

Leonardo DaVinci provided the illustrations for a well-known dissertation published in 1509 titled "De Divina Proportione" which outlines the principles of natural proportion, called the "Golden Rule", or "Mean Ratio".

The "Mean Ratio", referred to as Phi (\emptyset) is mathematically derived from the ratio of sequential numbers in the Fibonacci series. Phi (\emptyset) is employed in DaVinci's works of art - as a method of balancing his subjects against backgrounds and other elements of the composition. These ratios, and others documented by Pythagoras and Fibonacci are used by other notable Renaissance artists and scientists such as Johannes Kepler.

$$F(n) := \begin{cases} 0 & \text{if } n=0; \\ 1 & \text{if } n=1; \\ F(n-1) + F(n-2) & \text{if } n>1. \end{cases}$$

Fibonacci Series: 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, ...

$$\emptyset := F(n+1)/F(n), \quad \sqrt{5+1}/2=1.618$$

$\emptyset=1.618$ as n approaches infinity ex: $89 / 55 = 1.618181818...$



About Phi Ø and This IWC

We understand the 'mean ratio' Ø and it's place in explaining natural things like the growth of trees, leaves, animals, and human features.

Hundreds of proportions in the human body are in the golden ratio Phi Ø, for example the distances between the shoulder, elbow and tips of the fingers, and the widths of teeth. I have recently made a fascinating discovery about this watch that goes far deeper than Ø.

Ø = 1.618

Ø on the IWC DaVinci Perpetual Calendar Edition Kurt Klaus:

Using digital image analysis – we can measure dimensions of various features in 'pixels'.

Proportion of Hands = 1.618:

Length of Minute Hand =	151 pixels
Length of Chrono Seconds hand =	244 pixels
Ø x 151 =	244

Proportion of 'positive' and 'negative' curves = 1.630:

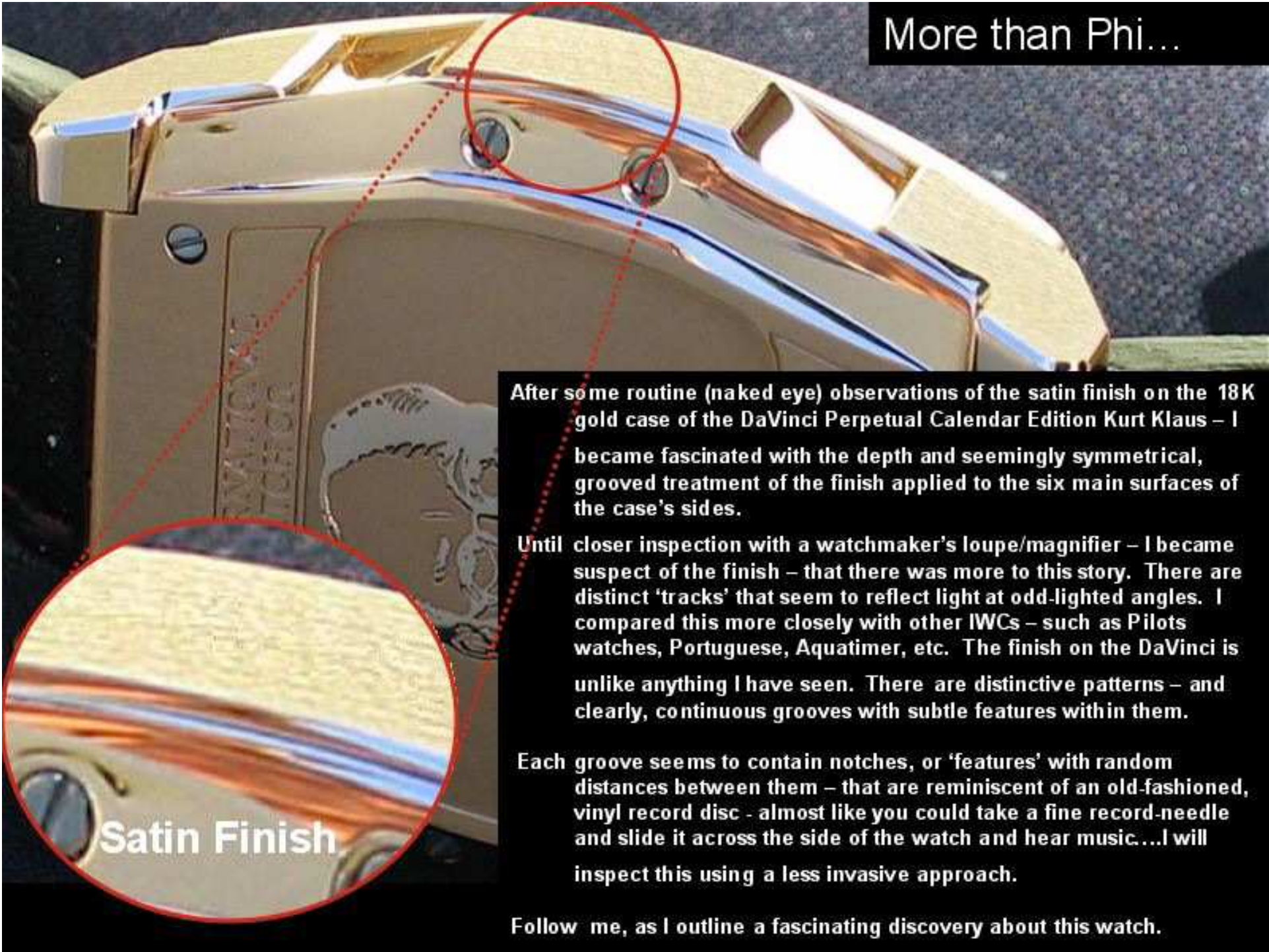
Length of polished, negative curve =	92 pixels
Length of satin, positive curve =	150 pixels
Ø x 92 =	149

