ON THE PSYCHODIAGNOSTIC VALUE OF HANDWRITING ANALYSIS

WILLIAM R. PERL, CAPT., M.S.C., FORT LEAVENWORTH, KAN.

The Psychological Rationale of Handwriting Analysis

The value of handwriting analysis as a psychodiagnostic tool is based not only on the theoretical assumption that an individual is essentially self-consistent and that such self-consistency is reflected in one way or the other by all his behavior and actions, it is more specifically based on two facts which are almost self-evident, but which were investigated and proven correct experimentally: (1) Handwriting is at the same time a product and a permanent record of a person's highly individualized motions. (2) There is an intricate and interpretable relationship between an individual's motions and his emotions.

The existence of a correlation between motions and emotions is the premise for much of what we call "clinical observation," whether we diagnose a patient as euphoric or depressed, manic or catatonic, is certainly influenced by the motions we observe.

The question of the individuality of handwriting was experimentally investigated and statistically confirmed, but for a long time prior to these statistical studies, its existence was common knowledge and one of those facts which just work. We see it daily when we look at the mail we receive, when we present a check to the teller at the bank, who knows exactly that there is only one person who could have produced the motions that resulted in the signature of his customer. The smooth working of our whole economic system, as well as our civilian and criminal legal procedure, depends largely on the correctness of the assumption of the strict individuality of handwriting.

The psychological reason for this generally accepted and utilized individuality of handwriting is rooted in the fact that handwriting is self-recorded behavior in a structured situation.

1 Chief Clinical Psychologist, United States Disciplinary Barracks, Fort Leavenworth, Kan.

The structure within which the individual behaves while writing is provided by the requirement for a minimum legibility within the framework of the national alphabet. It is furthermore influenced by the style which the specific cultural era, in line with its psychological characteristics, employs in the use of this alphabet. Why certain cultures develop their specific alphabet, what the formations thus produced express, as well as the investigation of historical changes of alphabets, makes a fascinating study, but it is mentioned here only to stress the value of expressive movement as recorded in handwriting.

Within these limits, provided by the requirement for a minimum legibility and by the national alphabet, influenced by its contemporary styling, it is left to the writer to form and connect his strokes and to distribute the available writing space in the course of his actions.

Next to language, movement of our body or its parts—gestures—is our most common means of expression. In the development of the human race expression by movement preceded the use of organized language, and the same is true of the development of the individual. In times of emotional shock one might lose his ability to express himself by language, his "tongue freezes" temporarily, and he regresses to the earlier, as it seems, more deeply rooted, state of expression by gesture. It is not a premise for the validity of the expressive and projective values treated herewith, but it is quite possible that, because our earliest reactions were freely expressed by movements, the expression by movement continues to be more free, less inhibited than verbalization.

Even after the use of language has been well established, the individual—as did mankind in its development—continues the use of movements as means of expression. Gestures may be conscious, intended to support the word, or they may be unconsciously produced, sometimes even against our will, be-
traying the untruthfulness of the spoken word.

When man learned to preserve the meaning of language, first by using drawings as his notes, later by using the symbols of letters, language had gained its decisive preponderance over expression by gesture. The gesture remained spoken into the wind—and gone with the wind. Now, in the decades of widening use of projective and expressive techniques, it is well to remember that handwriting does not only convey the content of the written word; it is, at the same time, a product and a permanent record of our movements. It is, to use Allport's and Vernon's expression, "crystallized gesture."

That our mental processes influence our movements was demonstrated first, as it seems, by M. E. Chevreul in his famous experiments with a pendulum. These simple experiments can be easily repeated by anyone. A subject is handed a ring which is suspended from a hair and he is requested to hold the other end of the hair motionless between his fingers. He is then asked to think, without looking at the ring, that it is moving, prescribing a circular movement. The ring will, as an effect of the subject's thought-produced motions, start moving in a rotary fashion: clockwise when the subject thinks of that direction, counterclockwise when he imagines the opposite direction. Chevreul reported that the perception of such effect increases the movement. This principle should increase the expressive value of handwriting, as we observe our movements and their record while we write. Later studies went into numerous other details in investigating the connection between mental processes and movements. The most important experimental investigations are the studies by Allport and Vernon, Lewinson, and Zubin, Saudek, and the various publications by Wolff.

