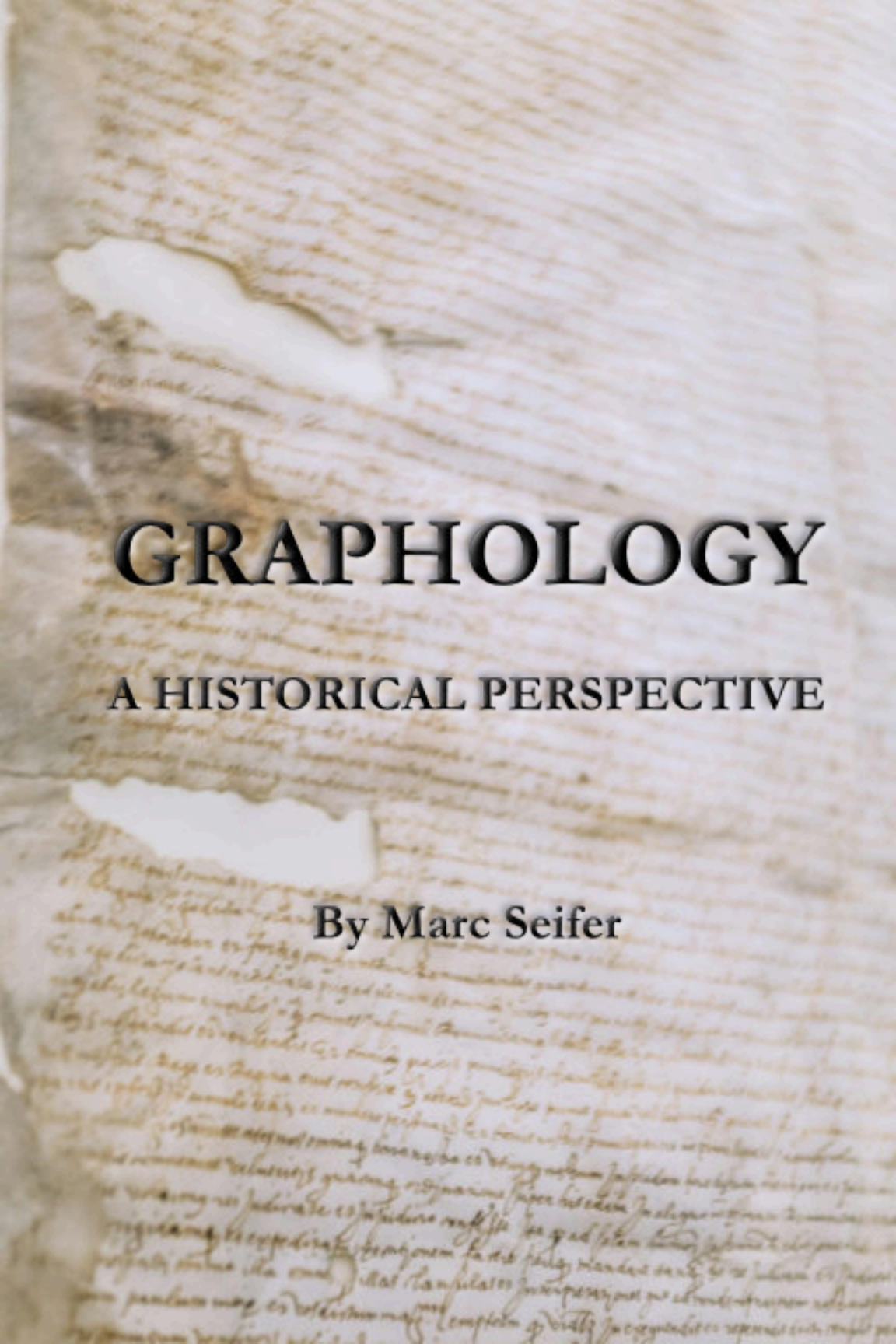

GRAPHOLOGY

A HISTORICAL PERSPECTIVE

By Marc Seifer

Marc J. Seifer, Ph.D.

I. HANDWRITING ANALYSIS

In April of 1841, Graham Magazine published "Murders of the Rue Morgue," the famous detective story by Edgar Allen Poe. The introduction to the tale contained passages adapted from Poe's work on autography" or handwriting analysis, which first appeared in the Southern Literary Messenger:

> *The analyst... glories... in that moral activity which disentangles. He derives pleasure from even the most trivial occupations bringing his talents into play. He is fond of enigmas, of conundrums, of hieroglyphics; exhibiting in his solutions of each a degree of acumen which appears to the ordinary apprehension preternatural. His results, brought about by the very soul and essence of method, have in truth, the whole aim of intuition. (Poe, 1951, pp. 162-163)*

Poe makes it clear that there are systematized procedures to "autography." The true handwriting analyst must be able to distinguish by a "host of observations and

inferences" the differences between calculation and analysis. "It is in matters beyond the limits of mere rule that the skill of the analyst is evinced" (p. 164).

Although questioned document experts assure us that "handwriting exhibits identifying characteristics… which enable it to be identified beyond a reasonable doubt" (Harrison, 1958, pp. 288-291), the psychoanalytic side to this discipline carries the burden of virtual lack of acceptance in America.

European Heritage

Unlike in America, graphology is a required or available course for graduate studies in a number of European psychology curricula. Centers of learning that have offered or still offer courses in graphology include universities in England, Spain, France, Germany, Switzerland and Italy. Consequently, most of the major developments in the field are European in origin. Trained handwriting analysts with advanced degrees can testify in court, although this practice was more prevalent before World War II.

Klara Roman, a research associate to psychologist Kurt Lewin had written her doctorate on graphology in 1928. Soon after, she became the authorized handwriting expert to the Royal Hungarian Criminal Court (Wolfson in Roman, 1962, p. xiii).

In the 1930's and 40's, Rhoda Wieser, authority on the handwriting of criminals, became the "handwriting expert to the courts and police of Austria," and Max Pulver who taught handwriting at the University of Zurich, worked in a similar capacity in Switzerland (p. 446). During this same era, Dr. Hans Schneikert held the Chair in Criminalistic Graphology at Berlin University and Captain Arthur J. Quirke, who was both graphologist and questioned documents examiner, was the Handwriting Expert

to the Department of Justice in Ireland (Quirke, 1930, p. xi).

Today, important centers for graphology include the Moretti Graphology Institute at Urbano University, Italy, Leipzig University in Germany, the University of Barcelona in Spain, and graphology institutes in Zurich and Paris.

Dr. Helmut Ploog (2007) editor of Angewandte Graphologie und Personlichkeits Diagnostik, teaches graphology at the University of Munich. Ursula Avé-Lallemant, creator of the Star Wave test, has developed a grapho-diagnostic technique for children and adolescents which she has implemented in Switzerland, England, Norway and Germany having been supported with a grant from the Bavarian Ministry of Education (1999, p. 120).

The French School

The term graphology was coined by French clergyman, Abbé Jean Hippolyte Michon, student of Abbé Louis J.E. Flandrin, who in the 1830's founded a school of handwriting interpretations with the Archbishop of Cambrai. This school became the source of modern graphology.

After thirty years of empirical study comparing hundreds of known characteristics with various graphological signs. Michon (1871) wrote System de Graphologie, which is considered to be the first modern major treatise on the subject. Each specific "element of the handwriting" or "sign" corresponded to a specific character trait, "and the absence of a specific sign indicated the lack of its matching trait." It was Michon who coined the word "graphology" from the Greek "grapho" meaning "to write" or "draw" and "logos" which stands for "word" or "reason" (Saudek, 1926, p. 13).

The science of handwriting analysis can trace its roots to antiquity. In ancient China, Confucious (551 BC – 479

BC) warned, “Beware of a man whose writing sways like a reed in the wind” (cited in Rockwell, 1979, p. 4). “King Jo-Hau (1060-1180 AD) a philosopher and painter of the Sung Period declared that ‘handwriting infallibly shows whether whether the scribe comes from a vulgar or a noble-minded person’” (Hatfield Holmes, 2006; Dolch, 2006). The Greeks also had graphologists. C. Suetonius Tranquillus wrote of Caesar in 120 A.D.,

> *“He does not hyphenate words and continue on to the following line… but simply squeezes them in and curves the end of the line downward,” (cited in Jacoby, 1939, p. 17).*

Nevertheless, a full-bodied work on the science did not appear until 1622, when the Italian physician and Professor of Theoretical Medicine from the University of Bologna, Camillo Baldi, wrote his treatise on a Method to Recognize the Nature and Quality of a Writer from his Letters. In this study, Baldi stated, “it is obvious that all persons write in their own peculiar way…. Characteristic forms… cannot be truly imitated by anybody else” (Jacoby, p. 18). He also pointed out the necessity of careful observation to mark down characteristics that tend to recur and to distinguish artificial from natural tendencies.

A century later, in the 1770’s, Lavater wrote Physiognomic Fragments which continued to expand the theory of handwriting interpretation; and in 1820, Lavatar’s colleague, Goethe, concurred stating, “There can be no doubt that the handwriting of a person has some relation to his mind and character” (p. 20). Other early notables who practiced the art included Charles Dickens, Emile Zola, the Brownings, Disraeli, Sir Walter Scott, Ernst Mach, Baudelair, Balzaq and Sir Arthur Conan Doyle.

Jean Crépieux-Jamin

It was Michon's student, Jean Crépieux-Jamin (1858-1940) son of a watch maker, who synthesized the work of his predecessors when he abandoned the restrictive tradition of correlating each graphic sign to a specific character trait and the simplistic notion that if a graphological sign was missing, the corresponding character trait must be missing as well.

> *All knowledge of graphology is either based on… or is derived from adaptions, imitations and plagiarisms of [Crépieux-Jamin's] works. Robert Saudek (1926, p. 16)*

In 1888, Crépieux,-Jamin published L'ecriture et le caractere (Handwriting & Character) in which he emphasized that handwriting must be analyzed as a totality with each trait contributing to the whole. In this way, he laid the groundwork for the Gestalt approach to graphological interpretation. "No modern graphologist would claim that any one graphic feature or 'sign' has in itself any fixed meaning" (Roman, 1962, p. 444).

