
FORENSIC DOCUMENTS

MEANING, PURPOSE & SCOPE

The increasing use of documents of many kinds is one of the hallmarks of the modern civilization and with the opportunity that they offer to commit fraud and with human nature not being controlled by any universal force, the scope for documentary frauds is phenomenally growing.

Questioned Document Examination is the Forensic Science discipline pertaining to documents that are (or may be) in dispute in a court of law. The primary forensic document examination is to answer questions about a disputed document using a variety of scientific processes and methods.

One of the most important aspects in the examination of questioned documents is *Handwriting Analysis*. Broadly, it may be considered as *a science of comparison*.

In its simplest definition a '*Document*' means something presented as a proof or evidence like 'legal deed' or 'official records' meant for validating or authenticating or certifying a fact.

Any surface containing handwritten, typewritten, machine printed markings or inscriptions made by men or machines whose source is disputed, suspected or questioned is a "**Questioned Document**". It includes writings on walls, doors, carriages, etc. The Handwriting Expert also called Document Expert compares the admitted standard writings and signatures of a person(s) with those on disputed documents and gives opinion on the authorship of the disputed writings and signatures. The expert also examines the Questioned documents using microscopic instruments under visible, ultraviolet and infrared light and offers opinion regarding the alterations, additions, interpolations, erasures, obliterations, secret writings, and indented writings, found on such documents as bank cheques, receipts, pronotes or any other questioned documents. Expert opinion is also given on typewriting, stamp impressions, printed matter, paper, ink etc.

A document examiner is often asked to determine if a questioned item originated from the same source as the known item(s), then present his opinion on the matter in court as an expert witness.

Other common tasks include determining what has happened to a document, determining when a document was produced, or deciphering information on the document that has been obscured, obliterated or erased. Sometimes opinion on decipherment of writings on charred documents; age of signatures/ writings on documents are also called for.

DIFFERENT TYPES OF CASES

- i. Misappropriation, cheating.
- ii. Murder cases.
- iii. Educational frauds.
- iv. Departmental frauds.
- v. Bank Frauds.
- vi. Co-Operative Society frauds.
- vii. Postal & Insurance frauds.
- viii. Chit Fund frauds.
- ix. Cases of scams & leakages.
- x. Lock-up death cases.
- xi. Dowry death cases.
- xii. Lottery Tickets
- xiii. Anonymous petitions.
- xiv. Kidnapping
- xv. Threatening Letters
- xvi. Civil disputes - Promissory notes, Sale deeds, Lease deeds, Mortgage deeds.
- xvii. Falsification of Accounts.
- xviii. Criminal conspiracy
- xix. Suicide cases
- xx. Impersonation in answer books, registration documents
- xxi. Theft cases
- xxii. Counterfeit coin currency matters
- xxiii. Non- litigious matters

DIFFERENT ASPECTS OF QUESTIONED DOCUMENTS

Examinations of questioned documents include the following:

1. Writings / Signatures / Initials / Numerals
2. Alterations / Additions / Insertions
3. Erasures / Obliterations / Substitution
4. Invisible Writings
5. Indented Writings
6. Stamp / Seal Impressions
7. Type Writing / Cyclostyle Copies / Printed Matter
8. Paper
9. Ink
10. Torn Documents
11. Charred Documents
12. Photostat / Fax / Carbon Copies / Computer Printouts / *Digital signatures*
13. Laminated Documents
14. Determination of age of signatures/ writings.

Each category of evidence requires different methods of analysis.

EXAMINATION OF WRITINGS / SIGNATURES / INITIALS

One of the major problems encountered in an inquiry regarding a document, is to find out/establish genuineness or otherwise of the writing / signature / initial, but every document which requires examination should be scrutinized in every possible manner that may ultimately throw any light upon its origin, its age, or its quality, or condition that may have a bearing upon its genuineness.

Document: Any material that contains marks, signs or symbols, either visible, partially visible or invisible that may immediately convey a meaning or message to someone is called a "*Document*".

Questioned / Disputed Document: All documents are not disputed documents. When the genuineness of the document, or, the contents or facts related to its production arouses suspicion, such document is termed as "*Questioned / Disputed Document*".

Handwritings: Visual expressions in the form of signs or marks made by a person by coordinated effort of brain, nerves and muscles, useful as a means of communication.

Signature: Signature is an expression in the form of writing but with limited number of characters - highly individualized due to regular practice and use and represents an individual.

Initial: Short form of signature

The surface that qualifies for a document in this context: *Paper, Wall, Stone, Wood, Leather, Plant Leaf, Trees, Cloth, Glass, Magnetic Tape or even the Skin of the Body parts, like Hands and Legs.*

For the purpose of examination of disputed writings / signatures / initials, either to fix the authorship or to detect the forgery, the comparison material i.e. standards are required.

