

Voynich Manuscript Revealed

Turkic Origin

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Note to Reader

We wanted to inform the readers that the purpose of this paper is to demonstrate brief examples and clear proof of concept as it relates to our findings. This study explains the necessary information to convey the study to an English speaker, however it does not describe Turkic and/or agglutinative language structure in great detail, for that is not the purpose of the study. The necessary basic information behind the Turkic languages are found in the appendix. Additional examples and study findings can all be found in our book as well as website that was specifically created for this purpose. Currently (as of June 2020) the webpage works, but remains under construction.

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Abstract

The Voynich Manuscript is a 15th century book written by an unknown author(s) which has been the subject of worldwide debates within the academic community. The philological study outlined below reveals that the Voynich Manuscript was written in a Turkic language. This study also provides an alphabet and concrete evidence to support the linguistic claims by analyzing and translating individual words that are linked to their specific illustration, provides a fully translated transcription of *Folio 33v- Sunflower-Herbal's* first sentence as an example to demonstrate proof of concept.

Preface

The Voynich Manuscript is a mysterious medieval manuscript, named after a Polish book dealer, Wilfrid Voynich. The book is illustrated, hand-written and has been carbon-dated to the early 15th century, 1404 – 1438 (Hodgins, UA). It has been studied by many professional and amateur cryptographers and linguists, none of which have yet been able to decipher the text. Some suspect Voynich of having fabricated the manuscript himself and various hoax theories have been proposed over time. The manuscript's title and author remain a mystery. The manuscript consists of 116 numbered folios, around 14 of which are lost (Skinner). The manuscript was written in an unknown script; most of the pages have illustrations or diagrams, some of which are foldout pages. It appears that the illustrations conveniently divide the manuscript into four primary sections – astronomical, biological/botanical, cosmological, pharmaceutical. In 1969, the American medieval manuscript dealer Hans Peter Kraus donated the Voynich Manuscript to Yale University's Beinecke Library, where the original manuscript has resided ever since. A new facsimile, edited by Raymond Clemens and published by Yale University Press, along with scanned pages of the manuscript, has been made available on the internet (Clemens). These documents have been made available with the motivation to invite the general public to solve the mystery of the manuscript.

Initial Approach and Alphabet

The initial approach regarding analyzing and transcribing the work was to employ the use of proper citations and viable sources. Our study is largely based on analyzing the manuscript itself, which is our primary source. The study also includes a variety of reliable secondary sources, such as *Sir. Gerard Clauson's An Etymological Dictionary of Pre-Thirteenth-Century Turkish* (Clauson) and other sources alike that will all be listed in greater detail in the bibliography section of the study.

Upon first observation, it became evident that a substantial amount of characters and short words, that looked like root words, were repeated with only their endings changing. Additionally, we further substantiated this idea by finding monosyllabic words (root-words) were can be written alone (without any

affixations). Thus, it was also understood that they are not prefixes, as they might be root words. It was also observed that word-suffixes can merge into different roots. Moreover, it was seen that different root words combined with each other and formed different compound words. Through these observations, as well as the number and diversity of word suffixes found in the manuscript, the language employed appear to represent an agglutinated structure. An example of such a root word can be found on *folio 67r*¹.

***Note:** Although many languages may have similar agglutinative patterns, Turkic languages (and-or Turkish) have a significant abundance of them. The earlier example of the characters  (OY/AY dependent on dialect) were constantly placed in the beginning of the words, as well as continually appeared around the “moon” illustrations throughout the entire manuscript. Now this was one of the initial words that had their definitions match its respective illustration, yet more on that later.*

The initial examination of the score suggested that the Voynich Manuscript could be written in a Turkic (and-or Turkish) language, for the alphabet shared common as well as similar letters with Old Turk-runic alphabets. Letters such as “N”, “O”, and “D” were as seen in other Turkic/Turkish inscriptions and alphabets predating this manuscript (Celilov, Mirşan). This manuscript graphemes visually seemed to be a mixture of Latin alphabet characters, Runic characters of ancient Turkish writings and Turkish-Tamga signs. The common and similar letters were matched phonetically to the identical characters in the Voynich Manuscript. Once matched, specific words – that contained those same characters – were selected, and the remaining characters of the words were derived through trial and error. Further details regarding some alphabet character acquisition can be found in our web-page and in the appendix².

Eventually, we matched a transcription of the alphabet that fit every testing we attempted. The Voynich alphabet consists of 24 basic single letters³ and 90+ combined letters. The alphabet also contains a few “tamga”(s)⁴ which are artificially meaningful symbols such as tribe tags, banners, etc. Additionally, we found that some alphabet characters also represent numerical values⁵.

The author did not differentiate between characters containing dieresis and cedillas, (except for 'C' and 'Ç' characters, as they are considered completely separate character representing unrelated phonemes) the use of both on certain

¹ Appendix (1a)

² Appendix (3)

³ Appendix (1b)

⁴ Appendix (1c)

⁵ Appendix (1d)

characters are accounted for as well, as the pronunciation of most words will vary depending on the dialectic differences. In addition to this, most of the placing of dieresis, cedillas, and the overall word structure are determined by the Turkish vowel harmony rule, Turkish consonant mutation, and vowel apocopation (Turkish vowel loss)⁶. The phonetic values derived in the alphabet, account for dialects of Turkic such as Azerbaijani Turkish, Anatolian Turkish, and Uzbek Turkish.

Single and Combined Letters

The single letters could be combined to form a joint character that would share both of the other letters' phonetic values. Combined characters can be referred to as syllable characters. The combination of two or more single letters could also have numerical values (as established in the section above) as they are part of the alphabet as well. Thus, if the sound of “ch” or “ç” (in Turkish/old Turkic) is mixed with the number “7” which is “yedi” (in modern Turkish/old Turkic), it would produce the phonetic sounds of |çy|, |çye|, |çyed| or |çyedi|*. The genius of this method is that as the word is read in context, the human brain (for a native speaker) automatically derives all variations, and selects the appropriate one for the context. An example of the brain automatically selecting the appropriate concept to the context in English would be the presentation of the word “fly.” Depending on the context in which it is being read, the brain will draw a distinction between “fly” the verb and “fly” the noun. Combined letters are read from the bottom up.

*The combined letter for the character “|ç|”  and “|yedi|”  would be  ⁷.

Testing Part One

Upon deriving an alphabet and a few words, we decided to put the alphabet through a test. In order to proof our hypothesis, we looked for words that appeared beside illustrations (as labels), as well as words in pages that only had one illustration. We have defined and matched more than 70 words that were associated with their illustrations. This study provides 5 such examples that can be found in the appendix⁸.

Testing Part Two

In order to further test the concept, random pages were selected and paragraphs from each page were translated. While translating, it became apparent that around 20% of the words are directly translatable (meaning that the words still exist and are used between Turkic dialects such as Azerbaijani, Anatolian Turkish, and Uzbek). The best example of this is found in the first paragraph of page 58r. This paragraph contains 131 words; of those words, 28 (Fig. 5) are directly translatable

⁶ Appendix (2)

⁷ Appendix (1e)

⁸ Appendix (4)

(21%) and are still used in many Turkic dialects (mainly Azerbaijani, Anatolian Turkish, and Uzbek).

Test Part Three (Translation of *Folio 33v – Sunflower – Herbal*)

In order to further provide proof of concept, we have decided to translate a whole page. *Folio 33v-Sunflower-Herbal*⁹ was selected at random. In the section provided below, the first sentence analysis and transcription (in Turkic and English) of *Folio 33v-Sunflower-Herbal* can be seen. For proof of concept, the methodology¹⁰ used and the first sentence analysis¹¹ can be found in the appendix.

Turkic Translation:

Yararsam üşengeç yapışkan, yassı, oval, ve uzunca çiyitini serpen çok uçlu-meyveli / güneşli (güneşe yönümlü veya güneş gibi anlamında) orağın çiçek.

English Translation:

If I was to cleave it, this harvestable sunny/ multi-ended flower with its flat, oval-like, loose and sticky seeds will be split and scattered.

Language of the Analyzed Text

The Voynich manuscript was written in Turkic language. This is an agglutinative language with a large dialectic diversity. A substantial amount of the words used in the Voynich Manuscript are in current use by many modern Azerbaijani-Turkish and Anatolian-Turkish dialects, and many of the words have not changed at all, for the phonetic pronunciations and contextual definitions have remained intact. Furthermore, the text that appeared in VM is following many Turkish phonetic and morphological structures. Although, there are too many such concepts to list here a few examples we can provide include facts such as, both VM and Turkish structure does not have any words that end with “/b/, /c/, /d/, /g/”. Likewise, they also do not have any words that start with “/f/, /h/, /j/, /l/, /m/, /n/, /p/, /r/, /v/, /z/, /ş/”. There are some exception to this rule. There might be word being taken from other languages such as Arabic, Persian, etc. Additionally, we must account for the fact that certain first letters may be dropped¹², as well as letters can be changed to replace others as dialects expanded and evolved. For example, the word “bar” became “var”; “/b/” can also become “/m/”, “/s/” becomes “/ş/” etc.. Another example that has no exceptions is the use of the letter “/ğ/”, as there are no word that start with it. All of this is reflected in the VM.

The analyzed herbal page (*Folio 33v*) is written in a poetic language, as the text contains ongoing rhymes and organized structure. The text appears metaphorically rich and likewise engages multiple figures of speech that present the text as both

⁹ Appendix (1f)

¹⁰ Appendix (5)

¹¹ Appendix (6)

¹² This makes the second letter appear as the first which become problematic when the actual first letter is a vowel. If the vowel is dropped then the consonant that stays becomes an exception as it's an evolutionary structure.

pedagogically valuable (which could imply its potential use) technically, and philosophically relevant.

The rhyme structure¹³ of the text makes it easier to remember, thus further proving that passing on the knowledge (pedagogy) potentially indented. However, the rhythmic structure of the writing can also directly be related to the fact that the author was writing in a promotional tone, for it sounds as if the author is trying to sell/advertise the plant, and the rhythmic structure makes the presentation memorable.

Writing Structure

The text was written from left to right and demonstrates phonemic orthography, for the author would spell words as he/she is pronouncing them. The author did not use any periods, commas or any other apparent type of punctuation. The page also did not contain any upper-case characters. Thus, if there are no capital letters, we can say all letters appear lower-case or vice versa.

Author's Use of Turkic Dialect

For now, we do not know what dialect/subdialect of Turkic language the author used. Therefore, in selecting the vowel between two silent letters, we are currently considering some dialect options and eventually will reduce the vowel choices as we improve our understanding of the particular dialect the author used. It is hard to define the dialect/subdialect of the author, for this dialect may be no longer in use. If there is more than one definition in our Latin alphabet transcription, it needs to be considered that we provided some dialects known today. This translation study is still in progress and these multiple Latin transcriptions (original VM alphabet character's phonetic equivalents) needs to be reduced during the translations. Thus, we can reach a certain result and finalize the VM alphabet.

