Angel, Miriam, Michael P. Caligiuri, Melvin H. Cavanaugh

Kinematic Verification of Subjective Complexity

Abstract: Evaluation of the complexity of a signature is important in the field of Forensic Document Examination because it conveys the limitations, if any, of the process by which authorship can be determined. This research seeks to define which features of a signature contribute to the Forensic Document Examiner’s (FDE’s) perception of complexity. It expands on previous research on static signatures by including dynamic features related to size, speed and pressure. Signatures are captured on a tablet utilizing NeuroScript© MovAlyzeR software while the subject is signing using an inking pen that also provides an original signature on paper. Five FDEs will be given 160 of these signatures to rate as low, medium, or high complexity. The signatures for which there is a consensus or majority in categorization will be used for analysis. Statistical analysis on the numerous kinematic features provided by MovAlyzeR will reveal whether there is greater variance between the complexity groups than within each group. If so, this provides support for the assertion that there is a difference in complexity between low, medium, and high complexity signatures as judged by FDEs.

Annunziata Nicolaides, Kathleen

Electronic Signatures: Pen Stylus v. Finger

Abstract: A small study is conducted wherein subjects are asked to sign an electronic signature device using their finger. The biometric signature data is plotted and compared to data collected in previous studies from the same subjects where signatures were collected using a pen stylus. The purpose of the study is to analyze the impact of this awkward writing position on genuine signatures. By comparing the quantitative data of these signatures to those of signatures executed with a pen stylus, it is expected that the results of this study will help familiarize forensic document examiners with the variation that can occur in electronic signatures executed with the finger. It is also expected that this study will help determine if authors of electronic signatures of this type are identifiable.

Baird, Courtney and Lynn Redd

A Standard Guide for the Collection of Known Writing

Abstract: There is a need in the field of forensic document examinations for a consensus-based standard guide for the collection of both request and non-request known writing. An examiner’s ability to reach a definitive opinion in a handwriting comparison is deeply rooted in the quality of the submitted known writing. This paper addresses the importance of having written guidelines for the collection of known writing as well as providing a suggested framework for such a guide. Laboratories may also use this as a foundation for policies regarding the collection of known writing.
Bhutta, Zumrad Usman

**Analysis of Urdu Handwriting and its Recognition**

**Abstract:** In this Study, a structural method of recognising Urdu handwritten writing characters is proposed. The main problem in the cursive writing identification is the segmentation into characters and into representative strokes. When we division the cursive parts of the words, we take into account the appropriate properties of the Urdu grammar and the segments connecting the characters with each other along the writing row. The main alphabets of the Urdu are quite similar to the Arabic; the problem determined that how can detect disguisness and forgery in the Urdu writing Specimens. For this collection of the date of different people how they write the basic alphabets in the Urdu writing and observe change in the alphabets with time. The data gathered for this is more 20 candidate characters with similar shapes. Then the analysis follows that checks the sample via goal-directed feedback control. Key words Character recognition Cursive handwriting in Urdu writing characters Script

Bird, Carolyne, Thomas Vastrick, Brent Ostrum, Jonathan Morris, Rigo Vargas

**PANEL: Approaches to Evaluation and Reporting of Expert Evidence**

**Abstract:** As in other aspects of forensic science, a defining push for improvement and consistency in the analysis and reporting of forensic evidence came with the 2009 National Academy of Sciences report Strengthening Forensic Science in the United States: A Path Forward (NAS Report). Shortly after the publication of this report, the National Institute of Justice agreed to fund a project titled "Frequency Occurrence in Handwriting and Hand Printing Characteristics" to provide statistically accurate frequency ratios as to the occurrence of pre-selected handwriting and hand printing characteristics. This work, completed in 2015, falls under Recommendation 6 of the NAS Report which concerns the development of tools for advancing measurement, validation and reliability in forensic science as well as establishing protocols for forensic examinations, methods and practices. The results of the project provide practitioners of forensic document examination with a statistical basis for reliability and measurement validity to accurately state their conclusions and assess complexity. A European Union-funded project spanning the same time period aimed to standardize and improve evaluative reporting in ENFSI laboratories, and resulted in the 2015 publication of the ENFSI Guideline for Evaluative Reporting in Forensic Science. This Guideline documents a framework for reporting based on the likelihood ratio approach. This approach provides a framework where the expert opinion is based on the probability of the observations given two or more competing independent propositions. The current state of evaluation and reporting in Europe following the publication will be summarized. More recently, the National Institute of Science and Technology (NIST) established Organization of Scientific Area Committees (OSAC) to strengthen forensic science in the United States by supporting the development and promulgation of forensic science consensus documentary standards and guidelines. The OSAC subcommittees, including the Forensic Document Examination Subcommittee, are diversely populated and are informed not just by what is happening around the US but also worldwide. The FDE Subcommittee has been
reviewing current and best practice in order to develop the future of conclusion terminology. This panel discussion will present a brief overview of the frequency of occurrence and likelihood ratio approaches to evaluating (handwriting) evidence, and their respective advantages and limitations. Reporting of evidence using these approaches will also be discussed, as well as potential future conclusion terminology. Time will be set aside for questions, comments and views from the audience.