Proportion of Areas of Subdials = 1.616:

Area of small subdials (r=59 pixels) =	10,935 pixels
Area of Moon phase dial (r=75 pixels) =	17,671 pixels
Ø x 10,935 =	17,692

^measurement accuracies +/- 1/10





More than Phi...

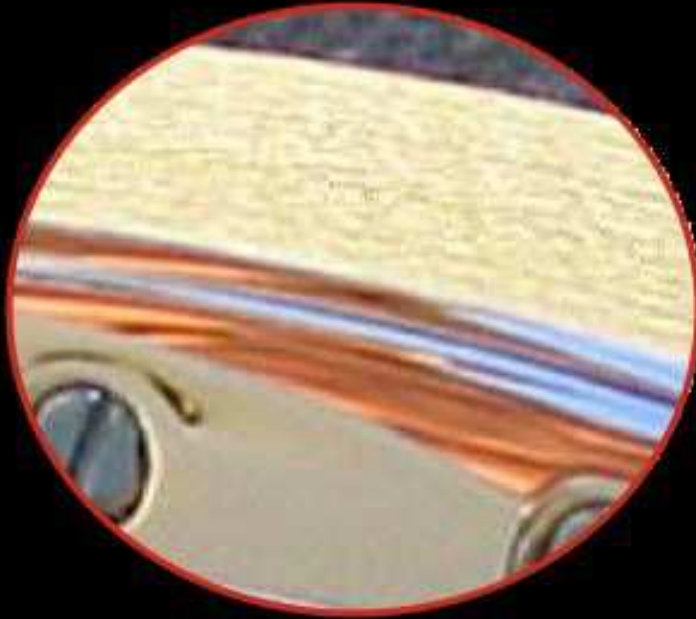
After some routine (naked eye) observations of the satin finish on the 18K gold case of the DaVinci Perpetual Calendar Edition Kurt Klaus – I became fascinated with the depth and seemingly symmetrical, grooved treatment of the finish applied to the six main surfaces of the case's sides.

Until closer inspection with a watchmaker's loupe/magnifier – I became suspect of the finish – that there was more to this story. There are distinct 'tracks' that seem to reflect light at odd-lighted angles. I compared this more closely with other IWCs – such as Pilots watches, Portuguese, Aquatimer, etc. The finish on the DaVinci is unlike anything I have seen. There are distinctive patterns – and clearly, continuous grooves with subtle features within them.