STANDARDS FOR COMPARISON

Standards are those writings which are written by a suspect especially for the purpose of comparison or written by him/her in his/her routine transactions. The first category is called specimen standards and the second category is admitted standards.

Since the scientific method of identification of a disputed writing or signature is based on its comparison with the known genuine writings or signatures of the alleged writer, the suitability and adequacy of standards for comparison are of primary importance. The standards must be in accordance with the basic rule of comparison. "Like be compared with like". Both the questioned and the standards must be of the same script and class (surface and instrument etc.) and contemporary (near about date/month/year) to the questioned / disputed documents.

The basic requirement of the standard writings and signatures is that these must contain **sufficient amount of material to indicate the identifying writing habits, their qualities and the range of natural variations in the writings of an individual**, i.e. the standards must give a full picture or should be indicative of the writers writing habits during the period, or as near thereto, as possible when the questioned writings were written or supposed to have been written.

Standard Writings classified and defined as:

- Admitted
- Specimen

Admitted writings mean writings which are written by a person in his/her normal routine course of activity / business, which are freely written, natural and undistorted and without any disguise. As while writing such writing, a person is not aware that these will be or may be later on used for the purpose of comparison with questioned writings, and as such these writings are supposed to portray normal writing habits of a writer.

The Available Forms for Admitted Writings / Signatures

The material for comparison of handwritings, signatures and initials may be available in any of the following sources written by a suspect (/victim) in his/her normal course of business. The list below is indicative but not exhaustive or all inclusive.

1. DOCUMENTARY EVIDENCE FROM BANKS/CO-OPERATIVE SOCIETIES: Cheques, withdrawal forms, New account opening forms, fixed/recurring deposit forms, specimen signature cards, DDs, traveler's cheques, loan application forms, vouchers, credit slips, ledger books etc.
2. BUSINESS DOCUMENTS: Agreements, quotations, invoices, share certificates etc.
3. REVENUE DOCUMENTS: Revenue records, deeds, agreements, property certificates, Patta passbooks, income certificates etc.
4. PERSONAL DOCUMENTS: Post cards, inland letters, envelopes, diaries, applications for employment, birth certificates, death certificates, promissory notes, credit cards, I.D. cards, pass ports, caste certificates, income certificates, pass books, receipts, bus passes, leave letters etc.
5. ACADEMIC DOCUMENTS: Answer scripts, school/college applications, Memo of marks, certificates, bonafide certificates, Research theses, Project reports, notes, records etc.
6. SERVICE DOCUMENTS: Service Registers, G.Os, Salary certificates, Income tax documents, Insurance documents, acquittance rolls, Official correspondence, drafts, leave letters, applications for loans such as P.F., LIC, Housing etc, Surveys, Sentry books, case diaries, Attendance Register, Doctor's prescriptions, Lawyer Diaries, Case sheets, Engineers Estimates, Project reports, Manuscripts, Petitions etc.
7. JUDICIAL DOCUMENTS: Affidavits, vakalatnamas, written statements, complaints, bail bonds, judgments, summons, warrants, depositions etc.
8. POSTAL DOCUMENTS: Passbooks, withdrawal forms, money orders, acknowledgements, envelopes, receipts etc.
9. CIVIL SUPPLIES: Waybills, receipts, ration cards etc.
10. MISCELLANEOUS DOCUMENTS: Lodge registers, lottery tickets, railway reservation forms, telegraph forms, suicidal notes, anonymous letters etc.

Specimen writings signatures/ numerals/ initials are the specially written by victim / complainant/ accused / suspect for the purpose of comparison with the disputed documents. This is usually done either in the open court or in the presence of presiding officer or enquiring authority or before any responsible individuals. The following are the various steps suggested while procuring the specimen standards for making examination meaningful, objective and conclusive and also to ward off disguise.

- (i) The suspect should be made to sit in a comfortable posture.
- (ii) He /She should be supplied similar paper and writing instruments as that of the questioned.
- (iii) The suspect should not be shown the questioned document.
- (iv) Dictation should be given to the suspect at different intervals.
- (v) After each dictation, the sheet of specimens should be removed, and a fresh sheet of paper to be supplied.
- (vi) The dictated text should contain many of the words, phrases, numerals and letter combinations as found in the questioned document. No instructions should be given regarding spelling, grammar, punctuation marks etc.
- (vii) At least 5-10 specimens should be taken. In case of deliberate efforts to disguise, more specimens should be taken.
- (viii) As far as possible signatures and writings should be obtained in the natural 'setting' and 'medium'.
- (ix) Each and every specimen sheet should be attested by the Judicial Officer / Investigating Officer along with the signatures of the witness appended on them with date.
- (x) In case of specimen writings also the Judicial Officer / Investigating Officer should make all efforts to the expert to compare "LIKE WITH LIKE" with sufficient material.

