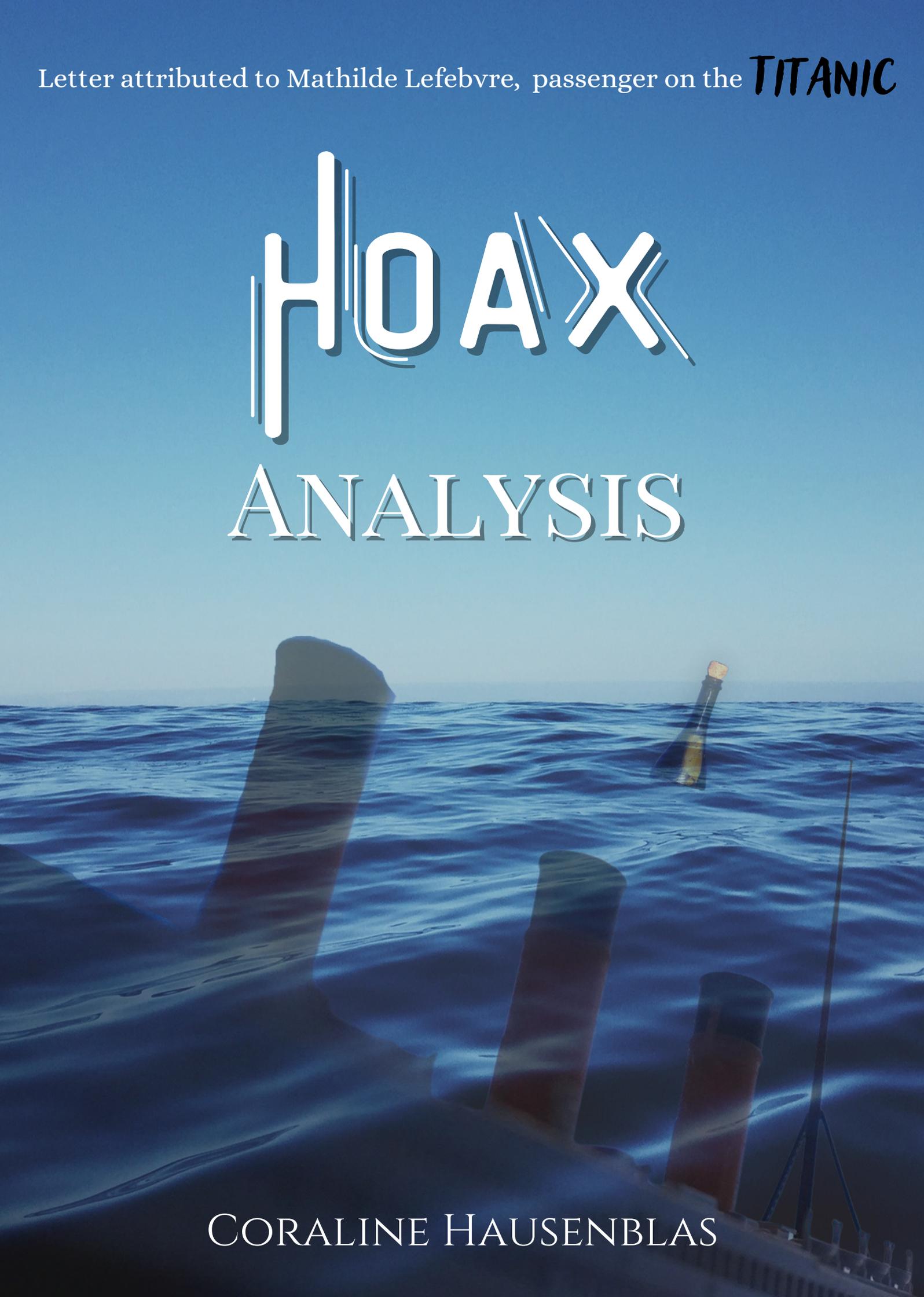


Letter attributed to Mathilde Lefebvre, passenger on the **TITANIC**

HOAX

ANALYSIS

CORALINE HAUSENBLAS

A blue-tinted photograph of the ocean. In the foreground, the masts of the Titanic ship are visible, partially submerged. In the middle ground, a bottle is floating in the water. The background shows the horizon line under a clear blue sky.

Credits

© Coraline Hausenblas 2022

Cover photo credit: Coraline Hausenblas

Cover image: Pixabay

Data mining consultancy: Matěj Hausenblas

This document was written, designed and translated by the author of this document, Coraline Hausenblas.

This document is for personal use only. Any use in a collective setting is prohibited.

This document is protected by international copyright laws. All or part of this document may not be used without the written permission of the author.

Copying, commercial and non-commercial distribution of this work are prohibited.

Any reproduction of this document is prohibited in any form (digital, paper, audio and video).

As part of the right of short quotation, it must be followed by its source (full name of the author and title of this document.)

Any practice contrary to the legal provisions mentioned above is liable to legal action.

First edition in English: April 2022

For any question or request for the use of this document, please send an email to:

contact@coralinehausenblas.com

This analysis is a summary of the French analysis :

"La lettre attribuée à Mathilde Lefebvre, passagère du Titanic. Analyse d'un canular."

Do you need the full French analysis in English ?

Send me an email :

contact@coralinehausenblas.com

In memory of the men, women and children who died in the sinking of the Titanic.

In memory of Marie, Mathilde, Jeanne, Henri and Ida Lefebvre.

Summary

Why this analysis? - 01

This analysis is not... - 03

Introduction - 04

- Titanic's history - 05
- Lefebvre family - 07
- Education in France : Key dates - 08
- Learning to write in France in the beginning of the 20th century - 09

Composition of the letter attributed to Mathilde Lefebvre - 11

Observation of alphabetical letters and numbers - 12

Conclusion of observation of alphabetical letters, links, numbers and spatial organization - 14

Conclusion on vocabulary and lexical fields - 18

Conclusions on the tools - 20

General conclusions - 21

Glossary - 24

References - 26

The author - 27

Why this analysis ?

It is easy to understand the emotion created when a bottle thrown into the sea is found. After all, these bottles and the messages they contain are testimonies of the past that suddenly bind us to these people, civil or professional, who one day hoped that their message would be received.

