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Some Aspects of Normal Behavior: Their Use in Understanding Problems Encountered by Document Examiners

It is unfortunate that in this country the need to separate the opinions of document examiners from those of graphologists has directed almost all handwriting research away from the areas of the behavioral sciences and toward the physical sciences. Because of this trend in research, little direct mention is normally made of the relationship of the behavioral sciences to document examination, although it is covertly mentioned in many papers. This attempt to pursue studies only in the pure sciences has placed a self-imposed limit of knowledge on document examination.

Lest there be a misunderstanding, it should be clearly understood that this paper does not suggest that progress in the field of document examination will depend on the adoption and pursuit of the techniques of graphologists. However, it does emphasize that there is much to be learned from a study of the behavioral sciences such as psychology and sociology.

It is the habit of many document examiners to jot down thoughts on paper as these thoughts occur to them, usually with the intention of working up something useful at some later date. However, this frequently does not work out. In this paper the author presents some of his random thoughts, partly for the purpose of getting them off his mind but principally for the purpose of motivating others to explore *all* of the sciences applicable to document examinations.

That there is no formal structure to this report will become immediately obvious. The thoughts contained herein are offered merely as notes and nothing more. The word "behavior" is not even defined; rather, it is used as a hospitable word of a diverse and all-inclusive nature.

Some Aspects of Behavior and the Act of Writing

1. Beauty is a quality seldom heard in other forensic sciences. Some handwriting may be classified as beautiful. In fact, the word "calligraphy" means the art of beautiful writing.

2. Handwriting most certainly reflects some aspect of the writer's personality. And that is about all you can say with assurance on a subject which has been remarkably blessed with numerous theoretical insights of dubious value.

3. Handwriting is in essence nothing more than a form of visual behavior, graphically recorded, and relatively permanent. It is the result of the writer's physiological, psychological, and environmental life.

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4. In observing and commenting on the behavior of another person, we can only say how he normally behaves. We can never say that he is utterly incapable of another form of behavior. Thus, in handwriting cases, identifying the author of a writing is easier than the process of elimination. Nevertheless, eliminations can be made when a reasonable and prudent examiner finds that any other explanation of a large number of dissimilarities are so glaring that it would require tremendous intellectual gymnastics to come to any other conclusion.

5. Since behavior at a particular time in a particular set of circumstances is unpredictable, it is extremely difficult to eliminate as suspects those individuals whose writing reflects about the same skill as that found on the questioned document, even though other characteristics are completely different.

6. An habitual action tends to become automatic, that is, to take place independently of attention. Few people can tell which shoe they put on first in the morning because the act is so habitual as to require no attention. Handwriting of the skilled writer is acquired through practice. The practice is continued until the exact movements can be executed unconsciously. When consciousness is applied to an activity which has become automatic the interference may become disastrous. This is an important point to keep in mind when examining "request" writings, since in executing specimens the subject usually becomes aware that his handwriting contains identifying characteristics. As the result of this awareness even the most cooperative subject may introduce some rare characteristics in his writing and the uncooperative subject's writing may be entirely unnatural.

7. The unconscious nature of habit is a significant psychological fact. It means that our particular handwriting is motivated by factors of which we are unaware and which we are unable to recall.

8. The act of writing is a semiautomatic act somewhat like the act of breathing. It is normally carried out without conscious thought, but it can be altered. For example, one can hold one's breath, one can voluntarily change the breathing pattern over a short period, but over the long run one's attention is directed to some other thought. It is important in collecting request writings to divert the attention of the writer on numerous occasions and in as many ways as practicable.

9. One does not outgrow handwriting habits. The tendency is to grow into them.

10. Can examiners use their present results to predict what will happen in the future (that is, how a person will write on the next occasion)? Since behavior can be modified at any time we cannot predict that an individual will continue to act in the same way. For example, a confirmed smoker may give up cigarettes or a nonsmoker may take them up. However, normally, a whole group of unassociated habits are not changed. For example, stopping smoking and changing the shoe put on first in the morning are unrelated. Thus, while a person may change his writing habits, he can be expected to keep his habits of arranging material on paper.

11. In attempting disguise the writer can be expected to revert to an earlier form of behavior, that is, re-adopt a letter formation previously used. Thus, in examinations involving possible disguise in a questioned writing it may be wise to look for samples written years earlier. This is particularly noticeable when capital letters are dramatically different.

12. In fatigue conditions the writer must resort more and more to habit in writing, and normal characteristics may reappear even when he is attempting disguise. This is also true of rapid writing.