The word "handwriting" is thus a misnomer. Our hand does not write; it is a tool used for the double purpose of consciously communicating thought content and unconsciously expressing personality. Instead of this tool, other tools, other parts of the body, can be used and are used, and because they are expressive of the same personality they are bound to produce the same graphic record. Those patients who become unable to further use the hand with which once they wrote or who lose the use of both hands will, after a relatively short training, produce essentially the same letter formations as before, now with their other hand or by holding the pencil between their toes, or in their mouth.

**With Right Hand**

*I was only twenty that

Sheepfolds ministered one Sunday to

A captive in Battle

Horatio Nelson

May the God of Battles

Create my Eminence

With success

Lord Nelson*

**Left Hand Ten Years Later**

FIG. 1.—Specimen of Lord Nelson's handwriting showing similarity between left and right hand. (Original size.)

The writings in Fig. 1 originate from the same person, and exactly because on first glance they do not appear similar they were chosen to demonstrate the principle of essential consistency of handwriting. Both were produced by Horatio Nelson. The upper writing is a product of his right hand; the lower was written 10 years later with his left, after Nelson had lost his right hand. Saudek, in a quantitative study of numerous handwritings, established that the element most consistent and, therefore, most difficult to falsify is the exact individual relation between the upper length and the lower length of letters. In fact, this relation between the length extending above and the length extending below the line does not change at all. A quantitative consistency in the organization of the available field of action—spacing of letters and words—tooke, was found. However, these two Nelson writings show, in addition, *identities* that can be seen without microscopic measurements, by pure inspection. Comparison is made easy as the 2 specimens contain one almost equal word: "battle," with 6 letters in the right hand writing.
and "battles," with 7 in the specimen produced by the left hand. In both specimens:

1. The "B" is written like a "13."
2. The "i" in the "13" is larger than the subsequent "i."
3. The writer interrupted completely after the "B," while the rest of the writing is completed without further interruption.
4. The distance between the "a" and the following "i" is longer than any of the following interword distances.
5. The first "i" is larger than the second.
6. The second "i" has no "i" bar of its own.
7. The "i" bar of the first "i" forms a tangent, which exactly touches the top of the second "i."

Numerous other absolutely equal movements were produced, but those described should suffice to impress the fact of individuality of movement pattern, the more so as 10 years elapsed between the writing of the 2 specimens, years filled with adventure and battle, and the 2 specimens are produced with different hands.

Such identities of movement pattern, produced by different groups of muscles and separated by many years prove more conclusively than anything else that deeply rooted central dispositions in personality play an important part in the formation of handwriting.

In the past decade the theory and development of situational tests have received considerable attention. Handwriting analysis is not only, but it is also, a situation test. The test material is most easy to procure and the test itself is, quite paradoxically, self-administered, without the testee's knowledge. Every single letter we write contains numerous individual situational problem solutions. Whenever we have to draw a line we are faced with the problem of connecting two imagined points. To mention just some of the interpretable behavior: whether we solve this problem by drawing a straight and firm line, clearly shooting toward the aim; or whether we connect these points with a hesitating and wavy stroke; whether we seek the shortest solution; or, for the purpose of appearance, lose ourselves in detours and delight in intricate embellishments and flourishes; whether we put letters firmly and largely into the available space; or produce small letters with weakish pressure, is a recorded outcome of our behavior in this continually fluid and changing situation.

