, so that it can colonize habitats with poor soil conditions. There was also a common belief that the sun was godly and the moon was devilish, causing night madness or lunar madness, as people's suffering seemed worse at night and was followed by restfulness in daylight.

Medieval medicinal ideas were largely homeopathic rather than allopathic, as most of them were based on belief rather than empirical evidence. That doesn't necessarily mean that such medicines were ineffectual though, as the power of belief can have a strong placebo effect on the mind and body. Especially so when the malign agent, such as the will of the Devil's spirit, is also a belief. So, homeopathy is perfectly compatible with imagined ailments that arise through superstition.

Pregnancy was an anomaly for Medieval people, as it was necessary for reproduction, yet it was fraught with danger, as it brought extreme discomfort, pain and a genuine risk of illness and death. Therefore, there was a strange juxtaposition between perceived powers of good and evil. On the one hand, there was the possibility of surviving pregnancy with the enjoyment of having children, on the other hand there was the possibility of failure and fatality, for mother, for child or for both. Without knowledge of ecological explanations, Medieval people saw it as a battle between the benign nature of their god and the malign nature of their devil, in every detail.

By comparing the manuscript image of the Oblong-leaved Sundew (*Drosera intermedia*), Figure 10, with a photograph of the real plant, Figure 11, we can see that the artist was reasonably accurate in botanical terms. The only significant inaccuracies are the precise architecture of the stem and the number of petals on the flowers. Nor are the beads of sticky mucilage (dew) shown on the leaf trichomes (hairs), indicating that they had not seen the plant *in situ*, and were drawing from a dried, pressed and browning specimen without detailed knowledge of its predatory mechanism. From Ischia, the nearest location for collecting the plant is the northern region of Italy, so the islanders would have taken delivery of sundews, along with other medicinal plants, in trade from the mainland.



Fig. 10. The entire page for portfolio 53 (right), showing the Oblong-leaved Sundew (*Drosera intermedia*) complete with flowers, leaves and root. The plant is simply described as 'The Snare' (*La Nasa/Nassa*) in the manuscript, which was sufficient to distinguish it from other Mediterranean plant species.



Fig. 11. A photographs of the Oblong-leaved Sundew (*Drosera intermedia*) in its natural marshland habitat.
[Photos: Aaron Carlson, Doug McGrady].

Symbol key for Manuscript MS408. Gerard Edward Cheshire. University of Bristol. www.sciencesurvey.link

Symbol-Italic key for MS 408.			
Symbol	Italic	Symbol	Italic
a	a (trapped)	9	a (free)
aw	ais	aw	aus
æ	æ (ae, a, e, i)	4	d
c	e (short)	cc	e'e (intonation)
ce	é (long)	c	i
ll	l (ll)	ele	ele (elle)
mm	m (mm)	eme	eme (emme)
n	n (nn)	o	o
p	p (pp)	epe	epe (eppe)
qu	qu	eque	eque
r	r (rr)	s/z	s/z (ss, zz)
s/z	s/z (ss, zz)	sa/za	sa/za
t	t (tt)	ta	ta
u	u	v, f, fv, ph, pv	v, f, fv, ph, pv

Fig. 12. Symbol conversion key for MS408.