Each groove seems to contain notches, or 'features' with random distances between them – that are reminiscent of an old-fashioned, vinyl record disc - almost like you could take a fine record-needle and slide it across the side of the watch and hear music...I will inspect this using a less invasive approach.

Follow me, as I outline a fascinating discovery about this watch.

Investigation of Features in Grooves



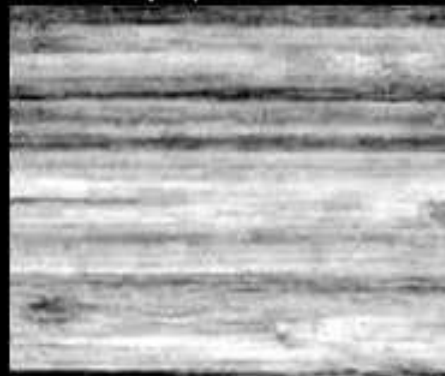
1. We took flat digital photos at zero-angle of the 78mm² satin surface using a Nikon D200 at 10.2 mega pixels. Photoshop Elements used to process the image and enlarge by 60x. (figure a. below)
2. Used Photoshop Elements to remove the color and adjust the lighting. (figure b.)
3. Final adjustment of the contrast and sharpening. (figure c.)
4. Image saved as a simple grayscale .JPG graphics file.

3mm² sample of the area
magnified 60x



a.

Color Removed, lighting adj
distinct grooves and features
are easily spotted



b.

Contrast +10, Sharpened +10
this will make it easier to
programmatically 'map' features



c.

Closer Inspection of 3mm² Surface Sample



The image on the left is only 3mm² of the 78mm² total area of the satin finish on the DaVinci Case located at 9 O'Clock....

I was am convinced that these grooves are no accident. Could these be 'intentional'?

Is there so much more to this watch than meets the eye?

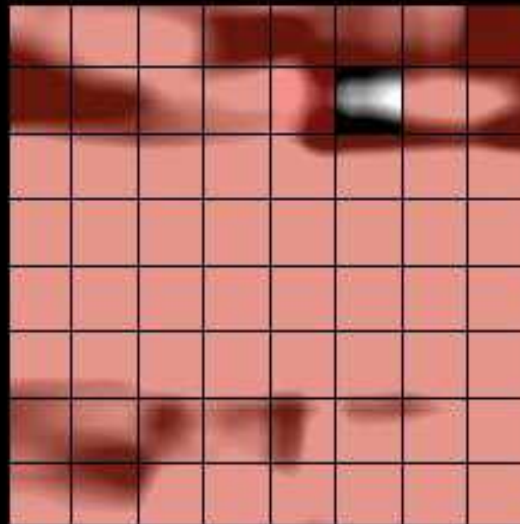
I knew that if I was to figure it out – I would need to get a team in place and invest some \$\$\$.

I am on a mission.

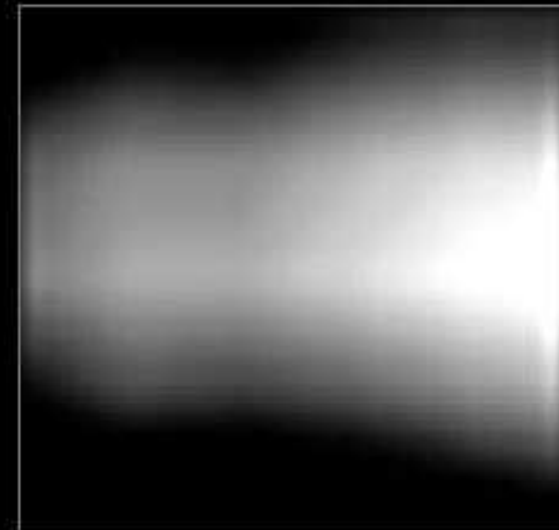
Conversion of Binary to Decimal



a. Sample of $1/5\text{mm}^2$ surface



b. Same $1/5\text{mm}^2$ sample outlined in grid highlighting one $.025\text{mm}^2$ segment - there will be 3120 total.



c. Enlargement of the $.025\text{mm}^2$ segment highlighted in 'b' on the left

It's a very basic process of taking the entire high-contrast, black & white image of the satin surface and enlarge it with 'Photoshop'.

