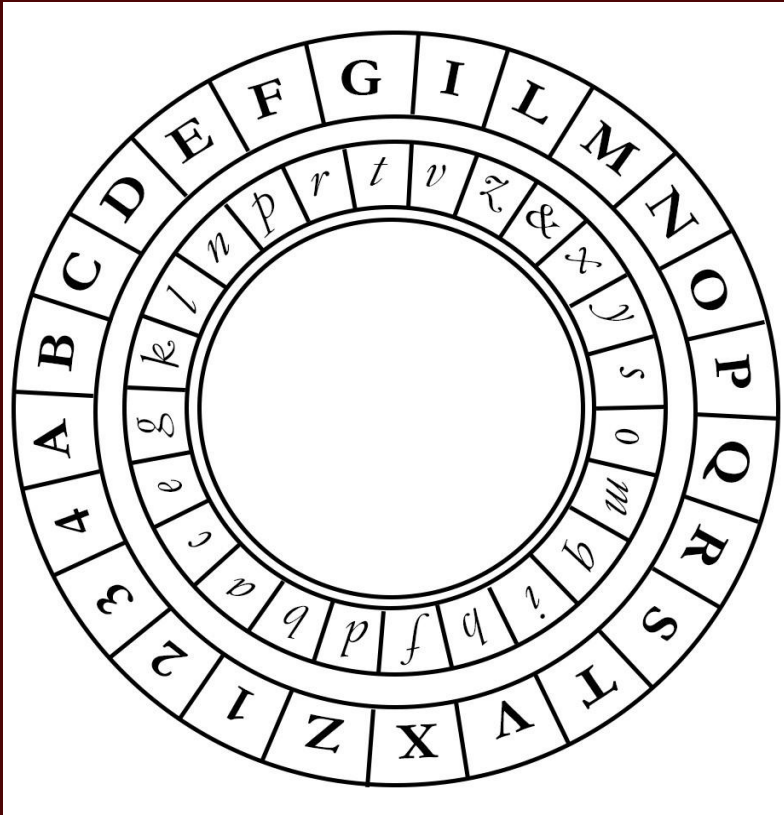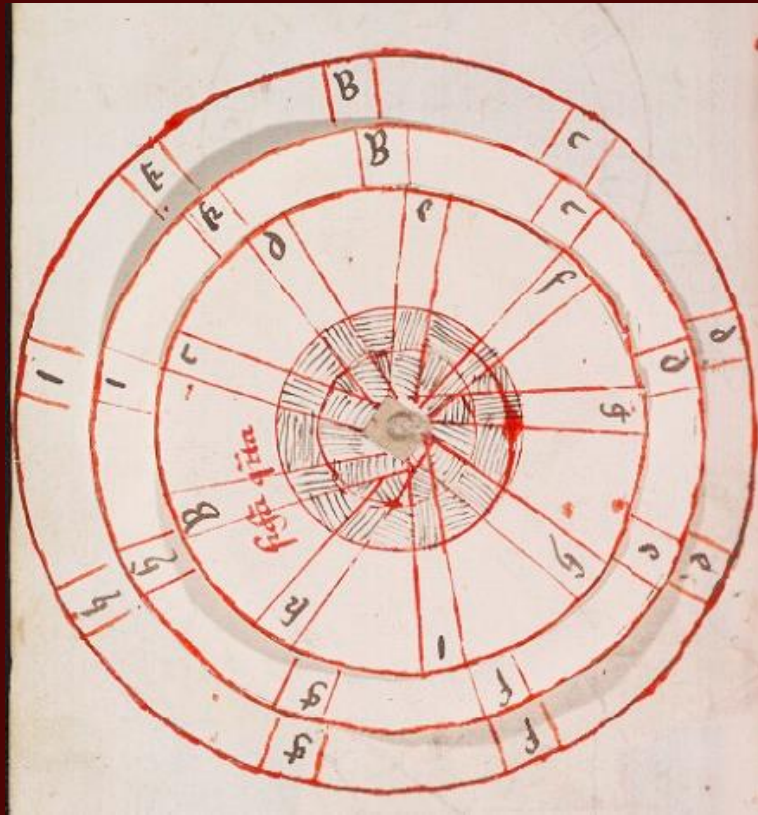# Circling around the Truth: Deciphering the Earthly and Divine in the Medieval World and Beyond.

By Beatrice Bottomley & Arianna Dalla Costa
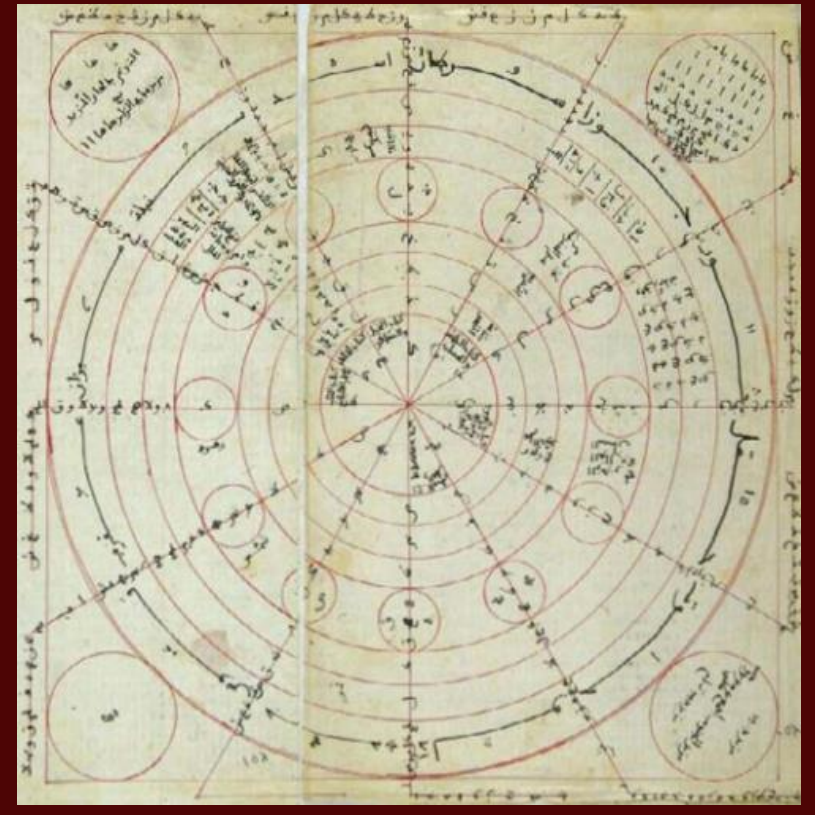
4th February 2022

Alberti's Cipher Disk   Llull's *Ars combinatoria*   The *Zā'irja*

Ramon Llull

Ramon Llull (1235-1316). *Breviculum* Codex. Miniature. Llull preaching. Parchment. Baden Memorial Library. Karlsruhe. Germany.

- Born in 1232 AD in Maiorca, from a noble family;

- After receiving a vision of the Crucifix he decides to dedicate his life to the conversion to Christianity of the non-believers.

- He wants to do so by writing "the best book in the world".

The *Ars combinatoria*

The book he writes is the *Ars compendiosa inveniendi veritatem*, (1274 AD).

Disillusioned by the methods used by his contemporaries to convert Jews and Muslims, he creates a new system for conversion.

Rather than basing his arguments on the authorities of Christian theology, he drew from a set of premises that are shared by the three monotheistic religions, for example, the existence of God and His attributes.

