International Journal of Forensic Science and Legal Medicine

Vol. 2, Issue-1, January-June 2022

EXPLORING KNOWLEDGE AND EXPERIENCE IN FORENSIC SCIENCE: THE VALUE OF HANDS-ON EXPERIENCE IN GROOMING AND GROUNDING OF A PROFESSIONAL DOCUMENT EXAMINER

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ABSTRACT

Handwriting identification is per se an area where almost everyone claims to be an 'expert' capable of recognizing unknown handwriting either from mental comparison of known letter-forms of his family or friend-circle; or after comparing any two sets of handwriting on the basis of pictorial similarities or differences that are apparent on cursory glance, notwithstanding the scope and limitations of the discipline as well as his own limitations as a 'layman'; conveniently or inconveniently, failing to recognize that a little knowledge or half knowledge as it is sometimes called could be dangerous, or even worse than complete ignorance. Based on empirical studies by Kam et al. [1], lay-persons were six times more likely than FDE's to incorrectly identify questioned writing. It is therefore imperative that the task of handwriting comparison needs to be assigned to a qualified and experienced document examiner who is well aware of the intricacies and limitations of the profession by virtue of his long experience and thorough knowledge of the subject.

This paper highlights the role of apprenticeship training, specialized knowledge and qualitative experience gained through various books and periodicals as well as actual casework laboratory examination under the supervision and guidance of senior experts of long standing; and, is primarily based on several quotes extracted from the works of several authorities including Osborn, who was not only the founder of the Questioned Document Examination in the real sense, but also a great scientist, philosopher and guide. Being 'Osbornians', the authors consider it to be their abandon duty to share their thoughts and experiences through this paper with the youngsters in the profession who may not have yet got the opportunity to read in depth Osborn's works on the subject. The main purpose of presenting this paper is to ignite and inspire the young minds desirous of adopting this profession to have a thorough and scientific insight into the works of Osborn because, in our opinion, the study and practice of questioned document examination shall remain incomplete unless and until the examiner has gone through and understood the Osborn's philosophical treatises in letter and spirit.

Keywords: Forensic Document Examination, Knowledge, Experience, Expertise, Competency, Training

INTRODUCTION

According to a famous quote, experience is the universal mother of sciences. Personal experiences leave an indelible impression on our minds that are more lasting and invaluable; we can profit from our good experience, while at the same time steer clear from those which are potentially harmful to us. We learn very meticulously from personal experience, rather than by adhering to the advice of others, or by reading about them from books and periodicals. It is however an acknowledged fact that a wise man who learns from the experiences of others, like the parents, teachers or those elder to him also gains

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from the books that are a virtual treasure house of knowledge and experiences shared by various authorities on the subject concerned. It may not be out of place to state that one's personal experience is by far the best, but sometimes comes too late. *"Experience is the comb that nature gives us after we are bald"*, says a Belgium proverb. We learn from everything we do in our day to day lives, in fact life is a great journey where we learn patience and forbearance when faced with adversity, courage in the face of danger and wisdom from our own mistakes of omission and commission. Life is short — a little hope, a little dream and then good bye. In this short span of life we should therefore, not only learn from our own experience but should also benefit from the experience of others. This can save us from many traps and the resultant issues associated with it, which is similar to 're-inventing the wheel'.

Questioned document examination is such a profession where the role of experience matters the most. The making and grounding of a forensic document examiner is a long drawn process where the acquisition of knowledge of the fundamental concepts of the art and science governing the handwriting production, technology and methodology of handwriting identification and related issues together with the development and refinement of necessary skills based on that knowledge and training, as well as practical experience of casework and court testimony consumes several years of hard work, diligence and patience to mature. With every laboratory examination and court testimony including toughest cross examination by elite of the the learned bar and the bench, the mindset and attitude of the examiner gets refined and balanced to meet the requirements of the profession. As stated by **Popkin [2],** mindset drives the cognitive processing and captures the critical thinking that is an important element of professional skepticism which involves critical analysis of evidence, and not just the doubt; whereas, the attitude includes effective and cognitive components to predict intentions and behaviour to recognize the influence of social factors on evaluating human judgments. Popkin [2] has further stated that in everyday life, practically everyone is skeptical about some knowledge claims; but, philosophical skeptics have doubted the possibility of any knowledge beyond that of the contents of directly felt experience. This being so, it goes without saying that the role played by practical experience is by far the most important one for the successful career of a forensic document examiner.