A simple Javascript program we wrote imports the .JPG file. Each of the $.025\text{mm}^2$ segments (3120 total) of the image are mapped and converted to 8-bit binary representation of the features in each 'groove' of the satin finish. This is a 2-step process that 'looks' for the dark areas - which appear as 'number 1's' in the chart at right and converted to decimal format.

The decimal output for the example is {248,240,0,0,0,128,252,255}

1 2 8	6 4	3 2	1 6	8	4	2	1	tot
1	1	1	1	1	0	0	0	248
1	1	1	1	0	0	0	0	240
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	128
1	1	1	1	1	1	0	0	252
1	1	1	1	1	1	1	1	255

Here's Where it Starts to Get Scary...

Using the example we just discussed {248,240,0,0,0,128,252,255} is just one of 3120 complete groups of 8-numbered 'bytes' yielded from the entire surface.

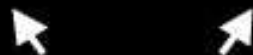
Decimal Val.	ANSI NEW
248	ø
240	¸
0	
0	
0	
128	€
252	ü
255	ÿ

Since the late 1960s, contemporary computers read and write data based on character-encoding tables.

Essentially, a 'character encoding' of the Latin alphabet is accomplished by assigning decimals to printable Latin characters. A complete mapping one particular code table can be found at:

<http://en.wikipedia.org/wiki/Windows-1252>

This is very similar to assigning letters to numbers, like 'A=1', 'B=2', 'C=3', except this ANSI code table accounts for !@#\$%^&*{} and lower-case letters, numbers, and other printable symbols... 'A=65', 'B=66', 'C=67'... the table ranges from 0 to 255 – or a total 256 symbols, each assigned to a decimal – this fits our 8-bit approach.



Convert from numbers to: symbols

Patterns...Encryption...Failure...

Maybe these 24,960 symbols we're analyzing are not the ones we're supposed to be looking at – maybe these are encrypted. How would the information be encrypted? How long is the encryption key? 64-bits? 128-bits? 256?

We broke off into 2 teams doing research on writings and drawings by DaVinci, paintings, speculation and analysis of his works in the centuries to follow. The attempt to come up with clues, hints, phrases, keywords, symbols – something we could use to ID a pattern in the data.

We even ran decryption routines against the 24,960 character file using hundreds of 8,16,32, and 64 character key codes. The chart below outlines the simple approach using a 16-bit key code such as: SCHAFFHAUSEN1868, Schaffhausen1868, 1868SCHAFFHAUSEN, 1868Schaffhausen KURTKLAUSDAVINCI, KurtKlausDaVinci...

	original char	ø	,			€	ü	ÿ	ã	h	E	ò	†	3		k	
A →	ANSI	248	240	0	0	0	128	252	255	227	104	69	210	134	51	0	107
	KEY	S	C	H	A	F	F	H	A	U	S	E	N	1	8	6	8
B →	ANSI	83	67	72	65	70	70	72	65	85	83	69	78	49	56	54	56
C →	SUM 0-255	75	51	72	65	70	198	68	64	56	187	138	32	183	107	54	163
	Decrypted char	K	3	H	A	F	Æ	D	@	8	»	_	SP	.	k	6	£

A + B = C: Decimal ranges from 0-255, If sum(n) > 255 then n = n - 256

The Answer is 'Mona Lisa' !

The alternating "A" and "*" that appear in the positions corresponding to the Fibonacci series have significance to Leonardo DaVinci's painting "Mona Lisa". Some research we came up with hypothesized the name "Mona Lisa" itself is an anagram for 'Anom Isis' which bears root from Egyptian history - "A" for Anom, the god of male fertility and * (asterisk) representing the 'star Sirius' and symbol for "Isis", the god of female fertility.

Mona Lisa's smile has been left for centuries of interpretation - and certainly, the argument of the duality of male/female traits has played an integral role in the fascination of this work.