Cod. Cus. 83: Raymundi Lulli Opera, 1428
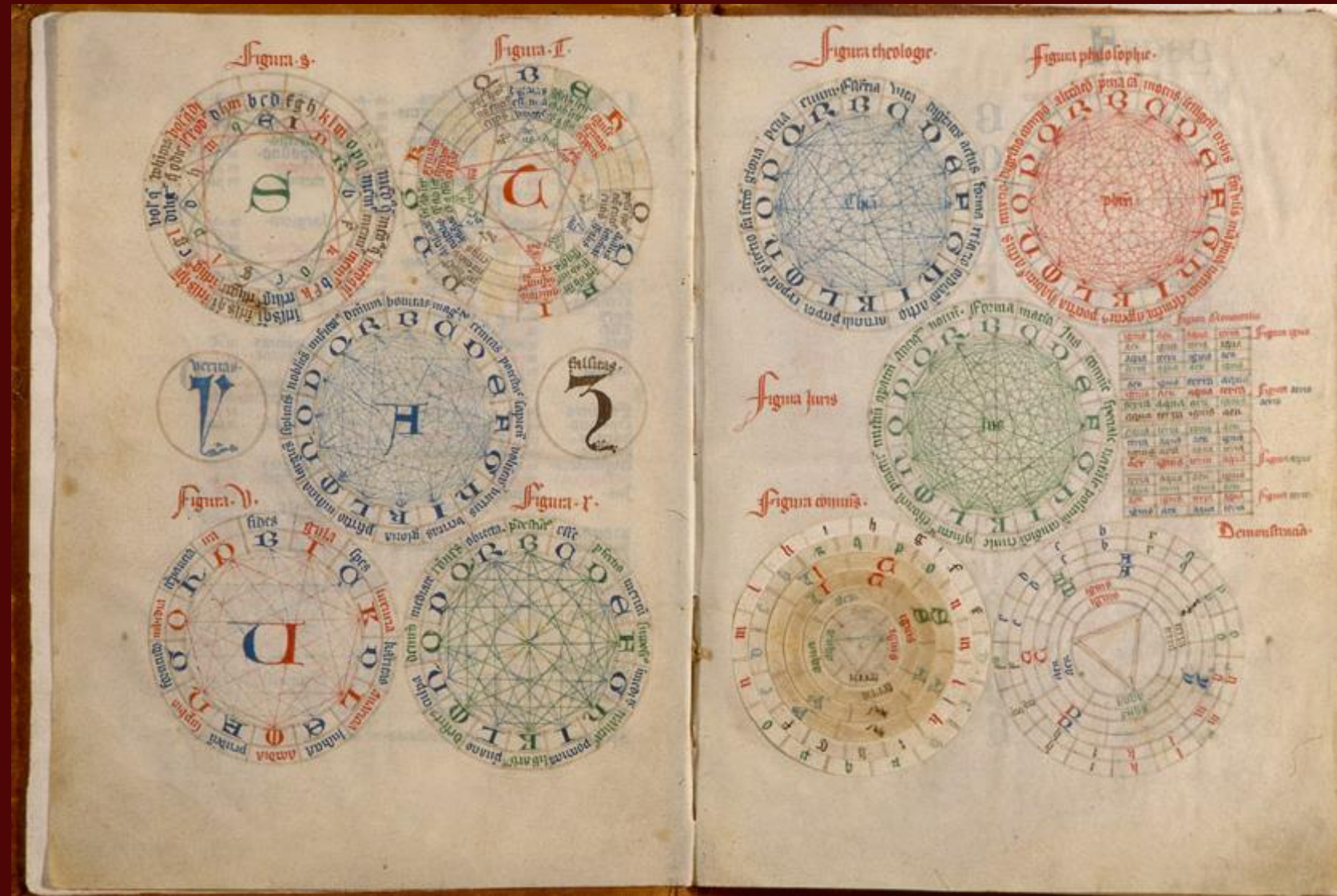
The *Ars Brevis*

The terms of the art

	Group 1: Absolute principles	Group 2: Relative principles	Group 3: Questions	Group 4: Subjects	Group 5: Virtues	Group 6: Vices
B	Goodness	Difference	If	God	Justice	Avarice
C	Greatness	Conformity	What	Angel	Prudence	Gluttony
D	Eternity/duration	Opposition	From what	Heaven	Fortitude	Luxury
E	Power	Beginning	Why	Man	Temperance	Pride
F	Wisdom	Middle	How much	Imaginative	Faith	Sloth
G	Will	End	Of which kind	Sensitive	Hope	Envy
H	Virtue	Superiority	When	Vegetative	Charity	Anger
I	Truth	Equity	Where	Elemental	Patience	Falsehood
K	Glory	Minority	How and with what	Instrumental	Pity	Inconstancy

- It is compendious, general, inventive and demonstrative;

- The three fundamental components of this technique are: the terms, the figures and the alphabet;

- The terms are the basic concepts used in the *ars*;

- The alphabet used by Llull is made up by 9 letters (B, C, D, E, F, G, H, I, K) used to represent the terms;

- The figures represent the syntax of this system, they show the relationships between the terms of the *ars*.

Figure 1

The first figure is called 'A', it indicates God and every other being of reality. This is the figure of the divine names (*dignitates*).

The nine divine names are linked by lines that indicate the convertible identity between all the principles.

Figure 2

The second figure is called 'T'. It is formed by three equilateral triangles enclosed in a circle, which is divided into nine sections that correspond to the relative principles.

Each triangle links three letters of the alphabet forming triplets of terms
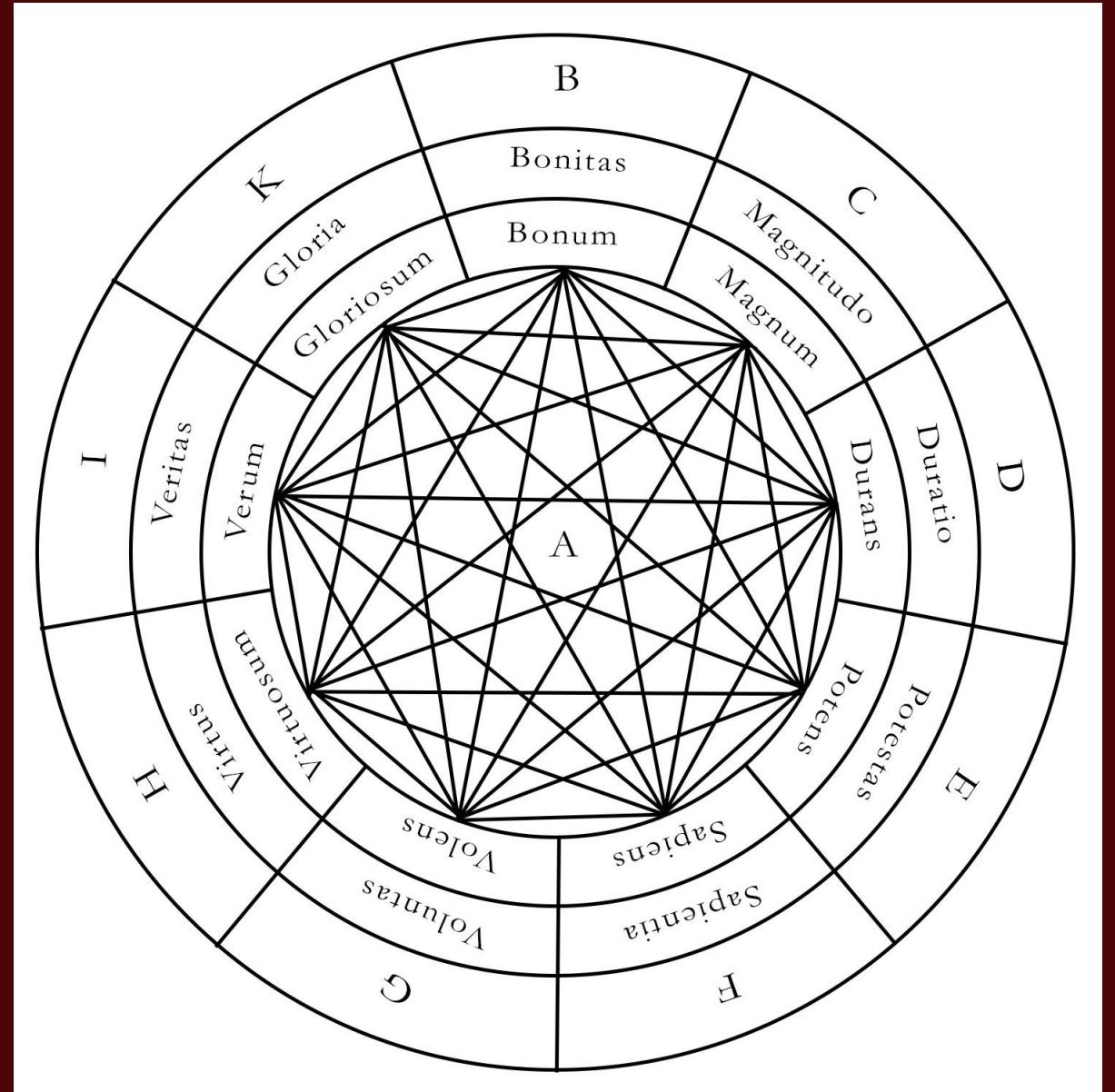
Figure 3

