FORENSIC GRAPHOLOGY A VITAL TOOL FOR CRIMINAL INVESTIGATIONS
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ABSTRACT

Forensic graphology is the study of handwriting. Handwriting Analysis or Graphology is a scientific method of recognizing, appraising and understanding personality through the strokes and patterns revealed by handwriting. Handwriting is one of the unique characteristics to represent what is in our minds, to communicate with others. Each person has a unique handwriting just like a fingerprint, and it represents individual characteristic, a unique feature of an individual. Handwriting it is a complex motor skill which involves a combination of sensory, neurological, and physiological impulse.

Handwriting refers to a person's unique style of writing characters created by hand with a writing instrument such as a pen or pencil. Handwriting is an acquired skill and a complex perpetual-motor task, sometimes referred to as a neuromuscular task. Because each person's handwriting is unique just like DNA, it can be used to verify the writer of the document. Handwriting shows the true personality including behaviour, emotional outlay, self-esteem, anger, imagination, honesty, fears, defences, criminal tendencies and many other personality traits.

Forensic investigators use handwriting pattern/technology to determine personality traits of an individual. In different agencies use graphology for checking application for jobs, writer identification, recruitment procedure, medical diagnosis, psychology, compatibility for marriage, career guidance, motivates different employees and child behavior and development. In this poster we discussed that forensic graphology helps in criminal profiling by analyzing handwriting on ransom notes in kidnapping cases or blackmailing letters or in the cases of pen poison letters, disputed handwriting and writing sample found at the crime scene. It helps in investigation by determining the psychological state of the writer, identifying the writer as well as helping in criminal profiling. The various features of handwriting (such as, spacing, margins, pen pressure, size of the letters, zones, slant, i-dot, t-bars etc.) are discussed in this poster as well as their significance in describing various behavioral aspects of the persons.

Keywords: Forensic science; Forensic graphology; Graphology; Handwriting analysis; Personality traits; Writing features

INTRODUCTION

HANDWRITING:

- refers to a person's unique style of writing characters created by hand/leg/ mouth with a writing instrument such as a pen or pencil.(Oliveira et al, 2005)

- It is an acquired skill and a complex perpetual-motor task

-It is often referred as brain writing due to neurological brain pattern produced by neuromuscular movement creating writing strokes.(Mishra, 2017)

- refers to as a neuromuscular task

- is unique just like DNA

CONT'D

- It shows the true personality including behaviour, emotional outlay, self-esteem, anger, imagination, honesty, fears, defences, criminal tendencies and many other personality traits.(Fisher, 2012 and Amaranth(2017)

-Unique just like a fingerprint - not handwriting but brain writing' - the handwriting comes directly from the writer in a uniquely personal and individual way, irrespective of how the person has been taught to write

- It is a complex motor skill which involves a combination of sensory, neurological, and physiological impulse.

-It is one of the unique characteristics to represent what is in our minds, to communicate with others.

- Each person has a unique handwriting just like a fingerprint, and it represents individual characteristic, a unique feature of an individual.

- It can be used to verify the writer of the document.

HANDWRITING ANALYSIS:

-Handwriting Analysis is an important business in criminal investigation. From identifying the handwriting of convicted murderers, to eliminating individuals.

-Handwriting analysis has wide application in the various fields such psychology, medical diagnosis, recruitment of staff, career counseling, writer identification, forensics studies etc.(Mishra,2017)

- Handwriting comparisons can tell if the victim really did sign that new life insurance policy or if the suicide note is authentic.

-If a crime takes place where there's a piece of handwritten evidence available, it's possible to match it to a suspect through the process of handwriting analysis.(Amaranth, 2017)

- Handwritten evidence could be a forged document, a letter, a random note, or anything else featuring handwritten words

HISTORY OF HANDWRITING ANALYSIS:

- The analysis of handwriting has been studied for almost four hundred years.

- 1622, the first person that carried out systematic and practical observations on the way of handwriting was Camillo Baldi.