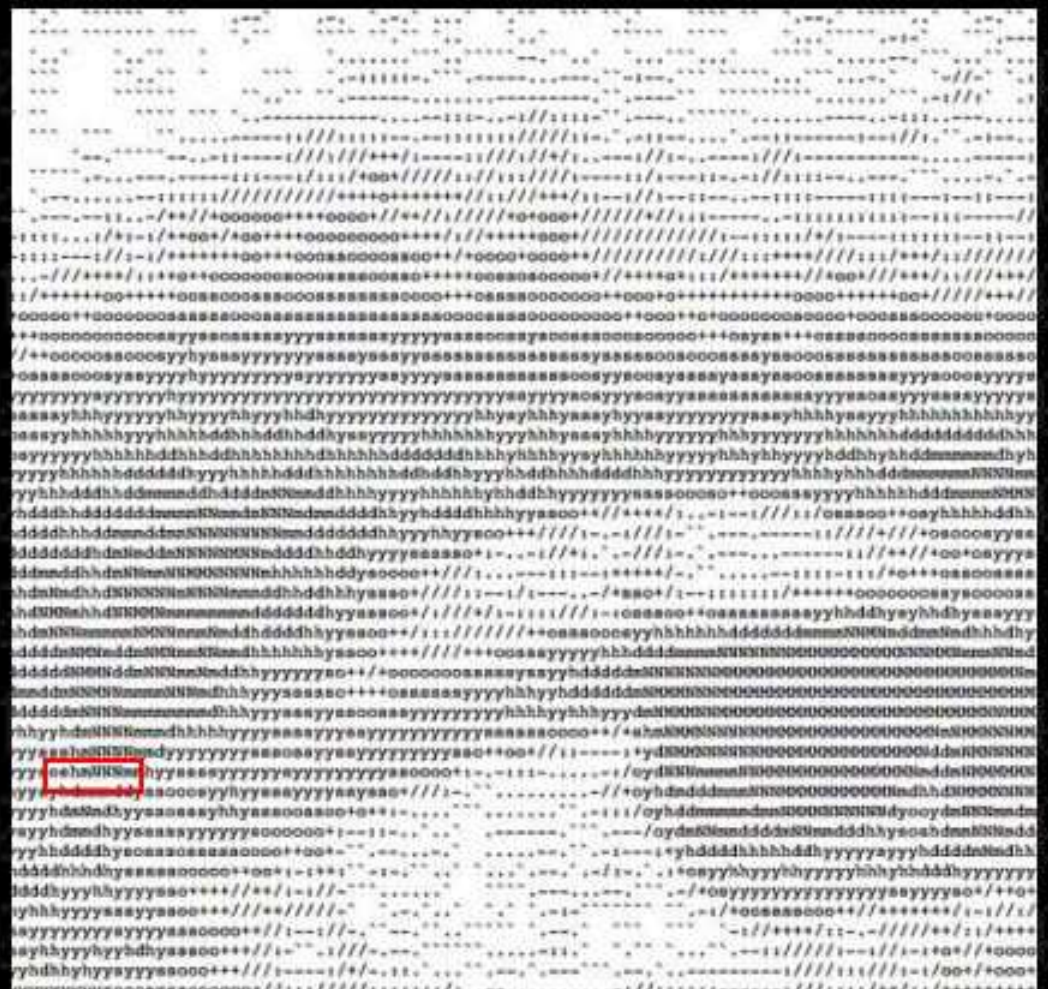
Furthermore, this makes complete sense - after all, IWC's recent production of "The Interrogation of Leo and Lisa" adds credence to the selection of this 8-character keycode by IWC.