Thus, handwriting analysis as a situation test has the advantage over other such tests in that the behavior is not only self-recorded but, in addition, is a test of behavior in numerous situations which, like the ribbon of a film, flow by the writer's eyes as his pen moves across the paper. There are numerous ways of forming and shaping a stroke, many ways of connecting strokes with each other. Also, the subject might write with large letters or with small ones, with rising lines and soon his letters might become small and the lines show a declining trend. If one combines all these possibilities of individual behavior within the framework of the school copy, one arrives, because of the combination of numerous possibilities, at astronomical figures.

This individualization and deviation from the stereotype school copy starts with the very first writing lesson in grade school and it never ends. In this very first lesson we can see the teacher instructing all the children by the same method; they all use the same writing material. Yet, one child will use up the whole writing space with a few bold strokes, while another, expressing his personality, will hide his weakish and wavy lines in one corner of the space. One writes with meticulous care, thus displaying compulsive elements; while the other one will not care for the details, solve the problems carelessly with untidy result. Increased facility in writing and the differentiation of personality increase the potential for individual expression. Therefore the more intelligent, mature, and original the writer, the less strict will be the adherence to the school copy.

Some Psychodiagnostic Aspects of Handwriting

The Individual and His Lifespace: Pressure and Counterpressure

Pressure in handwriting is, psychologically seen, the graphic record of our reaction to the resistance created by the friction between paper and pen. In his effort to overcome this resistance, the individual's pressure may be applied in a consistent manner, or it may increase towards the end of strokes or words. It may diminish or fluctuate, resulting in irregular pressure. The endeavor to go ahead may block when facing certain tasks. The
resulting blocked pressure may show when the writer is confronted with the need for a complete turn of direction, or for a dive into a deep form valley, or when the pen climbs to a peak.

Graphic pressure in drawing and painting, as well as in handwriting, is often interpreted as a sign of "energy." Psychoanalytical handwriting analysts in particular describe pressure as the graphic expression of libido. In the widest sense, pressure is indicative of application of "energy" in some way, but it cannot be said that it is an expression of energy in the sense of strength. Whether it indicates organized application of strength, or is a product of the frustration and tension of a neurotic, has to be understood by looking at pressure as one kind of solution in the test of writing. Particularly Klages and Pulver probed this aspect of writing. The way a person deals with the problem of the obstacle of friction is considered one indication of his method of dealing with obstacles. He may react by increasing his pressure, by using increased force to move his pen, and such increase might reach the point of brutal damage to the paper. On the other hand, he might try to avoid the difficulty, by reducing the pressure, to experience less friction and to move the pen with more ease. The extreme case of such test reaction, or test solution, is the pen which easily "dances" across the paper, producing lines so thin and lacking in distinctness that they are almost invisible. Such a writer in this situational test has exhibited—and himself graphically recorded—full subordination of his own desires for expression to the requirements of the surroundings.

Yet, it would be erroneous to assume that the writer who treated the paper so forcefully—and brutally—is a forceful personality. Such performance might very well be the result of confused and disorganized behavior in the face of a problem and, therefore, actually indicate weakness instead of strength. On the other hand, weak pressure might be the record of the expressive movements of a subject who will not waste his energy in blind attacks but adapts himself to the opportunities, marshals his strength, and employs it in organized attack, where the aim cannot be reached without it. The general rule of expressive and projective techniques, that one response derives its meaning only in connection with the general constellation in which it is found, is particularly true in the analysis of handwriting because of its extreme complexity of possibilities of expression. Especially we cannot assess energy from the pressure in handwriting without studying the subject's ability to employ his strength in an organized way.