KNOWLEDGE AND EXPERIENCE-AN OVERVIEW:

According to Wilson [3]**,** knowledge and experience are complementary. On the face of it, they look similar to each other. By definition, knowledge is information including the skills that are acquired through experience or education. Similarly, experience is defined as the knowledge or skill acquired through practical experience of something. Whereas knowledge lays emphasis on theory and the acquisition of information and ideas therefrom; experience relates to practice or the use of knowledge over a long period of time to strengthen the understanding of a particular subject matter or activity. While further knowledge on a subject or a task can be gained through experience, experience cannot be gained through instruction. Experience comes with time, exposure and practice. It is based on practical application rather than on supposition or assumption. Knowledge on the other hand is founded upon the accumulation of information through either experience or education. Thus, there is inseparable link between knowledge and experience. Further, as quoted by Osborn [4]**,** *"There are two kinds of knowledge; actual knowledge and potential knowledge; actual knowledge is the knowing of a thing; potential knowledge is knowing where you can find out about it"*.

As stated by Ary [5]**,** the main sources of knowledge can be categorized under five headings: Experience, Authority, Deductive reasoning, Inductive reasoning; and, the scientific approach. Reason is the most reliable source of knowledge. Experiential knowledge (EN) is sometimes considered a resource that helps in vulnerable situations respond to uncertain futures. Although frequently undervalued, EN is involved in multi-faceted responses to situations loaded with uncertainty. Lay knowledge is a type of knowledge that has the potential to enhance the understanding of the nature, causes and most effective responses to social problems. It is grounded in experience of the people facing the challenging problems of everyday life. The relevance of distinction between lay knowledge and expert knowledge is open to question. The complexity of the problems indicates that sometimes expert knowledge alone is insufficient and inadequate to resolve the issues. Though it is not always necessary for the examiner to know the entire case-history during examination, expert

opinion should normally be consistent with the facts and circumstances of the case under examination. If otherwise, the reasons for the inconsistency there-of must be explored before releasing the report. Clinical knowledge is another knowledge that combines scientific knowledge with practical experience and is rooted in professional education, training and professional experience.

Intuition is yet another form of knowledge which is initially developed from one's personal experiences and later gets further refined as one continues to learn and practice. Intuition (or instinct) is the feeling or understanding that makes you believe or know that something is true without being able to explain why. According to Wikipedia[6], intuition is the ability to acquire knowledge without recourse to conscious reasoning. Different fields use the word intuition in very different ways, including but not limited to: direct access to unconscious knowledge, unconscious perception, extrasensory perception, deeper insight into the extrasensory pattern recognition, and the ability to anticipate something instinctively, without any need for sensory reasoning. It is based on practical knowledge which is developed through personal experience and internalized so that it seems to the person using it 'naturally' relevant to judge and deal with problematic situations. In philosophy, intuition is considered as the power of obtaining knowledge that cannot be acquired either by inference, or observation, by reason, or experience. As such, according to Britannica Encyclopedia[7], intuition is thought of as an original, independent source of knowledge, since it is designed to account for just those kinds of knowledge that other sources don't provide. As an example, knowledge of necessary truths and moral principles is sometimes explained in this way. Further, intuition is usually the first response or initial assessment raising doubt (if any) regarding the truthfulness or falsity of any happening or event. In this connection, emphasizing the role of intuition, Osborn[4] wrote that, *"It is by a sort of intuition that one suspects the truth of a tale too highly embellished. Without analysis of any kind we sometimes say that a story of this kind does not sound right. In a recent opinion of a high court this statement is made--this testimony bears the unmistakable stamp of truth. There is no business of the trial attorney more important than learning just what this stamp consists of"*. Trained intuition of the observer that is backed by past experience of handling similar situations is somewhat better bet than the simple intuition; and, it is one of the several factors that counts toward immediate response to any situation. Its practical application is precisely exemplified by Osborn [4] when he wrote that, *"By study, experience, and a trained intuition, the lawyer will also have acquired an instant appreciation of the significance and force of evidence and will have learned its correct order of presentation"*.