Multifunctional Isolated Affixation in Agglutinative Syntax

The author of the manuscript was very specific and precise in the choice of words. A crucial aspect of the manuscript being written in a Turkic/Turkish language is that the language is agglutinative. The word structure has to contain a root, but the root may be also comprised of other roots and different combinations of suffixes, prefixes and other roots which will cause each variation to produce a new word. Furthermore, certain roots can also be used as suffixes, often changing the meaning completely. The significance of this is that an agglutinative language is very rich in context and the author of the manuscript took full advantage of the linguistic syntax, thus demonstrating an immense understanding of language. The vast understanding of the language is proven by the fact that the author is able to take a suffix and isolate it in a sentence, causing the words before and after the suffix to each have a different meaning as they approach that suffix. However, each combination of the roots, suffixes, and prefixes in the words around (either before or after, and

¹³ Appendix (7)

sometimes both) the isolated suffix also have multiple combinations both within and with the isolated suffix again, thus causing even more implications and new words. The genius behind this is that the author produces and uses all of the potential meaning combinations in context and makes each one applicable to the situation. Therefore, the author is able to take two words and have a suffix in between and create dozens of meanings, yet make each one applicable to what he/she is trying to convey, thus demonstrating that the author had total control of the language being used. This enigmatic use of syntax oddly resonates with the reader without the reader fully understanding what the author did, yet renders the reader able to derive the same conclusion and understanding regardless. This example can be found in the 3rd line of the paragraph that was analyzed in *Folio 33v-Sunflower-Herbal*¹⁴, yet is also present all throughout the manuscript as well as in different sections of analyzed folio.

Use of Abbreviations

Another one of the most significant syntax choices that the author made was demonstrated through occasional use of abbreviations all throughout the manuscript. The alphabet that the author used contains abbreviations that both have phonetic and numerological value. A close example to demonstrate the concept in English would be the use of abbreviation to express statements like “for you” as “4U”. Phonetically they sound the same, and similarly to this concept, the author of the manuscript uses numerical values alongside letters to create words and apply specific syntax, yet unlike the intentional use of abbreviations (like in the English “4U” example), the author uses the abbreviations as part of the alphabet itself. For example, the number “8” is called “sekiz”, and the symbol of “8” would both convey the numerical value of eight and also can be used as part of the alphabet to convey the phonetic sound of “se”. More information regarding the nature of letters and numbers can be found in the appendix¹⁵.

Coding

In the middle ages, coding was considered a common practice that exalted the coder by reflecting the status and intelligence of that person. Akin to a type of artistic practice, coding was also embellishment that added proprietary value towards its intended audience. It is evident that the entire text could have been written in basic letters, yet the author used complex syntax – that employed combined letters and tamgas – by using multifunctional isolated affixations. In doing this, the author was creating more phonetic variations. The coded information appeared as a type of diary that kept accounts such as the people and places of travel akin to culminative militaristic intelligence. The in-depth coding analysis will be presented in future studies, yet a brief example can be seen in the appendix¹⁶.

Conclusion

¹⁴ Appendix (6)

¹⁵ Appendix (3)

¹⁶ Appendix (8)

The Voynich Manuscript was written in phonemic orthography, for the author would spell words as he/she is pronouncing them. The language used in the manuscript was a type of Turkish dialect and it belongs to an Altaic linguistic branch also known as the Ural-Altaic linguistic family. Turkic is an agglutinative language, and the author took full advantage of that, for the author demonstrated a very intelligent, skillful and controlled use of language and its syntax. The alphabet used contained both single letters, combined letters, and tamgas. It is evident that the entire text could have been written in basic letters, yet the author used complex syntax – that employed combined letters and tamgas – by using multifunctional isolated affixations.

The author did not use any periods, commas or any apparent type of punctuation. The page also did not contain any upper-case characters, thus if there are no capital letters, we can assume all letters appear lower-case or vice-versa. The manuscript was written from left to right (including the illustrations and diagrams) and the text is written in a rhyming structure. Furthermore, while analyzing the text the results showed that the author did indeed also code the text in a way that conveyed a secret message. The coded information appeared as a type of diary that kept accounts such as the people and places of travel. As far as we can read, we think that the information for military purposes is written in the coded sections. However, this is not pertinent to this study and is further explained in our book.

To further prove the validity of the alphabet, the entire *Folio 33v-Sunflower-Herbal* has been fully translated. Furthermore, about 600 additional words have been identified. However, this is still a work in progress as we are currently working on presenting more translations for the Voynich Manuscript.

Appendix

(1) Independent Figures

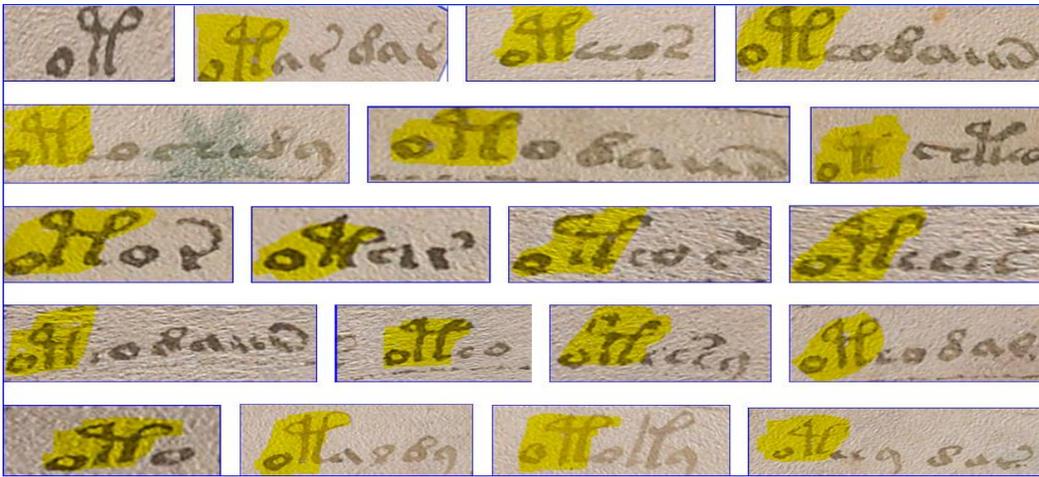


Figure 1a

 Ǫ, A, E	 B	 C	 Ć
 D	 G	 Ğ	 X
 I, İ	 J	 K	 L
 M	 N	 O, Ö	 P, F
 R	 S, Ş	 T	 U, Ü
 V, VA	 W, WÆ, BÆ	 Y	 Z

Figure 1b

Yazmadaki Tanımgalar (Tamgalar) Tablosu (--Letter-Seals--)				
 ER, ERİ / ERÜ, ERLER	 YAR, YIR, IR, YARI, IRI / İRİ / DİRİ	 YER, YƏRÜ / YƏRİ	 YIL / YOL	 ONU, ÖNÜ, ONGU, ÖNGÜ
 AKI- KOŞA, YER-ERİŞ	 ONAN, ÖNEN,	 EKİ-ÖNÜ, AKI-ÖNÜ, AKI-KOŞA- ÖNÜ	 AT, ATI / ATÇI	 BİRİ, BARİ, VARI
 UÇ, UC, UCU, UÇA, UÇLU, UÇ-ULU, UCA / YÜCE	 ÇOĞAN, COAN, DOGAN, OYÇO / AYÇA	 OY ON, AN OOO (ay), OOI (ay) , OI (ay), TOLAN-OY (dolunay)	 AN  AN, OAN <i>Alfabe karakteri ve tamga karışımı işaret;</i>  ÇAN / ÇON (CAN)	 XİR-ON, KİR-AN,

Figure 1c (also see Figure 1g for graphic example)

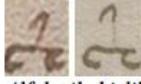
 #1, Bi / Bir, var / bar  #2 Alfabe ile birlikte Ç1 olarak da okunmuştur.	 #2 Eki/ekü iki, ek	 (kodlanan yerde)  (kodlanan yerde)  #3, 3'ü, üç / uç, uçı, üçi	 #4 D / dö, dör, dört / dürt (Örnekleri metin içlerinde de çok sayıda var)
 BEŞ, BAŞ  Ç5, Çebeş, Çbeş, Çbaş, Çb, Çbe / Çba Yazılarda Ç harfi üzerinde silik de olsa örneği görülmüştür. Burdaki ikinci Ç5 silik karaktere karşın çizilmiş benzeridir.	 #6 Al Alt, Altı / Altu	 #7 Yedi,  Ç7 (Metinlerde Ç harfi üzerinde 7 örneği görölmüştür.) Çyedi, Çeyedi, Çeyed, Çyed / Çyc / Çeye / ÇY	 #8 S / Se, sekiz, seyirkez Not: Kodlanan bölümlerde sayılar dikey (yukarıdan aşağı) yazılmış olabiliyor.  Yukardan aşağı 1 2 3 4 5 yazılmış sayfadan alıntıdır.
 #9 G7, 97 (Kodlanan yerlerde yukarıdan aşağı okumada 79, Y9, YU, YEDİÜ, okumaları yapılabilir.)	 #10 ON, ION	 #11  #13  #14  #21  #22  #29  #31  #39  #43  #99  #89  #82  #88  #93  #100 NOT: Sayfa numaralarından ayrı, metinler arasında geçen muhtelif sayı örnekleri vardır. Ayrıca sayfa numaraları da mevcuttur.	

Figure 1d

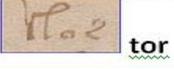
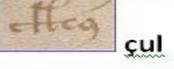
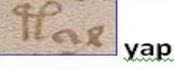
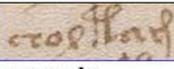
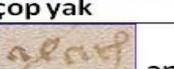
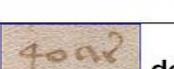
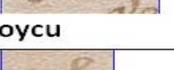
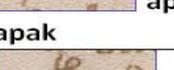
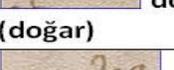
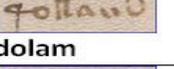
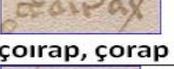
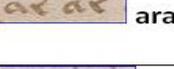
 tor	 çul	 çar	 yap
 uyar	 uyak	 oyçu	 çopar
 am	 sap	 oyar	 çak
 oyam	 çop yak	 zam	 o
 oycu	 apak	 doar (doğar)	 capak
 ak	 dolam	 çoirap, çorap	 arar
 çöpsap, çöp-sap	 çöpsü, çöp su	 çekar	 çap

Figure 1e



Figure 1f

(2) Overview of Turkish

The modern Anatolian Turkish alphabet consists of twenty-one consonants and eight vowels (A, E, U, Ü, İ, İ̇, O, Ö). The alphabet is phonetic as each letter retains its own sound.

In modern Turkish a vowel usually follows a consonant and a consonant follows a vowel. However, in most old Turkic languages, two vowels in a word could follow each other. In modern Anatolian Turkish, generally the second vowel in a structure can be dropped while only the first vowel maintains its function, as this is called vowel apocopation (vowel loss). Furthermore, the Turkish Vowel Harmony Rule governs these structural amendments, and all alterations are based on the dialectic differences (Clauson, Guise). In addition to this, in rare cases throughout the VM, if there are three vowels side by side, usually the last two vowels can be dropped.