There are no fixed numbers of specimens to be collected for comparison.

Adequacy and suitability are in a way interdependent. One should not go by the mere number without regard to the various connected factors. The main criterion for adequacy is "clear expression of individuality and habit". Further it is also dependent on the nature of the disputed, and nature and quality of the standards. That is why: the amount of writings / signatures necessary for comparison differs in different cases. The range of standard signatures extends so greatly only from the point of view of their nature and quality.

HANDWRITING PRINCIPLES

The correct identification of handwriting requires the evaluation of all the physical facts found in the writing not only in the light of the following basic rules but also with patience, common sense and intelligence. The identification of handwriting is based on some established scientific principles which are listed below:

- (1) The handwriting of every mature writer is personal and individual to him alone.
- (2) A person cannot produce in a mechanical manner exactly what has been written first. There must be certain natural variations in the writing of the same person.
- (3) Related to the above principle, it is a fact that one cannot write two signatures precisely alike.
- (4) If two signatures are precisely alike then one of them must be a forged signature or both signatures may be forged.
- (5) Every person's writing undergoes gradual changes in the course of life, however, in most of the cases the changes are very slow and they may not be discernible.
- (6) Two different persons cannot write in similar style.

- (7) A writer cannot exceed his writing skill and ability unless he makes serious efforts and practice.
- (8) A person cannot adopt different styles of writing at different times, as to change ones normal style of writing is an exceedingly difficult task.
- (9) An attempt to disguise leads to an inferior quality of writing and the disguise is always superficial. The writer, however, skilled he may be, can never be able to effectively disguise his writing in respect of all the characteristic features of writing.
- (10) The attempted disguise in most of the cases is simple in nature.
- (11) Handwriting does not exclusively depend upon the physical movement of hand or the writing instrument used.
- (12) In spite of all the external factors such as nature of writing surface, writing instrument, position of the writer, nature of writing support, lighting conditions, influence of external conditions etc., it is a proved fact that "handwriting is 'brain writing' controlled by the signals sent by nervous system through hand". Hence no radical changes will occur in ones writing due to variations in the above said external factors.

BASIS OF HANDWRITING IDENTIFICATION - INDIVIDUALITY

Handwriting is an acquired art like other arts viz., painting, dancing or cycling. The early stages that accompany the learning and practicing of writing are characterized by a conscious effort on the part of a student to copy standard letter forms. He takes a mental impression of the model before him and makes an effort to translate it through muscles as writing. After practice, proficiency is acquired and the writing gets set and mature. It is then no longer effortful but almost a reflex action. A perfectly correct picture of the model is not grasped by the mind nor reproduced through the muscles. There are deviations in both these aspects. These mental and muscular deviations result in a nerve muscle reaction pattern and give the writing its Individuality.

The various form variations in the writing are based on the mental conceptions which are employed and developed by the writer. The muscular movements are fashioned on the basis of those conceptions and by practice they develop into a habit. Thus handwriting can also be termed as an acquired habit. The varied forms and their details are the visible characteristics in the writing which form the basis of a scientific analysis. Thus we have four factors to consider:

- (1) The mental conceptions as the origin of individuality;
- (2) The movement pattern analogous to the conception;
- (3) The habit of which ensures the consistency of the movement pattern; and
- (4) The various characteristics as the reflectors of that individual movement pattern.

Each person has a distinct mental conception of style and manner of writing. Characteristics, then, are the visible record, through which the expert can understand and get a complete and more coherent idea of the individuality and habit. A lay person identifies writings by their pictorial effect, stands for the individuality of writing. His concept of individuality is but the characteristic pictorial effect.

Pictorial effect is said to be the overall effect of the more obvious characteristics of handwritings, because a change in any of the obvious characteristics substantially alters the pictorial effect. The

natural process of integration which is a quality of the human mind and it forms a comprehensive concept of the individuality of the writing as a whole, is called "Pictorial effect". In other words it is the cumulative effect of the observed characteristics.

The individual significance of characteristics, their mutual relation and their cumulative significance, all are simply felt by an ordinary man to form a judgment of identity. The expert, through scientific analysis and synthesis, makes explicit what is implicit in a lay person's process of identification. The felt judgment of an ordinary person which is considered for all purposes subjective, is turned to a "reasoned judgment" quite objective in nature & verifiable by others.

VARIATIONS IN GENUINE HANDWRITINGS

It is a matter of common experience and observations that the genuine signatures and handwritings of an individual vary to an extent according to habit, circumstances and conditions under which they are written. Even if a person writes a number of signatures at the same time and in the same sitting, some Natural Variations must occur in the forms of letters and other features.