Bird, Carolyne

GROUP DISCUSSION re: Southern District Judge Rakoff's decision in Almeciga v. Center for Investigative Reporting, 15-cv-4319

In early 2016, an opinion was issued in the United States District Court Southern District of New York by Judge Rakoff in which the testimony of a proffered ‘handwriting expert’, Ms Wendy Carlson, was excluded in its entirety. Throughout the opinion, Judge Rakoff refers to criticisms of the field of FDE as raised by Risinger, Denbeaux and Saks et al and the 2009 NAS report, while remaining silent on much of the research that has been undertaken to address these. The ASQDE community is aware of what has been done to establish the reliability of the discipline, and members work hard to inform and educate courts during testimony. Following a discussion on the international document examination list it was suggested that an informative statement could also be provided to the National Commission on Forensic Science (NCFS). The aim of this session is to discuss the key issues and consider preparing a statement from the ASQDE.

Chicho, Nazar, Captain Karzan A. Rafiq and Major Sherko M. Aziz

Forensic Document Lab in Kurdistan Region-Erbil/Iraq

Devlin, Andrea, Dr. Steven Strach, Michelle Novotny, Claire Graydon, Paul Westwood, Geoff Masters

**Paper vs. Paperless: A Comparison of Parameters of Signatures Written on Paper and Written on a Screen**

**Abstract:** Signatures written using an inking stylus on a piece of paper placed over the screen of an electronic signature pad were compared with signatures written using a plastic nib stylus on the screen of an electronic signature pad. A number of parameters were compared including size, writing speed and writing pressure. Conclusions were drawn as to whether or not there were any statistically significant differences between the signatures written using an inking stylus on paper and the signatures written using a plastic nib stylus on a screen that could be attributed to the change in writing instrument and surface.

Devlin, Andrea, Dr. Steven Strach, Michelle Novotny, Claire Graydon and Paul Westwood

**Draft Methodology for Examining Electronic Signatures Using Wacom SignatureScope**

**Abstract:** A methodology has been drafted for examining electronic signatures using the Wacom software SignatureScope. Features that should be considered and compared are listed along with definitions and instructions on which function/s in SignatureScope are best suited to examine each of those features.
**Drexler, Steven**

**A Blast from the Past?**

**Abstract:** This poster will review a typical and common request to most FDE. The request is not unusual but very seldom does the request involve the examination of a non-typical “document”. In this particular case the client requested my aid in an attempt to decipher specific faded and unreadable markings on a significant, if authenticated, historic “document”. In most situations like this the common tool used to successfully render the unreadable visible would have been to immediately rely on a VSC® (Foster & Freeman) or similar instrument to quickly solve the issue. Unfortunately, the size of the “document” to be examined prohibited the use of any commonly available instrumentation. However, with thought and some “good old boy adaptation” a working system was developed, incorporated into the examination and the client’s questions were adequately answered.