Credited as the discoverer of the theory of resultants which enabled the graphologist to deduce secondary qualities from the combination of known primary characteristics, Crépieux,-Jamin created the framework for modern-day graphology, with his books as a primary source of all that was to follow. "The study of elements," Crépieux-Jamin wrote, "is to graphology as the study of the alphabet is to the reading of prose."

Writing about such related topics as the psychology of movement and sex in handwriting, Crépieux,-Jamin founded the Societe Francais de Graphologie, and had his works translated into English as far back as 1892. A charismatic figure, Crépieux,-Jamin remained the dominant French theoretician for more than half a century.

A well-known figure at international European congresses which were held until the outbreak of WWII,

Crépieux-Jamin influenced Nobel prize-winner/philosopher Henri Bergson, Alfred Binet, designer of the Stanford Binet IQ test, and Henri Pieron, who, working with Binet, conducted research on the topics of graphology and personality at the Sorbonne in Paris. Crépieux,-Jamin's American translation also became the standard from which all other turn-of-the-century graphology textbooks had to be compared to.

Criticism of Crépieux-Jamin

The Germans were initially sparked by the work of the French, who were their predecessors, but the Germans were more attuned to finding psychophysiological correlates to graphic signs found in the handwriting. Robert Saudek (1926), a Czech who moved to England in the 1920's, in part to bring graphology to the English speaking world, notes that although Crépieux-Jamin was "unsurpassed as a practical worker… endowed with that faculty of sharp observation…. he reared a new edifice of crooked construction" (pp. 16-17).

Crépieux-Jamin's methods were "inexact" because they were based on intuition and empirical study rather than on scientific analysis or biological premises. Further, Crépieux-Jamin saw the signature as an "autonomous product" unrelated to the handwriting, "a method quite suitable for graphological entertainment at a tea-party, but which renders impossible a scientific treatment of the subject…. But in spite of this, pupils with an innate talent for psychology and graphology will learn more quickly from him than from the more thorough, more scientific… but more cumbersome German authors" (pp. 16-17).

The German School

Adolf Hentze, a contemporary of Michon's, caught the attention of the public when he published articles on graphology in a periodical in Leipzig. Hentze was followed by E. Schweidland, later-day professor of economics, who translated some of the work of the French for a number of pupils, most notably Wilhelm Langenbruch, who in 1895, founded the first German graphology journal. One of Langenbruch's most important contributors was Dr. William Preyer, a full professor of medicine from the University of Jena who was well known for his work on the neuropsychology of language acquisition.

However, Langenbruch was soon eclipsed by Hans Busse, editor of the competing and more prestigious graphological periodical, Monthly Journal. Busse too translated much of the French work into German, and he also compiled an extensive bibliography of international literature on the subject and thus helped Germany become the leader in theoretical and experimental graphology.

In 1879 came two important works, Albrecht Erlenmeyer's Handwriting: Main Characteristics of its Psychology and Pathology, and Wilhelm Preyer's On the Physiology of Writing. Preyer (1895) established that handwriting was actually brain writing. By having writers perform with their opposite hand, their foot and even their mouth, crucial similarities were displayed which conclusively established that writing was centrally organized.

Other psychologist of note from Germany who studied handwriting for personality traits and psychopathology included Wilhelm Wundt, the father of modern day psychology, and his associate Emil Kraepelin "who attempted to measure pressure and speed in normal and mentally disturbed persons with his Kraepelin Scale (Roman, 1962, p. 437) the measure that became the basis for Psychiatry's Diagnostic Statistical Manual, the standard bearer

for cataloging all mental disorders. Unfortunately, Preyer would pass away at the age of 56 in 1897.

Ludwig Klages

Hans Busse continued to edit Monthly Journal throughout the early 1900's. Two new writers of note emerged: Dr. George Meyer and Dr. Erwin Axel. Meyer's 1901 treatise The Scientific Basis of Graphology expanded on the Gestalt approach while noticing that "the intention of the writer is always manifest at the beginning of words, lines or sentences, whereas further text or ends of lines show the real nature of the unconscious of the writer" (Saudek, p. 22).

On the other hand, Axel, who was unknown at the time, attacked Michon's work on fixed signs and Crépieux-Jamin's doctrine of harmony. He called for an end to unscientific suppositions and stated his belief that graphology should be based solely upon what can be proven. His premise sowed the seed for a scientific theory of expressive behavior. Notable proponents of this line of investigation include Robert Saudek, Thea Stein Lewinson, Gordon Allport, Werner Wolff, Klara Roman and Ludwig Klages.

Saudek informs us that it was not until a full decade later, in 1910, that Axel revealed his true identity: Ludwig Klages (p. 23). Saudek, who himself was born in Kolin Bohemia, moved to London for the express purpose of spreading the work of Klages, as well as his own, to the English speaking world. In 1930, Saudek produced Character and Personality, the first graphology journal to appear in English.

His two classic texts are Psychology of Handwriting (1926), and Experiments in Handwriting (1928). In the

former, Saudek discusses the concept of "counterdominant." Whereas the dominant feature in a writing is one single characteristic which "prevails over the others by the marked frequency of its occurrence, the counterdominant is a contradition," (p. 143), i.e., a feature which somehow seems out of place. An example would be a small signature in an otherwise large handwriting. This contradiction, if and when it appears, becomes a focal point from which the "real source of personality" can be uncovered.

Klages (1872-1956) realized that the dynamic relationship between contraction and release is manifested in the rhythm of the writing. Mentally healthy writers will display a natural balance between contraction and release (i.e., movements toward the body and movements away form the body). Mentally disturbed individuals will display impaired rhythm.

Criticism of Klages

Eric Singer (1949/69), doctor of law from the University of Vienna and popular author of graphology books, both praises and criticizes Klages. Singer credits Klages as being "the first to create a complete and systematic theory of graphology." Klages was also the first to realize the link between rhythm, or movements of contraction and release, with theories of expressive behavior and characterology. However, according to Singer, Klages was unable to realize that opposite traits can exist in the same person. "Secondly, Klages' intellectualism, and his tendency to supercilious condescension in appreciating the achievements of the French" thwarted further development of the field. Klages only knew German script, and this was also a hampering factor, as was his inability to appreciate the work of Freud and psychodynamic theory,

"and so he missed the connection between graphology and the modern psychology of the unconscious" (p. 36-36).

Max Pulver

Singer (1949/69) credits Robert Saudek as being the first graphologist to explore "the differences between national characters and national copy-book writing" (p. 36). The handwriting model in Germany is more angular than French, Italian or English writings, and this reflects a difference between, for instance, the more regimented Germanic nature and the more easy-going Italian disposition. And Singer credits Max Pulver as being the first to "abandon" some of Klages more abstruse ideas and link graphology to psychodynamic theory (pp. 36-37).

> *In order to grasp expression in an adequate way, it is absolutely necessary to know the unconscious images that act upon graphic action. The man who writes, unconsciously portrays his inner nature. Max Pulver, 1931/1980, p. 10.*

An associate of Carl Jung, and lecturer at the University of Zurich, Swiss psychologist Max Pulver (1890-1953) discusses symbolic characteristics of the writing field and its movement in three dimensions, vertical, horizontal and depth (pressure). Using ideas from projection theory and psychoanalysis, Pulver was the first to introduce the concept of the three zones in the writing space. "We take as a point of departure for our orientation the line, real or ideal.

It is bounded between above and below; it is the horizon the demarcation between day and night. Spontaneous imagination looks above, the sky, the sun, the day, the light, the powers and spirits on high. Below the line, it is

the opposite realm: the night, the darkness, the abyss, the depths" (p. 12). And the area on the line represents terra firma or everyday world. From this, Pulver formulated his trizonal symbology:

Upper Zone....Head.....Heaven.....Mental Ideas.....Superego

Middle Zone...Body.....Earth.....Everyday World.....Ego

Lower Zone....Genitals.....Hades.....Libidinal Drives.....Id

> *The unconscious knows more than consciousness does; but it is knowledge of a special sort, knowledge in eternity, usually without reference to the here and now, not couched in language of the intellect. Only when we let its statements amplify themselves... does it come within the range of our understanding; only then does a new aspect become perceptible to us. Carl Jung, 1961/73, p. 311*

As a technique for gaining insight, as told to this author many years ago by a Swiss emigre who met Pulver, the graphologue would project handwritings onto a wall to study them. "It is not the meaning of the written communication, but the symbolic significance borne by the play of the movements of the graphic image that reaches the organs of perception." Leaving the handwriting up for days on end, new insights began to emerge. In this way, Pulver was allowing unconscious perception or intuition to play a role (Pulver, 1953/80, pp. 3-4).

In one instance, after looking at the writing, he reached to his neck and then guessed that the writer wore a bow-tie and he was right. This kind of analysis was in-

fluenced by Rafael Schermann. A celebrity psychic of Polish origin who made his mark between the world wars, Schermann displayed numerous astounding insights which were based more on his pronounced intuitive abilities then on precepts derived from scientific graphology. For instance, Schermann had the ability, upon meeting a person, to simulate that person's signature. Assuming his abilities to be genuine, thought transference apparently played a role, and Freud himself took an interest in this unusual individual (NYFreudian.org). However, there was some crossover to known tenets from graphology. For instance, after looking at handwriting on an envelope that resembled an ocean-liner, Schermann speculated that the writer was planning a cruise, and he was right (Bagger, 1924).

In this instance, the writer's own subconscious presented clues concerning an upcoming event. It is well known that writers sometimes place symbols in their handwriting that correlate to their profession or to physical features, e.g., the baseball player Ted Williams often makes a t-bar that resembles a bat; the first man on the moon, Neal Armstrong, has a signature that resembles a rocket ship; Marlene Dietrich's signature resembles a lady in repose.

