

## Chapter 1

# The cipher gallery

*As a visual introduction to the world of codes, here is a collection of coding alphabets, from the Middle Ages to the twentieth century. They form a virtual gallery that is well worth a visit.*

## Code as an art form

Cipher alphabets are the layman's basic conception of codes and secret writing. Replace A, B, C with quaint symbols and step right into an exotic world of secrecy and mystery.

Indeed, from the Middle Ages to the twentieth century, many such cipher alphabets have been created. Some were designed for military or diplomatic purposes. Some were designed for the author's own use and to insure the privacy of their writings. Others had a merely illustrative purpose, to add depth to a story involving aliens or exotic people. Still others, more recently, are purposeful productions of artists intending to create new languages, or at least the external images of languages. This collection is a simple choice among a host of cipher alphabets that might have filled the whole book and then some.

Most of these alphabets are not secure. Being one to one correspondances of symbols with common letters, they are open to amateur code-breakers. The end of this chapter offers methods and hints on how to solve such codes.

In this gallery, each exhibit offers examples of a code that you are invited to solve in a personal tour of the quaint detours of the authors' minds. It will also make for a first and painless immersion in cipher coding.

## 'Alienese spoken here'

Language is such an important part of social life that authors creating and describing alien worlds are tempted to create the alien language as well. This began with the earliest known science fiction world, Thomas More's *Utopia*, and is still going on, for example, with our contemporary Star Trek Klingons.

Utopians and Klingons practice the simplest possible form of alienese. They actually speak English, but write it differently in their own exotic characters which confuses travellers. On the other hand, some entities such as J.R.R. Tolkien's creatures or Helen Smith's Martians and Uranians enjoy fully alien languages. Along with their alien type sets, they practice alien vocabularies with alien grammars.

This trend towards more elaborate imaginary languages seems to follow the development of the science of languages. Tolkien was a philologist and Helen Smith had met linguists and knew their works. Who knows? Are we now in for new fantasy languages taking full advantage of computer processing?

### Thomas More (1478-1535)

In 1516, Thomas More needed a setting to develop his ideas on democracy and religious tolerance. He created the imaginary island of Utopia, which he described in the book of the same name, exploring in great details the lives of the Utopians, their towns, magistrates, religions, etc.

Utopia became so famous that ever since it has been referred to by other authors as a model. In Rabelais' *Pantagruel*, Panurge speaks a strange language that Pantagruel recognizes as his own childhood Utopian...

To make his description of the Utopian civilisation sound real, More needed a specific language and an alphabet to write it in. He conceived the alphabet with his friend Peter Gilles, a humanist in Antwerp. They chose a logical series of geometrical symbols and here is a rendering of that font for use with modern English:

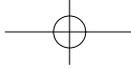


|   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ○ | ⊖ | ⊕ | ⊗ | ⊘ | ⊙ | ⊚ | ⊛ | ⊜ | ⊝ | ⊞ | ⊟ | △ |
| A | B | C | D | E | F | G | H | I | J | K | L | M |
| ⊠ | ⊡ | ⊢ | ⊣ | ⊤ | ⊥ | ⊦ | ⊧ | ⊨ | ⊩ | ⊪ | ⊫ | ⊬ |
| N | O | P | Q | R | S | T | U | V | W | X | Y | Z |

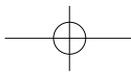
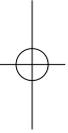
**Decode:** More's description of Utopian society:

⊠⊛⊗⊠⊗    ⊛⊥    ○    △○⊥⊠⊗⊠    ○⊠⊗    ○  
 △⊛⊥⊠⊗⊠⊗⊥⊥    ⊥⊗⊠    ⊠⊗⊗⊠    ⊗⊠⊗⊠⊗  
 ⊗○△⊛⊗⊠    ○⊠⊗    ⊠⊗⊗⊠    ⊠⊗⊛⊠⊠⊠  
 ⊗○△⊛⊗⊛⊗⊥⊥    ⊠⊗⊗⊠⊗    ⊛⊥    ○    △○⊚⊛⊥-  
 ⊠⊠○⊠⊗

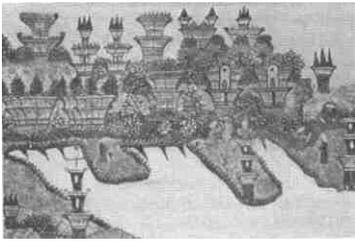




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### Helen Smith's alien languages



Toward the end of the nineteenth century, Catherine Elise Müller was a medium in Geneva under the pseudonym of Helen Smith. During numerous seances, she asserted she was communicating with inhabitants of the planets Mars and Uranus to the point that she spoke and wrote the Martian and Uranian languages. The most famous contemporary experts in language and psychiatry debated over her

case and analysed these languages.

Smith's production is impressive: a vast quantity of spoken, written and drawn material. During seances, the landscapes she described were so vivid in her mind that she could paint them. There is a picture of Martian landscape to the left. Her Martian language was very elaborate, with a vocabulary and a grammar so precise

|   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ſ | ʃ | ʒ | þ | c | ʒ | ç | ɔ | l | l | œ | ʃ | v |
| A | B | C | D | E | F | G | H | I | J | K | L | M |
| ʒ | & | / | ʒ | ʃ | ʒ | ç | ʃ | ʃ | ʃ | ʒ | l | ʒ |
| N | O | P | Q | R | S | T | U | V | W | X | Y | Z |

that she eventually produced letters sent to her alien friends and even fully developed novels. After careful analysis of her production, Professor Theodor Flournoy was able to show many similarities between Martian and French, a fact which seems hardly compatible given the distance between the civilisations. He deemed Smith a “glossolalic somnambulist”, meaning that she spoke and walked in her sleep. Other researchers also found traces of Sanskrit, Italian, German, Magyar and English, all languages that Helen Smith had been in contact with.

**Decode:** a description of Helen Smith by Theodore Flournoy  
 l ʒ&ʃ.ʒþ çɔc vçlʃ.v lʒ ʒʃ.cʒçl&ʒ  
 ç& ʃc ſ ʃcſʃ.çlʒʃʃ.ʃ ʃ.ævſʒ ſʃ&ʃ.ç  
 çɔlʃççl lçſʃʒ &ʒ ſcc çſʃʃ







ጠ ቶጻ ለጻ ካለብ ጠ ቶጻ በ > ዓዘ ቶቶ  
 በ > ካለብ ዩዘ >ዘ ጥጻዘ

**Decode:** Tolkien on life and death

ዩዘ ሃካ ገ ጸገ ገ ቶ ገ ዳዘ ዩዘ >ዘ ጥጻዘ  
 ዩዘዘ ገ ጸ በ ሃዩ > ለዩዘ ዩ ገዘ ገ ጸገ ገ  
 ዩዘ >ዘ ጥጻዘ ቶ ገ ዳዘ ሃበ ሃ ካለብ ዩ ገ ዳዘ  
 ገ ገ ገ ጸ ገ ጸዘ ዩ ገ ጸዘ ሃ ዩ ሃ ለገ  
 ገ ለ ለ ዘበ ሃዘ ገ ጸ ዩዘዘ ቶ ለ ገ ገ  
 ዩዘዘ ገ ጸ ገ ሃ ገ ጸዘ ሃበ ዩዘ ለጻ ጌ ቶ > -  
 ገ ገ ሃዘ ዳዘዘ ገ ገ ሃዩ ዳ ለ ገ ካለብ ገ ለ ዩ ሃ  
 > በ ዳዘ ገ ሃ ዘ ዳዘ ሃ ገ ጸዘ ዩ ገ ገ >ዘ ሃበ ሃ -  
 ሃ ለ ገ >ዘዘ በ ቶ ቶ ዘ ሃዩ >

**Decode:** Tolkien's "dragon" theorem.

ገ ገ ዩ ለዘ > ሃ ለ ገ ዩ ለ ገ ጸ ቶዘዘ ዳዘ በ  
 ቶ ገ ዳዘ ዩ ገ ጸ ሃ ለ ሃ ለ ገ ለጻ ካለብ ገ

ህን ቶሃ ተክ ገ ለሂጎ ሰፃ ህለታ ትሰጻዝ  
ሃዘን ጥ ሊገጽ

**Decode:** Tolkien on health.

በሃቸ ሰገ ሰጎ ሃለገ በክጠህጎ የለለቸ  
ገለ ዩዝ ሊዘን ትዘቸ ሰሃ ዩለቸህ ሃለጥ  
ሰጎ ሰገ በክጠህጎ ዘጻሰታ ገለ ዩሰዝ  
ሰሃ ዩበ ገገታዝ ዘጻዘሃ ሰሃ ዩሰገገዝጥ  
ዘሰ ሰሃ ዩዝጥዝ ሰ ዩዝጥገገገዝቸ ሰሃ  
ገሊሰጎ ዩበጥሃ ሊለታጥ ሰ ዩለታቸ  
ሃሊለላጎዝ ገሊዝ ክገገዝጥ

## Howard Phillips Lovecraft

Lovecraft's literary production is purposefully dishonest, misleading, cheating and deliciously deceiving. He creates imaginary worlds that stand way beyond the most fraudulent occultist's imagination, then refers to them in mock historical essays, boldly based on "persistent rumors".

Yet Lovecraft stands out as an extraordinary example of the power of symbolism in words. Indeed, Lovecraft's most important creation, more important even than his stories, is the one word: "Necronomicon". The book has never existed but such is the irresistible attraction of its title that fans could not help but make it exist, so that now you can actually find it in print. Lovecraft had mentioned that the Arab title of the hidden book was "Al Azif", as in "as if it never existed". Now it does.

Half a century after Lovecraft's death, the power of the word was revealed, in the blooming of role playing games where "Necronomicon" and "Cthulhu" were central references. In the meantime, both the prefix "necro", referring to death and death cults, and the suffix "nomicon" suggesting an occult book, have inspired code-words of the cyber-fantasy culture. Neal Stephenson's "Cryptonomicon" is a direct heir, and Gordon R. Dickson's "Necromancer" inspired William Gibson's "Neuromancer".

