



MISSION 5: KRYPTO

Method of

Encryption:

ADFGVX, grille cipher

Important Clues:

Text on record sleeve and label, french wine and bread, floppy disc labelled battleships, stopwatch, views on computer screen, tea kettle, print-out with letter matrix

Hidden active and

clickable areas:

Record player, computer screen, Folder „innen“ (German for „inside“), upper right corner of window „innen“ (to close it)

1 Record

On the record sleeve and label, the following letters are typeset in uppercase: **ADFGVX**. ADFGVX is a method of encryption. See also http://en.wikipedia.org/wiki/ADFGVX_cipher

2 Bread and Wine

The bottle of french wine and the bread are a picture puzzle:

Bread: pain (french)

Wine: vin (french)

GEORGES PAINVIN is a french cryptanalyst who broke the ADFGVX code in 1918. This picture puzzle confirms the ADFGVX method.

3 Battleships

Battleships, as written on the label on the floppy disc, is the **NAME OF A GAME** that is based on locating coordinates in a matrix – it also refers to the ADFGVX encryption method.

4 Stopwatch

The intervals that can be found on the stopwatch indicate the **INTERVALS IN THE COMPOSITION** Krypto that are relevant for the mission. The sequence of musical notes in these intervals are as follows:

Intro (in time) upper voice:

0 : 00 ' 33 " 00 - 0 : 00 ' 45 " 00 :
C# , C , C# , D , A , C , F , E , B , C , G , D , F , E , Eb , C

Interlude:

0 : 00 ' 33 " 00 - 0 : 00 ' 45 " 00 :
C# , C , C# , D , A , C , F , E , B , C , G , D , F , E , Eb , C

5a Computer screen, 1st window:

The names of the horizontally aligned (1,5.txt, 2,5.txt, etc) and the vertically aligned (1.txt, 2.txt, etc) files resemble a ADFGVX-matrix. The sequence of file names indicates that the 12 possible notes C, C#, D, D#, E, F, F#, G, G#, A, A# and B have to be arranged alternately in the first column and the first row of the matrix. This has to be done in whole steps, thus splitting the 12 notes into two groups (C, D, E, F#, G#, A# and C#, D#, F, G, A, B) that have to be arranged both horizontally and vertically.

This gives you two possible matrices:

Matrix A

	C#	D#	F	G	A	B
C						
D						
E						
F#						
G#						
A#						

Matrix B

	C	D	E	F#	G#	A#
C#						
D#						
F						
G						
A						
B						

5b Computer screen, 2nd window:

A second window opens on click of the folder icon labelled INNEN. It contains 36 files arranged in six columns and six rows. The file in the top left corner is named a.txt, and the file in the 3rd column/5th row is named 0.txt.

This tells you how the glyphs of the plain text have to be arranged in the ADFGVX-matrix. You start in the top left corner with the letter A and continue filling the next boxes to the right with the following letters alphabetically. By doing this, you end up placing the letter Z in the space left of the one indicated by the file 0.txt. From here, you continue in the same manner with the numbers 0 to 9.

The two matrices now look like this:

Matrix A

	C#	D#	F	G	A	B
C	a	b	c	d	e	f
D	g	h	i	j	k	l
E	m	n	o	p	q	r
F#	s	t	u	v	w	x
G#	y	z	0	1	2	3
A#	4	5	6	7	8	9

Matrix B

	C	D	E	F#	G#	A#
C#	a	b	c	d	e	f
D#	g	h	i	j	k	l
F	m	n	o	p	q	r
G	s	t	u	v	w	x
A	y	z	0	1	2	3
B	4	5	6	7	8	9

6 Plain text

Using these matrices and the sequences of notes detected in 4 you can now find the plain text.

A:

```
C#, C, C#, D, A, C, F, E, B, C, G, D, F, E, Eb, C + matrix A  
C#/C: a C#/D: g A/C: e F/E: o B/C: f G/D: j F/E: o D#/C: b
```

Solution: age of job.

The second sequence of notes doesn't deliver anything that makes sense in combination with matrix A.

B:

```
C, Db, C, Eb, Ab, Db, E, F, Bb, Db, Gb, Eb, E, F, D, Db + matrix B  
[Notes are n-harmonically substituted: Db=C#, etc.]  
C/C#: a C/D#: g G#/C#: e E/F: o A#/C#: f F#/D#: j E/F: o D/C#: b
```

Solution: age of job.

The first sequence of notes doesn't deliver anything that makes sense in combination with matrix B.

7 Tea kettle

The tea kettle refers to the game of the same name that is based on the fact that some words have several meanings. The id card underneath the kettle tells you for what word a different meaning is to be found: job (the job of the cardholder is the only information the card carries. The last name is an additional clue: Kellner is the german word for waiter – also a common job.) Next to its career-related meaning, the word job can also refer to a well known biblical figure.

8 Age

The bible doesn't give any precise information about the age of Job. But in Job 42/16 it is mentioned that Job had an **ADDITIONAL 140 YEARS** to live:

See also <https://www.biblegateway.com/verse/en/Job%2042%3A16>

9 Stencil

The title of the record “Cuttin’ through the years” is a clue that the numbers 1-4-0 have to be cut out in the matrix. By doing so, the following stencil is created (See also: [http://en.wikipedia.org/wiki/Grille_\(cryptography\)](http://en.wikipedia.org/wiki/Grille_(cryptography))).

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			2	3
	5	6	7	8	9

10 Applying the matrix

The matrix of the stencil has the same number of spaces as the the letter-matrix on the print-out that we can find underneath the computer. If you print out the print-out, transfer the stencil in matching dimension on paper and put both on top of each other, three spaces of the letter-matrix are visible.

In the space originally occupied by the number 0 you will see the letter “st” of the letter-matrix beneath. In the space 1 you can see the letter “l”, and in space 4 the letter “o”

- a.) Arranging these letters in the order 1-4-0 leads to the letter sequence: l – o – st
- b.) Turn the stencil by 90 degrees and find the letters for 1-4-0: i – n – cy
- c.) Turn the stencil by 90 degrees again and find the new letters for 1-4-0: b – e – rs
- d.) Turn the stencil by 90 degrees once more and find the letters for 1-4-0: p – a – ce

This procedure is hinted by the fact that the music in this mission is played with a turntable.

The combination of letters from 10a.) – 10d.) are the solution.

SOLUTION:

LOSTINCYBERSPACE



Did you notice the following?

- 1 — The NOTE IN RUSSIAN ON THE PRINT-OUT translates to “East Berlin, Behrensstraße (use back entrance), Sergej.” Behrensstraße is where the Russian embassy in Berlin is located at. A agent called Sergej was the first contact person for the group of hackers around Karl Koch, who were responsible for a famous cold war espionage incident in the 1980s.
- 2 — The WRITING IN RUSSIAN ON THE PLAQUE in which the code is entered translates to “Sergej welcomes you to the back door of the Russian embassy. Please enter your entry code.”
- 3 — STICKER ON THE COMPUTER SCREEN (75ct): An accounting error of 75ct lead to the detection of the hackers by Clifford Stoll. See also: http://en.wikipedia.org/wiki/The_Cuckoo%27s_Egg
- 4 — The green triangle with the eye inside hints towards the illuminati or Karl Koch. His hacker name was Hagbard Celine, a character from the book series *Illuminatus!* by Robert Anton Wilson.