Overboard bottles are a form of communication where the hope that the message will find a recipient collides with the reality of the dangers of seeing it destroyed forever. A romantic symbol of a possible communication beyond space and time, a playful game for travelers or an act of scientific research, the bottles thrown into the sea amaze and move us. So, when one of them could come directly from the most famous ocean liner in history, moreover, written by a child of almost 13 years old the day before her tragic death during the sinking, we sense that the emotion will be multiplied.

The story of the Titanic is a historical fact that fascinates many people around the world. While this interest has led to the emergence of increasingly extensive knowledge on the subject, it is also the object of passions that often take precedence over the facts. Since its sinking, the Titanic has seen the creation of many fanciful stories.

If from 1912, imposters flooded the newspapers with testimonies invented from scratch, the creation of legends surrounding the construction or the days of navigation of the ship has never ceased. The Titanic quickly left the field of historical fact to enter that of myth. Today, the proliferation of conspiracy theories about the famous ship continue to fuel the fictional storytelling machine.

But, if history can always reclaim its rights over legends, ethical questions are central when it comes to the treatment reserved for archaeological pieces. Vigorous debates regularly emerge as to the conditions under which the objects from the Titanic are removed. If some consider that the liner which rests at 3821 meters at the bottom of the Atlantic Ocean is a tomb that cannot be desecrated, the fact remains that the Titanic has become a real financial stake. Any piece related to the ship can be put up for sale at famous auction houses and sell for millions of dollars.

Archaeology, science or art no longer count the number of false documents or false discoveries. History is unfortunately not free from these deceptions and frauds of all kinds. In her book *How to identify a forgery?*, Suzanne Bell recalls: "*From the earliest human history, if something was perceived to be of value, it was an attractive target to forgers.*" (1) We can add that the more a subject is popular, the more its financial value increases, leading to the establishment of real markets in which false documents sometimes rub shoulders with real historical pieces. While some scams are quickly identified as such, some take decades to be debunked. The fear is of course to see these hoaxes sold at exorbitant prices or be mistaken with authentic pieces in museums.

(1) Suzanne Bell, *How to identify a forgery. A guide to spotting fake art, counterfeit currencies, and more*, New-York : Skyhorse Publishing, 2013, p.12

I am Coraline Hausenblas, state-certified Psychomotor Therapist in France since 2011. I also hold a Bachelor's degree in psychology from the University of Lille 3 in France and I learned Forensic Linguistics methodologies.

Born in Lille, in the North of France, and passionate about History, I have been researching the Titanic since 2014. I am familiar with the most well-known websites on the subject and I know what information is easily accessible to the public.

Psychomotor Therapy is a health profession sanctioned in France by obtaining a State Diploma. It is a regulated and protected profession. Writing is a psychomotor activity with a long and complex development. As such, psychomotor therapists are trained in its development and rehabilitation techniques when difficulties are encountered by children or adults.

It is the combination of three factors that pushed me to carry out this analysis: the fact that writing is one of the axes of work in psychomotricity, my passion for History and perhaps above all, my fierce opposition to any form of manipulation.

This document therefore offers an analysis of the letter attributed to Mathilde Lefebvre under the prism of historical knowledge around writing in the French school environment of the early 20th century and the psychomotor development of writing in order to answer the question :

“Could the handwritten letter attributed to Mathilde Lefebvre have been written by a young girl aged 12 years, 11 months and 9 days on April 13, 1912? »

Before proceeding to the analysis in order to answer this question, let us first see what this analysis is not.

This analysis is not...

While this analysis is based on historical and current knowledge of writing, its learning context and its psychomotor development, it is not:

- A graphological analysis. The purpose of this study is not to extract a personality profile of the author of the text.

- A psychological or criminological profiling analysis. The purpose of this study is not to draw up a psychological or criminal profile of the author of the text.

- A resulting analysis of esoteric or pseudo-science hypotheses and practices.

Important Note:

Throughout the analysis, we have opted for the use of the masculine to refer to the "author" of the letter. This choice was made solely for the sake of simplifying the statement.

The purpose of this analysis is not to determine the gender of the author of the document studied.

Introduction

This analysis was approached under the prism of skepticism which allowed us to avoid two pitfalls:

- 1) Accept from the outset that the document is authentic on the simple basis of the emotion or the interest it creates.
- 2) Disqualify it outright on the basis of suspicion.

We have therefore opted for the use of a scientific approach to study the letter and try to answer the question:

"Could the letter attributed to Mathilde Lefebvre have been written by a young girl of 12 years, 11 months and 9 days on April 13, 1912?"

To answer this question, this document proposes to analyze the handwriting of the letter according to three axes:

- **The form of the text** (Observation of letters and their variations in size and amplitude, observations of intra-word spaces, observation of spatial organization, observation of spelling anomalies, observation of numbers.)
- **The content of the text** (Observation of the vocabulary used, interpretative hypotheses on the presence of graphic "oddities" called cacographies)
- **Materials:** paper, pen and ink (Observation of graphic traces and various questions for other professionals (historians, chemists, etc.)

There are currently no authenticated documents written by Mathilde Lefebvre. Any comparative analysis of writing is therefore impossible. The school data on this child (report cards, transcripts, school notebooks, etc.) being also absent, it is impossible to affirm any school, intellectual or psychomotor level.

To carry out this analysis, we therefore had to resort to current knowledge on the development of writing in children and the characteristics of adult writing in association with historical knowledge on learning to write in the context of the French public school of the early 20th century.

The analysis was made from two supports: two photos published in two online newspapers. Although these materials are far from sufficient to conduct a comprehensive study, they provided the necessary foundations for the present analysis.

The first photo, and the one most used during the study, corresponds to an enlargement of the letter attributed to Mathilde Lefebvre available on the site www.dauphine.com. The second photo is from the website www.acadienouvelle.com

Titanic: construction, sinking and investigations

Development and construction of the Titanic

The Titanic is a transatlantic liner that belonged to the British shipping company White Star Line (WSL), itself part of the American International Mercantile Marine Company. Second boat of a new class of Liner called *Olympic*, its development and construction extended from 1907 to 1912. As with its predecessor the *Olympic* and all the boats of the WSL, it was built at the Harland and Wolff shipyards in Belfast in Ireland.

The Titanic left Belfast on April 3, 1912 to arrive in Southampton, the place of its departure for New York, on April 4 shortly after midnight.