Why not decode Lovecraft's very name? He played with words and symbols often enough to suggest alphabetical scrying on his own name. One need not gaze long at the word to see "craft" and "love" stand out, an artist in love with his craft. Love-craft was involved in his own work to the point of disregarding outside reality and believing in the reality of his creation. Now Love-craft fans are assiduously extending his mythical creation. The cipher "Nug-soth" alphabet that appeared in an Avon edition of his books has added a well needed symbolic basis to his literary constructions.

|   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| V | J | U | L | > | 3 | o | C | < | o | L | 7 | n |
| A | B | C | D | E | F | G | H | I | J | K | L | M |
| A | ^ | J | H | 7 | 7 | L | > | > | 3 | C | < | 7 |
| N | O | P | Q | R | S | T | U | V | W | X | Y | Z |

**Decode:** The introduction to The Shadow Of Time describing the hero as a possible somnambulist

ԼԵ>Գ> <Դ Գ>ՎԴԱԲ ԵՆ ԵՆԿ> ԼԵՎԼ ՈՒ  
 >ԵԿ>Գ<>ԲՍ> ԾՎԴ ԾԵՆԴԴԵՆ ԸԳ ԿՎԴԴԴԵՆ ՎԲ  
 ԵՎԴԴ>Ս<ԲՎԼ<ՆԲ ԾՆԳ ԾԵ<ՍԵ <ԲԼ>>Լ  
 ՎԿ>ԲԼՎԲԼ ՍՎ>Դ>Դ >Ե<ԴԼ>Լ ՎԲԼ <>Լ  
 <ԵԴ Գ>ՎԴ<ԴՈ ԾՎԴ ԴՆ Ե<Լ>Ն>Դ ԼԵՎԼ <  
 ԴՆԿ>Լ<Կ>Դ Ծ<ԲԼ ԵՆԿ> <ԿՆՆԴԴԴ<ԿԴ>

**Decode:** Further details on the hero, confirming his somnambulist, and probably glossolalic state and confirming that he spoke an invented language.

ՎԼ ԼԵ> ԴՎԿ> Լ<Կ> ԼԵ>< ԲՆԼ<Ս>Լ ԼԵՎԼ  
 < ԵՎԼ ՎԲ <Բ>ԵԿԴ<ՍՎԿԴ> ՍՆԿԿՎԲԼ ՆԾ  
 ՈՎԲԵՆ ՎԴԿՆԴԼ >ԲԵԲՆԿԲ ԴՆԴԴԴ ՆԾ  
 ԼԲՆԿԴԴ>ԼՕ> Վ ՍՆԿԿՎԲԼ ԾԵ<ՍԵ <  
 Դ>>Կ>Լ ԵՆ ԾԵ<ԴԵ ԵՆ Ե<Լ> ԳՎԼԵ>Գ  
 ԼԵՎԲ Լ<ԴԿԴՎԵ



**Decode:** A description of the Old Ones in the mythical Necronomicon

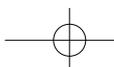
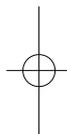
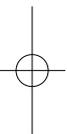
לכ> ארל אר>ר כ>ר> לכ> ארל אר>ר ור>

והל לכ> ארל אר>ר רעוהה נ> כהח לכ>

לוהל רלוהל לכ>ע טוה> >ר> הוה כוה

נאה >ה>>ה והל רלוהלרלח> לכ>ע

ל>רו>הל>ל לא נה<הוה >והל



## Star Trek's Klingon

TV series taking place on other planets or even other galaxies need specific languages whenever a message is shown or a sign displayed on a wall.

A typical example is Klingon, spoken and written by the Klingon people in the Star Trek series. As the story goes, the graphics of the alphabet were made up on the spot, while building the stage in the Paramount studios. Later, Klingon was developed into a true language by Dr Marc Okrand. A professional linguist, he produced a vocabulary, a grammar and vocalic sounds. To enhance the language's alien origin, Okrand made up specific sound combinations that do not belong to any known terrestrial language (cf the site *Omniglot, a Guide to Written Language*).

Although Klingon letters correspond very imperfectly to our letters, to experiment with the look and feel of the language, here is the Klinzhai form of Klingon, provided by the Yamada Language Center of the University of Oregon:

|   |   |   |   |   |   |   |   |   |  |   |   |   |
|---|---|---|---|---|---|---|---|---|--|---|---|---|
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| A   | B   | C   | D   | E   | F   | G   | H   | I   | J  | K   | L   | M   |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| N   | O   | P   | Q   | R   | S   | T   | U   | V   | W  | X   | Y   | Z   |

**Decode:** .Klingon adage #1.

᠋᠋᠋᠋ ᠋᠋᠋᠋ ᠋᠋᠋᠋ ᠋᠋᠋᠋ ᠋᠋᠋᠋ ᠋᠋᠋᠋ ᠋᠋᠋᠋ ᠋᠋᠋᠋ ᠋᠋᠋᠋ ᠋᠋᠋᠋ ᠋᠋᠋᠋ ᠋᠋᠋᠋ ᠋᠋᠋᠋  
 ᠋᠋᠋᠋ ᠋᠋᠋᠋ ᠋᠋᠋᠋ ᠋᠋᠋᠋ ᠋᠋᠋᠋ ᠋᠋᠋᠋ ᠋᠋᠋᠋ ᠋᠋᠋᠋ ᠋᠋᠋᠋ ᠋᠋᠋᠋ ᠋᠋᠋᠋ ᠋᠋᠋᠋ ᠋᠋᠋᠋

**Decode:** .Klingon adage #2.

᠋᠋ ᠋᠋᠋᠋᠋᠋ ᠋᠋᠋᠋ ᠋᠋᠋᠋ ᠋᠋᠋᠋᠋᠋᠋ ᠋᠋᠋ ᠋᠋᠋᠋᠋᠋᠋  
 ᠋᠋᠋ ᠋᠋᠋᠋ ᠋᠋᠋᠋᠋ ᠋᠋᠋᠋ ᠋᠋᠋᠋᠋᠋᠋ ᠋᠋᠋ ᠋᠋᠋᠋᠋᠋ ᠋᠋᠋᠋ ᠋᠋᠋᠋᠋᠋  
 ᠋᠋᠋᠋᠋᠋



## Edgar Alen Poe

Every reader of Poe's *Gdd-Bug* remembers Captain Kidd's message written on a piece of parchment. Will you be as good as Legrand in deciphering it and go straight to the buried treasure?

Note that Kidd, although a pirate in the South seas, used only symbols a typesetter could easily find in a printshop.

Here, to make it more challenging, the cipher alphabet is displayed only with the solutions.

**Decode:** the message on the parchment

5 3++! 305)) 6\* ;48 26)4+.) 4+);80 6\* ;48  
 !8'60) )85;;]8\*::+\*8 !83(88) 5\*! ;46(;88\*  
 96\*?;8)\*+(;485); 5\*! 2: \*+(;4  
 956\* 2(5\*-4 )8'8\*;4 0692 85); )6!8  
 )4++; 1(+9 ;48 081; 8:8 +1 ;48 !85;4)485!  
 5 28806\*8 1(+9 ;48 ;(88 ;4(+?34 ;48 )4+;  
 161;: 188; +?;

**Decode:** Poe's famous quote on enigmas and human ingenuity

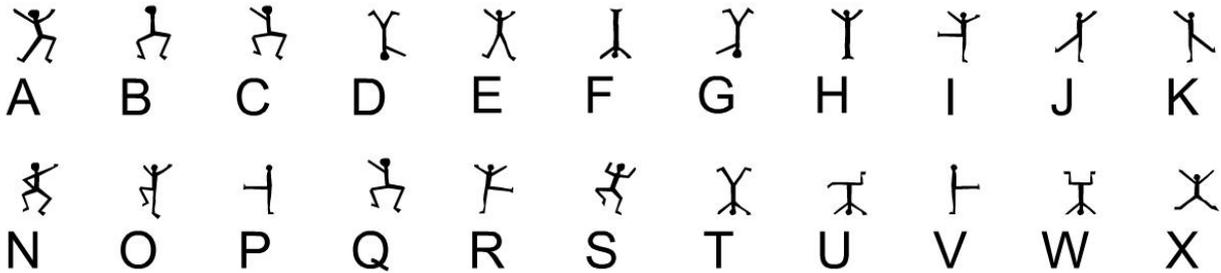
6; 95: ]800 28 !+?2;8! ]48;48( 4?95\*  
 6\*38\*?6;: -5\* -\*);(?-; 5\* 8\*6395 +1 ;48  
 =6\*! ]46-4 4?95\* 6\*38\*?6;: 95: \*+; 2:  
 .(+.8( 5..06-5;6+\* (8)+0'8



SPZl CEJMSW bGerth aNjmx sevThLa YaktXDIx  
 w8 JcJ K oFQA nDOTY rcr Otr dTBGP  
 SEB dNBLo Lph nlna at8i diky WLo cEpmixh  
 saJZ eif kMk xyKSG HlitvW qBP bLTc dYj rVv  
 Udicame nk VFHΛ lDah XWXTIax Ye vI adFuW  
 XQCKUΛwεε 8s b AGoIΛ umey rrc GIOQg  
 NBLEmMq nk LcoR SΛIvTsl NZQ agtju λucf  
 RZuK CtL W X JdMNUQX GDHΛBRI  
 bzNL Lbtjh fW eeToYdI lIA VIKQMFtv  
 vΛhQp dnb nNgI w nIvUεtm cW jgn vhd PlQhEVA  
 kySXtεv 8s ΛmΛ lQIgmXR w nUikU  
 AGGb MjG vRnwαQ cmI rz xhQEI SWct  
 CFo iJ oJf IqSLBDI oalj ky cI cF  
 Ixlv stu cEprεg v Λda K vPnl εPajcQ Wlpb  
 KJ emy iΛ G

### Conan Doyle's dancing men

In his *Adventure of the Dancing Men*, Sir Arthur Conan Doyle displayed more creativity than Poe in his Gold-bug story. Instead of simply moving around the symbols of a conventional font around, he coded letters with original drawings of “dancing men” that have fascinated his readers ever since the story was first printed in *Strand Magazine*, December 1903.



