

Dancing pen: The ultimate test of graphically matured skilled writer

MOHINDER SINGH

ORCID: 0000-0002-2649-1616

Former Government Examiner of Questioned Documents
Central Forensic Science Laboratory, Hyderabad, India

OM PRAKASH JASUJA

ORCID: 0000-0002-2221-1242

Department of Forensic Science and Chemistry, Chandigarh University, Punjab, India

Abstract

Unconscious and automatic rhythmic production of handwriting by graphically matured skilled writers through perfect synchronization of muscular body parts is an activity that resembles a pen dancing on paper, analogous to a dancer performing on stage. This analogy can lead to beginners in the profession better understanding the complex and intricate writing process.

There are several routine activities requiring various complex co-ordinations of mental, sensory, and motor factors by humans, such as walking, talking, writing, dressing, drawing, sewing, using a typewriter, playing a piano or violin, riding a bicycle, driving a car, handling a tool, a tennis racket, or a golf club, etc., which are performed habitually, unconsciously, and automatically once they are learnt and practiced. One of these activities is (hand)writing, which is a complex learned motor behavior generally developed in a person in three stages: formative, impressionable, and graphic maturity. The stage of “graphic maturity” is finally reached when the writing has fully developed, resulting in unique individual characteristics that become habitual in execution, most of which remain relatively constant throughout much of the writer’s active life. The complexities and intricacies of the writing process can be better understood by a beginner in the pro-

fession by comparing it with dancing, which is also a similar activity requiring perfect synchronization and coordination of all the body parts involved in the exercise.

Keywords: handwriting, dancing, neuromuscular coordination, graphic maturity, rhythm and harmony

Introduction

There are several routine human activities, such as walking, talking, writing, etc., which are performed habitually, unconsciously, and automatically. One of these activities is writing, which is a complex learned motor behavior, generally developed in an adult after three stages. During the first stage, called the “formative stage,” handwriting acquisition begins, letter designs are being learnt and practiced, and writing skills are slowly, steadily developed. In the second stage, named the “impressionable stage,” writing skills are further refined and mastered, but the master patterns of letters and writing characteristics are still being developed. During this stage, it is common for the writer to be influenced by some other sources, such as a parent or a role model. The writer will try and imitate someone else’s writing and as a result, the changes in some of the letter formations that occur may be quite pronounced. The third stage, the “graphic maturity,” is finally reached when the writing has fully developed, resulting in unique individual characteristics that become habitual in execution, most of which remain relatively constant throughout much of the writer’s active life. Because handwriting execution becomes habitual and unique to the writer, the questioned handwriting on a disputed document can be identified by a forensic document examiner in comparison with known handwriting samples of the suspect in accordance with the principles of handwriting identification.

Morris¹ has described several conditions that must be satisfactorily fulfilled for a person to be called a graphically matured writer. Osborn² has described several human activities requiring perfection in neuromuscular coordination, which are routinely performed habitually, unconsciously-

¹ R.N. Morris, *Forensic handwriting identification: Fundamental concepts and principles*, San Diego, CA 2000, pp. 1–18.

² A.S. Osborn, *Questioned documents*, Chicago 1929, pp. 98–99.

ly, and automatically. He has also stated some interesting analogies between writing and speech as well as dancing. All such human activities, including dancing and handwriting, require concerted efforts that aim for perfection in body–mind coordination for an optimum level of performance. Once the ability to write with perfect neuromuscular coordination has been achieved through various stages of handwriting development leading to the final stage of graphic maturity, and all body parts involved in handwriting activity start working in tandem with perfect rhythm and harmony, it can be seen and felt by an independent observer that the pen begins to dance over the paper with the same modulation and frequency, which is certainly a moment of satisfaction and joy for the writer. In reality, writers are dancers at heart; we sway to the words, we feel the meaning we wish to express, and we (write and) type to a rhythm with every piece of act we perform.

The main purpose of writing this article is to draw an interesting comparison between some of the human activities such as writing, talking, dancing, etc., for a better understanding of the handwriting process, which has been rightly described as a “neuromuscular controlled motor activity” by several authorities on the subject.

Graphic maturity considerations

Levels of graphic maturity

As stated by Morris,³ there are different levels of graphic maturity, each governed by a number of different factors working together. Following the existing “impulse system,” which is a basic concept in understanding graphic maturity, there could be several levels or stages of graphic maturity.

An immature writer, i.e., a child learning to write, uses separate pen strokes to draw a letter [stroke impulse]. As his graphic maturity level increases, he moves from writing with a stroke impulse to writing with a letter impulse. At this level each letter is written as a complete unit [letter impulse].

