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IMPRESSION BY TRACED FORGERY

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In the effort to determine whether it was possible to successfully "forge" indented impressions, 39 individuals were asked to trace entries on a prepared form. An Electrostatic Detection Apparatus (ESDA) was used to develop indented impressions created by the tracings. The developed impressions were then compared to the prepared entries. The research indicated that fully developed ESDA impressions that consist of more than a short single stroke were readily identifiable as the product of original writing or the product of tracing. Additionally, many impressions consisting of short single strokes were also detectable as authentic impressions or traced forgeries. Further, weak ESDA impressions of more than 2 letters or formations were also identifiable as "forged" tracings.

Introduction

A document examiner in the authors' laboratory, with over 25 years of experience in the field, developed ESDA impressions of a critical entry from a medical chart on a medical laboratory report generated months after the date of the critical entry. During the deposition of the examiner, the defendant's attorney raised the question of forgery. Defendant's attorney theorized that someone made a machine copy of the page containing the original critical entry, placed this machine copy on top of the laboratory report and traced the critical entry, henceforth creating the impressions that were developed by the examiner. The attorney argued that his client had not added the critical entry to the chart but instead someone had "forged" the impressions in an effort to bolster their medical malpractice claim.

Document examiners trained and experienced in ESDA examinations and evaluations know that ESDA-developed impressions are duplications of the original writing just as a carbon copy writing is a duplication of the original writing. Shifting may occur between the transmitter page and the receiver page(s), but the letters, symbols or words will overlay each other with the exception of writings on the transmitter page that are so faint that they are not duplicated on the receiver page(s). Such faint writings are usually found where the writing instrument is gradually placed on or lifted from the Writing surface, such as beginning and / or ending strokes.

Additionally, it is likely that every document examiner who has completed a recognized training program, and has done substantial casework involving ESDA examinations, has evaluated numerous ESDA lifts that contain similar impressions, and is able to identify which ESDA-developed impressions came from which transmitter page. These developed impressions may be as limited as checkmarks, circles or X's or as expansive as sentences, paragraphs or complete pages. It is possible that on occasion these impressions have been the result of someone tracing over original writings.

The authors were unable to locate any articles concerning traced or forged impressed writings, and therefore agreed to conduct research to determine if ESDA-developed indented writing impressions produced by traced forgery could be distinguished from indented impressions made as the result of original writing.

Methods and Materials

Using the theory that prompted this research, the authors developed a form consisting of short phrases of printing and cursive writing, symbols and numbers commonly found in medical charts. The form consisted of a top "transmitter" page (Figure 1) and two blank pages, receiver pages 1 and 2, of unlined white Hewlett Packard *8 1/2* by 11 inch Office Paper that were secured together by stapling at the top, bottom and each side to prevent shifting. Each packet was numbered 1 through 39. Each page within the packet was numbered with the packet number followed by a 1for the transmitter page, a 2 for the first receiver page and a 3 for the second receiver page. For example, 30-1 was used for the Test 30 transmit- term page, 30-2 for the first receiver page of Test Packet 30 and 30-3 for the second receiver page of Test Packet 30.

The participants in this study were the faculty and staff of a school district in the central Michigan area. Forty-five packets were distributed with 39 respondents. Twenty-four of the participants were male and 14 were female with 1 form undesignated. Thirty-three were right-handed and 4 left-handed with-Z forms undesignated (Figure 2). The ages of the' participants ranged from 24 to 73. Since ballpoint pens produce the best ESDA-developed impressions (Baier, 1983), directions to the participants were to "use a ball point pen and carefully trace over the following writings. After you complete the project, please fill out the information at the bottom of the page and return in the enclosed envelope."

When the completed test packets were returned to the authors' laboratory, the staples were removed, with the exception of the staple at the top of the packets, and the pages were fanned in an effort to separate the pages. Since this research was developed as the result of a deposition question concerning a medical records examination, the authors wanted to simulate the handling of medical records of a frequently seen patient. Therefore, the packets were placed in a file and every 2 weeks, on the workday closest to the first and fifteenth of the month, the packets were removed from the file and the pages again separated by fanning. The authors also wanted to see if the storage and handling of the test packets had any noticeable impact on developing the ESDA impressions. Three months after receiving the test packets, ESDA examinations were conducted.

The first step of the examination was to review the transmitter page of all the test packets for accuracy of the tracings. Because of the closeness of the tracings, the authors selected Test Packets 3, 17, 18, 37, 40 and 41. None of these test packets had accurate tracings throughout, but each had a portion at the transmitter page that exhibited close tracings.