A similar application of intuition for instant recognition of handwriting and signatures by a non-expert or a layman together with its limitation is mentioned by Kirk[8] when he wrote thus, *"An almost intuitive approach is utilized by bank clerks and businessmen in identifying signatures, and it is the failure of such individuals to understand the interpretation of the pattern in terms of its details that prevents them from being the actual experts that may at times assume themselves to be. To establish fully the analysis of an individual reflex pattern requires in practice a careful study of each and every factor of the writing which is its expression, and a virtual statistical analysis of these detailed factors. It is in the later requirement particularly that most authorities in this field have been deficient."*

Another term 'occult sciences' was used in the 16th century to refer to astrology, (including numerology, palmistry, alchemy, graphology, etc.) and natural magic, which today are considered pseudosciences. All such studies and personal experiences which cannot be demonstrated by reasoning and understood by anyone by the application of simple common sense and logic may have limited applications only in initial stages of any investigation, but has little or negligible evidentiary value in physical evidence examination unless corroborated, supplemented or substituted by independent scientific evidence based on well established laws and principles backed by sound scientific reasoning. Practically speaking, there is no need for intuition and no room for guesswork in handwriting identification. Intuition in itself cannot form the basis of any scientific finding. As rightly stated by Osborn[9], *"This instant recognition of a writing by intuition the experienced examiner not only does not attempt but studiously avoids; he reserves judgement until all the qualities of the writing have been observed and compared"*.

Referring to the application and limitation of some other forms of intuition like occult power, seer faculty, or occult intuition, Osborn [4] aptly described that, *"The technical enthusiast, misled*

by unscientific praise, often flatters himself that he has acquired a kind of occult power above reason. A writer on the so called science of graphology says, "Is it not possible that some of these fine and acute touches may have been arrived at through some subtle transference of ideas beyond the concept of the senses. ... This insight, this seer faculty, is not so rare as might be supposed, and under proper and controlling restrictions, is, I am confident, one of the highest qualities of which the soul is capable." These words exactly describe the mental condition of certain enthusiastic specialists whose ideas come "from beyond the concept of the senses". They often apparently are deficient in ordinary common sense and are unable to appreciate how ridiculous their metaphysical claims are to those who are still under the control of reason. This so called "occult intuition" is many times accompanied by untrained reason even if not mixed with pretension, stupidity, and fraud. As already suggested, the careful lawyer does not wait till he gets into court to find that his witness cannot show to others what he himself claims to know and to see". Undeniably, any opinion which is not demonstrable and supported by scientific reasoning has little evidentiary value in expert testimony. Referring it to be a mere intuitive opinion of the expert, Osborn [10] further stated that,*"In this special testimony by an informed and experienced observer, in which facts and circumstances are interpreted, what may appear to be almost an off-hand opinion necessarily is the result of a definite course of reasoning. If the reasoning is not outlined and explained in any way the conclusion may seem to be merely an intuitive opinion, but this is not the fact"*. As stated by Spacey [11] in the Simplicity Guide, educated guess is another source of knowledge which is thought of as conjecture based on knowledge, information and experience. This can be effectively compared to a random guess, because in most cases, the educated guess will outweigh the random guess.

However, it needs to be emphasized that all forms of intuition and guesswork are poor substitutes for the real evidence. Though valuable in the initial stages of investigation, they need to be supplemented or replaced with scientific evidence which can be demonstrated. As stated by Osborn [4],*"As a rule, success in these various quests is more the result of industry than of intuition or of genius, although there are practitioners who seem to have developed a kind of second sight that enables them to find the facts and the law that are necessary to success"*. Cautioning against the unscientific application of intuition, Osborn [9] stated that, *"As has been suggested, the bare intuition, although sometimes helpful and occasionally pointing the true way, is an unsafe guide, and at the outset should always be subordinated (placed in a lower category of evidence)"*.

Tragedy of Knowledge and Experience

Whereas ignorance is bliss, is an old proverb; however, at the same time, it is also equally important to be aware that ignorance of law is no excuse. It has been a considered view of the authors that ignorance, in any form, is dangerous and unpardonable; and, can never become an excuse, nonetheless a blessing, to take shelter by the professional examiner. As rightly stated by Osborn [9], *"There is sometimes greater danger from half-knowledge, 'a little learning', than from complete ignorance. If a smattering of knowledge from limited experience or superficial reading or information, is accompanied by presumption, as is often the case, the truth and justice are in peril when one thus prepared testifies in court regarding grave and important issues"*. A competent professional must also be aware of the fact that actual experimentation and correct reasoning are the corner-stone governing the real proof of truth of a law or principle which is likely to be used for problem-solving in a case. Osborn [9] has stated in this connection that, *"The real proof of the truth of a principle is not the finding of it in a book-even in this book-but in the conditions, facts, and essence of things as interpreted and demonstrated by research, actual experimentation and correct reasoning……. Lack of reasoning power, which is the child of ignorance, is the main hindrance and bar to progress……Ignorance or inexperience may lead to wrong reasoning on any of these general or individual qualities or may omit reasoning"*. As an example of incompetency, Osborn [9] has stated that, *"The honest but incompetent witness who thought perhaps that he could tell the approximate age of an ink will, when properly tested, promptly admit his inability to do what he thought he could do…..Those who expose their undeveloped natures would of course not do it if they knew they were doing it…..The tragedy of ignorance is the ignorance of it"*.