It is formed from the composition of the first and second figures. It displays the cells made from the nine terms, which are paired and expressed by letters in thirty-six combinations.
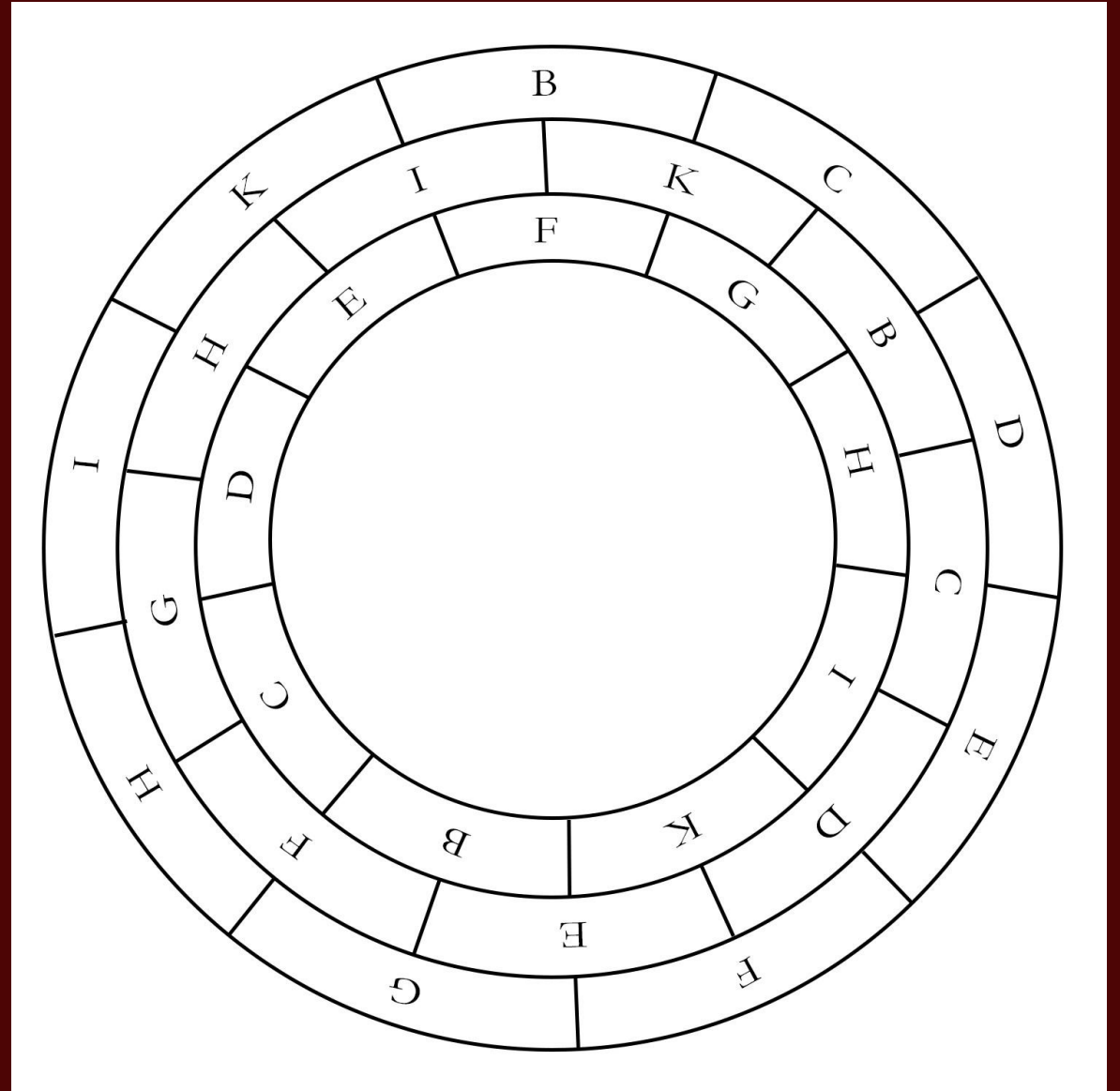
BC	CD	DE	EF	FG	GH	HI	IK
BD	CE	DF	EG	FH	GI	HK	
BE	CF	DG	EH	FI	GK		
BF	CG	DH	EI	FK			
BG	CH	DI	EK				
BH	CI	DK					
BI	CK						
BK							

Figure 4

The fourth figure is a volvelle. It is made of three concentric circles, of which the largest is fixed and the other two are movable.

Each circle is divided into nine sections containing a letter of the alphabet, which each correspond to a term.

Combinations of these letters are produced by rotating the two inner circles, thus offering numerous permutations of the terms

Gottfried Wilhelm von Leibniz, *Dissertatio de Arte Combinatoria* (1666), frontespice

From a collection of alchemical texts attributed to Llull, Beinecke Rare Book and Manuscript Library, Mellon MS 12, f. 87v

Leon Battista Alberti

- Born in Genoa from a Florentine family in 1404.

- He is known as an architect, writer, painter, musician, humanist, mathematician, cryptographer, linguist and philologist.