Prior to conducting ESDA examinations of the test packet receiver pages, a standard test of the laboratory's ESDA was performed to ensure reproducibility and sensitivity of the instrument. The laboratory's ESDA room is maintained with a relative humidity between 52 to 60% (Foster and Freeman, undated). The standard test is to place the "receiving" document in a humidity chamber to readily obtain an electrostatic charge (Beal, 1998) for 3 minutes. After 3 minutes of humidification, the document is placed on the ESDA vacuum plate and the vacuum pump turned on. The polymer imaging film is placed over the document and vacuum plate, thus sandwiching the document between the imaging film and vacuum plate. Then the surface of the imaging film is charged with 20 passes of the corona positioned 1 1*/2* to 2 *1/2 c*m above the film (Foster and Freeman, undated). The vacuum plate, which is hinged on one side, is raised 5 to 8 cm and the cascade developer is cast across the imaging film the entire length of the document. The casting

of developer is repeated three more times before the adhesive fixing film is placed over the imaging film to complete the ESDA lift (Figure 3). In the top portion of Figure 3 the black writing is the developed impression on the ESDA lift while the white writing is the original writing on the transmitter page. The bottom portion of Figure 3 depicts the ESDA lift overlaying the original transmitter page writing.

Following the test of the instrument, the authors separated the selected packets and conducted ESDA examinations on the two receiver pages. The ESDA examinations of the test packet pages were not limited to 20 corona passes and 4 developer castings, but instead each test page was processed until the authors believed that maximum development had been reached. Figure 4 is a typical example of a developed ESDA lift.

Results

Evaluations of the ESDA-developed impressions were conducted using the original written form. Evaluation of the ESDA lifts was done by aligning the lift directly on the original writing and placing a white piece 'Of paper between the two. The paper was moved back and forth to reveal the original writing and impressions while studying the area with magnification. If the ESDA impressions did not overlap the original writing and instead deviated from the original written, then the impressions could not be the product of the original writing. The authors found that the impressions developed on all 6 of the first receiver pages were easily detectable as not being the product of the original writing, except for the single number 1 on Tests 17, 18, 37, 40 and 41. All the impressions on Test 3 could readily be detected as not being the result of the original writing (Figures 5, 6 & 7). In Figures 5, 6 and 7, the black writing is the developed impression on the ESDA lift while the white writing is the original writing on the transmitter page.

The authors used this same evaluation method to compare the ESDA lifts with a first generation machine copy of the original writing and the findings did not differ as a result of using the machine copy instead of the original writing (Figure 8). In Figure 8, the black writing is the developed impression while the white writing is from a machine copy reproduction of the original writing on the transmitter page.

While almost all of the ESDA-developed impressions of the traced entries were easily detectable as not being the product of the original writing, the impressions developed from the untraced writing at the bottom of the transmitter pages were readily identifiable as the product of original Writing. The left portion of Figure 9 shows ESDA impressions of the date "9-20-00" and a circle developed from Test 3. The black writing in this figure is the developed impression while the white writing is the original writing on the transmitter page. The right portion of Figure 9show the ESDA impressions from Test 3-2 overlaid with the original writing and can clearly be identified as originating from transmitter page Test 3-1.

All of the first receiver pages in the test packets developed strong ESDA impressions, as did all, except Test 40, of the second receiver pages (labeled 40-3). The faint ESDA lift 40-3 (Figure 10) was compared with the original written form and some of the numbers and single letter formotions could not be identified as "forged" impressions. However, any combination of letters and/or letters with symbols, such as the "W" with a horizontal line above it, the printed "no" or the cursive "pt." could readily be detectable as not the product of the original writing (Figure 11). In Figure II, the black writing is the developed impression while the white writing is the original writing on the transmitter page. Again, using the same evaluation method to compare the faint ESDA lift 40-3, with a first generation machine copy of the original writing, the authors found no differences as a result of using the copy instead of the original.

An examination of the first receiver page from all the test packets revealed deep and readily visible impressions of the traced information (Figure 12), with the exception of Test Page 40-2, which contained traced portions too faint for observations without the ESDA examination. This information is being reported as an observation only and had no impact on the conclusions of the study.

Discussion

The results of this study indicate that fully developed ESDA impressions consisting of more than a short single stroke are readily identifiable as the product of original writing from a transmitter page or a product of tracing. Additionally, many impressions consisting of short single strokes are also detectable as authentic impressions or traced forgeries. Further, weak ESDA impressions of more than 2 letters or formations are also identifiable with the transmitter page or as “forged” tracings.

As with all document examination, care should always be used in the development and evaluation of ESDA impressions. When evaluating ESDA-developed impressions, it is necessary to evaluate the possibility of forged impressions.

References

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