Conan Doyle added a detail to his code that makes it more interesting but unfortunately less secure. Contrary to the usual typographic logic where uppercase letters begin sentences or words, here the end man-letter of each word bears a flag. In the authors's mind, this probably corresponds to Poe's cipher, where the gap between two words is signaled by the two letters being closer together than usual.

Sherlock Holmes solves the puzzle much like Legrand in the *Gold-bug* using the e-back-door and letter statistics (see page xxx) plus the clues he could gather on the case. Then, when he possesses the key, he sends his own coded message to the criminal and traps him.

**Decode:** Sherlock Holmes' homage to his colleague Legrand, where he states in his own words Poe's famous comment on ciphers and riddles.

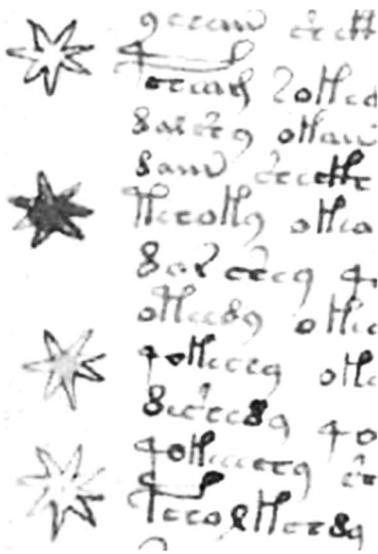




## The Voynich Ms exhibit

An outstanding yet unknown artist, probably in the sixteenth century, produced a challenging work of art. His hundred page manuscript displays coloured pictures and texts written in a cipher alphabet. The symbols are quite different from any known alphabet yet seem deceptively close to what could be one.

The manuscript, now kept in the Beinecke Rare Book Library of Yale University, was found in 1912 by Wilfrid M. Voynich, a book dealer, hence its name. This present short treatment will not do justice to the vast number of researchers who have spent time on it. W.M. Voynich himself researched the background of the manuscript for nine years before presenting it to the world.



Did the artist create his own "voynichese" language, or did he simply encipher a Latin or Middle English text in his own alphabet? He obviously spent considerable time training his hand to form the script of his alien alphabet for the writing is entirely consistent and without the least trace of hesitation from the first page to the last.

The smooth continuity of the writing thus apparently refutes the currently accepted theory. Gordon Rugg, a British researcher, showed in 2003 that Voynichese words were consistent with a systematic method of creation. He used a stencil made of holes cut in a piece of card which he then moved over a grid of syllables, reading words in the spaces. His words being similar to those of the Voynich, he infers that the document is a hoax. He

goes on to attribute it to Edward Kelly, the Elisabethan occultist known to have used such methods.

Could not this line of reasoning however yield several different conclusions? Had the artist used such an elaborate method for each word, would he have been able to produce such a fluent handwriting? Or does Gordon Rugg indeed prove that Voynichese is actually a structured language, where words do indeed follow patterns instead of being just random gibberish?

And why insist on calling a masterpiece that is so clearly a work of art a "hoax"? Is this the revenge of frustrated code-breakers?

One other detail adds to the interest of the manuscript. In the text-only pages,

each paragraph is marked with a pointed star bullet in the margin. The vast majority of these stars are seven pointed. Why this star, which is seldom used anywhere else? Kabbalists and alchemists use it as a reference to the seven planets. Yet the artist drew it several hundred times. Like the pentagram, it can be drawn in a continuous line but the artist chose not to. Was this on purpose or was it simply a lack of enough mathematical culture?

The star alone suggests that the manuscript may hide content in yet another direction: that of the symbolic world, and also leads us back to Renaissance England, although on firmer ground. The first magical system described by John Dee and Edward Kelley as brought by the angels is the *Heptardia Mystica*, or the “Sevenfold Mystical Doctrine”. Furthermore it involves forty-nine angels, the square of seven.



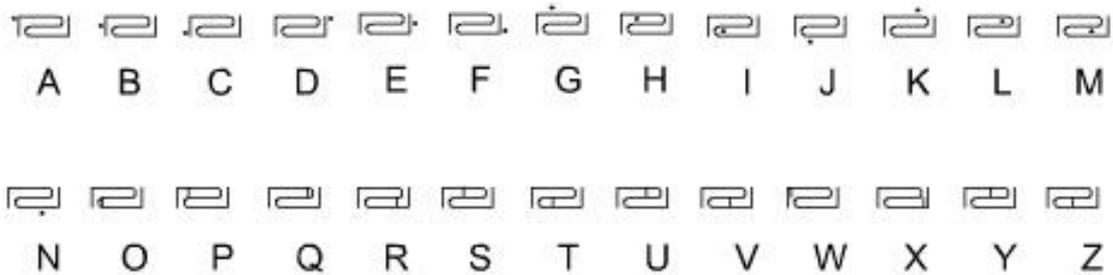
The “voynich” font used below was recreated by Gabriel Landini and called EVA 1: European Voynich Alphabet. Of course the order of the symbols has nothing to do with our Latin letters and they have no reason to correspond but we’ll use them for a quick immersion in Voynichese.

|   |   |   |   |   |   |    |   |   |   |    |   |    |
|---|---|---|---|---|---|----|---|---|---|----|---|----|
| a | ∂ | ⌒ | δ | ⋈ | ⚡ | g  | z | ∩ | 8 | ll | x | h  |
| a | B | C | D | E | F | G  | H | I | J | K  | L | M  |
| ∂ | o | ⚡ | 4 | ∩ | ∩ | ll | ∂ | ^ | ^ | x  | 9 | ll |
| N | O | P | Q | R | S | T  | U | V | W | X  | Y | Z  |

**Decode :** An appropriate quote: William Blake on imagination.

τ ll∂oλ οϕ ∂o οllzε∂ ετ∂ι∂llα∂ιllg α∂δ οϕ ∂o  
 οllzε∂ gο∂ϕεx llzα∂ llzε xι∂ε∂llg ∂οllz οϕ ∂οδg  
 α∂δ hι∂δ llο εxε∂ε∂ε llzε διιι∂ε α∂ll∂ οϕ  
 τhαgι∂αllιο∂: τhαgι∂αllιο∂ llzε ∂εαx α∂δ εllε∂-  
 ∂αx λο∂xδ, οϕ λzιετ llzι∂ λεgεllα∂xε ∂ιιιε∂∂ε  
 ι∂ ∂ωll a ϕαι∂ll ∂zαδoλ

### Johann Joachim Becher's lingua universalis



In 1661 Johannes Becher designed a unique way of drawing an alphabet. By adding segments and dots to a basic spiral at specific points inside and around the S, he came up with a rich system that can be used in two different manners.

The first is traditional: letters are drawn in a row to form words. For example LANGUAGE is:

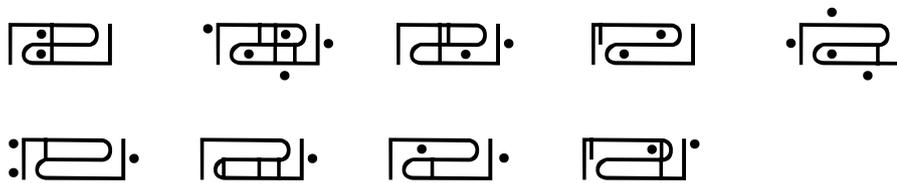


A second manner, less traditional and more interesting, consists in cumulating points and segments on the same basic S. This is possible because all the meaningful points and segments are in different places around the S. This allows the representation of all the letters of a word within a single symbol. For exam-

ple, the cumulation of the four letters of the word THIS would be as follows:

This cumulative method has one downside: it does not preserve the order of the letters within the word which precludes any real use as an efficient communication tool. On the contrary, it makes the cipher all the more challenging. Each word is an anagram whose letters need to be set in the right order.

**Decode:** a sentence coded with the cumulative method



Of course, this entertaining use of his alphabet contradicts Becher's purpose. He designed the alphabet in 1661 as a basis for a universal language easily written, spoken and understood by all peoples of the world. One of the many planned universal languages created in the past four centuries, Becher's "Universal Language" stands out thanks to his peculiar logical alphabet.

All these universal languages are a common effort to get humanity return to the golden age described in Genesis where all people spoke the same language. As the fable goes, that wonderful state was destroyed when the top of the building in the Tower of Babel project rose dangerously close to heaven.

Overcoming this biblical curse has been the goal of many other language creators since Becher. All have failed, including Esperanto, the most notable project, but the hope of meeting the challenge is still strong, especially with the help of computers that might produce automatic translations of any language into any other.

