

EXAMINING QUESTIONABLE DOCUMENTS

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Questioned-document examiners traditionally have specialized in the study and investigation of questioned documents to determine the facts surrounding their preparation and subsequent treatment. They examine not only suspected questioned signatures but also other handwritten and hand printed documents, and examine typewritten and printed material.

The examiner also is asked to determine the authenticity of a document by analyzing inks, paper and other substances. These might include carbon copies, typewriter ribbons and correction liquid. They might also include instruments, such as mechanical recording devices and check writers.

In addition, the examiner also is called upon to reveal alterations or substitutions in documents, and decipher erased or obliterated writings. Many of these cases occur in employee theft or medical malpractice. To accomplish this challenging task, a variety of sophisticated procedures and equipment have been developed.

Handwriting Comparisons

Traditionally, questioned document examination problems have involved handwriting or hand printing comparisons, especially in forgery cases.

Forgery is a twofold process: discarding your handwriting habits while at the same time assuming someone else's unfamiliar writing characteristics. This complicated mental and physical task rarely is successful and, thus invariably, telltale signs are associated with the forged signature.

Whether a freehand simulation or a traced forgery, the attempt to duplicate an unfamiliar writing always produces characteristic defects, namely hesitation, unnatural penlifts, patching, tremor or uncertainty of movement and a drawn quality to the writing.

The forger typically creates a deliberate drawing of the signature and tries to imitate as closely as possible letterforms and design rather than movement and qualities.

Certain types of traced signatures can be more readily identified with a device known as the Electro Static Detection Apparatus (ESDA). With this machine and specialized infrared side lighting photographic techniques, the characteristic indentations associated with some forms of traced signatures can readily be visualized.

To develop these indentations, the document to be examined is placed in a humidity chamber, then transferred to a porous bronze vacuum plate and

covered with mylar film (transparent non-conductive covering). After being electrically charged so toner will adhere to the impressions, cascade developer (polymer beads coated with toner) is poured over the mylar covering to develop the final document containing the indentations.

The ESDA also can sufficiently enhance the indentations found in paper surfaces to permit traditional handwriting or hand printing comparisons. This recently occurred in a case I examined for the United States Attorney's Office in San Antonio, Texas. Although there was no incriminating paper evidence found at the crime scene (a clandestine PCP drug factory), close side-lighting examination of a seized telephone directory disclosed faint indentations on the cover page.

Close inspection and, later, development of the indented images with the ESDA restored the writing detail enough so that it could be forensically compared to known writings of the chief chemist of the clandestine laboratory. It was determined that the chief chemist wrote the questioned chemical formulations found in the indented writings contained on the cover of the telephone directory!

(Research conducted at the John Jay College of Criminal Justice in New York City has determined that the ESDA can recover impressions from documents written up to 60 years earlier!)

Hand Printing and Numerals

The methods of handwriting comparison and identification are the same as those employed by the expert in script-handwriting examinations. Necessary complications exist due to the interrupted character-by-character method of writing. However, the expert can find individuality in hand-printing and numerals just as in script signatures. The key requirement is for the investigator to obtain adequate standards, both in quality and in quantity.

In a disputed handwriting case, most experienced investigators are familiar with the need to obtain sufficient request and non-request writings. It is essential to obtain natural, spontaneous exemplars from the suspects. Try to ensure that they are not disguised. A disguised writing usually is less skillful, producing irregularities and inconsistencies. Hallmarks of disguised writing may include hesitation, variations of slant, patching, and a slow, drawn quality exemplified by heavier pressure habits.

A recent IRS investigation of a Puerto Rican bank president involved the diversion of illegally obtained drug monies through several Caribbean banks. The money-laundering operation involved the deposit and subsequent withdrawal of large sums of cash by narcotics dealers acting in consort with banking officials in Puerto Rico.

A court-ordered handwriting exemplar obtained from one of the leading banking officials bore classic evidence of disguise. Although I couldn't positively identify the author of the questioned money transaction form, I did identify a portion of the exemplar writing as being disguised. This conclusion proved pivotal in the

prosecution's case because it substantiated the defendant's unwillingness to comply with the spirit of the original court order, which had required natural handwriting from the suspect.

(Legal investigators and attorneys are invited to review the following precedent cases regarding the admission of disguised exemplars and testimony permitted concerning their manufacture. These include US. v. Hall, 565F2d 1052 [8th Circuit 1977]; U.S. v. McCann and Pruitt, 431F2d 1104 [5th Circuit 1970]; US. v. Wolfish, 525F2d 457,461 [C.C.A. 2, 1975]; U.S. v. Stem-bridge, 477F2d 874 [C.C.A. 5, 1973]; and People v. Igaz, 326NW 2D 420 [Michigan Appellate, 1982).

To successfully circumvent disguised writing, it is often helpful at the beginning of the interview with a forgery suspect to require identification, such as a driver's license. The investigator should retain this and review it during the production of the exemplar. If it is apparent that the suspect is disguising the writing, the investigator should immediately confront the suspect and insist upon a more natural writing style, or one consistent with the non-request writing earlier obtained from the suspect's wallet or purse. It is also useful to procure the exemplar writings repeatedly on different pieces of paper rather than simply permit the forgery suspect to copy a "model" forgery several times in succession on a single piece of paper.

Examining the Entire Document

Examine the whole document rather than just a few handwritten words or a single signature. For example, even if the document is a single page, consider further investigation of these questions:

Is the letterhead one that might be challenged for date or authenticity? Is the sheet standard size? Is there evidence of cutting to create an unusual size?

What is the significance of the folds?

Are there erasures or crowding of lines or words?

If handwritten, should the text and signature be written with the same pen? If typewritten, was only one machine used? Was the document typed continuously? Do all lines align properly?