The next levels are the syllable and word impulse levels. Here, he knows how to write combination of letters as a single unit [word impulse].

³ R.N. Morris, op. cit.

The highest level is the sentence/phrase impulse level. The writer, at this level, thinks and attempts to write in complete sentences or phrases; however, he finds that sometimes his thoughts are ahead of his pen, therefore, he goes on to enhance and refine his skill level further.

Criterion of graphic maturity

A writer is usually considered to be graphically matured when they have developed a full command over the writing process; they only remain conscious about the subject matter that is to be written, and more or less remains unconscious about the writing process itself – that is, how to write and what to write. Morris⁴ has described several conditions that are to be met satisfactorily for achieving the desired level of graphic maturity:

- The writer has no doubt whatsoever about the form and movements necessary to write a letter.
- The writer has complete control of the pen and writing surface and there are no mechanical problems offered by either of them.
- [...] there is no transitory or permanent factor affecting the writer's ability to write.
- [...] there is no doubt on the part of the writer as to the legibility of the writing, relative pressure habits used to write the letters, relative spacing habits between letters, words, sentences, lines, paragraphs, the size and shapes of margins, etc.
- [...] the writer is comfortable with the language and writing system, he is writing.
- [...] they do not change from one language or writing system to another within the text of the writing.
- In summary, any act or occurrence of anything or event on the writer that causes him to pay more attention to the way he is writing than what he is writing will affect the writer's level of graphic maturity.

Limitations of graphic maturity

- Not all writers necessarily reach (or touch) the highest level of graphic maturity.
- Some psychological and physiological constraints and several limitations due to a lack of adequate interest, poor memory of letter forms, language, and grammar could restrict the level of graphic maturity of a writer, beyond which no further development in writing skill usually takes place.

⁴ R.N. Morris, *op. cit.*

– Individual weakness or imperfection in the acquired art or skill of handwriting, together with peculiar departures from the copy book forms, may lead to individualization of handwriting within the acquired level of graphic maturity, differentiating it from many other writers.

– Every writer acquires their own level of writing skill and graphic maturity; individualization takes place within those constraints and at that level only.

Automatic and unconscious handwriting production

All the conditions of graphic maturity, as stated above, are consistent with the automatic and unconscious production of free, fluent, and natural writing by perfect neuromuscular control of reflex process. As stated by Osborn:⁵

Writing is the result of a very complicated series of acts, being as a whole a combination of certain forms which are the visible result of mental and muscular habits acquired by long continued, painstaking effort. [...]

Developed, natural writing is an almost automatic act that follows the fixed grooves of habit, but as soon as attention is given to it, it necessarily becomes strained and unnatural. The nicety of adjustment of impulse is disturbed when muscles become tense as the result of extra effort and the best results can be achieved only when muscles are somewhat relaxed so that all work in harmony. [...]

A written form is simply a record of a motion and mature writing, by many repetitions, finally becomes what the psychologist calls an unconscious coordinated movement that produces a visible record. Most of our highly developed habits over and above walking or talking; for example, writing have become automatic through individual practice.

Writing and talking

According to Osborn,⁶ there are many commonalities between the human activities of writing and speaking, some of which are reproduced below:

⁵ A.S. Osborn, op. cit.

⁶ Ibid.

There are, in fact, many striking analogies between writing and speech, two of these being the persistence with which habits acquired in youth are retained and the partial, or total unconsciousness of them. Whatever he says, as soon as he speaks a man begins to exhibit the quality of his culture and to tell where he was born and what is his education, companions, and environment have been, and by his writing he does much the same thing.

Habits of speech and writing become so automatic and unconscious that even by the most strenuous effort it is almost impossible to change them. This is well known regarding speech and is also shown to be as true of handwriting when a careful study is made of it. [...]

Writing varies as speech varies; it may be large or small as speech is low or loud; it may be careful or careless, like speech, but both methods of human expression finally come to be settled habits of the individual acquired by thousands of repetitions of the same act. [...] [A man's] writing, like his speech, is part of his very flesh and bones.

It is true that speech and writing may both be disguised and unnatural and may imitate a style very different from that usually followed, but average unconscious writing varies no more than average unconscious speech since both finally are simply the product of unconscious habits. If speech with all its quirks and mannerisms were actually visible how positively it would identify an individual! Writing is practically visible speech, or the 'talking paper', as the Indian says, and by all its thousands of peculiarities in combination is the most personal and individual thing that a man does that leaves a record which can be seen and studied.

The variation of any particular handwriting is a matter, however, that must always be taken into account and given proper consideration. Failure to give due consideration to the subject may lead to serious error.