**Durina, Marie**

**Laypersons' Performance in the Determination of Authorship from a Homogeneous Group of Writers**

**Abstract:** In 2009, the author reported a study involving 49 FDEs from 5 countries who attempted to determine authorship of writing samples from 52 writers who had grown up in the same neighborhood, attended the same school, and who had all learned to write using the Palmer method. In that initial study, FDEs were able to successfully attribute authorship with average accuracy scores of approximately 98%. A more recent study was conducted involving a group of 46 Laypersons who were assigned the same comparison tasks as the FDEs involving the same writing specimens. This secondary study compared accuracy and error rates attained by the Laypersons with those attained by the FDEs. Findings demonstrated that the Laypersons in this study were able to determine authorship with average accuracy scores of approximately 76%. A comparison of error rates between the two groups showed an error rate of approximately 39% for the Laypersons Group, compared to 3% for the FDE Group. Additional findings showed there were profound differences between both groups in the number of writing specimens that were problematic for the examiners, in the strategies they used in examination and comparison, and in mindsets when assessing the ease of performance of the tasks.
Ezcurra, Magdalena

Who is Who

Abstract: This is a real case about two sisters and a will. When one of them died a will appeared. In our country you can make handwritten or notarized wills, in this case it was a notarized one, so, at the beginning, it was supposed to be authentic. Nevertheless, the heirs suspected that it was not the deceased who had done the will but her sister. The handwritings of the two sisters were so similar that the case became very interesting. The handwritings of the two sisters were compared to establish differences between them and after that, to study and conclude who made the signature on the will.

Fuchs, Batya, Geulit Anavi, Sharon Brown

Global Review Of QD Labs In The 21st Century

Abstract: In light of the constant advancements in new technologies that have become available for the production and examination of authentic, forged and counterfeit documents, an interest was expressed to determine if our questioned document (QD) lab's capabilities and practice were keeping up with the times. Survey answers collected from members of three international document examiner lists, covering several areas of QD examination, were processed. Interestingly, 82% of QD examiners still draw or sometimes draw the letters found in the questioned documents by hand. 82% take part in annual proficiency tests, but only 13% currently do chemical ink dating. The results of this study suggest guidelines for a "best practice" setup for a QD lab, and demonstrate that classic document examination is relatively consistent among the different labs. Diversity is found in areas which are still developing and their citation may encourage QD labs to consider new instrumentation or examination methods.
Hammond, Derek

**Feature Extraction by FDEs in Signature Comparison Tasks**

**Abstract:** In this study we further analyze eye tracking data of FDEs engaged in various signature comparison tasks previously reported by Merlino et al. (2014). Specifically, our analysis involved further data collection from a subset of ten (10) previously examined questioned/known signature sets that generated error rates ≥ 10% from participating FDEs. For each of these signatures we cataloged each feature/feature aspect previously viewed and compared eye tracking data (e.g., fixation count, fixation duration, visit count, and number of between set (Q-K or K-Q) and within set (K-K) referral saccades) from eight (8) FDEs that rendered correct findings and eight (8) FDEs that rendered incorrect findings for a given signature set. Through a statistical analysis of this data we hope to determine if any statistically significant relationships exist that would serve to identify methodological approaches in FDE examination/comparison/feature extraction strategies that are perhaps more likely to lead to correct findings or alternatively, that are more likely to lead to erroneous findings. Assuming that such a distinction can be quantified, it may be possible to make recommendations to improve upon current FDE training, continuing education, and competency assessment programs and as a result, reduce errors in FDE casework involving signature examination/comparison tasks.

Holland, Neil

**Screen Calipers and Other Measuring Aids for the Document Examiner**

**Abstract:** Although the use of conventional measuring devices will be used foremost by the document examiner, the use of computer screen calipers and other measuring aids can be beneficial and used successfully by the document examiner. With multiple questioned documents; scrutinizing and grouping different aspects of an image applied to these documents using a screen caliper was found to be extremely useful. The ICONICO screen calliper is one in particular I am familiar with and use extensively; and this will be explored.
Holzapfel, Juergen

Online Search for Document Examination Literature

Abstract: The Mannheim Bibliography of Document Examination (MABI), first published in 1996, now contains more than 16,000 titles for questioned document examination and related subjects. Each data set entry in the bibliography holds information about the author, title, publisher and year. Every entry is linked with up to three key words to provide an effective content search. In addition, MABI also offers a full-text search. Abstracts for more than 9,000 titles (5,000 in English language) allow for an accurate assessment of subject and content. The “Institute of Handwriting and Document Examination” (ISU) keeps the Bibliography updated. The online version is now available in English, also. As a part of the presentation, an online demo of the system will be shown.