Interestingly, not only ignorance, but sometimes knowledge too, especially if it is blinded or unbridled, may lead an expert to a point of saturation rather than the stage of maturity which becomes a big handicap and comes in the way of his further development

and maturity as a true professional. As stated by Finkelstein [12], It happens with certain persons that a stage may come when a lot of knowledge becomes a dangerous thing, at this point of time, tunnel vision sets in which is the tendency to look at things from only one point of view, prejudice, or narrow-mindedness. It leads to the virtual 'Expertise Trap' where the concerned expert starts utilizing his expertise by exceeding or over-application of his role as an expert to transgress into domains where it doesn't apply. The expert therefore becomes a victim of his overconfidence and narrow outlook which can also severely impede his performance. Such misguided application of knowledge is another form of ignorance; and, as stated by Einstein, the only thing more dangerous than ignorance is arrogance. Both overconfidence and arrogance have the potential to kill the expertise within, unless they are appropriately addressed at the right time by the expert himself and/or by his organization. According to a famous quote [13], *"Even the best natured people, if uninstructed, are always blind and uncertain. We must take pains so that ignorance makes us neither too blind nor too bold"*. Another sensible caution by George Bernard Shaw [14] reads as, *"Beware of false knowledge; it is more dangerous than ignorance"*.

Hence, for any professional expert including the document examiner, ignorance of any kind is no longer a bliss; a well groomed and grounded expert must always be aware of his limitations, cognitive bias as well as lack of knowledge or complete ignorance of any issue that may lead to pitfalls or sources of error in observation and interpretation of data. It looks relevant to quote Whitehead [15] in this context, which reads as, *"Not ignorance, but ignorance of ignorance is the death of knowledge"*.

DIVERSITY OF EXPERIENCE AND ITS OVERVIEW

Diversity is creativity; the more wide ranging the perspectives, the more scope for new ideas. Diversity of thought is the reality that there is more than one way to think about something; it is an understanding that the way each person interprets and interacts with the world is an indicator of their unique identity. As described by the American writer, James Baldwin, *"Experience is a private, very largely speechless affair"*. There are as many viewpoints about experience as the diversity of its utility and forms and the contexts in which they are used by different people to address (apparently) similar situations. A brief overview and categorization of experience as given by Osborn and others is given below:

Role of experience in professional disciplines

Some experiences do have the potential to change the mindset, perspective and vision of a person making him wiser and matured. Describing the various qualities and traits of a well experienced professional, Osborn [4] aptly stated that, *"The value of experience, in some professions at least, does not depend so much on the fact that it supplies added technical knowledge, as that it furnishes opportunities for a testing of knowledge and a study of the 'humanities', so called, that develops a philosophy of life and this necessary knowledge of human nature, already referred to, that gives balance, sanity, and wisdom. Its value, therefore, depends not so much on increase in knowledge as on the weighing and appraisal of the knowledge already obtained and its application to humanity and to affairs. The highest act of wisdom is determining what is important and what is unimportant. The recent graduate would perhaps be better qualified for a technical examination on some phases of his profession than the experienced practitioner and seasoned veteran, but he lacks that testing and measuring of knowledge as applied to human affairs that only experience supplies. Knowledge of these facts regarding experience develops in the beginner that caution and appreciation of advice that tends toward avoidance of errors that may lead to humiliation and defeat"*. Emphasizing the need for practical experience in contrast to the bookish knowledge in everyday life, the British Conservative leader, Benjamin Disraeli stated that, *"Experience is the child of thought, and thought is the child of action. We cannot learn men from books"*.

