

TECHNICAL NOTE

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Fraudulent Transposition of Original Signatures by Office Machine Copiers

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ABSTRACT: This study explores the transposition and subsequent manipulation of genuine pencil and ballpoint pen signatures by using office machine copiers.

KEYWORDS: questioned documents, signatures, photocopiers, transposition, manipulation of signatures

While attending the FBI document examination course in Quantico, VA, the course instructor, Dale Moreau, asked a question regarding one of my previously published articles. The article, "Transfer of Pencil Writings by Cellophane Tape," [1] explored the susceptibility of pencil writings to being transferred when tape was used as the conveying agent. Dale was amused at the idea of transferring his supervisor's signature to various awards, which proclaimed Agent Dale to be superior in all areas of endeavor. Obviously, the prudent supervisor would question the strip of tape covering his signature. The question asked was, "what would happen if the transferred signature and the original document were copied using an office machine copier?"

An original signature was prepared with the use of a pencil, that signature transferred to another original document and then the document was copied using a Xerox 5400 office machine copier. The results were disheartening to the document examiners in the class. The line quality of the copy was excellent; however, no "outline" of the cellophane tape was visible.

Much has been written regarding the examination of office machine copies. Most literature cautions the document examiner when dealing with copies. Some examiners render positive opinions regarding signature entries when they are certain the document in question is a first-generation office machine copy.

Experiments were conducted using the Xerox 3100LDC and Xerox 3400 copiers. Ballpoint pen signatures were used as were pencil signatures. The ballpoint pen signatures were prepared with a Papermate®, Erasermate® 2, medium point. This particular writing instrument was included because previous research found this pen (ink) to be very susceptible to transfer [2]. Since ordinary ballpoint pens did not transfer adequately because of the small amount of ink lifted by the tape, the rapid drying time of the ink, the viscosity of the ink, and the grade of paper, no further studies were conducted with these writing implements [1, 2].

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Two model signatures were written by Dr. I. C. Stone, one with the Erasermate 2 and one with a pencil, No. 2 lead (see Fig. 1). The ballpoint pen signature was lifted using cellophane tape, but before removing the tape a ball stylus was used to trace over the signature, thereby transferring the ink contained in the furrow of the writing line. Once this was accomplished the tape was lifted and transposed to an original sample check. The pencil signature was also lifted by cellophane tape and transferred to an original sample check (see Fig. 2). Both original docu-

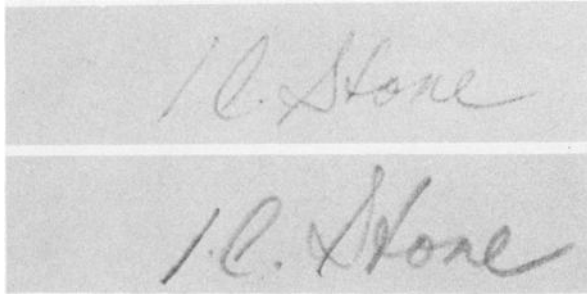


FIG. 1—Two model signatures. The top signature was written with a Papermate, Erasermate 2, medium point. The bottom signature was written with a No. 2 lead pencil.

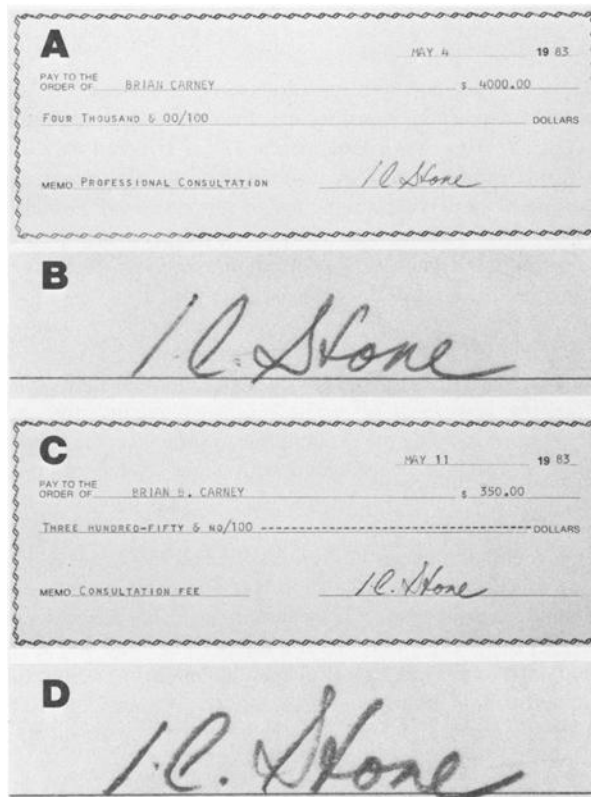


FIG. 2—(a) The original sample check bearing the transposed ballpoint pen signature; (b) enlargement of the transposed ballpoint pen signature; (c) the original sample check bearing the transposed pencil signature; and (d) enlargement of the transposed pencil signature.

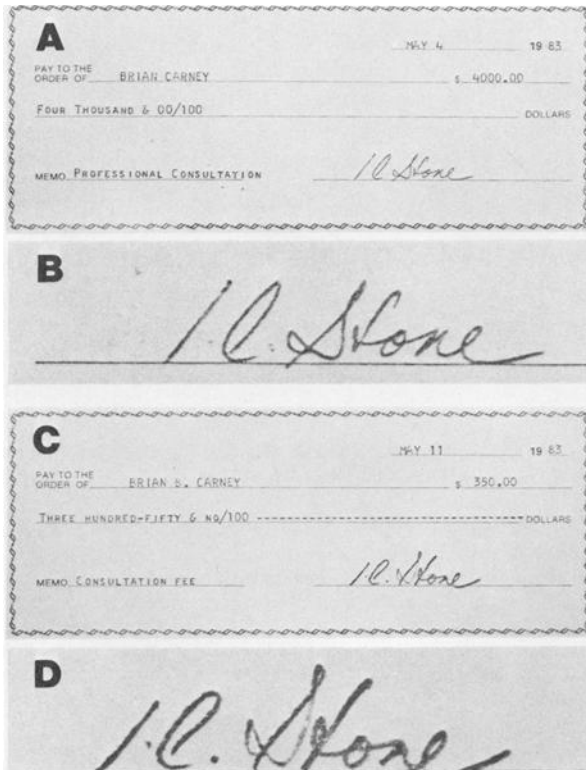


FIG. 3—(a) Office machine copy of the sample check bearing the transposed ballpoint pen signature, (b) enlargement of the ballpoint pen signature entry on the office machine copy, (c) office machine copy of the sample check bearing the transposed pencil signature, and (d) enlargement of the pencil signature entry on the office machine copy.

ments bearing the transposed signatures were copied on the Xerox 3100LDC and Xerox 3400 machines. An examination of the office machine copies failed to detect any trace of a tape outline (see Fig. 3). The signatures are genuine, although fraudulent.

In conclusion, beware of cases involving office machine copies, even if you have a first-generation copy to work with; the writings or, in particular, the signatures may be genuine, but how did the inscriptions get to the copied document?

References

- [1] Carney, B. B., "Transfer of Pencil Writing by Cellophane Tape," *Journal of Forensic Sciences*, Vol. 25, No. 2, April 1980, pp. 423-427.
- [2] Carney, B. B., "Transfer of Writing by Cellophane Tape—An Update," presented at the 35th Annual Meeting, Cincinnati, OH, 15-19 Feb. 1983, American Academy of Forensic Sciences, Colorado Springs, CO.

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