On April 10, having received the green light from the British Board of Trade of the time, the Titanic left the port of Southampton to make its first transatlantic crossing.

The shipwreck

As of April 12, the Titanic received warnings of the presence of ice, icebergs, and thick fog. On the night of April 14 to 15, at 11:40 p.m., the watchmen reported the presence of an iceberg in front of the liner.

Maneuvers were made, but the boat stroke the iceberg on the starboard side below the waterline. The first compartments were quickly filled with water.

At 12:15 a.m., the first distress messages were sent. The operators of the Marconi radio company used the *CQD* system, which has been neglected since 1908 following the agreements of November 3, 1906 at the Berlin International Conference for Safety at Sea.

After 12:45 a.m., the first distress message using the new international *SOS* coding was launched as the first lifeboats descended, often half empty.

At 2:20 a.m., the Titanic broke in two before sinking.

In total, there will be 700 survivors and more than 1,500 dead.

Two surveys and questions

After the sinking, two investigations were opened, one in America, the other in England.

No passenger were called to testify, with the exception of Mrs. and Mr. Duff Gordon. The latter was asked to clarify rumors accusing him of having survived the sinking by using his money on one of the lifeboats.

If the testimonies of the crew members made it possible to better understand the sequence of events that led to the sinking, neither of the two investigations made it possible to answer certain questions:

Why certain warning messages were not taken into account by the commander and his team?
Why did the old *CQD* distress signal was used as a priority instead of the new international *SOS* signal?
Why did the canoe descent simulation exercises ship out during the Board of Trade inspection?
and many others.

At the end of the investigations, two were blamed: the commander of the Titanic, Edward John Smith, and fatality.

The first having died during the sinking and the second not being justiciable, no legal proceedings were ever pronounced. The Titanic then left the sphere of investigation to enter that of legend.

Sources :

Full transcriptions of the American and British inquiries : www.titanicinquiry.org

Information about Titanic : www.encyclopedia-titanica.org

Wikipedia page about Edmund Duff Gordon : wikipedia.org/wiki/Cosmo_Duff-Gordon

Lefebvre family

Born on May 4, 1899, Mathilde Lefebvre is from the town of Liévin, in the department of Pas-de-Calais, France.

On April 10, 1912, then aged 12 years, 11 months and 9 days, Mathilde boarded the Titanic departing from Southampton, with her mother (Marie Lefebvre, née Daumont), her sisters Jeanne (aged 8 years and 6 months) and Ida (aged 3 years and 3 months) as well as her brother Henri (aged 5 years and 9 months).

At the time of boarding, Mr. Lefebvre had been established since April 10, 1911 in the United States. At this time, he left France with the eldest son of the family, Anselme, and a friend, Martha Dupont accompanied by her daughter.

Franck and Martha managed to enter American territory by presenting themselves as husband and wife. A few months later, a second son will join Franck Lefebvre, soon followed by his eldest daughter who immigrates with her husband to America and settles in the state of Pennsylvania.

Mrs Lefebvre and her last four children travel aboard the Titanic to join the rest of the Lefebvre family and settle in America, in the small town of Mystic in Iowa where the father works in a coal mine.

The sinking of the Titanic on the night of April 14 to 15, 1912 shattered the Lefebvre family's hope of reunification. Marie and her four children, third class passengers aboard the liner, perished. Their bodies will never be found.

In July 1912, Franck Lefebvre took steps with the compensation fund for the victims of the Titanic. An investigation was opened and the American authorities discovered his illegal entry into American territory a year earlier. Franck Lefebvre and Martha Dupont were summoned and imprisoned before the order of expulsion from the territory was pronounced.

In August 1912, Franck Lefebvre left America with his eldest son to settle back in France. The authorities having forgotten the youngest son, aged 15, he remained in the United States for a few more weeks before a deportation warrant was drawn up. The Lefebvre's eldest daughter and her husband, who entered the United States legally, continued their lives there.

Franck Lefebvre and his sons resettled in Pas-de-Calais. They continued their mining trade there. Franck Lefebvre died in 1948 at the age of 77 in Haillicourt, a town in the Pas-de-Calais mining area, in the district of Béthune.

Education in France: key dates

On June 16, 1881, public primary education became free. In 1933, this free will be extended to secondary education.

On March 28, 1882, the Jules Ferry law established the statutory age of compulsory education in France for boys and girls aged 6 to 13.

However, from this date, a child between 11 and 13 years old can leave compulsory education earlier after obtaining a Certificat d'Etudes Primaires (CEP) justifying a level of acquisition deemed satisfactory in writing, reading, calculation, history-geography and applied sciences.

In 1936, the legal age of compulsory education is raised to 14

Since 1959, education has been compulsory until the age of 16.

From 1882 to 1936, the CEP was still offered to students wishing to leave school to enter working life. With the decline in the age at which compulsory education ends, this certificate gradually disappears until being completely abolished in 1989.

Sources :

French Education Nationale website : www.education.gouv.fr

Wikipédia : [Certificat d'Etudes Primaires](#)

Learning to write in France at the beginning of the 20th century

On April 13, 1912, Mathilde Lefebvre, third class passenger on the Titanic, was 12 years, 11 months and 9 days old. If this child, born on May 4, 1899, entered school at the age of 6, (regulatory age; compulsory education in France for boys and girls since the Jules Ferry law of March 28, 1882), she would have started her schooling in 1905. On May 4, 1912, then aged 13, Mathilde could have left school in order to work, according to the French standards and laws of the time. But, this end of compulsory education could already have been acquired on April 13, 1912. Indeed, at the time, the Certificat d'Etudes Primaires (CEP) allowed pupils aged 11 to 13 to leave compulsory education earlier if they met levels deemed satisfactory in terms of “basic” knowledge (writing, reading, arithmetic, history-geography and applied sciences).

It is important here to mention the differences in school expectations regarding the writing of students between the beginning of the 20th century and today. In 1905, as in 1912, children learned to write in exclusive attached cursive. The letters are made of loops and strokes. Within a word, the letters are linked together. At the beginning of the 20th century (and until the 1970s/1980s) school writing was normalized and standardized. Only attached cursive is accepted in schools. It is only in adulthood, and according to personal writing habits, that it becomes personalized. In 1912, the writing of pupils at the end of compulsory education was not yet personalized and was still very close to the standards of spelling learned at school.