Yet today, while many researchers are working at programming this universal communication system, other researchers are designing more and more efficient ciphers in the hope of insuring absolute un-readability. (see chapter XXXX)

**Decode:** Genesis 11.

·⌒ ⌒· ⌒·            ⌒ ⌒· ⌒·  
 ⌒ ⌒· ⌒·  
 ⌒· ·⌒ ⌒ ⌒ ⌒·  
 ⌒ ·⌒ ⌒            ⌒ ⌒· ⌒·  
 ⌒· ⌒· ⌒            ·⌒ ⌒· ⌒·  
 ⌒ ⌒· ⌒· ⌒ ⌒·  
 ⌒ ·⌒ ⌒            ⌒ ⌒· ⌒·  
 ⌒· ·⌒ ⌒· -  
 ⌒· ⌒ ·⌒ ⌒· ⌒·

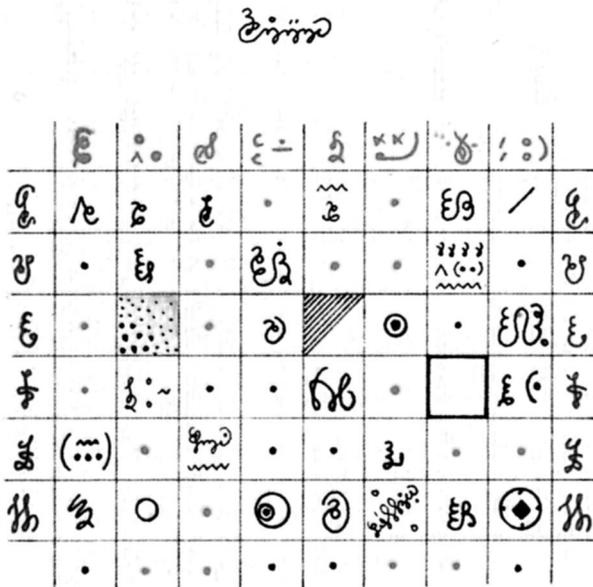




### Serefini's Codex Seraphinianus

In 1981 Luigi Serafini, a Milanese architect and designer, published an extraordinary Voynich-like book: **The Codex Seraphinianus**. The rare and expensive object is also a set of drawings and texts written in a cipher alphabet.

Only the numerals numbering the pages have been decoded so far: they are a



set of symbols arithmetically based on 21. To date no code-breaker has succeeded in reading even one sentence, and the author, who is still alive, is no help at all: he won't comment on his master piece. Readable or not, the book is worth its high price. The drawings are of such a wonderful quality and inventiveness that the reader cannot be disappointed.

Of course Luigi Serafini is no innocent. When he chose to live as a hermit for two years in a small apartment in Rome to create his Magnum Opus, the Voynich manuscript had already

been discovered fifty years before, with copies circulating all around the world. His pages of parody and graphic humour should not fool the reader. The Voynich also displays humour and sex, such as naked ladies bathing in a vagina-shaped pond. The Codex Seraphinius is clearly an alchemist's achievement: both a work of art and *une oeuvre-au-noir*. Twentieth century alchemists know too much about Chemistry and Physics to keep making gold with lead or quick silver. Art is their last resort.

Luigi Serafini goes even further, drawing on a fortuitous resource he could not ignore. His own family name gives him a golden opportunity to literally involve himself in his grand work, as intimately as the paint on the canvas. In Italian "serafini" are the seraphs, the twelve upper rank angels guarding the seat

of God in the Bible. His choice of “Codex Serephinianus” as a title places him and his work in the continuous tradition of John Dee and Edward Kelley’s cre-



ation of Enochian to speak with the angels.

At this level of symbolism, words such as “prank” or “hoax” have no meaning.

The Codex letters are different from all other alphabets in at least one detail. They seem to be made of rope or thread, rather than of mere lines; most of them display loops and some of them actual knots. In his script, Serafini is a kneedleworker or a sailor while Palanc is a confectioner.

*[...pending an actual study of the book in the coming weeks, with perhaps another paragraph]*

## Stephano Benni

Stefano Benni chooses an entirely different standpoint from Luigi Serafini and the Voynich manuscript. He creates a cipher alphabet, gives away its meaning and proceeds to create a world without actually ever using the alphabet. The alphabet is featured as yet another bizarre piece of wonder, among the many curios of an alien land.

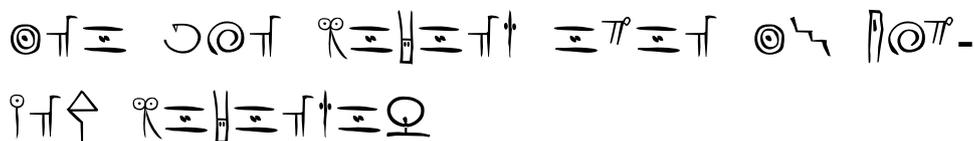
|   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| A   | B   | C   | D   | E   | F   | G   | H   | I   | J   | K   | L   | M   |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| N   | O   | P   | Q   | R   | S   | T   | U   | V   | W   | X   | Y   | Z   |

|   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |  |  |  |
| 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 0   |

In 1984 Stefano Benni devised the “Oswaldish” alphabet to illustrate the creation of his mythic and outlandish world “Stranalandia”. Like the Voynich and the Serafini manuscripts, his book features text as well as a wild world of landscapes and creatures drawn by Pirro Cuniberti.

Benni’s font displays two different styles for letters and for numerals. Obviously, his letters are serious while the figures are deliberate fun. His 26 letters look at you with seldom more than one eye, or none at all. Their sober lines are imaginative, with a life of their own. They let you know they are watching you but will not intrude in your life. They could be scribbled on your wall by your friendly neighbourhood graffiti artist.

**Decode :** .Benni’s paradoxical remark on repentance.





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On the contrary, Benni's numerals are meant to play with. Their cartoon-like characters are ridiculously cumbersome. They look at you with two mocking eyes. With two feet solidly planted on the ground, they intend to be your jocular angels. They won't lift a finger to help you: they have none. In your most serious computing works, they'll stand in the way, to remind you that humour should be ever present, even on the most solemn occasions such as mathematics or book-keeping.

**Decode :** What is the result of this simple addition, written with Benni's set of mocking figures?

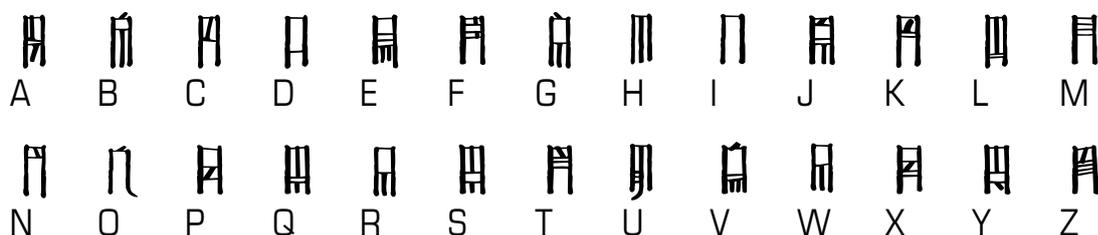
$$\begin{array}{r}
 \begin{array}{c} \text{Figure 1} \\ \text{Figure 2} \\ \text{Figure 3} \end{array} \\
 + \\
 \begin{array}{c} \text{Figure 4} \\ \text{Figure 5} \\ \text{Figure 6} \end{array} \\
 + \\
 \begin{array}{c} \text{Figure 7} \\ \text{Figure 8} \\ \text{Figure 9} \end{array} \\
 \hline
 =
 \end{array}$$

**Decode :** What is the result of this simple multiplication, written with the same set of figures?

$$\begin{array}{r}
 \begin{array}{c} \text{Figure 10} \\ \text{Figure 11} \\ \text{Figure 12} \\ \text{Figure 13} \\ \text{Figure 14} \\ \text{Figure 15} \\ \text{Figure 16} \\ \text{Figure 17} \\ \text{Figure 18} \end{array} \\
 \hline
 \times \\
 \begin{array}{c} \text{Figure 19} \end{array} \\
 \hline
 =
 \end{array}$$

## Bruno Munari (1907-1998)

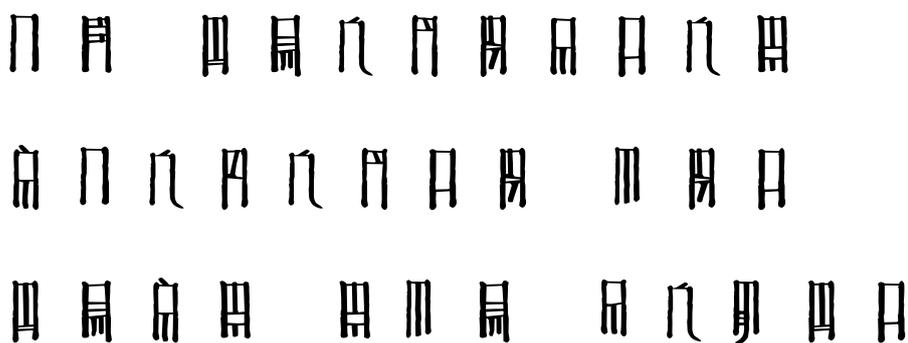
Bruno Munari is a typical artist working on cipher alphabets as well as esthetic codes. His 1935 alphabet looks like a series of abstract symbols revised by the Bauhaus to make them even stricter and more stern.



Yet, Bruno Munari does include humor in his philosophy. He developed his concern with esthetic code in a book of poems entitled “Art Theorems”. The book is based on the so-called “Munari Principle”: “lucidity, leanness, exactitude and humor”. He came up with this alphabet without any intention of its being easily readable or even readable at all. He used it, rather, to produce “illegible texts” in a period when he was also working on a “useless machine”. He insisted that “the biggest hindrance to understanding a work of art is wanting to understand”. Indeed, his alphabet is a great tool for preventing hasty understanding.

Let’s now experience Bruno Munari’s austere alphabet through a set of his provocative proverbs and sayings.