**THE SELF CONCEPT IN HANDWRITING**

It is an accepted assumption that, for example, in children's drawings the size of the figure the child draws of himself, its relative position to the surrounding figures, and other characteristics of the drawing are quite indicative of his self-concept. The drawing of the letter "I" invites the same identification procedure. Subjects who view themselves as weak and insecure unconsciously reveal this when they write. They do not dare to put down a forceful, heavy-pressed, and rhythmically easily produced "I." Their "I" will lose in relative size when compared with the surrounding letters; it will not reach as proudly up as the "I," the self-portrait, of a subject who views himself with self-confidence and invites inspection—and maybe even admiration—of himself. An "I," symbolized self-portrait of a subject of low self-esteem, might lose not only in height but also in pressure or seek the protecting nearness of neighboring letters.

Signature, however, has an additional psychological meaning, exceeding the one of the letter "I." While writing the context a subject feels relatively unobserved (if he does not write knowingly for analysis purposes). When, however, he comes to draw his signature, he feels that he is putting himself into the limelight. The signature is on public display. In the document he will write more or less in his natural way, while in the signature he will feel inclined to present himself in the way he wants to appear. Differences between writing characteristics in the signature (larger or smaller size, showy embellishments versus functionally simple formations, firm versus wavering strokes, etc.) are, therefore, particularly revealing.
Fig. 2.—Developmental change in Mussolini's signature. (Original size.)

Fig. 2 shows developmental changes in Mussolini's signature. The top signature was written when he was a fairly unknown journalist. The middle one, just after he came to power. (Notice, besides the increased size, the omission of the first name. Dictators and gods have one name only. Napoleon, Hitler, and most persons who gained dictatorial power dropped their first names after they achieved such status.) The last signature was written after Mussolini, in an attempt to assure himself a large slice of this world's surface, joined the Germans in the war against the Allies.

Even more specific unconscious projections of the self-concept are found in handwritings. When a child will draw himself as a roaring tiger or as a frightened rabbit, most psychologists will not hesitate to adjudge considerable projective meaning to it, particularly if the subject continuously produces the same identification. In our daily life we are meeting with hundreds of such graphic identifications; yet, in spite of their projective value, we do neglect their interpretative possibilities.

Fig. 3 shows the signature of the Dutch naval hero, Marten H. Tromp, who in the days of Oliver Cromwell destroyed both the Spanish and the Portuguese fleets and came close to dealing the same fate to the British navy. He was known "to live on sea only." His flagship, of whose performance he was exceedingly proud, was his home. The identification is quite obvious.

But one does not have to go back to his-
He is quite "Fox conscious," as shown by the fox tail in his signature. Yet, he was surprised when made aware of it by the writer.

Many such unconscious projections in handwriting are quite amusing, exactly as amusing—but not less revealing—as it is to observe a child again and again draw a picture of his family and, for example, putting a heart into his father's but not into his mother's chest.

A DIFFERENTIAL DIAGNOSTIC INDICATION IN PSYCHIATRY

The understanding of the dynamics of a patient can, as outlined above, be greatly facilitated by the analysis of his unconscious graphic expression and projection. Handwriting analysis is often called a projective technique; however, it by far exceeds the possibilities of both a situation test and a projective technique. It has, in addition, an aspect which it shares only with such objective devices as the electroencephalogram or electrocardiogram. Handwriting is the result of a brain wave; it is the transformation of a symbol into motion recorded on paper.

Physiologically seen, writing is produced by the binding and releasing tendencies of the muscles. The relation between binding and release constitutes the rhythm of handwriting. All the other specific handwriting characteristics, like size, pressure, slant, etc., are interwoven into this rhythm. It interrelates them all. Disturbances of this rhythm, which is essentially the balance between muscle release and tension, are recorded on writing paper, much like the electroencephalogram or electrocardiogram. The study of minute disturbances of rhythm has yet hardly started, but somewhat grosser irregularities are by now interpretable, with a good systematic presentation of the problem provided by Sonneman.

If we combine the study of handwriting as a behavior pattern with its study as a rhythmic change of tension and release, we can take the catatonic schizophrenic as an extreme case of binding, the actually manic patient as an extreme case of release.