In 1912, the act of writing was carried out using a writing tool (a steel nib grafted to a pen holder), an inkwell containing the ink, and two supports (a notebook and a blotter to remove excess ink). At that time, cartridge fountain pens did not exist. People wrote by plunging the tip of the steel nib into the inkwell before sliding it on the paper. The act of writing therefore consisted, at that time, of a series of movements of the arm back and forth between the inkwell and the paper, the nib having to be regularly loaded with ink. Within the French school, *Sergent Major* nib are used and will be for several decades. These nibs allow a line with a particular and recognizable aesthetic, the lines formed are fine, the curls are thicker. Within the French school, the standard is for the use of blue ink only. School writing work is generally done on two main supports: the slate (mainly for calculation) and the school notebook for dictations and other exercises related to writing.

At the beginning of the 20th century, the aesthetics of the spelling was as important as learning the rules of spelling, grammar and syntax. Students are graded in part on the cleanliness of their composition and their abilities to form beautiful, attached cursive letters. These standards, which will be current for decades, will change from the 1970s/1980s, when the search for aesthetics will be gradually abandoned in favor of the speed of execution of the gesture. The student is then asked to write faster and faster, which leads to difficulties in some who have to “choose” between writing slowly and well and writing quickly, taking the risk of damaging the spelling.

If the expectations are generally the same over time, the institution of the French school has changed a lot since the beginning of the 20th century. Better consideration of the postures of the pupils, a more in-depth knowledge of graphic disorders, changes in writing tools (abandonment of the steel nib, creation of the cartridge fountain pen or invention of the ballpoint pen) or even the acceptance of the abandonment of a standardized writing aesthetic in favor of an earlier personalization of it. These are just a few elements of the differences between learning to write at the beginning of the 20th century and that of the 21st.

It is therefore essential to understand that the standards for learning to write in the beginning of the 20th century have important differences with the current standards. Indeed, if the attached cursive writing remains the form of writing chosen in the French elementary classes to learn to write, there is today more flexibility given to the student in the upper classes. Thus, today, it is not uncommon to have personalized children's writings from the end of CM2 and entry in middle school. The aesthetic aspect of beautiful calligraphy is no longer as standardized as it was at the beginning of the 20th century and we see writings with a mix of cursive, scripte and personalized letters, sometimes attached and other times detached.

Composition of the letter attributed to Mathilde Lefebvre

In general, a handwritten letter is a communication medium with a normative framework characterized by:

- A header space with indication of a place and a date.
- The presence of an appellation formula.
- The presence of an introductory formula (to announce the nature of the message).
- A body of text.
- A polite formula.
- A space at the end of the letter corresponding to the signature.

The letter attributed to Mathilde Lefebvre is characterized by:

- A header space with an indication of a date (but no place).
- The absence of an appellation formula.
- The absence of an introductory formula.
- A body of text with two paragraphs and three sentences in total.
- Lack of polite formula.
- The presence of a space at the end of the letter corresponding to the signature.

More precisely, we observe that the letter attributed to Mathilde Lefebvre is composed of:

- 31 words (excluding prepositions and apostrophes).
- 3 sentences.
- 160 letters (the letter “n” in the word “*Atlantique*” in line 3 having been torn out, it was not taken into account in this analysis) including:
 - 150 lowercase letters
 - 10 uppercase letters
 - 171 characters (spaces not included).
 - 195 characters (including spaces).
 - 6 digits.

The whole letter is made of 8 lines:

- The first line is that of the date, placed at the top right (which we name: “line 1”).
- The body of the text is separated into two paragraphs:
 - The first paragraph consists of 4 lines (which we call: "line 2", "line 3", "line 4" and "line 5").
 - The second paragraph consists of 2 lines (which we name: "line 6" and "line 7").
- The last line is the signature line (which we call "line 8").

Observations of alphabetical letters and numbers

Methodology of analysis:

For the analysis of the letters composing the text attributed to Mathilde Lefebvre, we listed all the letters of the alphabet used in the document in an Excel table with several entries. This allowed us to observe the presence or absence of spelling variations of a letter throughout the text and the author's ability to create links between the letters according to their type of spelling: Cursive (Cu), Scripte (Sc) or Personal (Per).

The parameters studied were as follows:

- Collection of each letter of the alphabet used in the text.
- Number of the line from which the studied letter comes.
- The number of occurrences of a letter within the same word.
- The word in which the studied letter is written.
- The lowercase or uppercase character of the letter studied.
- The type of spelling of the letter studied: is the letter written in Cursive (Cu), in Scripte (Sc) or in Personal spelling (Per)?
- The possibility that the letter studied is linked to the letter which precedes it and to the one which follows it, when these links are possible.
- The effective link between a letter studied and the one that precedes it when this link is possible.
- The effective link between the letter studied and the one that follows it when this link is possible.
- The characteristics of the preceding letters and the letters following the studied letter (Lowercase/ Uppercase; Cursive (Cu) / Scripte (Sc) / Personal (Per)).

As a result, all the letters of the alphabet that appear in the document have been analyzed. Only one letter out of a hundred and sixty was not studied and was not taken into account in the analysis of the document. This is the letter "n" of the word "*Atlantique*" present in the third line of the document. This letter could not be the subject of any analysis having been lost during the tearing of the document in two.

The study of the links was based on the comparison between "possible link" and "effective link".

Is understood as "possible link" any link between two letters and which, in the logic of cursive writing, SHOULD be linked.

Is understood as "effective link" any link between two letters and which ARE, in the logic of cursive writing, linked.

Other variables were added to the study:

- The amplitude of a letter and the presence or not of variations of this amplitude throughout the text.
- The size of a letter and the presence or not of variations of this size throughout the text.
- The spatial organization of the text.
- The presence of cacographies in the spelling of certain letters. Is understood as "cacography" any spelling preventing the spontaneous reading of one or a set of letters.

- The spelling of the numbers.

All of these parameters allowed us to measure the author's ability to master cursive writing and to identify his behavioral writing patterns.

As a reminder, at the beginning of the 20th century, the teaching of writing within the French school was based on exclusive attached cursive writing. This type of spelling has characteristics that allow it to be differentiated from other types of spelling (scripte or personal). Composed of a succession of lines and loops, the cursive letters have a small final tail that allows them to be linked together within the same word.

