

# Abstracts

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## **The Application of Profilometry in the Analysis of the Lines Crossing (Jan De Kinder and Veerle Berx)**

A new approach for the problem of lines crossing was developed in this research project: laser profilometry was applied to crossing texts on questioned documents to determine the sequence of writing. Four major parameters influenced the presence of the crossing lines: the pressure exerted during the writing process, the kind of writing material and thus the kind of ink deposits, the type of paper used, and the angle between the crossing texts. In this paper, the writing pressure of both lines, together with the substrate (soft or hard), was controlled and varied through the tests. Homogeneous as well as heterogeneous writing pressures were evaluated. For the majority of the samples, 3-D topography gave conclusive information about the writing order, based on the presence of a complete intersection of 1 of the lines or an oval impression in the direction of the last-applied stroke. This research makes the laser profilometry a promising technique for questioned document examination.

## **Disguised Signatures: Random or Repetitious? Marie E. Durina**

In an effort to determine if people use the same disguise repeatedly, 62 writers at the San Diego Sheriff's Crime Laboratory participated in a study and were asked to provide both a natural and a disguised signature on specimen checks. Approximately 1 month later, they were again asked to provide a disguised signature on another specimen check. In addition to documenting methods of disguise used, this study focused on determining whether people tend to disguise their signatures in the same manner each time. Results showed that approximately 89% of the participants disguised their signatures in the same way on each occasion. It is believed that information from this study will prove useful in cases where forensic document examiners encounter multiple cases involving repeated disguise of an individual's signature.

## **COMMENTARY: Questioned Documents in Romania (Dr. Jay Levinson)**

## **The Uniqueness of Facsimile Documents Caused by Changes in Character Pixelation (Sze-Wing Ngan, Graeme McCormack, and Michelle Novotny)**

The primary objective of this research was to test the hypothesis that every page transmitted individually by a fax machine will be unique due to changes in character pixelation. The secondary objective of the research was to test the hypothesis that the character pixelation changes can be accurately reproduced on a 1st-generation photocopy. The tertiary objective was to test the hypothesis that every page transmitted by the fax broadcast function will bear similar changes in character pixelation due to those documents sharing the same single-scanning process of the sending fax machine.

The test documents were transmitted from 1 fax machine to individual fax machines located locally, interstate, and internationally. These documents were then returned, and microscopic comparisons were made of corresponding characters appearing on the respective documents. The results of this research demonstrate that each page transmitted individually by fax creates a unique pixelation pattern for each character and that this pattern was accurately reproduced on 1st-generation photocopies of these respective test fax pages.

The research demonstrates that changes in character pixelation can assist document examiners to trace the source of a photocopy of a 1st-generation fax document back to the original received facsimile from which that copy(s) was produced.

### **Examination of 35 mm Color Transparencies (Paul Westwood and Michelle Novotny)**

Forensic Document Services (FDS) was engaged by the New South Wales Police to examine 157 35 mm color transparencies (positives) and a 35 mm camera to assist in the investigation of the disappearance of a young girl. The purpose of the examinations was twofold: first, to determine whether 2 or more of the transparencies originally formed part of the same roll of 35 mm film and, second, whether any of these films had been exposed using the suspect camera. The combination of the findings revealed that the transparencies originated from 26 rolls of film and were exposed using at least 2 different cameras, one of which was the camera submitted for examination. The methodology applied in this examination is equally applicable to the examination of negatives.

### **Determining the Sequence of Original Ink Writing and Toner Printing (Michelle Novotny and Paul Westwood)**

Document examiners are frequently called upon to determine the sequence in which intersecting entries were written. This paper arises from research undertaken to determine the sequence of intersecting original ink writings and toner-printed text. One might intuitively expect that writing over toner would not penetrate the toner. Tests were undertaken based on documents produced on a Hewlett Packard LaserJet printer and a combination of 70 different writing instruments. The subject intersections were prepared to test both sequences of ink *before* toner and ink *after* toner. The points of intersection were examined microscopically before and after the removal of the toner. Corresponding intersections for the 2 sequences were compared. It was found that the extent to which the ink penetrated the toner varied between different ink types.