Natural Variations means normal or usual deviations found between repeated standards of any individual's handwritings. Variation is an inherent part of natural writing. Such variations are bound to occur in the writing and signatures of the same person written on different occasions.

The human hand does not work like a mechanical device and the handwriting and signatures of the same individual show some variations due to the internal or external factors. But, it should be noted that such variations always occur within certain well defined limits in form, size, proportion, slant, etc. There may be divergences of varying degrees or of varying forms in the writing of different persons but the unmistakable distinctive feature of marked individuality cannot be found to have been spoiled by such variations.

The basic principle of handwriting comparison is that the handwriting habit of an individual once reached to maturity becomes a permanent and unconscious habit and the variations found in it are always superficial in nature.

The layman sometimes believes that the writing depends exclusively on the physical movement of hand or writing material used, which is obviously untrue.

In spite of so many external factors supposed to influence the character of handwriting, the consensus among forensic document examiners is that the handwriting is brain writing and that, for example, those who have lost an arm have reverted to the same characteristics with one hand as they showed with the other. Handwriting of an individual has so many peculiarities which make it most individualized and personal thing. The pen, it has been said is like a cutting needle which transforms the essence of music into the wax of master record, on the paper as on phonograph record, an underlying motive is reproduced. Both must be played back to reveal their hidden contents.

The peculiarities (Characteristics) in the handwriting as 'Osborn' says are of various degrees of force and value, ranging from permanent, habitual, occasional, exception to accidental.

It is the specialist who is to judge the characteristics and ascertain their identifying value in a particular writing or signature(s). A characteristic in ones writing may have an important bearing, while the same peculiarity may be of little significance in the other writing.

The presence of natural variations in writings and signatures is a strong indication of their genuineness. Once the two signatures are found to be having exact size and proportions, then one of them or both of them must be the forged signature(s).

The natural variations in the writings and signatures as referred above are always in the superficial features.

FACTORS AFFECTING THE HANDWRITINGS / CAUSES OF VARIATIONS

Handwriting is affected by unusual conditions in and surrounding the writer. The knowledge of the nature of the results produced by unusual conditions in the writing will serve two fold purpose; first, it enables us to exclude them in assessing the individuality, and second, they can be distinguished from the signs of disguise and of forgery.

- i) Age
- ii) Space
- iii) Variations due to surface, writing instruments and support
- iv) Variations due to weakness of sight
- v) Variations due to illness/psychology
- vi) Variations due to disguise
- vii) Variations due to intoxication
- viii) Variations in the signature and writing of the same person

IDENTIFICATION OF HANDWRITING

The identity / non-identity / forgery of a writing can be established by the study and analysis of general and individual characteristics of the writing.

Class/General Characteristics

The general/class characteristics which are common to a group of people such as:

- a. Movement
- b. Line Quality
- c. Skill
- d. Speed
- e. Alignment
- f. Slant

- g. Spacing
- h. Relative size & Proportion Of Letters
- i. Pen Pressure
- j. Shading
- k. Pen Presentation
- l. Arrangement
- m. Style
- n. Tremors

Individual characteristics

A characteristic that is highly personal and peculiar and is unlikely to occur in other instances which lead to an unmistakable identity of two writings is called as an individual/personal characteristic.

It is a matter of common knowledge that hand writing becomes individualized from the time the child learns the art of writing. Individuality is the basis for the identification of handwriting. The mental and muscular deviations result in a nerve muscle reaction pattern and give the writing its individuality. As the writing matures it is modified by the factors like education, training, personal taste etc. But once the form of letters and their manner of execution get established by usage, the writing becomes automatic and unconscious, which is a reflex action.

The changes in hand writing developed by use may affect nearly every character and finally produces that surprising individual variation.

These individual characteristics which themselves reflect individuality, are rare, mainly unique, inconspicuous form variations and they are so numerous. Their rarity and peculiarity depends on the nature of their divergence from the copy book form.

They result largely due to:

1. The survival of an error over looked by the teacher;
2. Conscious or unconscious influence of others' writings;

3. Admiration for a particular design;
4. Necessity of purpose as in the case of fluent and rhythmic writings, degeneration due to speed or inaccurate memory as in the case of an illiterate writer;
5. Idiosyncrasies developed by use. These produce surprising individual variations by which handwriting is most positively identified. These develop in many ways, two of which are abbreviations and embellishments.