The Turkish Vowel Harmony Rule refers to an echoing phonetic value of the previous vowel in a word. In other words, the vowels of suffixes must mirror the final vowel of the word being suffixed in a same phonetic value. Most suffixes must follow the rule of vowel harmony (Clauson, Guise).

Within the Vowel Harmony Rule, there are two sets of vowels. The first set consists of the letters “A, I, O, U”; the second set consists of the letters “E, İ, Ö, Ü”. These vowels only appear in words as either one of these sets, for within one word, a vowel such as “O” cannot be seen with any other vowels outside “A, I, O, U”. Similarly, the same rule allows the phonetic listing of combined letters (syllabic characters) in the Voynich Manuscript. Since most combined letters appear as two consonants, the vowel that is placed initially is not limited to any vowel harmony set – unless the combined letter is not the root of the word. The initial vowel in the root governs which vowel set is employed in added affixation.

There are some vowels that are not confined to the set division of the vowel harmony. An example of such an exception is found in the letter “ə(Æ)”. There is no “ə” letter in Anatolian Turkish. However, phonetically the letter “ə” is in-between “a” and “e”. This character is expressed as |Æ|, or |ə| in some Turkic dialects such as Azerbaijani-Turkish.

Spelling can change to preserve phonetic consonance with an actual pronunciation, which is known as consonant mutation in Turkish. For example, (but not limited to) the letter “-d” of a suffix may transform into a

“-t”, the letter “-c” of a suffix “-ç”, or the letter “-k” may transform into a “-ğ” (soft “g”), and “g” when a suffix with a vowel is added.

In Turkish the basic sentence form is “SOV”: Subject, Object, Verb, but sometimes a poetic writing structure may alter this structure. In addition, it is possible to say that the order of “SOV” (Subject, Object, Verb) may change in some Turkish-language dialects. For example, “SVO” (Subject, Verb, Object) order is can be seen in Gagauz-Turkish language. It is known that this order can be broken in different directions in colloquial language of different dialects of Turkic languages.

Furthermore, suffixes in Turkish change spelling to harmonize with the parent word, which can add to the word's meaning and-or mark a grammatical function. In addition to this, consonants may change pronunciation.

There are no gender forms in Turkish, and one single word is used for “he, she, it” (Clauson, Guise). Additionally, there are no irregular verbs in Turkish (Clauson, Guise).

Suffixes (relevant to study):

a. “-Ü/-U” and “-İ/-I”: these are an Object Pointer Suffixes (*Turkish Direct Object Suffix (accusative) such as “the” in English*). (Clauson, Guise) When we examine the words in ATA manuscript, we know that in modern day Turkish (*mostly*). There is a construction in Turkish which means "belonging to". In English generally only the possessor is marked as in Ahmet's car. This tells us that the car belongs to Ahmet. The possessed (Formation of the Possessed) item in Turkish is suffixed with -i, -ı, -u, -ü (Such as; his, hers, its. Buffer -n- is used when suffixed to vowels: → -si, -sı, -su, -sü. The only exception is 'su' (water). 'Su' uses the buffer letter -y- such as 'suyu'.(Guise) In addition, suffixes ‘-ı -i -u -ü’ is added to single syllable words ending in a consonant and a noun of result from the verb modified such as ‘ölmek’ (to die) → ‘ölü’ (a corpse), ‘yapmak’ (to make) → ‘yapı’ (a construction, a building). (Guise)

b. The suffixes “-mek/-mak”: these are suffixes of Turkish infinitive. They turn the root word into a verb as well as also a concrete noun. Furthermore, the “k” drops when (me[k]/ma[k]) another suffix is added beside it. (Clauson, Eyuboğlu, Guise)

c. The suffixes “-AR” and “-ER” (-ar -er -ır -ir -ur -ür -r) in Turkish are simple present tense positive participle formations. (The Simple Present Tense is used for habitual situations. The wide tense participle is an adjective. It precedes the noun which it describes.

(Guise)) Turkish simple tense regular single syllable verb formation for verbs of one syllable which end in a consonant the positive tense sign is -ar or -er. There are some exceptions to this general rule. This tense is the only one which shows some irregularity in its formation. There are few verbs which take -ar or -er as their causative sign. (Guise)

- [-ar/-er/-ır/-ir/-ur/-ür properly an Aorist (past tense) Participial Suffix; forms a few Nouns and Noun/Adjectives. In addition to that, -r- (after vowels)/-ar/-er- (the ordinary form after consonants)/-ır/-ir- (very rare, after Dissyllable Nouns in which the second vowel, -ı/-i-, is elided, fairly common. The (Denominal Noun) -ar/-er (also -rer in ikkirer)/-şar/-şer (after vowels) forms Distributives after Numerals, e.g. birer 'one each', and Adjectives of quantity, e.g. azar 'a few each'; very rare; also a Deverbal and Conjugational Suffix. (Clason)

- In addition to this, the suffixes '-ar', '-er', '-r', which make verbs from nouns in Turkish language, are also seen. Examples of this can be seen in Turkmen-Turkish and Azerbaijani-Turkish. (For example, we can produce the verb 'suv-ar (suvar)' (watering) by adding it to the word 'suv (su (water))'.

(3) Alphabet Acquisition

Turkish is an agglutinative language. New word derivation in Turkish and the acquisition of grammatical meaning or expanding connotation of words occur when the words are added to the root of the word without any change in the root, that is, by concatenation. Since Turkish is an agglutinative language, suffixes are consecutively affixed to the end of the root structure. For instance, in the German and English languages, the word suffixes can be seen from members of the group of languages defined as Indo-European languages. However, in these languages there are far fewer variations of word suffixes than Turkish, and these words which have additions have a linguistic structure which cannot be divided into unit parts to create further expansion in connotation or new words. In these languages, a suffix can have multiple functions or meanings, and there may be changes in the root of the word as meaning changes are structured. But this does not happen in Turkish. In other words, no matter what the suffix of the structure, the meaning of the root word will not vary. Examination of Turkish in terms of phonemes and glyphs, especially in the context of VM handwriting, makes the transcription of the alphabet more understandable, especially when determining the phonetic values of the alphabet characters of the combined letters.

The combined words in the VM are examples of syllabic writing (syllabogram). In VM there are only few Tamgas. Tamga generally represents a letter sign, a phrase, a word or a structure. A large part of VM

was mainly written in base alphabet characters. We assume that besides the use of base alphabet characters, the use of syllabic characters and Tamgas were expanded the meaning of words or sentences.

a. The Connection Between Numbers 1 to 9 and VM Letters:

Other than using the numbers as numerical values the author also embedded numbers within letters. This embedding provided us a direct correlation between a number of Turkish letters and combined syllable letters. In the case of the numbers 4, 8 and 9 the author used these numbers in place of first letters of the corresponding Turkish words. For the remaining numbers 1, 2, 3, 5, 6, 7 the author used more than the first letters of the corresponding Turkish words, mostly within the combined letters.

The number “1” is “Bir” and “Bar/Var”. The number “2” is “iki”, “eki” and “ek”. The number “3” is “üç/üçü” and “uc/ucu”. The number “4” is “dört/dürt”. The number “5” is “beş/baş”. The number “6” is “altı/altu”. The number “7” is “yedi”. The number “8” is “sekiz/seyirtkez”. The number “9” is “dokuz/ukkız/ukez”

The number “1”  is “Bir”

In Turkish the word for number “1” is “BİR/BAR/VAR”. We have only encountered the number “1” in association with combined characters. The VM letter  “Ç” (to be explained in the next section) is combined with “BİR” to make the character  “Ç-BİR/Ç-BAR/Ç-VAR”.

The number “2”  is “iki” and “eki”

In Turkish, the word for number “2” is “İKİ/EKİ/EK”. We have only encountered the number “2” in association with combined words. Thus, the combined letter  is translated as “ÇİKİ/ÇEKİ/ÇEK”.

The number “3”  is “üç/üçü” and “uc/ucu”

We have not encountered a better example of number 3 embedded within words yet. Work in progress.

The number “4”  is “dört/dürt”

In Turkish the word for number “4” is "DÖRT" and “DÜRT” in old Turkic. Therefore, when the letter “4” is embedded within a word the author used it in place of letter “D”. In addition, the way the author wrote the letter “4” resembles to the shape of a triangle. It is remarkable that in old Turkic the triangle sign “” was also used as letter "D" (Mirşan).

The number “5”  is “beş/baş”

In Turkish the word for number “5” is “BEŞ/BAŞ”. We have only encountered the number “5” in association with combined words. Therefore, the combined letter  is translated as “ÇBEŞ /ÇBAŞ”. (Note: This character was seen in folio 1r. On this page, some words cannot be fully read because they are dimmed / erased later. However, when examined closely, it can be understood that these are 5 and Ç5.)

The number “6” is “altı/altu”

We have not encountered the number 6 embedded within words yet. Work in progress.

The number “7”  is “yedi”

In Turkish the word for number “7” is “YEDİ”. We have only encountered the number “7” in association with combined words. Therefore, the combined letter  is translated as “ÇYEDİ” and “ÇYed/ÇYe/ÇY”.

The number “8”  is “sekiz/seyirtkez”

In Turkish the word for number “8” is “SEKİZ” in modern Anatolian Turkish and “*SEYİRTKEZ / *SEYİRTGEZ” in old-Turkic. When the letter “8” is embedded within a word the author used it in place of letter “S”. VM manuscript, however, did not distinguish between the letters "S" and "Ş".

The number “9”  is “dokuz/*ukkız/*ukez”

In Turkish the word for number “9” is “DOKUZ” and “*UKKIS”, “*UKEZ” or “*OK+EZ” in old Turkic in Old-Turani/Proto-Turkish. When the letter “9” is embedded within a word the author used it as letter “U”. VM manuscript, however, did not distinguish between the letters “U” and “Ü”.

b. Tamga “ER” to Character “R”:

The "ER" Tamga in Turkish “”¹⁷ is a symbol engraved on stone carved into the carpets for thousands of years. There are other commonly used and known Tamgas. However, the words expressed by these terms may have been used differently due to the divergent differences in different periods or the use of synonyms. Using different words or synonyms does not change the meaning of Tamga.

The VM character “” (first letter of line 6 in the first page) is a classical Turkish Tamga (Tanınga, Damga). Tamga is an abstract symbol, seal or stamp used by Turkic tribes before the alphabetical writing was invented. Tamgas could describe a certain word, phrase, definition or a specific phenomenon.