Is the arrangement of material on the page normal or usual? Are there unusually wide gaps between the text and signatures or any other arrangement not typical of normal documents?

Are there stains or marks on the paper?

Are there suggestions of indentations from writing on another document?

In dealing with a photocopy, where is the original and has it been compared with this copy? If the original isn't at hand, where is the first copy of it? In other words,

might we be dealing with a forged photocopy? If the questioned documents consist of several pages, the problems become more complex. For example, is there evidence that a page has been inserted, deleted or substituted? Are all the pages in the same general condition? Have they all been written by the same person with the same ink or pen? Were the pages ever bound together, and if so, how (staples, pins, or paper clips)?

Also, check to see if there is consistency from page to page. Are the writing impressions on a paper the same as the one before or are they some other source? Are all the signatures authentic (principles and witnesses)? Is there evidence that the document was bound in its present form when executed? Are there marginal notes that may reveal when the document was assembled? Is each page initialed properly by the same pen?

Each document may contain its own special problems. The investigator and attorney must think of particular questions before their opponents do.

Ink and Paper Analysis

Often, the document examiner is called upon to distinguish not only between inks but also to identify the source of a particular ink. More and more, this type of examination is being conducted chemically.

Often, the examiner could differentiate between different ink sources through specialized photographic techniques and various non-destructive tests. In the last 20 years, however, the most common chemical ink testing technique has been thin-layer chromatography (TLC). Additional chemical tests, including high-pressure liquid chromatography (HPLC), solubility tests and densitometry allow direct comparison of many colored and invisible components of inks.

Recent research conducted by two forensic chemists, Dr. Antonio Cantu and Richard Brunelle, has led to new methods for chemically determining the relative age of ballpoint inks. These techniques can be extremely helpful in dealing with documents containing ledger records or expense and income records where several ink entries are known dates and one or more questioned entries on the same page or pages are involved, and where these inks are of the same formula. Dr. Cantu has established that the longer an ink has existed on paper the slower it will dissolve in various solvent systems.

Brunelle has recently advised that under certain circumstances, the relative aging of ink determinations can sometimes permit identifying its relative age to around six months. These latest developments already have had significant impact on the detection of backdated fraudulent documents, especially in medical malpractice or income tax evasion matters.

Forensic paper examinations have been expanded to include not only the traditional non-destructive physical measurements, such as a paper's weight, thickness, fluorescence and opacity but also its fiber composition, pulping processes, coatings, fillers and whiteners, and their elemental compositions.

The dating of paper is conducted in essentially three ways: identifying a coded watermark or a change in its design; comparing a questioned paper with standards of known production dates; and getting its elemental composition from the manufacturer.

As with ink analysis, chemical and physical examination of paper also is useful in the detection of fraudulent documents.

Photocopier Identification

Today's photocopying equipment has provided a fast and inexpensive means of copying documents. It used to be easier to identify and classify photocopiers by copying process (some of these are thermographic, transfer-electrostatic, gelatin-transfer process and diffusion transfer). Or, you could search out various "trash" marks and other peculiarities characteristic of the reproducing and transport mechanisms.

Today, dry photocopy systems provide different and often more difficult problems for the questioned document examiner. The direct-electrostatic process has continually been refined, as have its quality control standards, which leave fewer individual peculiarities in the copied document.

The Royal Canadian Mounted Police Forensic Laboratory has discovered that particular types of color printers -- dot-matrix, ink-jet and thermal color -- have particular and distinguishing characteristics.

Dot-matrix color printers differ at the shape of the pin cross-section; the diameters of pins and the impressions they produce; the distance between adjacent pin centers in draft mode; the type of ribbon (processed v. primary); broken/damaged pins and their associated characteristics; ribbon misalignment problems and their related features; smearing of impressions on the paper surface; and the effects of color "banding."

Inkjet color printers differ by the type of ink used (water or oil base v. plastic); the presence of ink spatter; evidence of dragging and the presence of gaps in areas that should be solid.

Thermal-transfer color printers share evidence of burnout of thermal elements in the print head, the effects of faulty ribbon advance mechanisms and the presence of "banding."

Some of the characteristics discussed concerning color printers also relate to features observed in one-color printers. The only exceptions are those elements pertaining to the ribbon and ribbon-shift mechanisms.

Altered Documents

The most common methods of changing documents include erasure, obscuring the material with opaque marks, and adding material either by interlineation or by

extending portions of the document. Virtually all erasures can be detected through a thorough examination. Even skillful attempts to abrade or scratch the original document generally leave some sort of definite trace of disturbed paper fibers. Ballpoint pen ink does not erase, nor can it be eradicated as readily as other types of writing mediums. Extensive rubbing is necessary because the ink penetrates the paper and is not all lying on its surface. Photographic, ultraviolet and infrared luminescence methods often are effective ways of deciphering the original material.

A significant advance of modern ballpoint pen inks is their insolubility in water. Even with long water soaking, the writing often does not become obliterated. Photographic techniques often can restore the original writing.

However, water soaking often obliterates older fluid-based inks. Unless the ink contains some sort of fluorescent indicator, common means of restoration provide limited results. Certain stains, however, can be removed by carefully applying reagents or through specialized photographic techniques. If chemical treatment of the document is anticipated, contact a qualified chemist for any efforts.

Photographic deciphering has proven most successful in restoring charred documents. Generally, a recently charred paper is placed between two unexposed photographic plates, which are then stowed away in a light-tight container for about 15 days. At the end of this time, the plates are unwrapped and a photographic negative of the original material is obtained. Prints are then made from the negative, which will closely resemble a photograph of the original document.

Other successful restoration methods include ultraviolet radiation, infrared films and oblique or reflected light.

Charred documents should be moved in the same container in which they were found. During shipping, pad the documents with lightweight absorbent cotton.

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