FORGERIES AND THEIR DETECTION

The average unaided or so-called naked eye can distinguish or, optically speaking, resolve, separate lines up to a fineness of only about 200 or 250 to the inch, lines finer than this appearing as solid mass or tint. The microscope is the instrument which makes it possible to see physical evidence directly that otherwise might be invisible or cannot be distinguished by the naked eye. There is great variety of questions which only microscope can answer. In many instances its evidence is conclusive. The microscope serves to discover and show the physical fact by direct view of the thing itself.

Forgery: Forgery means making of a false document with intent on the part of its maker to defraud.

Or

Making of a false document or tampering any part of a document, dishonestly or fraudulently to support any claim or title.

Or

Who dishonestly makes, signs or executes a document or part of a document, or makes any mark denoting the execution of a document with the intention of causing it to be believed that such document or part of a document was made, signed, sealed or executed by or by the authority of a person by whom or by whose authority he knows that it was not made, signed, sealed or executed.

The problem of identification is inseparably related to the problem of forgery. The necessity for a scientific identification of handwritings or signatures arises from the fact that forged documents are often presented as genuine and that genuine documents are sometimes attacked as forged. Usually signatures are forged; for, firstly, it is the signature that authenticates a document, and secondly it is relatively easy to forge only the signature rather than to forge the whole document.

The validity of documents involving transfer of money and property, like cheques, drafts, receipts, bills, agreements, sale deeds, will etc. rests mainly on the signatures of the executants. Many claims and disputes, therefore, centre round the signatures. The possibility of forgery necessitates the examiner first to verify whether the questioned signature shows evidence of forgery or of genuineness. In any enquiry the first step is the understanding of the nature of the questioned signature (or writing) and the psycho-physiological factors behind its production, before its actual comparison with the standards are made.

When forgery of a signature is alleged it is natural to ask what kind of forgery it is and how the process or method by which a fraudulent signature is produced may show itself.

Types of Forgeries

For the purpose of the subject of identification and comparison of signatures and writings, forgeries may be classified as –

1. Simulated or Copied Forgery / Simulation by Memory.
 - a. Partial Simulation
2. Traced Forgery.
3. Freehand Forgery (Forgery without Model / Impersonation).

Forgery by Trickery

1. Forgery by transplantation of Revenue Stamps bearing a Genuine Signature.
2. Utilizing a Genuine Signature (Built-up)

The purpose of a forger is to make a signature as similar as possible to the model genuine signature so that one may be taken in by its general appearance. That a forged signature resembles a genuine signature in some ways, particularly in its pictorial appearance, means that some of the characteristics constituting pictorial appearance are introduced into it. In a traced forgery even the details are produced. Laymen are usually carried away by similarity in those characteristics, though vaguely perceived as a whole in the pictorial effect of the signature. But the trained examiner is not deceived; he sees through this surface resemblance and detects a forgery.

What is it that the examiner relies on in determining the evidence of genuineness or forgery? Certainly it is not the graphic similarity of characteristics, nor the number of such characteristics. He looks to their nature and significance and the significance of characteristics is assessed only by understanding their nature with reference to the movement, lack of form and the mental background of writer. That is, the examination begins with the probing into the psycho-physiological factors that are responsible for the production of the signature in question.

Here it may be repeated that a correct interpretation is possible when we know the causative factors or the casual connection, for it is judging the cause from the effect; from physical quality to movement and mental background is the rule. The act of forgery is different in many ways from the act of making a normal genuine signature. A person makes his signature almost automatically and also unconsciously out of habit. Neither is he unfamiliar with the movement involved in making his signature nor does he need to pay any conscious attention to it. He writes with his habitual movement, speed and skill so that the various characteristics in his signature reflect these qualities and also his writing individuality. A genuine signature therefore exhibits, as a rule, freedom, flow, smoothness and energy in the execution of strokes.

A genuine writer does not need any prior preparation; he just picks up the pen and makes his signature. An initial ink failure suggests absence of prior preparation and is therefore one of the indications of genuineness. Flying starts and vanishing terminals also suggest the absence of prior preparation and a speedy execution without attention to the writing process. So also a fly-off of the pen in the middle of a flourished stroke which points, in addition to speed, a delicate habitual gradation of pressure.

Since the signature is made automatically out of habit the writer is unmindful of the writing process. It is neither necessary nor is it his intention to make the signature faithfully conform to any of his other signatures. A genuine signature differs graphically in many particulars and this is the natural variation. A genuine writer pays no attention to these varying details. He does not think that this natural variation makes his signature unacceptable; in fact, he has no reason to doubt the validity of the signature which he makes. Inattention to details and natural variation are positive signs of genuineness.

Sometimes a genuine writer may overwrite or retouch his signature when he thinks that such overwriting or retouching is necessary for clarity and legibility; and he does it with usual carelessness. Genuine overwriting or retouching is as careless an act as the writing itself and is necessarily obvious. This is so even when the writer is in the habit of frequently overwriting or retouching.