Conclusions of observations on alphabetical letters, links, numbers and spatial organization

Based on the observations made in the analysis ([full analysis in French available here](#)), we can conclude that:

- The text presents three types of spelling: cursive (Cu), scripte (Sc) and personal (Per). If the majority of the letters of the document attributed to Mathilde Lefebvre are written in cursive (96 lowercase letters out of 150 = 64%), we note the presence of incursions of scripte or personal spelling throughout the text (64 lowercase or uppercase letters out of 160 written in scripte or personal or indecipherable spelling = 40%.)

- 4 letters are written exclusively in cursive (l, m, s, u). The other letters of the text show spelling variations. We observe the presence of types of graphics often combined: Cu+Per (a, d, r); Cu+Sc (e, i, t, Per+Sc (b).

- Observations on the ability to create links between letters show that 56.45% of the letters studied present an effective link with the letter which precedes them and that 57.02% of the letters studied present an effective link with the letter which follows them. These figures, slightly higher than the average, are relatively low considering the writing standards of the beginning of the 20th century, for which attached cursive writing is a norm.

- These difficulties in establishing links between letters can be explained by the fact that the author uses three different types of spellings and by the variations of these spellings for the same letter. The letters in cursive are more often linked to the letters preceding them (82.50% link between a cursive letter studied and the one preceding it). If this link rate is very high, we observe however that these links are not always established: 17.50% of non-links while these are possible. However, we note that the rate of effective links between a cursive letter and the one that follows drops very sharply (69.23%).

Differences are also observed for scripte and personal letters. Thus, we observe a rate of effective links between a scripte letter and the letter that precedes it of 6.25%, a figure that rises to 33.33% when it comes to effective links between the scripte letter and the one that follows. Similarly, the effective links between a personal letter and the one preceding it (18.18%) increase to 56.25% when it comes to linking a personal letter with the one following it.

We therefore note that the author's ability to establish links is very fluctuating, depending on the combinations of spelling he uses. We note that, if sometimes the author does not make the connections that he should make between two letters, other times, he creates them from scratch. Thus, half of the time, the scripte letters (whose characteristics do not lend themselves to the formation of links) are linked to the cursive letters which precede and follow them. Similarly, the majority of personal letters are linked to the cursive letters that precede and follow them. The presence of cursive letters allows the author to create links between the letters, but the presence and the great variations in the types of spellings show that the author cannot write in cursive tied for a long time. Attached cursive being the standard of school and social writing in 1912, such an inability can only arouse suspicion about the authenticity of the document.

- The uppercase letters have the particularity of being all written with a spelling personal to the author. They do not correspond to the 1912 standards of cursive uppercase. Only 2 out of 10 have a link with the letter that follows.

- The first two words "*Je jette*" (line 2), already show the characteristics of a lack of control of the attached cursive writing since we note a mixture of the use of personal, scripte and cursive letters as well as a absence of connections between letters. The third word "*cette*" is a perfect example of sufficient control to write all the letters in attached cursive and to make the appropriate links between them.

The attentional and motor control to write this short word, however, seems difficult to maintain for a long time. Very quickly, the author "relaxed" this control to resume his natural tendency of writing, made of a mixture of cursive, scripte and personal graphics. After analyzing the document, we can hypothesize that the author wanted to conceal his natural graphic gesture to make it more consistent with the idea he had of typical 1912 writing. Attempts to mastery of the attached cursive quickly fail because the author's natural writing tendencies quickly return.

- There are several cacographies, or "oddities" in the spelling of certain upper or lower case letters. It seems interesting here to propose an interpretative hypothesis regarding the words on which these anomalies are observed. We thus notice that the words "*Je*", "*Liévin*" and the two occurrences "*Lefebvre*" are all words linked to the identity of the supposed author of the document. These words are identity markers with strong psychological resonance and it is not excluded that the anomalies observed on these words constitute attempts by the author to distance themselves from what is identity theft. Indeed, pretending to be someone else is a very expensive activity in terms of cognitive and emotional resources. The cognitive dissonance experienced by the author can be translated at the motor level, in particular in the way of forming letters, the behavioral leaks multiplying and ending up betraying the imposture.

The question of the period instead of the apostrophe on the word "*quelqu'*" can be due to two events: either a lack of attention by the author when writing the text, or an error added to the proofreading due to lack of attention, stress, etc. The author is probably no longer familiar with attached cursive as the only form of spelling, and in forming the end of the letter "*u*" he confused it with the cursive spelling of a dotted "*i*" instead of an apostrophe.

Note that the letter "*r*" has 3 spelling changes depending on the progression of the text. In the first paragraph of the body of the text (line 2 to 5), we observe an "*r*" in cursive which changes to become more and more tight at the end of line 5. We note that the second paragraph presents a spelling completely different from those observed in the first paragraph.

In general, there is a difference between the first paragraph of the text and the second in the spelling of the letters, the changes of spelling most often taking place in the second paragraph. It is also in this second paragraph that the amplitude and size of the letters are at their maximum. The lines 6 and 7 of text are those with the fewest words, letters and spaces between words. However, these lines are inscribed in the same text space as the lines of the first paragraph, the author compensating for the reduction in the number of words, letters and spaces by increasing the size and amplitude of the letters.

- The date line (line 1) has two interesting letters to analyze (the "i" and the "r") because they highlight the spelling changes between the first paragraph of the body of the text and the second.

Thus, we note that the letters "i" and "r" of the word "*Avril*" of line 1, present a spelling different from that observed in the first paragraph of the body of the text, but in accordance with the changes established by the author in the second paragraph of the body text.

We therefore propose the hypothesis that the date is an addition after the writing of the body of the text. This word, "*Avril*", composed of a mixture of spellings encountered at the very end of the body of the text and marked by a total absence of links between the letters, reflects the author's difficulty in maintaining the usurped identity and the return to his own writing habits.

- The aspects of the written date represent attempts to stick to a certain idea of the aesthetics of the writing of 1912. This aesthetics come from historical stereotypes, that is to say what the author believes to be a typical writing of the time. However, as we saw in the introduction, the typical handwriting of a child of 12 years and 11 months at the end of her school career in France in 1912, is attached cursive writing. At the time, personalizations of writing were not allowed in schools and they appeared later, anchoring themselves in adulthood, depending on the level of practice. It is therefore unlikely to have a text with so many flourishes written by a child still so close to the school system in 1912.