-He published the book named 'Treated how, by a letter missive, one recognizes the writer´s nature and qualities', which is considered the first known graphological essay in the world. In 1897, the term "graphology" was coined by Abb Jean-Hippolyte Michon in Paris by combining two Greek words graphe in, to write and logos, science. He was the founder of The Society of Graphology and the first person to give scientific grounds to the handwriting analysis. The Michon´s work was continued by one of his pupils, J. Crepieux-Jamin. He put of the order in Michon´s work and divided the writing into 7basic elements: speed, pressure, form, dimension, continuity, direction, and order.(Oliveira et al ,2005)

FORENSIC GRAPHOLOGY:

-Is the study of handwriting.

- It is applied when there are a ransom notes in kidnapping or blackmailing letters or in the case of pen poison letter, signaturs, letters, disputed handwriting, authorship/ownership of a piece of handwriting identification, event of a formal debunking of signatures fixed on contracts, in civil law cases and in all those cases in which handwriting is applied in order to commit a crime for which it becomes necessary to identify the authorship/ownership of a handwriting or suicidal note.

-It helps in investigation by determining the psychological state of the writer, identifying the writer as well as helping in Criminal profiling, attributing old manuscripts to specific authors, helping behaviourist build a psychological profile of an unknown person and to help solve crime.

(Mishra, 2017 and Amaranth, 2017)

CONT'D

-Forensic handwriting analysis relies mainly on expert judgment, namely the side-by-side comparison of different samples of handwriting, similar to the comparison of fingerprints(*National handwriting Analysis week is Jan 22- 28, 2018 online blog)*

-Forensic graphology has been one of the vital criminal investigation tool in both forensic science and document examination. It has been used as admissible evidence in the court, handwriting sample found at crime scene -Forensic graphology covers many areas of investigation such as signature authentication, verifying handwriting on documents legal and non-legal, comparisons of a suspect handwriting with poison pen.

- Forensic Graphology is the analysis of disputed handwriting especially that found in ransom notes, poison pen, letters or blackmail demands, personality behavior profiling by analysis of the handwriting can help convict a suspect

FORENSIC GRAPHOLOGIST:

- use handwriting pattern/Technology to profile criminals.

- Specially trained person who scientifically analyzes handwriting and other features in a document.

- Handwriting analysts are often called upon to help law enforcement, private investigators, fraud investigators and forensics examiners to evaluate handwriting on documents or sets of documents to either match them to a single writer or to help identify characteristics of the individual to assist in narrowing in on suspects.

-Graphology can literally solve crimes in some cases.

- Expert forensic analysts closely examine individual characteristics on a microscopic level to identify criminals and verify document authenticity.

-The numerous criminals suspected, caught and convicted based on nothing more than a writing sample or a single strand of hair is astounding.

CONT'D

- Forensic graphologist uses scientific methodology to identify a suspect with a questioned handwriting or signature. Forensic graphology is accepted in court.

- Forensic Graphologist, authenticate, identify writers given enough questioned material if available and sufficient known specimens.

- Differentiate between disguised and physical anomaly (essential tremor)

- Forensic document examiners are highly trained experts who can thoroughly analyze handwritten document, signatures, and other writings to verify their authenticity.

- The best expert forensic analyst are adept at testifying about their findings, providing clear, understandable testimony that explains how they arrive at their conclusions. That testimony can be indispensable in any courtroom, arbitration hearing, or insurance claim process.

CHARACTERISTICS OF HANDWRITING FOR CRIMINAL INVESTIGATIONS

1. Zones (How is the handwriting? Is it Upper zone? , Middle zone? Or Lower Zone?)

2. Baseline (How is the Baseline? Is it Ascending Baseline? Descending Baseline? Or Straight Baseline)   Is the text on the line, above the line, or below the line?

3. Slant/slope (How is the Slant of the handwriting? Straight/Vertical? , Lightly inclined to right? , Very inclined to the right?, Very inclined to the left?, Acutely reclined to the left? Or unstable slant?)

4. Size consistency (How is the size of the handwriting? Large writing?, Overly large writing? Or small writing?, or Microscopic writing? Is the ratio of height to width consistent?)

5. Continuous - Is the writing continuous or does the writer lift the pen?

CONT'D

6. Connecting/ disconnected Letters/strokes - Are capitals and lowercase letters connected or not connected? and continuous?