- He writes the *De componendis cyfris* in 1466 following a conversation with his friend Leonardo Dati.
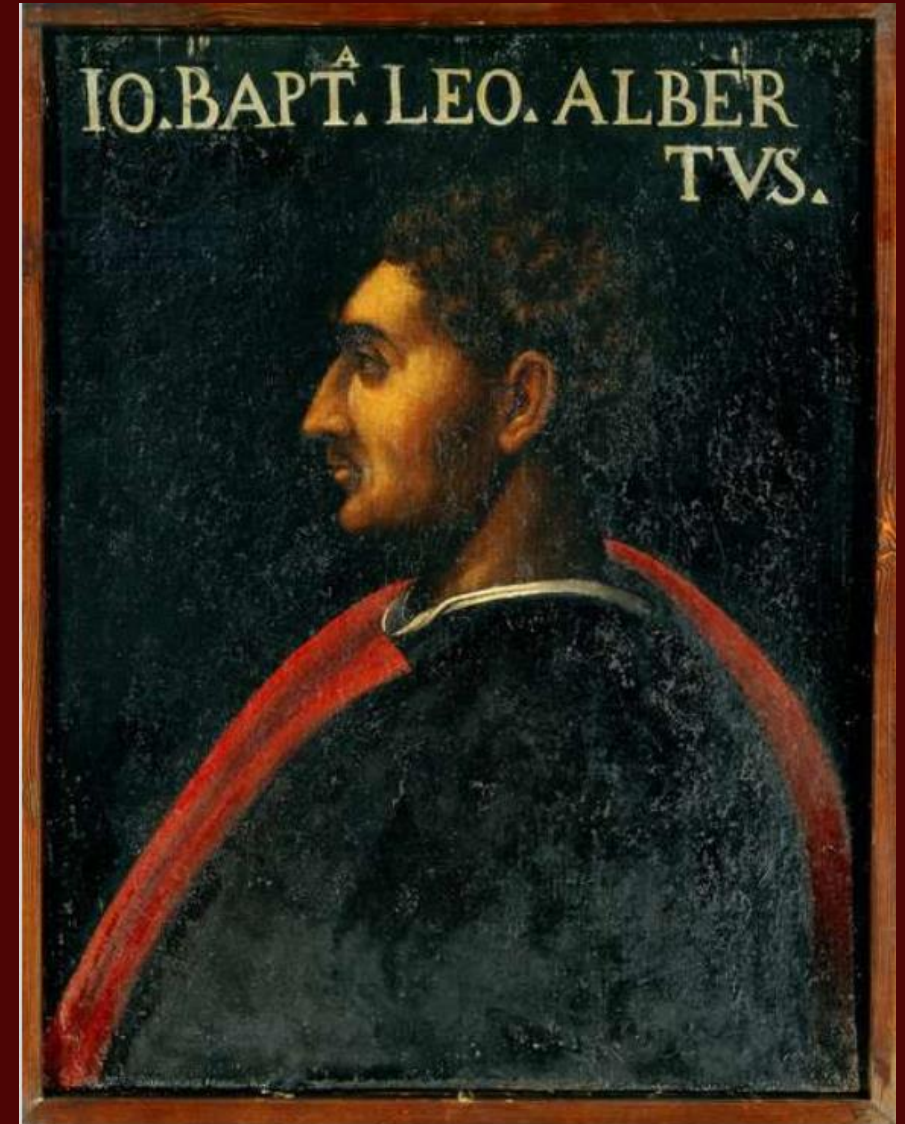
Portrait of Leon Battista Alberti. Painting by Antonio Maria Crespi known as Bustino (1580-1630), oil on canvas, 60x51 cm. (Inv. 1352)
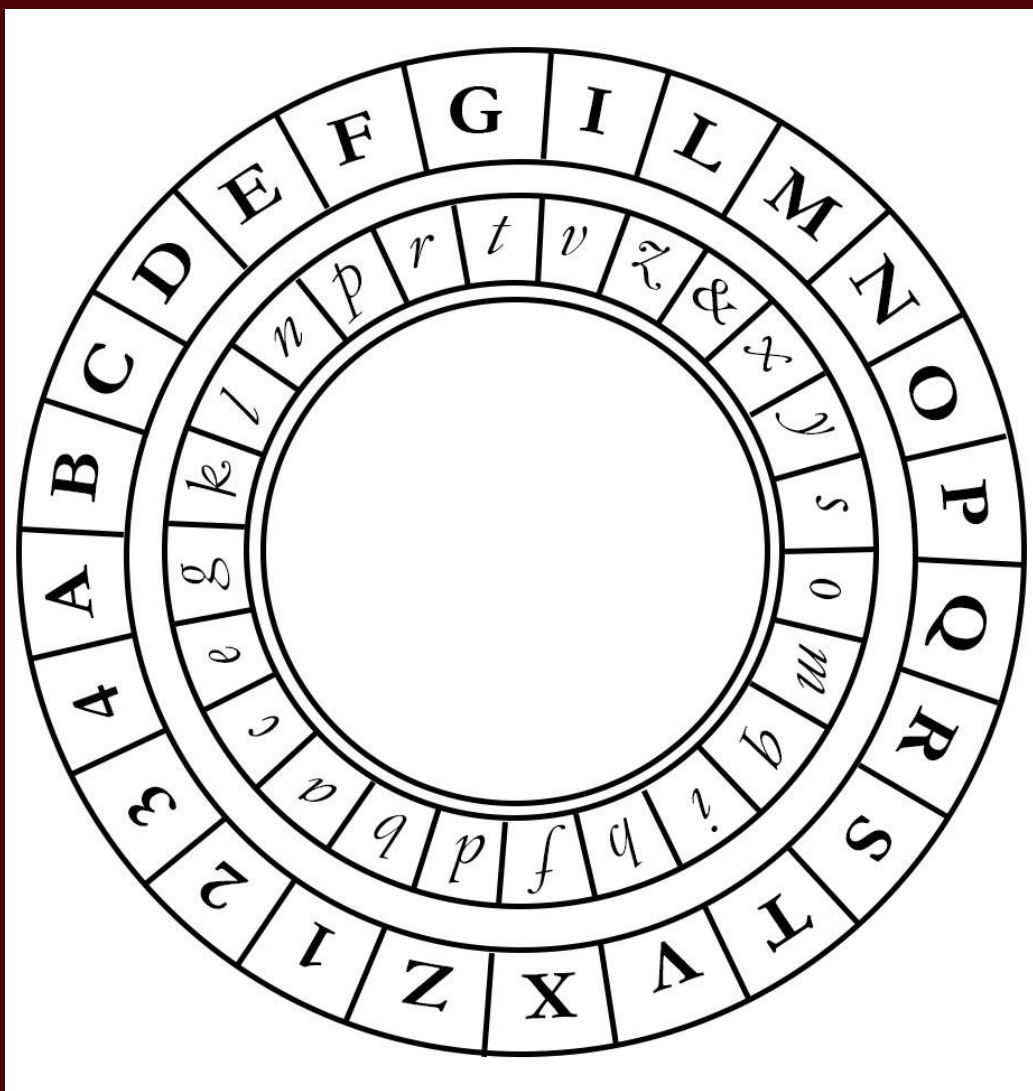
The Cipher Disk

" A cipher should be defined as a method for writing secretly by means of arbitrarily chosen signs, the meaning of which has been agreed on between the two correspondents, so as to be unintelligible to others"

- Alberti, *De componendis cyfris.*

To Encipher a Message

- Choose a reference letter from the outer disk and then choose an index letter from the smaller disk. Line up the index letter from the smaller disk with the reference letter from the outer disk.

E.g. If the reference letter is 'B' and the index letter is 'k', this means that C=l, D=n, E=p etc.

- Write down the reference letter and index letter. In this example, 'Bk'.
- Keeping the disk in the same position, write down the lowercase letters, from the smaller disk, which correspond to the letters of the plain text of your message, which are indicated by the larger disk.

E.g. The plain text message 'SALVE' would be enciphered as:

Bkqgzhp

- You can indicate the new reference letter by using an uppercase letter. The following lowercase letter is the new index letter.

E.g. BkqgzhpR&adexd&e stands for 'SALVE CAESARE'

To Decipher a Message

- To decipher a message, take your cipher disk, match up the reference letter on the outer disk, which is indicated by an uppercase letter at the beginning of the message, to the index letter, which is indicated by a lowercase letter that follows the reference letter.

E.g. 'Lxnlinlsos', 'L' is the reference letter and 'x' is the index letter.

- After you have positioned the disks correctly, write down the uppercase letters that correspond to the lowercase letters of message.

- Can you decipher the message 'LxnlinlsosZilaepolprzszlmt'?
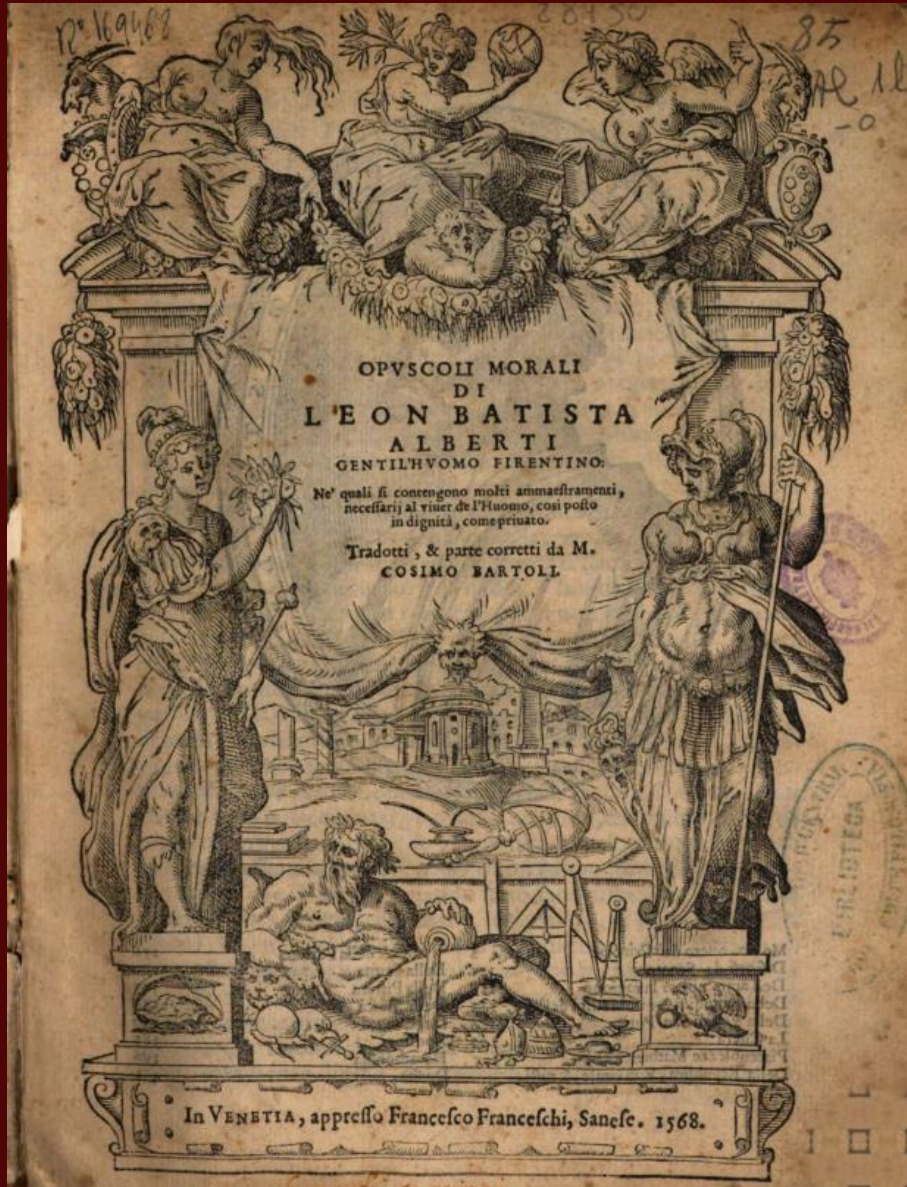
"It is my wish that this essay be preserved by our friends and not allowed to fall into the hands of the general public, divulging a matter that is best reserved for the use of statesmen in extremely important undertakings" - Leon Battista Alberti, *De componendis cyfris*