Since a genuine writer is not conscious of the writing process and writes with his normal speed and energy, the line quality would be clear cut and the writing has a live appearance with strength and force. These qualities coupled with carelessness are signs of genuineness.

The writing of a person is liable to be affected in some measure by the instruments used and the conditions surrounding the writer. Here again the writing exhibits the carelessness of the writer as to the selection of the instruments and the kind of writing produced. The line quality may be scratchy and broken in the case of a bad or defective nib or degenerate and illegible or may show repetitions, omissions, abbreviations, overwriting or corrections which are necessarily obvious. The careless abandon of a genuine writer would also be evident in his failure to correct any mistakes or ink failures. Anything that suggests the careless abandon of the writer is indicative of genuineness.

If a genuine writer is used to write a shaded writing, the shading in such writing would be well placed and consistent.

On the other hand, *forgery is a conscious act*. A forger is neither familiar with nor used to the movement habit of the signature which he intends to forge. *He gets hold of a genuine signature,*

looks at it and tries to understand its form, details and execution in his own light and then tries to produce the signature as similar as possible to that model signature and as best as he could. It is always a double process. The forger firstly needs to avoid his own characteristics and secondly to adopt another's. This double requirement keeps him always conscious of the model signature on the one hand and the process of his writing the signature on the other.

This consciousness and the desire to follow a particular track or movement pattern invariably slows down the writing process and results in defective line quality. The first thing an examiner looks to is the line quality, the importance of which needs no emphasis. From it is inferred the nature of movement and the mental background i.e. the consciousness or otherwise of the writer to the writing process. Defective line quality is therefore one of the most important signs of forgery.

The fear of punishment in doing such an illegal act also disturbs the forgery. The reflexes of his mental tension also make the imitation difficult and thus he does not achieve perfection.

The writing process being slow, the beginnings and endings tend to be blunt. Often they suggest the drawn movement and hesitation and therefore point toward forgery. No forger would be so foolish as to do on the spur of the moment, without much thinking and preparation, a complicated job such as forging a signature involving an unfamiliar form and movement pattern. On the contrary he is anxiously careful and excessively meticulous about the selection of materials and necessarily makes trials till he gains confidence that he can forge the signature satisfactorily and make it pass as a genuine one. Forgery therefore is, as a rule, a careful act of deliberation and preparation. It is for this reason initial ink failures and scratchy strokes contraindicate forgery.

A person disguising his writing is also conscious of the writing process, but a forger's consciousness is something more than that. It is limited to *avoiding one's own characteristics*. Further a forger knows that forgery is a criminal act punishable under law. All forgers are not professionals; many of them are beginners and novices. One who for the first time sets himself upon committing a forgery is usually constrained by moral inhibitions. And all forgers alike have the fear of punishment on detection and consequently become disturbingly anxious to perform the act well so as to avoid detection. *The consciousness of a forger is mixed with fear and anxiety which noticeably disturbs the co-ordination of movement reflexes.*

It may be that a hardened or professional forger largely gets over this fear-anxiety complex, yet the task does not become any easier. *Forgery is not a regular act; and a forger, every time he commits a forgery, may not be forging the same person's signature.* The unfamiliarity about the movement habit of the signature to be forged continues to be a problem to the forger. He is therefore bound to be critically *conscious of the writing process. The result is a marked loss of freedom and fluency. The movement is usually lowered; often it is a drawn movement. The speed is slow marked with hesitation, pen lifts, and pen pauses.*

In copying a signature, a forger's attention is frequently shifted to the model signature and back to the writing of signature. This *alternation of attention results in unnecessary pen lifts or pen stops, which are usually inconsistent with the skill of the model signature and are likely to occur at unnatural places.* In an attempt to write continuously the forger may delay the shifting of his attention to the model and, then, he may miss a natural and habitual pen lift occurring in the model signature. More pen lifts are usually expected in a simulated signature. They may be more or less depending on whether the alternation of attention is quick or delayed. *Pen lifts or pen stops at unnatural places and absence of pen lifts at habitual places are indicative of simulating process.*

The reason for his belief in and insistence on close resemblance is firstly his fear that variation or divergence from the model may make the signature liable to suspicion. Secondly, natural variation is hard to understand and harder still to simulate. This makes him pay all possible attention to every perceptible detail. The result is an unusually close resemblance with the model signature.

A forger seldom contains his anxiety. He himself is the severest critic of the signature he forges. He is scarcely satisfied with the signature as first produced and therefore tries to perfect it by correcting what he considers defects by careful retouching, over writings or patch-ups. These retouching etc. are necessarily minute and hidden, for a forger detests obvious retouching and correcting lest they should draw attention and create suspicion.