7. Letters Complete - Are letters completely formed? Or, is a part of the letter missing?(-Very opened circled strokes, partly opened circled strokes, round circled strokes)

8. Cursive and printed letters - (Are there printed letters, cursive letters, or both?)

9. Pen Pressure/ pressure pattern (Heavy pressure?, Light pressure?, medium pressure? uneven pressure?) - Is pressure equal when applied to upward and downward strokes?

10. Line Habits - Wide line spacing or Narrow line spacing? Do the lines flow or are they shaky and irregular?

11. Fancy curls or loops Are there fancy curls or loops? (Loops at start to the end? Or loops only at the lower zone or loop at the upper zones)

12. Placement of crosses on ts and dots on i's - Correct or misplaced? Are t's crossed, crossed in the middle, toward top, or toward the bottom, leftward, far left, rightward, or far right? Are the i's dotted, dotted toward the right, left, or centered, ahead, semi-circle, heavy, very light, circled, no i-dot?

13. Types of capital letters (How is the capitals? Very big capitals, very small capitals, No capitals, small capitals, clumsy capitals, typographical capitals, zigzag capitals, upward capitals or Agglutinating capitals?)

14. Word spacing -Large/wide word spacing or Narrow word spacing?

15. Margin (Left, right, top and bottom properly maintained?)

16. Retraced - Are lowercase strokes retraced or Not?

17 Type of writing (simply, clumsy, complicated, small, big, typographical, calligraphic, broad

TECHNOLOGY USED IN HANDWRITING ANALYSIS

- Biometric Signature Pads

- Computerized Analysis

- Forensic Information System for Handwriting (FISH)

-Computerized handwriting database maintained by the Secret Service

-Computer aided graphology (CAG)

-Automated handwriting Analysis system (AHWAS)

-Computer-generated hologram of a signature

- Basically there are two ways to carry out the handwriting analysis with the intent to determine the authorship and these are:

I. Manual

II. Automatic handwriting analysis through computer. Computer aided graphology (CAG) .The CAG system involves the following steps: Scanning; Pre-processing of the image; Feature extraction ; Analyzing a handwriting sample and expert witness (Djamal, et al, (2013))

THREE BASIC STEPS ARE:

1. Questioned document and the standards are examined and detectable characteristics are recorded

2. Characteristics of the questioned Handwriting are compared with known standard

3. Forensic graphologist determines which characteristics are valuable for drawing a conclusion about the authenticity and authorship of the questioned handwriting (Mishra,2017)

QUESTIONED DOCUMENTS:

(who wrote it?), typewriting, or other written mark whose source or authenticity is in dispute or uncertain.

FORGERIES

- Documents made, adapted, or falsified with the intention of deceiving someone

- The act of copying or replicating a document, signature, bank note, or work of art e.g. Signing off for someone elses form or application, Using a fake form or identification, Physically or digitally altering an official document or form etc.

TYPES OF FORGERIES

Fluent , copied, photomontage, cheque, art , signature, Federal, Literary, Prescription and currency counterfeit

HANDWRITING FORGERY

- Is the process used by criminals to fraudulently make, alter, or write a person's signature so that in most circumstances it appears identical with the genuine signature with the intent of profiting from the innocent party. Authentic signatures are included on such papers as cheques, employment records, legal agreements, licenses, titles, wills, and any other type of personal or business transaction or agreement. Even slight handwriting alternations are considered as much a crime as the complete fabrication of a signature when the intent is to deceive.

- the act of handwriting forgery annually takes many millions of dollars in cash and property from victims, primarily in the form of fraudulent cheques, credit card purchases, invoices, identification papers, and passports.

(http://legaldictionary.net/forgery/)

TYPES OF HANDWRITING FORGERY

- Blind forgery

- Simulation

- Tracing

- Optical transfer

SIGNATURE FORGERY

Common Types of Forgery: Simple spurious, Freehand simulation ,Tracing,

Transfer ,Disguise.