"One can refine intuitive sensitiveness," Klara Roman (1962) writes, "but the scientific mind feels the need for objective principles by which to check subjective perceptions and clarify their vague, hit-or-miss impressions" (p. 441). Handwriting, for Roman, as an expressive behavior, reveals the "dynamic interplay of purposive and unconscious factors" (p. 442). She sums up the process as follows:

> *Viewing the writing pattern as a whole in order to grasp its essential overall expression; closer scrutiny of … its individual features and corre-*

lating them with the personality factors they stand for; then ordering them all into related groups and synthesizing them in the context of the whole… [to create an] integrated, dynamic personality picture. It should be emphasized that it is never the form of single letters alone, or on any particular characteristic, but the combination and interaction of all parts of the writing pattern that reveal the personality of the writer. (Roman, 1962, p. 441)

19th Century Graphology in America

The handwriting is bold, large, sprawling, and irregular. It is rather rotund than angular, and is by no means illegible. One would suppose it written in a violent hurry. The t's are crossed with a sweeping scratch of the pen, giving the whole letter an odd appearance if held upside-down, or in any position other than the proper one. A dictatorial air pervades the whole…. betraying a blustering self-conceit. Edgar Allen Poe, Analysis of the Signature of Journalist Robert Walsh (1784-1859), Southern Literary Messenger, February 1836 [pp 364-65].

The first American autographer of note is none other than Edgar Allen Poe who analyzed the signatures of over 100 notables in a running column which ran in Graham Magazine and The Southern Literary Messenger from 1836 until 1842. Elizabeth Barrett Browning and Lord Beaconsfield were also intrigued by the study of handwriting, says R.D. Stocker (1901) who credits Miss Rosa Baughan as “the first modern English writer “to compile a serious treatise on “graphology” which she published in

1875. Her forebears included two other British authors, Thomas Byerley, editor of The Literary Chronicle and Weekly Review who devoted a chapter on signatures in 1823, and Isaac D'Israeli, father of the Prime Minister of England who added a chapter on the topic in his popular book Curiosities of Literature in 1824 (Backman 2006; Bradley 2006).

> *I am prejudiced in favor of him who, without impudence, can ask boldly. He has faith in humanity, and faith in himself. No one who is not accustomed to giving grandly can ask nobly and with boldness. Johann Kaspar Lavater*

All of these individuals ultimately trace their initial interest in the topic to the work of the Swiss pastor, Johan Kasper Lavater (1741-1801), physiognomist, and handwriting analyst. "I have remarked a perfect analogy in the language, movement of the body of a person and his handwriting." Lavater wrote, predating Harvard educated psychologist Gordon Allport and his assertion of the same observation by 150 years.

"The more I compare different handwritings," Lavater reflected, "the more I am convinced that handwriting is the expression of the character of him who writes" (cited in Stocker, 1901, p. vi). The web lists many quotes from the astute Lavater, the following which aptly predates the work of Max Pulver and the Gestalt psychologists: "Intuition is the clear conception of the whole at once."

> *The finest delineations are made by combining characteristics. In fact, that is imperative if the student desires absolute accuracy. The most incompatible traits are sometimes indicated, and he must remember that human nature often exhibits curious anomalies. If two traits seem to be opposed, he must find their relative*

strength, and from that deduce the resultant characteristic. Any sign in a specimen may be strong or weak, plentiful or scarce. Rexford, 1902, p. 7

Other 19th century American autographers include Scarlet Letter author Nathaniel Hawthorne who wrote a chapter on signatures stating, "The original manuscript has always something which print itself must inevitably lose. An erasure, even a blot, a casual irregularity of execution, bring us close to the writer and perhaps convey some of those subtle intimations or which language has no shape.... The writer's character," Hathorne concludes, "is revealed in the autograph" (Don Felix de Salamanca, 1879, pp. 3,4).

However, like Poe and most other early 19th century handwriting analysts, Hawthorne's work was based almost purely on intuition with no scientific counterpart. Thus, these early graphologists were often wrong in their personality assessments, because they had no theoretical or scientific basis for the assumptions that they made. In a nutshell, handwriting analysis in the early and mid-19th century was no more than a hobby.

One of the first modern American graphology texts to gain a foothold for a more systematic study of the topic was Talks on Graphology: The Art Through Knowing Character Through Handwriting by the mysterious couple H.L.R. & M.L.R, published in 1892. Having studied Michon's work, these two authors state that handwriting as an "expression of thought" revealed traits that "emanate from the soul," (p. 16).

Predating this work is a handwritten manuscript, "The Principles and Practice of Graphology or Character Reading from Handwriting," by J. Harrington Keene given to a student in 1887. Under the pen name Grapho, Keen, who was also a sports fisherman, came to publish the well-il-

lustrated and popular Mystery of Handwriting in 1896 which displayed the signatures of many famous people of the day. Using a typology system which broke down writers into four general types, sanguine, bilious, nervous and lymphatic, Keen would write that "handwriting was a gesture of the mind."

Other major treatises from the late 1890's and early 1900's include The Language of Handwriting by Richard Dimsdale Stocker (1901), Reading Character from Handwriting by Hugo von Hagen, Ph.D, (1902) and Crépieux-Jamin's masterwork, Handwriting & Expression which, translated from the French, was published in America in 1892. Aside from Crépieux-Jamin whose resultant theory will be discussed in a later chapter, Stocker's book strikes the reader as perhaps the most sophisticated.

Attempting to create a science of graphology, Stocker (1877-1935), an expert on will power and the science of mind, wrote that "thought has form," and this "form is preserved" in handwriting. Stocker explains that sexuality is not necessarily revealed in a writing because "men and women both possess the same faculties, modified by development" (p. 15).

He also notes that heredity plays a role in style, but also that handwriting is also influenced by momentary feelings. "It has been proved by experiment that it is almost impossible for anyone to simulate any passion (either physiognomically or graphologically) and at the same time free himself from the feeling therewith" (p. 6).

In other words, handwriting by its nature, has to reflect the mind, mood, and even momentary temperament of the writer. When analyzing a writing, Stocker says to consider the style as a whole as well the size of the letters, their shape, slope, position on the paper and texture" (p. 25). The book also contains an impressive bibliography.

Having studied at the Paris Graphology Society, Hugo Von Hagen moved to Boston where he started the first

American Graphology Society in 1892. With over 100 clear examples, von Hagen (1902) created an exhaustive chart of graphic signs with their corresponding personality characteristics. For example:

SIGN	INDICATES
Simple, plain writing	Modesty, naturalness, simplicity
Perpendicular slant	Mind controls, lack of feeling, coldness
Large	Enterprise, desire to do great things, pride
Small	Observation, criticism, narrow-mindedness
Writing close together	Moderation, thriftiness, carefulness
Writing very close together	Meanness, avarice, stinginess
Heavy pressure	Resoluteness, will power, obstinate
Harmonious	Clear and level-headed
Inharmonious	Weak character, hard work to keep himself under control
Lines ascending	Activity, enterprise, ambition, optimism
Lines descending	Pessimism, inactivity, laziness, melancholy, discouragement
End of words turns left	Selfishness, flattery
T-bars made after t	Enterprise, enthusiasm, curiosity, ambition
Large loop under first word	Vanity, conceit, pride

Wide margin	Desire for originality
Uneven margin	Careless in spending money, little order, lively

The last author of note from this early period is John Rexford (1902) who writes in his book Analytic Graphology that "every act of a man's life bears the stamp of his personality…. Hence, if an act or a series of acts, could be recorded and studied, a clear idea of the character of the person could be obtained" (pp. 1, 2). Of all the American authors from this period, it was Rexford who constructed a well organized, succinct, yet comprehensive text with chapters on the rules of analysis, size, slope, shape, thickness of the writing trail, spacing, connections, finals, punctuation, speed, flourishes, general style, individual letters and the signature.

Rexford also has two appendices, one with an exhaustive list of traits and corresponding graphic patterns, and another devoted to deviant handwritings and questioned documents. In his section on the final analysis, Rexford recommends making a list of various traits noted, weighing each of them for emphasis or lack thereof, and then combining them all together into one cohesive summary.

Handwriting analysis has always been linked to fortune telling, and such related fields as phrenology, astrology and palm reading. In fact, it was Adolphe Desbarrolles, one of the fathers of modern palmistry, who, in 1872, wrote the introduction to Abbé Michon's first major treatise on graphology. Ten years earlier, Samuel Wells, a phrenologist and partner of the publishing firm Fowler & Wells, published a book on physiognomy which devoted a chapter to "graphomancy," Wells' "name for his variant of handwriting interpretation" (Backman, 2001). No doubt, because of this esoteric relationship, many writers of graphology books tended to use pseudonyms. H.L.R. & M.L.R. wrote perhaps the first important American book

on the subject, Harrington Keen wrote under the name Grapho, Ludwig Klages used the pseudonym Dr. Erwin Axel (Saudek, 1926) and Elijah Prentiss Bailey wrote under the name John Rexford (Backman 2001).

Klages eventually revealed his name, but Bailey never did. Born in 1834 in upstate New York, and a graduate of Colgate University and Fordham, Bailey was the son of a prominent member of the New York State Anti-Slavery Society who was editor of The Liberty Press. In 1853, Bailey began to work for the Utica Observer where he became a telegraph operator and journalist, and over time, editor in chief and owner of the newspaper. A member of the Masonic fraternity for over 30 years and manager of the Utica Homeopathic Hospital, Bailey was also elected School Commissioner of Utica, commissioner for the Northern Pacific Railroad, President of the New York Associated Press and also appointed by Presidents Harrison and Cleveland to be Postmaster of Utica and President of the New York State Civil Service Commission.

Emigration of European Graphologists

As Hitler moved his country closer to war, a number of key graphologists emigrated, such as Klara Roman, Werner Wolff, Ulrich Sonnemann, Eric Singer, Rudolf Arnheim, Wladimir Eliasberg, Herry Teltscher, Alfred Kanfer and Felix Klein. Clearly, European graphology suffered because of the war.

Thea Stein Lewinson

Thea Stein, daughter of a wealthy Jewish businessman from Berlin, was sent by her mother to work in a household for a family in Paris. Born in 1907, and quite spoiled, Thea was fond of reminiscing that she never

brushed her own hair until she was 18. Thus, it was not surprising that she failed as a servant. Already trained in graphology, and now out on her own, she met Gus Lewinson, who helped her get a quick visa for America, and she married him shortly thereafter. During the war, Thea worked for the U.S. government in the censorship department reading German correspondence. This led to the capture of a German spy who she knew personally (Keehner, James, Thea Stein Lewinson, ASPG, 2004, pp. 222-223).. Later, she would also do graphological profiling of job applicants for the CIA as well as enemies of the state like Lee Harvey Oswald and Saddam Hussein. Working with the American statistician Joseph Zubin, in 1942, Thea co-wrote *Handwriting Analysis*, a methodological treatise which contained a series of numerical scales for evaluating four dynamic aspects of handwriting, its form, vertical and horizontal components and its depth. Combining the findings of Pulver and Klages, Thea attempted to establish an objective basis for measuring rhythm in handwriting.