13. In a specific situation a person is prone to do what he has done in that specific situation before. In psychology, this is called "propensity." Thus, in cases where the forger's name and the name being forged have some common letters, one may find that at the end of one series of letters another has been formed, in whole or in part, which reflects a letter found in the forger's true name.

14. Introjection is a mode of embracing in the personality elements that are admired in other persons. It may be thought of as the taking for one's own the feelings, attitudes, standards, restrictions, prohibitions, physical gestures, and characteristics of parents or parental figures. Thus, in addition to enjoying a neuromuscular system similar to our parents, brothers, and sisters, we consciously embrace graphic forms which we admire in members of our family as well as teachers, friends, and so forth.

15. Some people deteriorate or change dramatically with the years while others do not. Some writings change with the years and others do not.

16. Moving the pen off the paper permits the attention of the writer to be directed away from the act; thus, more variation can be expected to appear in the writing of numerals and in handprinting than in cursive writing.

17. One can induce an earlier form of behavior by having a person write with the weaker hand. This is true principally with letter formations, but is probably also true of such things as rhythm and line quality.

18. A transitory change in characteristics may be injected into handwriting by temporary physical and mental conditions, such as fatigue, nervous tension, and intoxication or severe illness, from which the writer ultimately recovers. In these cases, handwriting reverts to its normal qualities after the causes of the deterioration are removed.

19. Writing is a function of the central nervous system. Thus, any substance which affects the central nervous system will effect the writing, for better or worse.

20. One must observe behavior over a period of time. One cannot determine a person's normal behavior based on a single check at one point in an individual's history. Thus, in handwriting examinations and unlike fingerprint identifications, one needs more than a single standard for comparison.

21. Training produces its effects on habit systems without leaving any explicit memories. The automaticity of habit is an important feature in mental economy. However, habit works against us as well as for us and bad habits can become second nature as readily as good ones. Thus, some individuals not only do not remember how they arrange their material on paper, but do not know that these habits of writing might be wrong or, at least, unusual.

22. Strong emotional stimuli may produce disorganized responses in some individuals. Thus, some subjects in executing request writing may appear to be intentionally distorting their writing when in fact their erratic writing style is due solely to the inability of the subject to function normally in a stress situation.

23. The melody of a musical score does not depend on the parts but on the structure, for the parts may all be changed by transposing to another key, and yet the melody remains intact. The parts have been altered, the whole is still the same. Changing the angle of a writing is nothing more than changing the key. The handwriting is still identifiable.

24. Perseveration is the tendency to repeat or continue an activity. Thus, when an individual starts to write there is a momentum involving inertia which impels him to continue the same habits throughout his life.

25. Practice results in improving any motor skill, thus the flat statement that no one "can write better than his best" is erroneous if there is time and effort available for practice. However, even after the expenditure of time a writer will return towards his norm when the time and effort expire.

Some Aspects of Behavior Relating to the Document Examiner's Experiences

1. Joel L. Leson's recent unpublished thesis [1], "The Education and Qualifications of Questioned Document Examiners," is possibly a biased sample. Nevertheless, personal experience suggests that the data contained in the study is probably reasonably

representative of the population falling under the caption "Document Examiners."

A look at the examiners surveyed by Leson indicates that almost 80% are over 40 years of age and about 50% are over 50. It is a maxim in business, science, art, and other branches of life that if a man is going to be creative, or if he is going to make any lasting contribution to his field of interest he will do it (or, at least, show the potential) before the age of 40.

Leson's data indicates that 70% of those surveyed work for governmental agencies. These are usually low-pressure jobs that require little imagination and are incentive-discouraging situations. The status of examiners in the system is usually dependent on seniority and not ability.

A characteristic of youth is an unwillingness to accept statements and precepts based on the opinions of those in authority. They want to know why things are as they are. They have innumerable interests. However, the middle and older years are characterized by a narrowing of interests and a lack of concern for why things are as they are. The data presented by Leson indicate a danger to the field of document examination and suggest that it is quite possible that the discipline may die from the inertia of old age and security.

2. In studying the major subjects pursued by many of the older examiners, I am somewhat surprised at the number whose major is listed as mathematics. At times I think there may be something of significance in this fact, but then I recall how little employment there was for mathematicians 35 years ago.