The *Zā'irja*

- May refer to a diagrammatic representation of the universe, the science underlying this representation, or a horoscope.

- Descriptions of the *zā'irja* as a divinatory tool are found in Ibn Khaldūn's *Muqaddima*, 'Introduction to History', and (Pseudo) al-Būnī's *Shams al-maʿārif al-kubrā*, 'The Major Sun of Knowledge'.

MS Damad Ibrahim 863, Süleymaniye library, Istanbul, fol. 352v.

Muqaddimah, trans. Rosenthal, vol. 3, end pocket.
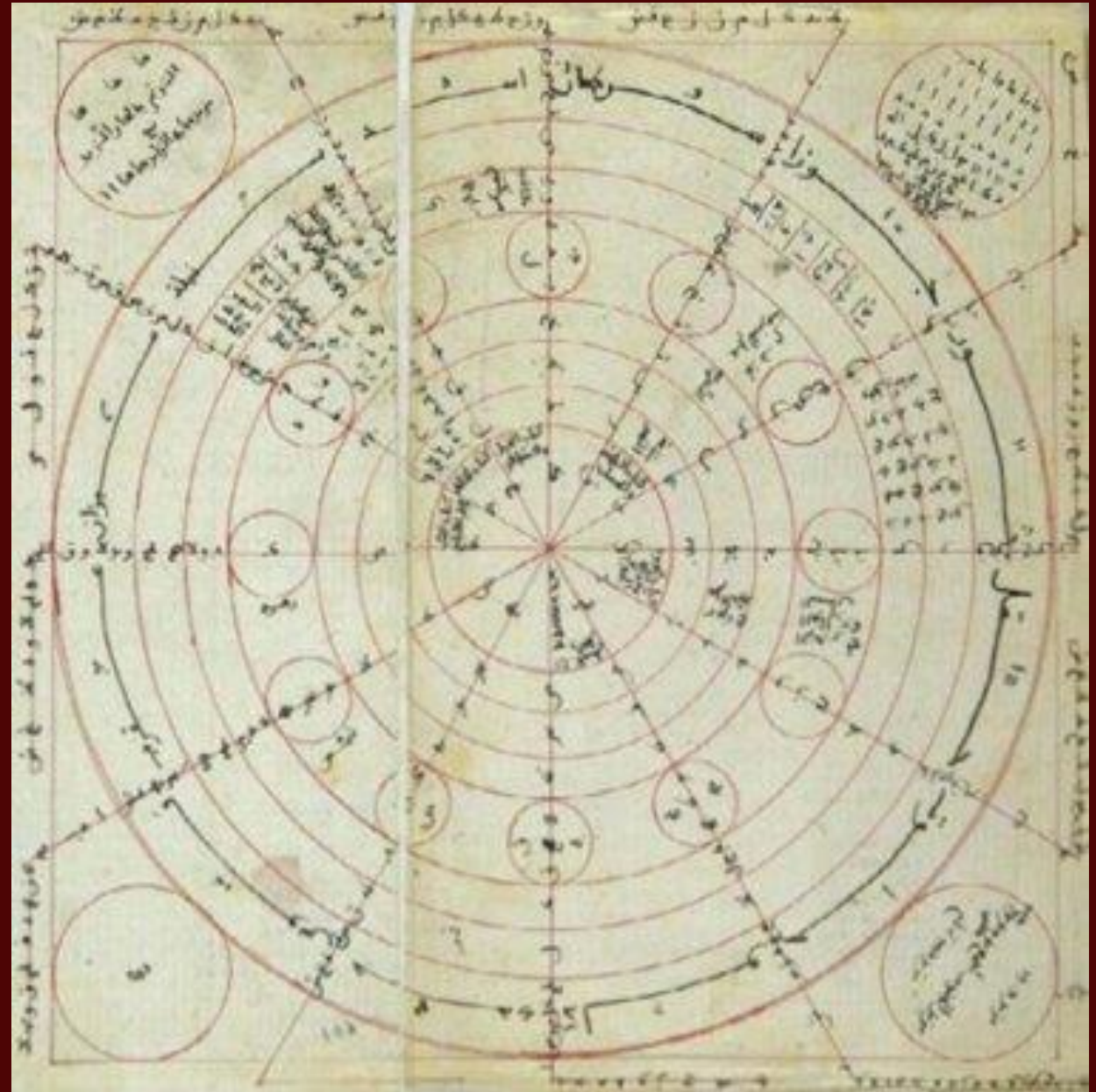
Ibn Khaldūn's *Muqaddimah*

The *zāʾirja* as a technical principle for the "discovery of the supernatural"

- Vol. I, 239.

"A weighty question you have got. Keep, then, to yourself

Remarkable doubts which have been raised and which can be straightened out with due diligence."
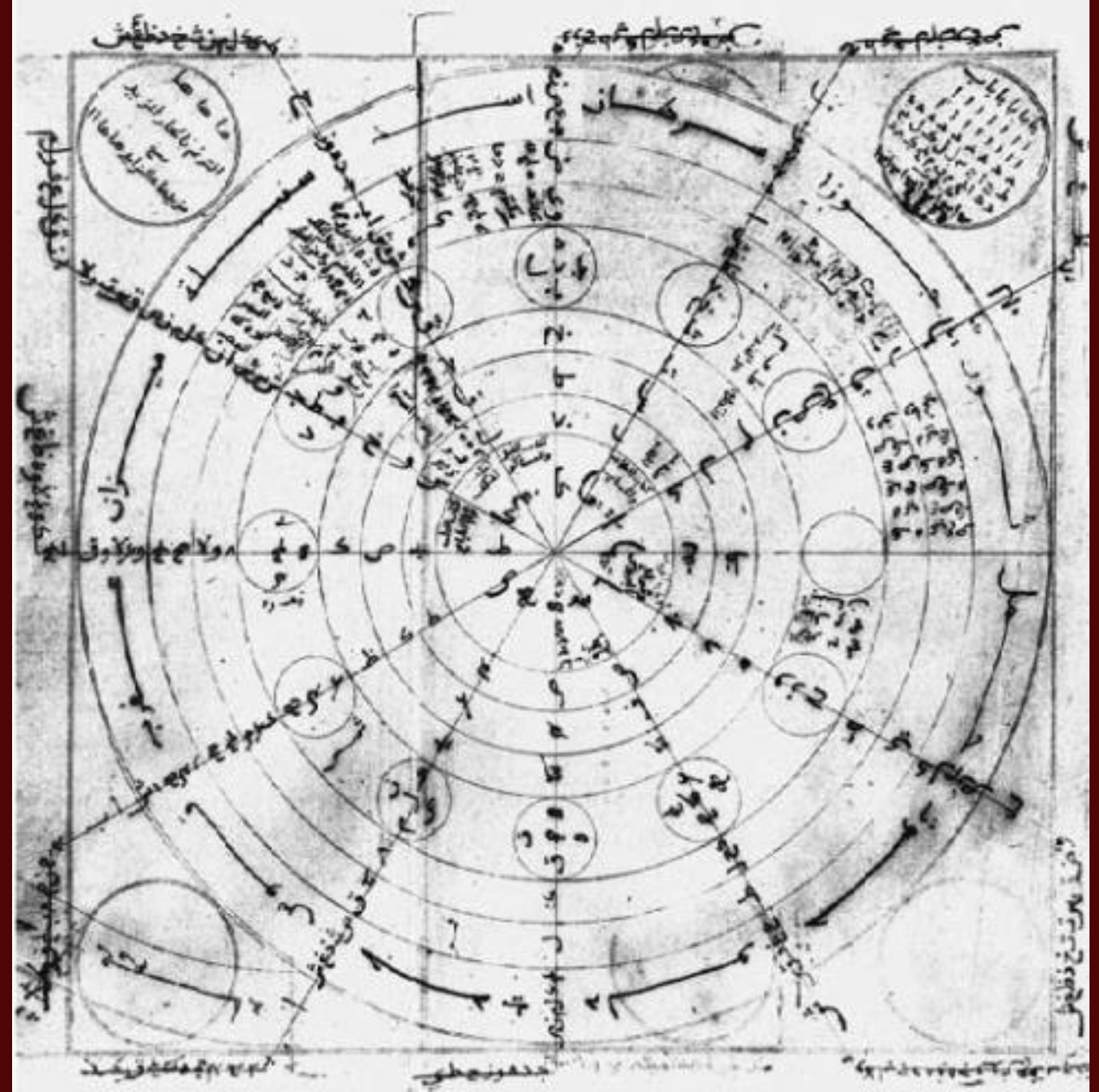
- Vol. I, 240.