The search for a writing aesthetic approaching the historical stereotype is also visible in the disproportionate downstrokes of the "1" of "13" and the first "1" of "1912". In addition to what has already been said above on the historical reality of this kind of flourish at the time in a child, we notice that the number "9" is written with an Anglo-Saxon spelling. Mathilde Lefebvre having been a student at the French school at least until April 10, 1912 (date of departure of the Titanic from Southampton where she embarked with her family), it is hard to imagine how an Anglo-Saxon spelling could be found in her correspondence.

On the other hand, we know that today, this spelling is quite common in many writings of French adults living in the 21st century.

- Note that the text is written on a plain sheet, not squared. The lines of writing are straight, there is no tremor of the hand or deviation of the lines. The author has set a frame in which the text is written, leaving a large margin on the right, a line break being made while a space for writing is still possible. As we have already mentioned, the letters increase in size and amplitude throughout the text. We see that the last two lines of the body of the text (lines 6 and 7) include words whose letters are the largest and the widest. We can therefore conclude that the increase of the size and amplitude of these letters shows the author's desire to maintain a well-defined writing framework. This desire to master the spatial framework of writing is also demonstrated in the presence of spatial markers for the start and end of writing of the body of the text: the uppercase letters and certain lowercase letters are aligned one below the other to constitute the spatial marker start of the frame, the final loops on the last word of a line constitute the spatial markers of the end of the frame.

The observations make it possible to highlight the qualities of attentional, motor, visuo-spatial and visuo-motor deployed by the author for whom the experience of writing has become completely automatic. However, this automatic process is costly to conceal for a long time, and the author's natural tendencies return very quickly.

To create a handwriting, a fortiori that of a child, requires leaving one's own automatisms and an ability to create a new spelling which opposes the one the motor memory has recorded for years.

All these observations concerning the study of the letters, links and numbers of the document are as many clues that the text attributed to Mathilde Lefebvre does not correspond to the French writing standards of 1912. Nor does it correspond to the standards and norms of learning and writing practices within the French school system in 1912.

Given the age of Mathilde Lefebvre on April 13, 1912 and her proximity to the school system, it is unlikely to find on this date and at the age of this young girl, a writing so far removed from school and social norms of the time.

Aged 12 years, 11 months and 9 days on April 13, 1912, it seems impossible that Mathilde Lefebvre could not write in a stable manner in exclusive attached cursive and establish the links required by this type of writing when it was the writing standard of the time, both socially and academically.

In addition, the combinations of cursive, scripte and personal spellings are typical of modern writing. Today, it is not uncommon to see young adolescents mixing these three types of spelling and this trend is even more marked among adults.

The author of the letter tries to maintain a cursive writing and make connections between the letters of a word but, he manages to write only 2 words out of 31 in attached cursive letters ("cette" and "mer" in line 2).

In addition to the author's inability to write in total cursive and to establish stable links, multiple contextual errors run through the text: historical stereotypes, behavioral leaks, use of certain Anglo-Saxon spellings... errors which are so many additional clues about the origin of this writing which probably belongs to an adult living in the 21st century.

Conclusion on vocabulary and lexical fields

- On reading the document, we notice that this short text (3 sentences, 31 words) contains very little, if not any element of information that can be directly linked to Mathilde Lefebvre. The only elements related to this child are her first name, her last name and the reference to the city where she lived before her departure on the Titanic.

- The lexical fields used in the document are essentially of three types: spatial, temporal and identity.

The temporal notion linked to the past is of particular interest to us because if we find it in the date (eve of the shipwreck), we also observe it in the transitive verb “*prévenez*” which contains a well-defined temporal notion. To “prevent” is to act BEFORE something happens. In the supposed writing context of the document, this choice of word questions us and evokes a guilty knowledge of the author which leads him to create an anachronistic message in view of the date of the letter.

The choice of another word questions us: “*quelqu'un*”. In a communication process, a sender sends a message to one or more receivers. The purpose of a letter is to be read, even when it ends up in a bottle thrown into the sea where its chances of survival are slim. The choice of the term “*quelqu'un*” is an emotional distancing, the author preferring this vague and impersonal term to a more direct and personal formulation with the reader.

We note another emotional distancing with the change in the use of the personal pronouns “*Je*” (line 2) which becomes “*nous*” (line 3). The “*nous*” becomes a reference to the collective without specifying who “*nous*” are: the members of the Lefebvre family? The passengers as a whole? Since the text has no reference to the Titanic or any other ship, the author relies on the reader's interpretations to give meaning to the word “*nous*”. This is another striking element of the document: the systematic use of fuzzy words and generic terms.

The author uses a “catch-all” term that seems to make sense, but whose meaning is actually vague enough for each reader to project his or her own interpretation. With this type of words, it is up to the reader to find meaning in what is said, which goes against the very principle of communication in which it is up to the sender to ensure that his message is well understood. The use of catch-all words is a well-known communication manipulation strategy, the use of which should always arouse suspicion about the intentions of the person using it.

- In general, we confirm the conclusion already mentioned in the analysis of letters, links and numbers regarding the changes made in the second paragraph of the body of the text. The author no longer manages to control all the parameters necessary to continue to assume an identity that is not his own: the words have a maximum size and amplitude, the mixtures of spellings increase, we observe complete changes in the forms of certain letters (r, i), the spaces between the letters within a word multiply, the words are fewer and fewer but take up just as much space in the spatial framework of writing.

The lack of the end point may be involved in this general relaxation of attentional control which leads to an increase in errors and omissions.

If the purpose of the first paragraph is to give context of the document, one can only remain perplexed when reading the last sentence of the document (lines 6 and 7). Indeed, the use of the imperative, the absence of a polite formula, the request to address "*la famille Lefebvre*" gives the sentence a sense of urgency that does not match the date inscribed in head (line 1) nor to the playful aspect of the supposed process.

As a reminder, the Titanic sank in Newfoundland on the night of April 14 to 15, 1912 after hitting an iceberg. The feeling of urgency on April 13, 1912 can only be explained by a phenomenon of guilty knowledge of the author, who knows the history of the Titanic and the death of Mathilde Lefebvre during the sinking.