The VM character “” resembles the famous Turkish Tamga () which is "ER" and refers to male, man, husband and-or soldier. In different geographical regions and periods various forms of “ER” Tamga has been used and the letter “R, r” has its roots in this Tamga. We assume the character “” represents the plural form in some periods (two “r” side by side as mirror image) and the VM letter “” represents the singular form of the letter "R, r".

c. Characters “I, İ, N, T”:

Kazim Mirşan, a researcher of Old-Turkish/Turkic languages, has been an invaluable resource. We found some inferences for

¹⁷ - <https://www.scribd.com/document/137103213/Turkic-Alphabet-Genesis>

- http://www.bolgnames.com/Images/Dulo.Osmanids_1.pdf

- <http://kokturukce.blogspot.com/2008/09/gktrk-yazlarnn-harflerinin-kkeni-4.html>

- 'ER' TAMGASI VE ONDAN TÜREME TAMGA İŞARERLERİ BU KAYNAKTA Sayfa 571, 537, (ve 306, 316, 329, 364, 399, 439, 441, 496, 511, 524, 527, 530, 637, 541, 545, 547, 571, 583 ve 601'de ve de başka farklı sayfalarda görülebilir) Görseller İçin Kaynak: The Heraldic Sign Tamgha of the Protobulgarian Ruler Clan Dulo and the Tamgha of the Oghuzian Tribe Qayi Protobulgarians Xiongnu Tamghas / Link:

http://www.bolgnames.com/Images/Dulo.Osmanids_1.pdf

- 'ER' TAMGASI Bu linkte 2. Sayfada ve Kaynak eserde muhtelif sayfalarda görülmektedir (Sayfa 2, 289, 290 etc) Kaynak Eserin Link Adresi: : <https://www.scribd.com/document/137103213/Turkic-Alphabet-Genesis>

- ER 'R' Tamga İşareti <https://tarihvearkeoloji.blogspot.com/2019/06/latmos-kaya-resimleri-ve-er-damgas.html>

the characters of the VM alphabet in Miršan's publications. For example, we have found that the "N" letter () does not usually change in ancient Turkish alphabets. For this reason, we think that the correspondence of this letter  in the Latin alphabet is also the letter "N". Likewise, we had a similar extraction for the letter "T" (). The letter "T" in TANRI and TENGRI meaning "God". The letter "t" if put in a circle  in some old Turkic languages represents "God". We assumed that the VM character "" is the combination of letters "I" () and "T" (). Therefore, we foresee that we can read this symbol as both  "It" and "T".

Of course, for a cedilla sign used in writing to be called a glyph, that sign must provide a distinguishing function. This type of character should have different features from other characters.

In addition, the dot symbol on the letter "i" is not recognized as a glyph; since the dot symbol on "i" has a distinctive function, it can be considered as a glyph in Turkish.

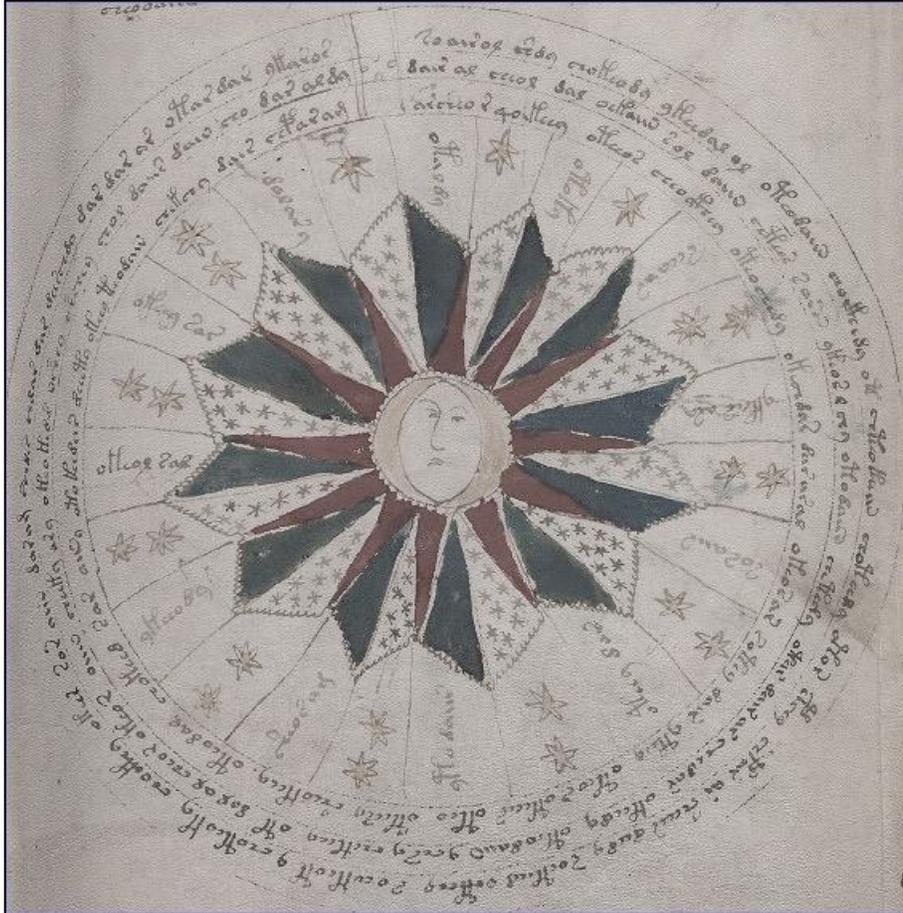
d. Initial four characters deciphered (O, Y, C, Ç):

Letters  O and  Y

Throughout many pages, the word "OY" () appears as a reoccurring root. The reason we established that this word was a root was due to the fact that the words always started with "OY" and proceeded with alternate affixations. This repeated visible pattern would suggest that "OY" was a root.

Once that was established, we proceeded to relate the word to an illustration by checking the artworks around the words. When we came upon Folio 67r, it became evident that the illustration was some kind of a Lunar calendar. The constant reoccurrence of the root "OY" was suggestive of the fact that it was clearly a descriptive root. Upon researching what the word "moon" was in old Turkish, we came across an overwhelming number of references that the modern day Turkish word "AY" (moon, month) was pronounced and written as "OY" in many

old Turkic dialects. Furthermore, some dialects of Turkic (such as Uzbek) still refer to the moon as “OY”. Thus, we associated  to “O” and “Y” characters respectively. In addition to this, since the word also means “month”, the presentation of the 12 sections listed in the illustration of Folio 67r, are further suggestive of the fact that perhaps this was a calendar.



Letters C and Ç

Upon analyzing the characters “R”, “O”, and “T”, it became apparent that the alphabet employed was also derivative of the

Latin one. Thus, we chose to use the letter  as “C” in Latin. Furthermore, many researchers such as Kazım Mirışan and Prof. Dr. Firudin Celilov have highlighted the relationships between the Latin alphabet and the old Turkic alphabet. Among this research the character “C” also appears in both Latin and Turkic. In addition to this, it is important to consider the fact that about 600 years ago, the Ottoman Turks declared that the Arabic alphabet was the official one. However, it is well documented that due to the difficulty of this change, many common folks

maintained their old alphabets as well as adopted Latin characters in the mix.

The word “AYÇA” (“OYÇO”)  in the Turkish language is written and pronounced in some dialects as "AYCA" and means “as beautiful as the moon”, “the crescent moon”. The words "AYÇALI" and "AYCALI" derived from this word can be translated as “crescent moon-like”, and-or “C-shaped”. However, we had previously foreseen that this word was used in the early sense of the term "AY + Ç + LI"

. The origin of the word “AY-CA-Lİ” comes from “AY-C-Lİ” which literally means the moon is in the shape of “C”, therefore the shape of “Crescent”. Thus, we have also estimated  to be the phonetic equivalent of “JC”/ “Ç”.

(4) Words Matching Respective Illustrations

Word(s) #1: Folio 68r



Text in Latin: “ÜLÜ KERÜ / ULU KARU”.

If the first word is read as “ULU”, it would be directly translated as “the great” (Akalin, Clauson, Gülensoy, Orucov). Accounting for the fact that the author did not differentiate between dieresis and cedillas – since we do not actually know the author’s specific Turkic dialect, the word can also be read as “ÜLÜ”. Nevertheless, “ÜLÜ” is directly translated as “gift” and “to assist”. However, we still looked into the root meanings of the words.

The second word “KARU” can be directly translated as “arm”, “power”, “strength”, “force”, “divine strength”, “God’s power”, “capability” and “talent”. (Akalin, Clauson, Gülensoy) However, since many of the “-U” suffixes became “-I” – as explained in the appendix section 1a – the word is most likely the equivalent of the modern Anatolian Turkish word “KARI”. The word “KARI” is translated as “woman”, “wife”, and “old lady”.

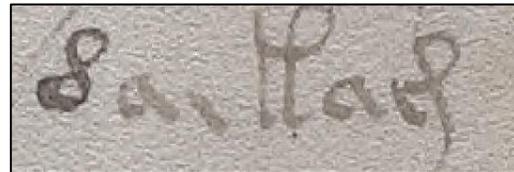
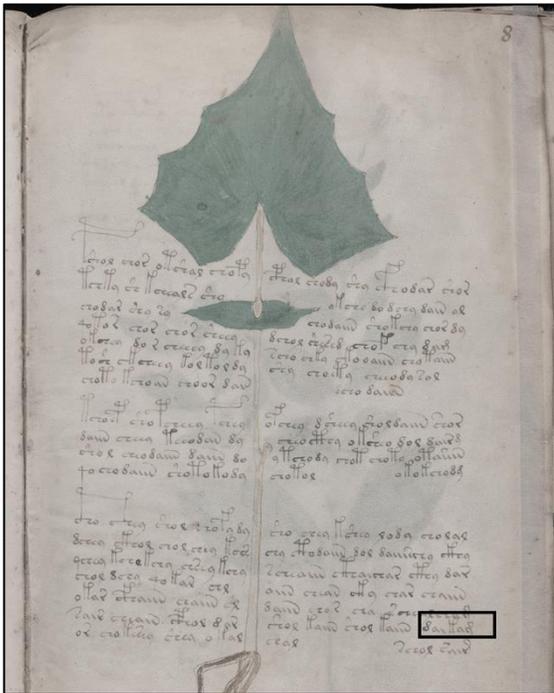
In Turkish, having two words together as one compound word will never vary the meaning of either. In other words, “ÜLÜ KERÜ / ULU KARU” is identical to having a compound word of “ÜLÜKERÜ / ULUKARU”. The reason this is significant to understand is that these words have a clear relation to the modern day Turkish word “ÜLKER”, which is translated as “Pleiades” (Akalin, Clauson, Gülensoy). We believe that this was a natural evolution of the word across many dialects, as all it does is take out the suffixes “-U/-Ü” and make a compound word out of the roots; hence, “ÜLKERÜ” translates as “The Pleiades”.

“ULUKARU (ULU KARU / ULU KARI)” translates as “The Great Woman”.

“ÜLÜKERÜ” translates as “The Pleiades”, “The Great Force”, and “The Great Hand”.

In conclusion, due to the illustration depicting the “woman”, both translations appear relevant. Thus, this leads us to believe that the author had intentionally implied both meanings. In other words, we believe this is “The Pleiades star cluster” which is also being symbolized as “The Great Woman”.

Word #2: Folio 8r



Text in Latin¹⁸: “ŞAILAK” and-or “SAILAK”.