### **Decode:** Munari on Da Vinci's Gioconda





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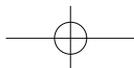
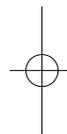
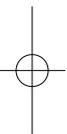
四 鳥 陽 鳥 鳥 陽 鳥 陽 陽 陽  
 鳥 鳥 陽 鳥 鳥 鳥 陽 鳥  
 鳥 鳥 陽 鳥 鳥 鳥 鳥

**Decode:** Munari on life.

陽 陽 陽 鳥 四 鳥 陽 鳥 陽 鳥  
 鳥 鳥 鳥 鳥 鳥 鳥 鳥 鳥 陽 鳥 陽  
 鳥 陽 鳥 鳥

**Decode:** A very zen principle

鳥 鳥 鳥 鳥 陽 鳥 鳥 鳥 鳥 鳥 -  
 鳥 鳥 鳥 鳥 鳥 鳥 鳥 鳥 鳥 鳥



**Decode:** Munari on symbols and meaning

四 鳥 丹 卯 四 丹 四 四 丹 九 卯 四 鳥  
 四 四 丹 九 四 四 四 四 四 四 四 四 四  
 四 九 四 四 四 四 四 四 四 九 四 丹 四 四  
 四 九 四 四 四 四 四 四 四 四 四 四 四  
 丹 九 四 鳥 四 四 四 四 九 四 四  
 丹 鳥 四 四 四 四 四 四 四 四 四 四 四 四  
 四 九 四 丹 鳥 四 四 四 四 四 四 四 四  
 四 四 四 九 四 四 四 四 四 四 四 四 四  
 四 四 四 四 四 四 四 四 四 四 四 四  
 四 四 四 四 四 四 四 四 四 四 四 四

## Angelic “Mysticeses”

Heavenly creatures cannot be expected to speak our mundane languages. Whether demons, angels or higher beings, they inspired the mystics who dealt with them to use specific symbols, alphabets and even vocabularies. And this mystics were no ordinary artists or imaginary travellers. Devoted seekers of higher knowledge, they stood on the uncertain territories between religion, occultism and science. Many times, their use of arcane symbols and talk made them dangerously questionable, and yet they dared to go on and those symbols are our best initial access to their worlds.

### Hildegard’s coded faith

Hildegard von Bingen is a pioneer. Among her many creations in music, literature and art (see chapter XXX), there is also a language. Her *Lingua Ignota* (Unknown Language) is sometimes described as the oldest known artificial language but it cannot be compared with complete artificial languages such as Esperanto or Volapuk. Having only a thousand words, it is more a code book. Lacking a real grammar to make it a workable language, its words could be used only to replace normal words in sentences of ordinary speech.

|   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ſ | Ɔ | 7 | U | ſ | Ɔ | 2 | ſ | x | x | 2 | U | ſ |
| A | B | C | D | E | F | G | H | I | J | K | L | M |
| ſ | ſ | ſ | ſ | ſ | ſ | ſ | ſ | ſ | ſ | ſ | ſ | ſ |
| N | O | P | Q | R | S | T | U | V | W | X | Y | Z |

Hildegard insisted that she had not invented her *Lingua Ignota*. The language was directly revealed to her. Like her visions, it came in her mind directly from Above. (see chapter XXX). Apparently she used it to communicate with the divine source of her visions as well as to convey her visions and mystical knowledge to others. The language contains only nouns and adjectives. It refers to diverse topics, not necessarily all mystical: religion, crafts, illness, anatomy, social hierarchy, clothing, agriculture, animals, etc.

The real use of the *Lingua Ignota* is a mystery. We have no record of Hildegard teaching it to others or encouraging them to practice it. Was it spoken by a secret society around her of which we have no record? Were there initiates exchanging her secret words in a mystical brotherhood? Hildegard had enough

science and enough charisma to be a 12th century Pythagoras, but if that actually was the case, we have no record of it. We have a touching letter to Hildegard from her Benedictine friend and secretary, Volmarus, when she is about to die, expressing her regret at the disappearance of her “unheard music” and her “unheard language”: “ubi tunc vox inauditae melodiae? et vox inauditae lingua?”

**Decode:** This is what a sentence of Hildegard's would look like when coded in her alphabet

xT 7J%9 rS qJ33 rTJr rTJ JJJU993  
 UJJ S9999U J9U J 6lx9Ux92 lx2Jr ST  
 Jv7JqTxS9Jb 6Jx6lxJ97J 6bS99U  
 rTJ S92J %v J9TxJJ 6J Jx9

From a mystical point of view, Hildegard had nothing to hide. On the contrary, she had everything to reveal. She may have developed the new language and the strange letters with which to write it out of a need to distinguish mystical from worldly speech. Out of respect for them, certain words seem to be replaced by their *Lingua Ignota* equivalents to stress their mystical importance. It worked as a graphic extension to normal written language. Hildegard had produced a new art of illumination applied to language the better to underline certain words while speaking or writing.

If the language was designed as a tool of illumination, the meaning of the expression “unknown language” is easier to understand. It might mean “language to reveal the unknown”. Hildegard’s vocabulary is meant here to reveal the real meaning of key mystical words behind their common, worldly appearance. Mystical meaning is often hidden by the ordinariness of mundane language. When illuminated by the *Lingua Ignota*, its meaning is mystically revealed to us.

To appreciate the flavor of Hildegard’s language, a few of her more important words are listed below in her own handwriting along with translations into Latin and English.

If we apply Hildegard’s *Lingua Ignota*, to the sentence “The son of God, our savior, helps us against the devil” as an illumination tool it will look like this :



of her life. After her main visions when she was 42, she became a moral and mystical center of reference. Princes, bishops and popes sought her advice. Besides her important production in music and literature, she sent a vast number of letters to all countries. She was an indefatigable fighter against the moral corruption of the church.

Like Pythagoras, Hildegard stressed the importance of music. Composing and singing brought yet another dimension to her mystical world, another code to reach beyond conventional speech. She wrote Gregorian style music in neumes on a four line staff, with melodies that extended over two and a half octaves. Her leaps and roulades demand great concentration on the part of singers. As Dr. Nancy Fierro remarks, a specific code signs most of Hildegard's chants: "a melodic leap of a fifth followed by a leap of a fourth upwards"(1).

## 59 O virtus Sapientiae

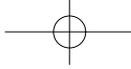
Ant.

The image shows a musical score for an antiphone. It consists of two staves of music written in neumes on a four-line staff. The lyrics are written below the notes. The first staff begins with a large initial 'O' followed by the lyrics 'vir-tus\* Sa-pi-'. The second staff continues with 'en-ti -æ, quæ cir-cu-i-ens cir-'. The music features a melodic leap of a fifth followed by a leap of a fourth upwards, as mentioned in the text.

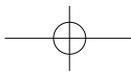
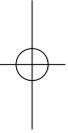
(1) DR. NANCY FIERRO, CSJ MOUNT ST. MARY'S COLLEGE, LOS ANGELES, CALIFORNIA USA  
<http://www.staff.uni-mainz.de/horst/hildegard/music/music.html>

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|             |            |                      |             |
|-------------|------------|----------------------|-------------|
| Aigonz      | deus       | <i>god</i>           | JXZSQA      |
| AieganZ     | angelus    | <i>angel</i>         | JXPZJQA     |
| Zuuenz      | sanctus    | <i>saint</i>         | AAQA        |
| Liuionz     | salvator   | <i>savior</i>        | UXAXQA      |
| Diueliz     | diabolus   | <i>devil</i>         | UXAPUXA     |
| Ispariz     | spiritus   | <i>spirit</i>        | XZQRJXA     |
| Nimois      | homo       | <i>man</i>           | QXQSAZ      |
| Jur         | vir        | <i>hero</i>          | XAJ         |
| Vanix       | femina     | <i>woman</i>         | AQA         |
| Peuearrez   | patriarcha | <i>patriarch</i>     | QAQAJJJA    |
| Korzinthio  | propheta   | <i>prophet</i>       | ZSJAQPTXAS  |
| Falschin    | vates      | <i>poet</i>          | CTUATXQ     |
| Sonziz      | apostolus  | <i>apostol</i>       | ASQAQA      |
| Linschiol   | martir     | <i>martyr</i>        | UXQATXSL    |
| Zanziuer    | confessor  | <i>confessor</i>     | AQAQAQA     |
| Vrizoil     | virgo      | <i>virgin</i>        | AJXASL      |
| Jugiza      | vidua      | <i>widow</i>         | XAZXAJ      |
| Pangizo     | penitens   | <i>penitant</i>      | QAQZXAAS    |
| Kulzphazur  | attavus    | <i>father</i>        | ZAAQAQTJAAJ |
| Phazur      | avus       | <i>ancestor</i>      | QAJAAJ      |
| Peueriz     | pater      | <i>father</i>        | QAQAJA      |
| Maiz        | maler      | <i>mother</i>        | QJXA        |
| Hilzpeueriz | nutricus   | <i>food</i>          | JXUAQAQAJA  |
| Nilzmaiz    | noverca    | <i>malevolent</i>    | QXUAQJXA    |
| Scirizin    | filius     | <i>son</i>           | ATXJXAXQ    |
| Hilzscifriz | privignus  | <i>step-daughter</i> | JXUAATXCTJA |
| Limzkil     | infans     | <i>baby</i>          | UXQAZXL     |
| Zains       | puer       | <i>child</i>         | AJXQZ       |
| Zunzial     | iuvenis    | <i>young</i>         | AAQAJA      |



The cipher gallery - **47**



## Doctor Mirabilis' ciphers

Roger Bacon's nickname was Doctor Mirabilis. He currently enjoys a fame he never anticipated in his 13th century Franciscan monastery, one that he probably does not deserve. In the present interest - not to say craze - surrounding ancient manuscripts, the mysterious Voynich document has become a household word. For want of a definite author, Roger Bacon is among the candidates nominated.

Is it true that Bacon was an outspoken advocate of secret writing and cryptography. His quotes promoting cipher are numerous. "A man is mad who writes a secret in any other way than one which will conceal it from the vulgar." Or : "It is reputed a great folly to give an ass lettuce, when thistles will serve his turn; and he impaireth the majesty of things who divulgeth mysteries."