Writing and dancing

In our view, there are several commonalities between the art of dancing and that of writing.

- Both are neuromuscular activities involving the application of physiology and neurology, though to varying degrees. Dancing involves the rhythmic movement of the whole body, whereas writing is restricted to moving some body parts, such as fingers, wrist, fore-arm, and whole-arm.

- Both these activities necessarily require near perfect coordination and synchronization, i.e., teamwork between the muscles involved in an individual's movement and conscious thoughts.

- Both are necessary to be learned and practiced in order to an optimum level of performance. Once the appropriate level of maturity has been acquired by an individual, both handwriting and dancing are rou-

tinely carried out habitually, automatically, effortlessly, and unconsciously, directing one's attention to the subject matter alone rather than the process itself.

– Both are subject to the laws of nature, such as the law of individuality and uniqueness, the law of progressive change and natural variations, laws of physics, including Newton's laws of motion and gravitation, etc.

– Because the physiological and mental levels combined together along with their coordination are necessarily different for different individuals, their performance levels vary greatly to the extent that no two people can walk, talk, behave, dance, or write exactly alike; and one person cannot mechanically repeat the exact same level of performance at different times for similar reasons.

– Both are affected by some extrinsic and intrinsic factors, such as injury, age, illness, mood swings, and, especially, the apparent anxiety to perform and deliver best results at a particular event and time, such as in a sports competition or attempting to produce someone's forged signatures with criminal intent rather than for a mere exhibition of forging skills.

– Both are prone to disguise and imitation in varying degrees, although the rate of success varies depending upon the respective levels of skill and the purpose.

– Both these activities require a balancing approach; balance between speed and legibility in the case of handwriting, and between various moving body parts in dancing for maintaining reasonable stability.

– Both are complex and intricate processes that require the services of trained experts for recognition and differentiation; a document expert for comparison of handwriting and a fully matured dancing professional for judging the performance of a single individual or a dancing group.

According to Osborn,⁷ based on their respective levels of skill, pen control and movement, usually, there are four categories of writers.

The pen of certain writers (1) dances over the paper with a springy, rhythmic motion that leaves a characteristic record; in other hands (2) the writing instrument moves in a stately way that suggests strength, but not speed, while as guided by other writers a pen (3) leaves an irregular, broken line that is the record of a rapid, nervous movement. The record of the pen of still another class of writers (4) leaves a heavy, uneven, ragged line due to lack of skill and constant variation in pen pressure.

⁷ Ibid.

It is easy to understand how difficult it would be for a writer of the fourth class to successfully imitate first- or second-class writing. The same logic appears to hold good for the dancing activities as well.

While describing the significance of “rhythm,” which could be applied to both handwriting and dancing, Osborn⁸ has stated that:

One of the qualities of handwriting is rhythm, which is defined as a harmonious recurrence of stress or impulse or motion, and handwriting can be classified by the quality or the perfection of its rhythm. This peculiar quality in handwriting is, of course, primarily the flowing succession of motions which are recorded in the written record. Harmony of action, as in dancing, is based mainly on the circle, or the ellipse, and is a succession of connected curved motions rather than a succession of straight movements and sudden stops, and this is also true of handwriting. What is accurately described as the ‘flowing hand’ is a coordinated succession of movement impulses that glide into each other with a rhythm which is the final perfection of fixed and cultivated habit. There is nothing in handwriting so difficult successfully to imitate as the exact quality of this muscular rhythm, and a violation of it is the most common symptom of forgery.

Furthermore, according to Hagan,⁹ no two persons walk, talk, or do any other act which calls for the coordinate action of a series of muscular factors in precisely the same manner, and for the same reason no two persons write exactly alike. All individual habits in handwriting arise from the same pre-disposing causes as the differentiations that produce personalities in other respects.

Conclusion

It has been observed that humans have a remarkable range of movements. We have learnt to walk, dance, write, speak, and play different sports naturally, fluently, automatically, effortlessly, without thinking too much about how we move. An in-depth comparison of the art(s) of handwriting and dancing, which look very different on first impression, has revealed many commonalities between them. While a dancer dances on the dancing floor, the writer’s pen, too, dances on the paper to perfection. It hardly needs emphasis that a pen is mightier than the sword. Certainly,

⁸ Ibid.

⁹ W.E. Hagan, *A treatise on disputed handwriting and the determination of genuine from forged signatures*, New York 1894, pp. 16–17, 37.

it is an excellent instrument to fix attention and inflame one's ambition. Truly, the magic of the pen lies in the concentration of thoughts on the subject; and a dancing pen is, to our mind, the ultimate test of graphic maturity and skill of an individual writer.

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