Hunter, Gina

Various Evidence-Marking Methods of Forensic Document Examiners

Abstract: A survey was conducted to collect information regarding the different ways in which Forensic Document Examiners mark their evidence for later identification. The survey was distributed to examiners using the Docexam email list. Completed surveys were received from 33 examiners, including private and government FDEs, and the answers compiled. Examiners were asked whether or not they mark directly on the evidence and/or the evidence packaging. Examiners were also asked how the evidence and/or packaging was marked if the answer to the previous question(s) was "yes". This poster will present the results of this survey.
Ibrahim, Samiah and Tobin Tanaka

More Properties of Inkless Pens

Abstract: Forensic Document Examiners (FDE) must be aware of the multitude of writing instruments used both in the historical and present day context. One such instrument which spans centuries of use is metalpoint, now referred to as the “inkless pen.” Our research will impact the FDE community by explaining the findings of macroscopic, microscopic, physical, and chemical properties of a specific brand of inkless pen, in contrast with other pencil-type and metallic inking writing instruments. The current iteration of the inkless pen is a writing instrument that relies on metalpoint, the classic drawing technique that uses a sharpened metal rod or wire to make visible lines on a writing surface; the result of metallic deposition of material on the page. The metal is typically lead, silver, copper, or gold, although silver was the most common and “silverpoint” has achieved popularity as an art-form many times during the past 600 years. The new inkless pens are marketed not so much for artistic purposes but for general use on a variety of surfaces. This research serves to educate the FDE community and to explore options for analysis in the event one is confronted by this technology during the course of casework.

Khan, Nadeem-Ul-Hassan, Khurram Wajih Mahmood M.Phil, Muhammad Irfan Ashiq Ph.D, Muhammad Sarwar Ph.D, Muhammad Ashraf Tahir Ph.D.

Examination of Questioned Documents with Complicated Specimens Requiring Multiple Examination Types

Abstract: Objectives: To highlight the challenges faced in examining writings obscured by different writing instruments; to describe the methods used to decipher such confounded writing and signature specimens and to give possible explanations and motives. Method: The authors of this paper selected the case studies that involve successful detection of multiple writing instruments; whether the purpose was to ‘improve’ a forged signature by retouching, to camouflage a genuine signature or to otherwise confound the sample for examination purposes. In all such cases, the examiner’s job is to differentiate the different inks, to elucidate the original contents and if required, to make a comparison for determination of authorship. The samples were first examined in various light sources and infrared viewing filters available in the VSC-6000. The acquired images were further enhanced by using Adobe Photoshop. Results: The complex cases were all resolved using non-destructive methods. The handwriting and signatures were distinguished enough for forensic comparison to determine authorship. The reasons for overwriting varied from genuine retouching to obscuring and perfecting a forgery. Non-destructive examination can be used to clarify specimens that are obscured and complicated, before required comparison for determination of authorship can be made.
Lee, Jr., F. L. "Jim"

**Breakfast Lecture: Forward Looking Technology and Innovation From Foster + Freeman**

**Abstract:** Where research and the development of instrumentation for forensic document examination is concerned, Foster + Freeman has set its sights on planning for what the future may hold for the forensic document examination community in the area of verification of new security features, as well as for the examination of new types of documents made of newer substrates such as polymer, and the challenges associated with the examination of new types of identity documents and other security documents such as banknotes. This presentation will introduce some of the things in the way of instrumentation and their application to the field of questioned document examination that we’re looking at in 2016 and beyond. These new instruments for questioned document examination include the Video Spectral Comparator (VSC) 8000, the FORAM3 Raman Spectrometer and the improved Elemental Composition Comparator (ECCO). Attendees to this presentation will learn about the innovations in instrumentation from Foster + Freeman for forensic document examination applications that have evolved and that provide greater capabilities for not only today but for the future.