By a minute analysis of individual letters and even parts of letters, Thea created a continuum scale from very contracted motor movements to very released. Normal writings, she stated, should gravitate toward the central point of the scale (p. 14). Isolated graphics measured such variables as contour, vertical and horizontal strokes and pressure.

Well into her 80's, Thea Stein-Lewinson, founded the American Society of Professional Graphologists. At that time, she appointed the author, Marc J. Seifer, editor-in-chief of their publication, the only academic journal in graphology in the United States at the turn of the 21st century.

At one of our meetings at Swarthmore College in 1993, she recalled a conference she attended in 1939. There could be found many of the originators of the field

including Max Pulver, Ludwig Klages, Hans Jacoby, Otto Fanta, J. Crépieux-Jamin, William Preyer, Werner Wolff and Klara Roman. The conference was essentially split into two camps, the so-called intuitive camp headed by Crepieux-Jamin, and the German camp, who saw themselves as more scientific, headed by Klages. Speaking for the German contingency, Thea recalled a half-century later, "We did not think much of the French." But even within the German camp there was dissension. Never one to hold back opinions, in her Prussian manner, Thea remembered that for her taste "that little man" Werner Wolff, was not her cup of tea, because his ideas were too amorphous.

"Max Pulver, of course, was most impressive. He was very imaginative and fascinating."

"Did you ever meet Carl Jung?" Pulver's associate, I asked in the interview.

"Only at a lecture in New York, When I saw him I was disappointed. He was a little fat man and not as mythical [as I expected]," she added with a chuckle.

"How did Pulver get along with Klages?"

"Not at all. When a Pulver man spoke at the Congress, the Klages group got up and walked out. He and Pulver were on a collision course. Pulver said he never read Klages, but Klages wrote ten volumes and I read them all."

"And Klages' talk?"

"Klages gave a ridiculous lecture on voluntary movement which he had published in 1910. However, he was a charismatic and terrific presence. He was the one who put graphology on the map, and the basis of my book Handwriting Analysis rests on his 'science of expressive movement' [i.e., on the interplay of muscle contraction/ down strokes – movements towards the body, and release/upstrokes – movements away from the body, as revealed in the rhythm of the writing.] Klages wrote complex German,

but his own philosophy was close to the Nazi philosophy" (Seifer, Letter from the Editor, ASPG, 1993, p. 4).

According to Klages, "Every volitional movement is also influenced by its personal 'guiding image' (Leitbild)…. Expression, as an aspect of impulse …[or] volitional movement, represents the essence of personality." For Klages, handwriting is "a permanent and measurable record of volitional movement… [combining] intellectual, emotional, and physical tendencies…. Klages science of expression is his system of graphology." It lies in what Klages calls Formniveau, or form level, where it can be seen in the originality, aesthetic appeal, organization, harmony, rhythm, and strength of the form. Because of Klages work and "leadership in the field of characterology and the science of expression, graphology has been used as a psychodiagnostic method in Europe for the last three decades and has found practical application in the fields of child and vocational guidance… personality adjustment, for various legal and business purposes and for personality studies of patients suffering from certain chronic diseases (Stein Lewinson, An Introduction to the Graphology of Ludwig Klages, Character and Personality, 3/1938, pp. 163-176).

"Was Klages really antisemitic?"

"Oh, yes, of course. He was very antisemitic," Thea stated matter-of-factly. She then explained that a number of years earlier, (most likely in the early 1930's), Klages had gotten into a fight with a Jewish journalist, and had become anti-Semitic ever since. "Klages assumed a science of expression that postulates two forces within man: 'mind,' which binds and inhibits him; and 'soul,' which frees and develops him creatively.

According to Klages, these two forces, always dynamically at variance, influence all of man's behavior and are most crystallized in his expressive movements" (Roman, 1962, p. 437). "The mind for Klages was representative of

the Jew, and the soul representative of the German. Klages claimed that the mind suddenly tore into the soul and destroyed the soul, so the Jew destroyed the German soul. Klages had an obnoxious personality, but he was very good looking," Thea concluded.

The European/American analyst Erika Karohs stated at the 1992 AAHA/AHAF Denver conference that "When Hitler came to power, Klages positioned himself so that only his system came in. Klages used the Fortune Telling Law to put 90% of the graphologists out of business [so that only his school would remain]' (Seifer, 1993, p. 4). Thus, the rise of Nazi Germany drove many well-known graphologists to the United States. Klages stayed on as a supporter of the Third Reich.

In the case of Klara Roman, she lost her husband to the Nazis and had to hide in a cellar of friends before her escape; Rudolf Arnheim, who would come to teach at Harvard whose doctorate was on handwriting and facial expression, Werner Wolff, who first fled to Spain and was caught in the civil war before coming to America; Ulrich Sonnemann, who taught at the New School, Alfred Kanfer, discoverer of minute neuromuscular spasms in the writing of cancer patients; and Felix Klein, founder of the National Society for Graphology in New York City. Both Kanfer and Klein spent many months imprisoned in Third Reich concentration camps before their emancipation.

Felix Klein

No doubt, the most popular graphologist of European descent in America in the 1970's, 80's and 90's was Felix Klein (1911-1994) who was aptly named the "dean of American graphologists." By his nature, Felix had many students, helped unify diverse handwriting groups, and

was a well-known fixture at national and international conferences for nearly 50 years.

Felix Klein had been in Dachau and Buchenwald. At a conference in Chicago in the 1980's, he recalled to me that part of the reason he was able to survive in the concentration camps was because he would use graphology to analyze the handwriting of the girlfriends of some of the Nazi guards. In this way, he kept himself protected and occasionally got extra food such as the core of an apple or small loaf of bread which he cut into little pieces and shared with his fellow prisoners. Felix was able to emigrate to England right before WWII erupted, and from there he made his way to America and New York City. There, he founded the National Society for Graphology. Felix Klein's contributions included his development of Klages idea of the "guiding image" which corresponded to Robert Saudek's concept of the "dominant" characteristic in a handwriting, and "directional pressure" which in a concave handwriting could be seen as a vertical stroke curved or bent in the center because of libidinal energy "pushing" into the stroke as an vector from the past. With Felix Klein's death, the mantle has been passed to Roger Rubin, who, following in Felix' footsteps, has become one of the most respected handwriting analysts in America.

Klara Roman

Klara Roman (1881-1962), a Hungarian already into her sixties, arrived in New York City in the early 1940's. She had worked as a handwriting expert for the Royal Hungarian Criminal Courts. Seeking to objectify graphological research, Roman (1931) invented the graphodyne, a mechanical pen which recorded "quantitative and qualitative measurements of the dynamic components of the writing movement such as pressure and speed, interrup-

tions of flow and variations of emphasis [all which] constituted parts of the supposedly intangible phenomena labeled rhythm" (1952/1970, p. 66).

Work at The New School For Social Research

A dynamic woman who could not understand the indifference to graphology by the American psychological community, Roman was able to establish an accredited college course at the New School for Social Research in New York City, now New School University, which remains, a half-century later, the only major university to offer college courses on the topic.

> *The first and most general dichotomy of all components of the graphic movement… divides them into movements of contraction and movements of release, and, with the single exception of the level of form quality, there is no graphic characteristic within an of the dimensions of rating which cannot be classified in either of both groups….. Psychologically, emphasis on contraction [movements towards the body] relates to ego emphasis with its possible implications of relative increases in volitional, emotional, and concept control; emphasis on release [movements away from the body] relates to object emphasis with its possible implications of relative increases in spontaneity, impulsivity, and fantasy life. (Sonnemann, 1950, pp. 20-21)*

Roman, who would come to write two important texts, Handwriting: A Key to Personality and Encyclopedia of the Written Word, followed in the footsteps of another impor-

tant graphologist, Ulrich Sonnemann (1912-1993) who taught at the New School from 1949-51.

Author of another essential text Handwriting Analysis, Sonnemann presented to the English speaking world a superb exposé on the work of Ludwig Klages (whose books were never been translated into English). Born in Berlin, Sonnemann obtained a doctorate from the University of Basel in 1934. His topic was the social thinking of H.G. Wells. With an interest in graphology stemming from boyhood, Sonnemann eluded the Nazis by moving from Vienna to Zurich to the United States. After working with the Veterans' Administration and Fairfield State Hospital in the mid 1940's, he came to the New School and then returned to Germany in 1955 to teach in Munich and also lecture internationally. In 1982, he returned to the United States for a brief period teaching at the University of Missouri before returning to Europe and founding an organization in his name.

The Psychogram

In 1955, with the assistance of George Staempfli, Klara Roman developed the Graphological Psychogram, a diagnostic checklist which organized forty variables such as organization, I emphasis, angularity, rhythm, and spontaneity into eight major categories. These included creativity, ego strength, drives and inhibitions. The Psychogram, used today by many graphologists, was further refined by Daniel Anthony (1964/69), Roman's student.

The advantage of this system is that each handwritings can be broken down into 40 separate sub-components with 8 categories that can be converted to a numerical system. In this way, different kinds of handwritings can be separated out, compared, and studied from a statistical standpoint. The Roman Anthony Psychogram al-

lows for handwriting to be studied in a rigorous scientific manner. Upon Roman's death, Anthony took over her courses at the New School where he taught with his wife Florence for over a decade.

Grandnephew of the famous suffragette, Susan B. Anthony, Dan was a graduate of Brown University, a Ford Foundation research fellow at Rutgers and director of the Newark Human Rights Commission.

In the opinion of this author who studied with Dan and Florence for five semesters from 1970-72, and reflecting over 35 years, Dan Anthony remains the most astute graphologist I have come in contact with. He taught us numerous techniques, such as how to study printscript, the relationship between touch point analysis and the creativity of the writer, which was an extension of the work of Werner Wolff, the relationship between the physical act of writing as an expressive gesture to the writer's personality, how to analyze job applications for personnel selection, the link between handwriting and neuronal organization which stemmed from the work of Alexander Luria, the importance of doodles, left handed writers, the handwriting of children, and also such ideas as taking a pen and actually tracing over the writing of the sample being analyzed so that the actual motor movements involved could be better understood by the analyst.