DIFFERENT TYPES OF TAMPERINGS

- Alterations / Additions / Insertions
- Mechanical / Chemical Erasures
- Obliterations
- Invisible / Secret Writings
- Indented Writings
- Substitution

However, in critical cases involving suspicion of tampering of the questioned portions by mechanical / chemical erasures or alterations, insertions etc, recourse is tuned to instrumental analysis.

OTHER TYPES OF EXAMINATIONS

Stamp & Seal Impressions

Stamp/Seal impressions: Impressions made from the stamp/seal.

Seal impressions on postage stamps reveal information as to the place of posting the letter and date when it is posted. The office seal impression on a certificate from an authority may be fake one if it is a forged document. The facsimile signature stamp impression on a marks list could be a fake one. Stamp impression in a document when the signature is forgery is usually counterfeit in most of the cases.

To identify whether the disputed / questioned / suspected stamp/seal impression is genuine or not, it should be compared with the standard stamp / seal impression either by physical comparison or by superimposition technique.

By physical comparison by size and design of the stamp/seal; size and design of letters/emblem/any specific marks.

By super imposition techniques with the help of transmitted light or by preparing dia-positives.

Paper

Paper is a product consisting of a mat of cellulose fibres in compact sheets of uniform thickness.

One of the tasks of the forger is the finding of the suitable paper upon which the forged document is to be written. There are numerous ways in which the matter of paper becomes important in connection with the study of documents such as forged wills that have been written on paper made many years after the alleged dates of the documents etc.

The authenticity of the paper of a document may be questioned in numerous ways. E.g.

- 1) Whether the date of the document is in accordance with the date of its manufacture or the paper was manufactured after the alleged date written on document,
- 2) Whether a paper is identical with or different from the other papers of the same documents,
- 3) Whether the water mark of the paper is genuine or forged,
- 4) Whether the paper of the questioned receipt, agreement, compromise etc. is a part of some other paper from which it has been torn to use the signature or thumb impression appended thereon for some other purpose etc.
 - a. If the paper is torn from any paper the other piece of paper
 - b. If torn from any a book or a register the concerned book or register
 - c. If foreign paper is substituted in any book or register the remaining pages of the book.

Ink

A coloured fluid or viscous marking material used for writing or printing.

Many disputed document questions relating to ink can be answered in a positive manner and illustrated and explained.

Forensic ink analysis has been a part of questioned document examination and the examiner is often required to solve the following questions-

1. Whether all the writings on a document are written with the same ink or whether some of the writings are written with different inks?
2. Whether the alleged alterations, obliterations or cancellations etc. are done with the same ink or with different inks at a later stage?
3. Whether the entries of different dates in an account book or bahi khata etc. have been made with one pen and ink at the same time and in one sitting?
4. What is the age of ink/writing in question.?

Typewriting Matter / Cyclostyle Copies / Printed Matter

The clue for the authorship of type written documents is often through the identification of the machine on which the matter has been typed. For nearly as long as there have been typewriters, there has been a need for scientists to examine disputed type written documents.

The various forms of frauds frequently committed are subject of legal controversy. The documents which are questioned in business transactions and in other fields are pronotes, receipts, contracts, claims and wills etc.

The questions regarding these documents are presented in various ways which may be following:

- (i) If a particular matter has been typed by the same machine or by some different machine.

- (ii) If the date and figures or words and sentences have been altered.
- (iii) Whether the sheets of the document are typed continuously in one sitting or in different dates.
- (iv) Whether any sheet of will, contract or deed was substituted later on.
- (v) If the additions, alterations and interlineations are made at the same time or at different dates.
- (vi) Whether the matter was typed by the particular machine, or by the machine of the same make and model.
- (vii) Whether the matter was typed by a particular operator

The basis for the identification of typewriting is the individuality of every typewriter.

As a means of identifying the individual machine upon which a writing was done, or determining the date of a typewritten document, the examination of the typed impressions should be made in five ways:

- i) The design, size and proportions of each of the characters.
- ii) The relation of each character as printed to adjacent characters or its vertical and horizontal alignment.
- iii) The vertical position of the character in relation to the line of writing, that is, its perpendicularity, or slant to the left or right.
- iv) The comparative weight of impression of the upper, lower, right or left sides of each character, or as the machine adjusters describes it, how the type stands "on its feet" or "off its feet".
- v) The condition of the typefaces of all the letters and characters and the presence of defects, bruises, or "scars" due to wear or accidents.

Torn Documents

Sometimes it is necessary to prove whether the pieces of document under dispute together form a part of the same document or not.

Comparison and physical matching is done to establish the source of the torn pieces of the document.

Charred Documents

A document that has become blackened and brittle due to burning or exposure to excessive heat.