Bacon proposed several schemes with which to hide the real meaning of a text:

- "Some have used characters and verses and diverse others riddles and figurative speeches."
- "And an infinite number of things are found in many books and sciences obscured with such dark speeches, that no man can understand them without a teacher"
- "Thirdly, some have hidden their secrets by their modes of writing; as, namely, by using consonants only: so that no man can read them, unless he knows the signification of the words:--and this was usual among the Jews, Chaldaeans, Syrians, and Arabians, yea, and the Grecians too: and therefore, there is a great concealing with them, but especially with the Jews"
- "Fourthly, things are obscured by the admixture of letters of divers kinds; and thus hath Ethicus the Astronomer concealed his wisdom, writing the same with Hebrew, Greek and Latin letters, all in a row"
- "Fifthly, they hide their secrets, writing them with other letters than are used in their country"

**Decode:** Decode this application of Roger Bacon's first method. It hides his most famous quote, still an important principle today.

A long life sits certainly in earnest. No classic eagle requires each quest under irate rats. Every science moves and touches him else my art tires in cold souls.

**Decode:** Test Bacon's method of removing the vowels. How difficult is it to get back to the original text?

t s rptd grt fl t gv n ss ltcc, whn thstls wll srv hs trn; nd h mpairth th mjst f  
things wh dvlgth mstrs

In the fifth method, Bacon suggests using exotic letters. This is the clue that must have encouraged Voynich fanatics to credit him with that mysterious manuscript. It disregards however the probable fifteenth century date of the manuscript; which makes John Dee a more likely candidate.

**Decode:** Bacon's fifth method is applied to his own writing, using the Greek alphabet, each Roman letter replaced with its Greek equivalent.

It is ρεπυτεδ α γραεα φολλψ το γιπε αν ασσ λεττυχε, ωην τησ-  
τλεσ ωιλλ σερωε ηισ τυρν; ανδ ηε μπαιρετη τηε μαφεστψ οφ τηινγσ  
ωηο διπυλγετη μψστεριεσ. Ανδ τηεψ αρε νο λογγερ το βε τερμεδ  
σεχρετσ, ωην τηε μυλτιτυδε ισ αχθυαιντεδ ωιτη τηεμ

**Decode:** On the need and use of obscurity.

I δεεμεδ ιτ νεχεσσαρψ το τουχη τηεσε τριχκσ οφ οβσχυριτψ,  
βεχαυσε ηαπλψ μψσελφ μαψ βε χονστραινεδ, τηρουγη τηε  
γρεατνεσσ οφ τηε σεχρετσ ωηιχη I σηαλλ ηανδλε, το υσε σομε οφ  
τηεμ, σο τηατ, ατ τηε λεαστ, I μιγητ ηελπ τηεε το μψ ποωερ

## Geoffrey Chaucer

A basic principle of creativity states that it is easier to create new products with new words than with old words. Today, it is a good marketing strategy to first name a new product, then proceed to its invention and design. Old words have too many references to objects that already exist and have a distorting influence on the mind when we are looking for new ideas. New words are free of old references and leave the mind freer to invent. The same is true of science and Geoffrey Chaucer was aware of this.

Early scientists of the fourteenth century, also faced with this problem, came to the same conclusion. In their works, they continually introduced new terms to describe whatever they found or developed. This was not so much, as some think, to hide their results behind obscure wordings, as to underline a radical departure from old ways of thinking. They used it as a tool to force their own and their reader's minds into the various logics of new sciences.

Another benefit of new words and languages is that in themselves they are a statement of expertise and personal distance from the subject. Using the specific code books of their sciences, Renaissance scientists proved both the very existence of their science and their mastery of the matter. When it came to sciences needing the trust of the people, such as medicine, the reference to arcane code books was all the more important.

Researchers in geometry resorted to the use of Latin or Greek words. In chemistry, not yet quite distinct from alchemy, they used Arabic terms. Others went further and not only invented their technical terms, but wrote them in cipher alphabets. This was the case of Chaucer in some of his books.

Chaucer was doing for science what Hildegard had done for mysticism. They were both giving more poise and substance to their new language.

UGZI U14tW0 100kZUG 8b0 UB 03U00 23 UB U50 UV0W0 b8  
 this table serveth for to enter in to the table of  
 03kV12bz b8 U50 Hb30 b3 02UG00 12R0  
 equacion of the mone on either side

The following ciphers are encoded in an alphabet recreated from the example above, a cipher Chaucer included in his manuscript of *The Equatorie Of The Planetis*. The full table of correspondances is in the solutions (page XXXX).





Կեղ ԲՆՆԵՔ ԿՐՐՆԻՇՐՐՐ ՑՅՐՐՆԻՍՆԵՔ ՅՔԿԻ ԿԵՊ ԿՍՐՐՆՐ.  
 ԴՆԻՆՅՑ ԲՔԿԵՑՐՐՐՐՐՐ; ՑՍԻԿՐՆ ՅՔՐՐՐՐՐՐՐ ՅՔՐՆ ՐՆԻՍԿՐՐՐ.  
 ԴՆԻՆՅՑ ՐՔՔ ԴՆԻՆՑ ԿՐՐՐՐՐՐ ՐՐՐՐՐՐՐ ՑՅՐՐՐՐՐՐՐ ՅՔԿԻ  
 ՅՔՐՆ ՐՐՐՐՐ ԿԵՐ ՐՐՐՐՐՐՐՐՐՐ ՐՔՔ ԲՐՐՐՐՐ ԴԿՐՐ ՐՐՐ  
 ՅՔՐՆ ՐՐՐՐՐՐՐ ՐՔՔ ՍՅ ԿՐՐՐՐՐ ԴԿԻՐՐ ՅՐ ՐՐՐՐ ՍՅ,  
 ԿՐՐՐՐՐՐՐ ԲՔՐՐՐ, ՑՐՐՐՐ ՐՔՔ Կ ԿՐՐՐՐՐՐ ՍԲՐՐՐՐՐՐՐՐ,  
 ԿԵՐ ՑՐՐՐՐ ՅՔԿԵՔ ԿՐՐ ՔՐՐՐՐՐՐՐՐ ԲՆՐՐ ԿՐՐՐՐ ՅՐ ՔՐՐՐ  
 ԲՔԿԵՔ Ս ԿԿԻ ՑԿՐՐ, ԲՔՐՐ, ՐՐՐ ՅՔՐՐՐՐ ՐՐՐՐ ՍՐՐՐՐՐՐՐՐՐ  
 ԴԿՐ ՅԿՐՐՐ ՅՔՐՆ ԿԵՐՐ ՐՔՔ ԴԿՐՐՐՐՐ ՍԻ ՅՔՐՆ ԲՐՐՐՐՐ  
 ՑՐՐՐՐՐ, ԿԵՐ ՅՔՐՐՐՐՐ ՑԿԿՐՐՐՐ ԿԿՐՐՐՐ ՑՐՐՐՐ ՅՔՐՆ  
 ՅՐՐՐՐՐ, ԿՐՐՐ ՐՐՐ ՅՔԿԵՔ Ս ՅՐՐՐՐՐ ԿՐՐՐՐՐՐՐՐ ԿՐՐՐՐ,  
 ՑՐՐՐ ՅՔՐՆ ՑՐՐՐՐ ՐՔՔ ԿՐՐՐՐՐՐՐՐ, ՐՔՔԿՐՐՐՐ ՔՐՐՐՐ ՐՐՐՐ,  
 ԿԵՐ ՑԿԿԵՐՐՐՐՐՐՐ ՐՐՐՐՐՐՐՐՐ ԲՆՐՐՐ; ՅՔԿԵՔ Ս ԿՐ Կ  
 ՑՐՐՐՐՐՐՐՐ, ԿԵՐ ՑԿՐՐՐՐՐՐՐՐՐՐՐ ԿԵՐ ՐՐՐՐՐՐՐՐՐ, ԲՔՐՐ  
 ՍԻՐՐՐՐՐ ԿՐ Կ ԴԿՐՐՐՐՐՐ: ՅՐ ԲՔՐՐՐ Ս ԿԵՑԿՐՐՐ, ՅՔԿԵՔ  
 Կ ԴԿՐՐՐՐՐՐՐ ՐՐՐՐՐ ԿՐՐՐ ԿՐՐՐՐՐՐՐ ՐՐՐՐՐՐՐ ԴՐՐ  
 ՑՐՐՐՐՐՐՐՐ Կ ՑՐՐՐՐՐՐՐՐ, ՐՐ ՐՐՐ ՅՔԿԵՔ ՍՑ ՑԿՐՐՐ.  
 ՑՅՐՐՐՐՐՐ ՐՐ ՐՐՐՐՐՐՐՐՐ ; ՐՐՐ Կ ԲՆՐՐՐ ԴԿԻ, Կ

drawn as the lines between stars, the way our eyes link them to create Zodiac signs in the sky. With this code, Agrippa intended to be the first stellar code breaker, cracking the messages of the the. Had he been properly followed, present day astrology books would all now be printed in Malachim.

|   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ⊂ | ⋈ | ♃ | □ | ∇ | ♁ | N | Π | ∫ | ⊃ | ≡ | ∇ | ⊃ |
| A | B | C | D | E | F | G | H | I | J | K | L | M |
| † | X | □ | ∪ | ✕ | ♁ | ≡ | ∫ | H | J | ⊃ | ≡ | ∇ |
| N | O | P | Q | R | S | T | U | V | W | X | Y | Z |

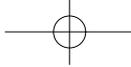
**Decode:** Agrippa on Venus

≡N∫∫∪∪∪ ∪V E □∫Π E V ♁∫□∪  
 ≡H□∫∫∪∪∪ ≡ E J E H E ∫≡∪ ∪V E  
 ≡∫Π ♁≡≡ E V ≡H□∫∫∪∪∪  
 N□H□□∫∪∪ ∪J E ∫H ♁∫≡N  
 ⊃∫□□Π ∪X∫V∫≡ ≡∫Π ∪ E E Π  
 ≡H□∫∫∪∪∪ ≡≡∪≡∪ ∪N□∪ E  
 ♁N∫♁N ≡V E ∪♁ E E ≡ □∫♁≡□□□∪  
 ≡∫Π Π E J E ♁≡≡⊃∫

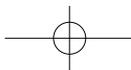
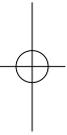








58 - HIDDEN CODES AND GRAND DESIGNS



## John Dee

John Dee, who lived from 1527 to 1608, was not only the Court Astrologer for Queen Elizabeth. Like many outstanding minds of the sixteenth and the seventeenth century, he easily led a career of scientist and developer of new technologies while pursuing research and practicing obscure traditional and occult disciplines. He was essential in the development of the British Navy and in the training of the first great navigators. He saw no problem in charting the astrological sky with the same methods he had used in charting the seas. He was also a very fine mathematician.