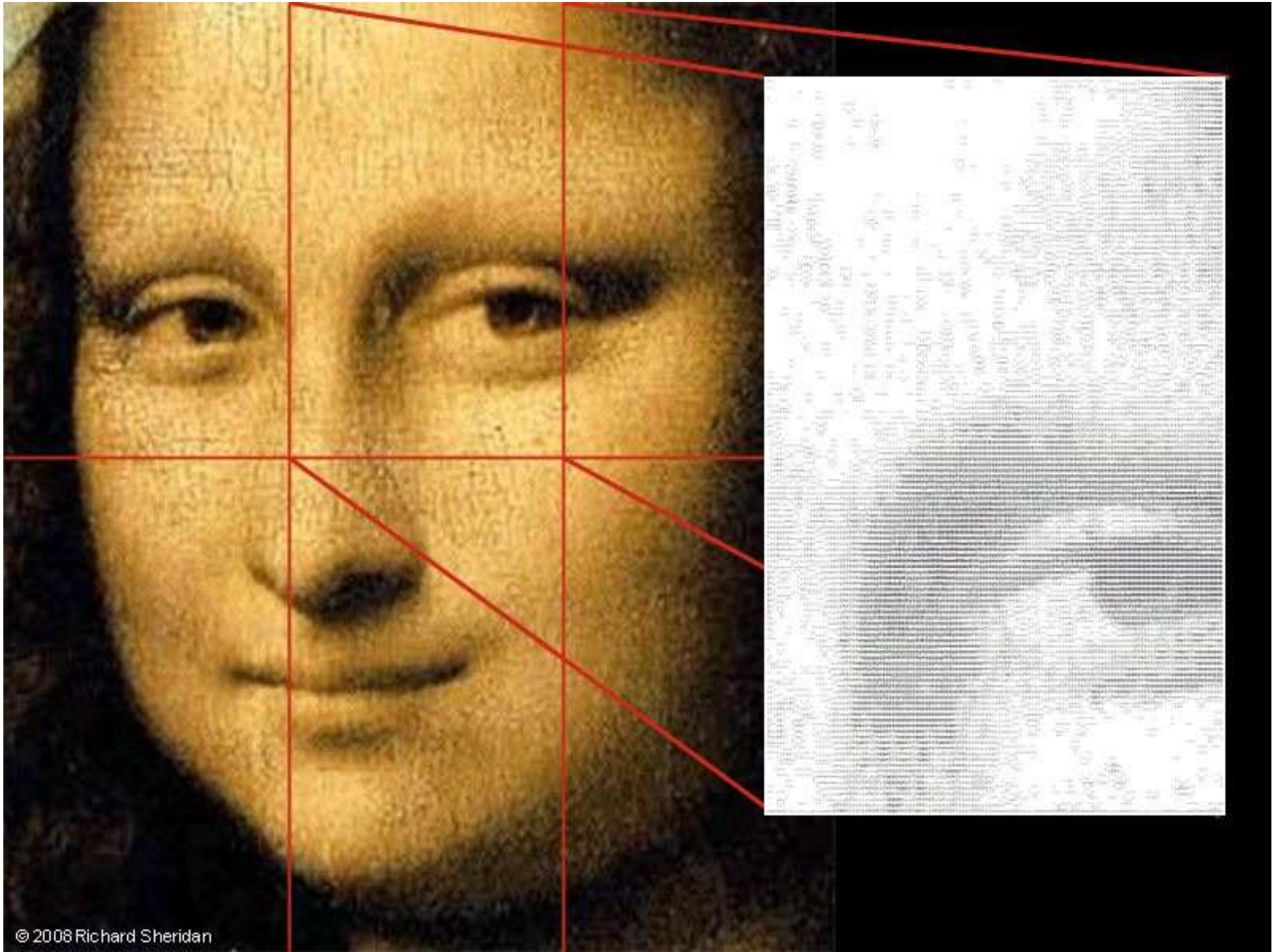
	original	"	ETX	Ù	FF	STX	ã	Û	ETX
A →	ANSI	34	3	249	12	2	229	219	3
	KEY	M	o	n	a	L	i	s	a
B →	ANSI	77	112	110	97	76	105	115	97
C →	SUM 0-255	111	115	104	109	78	78	78	110
	Decrypted char	o	s	h	m	N	N	N	n