The affective disorders, mania, hypomania, and the various kinds of depression, to the degree to which they can be at all differentiated from schizophrenic disorders, show whatever difference exists in the quality of rhythmic disturbance. In line with the different dynamics, the writing of the manic does not record—as that of the schizophrenic does—disintegration. It does not show the turmoil of disorganizing conflict between the impulses of flexion and release. The manic's writing is characterized by the exaggeration of its dimensions and its directions, but not by a disturbance of rhythm. Rhythm, to the contrary, appears easy flowing and even accentuated. The manic's writing is often aesthetically pleasing.

As we know, genius is sometimes manic. His writing (Fig. 5) confirms that Beethoven, the man with the wild-flowing hair, who in the last century was so often seen running through the streets of Vienna laughing and singing, whistling and wildly gesticulating, bumping into people, that this genius was what professional biographers diagnosed him—a manic-depressive. Equally, the motions recorded in Charles Dickens' handwriting (Fig. 6) support the biographers who diagnosed him as a manic-depressive.

In the manic-depressive psychosis, depressive type, we observe the increase of binding, with falling lines and toppling-over of letter formations, without disturbance of rhythm. The script flows slowly but rhythmically.

Fig. 5—Handwriting of Beethoven indicating manic-depressive characteristics. (Approximately one-half original size.)

Fig. 6—Charles Dickens' signature showing manic-depressive traits. (Original size.)
The depressed schizophrenic (Fig. 7) will not show just an exaggeration of binding tendencies, but also conflict between binding and releasing, with the binding predominant in a dissonantly deteriorated rhythm.

Depending on the form of schizophrenia, the schizophrenic's writing might also show—but not necessarily—exaggerated dimensions. Altogether, congruent with the dynamics involved, the schizophrenic’s writing has an essentially disintegrating centrifugal quality, the cyclical one is essentially centripetal. The schizophrenic's handwriting, because of the deteriorated rhythm, gives it the distinct feeling of being brittle, the cyclical of being more pliable.

**SUMMARY**

The basic psychological rationale of handwriting analysis is rooted in the essential self-consistency of human behavior and more specifically in the fact that handwriting is a product and, at the same time, a record of highly individualized motions. The rationale is furthermore based on the existence of a correlation between our motions and emotions. The individual's intrapersonal consistency in hand writing is discussed and 3 methodological approaches to the analysis of handwriting are, proceeding at different levels, distinguished, with their findings merging into one final analysis.

1. Handwriting analysis as a situation test: the individual's behavior and its dynamics in the structured situation of handwriting are analyzed, the structure being provided by the contemporary national alphabet and the requirement for a minimum legibility. As an example of the numerous possibilities of interpretation, the dynamic significance of the application and distribution of pressure is discussed.

2. The graphic character of the activity provides numerous possibilities for symbolic expression. As an example of this, the symbolic expression of the self-concept is discussed and demonstrated by samples.

3. Physiologically, handwriting is the result of muscular contraction and release. Disturbances in the quantity, direction, and balance between contraction and release, and the resulting rigidity and deterioration of rhythm in psychopathology are discussed and a diagnostic indication between cyclical and schizophrenic disorders is pointed out.

It should be stressed that many of the potentialities of handwriting analysis are still in their early development, though some of them have been more fully investigated than can be discussed within the limits of this paper.

Two specific results of the uniquely easy availability of the test material should at least be mentioned. One is the preventive value. Often a casual inspection of a handwriting might cause justified suspicion and result in further psychiatric and psychological investigation.

The other, and even more singular, potential was purposely hinted at by introducing the writing of historical personalities. Those who lived long before other psychological tests could be administered left behind them in their handwriting a record which provides the possibility of a test-based psychological evaluation. The clinician can, therefore, be helped to a more objective understanding of such figures in a patient's life who have long been deceased. Handwriting analysis opens new vistas to the understanding of men and women in history.

**BIBLIOGRAPHY**