With the help of Edward Kelley and probably at his suggestion, he developed Enochian Magic, based on working closely with angels. Dee and Kelley asserted that angels had brought them their Enochian Alphabet. The angels wished to be addressed through these symbols. Indeed, the alphabet did very much to enhance the magical character of Dee and Kelley's productions.

|   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ⚡ | ∇ | ⚡ | ∇ | ∇ | ∇ | ∇ | ∇ | ∇ | ∇ | ∇ | ∇ | ∇ |
| A | B | C | D | E | F | G | H | I | J | K | L | M |
| ∇ | ∇ | ∇ | ∇ | ∇ | ∇ | ∇ | ∇ | ∇ | ∇ | ∇ | ∇ | ∇ |
| N | O | P | Q | R | S | T | U | V | W | X | Y | Z |



John Dee's ambition was to be the Pythagoras and Euclid of magic. He worked at giving occultism a logical face. In his *Monas Hieroglyphica*, his principles and "theorems" make magic look, at least formally, as scientific as Euclid's geometry. John Dee must have hoped that if he paid due respect to the symbolism and to the external aspect to logic, then truth would "magically" follow: that his shaky theories on magic would become as valid as the most basic geometrical knowledge.

A very important notion emerges here: the power of symbolism. Such is the power of symbols that our minds are easily fooled into believing that they are containers actually carrying content and truth within themselves wherever they are and whoever uses them. In fact this can easily be disproved, for example with the swastika which contains widely different meanings, good and evil, in different cultures around the world, Indian, Nazi or eighteenth century Russian



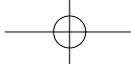


Diderot and d'Alembert

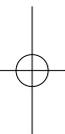
Pl. 1.

|                                |                                 |                                  |                                 |
|--------------------------------|---------------------------------|----------------------------------|---------------------------------|
| ♂, ♀. <i>Acer.</i>             | ∇, ♄. <i>Azur.</i>              | ♃, ☉. <i>Chaux d'Ég.</i>         | ♀, ♁. <i>Cucurbit.</i>          |
| ♀, ♀. <i>Arsain brut.</i>      | ♁, ♀. <i>Bain Marie.</i>        | ♁, ☉. <i>Chaux d'Or.</i>         | ♃, ☉. <i>Cuillerée.</i>         |
| ♁, ☉. <i>Air.</i>              | ♁, ☉. <i>Bain de Vapeurs.</i>   | ♃, ♄. <i>Chaux de Vitriol.</i>   | ♃, ♁. <i>Demie dragme.</i>      |
| ♁, ♁. <i>Alembic.</i>          | ♃, ♁. <i>Blanc d'Espagne.</i>   | ♃, ♄. <i>Chaux vive.</i>         | ♃, ♁. <i>Demie livre.</i>       |
| ♃, ☉. <i>Alun.</i>             | ♁, ♁. <i>Bol Armenien.</i>      | ♃, ♁. <i>Chopine.</i>            | ♃, ☉. <i>Demie once.</i>        |
| ♃, ♁. <i>Alun de Rhone.</i>    | ♃, ♁. <i>Baume.</i>             | ♃, ♁. <i>Coudre.</i>             | ♃, ☉. <i>Diger.</i>             |
| ♁, ♁. <i>Amalgame.</i>         | ♃, ♁. <i>Borax.</i>             | ♃, ♁. <i>Cuivre Antimoine.</i>   | ♃, ♁. <i>Distiller.</i>         |
| ♃, ♁. <i>An.</i>               | ♃, ♁. <i>Brique.</i>            | ♃, ☉. <i>Cire.</i>               | ♃, ☉. <i>Eau.</i>               |
| ♃, ♁. <i>Ame.</i>              | ♃, ♁. <i>Brique pulverisée.</i> | ♃, ☉. <i>Congeler.</i>           | ♃, ☉. <i>Eau commune.</i>       |
| ♃, ♁. <i>Antimoine.</i>        | ♃, ♁. <i>Calcaire.</i>          | ♃, ♁. <i>Congeler.</i>           | ♃, ♁. <i>Eau forte.</i>         |
| ♃, ♁. <i>Argent.</i>           | ♃, ♁. <i>Campêche.</i>          | ♃, ♁. <i>Coral.</i>              | ♃, ♁. <i>Eau rosée.</i>         |
| ♃, ♁. <i>Regule d'Arsenic.</i> | ♃, ♁. <i>Cimentier.</i>         | ♃, ♁. <i>Corne de Cerf.</i>      | ♃, ♁. <i>Eau de Vie.</i>        |
| ♃, ♁. <i>Athanas.</i>          | ♃, ♁. <i>Cendre.</i>            | ♃, ♁. <i>Crâne Humain.</i>       | ♃, ♁. <i>Ecorce de grenade.</i> |
| ♃, ♁. <i>Vitriol Rouge.</i>    | ♃, ♁. <i>Cendre Chavelée.</i>   | ♃, ♁. <i>Creuset.</i>            | ♃, ♁. <i>Ecume de Nitre.</i>    |
| ♃, ♁. <i>Vitriol blanc.</i>    | ♃, ♁. <i>Céruse.</i>            | ♃, ♁. <i>Cristal.</i>            | ♃, ♁. <i>Espirit.</i>           |
| ♃, ♁. <i>Aimant.</i>           | ♃, ♁. <i>Chaux.</i>             | ♃, ♁. <i>Cristal de Saturne.</i> | ♃, ♁. <i>Espirit de Via.</i>    |

|                     |                   |                               |                      |
|---------------------|-------------------|-------------------------------|----------------------|
| ☉, ☽                | ☿, ☽              | ☿, ☽                          | ☿, ☽                 |
| • Esprit de Vitriol | • Grain           | • Sif pour de Saturne calciné | • Mercure            |
| ☿, ☽                | ☿, ☽              | ☿, ☽                          | ☿, ☽                 |
| • Eau               | • Sels de drageon | • Lauge                       | • Miel               |
| ☿, ☽                | ☿, ☽              | ☿, ☽                          | ☿, ☽                 |
| • Purine de laque   | • Hume            | • Lauge d'Alcool              | • Miel de Teneur     |
| ☿, ☽                | ☿, ☽              | ☿, ☽                          | ☿, ☽                 |
| • Fer               | • Hume            | • Lauge d'Al                  | • Nitre              |
| ☿, ☽                | ☿, ☽              | ☿, ☽                          | ☿, ☽                 |
| • Feu               | • Hume de Christ  | • Sels de sapin               | • Nix                |
| ☿, ☽                | ☿, ☽              | ☿, ☽                          | ☿, ☽                 |
| • Feu de Rose       | • Hume de Saturne | • Mercure de Saturne          | • Chef Philosophique |
| ☿, ☽                | ☿, ☽              | ☿, ☽                          | ☿, ☽                 |
| • Feu de Christ     | • Hume de Sulfur  | • Magnésie                    | • Or                 |
| ☿, ☽                | ☿, ☽              | ☿, ☽                          | ☿, ☽                 |
| • Feyer             | • Hume de Or      | • Magnésie                    | • Or calciné         |
| ☿, ☽                | ☿, ☽              | ☿, ☽                          | ☿, ☽                 |
| • Filtré            | • Hume de Vitriol | • Marselle                    | • Or de Chimie       |
| ☿, ☽                | ☿, ☽              | ☿, ☽                          | ☿, ☽                 |
| • Feyer             | • Incorporer      | • Roche                       | • Or de Mine         |
| ☿, ☽                | ☿, ☽              | ☿, ☽                          | ☿, ☽                 |
| • Fleur d'Or        | • Jour            | • Mercure                     | • Or en Foudre       |
| ☿, ☽                | ☿, ☽              | ☿, ☽                          | ☿, ☽                 |
| • Fleur d'Antimoine | • Lait récent     | • Mercure d'Antimoine         | • Or Fincant         |
| ☿, ☽                | ☿, ☽              | ☿, ☽                          | ☿, ☽                 |
| • Fleur de Saturne  | • Lauge           | • Mercure Prépulé             | • Partic avec Puré   |
| ☿, ☽                | ☿, ☽              | ☿, ☽                          | ☿, ☽                 |
| • Galnie            | • Lait            | • Mercure de Saturne          | • Part               |
| ☿, ☽                | ☿, ☽              | ☿, ☽                          | ☿, ☽                 |
| • Génère            | • Lait de Or      | • Mercure Sublimé             | • Pierre Calcinée    |
| ☿, ☽                | ☿, ☽              | ☿, ☽                          | ☿, ☽                 |
| • Gome              | • Lait de Fer     | • Merc de Vie                 | • Pierre Sanguine    |

**64** - HIDDEN CODES AND GRAND DESIGNS

These tables by d'Alembert show how much contemporary science was still dependent on traditional symbolism in the eighteenth century. In 1772 Diderot and d'Alembert's encyclopedia records 256 symbols used in chemistry. Alchemy and chemistry were in the process of separating to evolve along different paths. The layout is closer to Agrippa's magical symbolism than to modern chemistry. The chemists had still not entirely parted from alchemy.