In Turkish, a vowel often follows a consonant, and a consonant often follows a vowel. Throughout most old Turkic languages, two vowel letters in a word could

¹⁸ Appendix (1)

follow each other (Such as: “ŞAILAK”). In modern Anatolian Turkish, generally, the second vowel in a structure can be dropped while the first vowel still maintains its function (Such as: “ŞALAK”). The vowel harmony rule¹⁹ governs this concept.

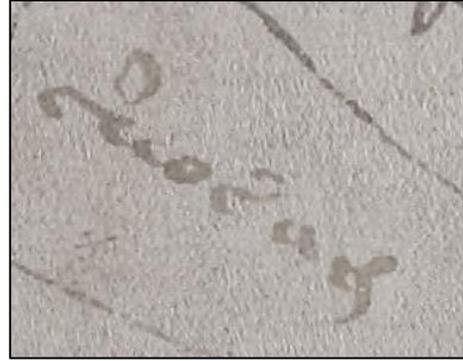
The first word “ŞALAK” is directly translated as “cucumbers only suitable for their seeds”. In different Turkish dialects, this word may describe either a “cucumber, zucchini, melon, watermelon or pumpkin” directly, as they are considered watery vegetables and fruits. However, some dialects employ the word to describe an underdeveloped and-or overdeveloped “watermelon, pumpkin, melon, zucchini or cucumber”. Nevertheless, this word is still being used in some Turkic dialects without any alteration to its original definition. In addition to this, the word “ŞALAK” also has a shared meaning with the second word option “SALAK”; this shared definition between both is “stupid” and-or “foolish” (Sözce).

The second word “SALAK” is directly translated as “stupid”, “foolish”, and “idiot” (Sözce). This term is still being used – in its original definition – in modern Turkish. Moreover, “SALAK” also means “penis” (Tulum). The interesting part of this is that the only reason “ŞALAK” has the definition of “stupid” is that at one point, calling someone a “cucumber” was thought to be derogatory. Furthermore, the connection of “ŞALAK” the “cucumber” and “SALAK” the “penis”, might have also played a role in making the association between a cucumber and the male genitals.

In conclusion, the definition – accounting for the dialectic differences – for the word “ŞALAK” is “an underdeveloped and-or overdeveloped watermelon, pumpkin, melon, zucchini or cucumber that is not good for consumption, as it is only used for its seeds”. However, a great majority of Turkic dialects employ this word to specifically describe an “inconsumable cucumber that is used for its seeds”.

¹⁹ Appendix (1)

Word #3: Folio 67r



Text in Latin: “ÇOIORAK” and-or “ÇÂIORAK” (ÇAĞI-ORAK / ÇÂI-ORAK).

This is a compound word made up of two words. The first word could be “ÇOI”, “ÇAĞI”, “ÇÂI” and the second word for all is “ORAK”.

The root “ÇO” is defined as “ember”, “cinder”, “hill”, “the highest point”, “the top”, “peak”, “peak time”, “maximum amount of something” (Akalin, Clauson, Gülensoy, Orucov, Sözce).

The root “ÇÂ” has many definitions of which the applicable ones are only “age” and “time” (Sözce).

The root “OR” is defined as “to separate”, “to cut”, “to gather”, “to put together”, and “to harvest”. This root often appears in its infinitive suffixed²⁰ form of “ORMAK” (Akalin, Clauson, Eyüboğlu, Gülensoy, Sözce).

The word “ÇAĞ” by itself shares many common definitions with “ÇÂI”. Both of these words are phonetically related; however, throughout dialectic variation and time, the definitions started to get additional meanings. The word “ÇÂI” has “-I” as a suffix²¹ which is the equivalent to articles such as “the”. The word “ÇAĞ” is defined as “period of time”, “season”, “time”, “age”, “century”, and “era”. The shared original definitions for both “ÇAĞ” and “ÇÂI” are “(the) time” and “(the) age” (Akalin, Clauson, Eyüboğlu, Gülensoy, Orucov, Sözce).

The second word that makes up the compound one is “ORAK”; the direct definition of this word is “harvest”, “reaping-hook” and “July”. In some dictionaries, the definition of “August” is also provided, but this definition is used

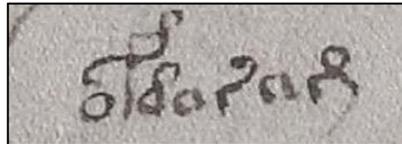
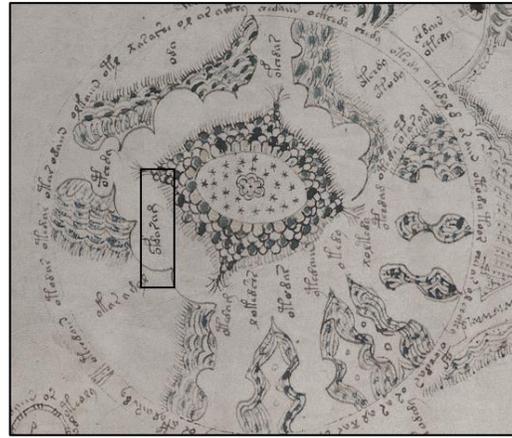
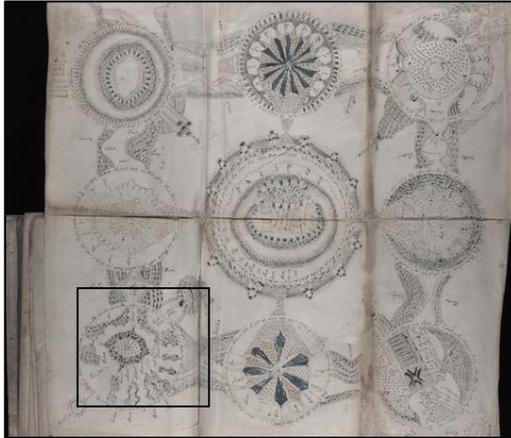
²⁰ Appendix Entry (2b)

²¹ Appendix Entry (2a)

by a dialectic minority that derived it from geographical influence – as their harvesting period is probably August (Akalin, Clauson, Eyüboğlu, Gülensoy, Orucov, Sözce).

In accounting for all of these definitions, the word is translated as “the time for harvest”, “the harvesting season”, and-or “period of July”. It is important to note that the calendar illustration does have this words as the 7th month, thus we simply relate this to the month of “July”.

Word #4: Folio 85v and 86r (The Map Foldout)



Text in Latin: “OIKSÆRÆK” (OIKSEREK / OIKSARAK).

This is a compound word that combines the words “OIK” and “SÆRÆK (SEREK / SARAK)”.

The first word that appears in this compound structure is “OIK”. This word in modern Turkish would be read as “OK”. The word is defined as “arrow”, “archery”, “missile”, “diameter”, and “calibre” (Akalin, Clauson, Eyüboğlu, Gülensoy, Sözce).

Since the second word of the compound structure can be read as both “SEREK” and “SARAK”, here are the definitions for both:

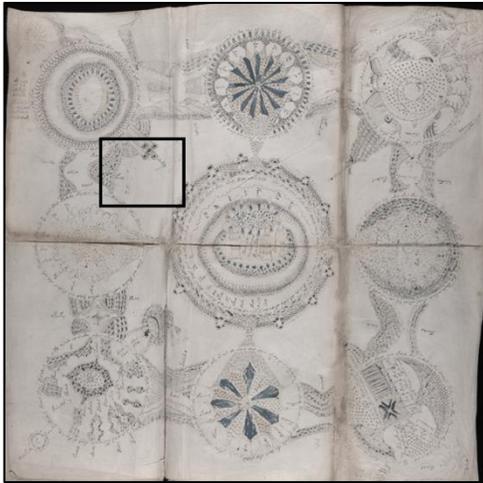
The word “SEREK” is defined as “square”, “field”, and “yard” (Akalin, Clauson, Gülensoy, Sözce).

The word “SARAK” is defined as (an architectural term) “faces of the building/constructed structures”, “a fancy horizontally wide plain string”. In other words, this is describing a wide, slightly protruding, fancy, or straight belt that runs horizontally against the wall (from one end to the other) of an architectural structure (Akalm, Clauson, Gülensoy, Sözcce).

Today there is a historical archery square in Istanbul city (formerly known as Constantinople) called “OKMEYDANI” (in modern Turkish). It is also important to keep in mind that “MEYDAN” and “SEREK” are both synonyms, as they both mean “square” (Akalm, Clauson, Gülensoy, Sözcce). Since there was no Turkic occupation of Constantinople prior to the year 1453’s, The Byzantine Empire probably had a different name for the square they have constructed. However, there were many Turks living in that region prior to the invasion, and these Turks referred to this square as “OKSEREK (“OIKSEREK”)”. Furthermore, it is important to note that the Ottoman Turks, as well as many other Turkic tribes and nations before them, used the term “SEREK” as “square”.

In summation, “SARAK” is an architectural term used to describe a specific structure. However, the elliptical shape that is illustrated on the VM map page suggests that the word was “SEREK” (square). Thus, the term “OKSEREK” is directly defined and translated as “archery square”.

Word #5: Folio 85v and 86r (The Map Foldout)



Text in Latin: “OIKARSU” (ÆOIKARSU/ ÄIKARSU).

This compound word is made up of the word “OIKAR (ÆOIKAR/ ÄIKAR)” and the word “SU”. This word “OIKAR” in modern Anatolian Turkish would be “AKAR”. This root of this word is “AK” and the suffix is “-AR”, yet the word is often presented in its infinitive suffixed form as “AKMAK” (Akalm, Clauson, Gülensoy, Sözcce).

The first word “OIKAR (AKAR)” is directly defined and translated as “flowing”, “running”, and “to be runny”. The second word “SU” is commonly defined as “water” (Akalin, Clauson, Eyüboğlu, Gülensoy, Orucov, Sözce). Thus, the word “OIKARSU (AKARSU)” means “flowing water”, “running water” and-or “stream”. This definition is not only very direct in translation, as it is later contextually verified by the illustration itself.

(5) Listing Method Procedure

The writing method of the analysis and transcription is organized in a listing method. The following listing method is used demonstrates how the transcription of the *Folio 33v-Sunflower-Herbal* was attained:

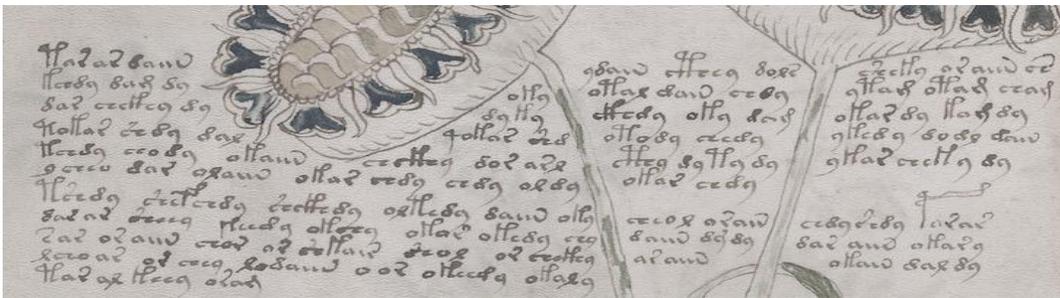
- a) The procedure begins by selecting and isolating a line.
- b) After a line is selected, proceed by isolating and analyzing the line word by word.
- c) Each word in the line individually goes through the following steps:
 - The location of the word is identified as a heading (Example: First Word of the First Line)
 - The word is presented in its original Voynich characters.
 - The word is then transferred from Voynich characters into the Latin alphabet letters.
 - The word is then filtered through the Turkish vowel harmony rule.
 - Letters are both treated as regular and containing cedilla and dieresis (such as ş, ç, ö, ü) if so required by the vowel harmony rule, for phonetically both may be applicable to the time period in which the author wrote. In order to identify which phonetic value of the letter is applicable to the word, the Turkish vowel phonetic harmony rule is employed.
 - If the letters in the word appear blurred and it becomes hard to make a distinction between several letters, all possibilities are presented.
 - All the possibilities for the word that have a direct translation that is applicable²² to the subject (words that make sense and aren't meaningless) are all listed.