3. There is a need for closure in one's thinking. To live in a state of suspended judgment is most difficult.

4. It is a common thought that belief starts at some neutral place and proceeds in some continuous flow to an end result such as towards innocence or guilt, or, in document examinations, towards identity or nonidentity. If this were so, we should never reach the other side, as in the illustration that Achilles cannot cross a room, for before he crosses R he must cross $R/2$ and before he crosses the remaining $R/2$ he must cross $R/2/2$ and so on, leaving a fraction always to be crossed. The answer may be found in the fact itself, which goes by strides or jumps (Achilles does not stop to recognize the perpetual fraction left). Thus, it is important to remember that in forming judgments we are not flowing towards a conclusion but rather we are proceeding in discrete steps. The difference between the competent and incompetent document examiner is probably in the size of the last step he is willing to take prior to forming a final judgment.

5. It is wonderful to be a reasonable creature, since it enables one to find or make a reason for everything one has a mind to do.

6. Once an action has been ingrained by long practice, it tends to persist in the same form (perseveration) even though the environment which first evoked the response may have changed radically in the meantime. This inertia in the form of social pressure is a powerful force in keeping us in line. Conformity is usually the easiest way out. The desire for approval and the fear of disapproval combine with other factors to encourage the inertia which comes naturally to us.

7. When any group is formed one of the first tasks they set themselves is to establish laws intended to keep out others. Keeping applicants out of the Academy and similar learned societies for any reason, however valid, bars the neophyte from the trade secrets of the profession, isolates him socially from his colleagues, and in instances where he might need their support, forces him to face personal attack alone.

8. A serious drawback to document examiners is the inadequacy of language as a medium of description. Take the work "rhythm." What does it mean to you and what does it mean to others? Yet, by using techniques of experimentation found useful in the behavioral sciences, the degree of rhythm found in a given writing can be measured and, within the limits of probability, agreed on by a number of observers. Thus, document examiners in evaluating any quality in writing will be in fundamental agreement.

9. The expression which is bothersome when talking to those dabbling in our profession is that "We only give opinions in small check cases when the amount is about \$10.00 or \$20.00." This is akin to an individual dabbling in medicine and justifying it on the premise that he only treats the lower economic strata of our society and not those in the upper or middle sectors. There is no relationship between the amount involved in an investigation and the complexity of a case.

10. The person-to-person aspects of some cases may result in a bias for or against the individual submitting the case, particularly if the individual is obviously emotionally unbalanced or has an irritating personality.

11. Examining writings in foreign alphabets and scripts may lead the unwary experienced examiner to make the same kinds of mistakes that a novice examiner may make in the examination of domestic systems of writing.

12. Given a part of a familiar whole, the individual completes the structure himself, usually unconsciously. For example, familiar forms of "a" and "o" may be ascribed to foreign writings when overlapping lines are involved. Further, there is a tendency to fill in blank spots in examining writing in the normal reading position. Turning the writing upside down as well as sideways causes these blank spots to stand out and become more easily recognizable. Attending to one thing means diverting attention from another. In looking at a jigsaw puzzle the design of the cutting is not apparent when the completed puzzle is picture side up; indeed, it is practically impossible to select out the cutting design. If the puzzle is turned up side down, the clear prominence of the cutting design is very striking.

13. If identifications are based on the examiner's subjective judgment of the probability that two characteristics would occur by chance in the general population, then it follows that he must have a good memory. We should test memory in picking candidates for training in our field of study.

14. Opinions of document examiners are based on their private assessments of the chances that combinations of particular characteristics would be duplicated in the handwritings of two different individuals. These assessments are founded on the individual examiner's subjective concept of probability which in turn depends on his personal experiences and maturity of reasoning. The greater the number of judgments the examiner has to make and the frequency with which he makes them, the more his subjective estimates of probability will resemble mathematical expectation. Thus, the judgments of those dabbling in the field are quite apt to be wrong. This can also be true of the qualified retired examiner who forms only a few judgments a year in selected cases.

15. In arriving at opinions in handwriting cases the document examiner must form judgments concerning the sufficiency of the evidence presented to him. This involves a certain amount of risk since his judgments and the liberty of others are intimately connected in most cases. In agencies having a large volume of business, the examiner should be aware that habitual risk-taking breeds contempt and must vigilantly maintain his standard of sufficiency of evidence. He should realize that it is extremely difficult for anyone to concentrate his thoughts for hour after hour, day after day, on the same type of task, without becoming somewhat contemptuous of the perils involved.

16. The premise that progress in document examination will depend solely on employing techniques of experimentation and measurement useful in more formal branches of science is not exactly logical. In most examinations of handwriting, it is more important to form a judgment about similarity and difference and their significance than it is to make precise measurements. Similarities and differences in handwritings can be seen by any person with normal vision; judgments of the significance of these similarities and differences are the peculiar stock-in-trade of the document examiner.