## The E back-door

Roger Bacon, Geoffrey Chaucer and, for that matter, all their European contemporaries were unaware of a critical weakness in their languages where ciphers are concerned. Latin, Middle English, Middle French and all other European languages including their present variants, are betrayed by the statistics of their letters. In all of them, when frequency is computed, the letter E stands out many points above the next letter. The statistics of the other letters are characteristic of each language.

Frequency characteristics also extend to sets of two letters following each other in a text - called "bigrams" - and to sets of three letters called "trigrams". Among all the possible combinations of two letters, some occur very often, while others never at all.

With these statistical tools, a codebreaker can literally break down a code into parts easier to translate and parts that remain obscure - statistics is not a precision tool. Then, step by step, using intuition and method, with much trial and error, if the text is long enough, he can come up with the whole translation.

|                               |   |
|-------------------------------|---|
| most frequent letters         | e t a o i n s h r d l u                 |
| most frequent first letters   | t a s o i c w p b s h m                 |
| most frequent last letters    | e t s d n r y o f l a g                 |
| most frequent bigrams         | th er on an re he in ed nd ha at        |
| most frequent trigrams        | the and tha ent ion tio for nde         |
| most frequent doubles         | ss ee tt ff ll mm oo                    |
| most frequent letters after E | r d s n a c t m e p w o                 |
| most frequent 1-letter words  | a i o                                   |
| most frequent 2-letter words  | of to in it is be as at so we he        |
| most frequent 3-letter words  | the and for are but not you all         |
| most frequent 4-letter words  | that with have this will your from they |

### the most frequent letters

|                |                         |
|----------------|-------------------------|
| <i>English</i> | E T A O I N S H R D L U |
| <i>French</i>  | E N A S R I U T O L D C |
| <i>German</i>  | E N R I S T U D A H G L |
| <i>Italian</i> | E I A O R L N T S C D P |
| <i>Spanish</i> | E A O S R I N L D C T U |

66 - HIDDEN CODES AND GRAND DESIGNS

Here are the percentages of the 26 letters computed in a survey of contemporary English. It must be stressed that in this table, only the order of the first letters is significant. The exact percentages will vary from one survey to another, depending on the text chosen for analysis, so, apart from the E, we cannot depend on statistics alone for the identification of each letter. Statistics tell us only roughly what zone a certain letter lies in.

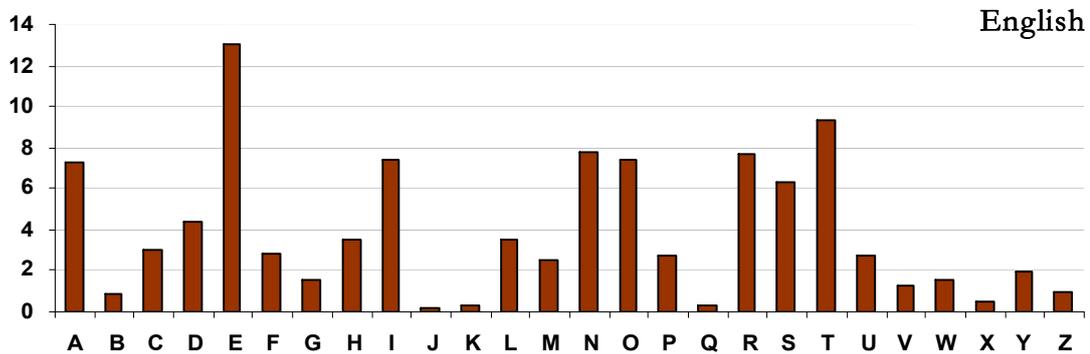
As for the other western languages, the letter E stands out ahead in German and French. In Spanish and Italian, E is challenged by the other vowels. E is harder to distinguish from A in Spanish and from A and I in Italian.

Letter statistics reveal a sort of alphabetical DNA that identifies each language. German and French are close to each other, and can only be differentiated by minor letters such as H, Q and X. Spanish and Italian are close to each other as well, but treat I and S differently enough for an easy separation.

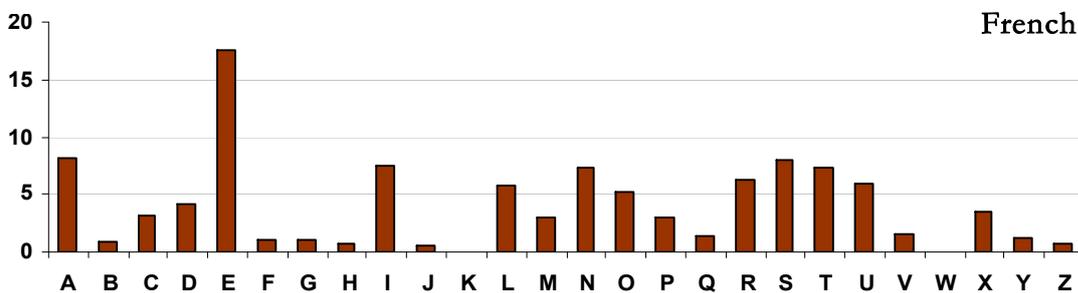
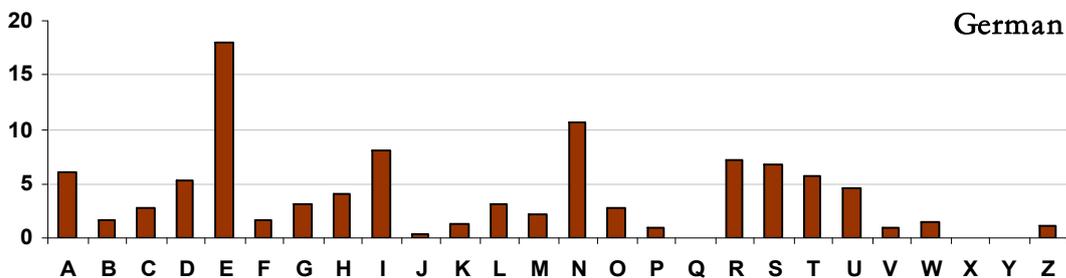
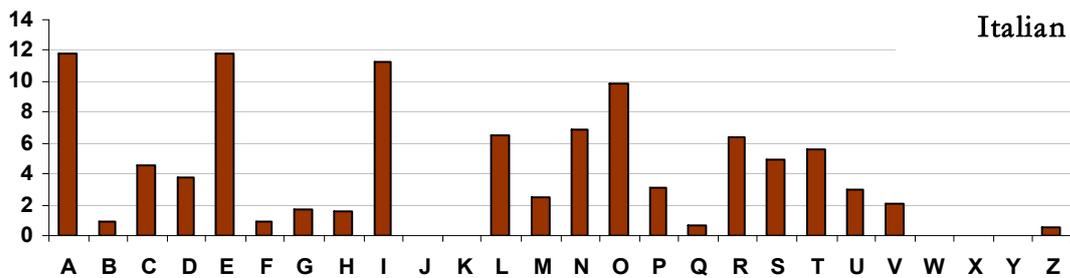
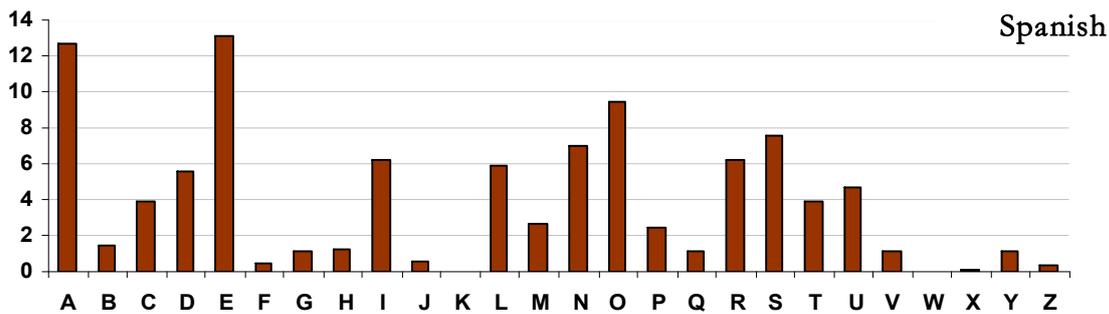
The following hints are useful when deciphering an English code:

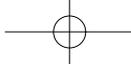
- U always follows q, save in foreign words such as Iraki or kat
- H is the most frequent letter before a vowel
- N is the most frequent letter after a vowel
- ED, ES and ER are the most frequent word endings
- the average word length is 5.5 letters
- if a word begins and ends with the same letter, look for S, T or D

|   |       |
|---|-------|
| E | 12.41 |
| T | 9.69  |
| A | 8.20  |
| I | 7.68  |
| N | 7.64  |
| O | 7.14  |
| S | 7.06  |
| R | 6.68  |
| L | 4.48  |
| D | 3.63  |
| H | 3.50  |
| C | 3.44  |
| U | 2.87  |
| M | 2.81  |
| F | 2.35  |
| P | 2.03  |
| Y | 1.89  |
| G | 1.81  |
| W | 1.35  |
| V | 1.24  |
| B | 1.06  |
| K | 0.39  |
| X | 0.21  |
| J | 0.19  |
| Q | 0.09  |
| Z | 0.05  |



The cipher gallery - 67



**68 - HIDDEN CODES AND GRAND DESIGNS**

Europeans realised these statistical weaknesses in the sixteenth century. But they can't be credited for it. They discovered them when they started exploring Arabian science. As early as the tenth century, Arabian linguists had computed letter statistics as applied to their own language. Books on cryptography were written and slowly found their way to Rome and Florence, mainly via Andalusia in Southern Spain, where Christians, Moslems and Jews shared a common civilisation.

The Italian Renaissance architect Leone Battista Alberti was one of the first to apply this knowledge on European languages. This gave him techniques to crack ciphers his contemporaries thought invulnerable. He was one of the first to propose the use of "homophones" to defeat the statistical weakness of alphabetical languages and close their E back-door: the replacement of each letter with different possible symbols.