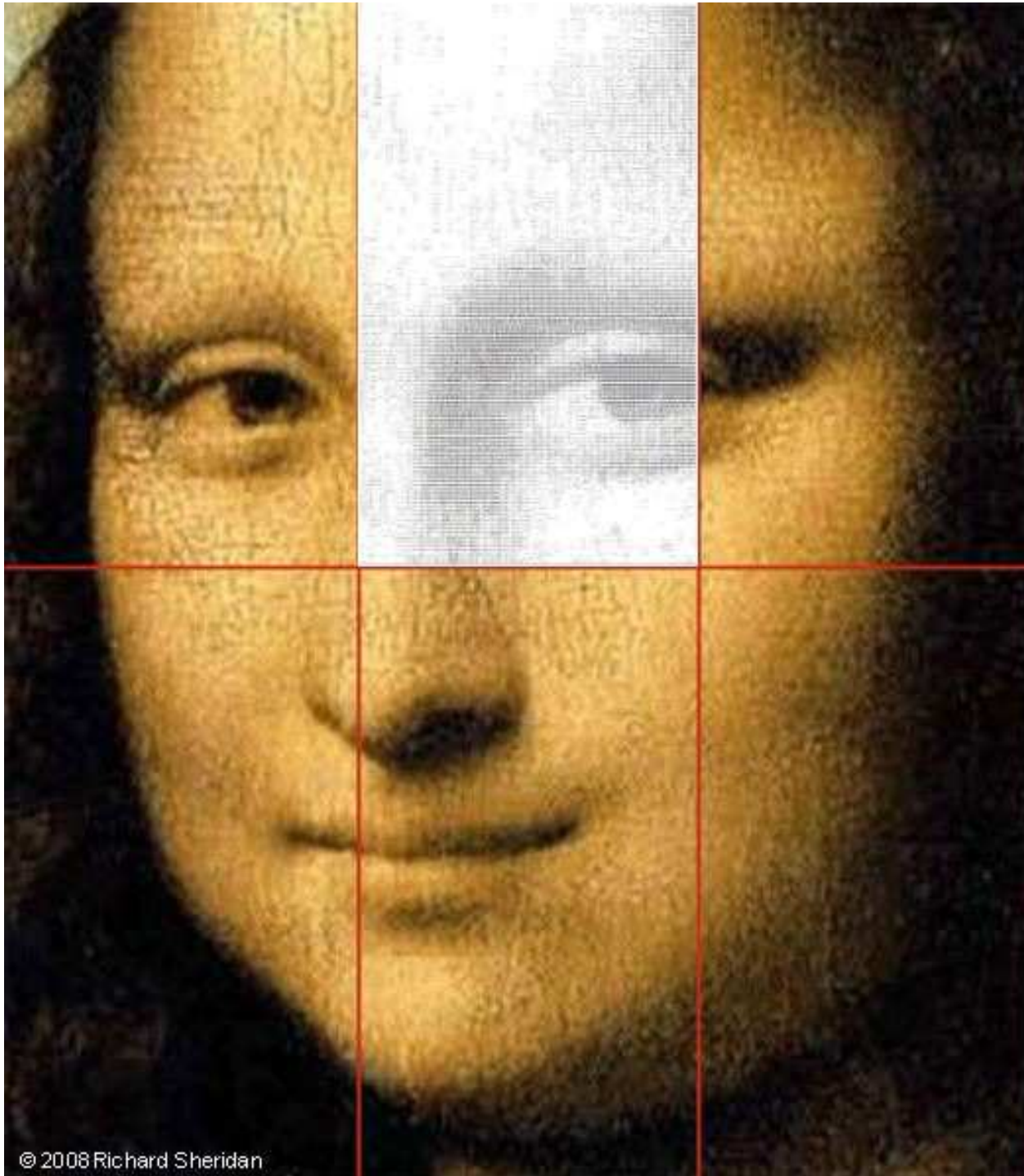
Here is an example how the keycode "MONALISA" is applied 3120 times throughout the length of the .TXT file, 8 characters at a time to 'decrypt' it...

A + B = C: Decimal ranges from 0-255, If sum(n) > 255 then n = n - 256

Viewing the Decrypted File...







Using the gold case of the DaVinci to store encrypted information that reveals the iconic work of the 'Universal Genius' is itself a technical triumph that may, or may not have been intended to be discovered. Perhaps given the 500 year perpetual calendar, IWC may have realized that the watches would be admired, and studied for centuries to come.

- there is no comment from IWC...

Richard Sheridan