Accidentally burnt documents or the documents which have been intentionally destroyed are sometimes received in the laboratory for their restoration and decipherment, i.e. to decipher the original writings.

Charred documents can easily disintegrate and are sometimes damaged or break up into brittle charred fragments.

Paper which has been subjected to a high temperature – even though the exposure is insufficient to discolour the paper much less char it - loses practically all its strength and readily breaks up when handled. If the heating has gone on until the paper has turned brown or black then it may fall to a powder on the slightest handling.

It is sometimes of the greatest importance to decipher and may be preserve a document in this state, and for this purpose the charred material must be transferred to a laboratory without suffering any further damage or disintegration. The charred documents should be treated very carefully. The fragile and twisted material must be strengthened and made flexible so that it can be handled and flattened.

At present 3% polyvinyl acetate solution in acetone makes an ideal binding agent for laboratory use on charred paper.

Charred paper, and even more so, paper ash, has little tensile strength, so that no attempt should be made to lift it with tweezers; instead, the charred mass should be moved by first insinuating a sheet of stiff paper beneath it. The whole should then be transferred into a box or on to the centre of a large sheet of wrapping paper. Protected in this way, it can be taken by hand either to the

laboratory or to a sheltered place for stabilization, after which it may safely be passed through the post for further treatment at a laboratory.

Photostat / Carbon / Fax Copy Documents

Greater access to photocopying facilities has been a consequence of advances in reprographic technology and the falling costs of producing copies. Many modern offices now have photocopiers and in many areas shops also offer photocopying services. This wide spread availability of photocopiers has lead to forensic document examiners encountering many photocopied documents in their case work. As well as the fax machine has now become an essential machine in many modern offices. Printers, faxes and photocopiers which were once only in the hands of specialist users are now common place items in every day life, all producing documents which could be subject to forensic examination.

Photostat: Reproduction of original copy is made by projecting the image of the document on to sensitive paper inside a large camera specially designed for the purpose.

Carbon: Copy of original made by using carbon paper.

Fax: Facsimile transmission of images usually of a document consisting of typed/printed/hand written text or drawing. The transmission of text or data is achieved through the telecommunication link, usually the telephone net work.

The examination required is:

Whether a given questioned/disputed/suspected writings or signature in the Photostat or carbon copies is written by the suspected or not.

For the authorship or to eliminate the writer or at times to detect the forgery, it is similar as that of writings / signatures already discussed.

To decipher the original writings from the faded fax.

By using different light sources U.V., IR etc. the original text or data from the faded Fax messages can be deciphered.

Limitations

Photostat:

(i) The writings/signatures/initials, matter available on the Photostat copies do not exhibit the core handwriting parameters such as line quality, speed rhythm, movement etc. and the minute details like design of the letters, type face defects, machine defects etc. in case of type writing and printed matter.

(ii) Photostat copies are susceptible for manipulation such as lifting, tracing, interpolations, additions, insertions etc. , in the process of photocopying.

(iii) Even the erasures can also be not detected.

(iv) Faint copies are not suitable.

Carbon copies: Faint carbon copies

Fax: Depends upon the time, nature of exposure the fading process varies.

INSTRUMENTS

Major instruments used in the analysis of questioned documents are

1. Stereomicroscope
2. Video Spectral Comparator
3. Electrostatic Detection Apparatus (ESDA)

HANDLING AND PRESERVATION OF DOCUMENTS

Proper handling and preservation of documents is very important. Documents should not be handled carelessly.

The following are some of the Do's and Don'ts in this regard.

1. Documents should be Xeroxed and kept for record.
2. Originals must be sent for Expert Examination.
3. Documents should not be cut, torn or trimmed. Documents should not be folded or unfolded.
4. Partially torn documents should be joined properly with adhesive tape to prevent further deterioration.
5. Documents should not be exposed to moisture, sun-light etc.
6. While sending documents they should be preserved in cellophane envelopes separately.
7. Documents should not be touched with ~~erasure~~ of any kind nor should any labels be stuck with gum.
8. Care should be taken that no oil stains or food particles fall on the documents.
9. Documents should not be punched, pinned or stapled. Only paper clips should be used.
10. The Forwarding Authority should not make any additions or underlining on the portions containing the disputed and standard writings and signatures.
11. The disputed portions should be encircled properly with a pencil without disturbing the disputed portions. The same thing can be followed in case of admitted standards.
12. Initial, date and numbering etc., should be put outside the encircled portion.
13. Documents should not be put in shirt/ pant pockets by I.Os. Since it will spoil the evidentiary value of materials present in the documents.
14. The original documents should be handled to minimum extent only.
15. Rubber stamp/ seal impressions should be put in places without affecting the portions to be examined.