Leonard, Paul

**The Challenge of Determining the Fraudulent Use of Postage Stamps**

**Abstract:** The policing of the worldwide use of postage stamps and items sent through the mail provides many challenges. Not only are millions of stamps used every day, the potential for fraud may take many forms. Around the world, there are individuals who will provide certificates that will provide an opinion on whether philatelic items are deemed ‘good’ or ‘bad’. To address this challenge, The Royal Philatelic Society formed an Expert Committee (RPSL) http://www.rpsl.org.uk/experts.asp that seeks to establish a concluding opinion based on the evidence obtained at that time. This process will follow a series of analytical steps. The RPSL has extensive museum facilities and over 200,000 records of worldwide significance. Analytical techniques will be used extensively to aid opinions, whether from comparison of reference material, accessing material from other collections such as the British Library or undertaking tests using the Video Spectral Comparator, VSC6000 manufactured by Foster Freeman http://www.fosterfreeman.com/questioned-document-examination/vsc6000-hs-col-180-comprehensive-examination-system.html. This has enabled comparison with previously published information and assessment of whether there are printing differences. Future work is likely to include international collaboration with other scientists, comparing analytical techniques on a weight of evidence approach to conclude with an opinion on whether items are fakes, forgeries or genuine.
Li, Jiangchun

Could the Striae Characteristics of Gel Pen Use be Individual Characteristics?

Abstract: The purpose of this paper is to research the quantity and quality of the striae characteristics of gel pen. As we know, the ball point pen can produce a wide array of striation patterns. One of the challenges when examining gel pen documents is whether the striae characteristics of gel pen could be used as individual characteristics. In this study, 54 different models of gel pen were collected and used to produce samples which were written by different persons. The results showed that the striae characteristics were always discovered in four main strokes of handwriting, and hardly produced in the other strokes. At the same time, the type of the striae characteristics is limited. The author drew a conclusion that the striae characteristics of gel pen could not satisfy with the demand of quantity and quality of reliability, and the striae characteristics of gel pen should be carefully considered as individual characteristics.

Lim, Shing Min, Nellie Cheng, Sock Kim Tan, Lee Tiang Wong-Lee, Yi Hui Ngor

Can Mass-produced Items be Linked?

Abstract: Document Examiners are often requested to establish association between printed products and printing apparatus or to find links among copies of printed products. Exhibits submitted span the entire spectrum of home to commercial products: business letters, counterfeit banknotes, pharmaceutical blister packs, sandwich bags, envelopes or Chinese New Year red packets. Our laboratory adopts a comprehensive approach in our examination, which includes identification of printing methods used, differentiation of ink using their physical and chemical properties, study of product formation profile, matching of paper-cutting edges, detection of paper-handling indentation marks. This presentation aims to share with the attendees our experience and also the protocol that we use in the examination of printed products.
Liu, Ning and Lichao Zhang

The Preliminary Attempts to Quantify the Three-Dimensional Details of Document Surfaces with Reflectance Transformation Imaging

Abstract: After having conducted an amount of experiments of applying Reflectance Transformation Imaging (RTI) in signature examination, tampered document examination, printer identification, paper examination, and so forth, RTI was found as an effective method for questioned document examiners. Four rendering modes of this computational photographic method could be very helpful for the analysis of morphological characteristics, among which the normal visualization mode provides the 3D details of the surfaces of documents while removes the ink colors at the same time. However, since there might be visual illusions among different examiners, analyzing 3D details just by observing the normal maps seems incomplete. With the way developed by the authors, quantifying the 3D surfaces with the normal data derived from the normal maps was tried. By comparison, the 3D data derived from the normal maps were similar to those generated by Laser Scanning Confocal Microscopy (LSCM). For there are inherent errors of the RTI method, an error correction was executed before each quantification, which was developed by the authors as well.

Logan, Lauren, Tobin Tanaka, Jim Ross, Jonathan Morris, Grant Sperry, and Lisa Tolli

WORKSHOP: Trainee Breakout Session

Abstract: The 8th Annual ASQDE Trainee Breakout Session returns with a multi-faceted problem. This workshop will provide participants with additional insights into the theory and practice of multi-faceted examinations along with report writing. The session will include discussions on the observations, interpretations and conclusions that follow from the examination process. This year the participants will also have the benefit of having experienced examiners provide their working notes and reports on the same problem. Each participant will receive a practical before the AGM. Participants are asked to complete the practical as if it were as actual case before coming to the meeting. Detailed notes made during the course of his/her examination should be brought to the workshop along with a report detailing the results of the examination. Reports should be written in accordance with his or her own laboratory policies and procedures. This session will be held on the afternoon of Monday, August 22 and is intended to provide participants with a forum for free and open interaction. It is proposed for trainees who are six months or further along in a training program or qualified examiners who have twelve months or less post-training experience.
Lunakova, Martina