As a rule, Dan did not analyze any writing in class if he didn't have access to biographical information about the subject. The student needed to see, as much as possible, the link between the handwriting trail and the life of the person. Dan also introduced the student to Rudolf Arnheim's book Art & Visual Perception and Rhoda Kellogg's work on the psychology of children's art.

An expert's expert, in his heyday, Dan was quoted in Newsweek and the Wall Street Journal, he had articles in Psychology Today and other periodicals, and he also worked on a number of high profile cases such as the Son

of Sam assassin and also the blood writing on the wall from the Sharon Tate murder.

When it came to questioned documents, Dan stressed the importance of obtaining enough exemplars to compare to, how to guard against pitfalls and how to use a light-box. Although he could be elusive at times, whenever this author asked him how he came to the conclusion that he came to, he always could point out the reason. Much like a Sherlock Holmes, working with a magnifying glass, compass and ruler, Dan Anthony based his astute analyses on the evidence.

In 1959, Klara Roman flew out to California to lecture at the American Handwriting Analysis Foundation which was run by Charlie Cole. The following year, Dan Anthony also lectured there. Charlie had first become interested in graphology in 1941, after meeting with the German refugee and graphologist Hans Schwartz. After working with Roman and Anthony, Charlie re-adapted the Psychogram and set up an important school in California which spawned many new graphologists on the West Coast.

Charlie also brought in other top speakers, most notably Irene Marcuse (AHAFHandwriting.org). Granddaughter of social philosopher Herbert Marcuse, Irene was European educated. With a doctorate in psychology from the University of Florence, and lectures at universities in Rome, Bologna and Milan, Irene had studied with Max Pulver in Zurich before emigrating to the United States.

Author of *Guide to Personality* and *Guide to the Disturbed Personality Through Handwriting*, Dr. Marcuse was an important graphologist in the 1950's and 60's, bringing the topic to the attention of the American psychological community through her research and writings and public appearances such as on the popular David Susskind TV show.

After Dan and Florence Anthony retired, their courses at the New School were taken over by Patricia Siegel, a graduate of Cornel, who later became President of the American Society of Professional Graphologists. and her associate Lois Vaisman, a graduate of Columbia University, psychotherapist, and vice president of ASPG.

Other Contributors

Other noteworthy graphologists from Europe include Alfred Mendel, H.J. Jacoby, Eric Singer, Anita Muhl, Irene Marcuse, Nadya Olyanova, Girolamo Moretti, Ursula Ave-Lallemant, Christian Dettweiler, Erika Karohs, Wladimir Eliasberg, Herry O. Teltscher and Paul de Sainte Colombe. Well-known American analysts include June Downey, Gordon Allport, M.N. Bunker, Dorothy Sara, Huntington Hartford, Roger Rubin, Marc Seifer, Patricia Siegel, Ruth Holmes, Iris Hatfield Holmes, Marcel Matley and Jane Nugent Green.

Mendel (1947) describes concealing and counter strokes and the concept of the stable and mobile axes. The downstroke, which he calls the stable axis, is the backbone of the writer's character (p. 216). Changing slants, Mendel correlates to mixed feelings toward the parents, especially the father.

The mobile axis, on the other hand, is the hand, is the horizontal stroke. It depicts "our attitude towards the future and our fellow man' and the exteriorization of libidinal drives (p. 235). Undue pressure in the mobile axis reveals displaced energy and/or neglect of he self due to desire for future goals or because of the expectation of others.

The horizontal axis generally moves away from the writer, whereas the stable axis comes toward the writer.

Mendel's text along with Roman (1970), Jacoby (1938), Saudek (1926; 1928), Sonnemann (1950) and Wolff (1948/60) remain the key books in the field along with Huntington Hartford's (1973) compendium, which is essentially a compilation of these and related works.

Anita Muhl, M.D., lectured on graphology at the University of Melbourne in Australia in 1939. She is known for her studies in analyzing hundreds of delinquent and criminal handwritings. Following in the footsteps of Saudek (1928), Muhl (1949) lists eight signs most often found in dishonest writers: left tending half ovals, small tight loops, covering strokes, abrupt stops above the line, breaks and mends, smeariness, slowness, and looped arcades. Extremes in tension, e.g., either very tense handwritings or very slack writings have also been associated with the antisocial personality (Weiser in Schuler, 1982).

Irene Marcuse (1969) studied the handwritings of suicides. Although no single graphic feature could be isolated as evidence for self-destruction, depression can be seen in connecting strokes which continually droop below the baseline and downward sloping handwritings, such as seen in many samples of Ernest Hemingway. Nadya Olyanova, having worked with psychiatrists, suggests that graphology can be used as an alternative to psychological tests when the therapist requires insight of a patient.

Girolamo Moretti (1879-1963) a friar and founder of the Graphology Institute in Urbino, has had an enormous impact on the practice of graphology in Italy. Emphasizing the Gestalt approach, Moretti, much like Crépieux-Jamin, created a system that gave energy to different graphic traits and set up well thought-out rules on how to combine them to understand the dynamic and structural aspects of personality (Fogarolo, 2006).

Moretti emphasized the idea that every personality is unique. Deranga, et al., (1994) used Moretti's temperament scale "to define a personality structure within which

suspected 'sine cause' patients may be classified." In other words, in cased of illnesses without physical causes, graphology becomes an excellent tool in the hands of competent practitioners. Specifically, Deranga, et al., analyzed the handwriting of an individual who suffered from psychosomatic sterility and was thereby able to compile an idiographic analysis which outlined key personality factors which may have contributed to the malady.

Wladimir Eliasberg, a psychiatrist from Germany, arrived in New York in the early 1940's. He published a number of graphology articles in medical journals including "methods in Graphologic Diagnostics" in The Psychiatric Quarterly (1944). With Herry O. Teltscher, a Viennese graphologist and psychologist, he furthered research in the fields of neuropsychiatry and graphology in order to study the onset of disease, especially Parkinsons. Coining the term "graphodiagnostics," these studies produced several papers and the popular text Handwriting: Revelation of Self (1971).

In the early 1950's, Teltscher conducted a research project at Essex Country Overbrook Hospital in New Jersey. The object was to determine to what extent "blind" psycho-graphological analyses could be matched with clinical specimens, Teltscher prepared detailed analyses plus psychiatric diagnoses where indicated. The judges were able to match the analyses with their own observations. The results proved to be statistically significant on the 0.5 percent level.

The last European writer from this group is Paul de Sainte Colombe, a Hollywood film writer and student of Pierre Janet. In Grapho-Therapeutics, he suggests that under the guidance of a psycho-graphologist, if one is taught to change poor qualities in the handwriting through repetitious exercise of desirable graphic traits, a

corresponding change in the personality will also take place.

The success of the technique, like any other form of therapy, depends on the will of the patient and the skill of the therapist. De Sainte Colombe's work correlates with Teltscher's findings and those of Jeanette Farmer (1997) During the process of psychotherapy, Teltscher was able to pinpoint significant changes in the handwriting with major psychological transformations. Farmer, on the other hand, worked in reverse. By assigning handwriting assignments in students with poor reading skills, the idea was that in a corresponding manner, the brain would be retrained as well.

A place where handwriting analysis enjoys a position of prestige is in Israel where many corporations employ graphologists. Three Israeli graphologists of note are Arie Naftali, M.D., a student of Pophal's who has studied how stress affects the writing stroke, Israel Odem. Odem, adept in the field for over 50 years, has stressed the importance of the angle of writing, correlating the slant with a typology of nine major personality types (e.g., indolent, integrative, impulsive, narcissistic, anarchic-instinctual), and Dafna Yalon who has recently integrated graphological principles with the Star Wave test.

United States

On the American scene, June Downey stands out as one of the first experimenters. In 1919, she performed a study examining handwriting as an example of the expressive behavior exhibited by an individual. Rating 12 writers on such bipolar characteristics as fluent or jerky and impulsive or deliberate, her scores correspond 10% above chance with eleven judges who rated the same individuals basing their observations on the gait, carriage and

gestures of the subjects. This line of investigation was supported in the 1930's by Harvard psychologist Gordon Allport and his associate Phillip Vernon (1933/67) who wrote:

> *"From our results it appears that a man's gestures and handwriting reflect an essentially stable and constant style.... Furthermore, the evidence indicates that there is a congruence between expressive movements and the attitudes, traits, values and other dispositions of the inner personality" (pp. 247-248).*

M.N. Bunker & Graphoanalysis

On the poplar front, Dorothy Sara (1968) and Huntington Hartford (1973) have both written graphology books with widespread appeal. But, the most important mid-20th century American figure in terms of capturing the imagination of the people and in training large numbers of handwriting analysts has to be Milton N. Bunker (1892-1961) father of Graphoanalysis. His teachings provide step by step correspondence courses which delineate an atomistic approach to handwriting interpretation. From the 1930's through the 1980's, Graphoanalysis had been, by far, the most popular approach to American graphology although it differentiates itself from the studies mentioned above.

Having taken correspondence courses in short hand at the turn of the 20th century, Bunker soon became interested in handwriting analysis. He became a student of DeWitt B. Lucas through the mail, and according to graphology historian Bob Backman, purchased a German rendition of Crepieux-Jamin's text on resultants which had been "unmercifully condensed, omitting much critical information.

In the 1920's, while "a regional sales manager" for International Correspondence Schools, Bunker continued his studies with Louise Rice, who, like Lucas, had written an excellent book in the field. "They became personal friends, yet also were enemies, graphologically speaking. In 1928, Bunker gave radio broadcasts on graphology. He ran for office of President of the American Graphological Society, but was roundly defeated by Rice. He smarted from the defeat and it motivated him to begin a [correspondence course] in graphology to compete with Rice (Backman, 2001). Thus, Bunker's "Graphoanalysis" was born.

Criticisms of Graphoanalysis

The problem with graphoanalysis was twofold. 1) It was cult-like. Graphoanalysts were taught many yardsticks which enabled them to compile impressive handwriting analyses, but these yardsticks were too rigid and reductionistic. Harking back to the work of Michon, this graphic sign=trait approach ignored the relationship of the sign to the total pattern and also to the idea that a similar symbol in two different handwritings could have different meanings. 2) Graphoanalysts were forbidden from reading any books on graphology!