17. When no one checks our opinions on a day-to-day basis the result may be carelessness. If one is tested from day-to-day one is more cautious. For example, a good cross-examination makes one cautious for weeks thereafter. A document examiner

who is cautious may merely have a better memory of his last cross-examination than his less cautious colleague.

18. When a case is bothersome for any reason, one may put it aside and take an inordinate amount of time to do it, or one may rush it back to the contributor to stop thinking about it.

19. Impressionability decreases by adaptation, especially when fatigue is involved. Thus, it is best not to push a case through to a conclusion when tired.

20. When the investigative aspects of a case indicate that a limited number of suspects could have prepared the questioned writing, there is a tendency to say to oneself during the examination that one of these individuals executed the writing. This tendency unconsciously hampers true objectivity since one is apt to look for that author whose writing is most like the questioned material, when in fact the actual author may not be among the suspects at all.

21. The difficulty with many forgeries is that the forgers have picked the signature to pieces but have forgotten the whole. The same mistake often occurs with the novice examiner.

Behavior As It Relates to the Testimony of the Document Examiner

1. Inconsistency is hard to understand. Thus, it is difficult for the average juror to understand variation in handwriting. People are more easily convinced when there is a lack of variation than when there is great variation.

2. The data with which we deal are subjective. Yet some attorneys further complicate the work of document examiners by desiring testimony on qualified opinions. These opinions are in turn the subject of subjective interpretations by those responsible for taking some action. Qualified opinions may not only shake the belief placed in definite opinions but may offer the examiner rendering one an ability to rationalize that he wasn't wrong in that he didn't say "yes" or "no."

3. The jury normally has a problem paying attention to the lengthy testimony of the examiner. The size of a photograph will have attention-getting value. However, there is the factor of diminishing returns. A $\times 10$ photographic enlargement at 10 ft (3 m) will not have five times the value of a $\times 2$ enlargement at 18 in. (457 mm). However, the former type of chart, when combined with the use of a pointer of some kind, will permit the examiner to introduce the aspect of movement to his demonstration. This is not only the behavior he is trying to demonstrate but, since moving objects are more apt to catch attention than stationary ones, it is more probable that the jury will pay attention to his testimony.

4. A stimulus which escapes attention at first ultimately is attended to if repeated. It is well to repeat some aspects of your findings to the jury. However, too frequent repetition will cause negative adaptation.

5. Insights come in meaningful structures or forms rather than in meaningless pieces—the parts are there but they belong to wholes. The characteristics of the parts are influenced by the total pattern. Thus, in testimony, always begin with the "pictorial image" or the "general impression" of the writings being considered, relate each part to the whole and conclude by again emphasizing the overall similarities in general form.

6. Hilton [2] states that:

In ... a document problem, it is necessary to establish a sufficient number of identifying attributes in common between the known and questioned specimens so that the chance of their having originated at two different sources is so unlikely that for all practical purposes it can be considered nonexistent.

In mathematics this is called "The Probability of Chance Occurrence." However, there

is another mathematical formula which deals with the "The Probability of Duplication." Consider the following statement from Ref 3:

Given 23 people selected at random, what is the probability that two of them will have been born on the same day of the year? It generally comes as a surprise to find that there is better than a 50% probability of such an occurrence. And, if we increase the number of people in the group, the probability of two people having the same birthday increases at an amazing rate. With 30 people, it is 71%, and with 50 people it is 97%. In this latter case, one might say that for all practical purposes it is certain that there will be at least two people born on the same day of the year.

During cross-examination, the opposing attorneys will emphasize the probability of duplication and ignore the probability of chance occurrence while the examiner does the opposite.

Summary

The premise that progress in document examination will depend on employing techniques useful in the more formal branches of science is not exactly logical. The correlation between the work of the document examiner and the behavioral sciences has been discussed by presenting some random thoughts which have occurred to the author over a period of years.

The suggestion is made, by illustration and implication, that the unfortunate connotation of the word "behavior" with the word "graphology" has tended to direct the attention of document examiners away from a study of the behavioral sciences, a branch of science from which much can be learned. The fact that the subjective concepts of probability formed by the mature document examiner will approach mathematical expectation has been noted.

References

- [1] Leson, J. L., "The Education and Qualifications of Questioned Document Examiners," unpublished Master's thesis, George Washington University, Washington, D.C., 1974.
- [2] Hilton, Ordway, *Scientific Examination of Questioned Documents*, Callaghan and Co., Chicago, 1956.
- [3] Cohen, John, "Subjective Probability," *Scientific American*, Vol. 197, No. 5, Nov. 1957, pp. 128-133.

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