**WORKSHOP: Sequence of Entries Determination – New Approach to Additional Print**

**Abstract:** Based on our casework and thanks to research projects at the Institute of Criminalistics Prague we have been improving a method that can help analyze the sequence of electrophotographic print and handwritten entries despite the absence of intersecting handwritten strokes with printed items. Usually the solution of such cases requires quite expensive technical support. The presented method uses nondestructive optical way of analysis. A simple and affordable micro zoom camera is sufficient for this method to be effective. We take advantage of the electrophotographic technology weakness – poor toner transfer on structured substrates. Research confirmed that during consequent print a sheet of paper with indented written strokes is covered with random toner particles but that there are less particles in the area of the strokes. Statistical comparison of the toner particles occurrence inside and outside of the strokes is the way to state a conclusion. During this workshop we will focus on the examination process. The method called “Sequence Determination of Handwriting and Electrophotographic Print According to Distribution of Toner Particles” will be demonstrated step by step.

Mazzella, Williams, Martin Fürbach, Alex Biedermann, Bing Li, Silvia Bozza

**Magnetism Analysis of Black & White Electrophotographic Printed Documents**

**Abstract:** This research paper was undertaken to determine if magnetic measurements, particularly the magnetic flux, using a proprietary magnetic analysis system might be routinely applied for the analysis of black & white electrophotography printed documents. The magnetic properties of black toners were studied in order to differentiate photocopied outputs. This paper highlights the complementarity of magnetic analysis to classical methods employed for the analysis of black toners. Some pragmatically tests will be presented and discussed.
Mogahed, Al Sharif Hashem and Noha Abd Al Rehim

Historical and Recent Questioned Documents Reviews of Child Abuse

Abstract: After the Egyptian revolution, we found that child abuse increased rapidly in the form of kidnapping and homelessness. We searched in our field for cases related to child abuse and we found a historical case: “The Lindbergh Kidnapping” as stated on the FBI website under category of “Famous Cases & Criminals” was the most famous case in the kidnapping of a child in the United States. Forensic document examiners played an important role in achieving justice; they solved this case through the investigation of the ransom note and ransom money. In our department, we received a different case about child abuse. The “Homeless Case or Haneen Case” was a complex study that included child and elder abuse. Haneen’s father and mother divorced six years ago. The Court decided that father must pay Haneen’s mother alimony every month. He used a modern technique to trick her grandmother on the child's expense receipt, but we discovered the forgery in the receipt by using laboratory investigations.

Mogahed, Al Sharif Hashem, Hossam El-din Mostafa, Noha Abd Al Rehim

Photo Substitution In Egyptian Passports

Abstract: Forged documents can be defined as “unauthorized alteration made to an authentic/genuine document, after having been lawfully issued.” Types of alterations include photo substitution, page substitution, and data alteration by physical or chemical erasures. Photo substitution is one of most common targets of counterfeitters to alter passports. After November 2015, Egyptian passports have only valid issue “machine readable passports”. We received two Egyptian passports as a case study before November 2015. One of them was “non-machine readable” and the other “machine readable”. We investigated both of them using a VSC 6000 at Cairo Central Laboratory of Forgery & Counterfeiting Research Department. We found that they were genuine passports, but there were photo substitutions in both of them.
Morris, Jonathan

**Best Practice Manuals – A European Approach**

**Abstract:** From the introduction of the National Measurement Accreditation Service (NAMAS) Standard M10 in the early nineties, through BS5750 onto global accreditation to ISO17025, Quality Systems and Quality Standards have evolved significantly over the last quarter century. This period has also seen significantly closer cooperation in Forensic Science throughout Europe through the European Network of Forensic Science Institutes (ENFSI) and its discipline specific Working Groups. More recently, through EU funding, ENFSI has developed a range of “Best Practice” manuals covering various areas of forensic science. This presentation will examine the development of these Best Practice Manuals, specifically covering the world of the forensic handwriting examiner.