Further, students of this school were banned from interacting with graphologists, and this was a practice that was strictly enforced for decades. Thus, many graphoanalysts lived in an isolated community, an essentially artificial world that was unable to expand into the more comprehensive field of graphology.

How would it be possible for a true student of handwriting analysis ignore the works of Roman, Saudek, Mendel, Wolff and others? Yet this was one of the rules that graphoanalysts were forced to obey. The only solu-

tion for many in this predicament was to break their bonds with the Bunker school so that could attend regional and international conferences and interact with the so-called graphology crowd. In this manner, many graduates of the Bunker method have gone on to become respected and highly successful professionals in the field.

Jane Nugent Green

World War II greatly impacted the development of the field of graphology, disrupting the lives of many leaders, and forcing some to come to England or America where graphology was much less accepted. In terms of textbooks in the field, there has been little advance in nearly half a century. One recent book which stands out is You and Your Private I, by Jane Nugent Green (1975/88). Coming from the Adlerian school of psychology and influenced by Felix Klein and Daniel Anthony, Green has devoted an entire text to discussing the variations of the personal pronoun "I" the written symbol of the ego. Differentiating from the signature which becomes a consciously produced trademark, "the 'I' may be compared to the man asleep, unconsciously experiencing himself.... It is written much more naturally and is much less subject to deliberate tampering" (pp. 141-142).

The history of handwriting analysis maintains a proud heritage. Many highly respected psychologists have studied and produced research papers on the topic. Advances by experimental and theoretical graphology has continued not only in the psychology of expressive behavior and depth psychology, but also in neurophysiological research and cancer detection. Unlike any other projective measure, handwriting, as uninhibited self-expression, pro-

vides a valuable and tangible road map to that mysterious borderland between the brain and the mind.

II. HANDWRITING & BRAIN ORGANIZATION

From an evolutionary perspective, it becomes apparent that the process of handwriting is linked neurologically to the process of speech, and in a certain sense is a further development of human language production. Hand writing is about the most advanced process that a human brain can achieve.

Werner Wolff

Born in 1904, Werner Wolff was only 53 years old when he died. A tireless researcher and prolific writer who taught psychology at the University of Barcelona and at Bard College after he emigrated, Wolff's articles and books cover a wide range of topics including unconscious expressions of behavior, dream interpretation, the child's expression of self and a study of the culture of Easter Island.

Frankly, I was shocked when CIA consultant and longstanding matriarch of the field, Thea Stein Lewinson, dismissed Wolf's contributions. In the humble opinion of this author, Wolff's masterwork Diagrams of the Unconscious is one of the most important graphology textbooks published in the English language. It is an indispensable and highly original reference work which covers such topics as psychoanalysis, symbolism and depth psychology as it relates to handwriting. His idea of the principle of configuration, an unconscious organizing factor to the writing, stemmed from some of the more philosophical aspects of Klages' theories and that of Gestalt psychology. Each part of a handwriting, including so called individual signs, e.g., the lower loops, the way a "t" is crossed, etc., must be linked to the whole.

> *We cannot bring to consciousness why we incline a certain letter, why we put the dot over the "i" in a certain place, why we emphasize a curve.... While the direction of the total movement is conscious and single steps are preconscious, its form and quality are unconscious. (Wolff, 1948, p. 3)*

Wolff was able to discern principles of configuration such as symmetry, periodicity and consistency manifest-

ing in precise ways in the unconscious aspects of writing. By working with compass and ruler, Wolff noted that many signatures had an exact midpoint, either the ending stroke of the first name, the beginning stroke of the last name or the dot in the middle initial. Wolff also noticed that certain favorite psychomotor movements, such as a t-bar or ending stroke, would be a particular length that would bear a precise geometric relationship to the size ratios of the signature. These relationships persisted throughout the life of the writer.

Wolff's findings were expanded by Daniel Anthony (1967) who noticed "geometrical forms, interlocking units and touch points" in creative writings. These ideas were further expanded by Seifer (1976) who applied Jung's concept of synchronicity to the study of a full page of writing. Oftentimes, particular letters, i-dots, symbolic features or the same word would line up to the millimeter down a page. Thus, Wolff's exacting "diagrams of the unconscious" have been expanded beyond signatures and words to include the entire writing field.

Alfred Kanfer

Like Saudek, Alfred Kanfer made use of a microscope in his graphological investigations. Although an accomplished handwriting psychologist who analyzed Howard Hughes' writing for Life Magazine in the early 1970's (the sample which Clifford Irving used for his famous forgery), Kanfer's major contribution to graphology was in cancer detection. Burdened with a tremor hand from his earliest years, Kanfer became interested in psychological disorders.

After decades of research and examining thousands of handwriting samples of cancer patients, Kanfer, a Viennese who had escaped the concentration camps, came to

New York City to work as a diagnostician for the Hospital for Joint Diseases and later for the Strang Clinic.

In his lab, Kanfer enlarged handwritings 500 to 1,000 times. By this procedure he was able to detect minute neuromuscular spasms indicative of cancer in the connecting strokes of the writing which occur when muscle groups involved in contracting movements change to releasing strokes.

In a study for the American Cancer Society (1950) involving 935 handwriting specimens, 88 with cancer, Kanfer was 85% correct in detecting he cancer cases and 79% accurate in distinguishing non-cancer writings (Hartford, 1973, pp. 196-218). In a rare interview, Kanfer stated:

> *No matter what they call my test: cancer test, neuromuscular test, etc. ... it is still a handwriting test.... I cannot, and I do not want to deny that my work is closely related to graphology. I consider graphology my spiritual parent. (4/13/65, p. 4)*

Handwriting & Hemispheric Dominance

Current president of the American Society of Professional Graphologists, Patricia Siegel has studied the neurophysiological organization of left handed writers. As a lefty herself, Siegel has noted that there is a sense of alienation peculiar to lefties as they live in a right handed world. Her categories of lefties take into account the hold of the pen (e.g., inverted or non-inverted hold) and link between left-handedness and hemispheric dominance. Siegel suggests that different kinds of lefties may have "different neural subsystems" (1985). This work is related to Klara Roman's research on the handwriting of twins. Having studied nearly 300 pairs of identical twins for the Medical School of Budapest in 1942, Roman discovered

that “the dissimilarity in the handwritings of identical twins is due to a difference in lateral dominance, since in most cases, one twin was right-handed and the other left-handed” (Roman, 1962, p. 448). The brain is organized contralaterally, that is, the opposite hemisphere rules. Most people are right-handed because the language center of the brain is almost always located in the left temporal lobe. In general, right-handers tend to be left brained dominant, and left-handers tend to be right brain dominant. But there are many exceptions to the rule. Some lefties slant to the right or upright and some slant to the left. It is generally more comfortable for a lefty to slant to the left, even though he or she was taught to slant to the right. Thus, a left slant in lefties has a different connotation than a left slant in a righty. Simplistically, a left slant for a lefty is more natural and suggests right brained dominance, whereas a right slant for a lefty suggests left brain influence. A left slant in a righty could reflect right brain dominance, or it may be linked to a psychoanalytic tendency not to conform. Graphology is very complex. In the study of left slant in lefties and righties, other tests for brain dominance (e.g., projective measures, MRI or eye dominance tests) would help in the investigation.

The link between hemispheric dominance and handwriting has also been investigated by Jeanette Farmer (1995). Based on the work of Ned Hermann who extrapolated from Carl Jung’s four types, Hermann identified four thinking styles with four quadrants of the brain: Thinking and Sensing for the left hemisphere and Intuitive and Emotional for the right. By plugging in graphic indicators which are graded for each type, a mandala shaped chart can be constructed for each different person mapping out, in derivative form the type of brain dominance he or she has (Farmer, 1995).

A student of Anthony’s, this author undertook a study of muscle tension in the handwritings of schizophrenics

as compared to normals at Billings Hospital, University of Chicago, under the direction of two medical doctors, Herbert Meltzer, MD and David Goode, MD. Marc Seifer isolated ten of the 40 indicators from the Roman/Anthony Psychogram which related to muscle tension. These included pressure, narrowness, speed and rhythm. In a blind study of twenty individuals, each handwriting was graded for each variable, with a 1 corresponding to a non-tense handwriting, and 10 corresponding to an extremely tense script. This procedure proved statistically significant in separating schizophrenics who were more tense from normal people (Seifer & Goode, 1974). German graphologist Bernard Wittlich studied tension in psychomotor movements and has discovered "a method of determining through handwriting whether under stress a given personality would lean towards compulsion, depression, hysteria or schizophrenia" (Schuler, 1982). Seifer's study uncovered a link between arrhythmic disconnections within words and schizophrenia as compared to the handwriting of normals.

In a blind study utilizing the entire Psychogram, Marc Seifer and Pat Siegel were each independently able to differentiate eight epileptic split-brain writers from eight normal matched pairs ($p < .05$). The study found fragmented and foreshortened letters, tremors and misspellings in the writings of many of these epileptic patients who have had their corpus callosum's surgically severed (TenHouten, Seifer & Siegel, 1988).

Russian neurophysiologist Alexander Luria (1973) describes a relationship between the organization of handwriting, language, and the coordinated workings of the various lobes of the brain:

> *Writing starts out as a chain of isolated motor movements, but with practice the process is radically altered and writing is converted into a*

> *"kinetic melody" no longer requiring the memorizing of the visual forms of each isolated letter of individual motor impulse for making every stroke. (p. 31)*

Neurophysiological investigations have been conducted by Rudolf Pophal. His work has been translated into English along with the studies of other researchers by Marie Bernard and Erika Karohs. Pophal has determined that whichever motor center in the brain was reflected in the quality of the stroke, the same center dominated the personality (Schuler, 1982). Pophal's work suggests that personality factors would be influenced by different parts of the brain.

This author (Seifer, 1985) expanded Pophal's work to suggest that the three zoned vertical cerebral division: a) cerebral cortex, b) mind-brain, and c) brain stem, which MacLean associated phylogenetically with a) human/intellect, b) mammal/emotion, and c) reptile/instinct, should also be reflected in handwriting. For instance, Albert Einstein would have a handwriting that would reflect the cerebral cortex type by displaying high form level and excellent organization; Truman Capote would be the emotional mid-brain type, with tendencies towards curves, changing slant and wavy baseline; and the fierce Napoleon would display aspects stemming from brainstem activity such as erratic explosions of motoric impulses appearing in the writing.

