ABSTRACTS

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Kinematic Validation of FDE Determinations about Writership in Handwriting Examination: A Preliminary Study

Michael Caligiuri, Linton Mohammed, Brenda Lanners, and Gina Hunter

As with many of the forensic disciplines that rely on feature-comparison methods, there is no "gold standard" against which to test accuracy of handwriting examination. This study examined differences in kinematic features between pairs of handwriting exemplars judged to be from the same writer and compared them with differences in kinematic features for pairs of handwriting exemplars judged to be from different writers. We hypothesized that differences in kinematic features between pairs of handwriting exemplars judged to be from the same writer would be nonsignificant; whereas differences in kinematic features for pairs of handwriting exemplars judged to be from different writers would be statistically significant. Cursive, script and block print handwriting samples were obtained from 37 writers who were asked to write a single word ten times each. High resolution (600 ppi) scanned copies of the original ink and paper samples were submitted to four experienced forensic document examiners (FDEs) for writership determinations. Each score sheet included 5 known (K) handwritten samples and two questioned samples (Q1 and Q2). FDEs were asked to rate the evidence in support for the proposition that the Q samples were written by the K writer using a 4-point scale (ranging from limited or weak support to very strong support for the proposition). Kinematic difference scores derived from dynamic analysis of the handwritten strokes were converted to absolute standardized z-scores with larger z-score reflecting greater differences between K and Q for a given kinematic feature. Findings revealed that several kinematic handwriting features were significantly associated with accurate FDE opinions of acceptance and rejection of the proposition. Significant features included pen pressure, stroke velocity, and straightness variability. Correlational analyses revealed strong associations between specific dynamically recorded stroke features and FDE judgments of writership; particularly for pen pressure and straightness. Results support the use of an independent quantitative measure of feature comparison as a tool for evaluating the foundational validity of subjective feature comparison methods experts use when reaching conclusions about writership.

Global Review of Questioned Document Laboratories in the 21st Century

Sharon Brown, Geulit Anavi and Batya Fuchs

In light of the constant advancements in new technologies for the production and examination of authentic, forged and counterfeit documents, an interest was expressed to determine which capabilities, working methods and instrumentation are used in questioned document (QD) laboratories.

Survey answers were collected from recognized document examiners around the world.

The collected information demonstrated that document examination is relatively consistent across the globe. Furthermore, it may be utilized to suggest guidelines for a "best practice" setup for a QD laboratory.

The smaller number of labs currently working in areas such as chemical testing of printing inks and dating of ballpoint inks may encourage other QD laboratories to consider new instrumentation or examination methods.

Book Review: *Huber and Headrick's Handwriting Identification: Facts and Fundamentals, Second Edition*

Charles L. Eggleston

Understanding Sinosphere Characters through a Comparison of Korean, Chinese, and English Characters

Jinwoo Choi, Mijung Choi and Chris Anderson

Since ancient times, the application of Chinese characters went beyond China's borders to regions such as the Korean peninsula, the Japanese archipelago, and northern Vietnam; their use was a necessary means of educating intellectuals and sharing culture. The Korean alphabet, known as Hangul in South Korea, was created by King Sejong the Great in 1446 and employs phonograms that give the sound of characters by combining graphemes, as in English. However, while there is a morphological difference of linguistics compared to Chinese characters (i.e., ideograms), one principle of the Korean alphabet established during its inception was that it should be used in combination with Chinese characters. Therefore, the Korean alphabet naturally absorbed intrinsic denominators such as syllable-based writing in a square frame and vertical writing. This common denominator contrasts the phoneme-based horizontal writing of English in that the graphemes, radicals (i.e., bushu), and basic characters are arranged within the limited range of the square frame. In such a system, the size, slant, proportion, and arrangement of the graphemes and radicals mutually affect each other in the writing process at a level above the word impulse. Based on the basic structure of the Korean alphabet, this paper focuses on understanding the differences between the Korean, Chinese, and English characters, as well as the correlations between square frame structure and vertical writing, which are an intrinsic feature of Sinosphere[3] characters. Accelerated globalization requires Forensic Document Examiners (FDE) to better understand these various characters and their correlations with English characters plus gain an understanding of the Korean and Chinese cultures they came from. Therefore, this paper examines the square-framed, syllable-based writing form, as well as the vertical writing system with regards to handwriting analysis in forensic document examination.

Classification and Ink-Dating of Inkjet Printed Documents with TDS-GC-MS

V. von der Kall, J. Schram, T. Rottes, D. Bogedain

In document examination casework, the need for a method to differentiate pigmented black inkjet inks and determining their age increases. More and more documents are produced using the inkjet print technique. Commonly this raises questions for the examiner concerning the machines used to produce the documents and the age of the prints.

The first part of this preliminary study aims to distinguish different inkjet inks (printed on paper) by analyzing their main volatile components and assigning them according to their composition. In the second step of the research, it will be assessed whether it is possible to date these inks by measuring the decrease of volatile ink components (e.g. 2-Pyrrolidone, TEGBE) as a function of time.

Initials Value For Identification

Jane A. Lewis

This study was conducted to determine the individuality of handwritten initials and their similarities and differences when compared to the capital letters representing the first letter of each name in a signature. Initials and signature samples were collected from 456 people in order to answer 8 research questions. The main research question asked whether one or more initials were constructed similarly to the capital letters in each person's signature. Evaluation of the collected forms recording the initials and signatures showed the individuality of many of the letter construction of initials in cursive and hand printed styles. The study aimed to provide an evaluation of modern initials, their general format and individuality. Initials were found to conform closely to capital letters in the majority of examples examined; however, they also diverged in a smaller group of initials. The initials complexity ultimately determined the individuality of initials in this study.