Olson, Larry

**I Had a Case: The Evolution of a Writing Habit**

**Abstract:** In 2010, the examiner was asked by a DOJ tax attorney to authenticate signatures on two promissory notes dated in 1998. The signatures were brief and illegible, but not particularly complex in construction. The defendant denied making the signatures, and during the taking of exemplars, attempted to demonstrate to the attorney that he “did not write like that.” Although pictorially similar, the questioned signatures bore some features that were not present in the most recent writings. No collected signatures had been provided initially, but with some coaching from the examiner, the attorney was able to find, in online public sources, one-hundred and sixty-one (161) normal course of business signatures that had been written by the subject over a period of twenty-three years. Having that many signatures to study presented an excellent opportunity to chart both the variation and the evolution of signature habits over time. The change observed in one habit in particular disputed the subject’s claim, and convinced the examiner of the genuineness of the questioned signatures.
Orta, Raymond

Two Forged President Signatures Appeared In The Gaceta Oficial De Venezuela

Abstract: At the beginning of 2013, The Orta Document Laboratory, analyzed signatures allegedly from “Hugo Chavez Frias” printed on executive decrees No. 9.351 and No. 9.352 printed in the “Gaceta Oficial de Venezuela” dated January 15th 2013. The task was to determine if the printed signatures were genuine or forgeries. At the time of these two decrees’ publishing, Hugo Chavez Frias was not in Venezuela, and was receiving treatment for cancer in Cuba. Many rumors of the president’s death on December 2014 called out attention and motivated our investigation due government silence about the health of the president. Investigation results showed, that both signatures were reproductions of a single signature. Methods and Materials • Literature and Internet searches. • Physical-optical analysis under full spectrum light bulbs, Ultraviolet, and Infrared radiation, and transmitted illumination. Digital Scanning with light contrast adjustment to get better images. • Microscopy examination Method and Photomicrography: A Microscope with magnification up to 300X.

Ross, Jim

Advances in Tactile Security Features Used in Identification Documents

Abstract: This presentation focuses on tactile security features incorporated into modern-day identification documents and the methods used to produce them. Tactile features that were once reserved for paper documents and applied using traditional security printing have transitioned to plastic identification documents. These features have evolved from simplistic die-stamped elements to sophisticated plate feature elements that greatly enhance card security. The importance of including such features in document designs to deter document fraud will also be discussed.
Vaccarone, Paolo and Francesco Dellavalle

**Determination of the Sequence of Non-intersecting Media on Documents: Ballpoint Pen Ink and Laser Toner**

**Abstract:** Certifying the entry chronology of signatures or printed text on documents represents an important issue for the examination of forged documents. The research was motivated to solve, if possible, the following question: "The dynamics of the formation of a document, regarding the order of application between the signature and text in print". The research was focused on the analysis of documents where there is no overlap between the stroke to Ballpoint Pen Ink and Laser Toner using the NIR lighting. The author of this research, together with me, has already started to experiment with the same technique with excellent result also in the following cases: 1) using ink pens like "Gel" and markers (with felt tip); 2) Inks generated by an ink jet printer. In this case much depends on the type of manufacturer of printing ink because certain ink jet inks "disappear" when they are illuminated by infrared radiation.

Vastrick, Thomas, Dr. Mark Johnson, Ellen Schuetzner, Dr. Michele Boulanger

**WORKSHOP: Measuring the Frequency Occurrence of Handwriting and Hand Printing Characteristics**

**Abstract:** In 2010 a research team was awarded a research grant to establish frequency occurrence proportions in cursive and print. A four-year statistically driven study was conducted and successfully completed in 2015 with the submission of the project's final report. The study was careful to insure that proper statistical procedures were utilized and methodologies tested along the way. The team developed a stratified method for population sampling of handwriting within the U.S. taking into account age, race, sex, location of education, level of education, etc. and quantitatively determined the effect that each factor had on the results. The samples used the study were pared to fit within each defined stratification in order to insure that the sampling truly represented a proper representation. Similar quality tests were imposed on the data to insure that the featured characteristics were objective and the results reproducible. A total of 776 characteristics withstood the quality testing and became part of the database. In addition to the frequency occurrence proportions, this project provides the methodology for estimating 95% confidence limits for each proportion. Finally, the data was tested for interdependence and a significant study into the potential use of the Product Rule was conducted.
Ware, Charlotte and Joseph Parker

Metadata - Potential Support for Forensic Document Examiner Findings

Abstract: This presentation provides information on the potential value of Metadata in MS Word .doc files that can support Forensic Document Examination findings. The examination results of an ASQDE Forensic Document Examiner colleague recently demonstrated that questioned signatures on two separate pages were identical; both signatures depicted the same “cut-and-paste” signature image, the source of which was also fabricated. The opposing party presented a report from their academican “information technology expert”, which stated the documents were not altered based on the metadata of two .doc files newly presented and claimed to be the genuine sources of the two questioned documents. Digital evidence examination of the .doc files provided conclusive support for the findings of the ASQDE member. The FDE and DE examinations, software, and methods used, will be discussed. Attendees will become aware of the potential advantages of DE support in bolstering FDE examination results of similar evidence.