In brain-damaged writers, Luria (1980) discovered that if a person had damage to the left parietal/occipital lobe (visual cortex), when the person copied a drawing, the right side of the drawing would be missing. Studying the MRI's and handwritings of multiple sclerosis patients, coma, and stroke victims before and after the onset of trauma, Seifer (2003) working with medical doctors from Brown University, was able to point out alterations,

tremors and breaks in the writings and correlate them to the damage seen in the brain scans. Different kinds of brain damage caused different aspects of the handwriting trail to be affected.

Difficulty in Testing

Allport and Vernon (1933/1967) note that psychologists in America seldom take the findings of graphologists seriously. Rather, they tend to "regard handwriting as unrelated to the deep lying factors of personality, and as a product of essentially peripheral manual movement" (p. 186). Written nearly three score and ten years ago, this statement is probably true today. For instance, Emery (1985) reported that findings of E. Karnes, chairman of the psychology department at Metropolitan State College, Los Angeles, who studied the so-called "Barnum effect" (names after the famous circus manager) whereby "people while rate as 'very accurate' any personality profile that is general and flattering, as long as they are led to believe it was written specifically for them" (p. 1).

Karnes commissioned a "Graphoanalyst" to analyze the handwritings of nine individuals from a local business. Each person was then asked to choose his or her analysis. They were unable to do so beyond chance expectations. Karnes concluded that the use of Graphoanalysis (or graphology) could be "harmful" to corporations who may employ this diagnostic tool for personnel evaluations (p. 2). Starting from a similar premise, Jansen (1973), a psychologist from the Netherlands, had 79 scripts analyzed for characteristics of "energetic versus weak." Using ten graphologists, ten psychologists and ten psychologists briefly trained in graphology, Jansen found "a positive, but very slight agreement between graphological judgments and business personnel ratings" (p. 126). These, to

Jansen, were “disappointing results… show[ing] precariously low reliability” (p. 126).

An often quoted study cited as disproving (and which lies as the basis for Karnes’ work), was by Hull and Montgomery (1919) whereby they had 17 fraternity brothers compare graphological analyses based on a a copied paragraph to their own psychological assessment of such traits as ambition, bashfulness, and perseverance. Correlations (of -.016) were not significant. Allport and Vernon (19833/67) concluded that “the deficiencies of this method are so patent that one is neither surprised nor convinced of the negative result” (p. 193). Yet, the poor status of graphology in America prevailed.

Part of the problem is associated with such variables as the intricacy and subtlety of personality investigations in general, the impreciseness of language, semantic differences in comprehending the meaning of the analysis and also the caliber of the analyst. Wolfson (1951) wrote “clinical validation… [of handwriting analysis] does not yield satisfactorily [to] statistical treatment” (p. 425). Many experimental studies performed by academically trained psychologists, however, have had positive findings. Harvey (1934), for instance, testing 50 college females with handwriting analysis, and measuring 26 variables, with the Thurstone personality Schedule, obtained significant correlations. Binet (1907) and Eysenck (1945) found positive correlations between handwriting analysis and certain personality variables including intelligence and emotional stability. Lewinson and Zubin (1944) successfully differentiated between the handwritings of delinquent and non-delinquent students for such graphic traits as balance and extreme tendencies (e.g., in size, slant and pressure).

Wolfson (1951) recognized that there is a difficult problem in finding the meaning to variables that have been objectively delineated. Harvey (1934) questioned the

reliability of relating a graphic trait to a personality variable as the meaning of the graphic trait remains somewhat subjective an would vary based upon (a) the school of thinking that the analysis reflected, (b) the graphologist's psychological training and, (c0 that insight of the graphologist. Graphology is a highly complex method of personality investigation. Wolfson writes that handwriting analysis is "fundamentally a study of relationships. Absolute measures do not exist (p. 442).... The central problem... relates to evaluation and interpretation" (p. 453).

III. QUESTIONED DOCUMENTS

A weighty early American treatise is *A Manual of the Study of Documents; To Establish the Individual Character of Handwriting and To Detect Fraud and Forgery* by Persifor Frazer, J.B Lippincott Company, 1894. Frazer identified three postulates: 1) "Everything capable of being observed is capable of being measured." 2) "The method

employed must be capable of that which is essential from that which is accidental." 3) "Handwriting is the result of the action of a motor (the will) on a machine (the bony structure of the arm with the particular muscles and nerves attached to it) attempting to reproduce a pattern which habit has gradually rendered permanent in the mind" (p. 109).

Frazer explains the absurd situation that the questioned document (QD) examiner faced during the turn of the twentieth century, because the courts did not allow the expert to compare in court, known samples of the writer, i.e., exemplars, with the document or documents that were in dispute! In no uncertain terms, Frazer states that this is "bad law." "If one who is an expert be forbidden to juxtapose and make comparisons before a jury of the handwriting admitted to be genuine with the one in doubt, it is consonance with the spirit of such a law that he should be forbidden from using such comparison in forming an opinion" (pp. 200-201). In other words, if it was good for the goose, it must be good for the gander, therefore the law must change.

The courts during the late 19th and early 20th centuries were highly suspect of supposed expert witnesses because many of them were hired advocates rather than objective scientists, a problem which, of course, still exists today. Oftentimes, defense attorneys would hire expert forgers to simulate the writing of a signature in question and then ask a witness if he or she recognized that signature. Invariably, these witnesses, not knowing they were being duped, would simply state that said signature was genuine. The clever defense attorney would then admit to the ruse, and the case would dissolve (p. 203).

One of the most famous of these expert witness forgers was a Mr. Reilly, who, over a 50-year period, testified in nearly 400 cases. Here is a bit of testimony of Mr. Reilly from a case from the 1930's:

Q. Have you ever prepared any spurious writings whereby you have successfully misled Mr. John F. Tyrrell?

A. I don't know whether he was on the Patrick Rice case. I may have.

Q. What did you do on the Patrick Rice case?

A. I wrote nine signatures of W.R. Rice.

Q. For the purpose of deceiving the people who would testify on the other side?

A. [No, for the purpose of] testing their ability. (Testimony transcript from the Hauptmann trial)

These duped witnesses were often not handwriting experts, but simply individuals familiar with the defendant's signature. Unprepared for this kind of tactic, naïve witnesses continued to walk into the same trap and by this method, the case after case would be thrown out. Today, witnesses are much better prepared, and it would be a rare day that an expert witness on the stand would form an opinion on a new signature that he or she had not seen before.

Progress for allowing a handwriting expert to present evidence in a clear manner was painfully slow. Clark Sellers, President of the American Society of Questioned Document Examiners in the 1940's, informs us that as late as 1914, handwriting experts were still not able "to give effective testimony in most courts, due to restrictions and suspicions which surrounded all expert testimony. In a trial involving questioned documents in many states, no standards for comparison could be introduced in evidence unless they were admissible for other purposes; enlarged photographs were either excluded or looked upon with grave suspicion; it was not permissible to give reasons for an opinion on direct examination; and even the use of a magnifying glass or a microscope was strenuously objected to or excluded altogether" (Albert S. Osborn, by

Clark Sellers, Journal of Criminal Law and Criminology (1931-1951), Vol. 38, No. 1 (May - Jun., 1947), pp. 75-78).

Albert S. Osborn

The individual most responsible for changing the status of the questioned document examiner in America was Sellers' mentor, Albert S. Osborn (1858-1947), without doubt, the most important handwriting expert of the 20th century. Predated by Rexford's (1902) work on anonymous letters, forgeries and disguised writing, Osborn's magnum opus Questioned Documents became the standard bearer, a superlative 1,000-page reference work which could be brought to court to help change the way lawyers and judges looked at the field. Osborn states in his second edition, written in 1929, that "these restrictive conditions are now nearly all changed" (p. xi). And the reason was, in great measure, this book. Even today, nearly 100 years later, Osborn's work remains the standard bearer that all questioned documents books must be compared with.

With detailed bibliography, index and thirty-six chapters, Osborn covers a vast range of problems that the QD expert could encounter. Chapter topics include standards of comparison, the microscope and special instruments, pen position, pressure, shading, page arrangement, size, proportions, spacing, slant, use of different writing instruments, simulated, traced and copied forgeries, guided and assisted signatures, anonymous letters, disguised writing, printing, typing, types of inks and papers and the law and legal procedures in disputed document cases.

Osborn achieved international fame in 1932 when he testified about the ransom note in the Lindbergh kidnapping case. The venerated handwriting expert captured the

imagination of the media and the world when he proclaimed that the note was a disguised writing penned by a left-handed individual.

Wilson R. Harrison

It would be another thirty years before a work of comparable stature was written, Suspect Documents by Wilson R. Harrison, 1958. Born in Wales in 1903, and educated at Cardiff University with a doctorate in physical chemistry, Harrison came to head the university's Forensic Science Laboratory from 1938 until 1963. There, he studied more than 7,000 handwritings. Waiting nearly 20 years to write his masterpiece, Harrison's work advanced the field by providing many more samples to study. He also explained in greater detail a number of key topics first introduced by Osborn.

"I believe what cannot be demonstrated is not evidence," Harrison wrote. "In criminal cases, in particular, there should never be any appeal to conclusions based on flair or on the 'eye of the expert'. Consequently," this chemist/handwriting expert wrote, "I have endeavored to treat the subject as a branch of physical science with a broad basis of demonstrable fact for every opinion I have expressed," (1958, p. vii).

Harrison's exposé on disguise in writing is exhaustive and groundbreaking. His understanding of nuance and discussion of details of fundamental structure of writing, and his ability to explain how an expert makes a final determination on authenticity is first rate. "The rule is simple – whatever features two handwritings may have in common, they cannot be considered to be of common authorship if they display but a single consistent dissimilarity in any feature which is fundamental to the structure of

the handwriting, and whose presence is not capable of reasonable explanation" (p. 342).