- Despite the fact that the author has very good psychomotor skills used jointly during the writing act, a significant relaxation of cognitive skills is felt as the letter progresses.

- On the basis of the elements observed, it is much more likely that the author of the text takes his information not from a personal life experience, but from sources that are now well known and public (cinema, Internet sites, books on The Titanic...).

As a reminder, in 2002, the town of Liévin had a commemorative plaque placed in memory of the Lefebvre family where the first names of Mathilde, her brother and sisters and her mother (all of whom died during the sinking of the Titanic and whose bodies have never been found) are mentioned.

In the absence of evidence to the contrary, we reiterate the conclusion already issued following the analysis of the alphabetical letters, liaisons and numbers, namely that the elements of language used in the letter attributed to Mathilde Lefebvre are much closer to handwriting belonging to an adult living in the 21st century than to that of a child under 13 who lived in 1912.

Conclusion on the tools

Following the observations made above, it can be seen that the writing over the entire length of the text does not have the typical characteristics of the use of a steel nib used in 1912.

The fluidity of the flow of ink throughout the text, as well as the absence of variations in shape in the lines, suggest that the document was written using a modern writing object such as a fountain pen with a black ink cartridge. After 105 years spent at sea or stranded on a beach, it seems that the document shows no trace of humidity and no trace of ink erasure.

On the contrary, the latter seems strangely fresh and lively for such an old document having spent so much time in a closed environment.

The sheet of paper was torn lengthwise. This tearing was extremely controlled to avoid a maximum loss of content. We note that the tearing gesture is so controlled that it is sometimes performed between a word and a preposition or between two letters of the same word.

One of the possible reasons to explain the tearing of this document lies in the fact that the author probably already had in his possession the bottle which would serve as a container and that he realized that the whole rolled sheet would protrude from it. The author therefore resolved the problem by making an entire sheet into two separate pieces.

Although our expertise in ink and paper is limited, the general appearance of the materials used leads us to express serious reservations as to the authenticity of the document attributed to Mathilde Lefebvre.

A number of questions remain. Among these, that of the material conditions for writing the letter seems interesting to us. Indeed, how could a child of 12 years and 11 months, traveling in third class on board the Titanic (class of migrants leaving for the United States) have been able to have a writing set and sealing wax?

If portable writing sets existed in 1912, their price made them a luxury item that only wealthy people could have. It is hard to imagine that a modest French family, a third-class passenger, could have owned such an object.

Another possibility: did the third classes traveling on board the Titanic have access to a room in which a writing (and sealing) kit was at their disposal? If disposing of ink and paper was always possible inside the Titanic, we wonder about the availability of the wax used to seal the bottle.

Sealing wax is a particular wax that must be liquefied before being used. It is therefore particularly hot and can cause serious burns. If this wax is well known to professionals for the preservation of certain alcohols, its use by a child under 13, a third class passenger on board the Titanic, seems implausible. So what is the wax used to seal the bottle? How could a simple candle wax have insulated the letter for 105 years without any trace of humidity appearing on the paper and the ink?

Scientific analyzes of paper, ink and wax would make it possible to obtain the actual chemical compounds of these different materials and thus to date their existence.

General conclusion

The present study proposed to analyse the document attributed to Mathilde Lefebvre, passenger of the Titanic aged 12 years, 11 months and 9 days on April 13, 1912.

To carry out this analysis, we studied the document on its form (analysis of letters, spaces, words), on its content (general aspect of the text, analysis of vocabulary), and on the tools used to write this document (paper, ink, writing tool). This analysis showed that:

- The handwritten spelling of the document does not correspond to the standards and norms of attached cursive writing, characteristic of French school and social writing in 1912.

- The handwritten spelling of the document has all the characteristics of modern writing (mixture of cursive, scripte and personal spellings, absence of links between letters).

- The handwritten text of the document has several elements testifying to an attempt to control the graphic gesture to make it correspond to historical stereotypes, i.e. to what the author believes to be a typical writing of 1912 (aspect of capital letters, aspect of certain letters, inclined writing, spelling of certain numbers).

- The handwritten text of the document has several elements testifying to an important attentional, visuo-motor and visuo-spatial control in order to adapt the text to a dedicated writing space by using spatial markers and by sufficiently mastering one's gesture to maintain fluid writing throughout the text.

- The handwritten spelling of the document highlights variations in the control of the size and the amplitude of the lines, the author struggling from the first two words of the body of the text to maintain a cursive writing attached, succeeds in one word of four letters before losing this ability again. This lack of stability proves that the author's natural writing is no longer done in long-attached cursive and highlights the natural tendency of a highly personalized writing of an adult living in the 21st century.

- The handwritten spelling of the document highlights "behavioral leaks" testifying of the fact that the author tries to hide the specific characteristics of his writing to assume another identity, that of Mathilde Lefebvre.

- The words used in the document are "catch-all" words, vague and very uninformative. The text is largely made up of vocabulary related to space, time and identity. The text does not include any personal information related to Mathilde Lefebvre or her family. The rare information is of a general nature, relating to general knowledge or easily found on the Internet.

- The choice of certain words reflects the presence of anachronistic knowledge of events and attempts to distance the author emotionally from his own text.

- The tracings presented throughout the text do not show the variations characteristic of the spellings written using steel nibs used in 1912.

- The ink of the document is vivid and does not show alterations or areas of erasure.
- The tearing of the sheet to separate it in two is well controlled, passing clearly and diligently between a word and a preposition or between two letters of the same word.
- In general, we note that the author has very high motor, visuo-motor, visuo-spatial and attentional control, which allows him to master space and graphic gesture to the maximum. The level of cleanliness and control makes us hypothesize that this document corresponds to the final drafting of a text that has been the subject of numerous drafts.

In view of all these elements, to the initial question that motivated this study, namely:

“Could the handwritten letter attributed to Mathilde Lefebvre have been written by a young girl of 12 years, 11 months and 9 days on April 13, 1912? »

We can conclude that, until proven otherwise, this document was not written by Mathilde Lefebvre, a passenger on the Titanic, aged 12 years and 11 months on April 13, 1912.

Everything suggests that the document attributed to Mathilde Lefebvre is identity fraud with a view to carrying out a hoax around a historical subject attracting the attention and sympathy of the public, and whose archaeological traces are the subject of great economic interest.

