

MISSION 7: MERCURY DANCE

Method of

1

Encryption:

Substitution based on the number Pi

If the cursor is moved over the word „introduction“ in the champagne advertisement, the following is marked by red circles:

Important Clues:

Various parts of the magazine (see solution method)

› **299, 792, 485**

This is a hint towards the speed of light – light travels at 299792458 metres per second. The Symbol for the speed of light is c0.

› **ASTON MARTIN 2-LITRE SPORTS**

This is a car model, also know as DB1.

Hidden active and

clickable areas

(mouse over):

„introduction“, „après“, „ la grande danseuse MATA HARI...“, Car

› **DEUTERIUM**

This is a isotope of hydrogen for which the symbol D2 is used.

› **EXOSOME COMPLEX EXONUCLEASE RRP44**

This is a protein that can also be described as DIS3.

The symbols linked to the four marked spots are the first 4 notes of a chromatic scale combined with a number:

C=0 D \flat =1 D=2 Dis=3

(“Dis” is the german name for D#.)

Since they are found in relation to the word “introduction”, this clue is about the intro of Mercury Dance, consisting of 51 notes in total (the sheet music is accessible by clicking on the ad “le grand danseuse MATA HARI...”). All in all, there are 10 different notes in the intro:

C, D \flat , D, E \flat (D#/Dis), E, G \flat , (F#), G, A \flat , A, B \flat

The first four notes of the chromatic scale have already been assigned to a number each. Continuing this method for the remaining notes that are used in the intro leads to the following:

E=4 G \flat /F#=5 G=6 A \flat /G#=7 A=8 B \flat /A#=9

If the 51 notes from the intro are substituted by their corresponding numbers (see above) it leads to the following string of numbers:

314159265358979323846264338327950288419716939937510

The first note (E \flat =3) is different from the other 50 in that it is not assigned to a chord symbol (such as D \flat m6/9 or Cm7#11) or to a time signature (such as 5/4, 6/4). Separating the digit 3 from the other by a comma leads to the number pi.

3,14159265358979323846264338327950288419716939937510

2

The ad titled "nouvelle élasticité" on the third magazine page contains the following clue: ←A→ ↑B↓ = first horizontal, then vertical

This refers to the letter matrices that can be found on pages 1 to 3 of the magazine and to the order that has to be followed when decoding them.



3

Moving the cursor over the car on the same page shows an arrow that points to the syllable "**COM**"

This car has the number 788261 written on its door. The number consists of six digits, or three double digits: 78,82,61. Those double digits are to be used in the letter matrix 3 according to the instructions on the same page (first horizontal, then vertical - see 2)

78: the box in column seven, row eight contains the letter U.

82: gives the letter R.

61: gives the letter L.

URL is an abbreviation for Uniform Resource Locator, commonly also known as a web address. The letter strings com and URL indicate that a **WEB ADDRESS** is to be found.

4

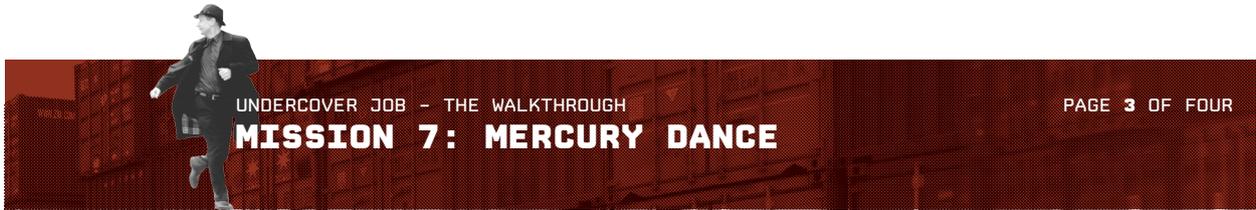
4a – Magazine, Page 1, Aspirine Ad

When moving the cursor over the word "**AVANT**" ("in front of" in french) several other words are highlighted that read combined "**ALLEZ CHEZ VIR-GULE**". ("Go to comma" in french) In French and most European languages, the comma is used as a decimal point, so it is the digit in front of the comma in Pi (3) which is relevant now. This points to the **THIRD LETTER MATRIX**.

4b – Magazine, Page 1, CACAO-Ad

Moving the cursor over the word "**APRÈS**" ("after" in french) causes several other parts of the magazine page to be highlighted: the words "**YEUX**" („Eyes") and "**PAIR**", and an illustration of two **EARRINGS**.

This indicates that the digits of pi after the comma are to be used **IN PAIRS**.