²² Contextual applicability (imbedding) is not a process that is arbitrarily employed, for even the least relevant and random terms are identified. Once all the possible definitions are identified for the selected word, some definitions might not make sense in multiple regards such as a technical

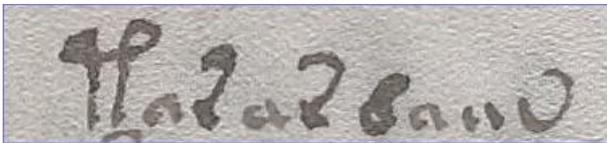
- Then those words (that relate to the Voynich word) are organized and analyzed by roots, affixations, and additional helpful information (if needed).
 - All translations are provided for each word.
- d) Once all the words in the line are identified, all the words in the line are put together and presented in both the original and translated formats.
 - e) The references to the illustrations in the manuscript are shown and explained (if applicable to the transcribed line).
 - f) All references are cited in 3rd edition MLA standard format in the Bibliography section.

For translating single word examples outside of *Folio 33v-Sunflower- Herbal*, only employ section #3 in the procedure (as listed above).

(6) First Sentence of *Folio 33v*



First Line of Folio 33V Sunflower Herbal – The First Word of the First Line



Direct Latin Equivalent: “YARARSAIN” / “YARARSAM”

Word possibilities after filtered through the Turkish vowel harmony rules (Guise): “YARARSAN”, “YARARSAM” and/or “YARARSAGIN”.

The root word “YAR” is a homonym, for this root has more than one definition. Such as “YAR”, “YARA”, meaning to be successful, to be advantageous, to be

definition that is not applicable to the time period, context of the text and or illustrations. For example, if there are multiple definitions for a particular word, and one of them is a technical definition describing a modern airplane part, this word does not fit the context of the line, illustration (plant/flower) and the time period, thus it is eliminated. If the other left over words could all be applicable in the context (even in the slightest), they are kept and assessed accordingly.

useful, to be serviceable; “YARAR”, has a dual meaning; useful and beneficial (Clauson). The root word “YAR” appears typically in its original noun form and the suffixes of Turkish infinitive “-mek/-mak” turn the root word into a verb (Eyuboğlu) and also a concrete noun (Clauson). Most common definitions for this “YAR” root and its “-mek/-mak” verb form includes “(to): split, chop, slit, rip, plow, disrupt, breach, rend, tear, slash, cleave, crimp, splinter, flaw, hew, maul, incise, rift, sever, wedge off, plough” or the Turkish equivalent which would be “kesmek, ayırmak, bölmek, kazmak, açmak, eşmek, çatlamak, yırtılmak”. The definition of this word in context would suggest that it means “to cleave, split, or cut”, yet when searched in a vast majority of dictionaries, the definition will not present the “-mek/-mak” verb variation of the root, for this definition will be found in the suffixed verb of “YARMAK” (which dictionaries often treats as a separate word). The dictionary will see the words as different, for one is a noun and the other a verb, yet the “-mak” suffix is what makes the root a verb (one form of verb among many), while the root still remains as “YAR” (Eyuboğlu).

An additional possibility is that the word stated above could be read as “YARARSAĞN”, “YARASUN” (Clauson), and “YARARSAĞIN” which is translated as “the potential to be beneficial”, “meet your wishes”, and at the same time the word implies that “the plant is a harvestable plant”.

The first suffix that is added to the root is “-AR”, and it indicates movement (Eyuboğlu), turns the root word into a verb and is the English equivalent of the suffix “-ING” and “TO” (Guise, Aksoy).

The third and last that is added to the root is “-SAİN”/ “-SAĞN” and/or “-SAM”, which are both suffixes that indicate the action’s owner as in you (second person) or me (first person). Technically, the suffix that was written by the author was directly and only “-SAIN”, yet it is important to understand that the “-IN” (and its phonetic and connotation equivalent “-IIN”) part of the suffix could both be pronounced as |em| (“-M”), or |en| (“-N”) during the time period in which the manuscript was written in. It makes essentially no difference as to the definition of the term, and only effects the description of the action’s owner. However, it is important to identify and explain both possibilities – despite the fact one is more relevant than the other – as both technically remain a possibility. In addition, the presence of “-SA”/“-SA-” (Clauson). as a portion of the suffix acts as an indicator that is the equivalent of the English term "IF" (Guise). In addition, “-sa” suffix known as; "Forms Desiderative Denominal Verbs (No-men Actions (to wish))" (Clauson), and it is also important to keep in mind that the suffix “-SAN” can also stand as a root “SAN” which is defined as “(to): count, deem, think, suppose, and conjecture” etc (Eyuboğlu). Furthermore, based on some Azerbaijani dialects, an additional usage of the suffix “-SAIN” or “-SEİN” would be applicable to the time period in which the manuscript was written. In Turkish the suffix “SAIN” has comparable usages such as “-benzer”, “-gibi”, “-ya uygun”, “-ya müsait”, “-ya elverişli”. In English the translation would be “suitable to make something”, “convenient to make something”, “similar to something”, “such as”, “similarly”, and “like”.

The suffix “-SAIN” (in Azerbaijani-Turkic it is |SAĞIN| but in Anatolian Turkish it is |SAĞI|, or |SAĞI-| which equivalent of today's Turkish suffixes "-

ımsı", "-sı", and "-ımtrak". Which in English “such as”, “similarly”, “like” and it also indicates actions for second person (Aksoy) and suffix “-SAN” indicates actions taken in second person. The suffix “-SAIN”/ “-SAN” is based on the word “SEN”, which can stand as a suffix or a root and is defined (in English) as “you” regardless of its role. The suffixes “-SAN”, “-SEN”, “-SAIN”, “-SEİN”, “-SUN”, and “-SÜN” all are derived from the word “SEN” and all define as “you” as they indicate an action’s owner in second person. The middle letters have changed due to different Turkic dialects forming throughout different geographic locations, yet despite all changes, the definitions are shared and supported by the Turkish Vowel and Consonant Harmony Rules.

The suffix “-SAM” indicates actions taken in first person. This suffix is directly described as “I/me” and is related to the suffixes “-SAM”, “-SIM”, “-SİM” or “-SEM” which all describe action’s owner to be “I, me, myself” (first person) (Guise). In today's Turkish, we use suffix –“-SAM”/“-SEM” mostly to make wish and request modes or to establish conditional structures.

The suffix “-ĞN” (“-AĞN”/“-ĞİN”/ “-ĞİN”) is the phonetic equivalent of “-AĞİN / -EĞİN” due to the Turkish vowel harmony rule, for when the last letter of a root is a consonant, a vowel may be placed as a conjunction between the root and the suffix. These suffixes indicate prospect attainability, potentially achieving something, to be able to potentially attain/reach something, and expecting forthcoming form of something (**-able**). Sir Gerard Clauson in his book "Studies in Turkic and Mongolic Linguistics" (page 154) explained the suffixes “ĞİN”, and “ĞİN” as: [*“-ğın/-gin function uncertain; e.g. kev- "to masticate" > kevgin "indigestible"; rare and unproductive and probably very old."]. In addition, Sir Gerard Clauson explained in his book "An etymological dictionary of pre-Thirteenth-Century Turkish" (Clauson) that: [*“-ğ the commonest Deverbal Suffix; forms a wide range of Deverbal Nouns and Noun/Adjectives, Nomen actiones, etc".]**

YARAR: is defined as “benefit, utility, use, advantage, usefulness, profit, gain, winnings, earnings, income” (Akalin, Sözcce).

The word SAĞIN is defined as following based on five separate sources.

SAĞIN (source 1): 1 - (Düşünmek) is defined as “to think, think of, consider, imagine, contemplate, reflect”; 2 - (kaygılanmak) is defined as “concern, anxiety, worry, fear, fears, apprehension, care, curiosity, interest” (Kaljanova).

SAĞIN (source 2): 3 - (Tam) is defined as exact, exactly, precisely measurable, (bakır sahan) is defined as “copper pan” (Sözcce)

SAĞIN (source 3): 4- (Sağın anlatım) is defined as precise explanation; 5 - (Sağın ölçü) is defined as precise measurement (Akalin).

SAĞIN (source 4 and 5): The root word "SAĞ-" is defined as suppose, design, think, absorb, suck in, feed, sustain, raise, breed, bring up, claim, wish, plan, design, happiness, mightiness, take advantage of, exploit, sweat, trade on, lactiferous, milking (Eyuboğlu, Clauson).

“YARARSAĞIN” is interpreted and translated as the author indicating one being able to take exact and precise benefit from the plant in the subject page. The author implies the plant is useful for harvesting.

“YARARSAN” is interpreted and translated as; “if you were to cleave”, or

“if you cleave it”, or “if you will cleave it”. “YARARSAM” is translate as; “if I am to cleave”, or “if I cleave it”, or “if I was to cleave it”. “YARARSAGIN” is translated as the plant being useful for harvesting.

First Line of Folio 33V Sunflower & Herbal – The Second Word of the First Line



Direct Latin Equivalent: “USAIN”, “ÜŞEİN”

Word possibilities after filtered through the Turkish vowel harmony rules: “USAN”, “ÜŞEN” and/or “OSAN”.

“OSAN” and “USAN” have the same definition. The only difference is dialectal. Sir Gerard Clauson explained some of the definitions of “OSAN” and “USAN” in his book "An etymological dictionary of pre-Thirteenth-Century Turkish" (1972) as: Weak, tired, exhausted, negligent, to be listless, to be long and dreary, to be tired of something.

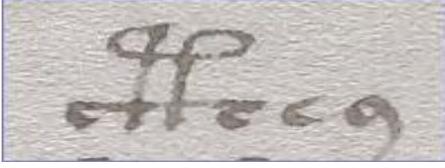
The Voynich alphabet does not specify the letter dieresis or cedillas, so both possibilities for the letters “U” and “S” have to be accounted for as phonetically they could be both pounced as “U, S” or “Ü, Ş”. The two possible words are “USAN” and “ÜŞEN”. Both root “US” and “ÜŞ” have common definitions.