The notion of identity corresponds to a set of data that makes it possible to establish the uniqueness of a person. This is what differentiates one person from another. If identity fraud is defined as the act of appropriating the identity of a living person for profit, identity theft concerns the use of the identity of a non-living person. Identity theft of the deceased is one of the most well-known scams.

In United States, the term "Ghosting" defines the practices which consist of going around cemeteries and recording on the tombstones, the first names, surnames, dates of birth and date of death of the deceased in order to steal their identity from social services or insurance.

In the case of the document attributed to Mathilde Lefebvre, the death of the latter being very old, the identity theft is not part of an attempted insurance scam. It is rather a hoax in order to create the "buzz" and/or to see the document sold at auction or bought by a museum or an individual for a large sum of money.

This process is unfortunately the one found in many stories of forgers of works of art or historical and archaeological objects.

Throwing a bottle overboard and pranking can be fun games. However, they must not conceal manipulation strategies to make the dead speak and lighten the bank account of the living.

This analysis has limitations that did not allow us to study certain aspects of the document. We hope that despite these limitations, it will have made it possible to highlight the elements that make it possible to classify this letter as a false document attributed to Mathilde Lefebvre.

If the analysis of writing can shed light on the veracity or not of a document, the scientific analyzes on the chemical compounds of the tools entering into the composition of a text (paper, ink, sealing wax, etc.) are necessary to definitively rule out a false document.

We hope that the studies on the letter attributed to Mathilde Lefebvre will continue, convinced that multidisciplinary can do justice to this child, whose identity and history are manipulated, and who is no longer with us to speak in her own name.

Glossary

Amplitude of a letter: This is the shape that a letter takes in relation to the motor gesture performed to achieve it. A letter can be more or less round, packed on itself, crushed... depending on whether the gesture of the hand is more or less ample.

Attention: Ability to voluntarily concentrate one's mind on a specific object.
Attention is part of cognition along with concentration, memory, language, problem solving.

Behavioral leaks: Set of verbal and non-verbal clues that a subject in a lying situation lets out in his behavior and communication.

Cacography: Said of a writing (letters, word...) which contains errors of spelling, grammar, syntax, etc.

Cognition: Set of psychological structures and activities whose function is knowledge, as opposed to areas of affectivity.

Concentration: Action of focusing all of one's attention on the same object.

Ghosting: Theft of identity from a deceased person in order to obtain financial gain.

Guilty knowledge: Truthful information(s) available to a person in a situation of lying.

Historical stereotypes: Set of beliefs and false representations about a time or a practice located in the past.

Hoax: Action, statement that aims to abuse someone's credulity.

Identity: Set of factual and legal data that make it possible to individualize someone.

Identity fraud: The criminal practice of impersonating another living person for personal gain, often financial.

Identity theft: It is the act of impersonating a deceased person for personal gain, often financial.

Jamb: This is the lower part of certain letters (j, p, etc.) which is located below the middle line of writing

Muscle tone: State of permanent tension exerted in the muscles of the body.

Occurrence: Number of times an element (letter, word, etc.) is present in a corpus.

Psychomotricity: Set of psychological, emotional, sensory, cognitive and motor functions that allow human beings to act on their environment.

Size of a letter: It is the height of a letter.

Spatial representation: Ability to mentally represent the space around us or a well-defined space (like a writing sheet) taking into account the limits of this space.

Spatial and temporal organization: Ability to organize oneself in space and time and ability to organize elements in a given space and time.

Stem: This is the upper part of certain letters (l, t, etc.) which is above the middle line of writing.

Type of spelling: This is the way of writing letters and words according to a writing code.

- **Cursive writing:** Letters are characterized by the presence and alternation of lines and loops, the presence of links between them and the absence of inter-letter spaces within the same word.

- **Personal writing:** it is a writing often composed of a mixture of cursive and scripte writing in which we sometimes find the addition of aesthetic elements making the graphic trace personal to the writer.

- **Scripte writing:** Type of writing known as "stick writing" which is similar to printing characters and found in textbooks for learning to read.

Visual-motor coordination: Coordinated action between the visual information received and the bodily movements that result from it.

Word: Element of the language composed of one or more phonemes, capable of an individualized written transcription.

Writing: Representation of speech and thought by conventional graphic signs. Writing is part of non-verbal language communication.

References

- Bell, S., *How to identify a forgery. A guide to spotting fake art, counterfeit currencies, and more*, New-York : Skyhorse Publishing, 2013
- Biland, C., *Psychologie du menteur*, Paris : Odile Jacob, 2004
- De Felcourt, G., *L'usurpation d'identité ou l'art de la fraude sur les données personnelles*, Paris : CNRS Editions, 2011
- Ekman, P., *Je sais que vous mentez. L'art de détecter les menteurs et les manipulateurs*, Paris : J'ai lu, 2010, (Bien-être)
- Elissalde, B., et al., *Le mensonge. Psychologie, applications et outils de détection*, Malakoff : Dunod, 2019
- Shadel, D., *Outsmarting the scam artists. How to protect yourself from the most clever cons*, New Jersey : John Wiley and Sons, Inc, 2012
- Steers Jr, E., *Hoax. Hitler's diaries, Lincoln's Assassins, and other famous frauds*, Kentucky : The University Press of Kentucky, 2013
- Tattersall, I., Névraumont, P., *Hoax : A history of deception. 5,000 years of fakes, forgeries, and fallacies*, New-York : Black Dog and Leventhal Publishers, 2018

The author

Coraline Hausenblas has a degree in psychology and holds a French state diploma in psychomotricity. She studied the Forensic Linguistics methodologies.

Born in Lille, in the North of France, she lived in France, Belgium, Japan before settling in Prague, Czech Republic in 2016.

She works as an independant analyst on 19th, 20th and 21th century written documents.

She uses her blog to share articles to understand what is communication and to identify, avoid and get out of manipulative situations and frauds.

Passionate about history, she has been interested in the Titanic since 2014 and has since carried out extensive research on this subject.

In 2020, she founded a free magazine "*La petite Histoire*" devoted to historical novels and history.

To follow her work about analysis of written documents :

www.coralinehausenblas.com

To download the free French issues of "*La petite Histoire*" :

www.cora-hausenblas.com