5

Turning to letter matrix three and using the digits after the decimal point in pi as coordinates works like this:

$$14 \text{ (1 horizontal, 4 vertical)} = S \quad 15 = A \quad \text{etc}$$

Continuing with the digits leads to the following result:
SAMEDIASEIZEHEURESAUMUSEEGUIMETFIN
(*Samedi a seize heures au musee Guimet fin*)

It has been established earlier that the result is a web address (see 3)
Entering **WWW.SAMEDIASEIZEHEURESAUMUSEEGUIMETFIN.COM** in a browser will show you a scene with multiple images of Mata Hari. (You have to be logged in to www.undercover-job.com to be able to see the site.)

6

Next to the letter matrix on page 2 of the magazine there is a pricing table. All the amounts in the table have two digits in front of and after the decimal point. As in 5, those pairs of digits can be used as coordinates in the letter matrix on the same page. (Another clue towards that can be found in the illustration "L'homme ideal")

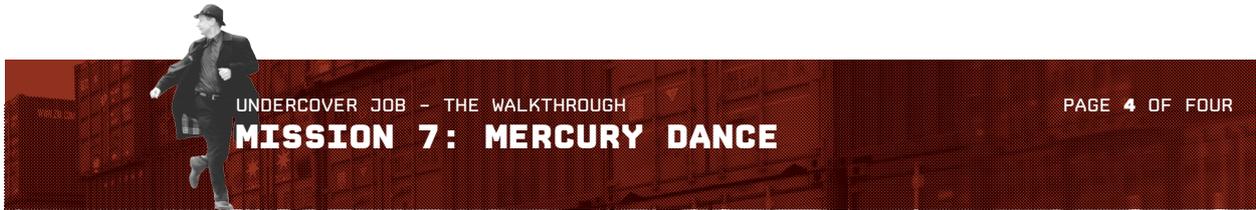
$$22 = T \quad 19 = U \quad 32 = D \quad 52 = I \quad \text{etc}$$

Continuing with the digits leads to the following result:
TUDISCELAPEUTARRIVERATOUTLEMONDE
(*Tu dis cela peut arriver a tout le monde*)

7

According to its instructions, **NAMES OF COUNTRIES** have to be found in the letter matrix on page 1. In total there are fourteen: BRESIL, CANADA, CHILI, COLOMBIE, EGYPTE, GRECE, HOLLANDE, HONGRIE, MEXIQUE, NORVEGE, POLOGNE, SUEDE, SUISSE and TURQUIE

Those countries can also be found in the **PRICING TABLE** on the left hand side of the same page. Using the amounts assigned to those countries as coordinates in the same way as in the other letter matrices (see 5 and 6) leads to the following result:
JEDISILADORELAMUSIQUEMODERNE
(*je dis il adore la musique moderne*)



SOLUTION / ENTERING THE CODE:

In the scene found at www.samediaseizeheuresaumuseequimetfin.com every photo of Mata Hari can be clicked, each opening two speech bubbles. One of them is titled "Je dis ..." (I say) and contains a sentence in french, the other one is titled "Q'est-que dis-tu?" ("What do you say") and has a field to be filled out.

For one of the photos, the 1st bubble contains the sentence „Il adore la musique moderne“, which what has been identified in letter matrix 1. The sentence from letter matrix 2 has to entered in the corresponding other bubble (leaving out "Tu dis"the blanks):

CELAPEUTARRIVERATOUTLEMONDE

Did you notice the following?

1 — The symbol for pi is also used as the formula symbol for permutation. A permutation can be found in part A1 of Mercury Dance: the order of the notes G, Bb, C and D is changed in every measure.

2 — The following drinks are hidden in letter matrix 2:

VIN, RINCETTE, EAU GAZEUSE, THE, CAFE, JUS, LAIT, LIQUEUR and LIMONADE.

In the matrix there are four boxes that belong to both the sentence TUDISCELAPEUTARRIVERATOUTLEMOND and to the drinks. Together, these boxes form a square and thus a contrast to pi (which describes a circle's circumference.) The letters in these boxes are N-E-I-R, which in an Anagram for "rien" ("nothing" in french) – a dead end leading to nothing.

3 — Letter matrix 3 is more complex than the two others. Some boxes contain two letters, and the words that are hidden sometimes change the direction they are read in. An example for this is MONTGOLFIERE: The word begins with the letter M from the Box with the coordinates 92 and continues like this:

O = 91, N = 90, T = 90, G = 91, O = 92, L = 93 etc

The following methods of transportation can be found: TRIPORTEUR, VOITURE, MONTGOLFIERE, MOTO, AVION, BATEAU, VELO, LITIERE

4 — A binary code is used in part A1 of Mercury Dance starting at measure 11: A note or a chord represent 1, a break represents 0. Using that method, the notes set in a measure of 5/4 read 10110, the notes set in a measure of 3/4 read 111.

10110 transferred to decimal number is 22, 111 is the number 7 in the decimal system. The fraction 22/7 is an approximation to Pi.