The word “USAN” is defined as “gafil, gevşek, tembel, isteksiz” in Turkish and “unaware, lazy, reluctant” in English (Sözce). In modern Turkish the word “ÜŞEN” is not typically presented as a single root word but as “ÜŞENGEÇ”, and/or “ÜŞENGEN” which words that combines two root words, or “ÜŞENMEK” which is a word that combines the root word plus “-MEK” suffixed. The common definitions word “ÜŞENGEÇ”, and “ÜŞENMEK” are translated as “lazy, indolent, slothful” (Akalm) and the root “ÜŞEN” also shares the same definition as the word “ÜŞENGEÇ” is derived from “ÜŞEN”.

The use and definition of “ÜŞEN” would definitely be the utmost applicable use and definition to the time period in which the manuscript was written.

“ÜŞEN”/ “ÜŞENGEÇ” is translated as “lazy, negligent, reluctant, indolent, slothful”. “USAN” is translated as “lazy, reluctant” and is usually contextually used in its “-mek/-mak” verb form (“USANMAK”) to signify “weary, wearisome of” and/or “tired of static/certain condition” (Akalm).

First Line of Folio 33V Sunflower & Herbal – The Third Word of the First Line



Direct Latin Equivalent: “ÇYİCU”, “ÇYİCÜ”, “ÇĞCU”.

Word possibilities after filtered through the Turkish vowel harmony rules: “ÇİYEÇİ”, “ÇİYİÇİ”, “ÇİĞUCU” and/or “ÇİYİCU”.

The first letter is the root and can be pronounced in Turkish as “ÇYC”, or “ÇĞC”, or “ÇİYİC”, and last letter “-U” is an object specifier (object pointer) suffix.

The words “ÇİYİÇİ”, “ÇİYOCU”, “ÇİĞİTİ”, “ÇİYİÇİ”, “ÇİYİC”, “ÇİĞİT”, “ÇİVİT”, “ÇİİT”, “ÇİYİRT”, “ÇİĞİD”, “ÇİYOC”, and “ÇİYİTİ” are all phonetically distinct, yet share the same related definitions. Since each region has their own dialect of Turkic, the word of “ÇİYOCU” can be phonetically changed in another region and be pronounced as “ÇİĞİDÜ”, “ÇİYİTİ” and/or “ÇİYİT”, but the definition would still not change. They all have practically the same definition, as they make small distinctions from region to region. All the words listed above are translated and generally defined as “seed, kernel, the seed, the kernel, this seed, it's kernel, its seed, seed itself”.

For example, the word that the author used “ÇYİCU” in modern Turkish is still used as “ÇİYİT” (Sözce), “ÇİYİD” (Axundov) or “ÇİĞİT” (Clauson, Akalın) is defined as “seed, kernel”, while the same word in a different region is defined as specifically “cotton seed”. Both the definitions are very similar, yet not identical. Many of these terms are still in use today in many different Turkic dialects, and the tantamount definition of the term(s) stands as “seed” (Aksoy, Gülensoy, Karahan).

In addition, the Anatolian Turkish word “ÇİĞDEM” is derived from same root and synonym with the word “AY ÇİÇEĞİ” which means “Sunflower” in English (Aksoy). The Turkish word “ÇİĞDEM” is a compound word, currently used in modern Turkish and derived from the word “ÇİĞD-” which is our subject word "seed", “kernel” in English and “-EM” means "to suck" in English (Clauson). Therefore, “ÇİĞDEM” is translated as eatable kernel / seed.

“-U” is an object specifier suffix. The object specifier is a form of suffix which is governed by the vowel harmony rules: “-I, -İ, -U, -Ü” are used with root nouns which end in a consonant, or used with extended (already suffixed) nouns which end with a consonant. The Direct Object Pointer suffixes “-I, -İ, -U, -Ü” in Turkish are equivalent to “the, it, that, this, it's, its, itself” in English. The suffixes of “-I, -İ, -U, -Ü” can also be used as “-CI, -Cİ, -CU, -CÜ, -ÇI, -Çİ, -ÇU, -ÇÜ”.

“ÇİYİÇİ” and/or “ÇİYOCU” is translated as “the seed(s)”.

First Line of Folio 33V Sunflower & Herbal – The Fourth Word of the First Line



The last letter of this word appears unclear. The letter could be “r”, “2” (ek/eki), or “z” (Ze). Thus, all the possibilities are accounted for.

Direct Latin Equivalent: “SOPR” (“SÖPR”), “SƏPR”, “SOPEKĪ”, “SOPZ”, “SOPZE”, or “SƏPZE”.

Word possibilities after filtered through the Turkish vowel harmony rules: “SÖPÜR”, “SƏPİR”, “SƏPƏR”, “SAPAR”, “SƏPER”, “SEPER”, “SAPEKĪ”, and/or “SEBZE”.

“SAP-EK-Ī” is a compound word, and last letter “-Ī” is an object specifier (object pointer) suffix. “SAP” is translated as “handle, stalk” (Clauson, Akalın). “EK” is translated as “extension, adjunct, inset, supplement, supplementary, supplemental, further, addition” (Sözce, Akalın). Word “SAPEKĪ” is translated as the stalk extension, the stalk inset, the stalk branch. It may also imply the head of the flower as a stalk extension.

“SEBZE” is defined as vegetable and grain (Sözce, Akalın).

The root word “SAP”, “SEP” (Clauson), “SÖP”, and “SƏP” are all synonymous roots that only dialectically differ from each other. These roots typically appear in their original noun form and the “-mek/-mak” (suffixes of Turkish infinitive) verb form as “SÖPÜR”, “SEPER”, “SƏPİR”, “SÖPMEK”, “SAPMAK”, (Akalın, Sözce) “SAPAR” (Akalın), “SEPMEK” (Akalın), (and “SEPELEME” or “SEPELEMEK” (Akalın)). All of these words are synonymous as the common definition among them remains as “to deviate, to rotate, to displace, to turn, to stray, to sheer away, to swerve, to lapse, to swing, to sprinkle, to spill, moving from one place to another, to turn aside, lead away from”.

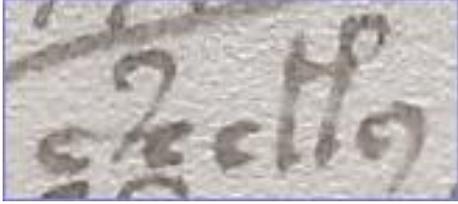
Sir Gerard Clauson explained the definition for “SAP-”, “SEP-”, “SAPAR”, and “SEPER” as “to thread, to sprinkle” (Clauson). In some of the Azerbaijani Turkic dialects the word “SEPER” is written and spoken as “SƏPİR”, “SƏPER”, and/or “SƏPƏR” and all have the same meaning.

Furthermore, there is also a compound (because it is made up of two roots SÖ+PÜ) word “SÖPÜ” (Sözce) which means “yassı, oval, uzunca” or “tabular, oval-like, elliptic, longish” in English. These definitions are also relevant as the author indicates additional substance to the word that he/she uses.

The suffix(es) “-AR”, “-ER”, “-İR”, “-R”, “-UR”, and “-ÜR” all indicate movement (makes the root a verb) and is the English equivalent of the suffix “-ING” and “TO” (Eyuboğlu, Guise, Aksoy).

“SÖPR” and/or “SÖPÜR” is translated as “to sprinkle”. However, if the word “SÖPÜ” is also accounted within the potential definition, the summative translation can also be defined as “sprinkling the oval-like/ tubular (seeds)”

First Line of Folio 33V Sunflower & Herbal – The Fifth Word



Direct Latin Equivalent: “ÇUÇCLU” (“ÇÜÇCLÜ”), “ÇOUKUCLU”, “ÇOUCLU”, “ÇOĞACLU”

Word possibilities after filtered through the Turkish vowel harmony rules: “ÇOKUÇLU”/ “ÇOKUCLU”, and/or “ÇOĞAÇLI”.

The root “ÇOUKUC-” means “multi-ended, multi-pointed”. In modern Turkish this compound word is written separately as “ÇOK UÇ”, as “ÇOK” (Akalm) (“[ÇOUK]” was used in Old Turkish, and still is used in Azerbaijani-Turkic dialects as “ÇOX” and “ÇOXLU” (Axundov)) means “many, multi”, and “UÇ” (“UC” was used in Old Turkish, and still is used in many Turkic dialects such as Azerbaijani (Axundov)) means “end, tip, point”. “UÇLU”, and “UCLU” means “tipped, pointed, edged”.

The root “ÇOĞAC” and “ÇOĞAÇ” (“çoğaç” in some Turkic-dialects.) both have the same phonetic value. “ÇOĞAÇ” is directly translated as “(The) Sun, daylight, sunbathing place, sunny place, hot place, sun-faced, or which faces toward the sun” (Aksoy, Sözcce).

The suffixes “-LI”, “-Lİ”, “-LU”, and “-LÜ” classify as containing condition in Turkish (place of, furnished with, originating from) rules (Guise). The suffix “-LU” gives the sense of being contained in something, or it can also give a sense of belonging somewhere (Aksoy). For example: “ÇOĞAÇ” means “the sun” (Sözcce) and “ÇOĞACLU” means, “from the sun, sunny or sunbathing place, furnished with the sun, sunny, originating from the sun”.

“ÇOUKUCLU”, “ÇOKUÇLU”, and “ÇOKUCLU”, are translated as “multi-ended”. “ÇOĞACLU” is translated as “sunny”.

First Line of Folio 33V Sunflower & Herbal – The Sixth Word

The first letter of this word appears unclear. The letter could be an “a”, “o” or “v”. Thus, all the possibilities are accounted for.



Fig. 19a The sixth word of the first line



Fig. 19b Multiple options for the first letter

Direct Latin Equivalent:

“ARAIIN” (“ARAĞN”, “ARAM”, as well as all dieresis and cedilla change variations)

“ORAIIN” (“ORAĞN”, “ORAM”, as well as all dieresis and cedilla changes variations)

“VRAIIN” (“VRAĞN”, “VRAM”, as well as all dieresis and cedilla changes variations)

Word possibilities after filtered through the Turkish vowel harmony rules: “ARAIIN”, “ARAM” and/or “EREIIN”; “ORAIIN”, “ÖREIIN”, and/or “ORAM”; “VRAIIN”, and/or “VEREĞN”

The root word is either “AR (ER)”, “OR (ÖR)”, or “VR (VAR, VER)”.

Roots	Applicable Definitions (Eyuboğlu, Clauson)
“AR”	development, growth , expansion, reproduction, taking action, moving
“ER”	(to): flourish, mature, evolve, grow, accomplish, thrive, reach
“OR”	(to):measure, compare, mow, cut, cut-out, carve, reap, (to) be in the middle, cooperate, (to) be a partner, forming, repair, patch, wooded, arbor, measurements, unity, research
“ÖR”	(to): develop, evolve, improve, cultivate, establish, organize, close, hide, resist, fall down, lean, like, collapse, connect, become, fill, warp
“VAR”	(to): attain, achieve, scale, progress, arrive, reach, improve, aim
“VER”	(to): produce, grow plant, give, multiply, go through, to grant, fertilize, grow

The suffix “-ĞN” (“-AĞN”/“-ĞİN”/“-GİN”) is the phonetic equivalent of “-AĞİN / -EĞİN” due to the Turkish vowel harmony rule, for when the last letter of a root is a consonant, a vowel may be placed as a conjunction between the root and the suffix. These suffixes indicate prospect attainability, potentially achieving something, to be able to potentially attain/reach something, and expecting forthcoming form of something (-able). Sir Gerard Clauson explained that suffixes “ĞİN”, and “GİN” as: [“-ğın/-gin function uncertain; e.g. *kev-* "to masticate" > *kevgin* "indigestible"; rare and unproductive and probably very old."].