> *The writer who is methodical, definite, matter of fact and practical does not produce with his hand that which is slovenly and uncertain; neither do the bungler and the sloven produce a page of writing that is graceful, balanced, artistic and finished without excess. Certainly to that extent here specified, graphology points in the right direction, although most of the deductions are based on foundations too slender for scientific accuracy. (Osborn, 1929, p. 140)*

The Questioned Document Examiners' Views on Handwriting Analysis

Where many QD examiners dismiss out of hand the field of graphology, or handwriting analysis, both Osborn and Harrison state unequivocally, "There can be no doubt that handwriting does, to some extent, at least, reflect the personality of the writer" (Harrison, 1958, p. 518). With this clear-cut premise, the issues that follow are then two-fold: 1) to what extent? and, 2) whether or not handwriting analysis can ever be raised to the level of an experimental science. Both Osborn and Harrison suggest that graphology cannot attain the status of being called a "science."

Osborn notes that writing as a "mental act" may reflect the "mental or even spiritual stature of a man," (1929, p. 439). Writing may also reveal a person's occupation, nation of origin, handedness and sometimes, the sex. "The scientific student [of questioned documents ex-

amination] is of course bound to study the subject and test its claims and enlist its aid if it will assist in any way in discovering and showing the facts in a disputed document case" (p. 436). Graphology, however, for Osborn, remains a "pseudo-science" because there are too many uncertainties and "unknown and outside influences... in this method of human character or personality evaluation" and this, for Osborn is its "fundamental defect" (pp. 438-439). In other words, the study of the human personality is too complex to be truly reduced to a discipline that could attain the level of a true science. This view, Osborn notes, "is made with full appreciation of the empirical skill acquired by certain experienced exponents of the subject of graphology" (p. 439).

Osborn clearly has his eyes open. He has studied the precepts of graphology, sees its merit and its flaws, and recognizes that attempts have been made by serious experimental graphologists to catalog and statistically analyze their findings. However, when compared to questioned documents examination, the graphologist can never attain an equivalent level of demonstrable proof. My argument with Osborn has to do with the definition of science and perhaps even with the definition of graphology.

By breaking it into three branches: 1) handwriting analysis or behavioral profiling, 2) neurophysiology, and 3) questioned documents, one begins to see that the cataloging of handwritings for corresponding neurological criteria can be studied in a scientific manner. For myself, in two separate studies with medical doctors, a professor of psychology and another graphologist, we were able to distinguish between schizophrenic and normal writers and epileptic split brain patients and normal writers to a statistical degree of certainty (Seifer and Goode, 1972; Tenhouten, Seifer and Siegel, 1989). There also have been other studies done to measure writings for personality differences, but I would agree with Osborn that such studies

encounter large stumbling blocks because, as Osborn notes, the study of personality involves so many variables, including ones that cannot be known.

For example, one would agree that it would take a certain level of aggression for a person to become president of the United States. Therefore, Jimmy Carter, Ronald Reagan, Bill Clinton and George Bush I and II are all aggressive individuals. But clearly, each are aggressive in different ways. In the case of Al Gore, he won more popular votes than George Bush II, but he had less electoral votes so he lost the election. Is he less aggressive than George Bush II?

Personality is very complex, but it can be studied in a scientific manner. Handwriting analysis cannot be measured as a science with the same ruling stick that governs the hard sciences or even questioned documents examination. But even in the case of physics there are theories, e.g., black holes, string theory, that are accepted as factual aspects of reality, but really are speculations. The important point to reiterate is that two giants in the field of document examination, Osborn and Harrison, are both in agreement that handwriting does indeed reflect personality, and that to be a top handwriting expert, one should be versed in this branch as well, even if it is controversial. And another handwriting expert, Captain Arthur Quirke, handwriting analyst to the Department of Justice, Attorney-General and Police Headquarters of the Irish Free State in the 1930's goes even father by devoting a full chapter on the psychology of handwriting in his text Forged, Anonymous & Suspect Documents. In support of the view that questioned documents examiners should also have training in handwriting analysis, Quirke quotes Dr. Hans Gross (1924) Professor of Criminology in his "classic work" Criminal Investigations, who writes the following with a caveat against untrained or unscientific graphologists: "The most important thing which an Inves-

tigating Officer can extract from a writing is the character of an individual."

This view contradicts many other QD experts who reject whole-heartedly handwriting analysis, know none of its precepts and disdain handwriting experts who are versed in that branch of the field.

Famous Questioned Document Cases

This deficit in the training of one group of questioned document experts that, otherwise have excellent resumes, has led to some grievous errors. The most famous case, no doubt, involved the handwriting of Howard Hughes. In 1972, McGraw Hill announced a publishing coup when they signed Clifford Irving to write the authorized biography of Howard Hughes. Although still alive, the recluse billionaire had not been seen in over a decade. But McGraw Hill had a series of letters written by Hughes giving Irving permission to co-write his autobiography. The letters had been sent to Russell and Paul Osborn, the prestigious handwriting experts and sons of the late Albert Osborn, venerated author of Questioned Documents cited above. After comparing these letters to Howard Hughes exemplars, the Osborns informed McGraw Hill that the letters were genuine, and Clifford Irving was given an advance of several hundred thousand dollars.

Shortly thereafter, Howard Hughes himself called McGraw Hill to inform the publisher that he did not know Clifford Irving and he did not write those letters. Two full pages of Hughes' handwriting had been published in Life Magazine one year earlier. Irving had simply used those exemplars as models to create the elaborate forgery. Having studied the forgeries and the Hughes' exemplars, it is clear that if one looks at the entire writing as a total pattern, it is not a good comparison to the exemplars. The problem with the Osborns was their reliance on only mea-

suring individual letters and not taking into account the dynamic pattern of the whole, something stressed in the field of graphology, but not stressed in QD examination.

A decade later, QD experts from Europe made a similar faux pa when they authenticated Adolf Hitler's personal diaries only to find out soon after that these also were frauds. In this instance, one of the errors that these experts made was in using fake exemplars to make their comparisons. In both cases, the QD experts were fooled in part because the material was so voluminous. After seeing page after page of fake writing, they began to have difficulty maintaining objectivity because they had a preconception that the fakes were real.

Other controversial cases include the Last Will and Testament of Howard Hughes, known as the Mormon Will, found in 1976, which gave 1/16th of his estate, or nearly $160 million dollars, to Melvin Dummar, owner of a Utah filling station. In a highly publicized court battle, the will was eventually ruled a forgery, although there was much evidence presented by QD experts hired from Europe in support of the case that the will was indeed genuine (Rhoden, 1980). Twenty years later came the Jon Benet Ramsey case whereby this lovely 6-year-old girl was found strangled to death in the basement of her family home. The 1996 ransom note has many similarities to handwriting that appeared in the *National Enquirer* purported to be the writing of Jon Benet's father, John Ramsey (Taunton Gazette, 1999). As a strange twist to the case, ten years later, in 2006, another John and accused pedophile, John Mark Karr, admitted to killing Jon Benet Ramsey, but his handwriting did not match the note.

Other case where questioned documents has played an important role include the handwritten anthrax letters which killed several people in 2001; a letter purportedly signed in 2003 by Osama bin Laden, which came at a time when the world was questioning whether or not the

terrorist was still alive; and some documents about President Bush and the reasons why he lost his license to pilot a plane during the Vietnam War. This last case was presented by Dan Rather in 2005 on CBS news. The controversy was whether or not the military documents were written in the 1970's or created on a computer thirty years later. This case became so contentious that it cost Mr. Rather his job even though he had been a well-respected newscaster for over 40 years.

Questioned Documents and the 21st Century

In many ways, the field of questioned documents investigation has not changed from time of Osborn, Quirke, or Harrison. The precepts they put forth hold true in most QD cases. However, as technology has advanced, there has also been many changes to the field. Most notably, the quality of reproductions has increased dramatically. In the case of mortgages and deeds registered in town halls, rarely are originals kept on file. Because of this advance technology, it has become much easier to create false documents and false signatures.

If Osborn were alive today, no doubt, he would devote additional chapters to such topics as digital signatures, machine-generated or Xerox copies, scanning machines, alterations caused by white-out, cutting and pasting, and by graphic design programs such as Photoshop. He would also cover electrostatic machines that can detect handwriting impressions on sheets of paper which lie beneath the document in question, the use of light-boxes, microscopes and camera and computers to enhance, study questioned and reproduce documents, facsimile machines and alterations, that is, the terminal transmission identification line at the top of the fax machine and fax papers.

Most fax machines today use normal typing paper. In the 1980's and 90's, many fax machines used chemically

treated rolls of paper that tended to fade over time. I had one case whereby the copy of the fax was better than the original fax because that one was fading and became almost non-readable by the time the case came to court. Had we not made hard copies of the original faxes, our case would have fallen apart.

Retail outlets such as Home Depot, UPS and many department stores now rely on signatures placed on computer screens. These are stored and cataloged. As time progresses, the mechanics underlying these signature screens will become more sophisticated. Writing instruments are now being developed to provide data as to such criteria as grip placement, pen pressure and speed. Likewise, receiving screens are also being developed so that they can distinguish speed, letter design and pressure. Signatures created in this manner can then be emailed to anyplace on the globe and recorded digitally rather than as ink on a page.

In this way, fraud can be reduced considerably. It may be fairly easy for some forgers to create a pattern that greatly resembles the signature being simulated, but a forger can never also produce that pattern with the same speed and pressure as the actual author of said signature. It is reasonable to foresee a day when signatures created with special pens on sophisticated receiving pads may create a situation making it virtually impossible for a forger to simulate by free hand the writing of another person. In these instances, fraud would occur by tampering with the parameters of the equipment recording said signatures.

It is now customary for banks to destroy original checks and instead, store check signatures and endorsements on microfilm. This is a very dangerous practice for a variety of reasons. Even though documents signed digitally may eventually replace the traditional procedure of placing ink on a page to seal a contract, this is not the

case today. Legislation should be enacted to prevent banks from destroying original checks. In my 35 plus years experience, I have had hundreds of cases whereby the signatures and endorsements on checks is paramount.

Destroying these vital documents is bad business practice, akin to the absurd recent practice in elections of creating voting machines with no paper trail. It is a simple matter to maintain a tradition of keeping a paper trail, and one of the easiest ways is to insist to banks that they retain original checks, or mail them back to you, and also insist on maintaining the longstanding practice of signing documents with ink on a page.

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