Welch, Kristen

Security Fiber: Distribution in U.S. Lincoln Visa

Abstract: The U.S. Lincoln visa is a machine-readable document containing sophisticated security features to include security fibers. Features such as security fibers are incorporated into the production of the document to aid in the resistance against counterfeiting. These features are often helpful in identifying families of counterfeit documents. When the artwork of a genuine Lincoln visa is used to produce counterfeit visas, the counterfeiter often lacks the knowledge that security fibers are randomly displaced during the paper manufacturing process; therefore, it is likely the counterfeit visa will contain the same fiber pattern. Although it is generally accepted by the forensic document community that security fibers are random, it is important that research be conducted to generate statistical data to validate this hypothesis. As such, this information could be of value if challenged in court proceedings. This poster will present preliminary research demonstrating that the visible security fiber distribution within Lincoln visas is random.
Xu, Daihua, Haishan Zhang, Qilin Xu, Xu Huang, Wei Sun

Study on the Carbon-Containing Ink Dating According to Color Fading

Abstract: In the field of forensic science, researchers have been working on the various examination methods for document dating. After a long time research, our institute has developed a computer system, aiming to examine the document dating.  1. The principle and method  As time going, various ink on the paper will undergo a natural fading process. According to their degree of fading, it can determine the time that the document was made. It captures the brightness of the ink color change itself with high-precision scanning equipment, then divides the brightness into multiple color Levels. By the varying of the color value, it can examine the difference between ink on the questioned document and sample, determining the making time of the questioned document. 2. The research process and research results By a three-year experimental study of 5 to 6 kinds of carbon-containing ink, we successfully analyze and summarize the law of ink colors varying with time. 3. The application of judicial practice We have put it into judicial practice for a long time, using it to solve thousands of criminal and civil cases, which reflect well.

Yang, Xu

Discussion on Several Special Altered Documents With Genuine Signature

Abstract: In China, the examination of questioned documents plays a more and more important role not only in the criminal investigation but also in the trial of civil lawsuits. Meanwhile, there are growing types of questioned documents in the practice. The forging tricks are getting more inconspicuous, for instance: to utilize a document bearing a genuine signature or stamp impression and alter the contents in the same way that the genuine document is made; or even to cheat to get someone’s signature then add contents to form a altered document with genuine signature but fake contents. These kinds of questioned documents are difficult to find out, especially the third type, for the forging traces are usually very minute and easy to neglect. This paper introduces several typical questioned document examination cases that were successfully solved by our institute in recent years. Through the analysis of these cases, how to use systematic examination method to find minute forging traces left on the questioned documents and recognize the tricks is described in detail. The systematic examination results provide scientific and convincing evidence to the courts, thus contribute to the successful close of the cases.
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Recovery of Faded Print On Thermal Paper

Abstract: Thermal paper is commonly used in our daily life for things such as ATM, credit card, and shop receipts. Those prints can be used as evidence to obtain information on activities of a person and to assist the investigation. However, the print image on thermal paper fades over the short period of time and cannot be stored for a long-term. Aims of this study were to investigate the factors that affect printed thermal paper fading, i.e., time, exposure to adhesive tape, water, vegetable oil, sunlight, and to compare recovery methods for faded print, which consisted the use of video spectral comparator instrument, image inversion, and ironing method. Results showed that adhesive tape, water and sunlight caused the print to fade gradually while exposure of thermal prints to oil made the print faded away immediately. Recovery of faded print image through the use of a video spectral comparator is suggested as it is non-destructive method. The quality of the recovered prints not only depend on those tested factors which affected the fading of printed thermal paper but also the letter size, storage time, and the quality of the thermal paper as well.