FORGERY FEATURES

Hesitations and Stop,   Patching/retouching , Slow, drawn line quality , Unnatural

tremor, Guidelines

FORGERY V. MOTOR DISORDER CHARACTERISTICS

Forged Writing, Slow, drawn,   Pen lifts, Blunt ends/beginnings, Irregularity, Tremor, Patching, Heavy pressure

Motor Disorder Writing: Slow, careful Rigid, Micrographic, Irregularity, Corrections, Tremor Irregular pressure pattern

METHODS OF ALTERING DOCUMENTS: Erasing, Obliteration, Insertion

FACTORS THAT CAUSE VARIATION IN A PERSONS HANDWRITING

- Handwriting can be effected by other factors - injury, illness, mood, medication, drug or alcohol use, stress, how hurried the person is, cold or heat, awkward writing position, the writing surface, the writing instrument, or attempted disguise.

-Major influence on writing is due to the emotional and circumstantial happening in and around the writer.

- It is the job of the Forensic Graphologist to understand these factors as they might relate to a specific situation.

CASE STUDIES

Case 1

Robert Durst

Robert Durst was suspected of murdering Susan Berman ever since her murder in 2000. But there was no physical evidence tying him to the case. Found dead with a gunshot to the back of the head, Berman was a long time friend to Durst. But letters between the two suggested they didn't share the friendliest of relations.

Among the evidence against Durst is a handwritten letter sent to Berman in 1999. The writing in this letter was matched to an anonymous note sent to Beverly Hills police at the time of Berman's killing, using identical block form writing with all capital letters. It not only informed the police of information only the killer would have known, but also shared the same misspelling of Beverly Hills; "Beverley Hills."(*National handwriting Analysis week is Jan 22- 28, 2018 online blog*)

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CASE 2:

Prosecutors in Ventura County once used a woman's distinctive signature — with its angular J and a D with a flowing tail — to help put her behind bars for the murder of her lover's wife.

The penmanship on a blood-stained, folded piece of paper led San Diego detectives to a serial-killing carpet cleaner who had slashed the throats of three women and a toddler.

And a handwriting expert was one of the first witnesses who testified in Los Angeles against the man accused of killing Bill Cosby's son, Ennis, to prove he wrote incriminating jailhouse letters

(*National handwriting Analysis week is Jan 22- 28, 2018 online blog*)

CASE 3 Lindbergh Baby Kidnapping:

Famed aviator Charles Lindbergh's 20-month-old son was kidnapped from his crib on the evening of March 1, 1932. The kidnapper left behind a ransom letter on the window sill. Ransom was paid April 2, 1932, but unfortunately, the child's body was found May 12, 1932. Once evidence led police to Bruno Richard Hauptmann, one of the key factors leading to his conviction and execution was comparison of his handwriting to the ransom letter left at the scene. Eight handwriting analysts testified in Hauptmann's trial and played a major role in proving his involvement in the child's kidnapping and murder.

Hauptmann 's was conv*icted of capital and was electrocuted in 1936 four years after kidnapping.(National handwriting Analysis week is Jan 22- 28, 2018 online blog*)

CASE 4: BTK Killer:

The BTK killer, Dennis Rader, murdered at least ten people in Kansas between 1974 and 1991. He sent numerous letters to police and various media outlets taunting them to find him and providing graphic details, photographs and other evidence proving the writer of the letters as the killer. The letters suddenly stopped and another was not received until more than a decade later in 2004. A combination of DNA evidence and handwriting analysis of Rader's many letters to police, to the media and those left in public places for passers-by to find led to his arrest and conviction in 2005.(*National handwriting Analysis week is Jan 22- 28, 2018 online blog*)

Dennis Rader, better known as the BTK ("Bind, Torture, Kill") Killer terrorized the Wichita, KS area for nearly two decades. Having tortured 10 known victims between 1974 and 1991, Rader wasn't even suspected until nearly fifteen years after his final victim was murdered.

CONT'D

In 2005, well after the BTK case was ice cold with no leads whatsoever, Rader was suddenly a prime suspect. That's because it was then he initiated a series of communications with the media.