The last letter of the word can also be read as “-M”. “-M, -AM, -EM” (Aksoy) are all first person indicator suffixes. (Guise, Clauson) Thus, the use of this is not applicable to this line (*Folio 33v-Sunflower-Herbal*, Line 1), as the subject is a plant/flower. However, the word “ORAM” can also mean “a type of grain/wheat”, and “ARAM” can also mean “opportunity, interval, intermittently” (Sözce).

“ARAĞN” (“ARAĞİN”) is translated as “the potential to grow, expandable, developable, and able to move”. EREĞN (EREĞİN) is translated as “the potential to flourish (flourish-able), grow (grow-able), evolve (evolve-able), mature (mature-able)”. ORAĞN (ORAĞİN) is translated as “harvestable, the potential to be cut (cut-able), mown (mow-able)”. ÖREĞN (ÖREĞİN) is translated as “improvable, expandable, developable, cultivatable”. VRAĞN (VARAĞİN) is translated as “the potential to achieve, progress, improve (improvable)”. VREĞN (VEREĞİN) is translated as “the potential to grow plants; givable, fertilizable”. In addition, the word “VREĞN” is the phonetic value equivalent of the modern day Turkish word “VEREN” which means “to give”.

First Line of Folio 33V Sunflower & Herbal – The Seventh Word

This character appears unclear. The character could be an “CZ”, “ÇZ”, or “C2 (2=Eki or Ek)”. Thus, all the possibilities are accounted for.



Fig. 20 The seventh word of the first line

Direct Latin Equivalent:

Ꝛ

“CZ”, “C2”

Ꝟ

“ÇZ”, “Ç2”

Word possibilities after filtered through the Turkish vowel harmony rules: “CIZ”, “ÇIZ”, “ÇİEK”, “ÇİEKİ”, “ÇİÇEK”, “ÇEZ”, “ÇÖZ”, “ÇİZ”, and/or “ÇÜZ”
One of the meanings of “ÇÖZ” (iç yağı, öz yağı, çöz yağı) is "fat/oil inside the

colon", "the oil inside the plant" in English (Aksoy).

The word "CZ" (or "CIZ") is directly translated as "burnt", (İç, can)"inner, live/life/lively, inner-life, internal-life, inside-life", and "a type of plant with sticky seeds" (Aksoy, Öztekin, Sözcü).

"C2" or "Ç2" ("ÇiEki" / "ÇiEk" / "ÇeEki" / "ÇeEk" / "ÇEki" (in Turkish, these words have similar phonetic value) is a dialectic equivalent of the modern day Turkish word "ÇİÇEK" which is translated as "flower" (Sözcü, Aksoy) and formed of two roots "Çiç" and "Ek". The word "çiç" (also used as "çeç" in some dialects) have two meanings; (1) head of the flower, (2) honey comb. The author referred to honey comb as the pattern where the sunflower seeds are grown. The second root word "Ek" is defined as the addition which implies the handle and stalk of the plant.

After filtering through the Turkish vowel harmony rule, the word "ÇZ" has four potential definitions. "ÇIZ" is equivalent to "CIZ" and is still defined as "burnt" and "a type of plant with sticky seeds". The other three potential words – that have meaning after filtered through the Turkish phonetic vowel harmony – are "ÇEZ", "ÇİZ", and "ÇÜZ". "ÇEZ" (Sözcü) is defined as "quickly, swiftly, quick, fast, rapid, snappy, restless, nimble, speedy, hasty, sharp, lively"; "ÇİZ" (Sözcü) is the dialectic equivalent of the modern day Turkish word "ÇEYİZ", and is defined as "a wedding gift for the bride"; "ÇÜZ" (Sözcü) is the dialectic equivalent of the modern day Turkish word "YÜZ", and is defined as "face".

"CZ"/ "ÇIZ" is translated as "burnt" and/or "a type of plant with sticky seeds". "C2"/ "Ç2" |(C/Ç) Ek or (C/Ç) Eki| is translated as "flower". "ÇZ", is equivalent to "CIZ" is defined as "lively", "a type of plant with sticky seeds", and/or "a wedding gift for the bride" and/or "face".

Translation of the First Line of *Folio 33v-Sunflower-Herbal*

The following is restating what happens if one was to keep all the potential translations in the first line of folio 33v.

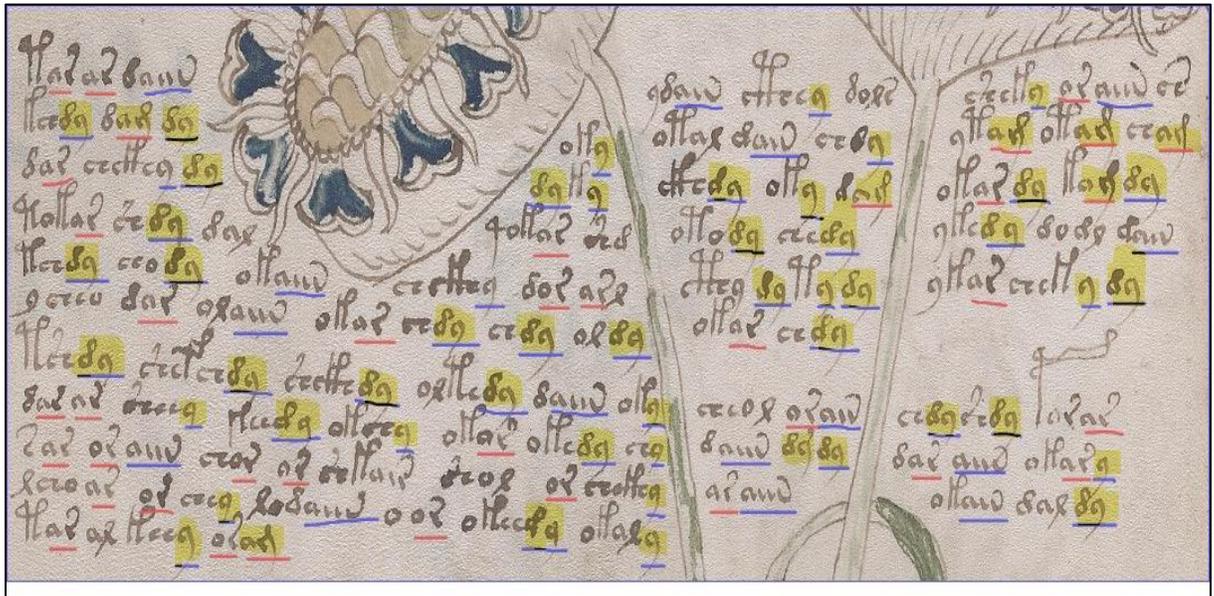
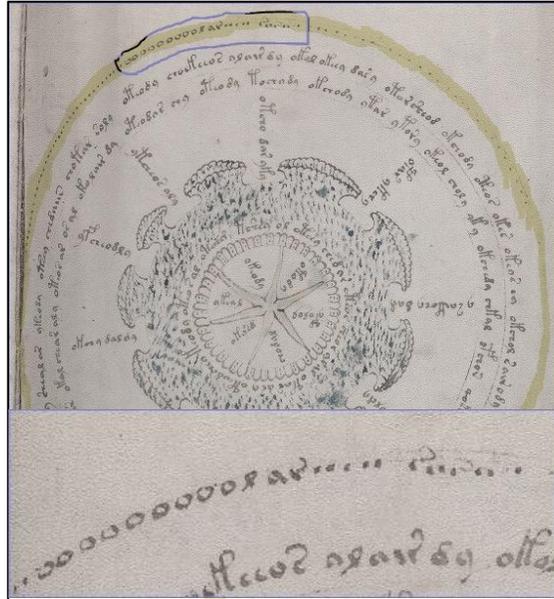


Modern Turkish	Yararsam üşengeç çiyitini serpen çoklu-çok uçlu-meyveli/ güneşe yönümlü orağın iri çiçek. (Yararsan üşengeç yassı, oval, uzunca/çoklu çiyitleri serpen, çok uçlu (birden çok dallı) tarımı yapılabilir/meyveli/verimli tohumları yapışkan tip bir bitki.)
English	This harvestable, beneficial sunny/moving flower (plant) with flat, oval, loose and sticky seeds are split and scattered. If I was to cleave it, many tabular, elliptic, longish, sticky and lazy seeds are separated and scattered.

(7) Rhyme Structure

In some parts of the manuscript, the author appears to use a musical / song-like vocalization by repeating and extending certain characters (as in "I LOVE YOU" instead of "I LOOOOVE YOU"). In these places, the writer may also

want the letter to be spoken in sustained vocal form. Furthermore, the poetical rhythmic structure of the VM, suggest that the author was conscious of the decision. This rhyme structure is demonstrated in figure 22b below. This figure demonstrates the rhyming syllables “AR, -AR / SU, -SU / -U / -AM / -AN”.

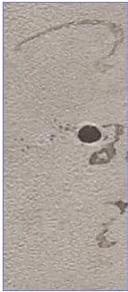


(8) Coded Section**Example: Folio 1r**

The coded pattern can be found if the text is read downwards and upwards for every first letter of each line, as well as it can be read downwards and upwards for every last letter of each line. We have observed the same coding pattern in all of the pages that we have analyzed so far. The example we provided (of Folio 1r) is only a brief contextual presentation of this in one page. If the first part of *Folio 1r* is read downwards, it states:



İKZ, IQIZ, İQİZ = *ikiz* (twin)



2 sz = 2 *söz* (two words, two promises)



ER, ERİ, ERÜ = *er, eri* (man, husband, soldier).

“SÖZ ERİ” is translated as “the person who is entrusted with keeping his/her promise”, “a man of his word”, “the person who can be trusted”.



3-ER, ÜÇ ER. Out of the meanings* that this has, we read this as “three men”, “by three” and-or “three of [something]”.



* #3. This word also has the following other definitions in Turkish, yet we only see the numerical value of #3 as being relevant to this portion. (“ÜÇÜNCÜ, ÜÇ, UYÇ, UYUC, YIL, YOL, YOLA”). We believe this was purposely slightly deformed when writing to not make the coding obvious.



OÇEK = OÇEKİ = ÖÇEK = OÇAK = OCAK

The word “OCAK” can be read as all of the above, and the word means “*eski ve soylu aile*” (old and noble family).

Thus, if *Folio 1r*'s first characters in a column were read in a downward manner, the sentence would say “ikiz iki söz eri üçer ocak”, which is translated as “two trustworthy twin men [, and] three noble families”.

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