- Write down the question in unconnected letters of the Arabic alphabet.

هل تمطر غدا
ه ل ت م ط ر غ د ا

(Will it rain tomorrow?)

- Determine the astrological ascendant.

- Note down all the letters and the numbers on the chord of the ascendant and convert the numbers into letters.

ه ٦ ي ل ٨ خ و ك ط ٩
ه د ي ل ب خ ف ك ط س

MS Ahmet III, 3042, Topkapi Saray library, Istanbul, vol. 1, fol. 237

- Enter the resulting letters into the table

- Divide the letters according to intervals called "cycles" (*dawr*, pl. *adwār*). From each cycle, the letter at the end is removed.

ه د ي ل ب خ ف ك ط م ت ا د غ س ط ك ت م ط ر ه ل

غ د ه د ي ل ب خ ف ك ط س ت م ط ر ه ل

غ ه د ي ل ب خ ف ك ط س ت م ط ر ه ل

د ي ل ب خ ف ك ط س ت م ط ر ه ل

- Use the series of unconnected letters to compose a verse of poetry that responds to your question.

مطر من كل الاوان يوميا

(Rain of all colours every day)

"Many an operation with numbers, which are the clearest things in the world, is difficult to grasp, because the relations are difficult to establish and intricate. This is the case to a much greater degree here, where the relations are so intricate and strange."