Though the ace in the hole for the prosecution was tracing contact information Rader inadvertently provided police on a computer floppy disk, once he was tracked they were also able to forensically match a series of handwritten letters. These were the handwritten letters he sent to police in order to communicate and garner media attention and strike fear into the hearts of the public. It was ultimately this need for media attention- along with his ignorance- which finally put him away for life.*(National handwriting Analysis week is Jan 22- 28, 2018 online blog*)

FORGERY CASE

On June 5, 2017 Mr. Romanus Kalu Madu, The cashier at the Abia State Government House, Umuahia Nigeria, during the tenure of former Governor Orji Uzor told the court that he did not author a statement requesting for the sum of N30.8 million bank draft in the course of his duties as a cashier in the Abia State House in 2005. He identified his name on the document, but said he was not the person that wrote it, adding that his signature was absent.

At the resumption of proceedings , EFCC counsel Rotimi Jacobs asked the witness to write a request for a bank draft from a fictional bank.

The letter was as follows: Sir, kindly issue me with two bank drafts for,

Twenty One Million Naira in favour of Inland Bank Plc.

Ten Million Naira in favour of Inland Bank both payable at Apapa. Thanks in anticipation of your co-operation. Signed R. K. Madu.

Madu complied and the letter was accepted as evidence by the court. It was confirmed that the draft of N30.8 million was forgered.

EXPERT WITNESS

Handwriting Evidence in Court Forensic graphologist prepares a written report to present to jury .

Forensic graphologist called upon as an expert witness

CONCLUSION

Each person has a unique handwriting just like a fingerprint, and it represents individual characteristic, a unique feature of an individual.

It is not Handwriting; it is basically the brain writing as with the response from the brain the person is able to write, and a unique pattern is produced by the brain.

Forensic graphology covers many areas of investigation such as signature authentication, verifying handwriting on documents legal and non-legal, comparisons of a suspect handwriting with poison pen.

It can authenticate, identify writers given enough questioned material if available and sufficient known specimens. Forensic graphologist uses the individual handwriting characteristics to identify the authorship of the questioned handwriting.

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Handwriting Experts can provide the evidence supported reports and testimony you need.

The best expert forensic analyst are adept at testifying about their findings, providing clear, understandable testimony that explains how they arrive at their conclusions. That testimony can be indispensable in any courtroom, arbitration hearing, or insurance claim process.

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SELECTED REFERENCES

1. Oliveira LS, Justino E, Freitas C, et al. The Graphology Applied to Signature Verification, 2005; p. 1–5.
2. Jamin JC. L´ecritureet le caractere (14th edn), Presses Univ de France, France.
3. Fisher J, Maredia A, Nixon A, et al. (2012) Identifying Personality Traits, and Especially Traits Resulting in Violent Behavior through Automatic Handwriting Analysis. Proceedings of Student-Faculty Research Day, CSIS, Pace University, USA, 1951; p. 1–8.
4. Fogarolo L. Personality traits in handwriting. Morettian Graphology Textbook, Edizioni Messaggero Padova, Italy, 2015; pp. 1–588.
5. Huber RA, Headrick AM. Handwriting Identification: Facts and Fundamentals. CRC Press, USA, 1999; pp. 1–43 4
6. Mishra A. Forensic Graphology: Assessment of Personality. Forensic Res Criminol Int J. 2017;4(1):9-12. DOI: 10.15406/frcij.2017.04.00097

7. Robert Durst is taken from Orleans Parish Criminal District Court to Orleans Parish Prison(Gerald Herbert,Associated press by Marica gerber, Victoria Kim published on march 17, 2015 online
8. National handwriting Analysis week is Jan 22- 28, 2018 online blog

9. Amarnath Mishr:(2017): Forensic Graphology: Assessment of Personality; Forensic Research & Criminology International Journal
10. Djamal, Esmeralda C., Sheldy Nur Ramdlan, and Jeri Saputra.(2013) "Recognition of Handwriting Based on Signature and Digit of Character Using Multiple of Artificial Neural Networks in Personality Identification." Information Systems International Conference (ISICO) 2 (2013): 410-15. Web.
11. Kedar, Seema, Vaishnavi Nair, and Shweta Kulkarni.(2015) "Personality Identification through Handwriting Analysis: A Review." International Journal of Advanced Research in Computer Science and Software Engineering 5.1 (2015): 548-56. Web
12. Oliveira LS, Justino E, Freitas C, Sabourin R (2005); The Graphology Applied to Signature Verification, p. 1-5

Thanks