– Ibn Khaldūn, *Muqaddimah , vol III, 214.*

"It is thus obvious that it is from the relations existing among data that one finds out the unknown from the known."
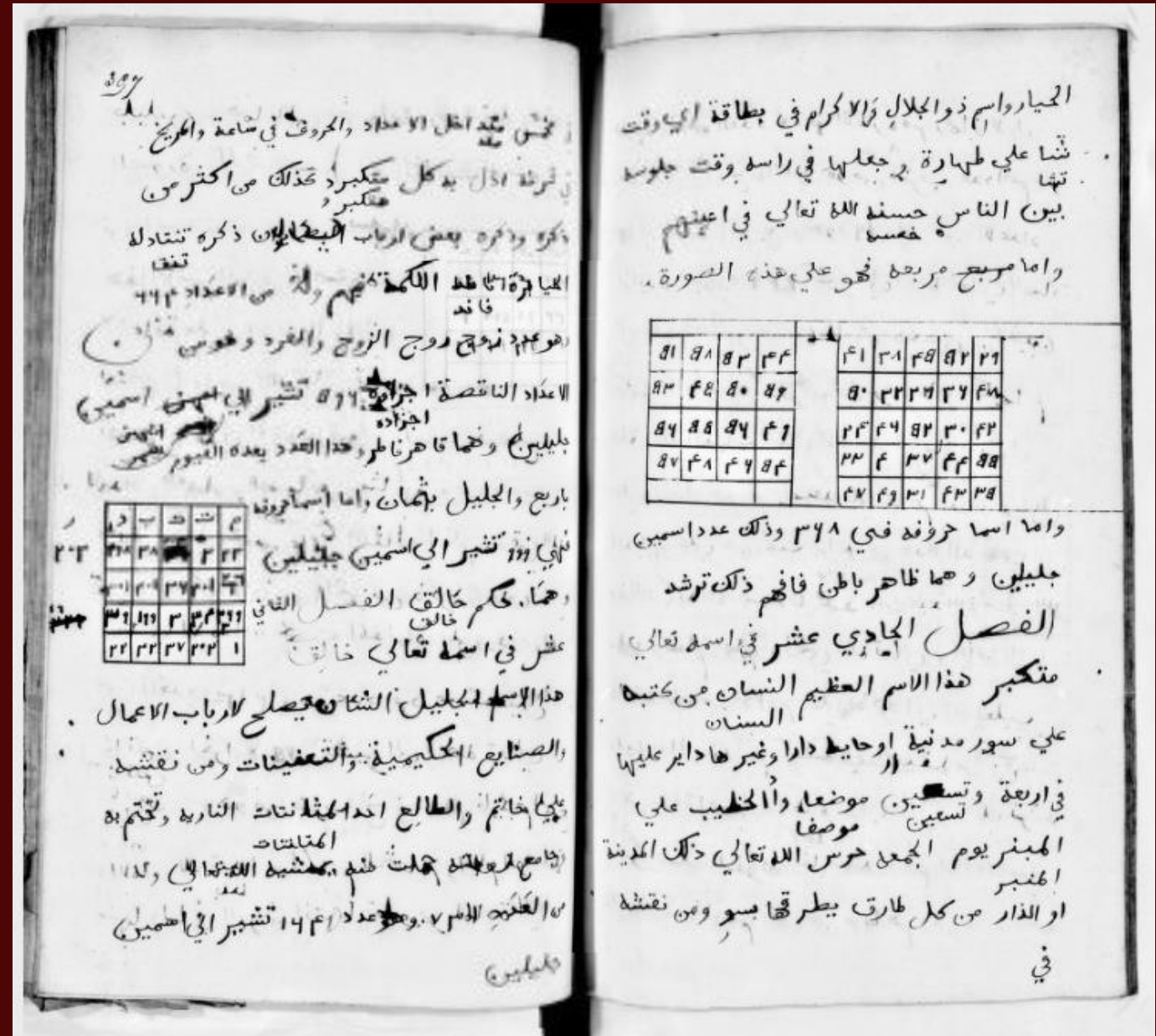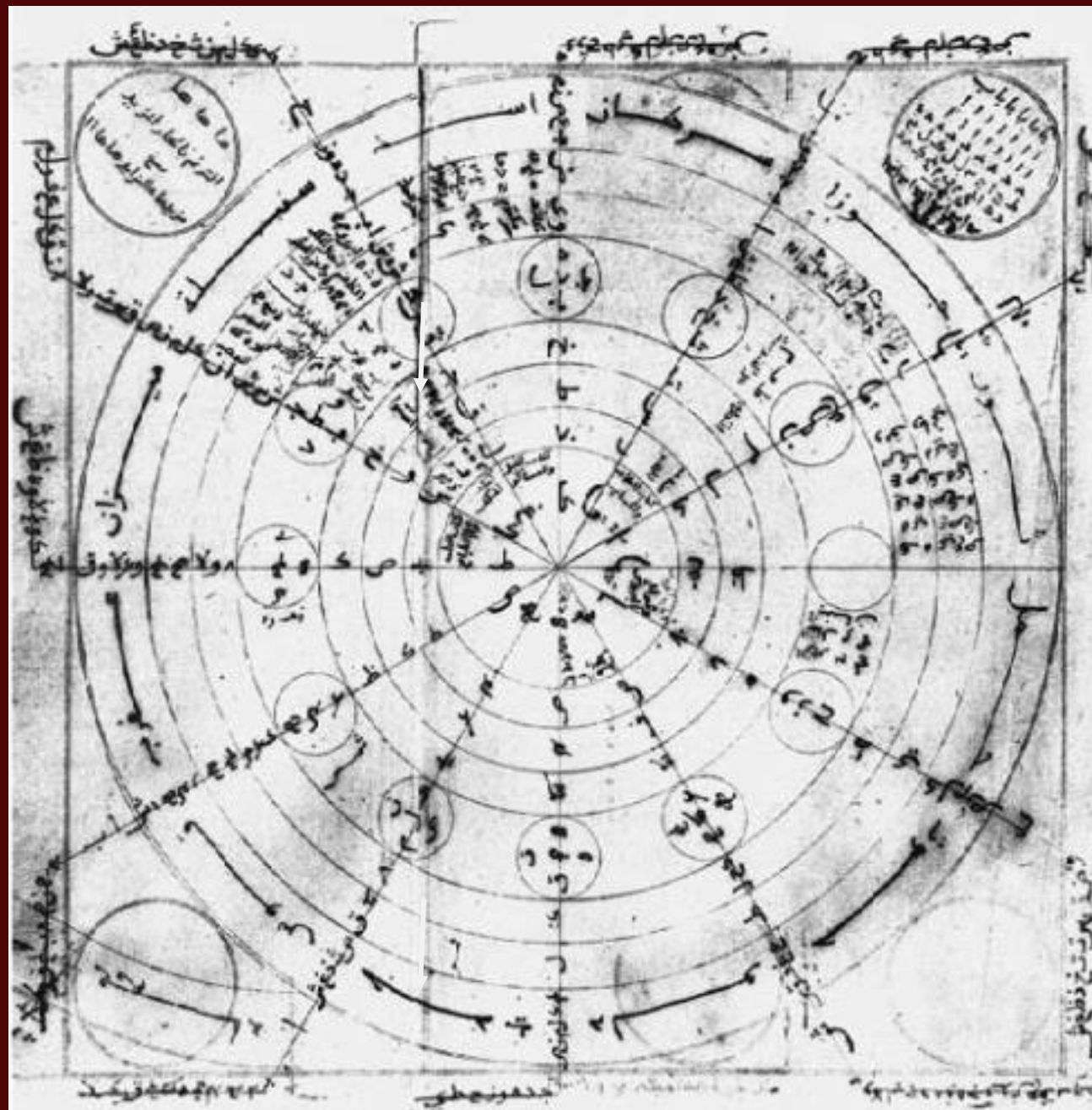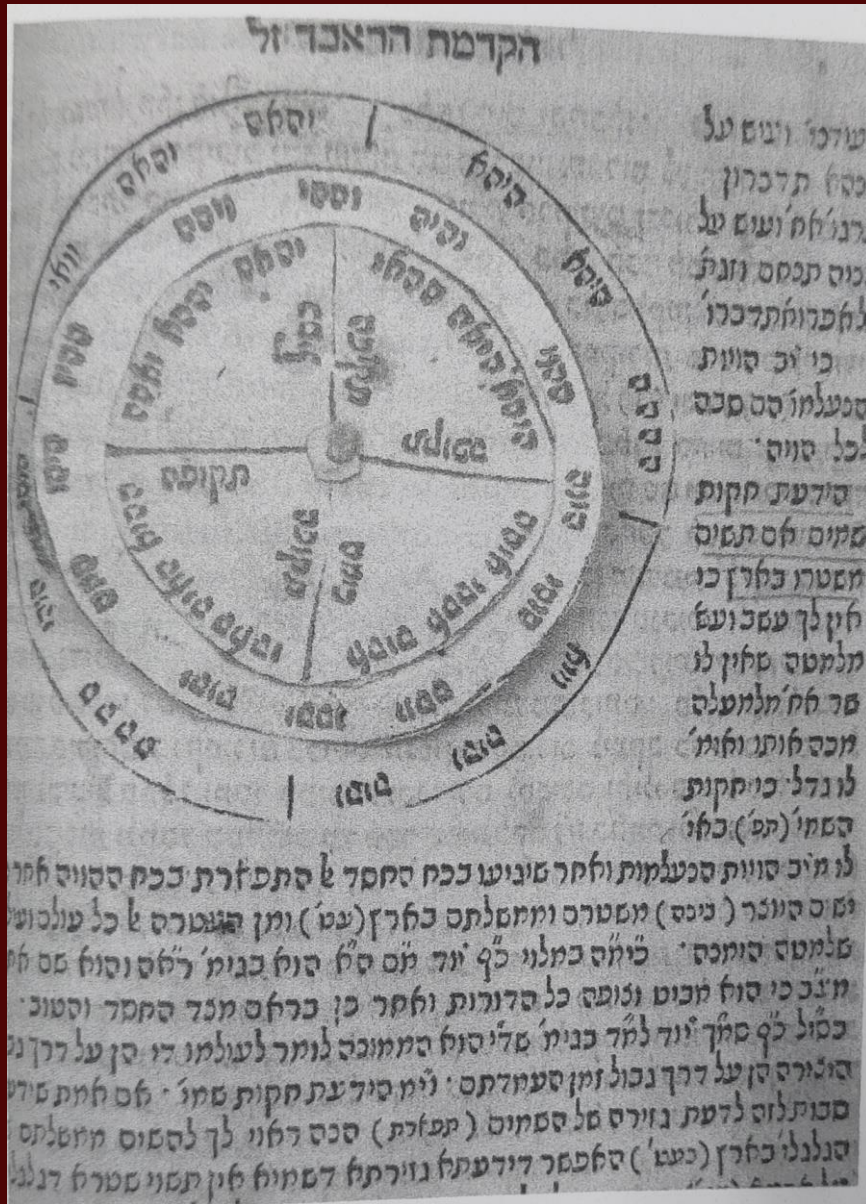
– Ibn Khaldūn, *Muqaddimah , vol I, 241.*
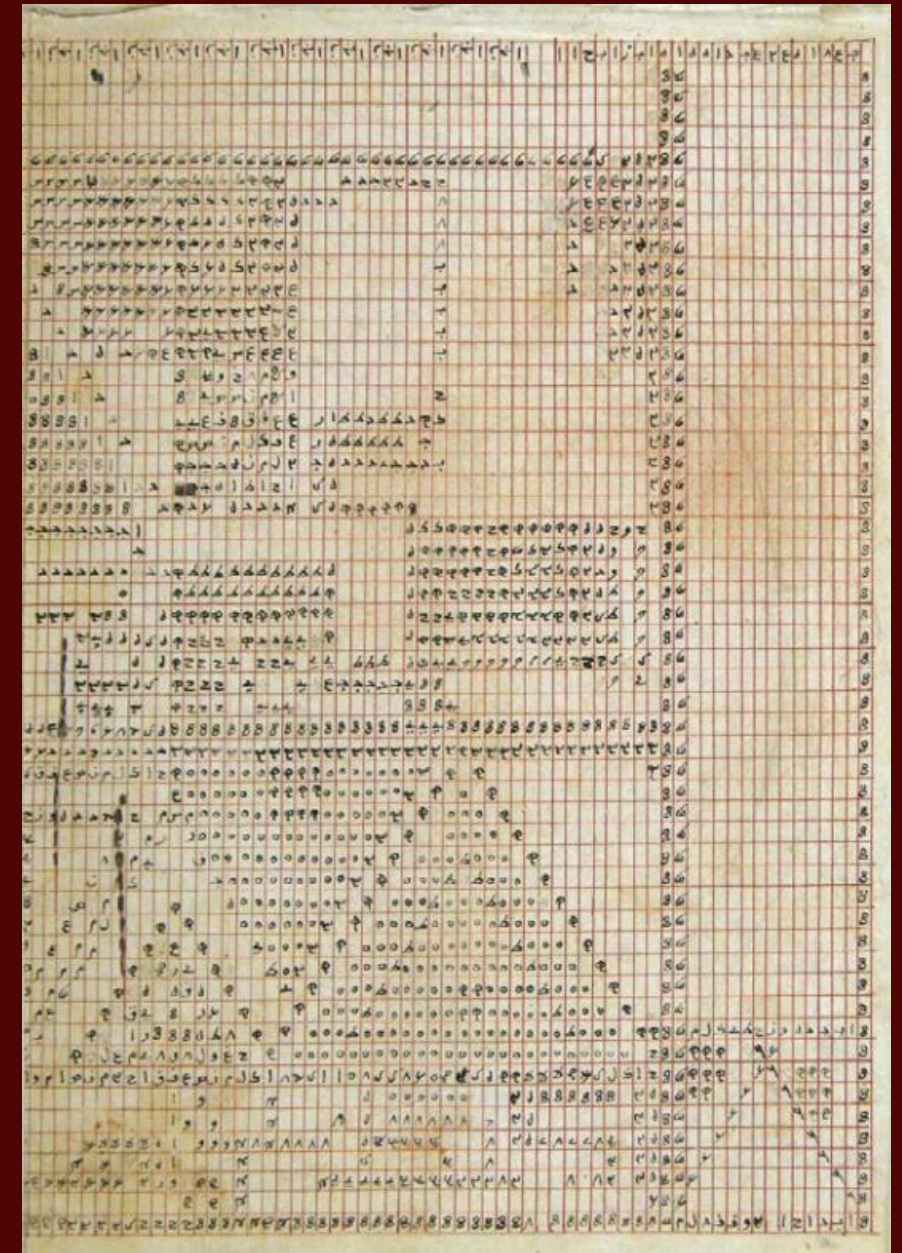
MS Damad Ibrahim 863, Süleymaniye library, Istanbul, fol. 353r.

(Pseudo) al-Būnī's *Shams al-ma ʿārif al-kubrā*

- Fragment the name of the seeker and mix it with the letters of the question.

- The letters are converted into numerals, which are used to determine a poetic metre.

- The letters are then arranged according to this metre in order to produce an answer.

- Other methods described in the text also employ fragmentation and combination in order to derive answers.

- They include the operation of magic squares or additional astrological components.

MS Arabe 2652, Bibliotheque Nationale de la France, Paris, fol. 397

MS Ahmet III, 3042, Topkapi Saray library, Istanbul, vol. 1, fol. 237

Llull and Kabbalah?

MS. SY Mantua 1561, Page Yud Aleph (from Marla Segol, *Word and Image in Medieval Kabbalah* (2012), p.131)

- Giovanni Pico della Mirandola (1463-1494 AD) saw an affinity between Llull's *ars* and a certain type of Kabbalah that was concerned with the combination of letters of the alphabet for representing the names of God.

- This was used for practices of meditation and for achieving mystical experiences.

- Llull was in contact with many important Jewish figures living in Barcelona, including some kabbalists.

Conclusions
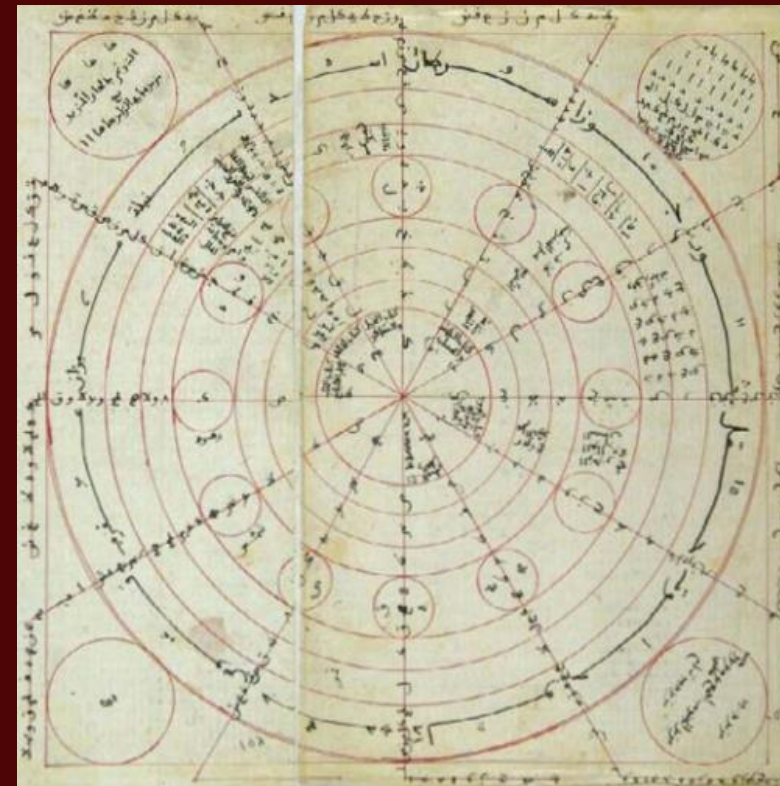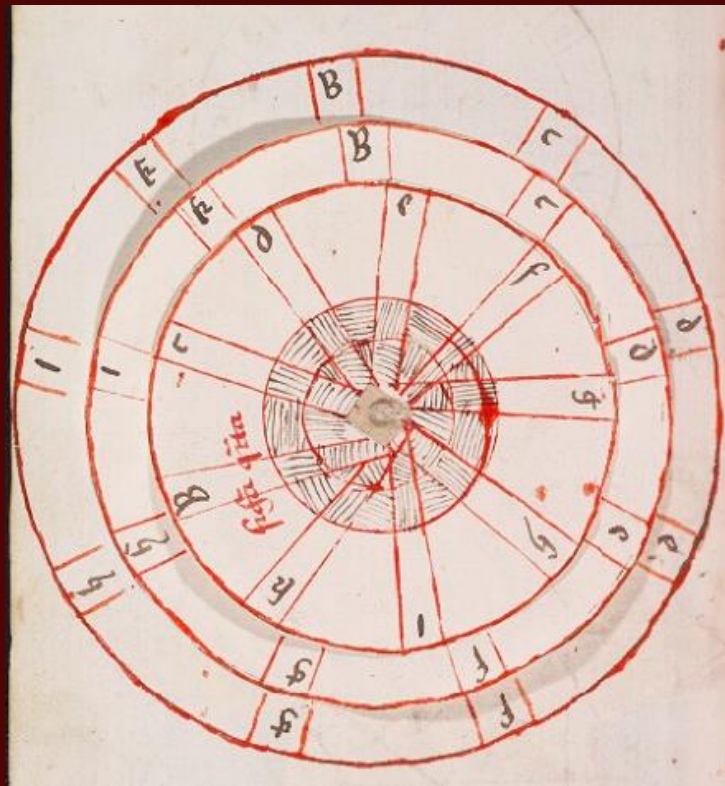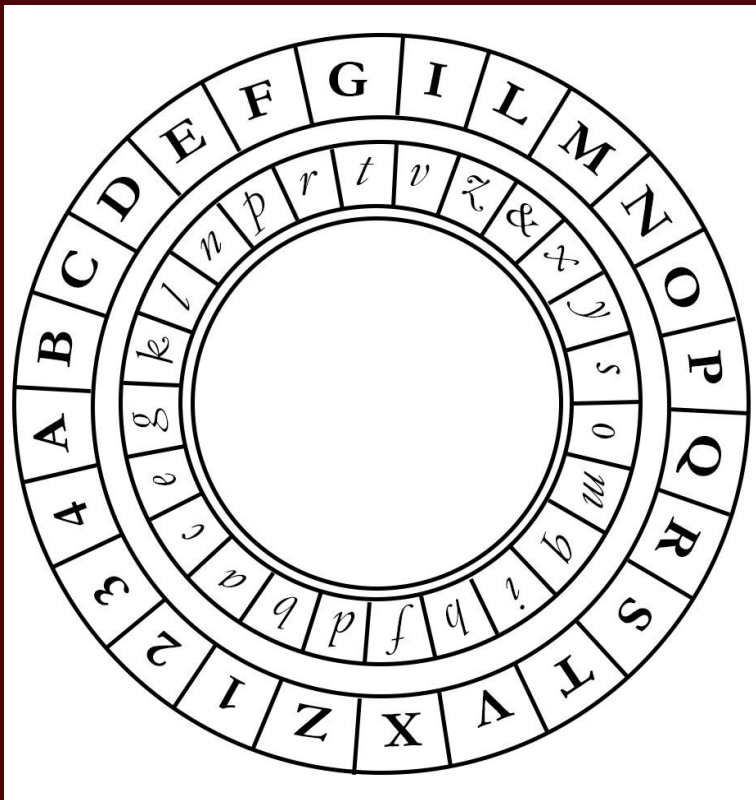
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