Education is a continuous learning process. Grooming and development of a forensic professional usually takes place after completion of his 'foundation laying' phase of formal education. Further, emphasizing the need of self-teaching, self-reliance and critical thinking, in the next 'experiential phase' of learning, sometimes in an atmosphere of uncertainty, hardship, setback and disappointment, Osborn [10] was perhaps forthright when he stated that, *"In many instances the training that comes to the professional man is the most important part of his education. Certain important phases of education actually begin after formal education has ended, although this formal*

education should have laid the firm foundation upon which the after development is based…. ..Biography and observation, however, teach that a certainty, a thoroughness, and a self-reliance, in many instances, have grown out of the sustained drudgery of what has been almost exclusive self-teaching that has developed strong qualities which almost command success. The thorough college of 'hard knocks' has been a reality in thousands of instances".

Value of experience in forensic document examination: During their life-long professional careers as document examiners, the authors have experienced that real-life and real-time 'job-oriented' practical experiences are far more valuable than the theoretical and sometimes the theatricals. They are truly the real assets of an individual which can neither be stolen nor be successfully imitated. Further, specialized experience for a particular type of job that may be readily available with a particular specialist performing that job regularly may not be so easily available with another person possessing a different speciality, though both of them may be having similar educational qualification and knowledge in general.Thus the need for practical experience differs from one discipline to another and even from one speciality to another in the same discipline. In this connection, Osborn [9] has stated that *"There are these two kinds of knowledge and there are two kinds of technical books written, those that grow out of life and experience and those that grow out of a library. The man who has navigated a ship, or plowed a field, or pursued a hare writes of the performance in a different way than the mere doctrinaire"*. Highlighting the value of specialized experience for the professional document examiners in contrast with the laymen posing as experts, Osborn [9] has emphasized that, *"The qualified and experienced examiner of disputed writing, who has examined hundreds of forgeries of all kind and classes, brings to such an examination an experience and memory of common qualities, and frequently occurring characteristics, of actual forgery that illuminate a new inquiry, but even this examiner sometimes must give a qualified opinion regarding a disputed signature. If this is true of the qualified and experienced examiner it is easy to understand how utterly incapable, in many instances, the ordinary observer is to determine whether or not a disputed signature is genuine. There are, here and there, judges who, like certain bankers, seem inclined to think any signature is genuine if they can read it"*.

Experience is therefore the worst teacher; it gives the test before presenting the lesson, especially for those who have adopted document examination as a profession. According to Osborn [10], *"The development of all professional men like lawyer, engineer, questioned document examiner, or doctor, or numerous others is along similar lines, but not just the same. After formal education ends progress depends upon what is learned in this New School of Experience in which there are few teachers and few textbooks. Unlike theoretical education, this hard school of experience tests methods and theories by practical effects and concrete results. This iron rule is in force in all fields of human endeavour"*.

Every experience is a new horizon: It is a common saying that adversity is the best teacher. Naturally, one learns much more from it than from the serendipity. Experience shows that best results are many a times produced under the worst circumstances. Similar views have also been expressed by Osborn [10] when he stated that, *"Certain kinds of skill cannot be learned from books nor from teachers but must be learned by contact with realities. This phase of preparation should be considered as part of the preparatory course of study and should be utilized to the fullest possible extent by reviewing, criticizing and recording so that every new experience is a new lesson"*.

Real-time experience is an essential component of the training, there is no substitute for it: By virtue of being a specialist in a particular field, the document examiner would have developed, over the years of his long study and practice, thorough knowledge of complexities and intricacies linked with the profession as well as the mindset and attitude necessary for their critical thinking and analysis eventually attempting to know more and more of less and less. Such qualities of the specialist have been minutely explained and illustrated by Osborn [10], when he wrote, *"The qualified and experienced questioned document examiner will have before him when he testifies the disputed document and the writings described in the case as standards, but he has much more in his mind than this. He has his knowledge of all the various systems of writing used and taught in his community and the sprinkling of foreign and fantastic styles; he has in mind the great*

number of natural and common variations that the human hand and mind develops and, still more important, he has a memory of the scores of forgeries of high and low degree that have come before him and the excuses, explanations and attempted justification of damaging divergences in bad writings, and finally he has knowledge of the incentives, motives and conditions out of which many of these suspected writings arise. There is nothing that can take the place of this actual experience; although it must be based upon study and experimentation that in large measure is similar to parts of a regular college course of study".

Experience gained by learning from one's own and from other's experiences: Naturally, there is no shortcut to success; eventually, everyone has to work for it independently. There have been instances of several generations of practicing document examiners belonging to the same family who had had highly successful and illustrious careers as experts in their profession. However, it is an acknowledged fact that hands-on practical experience gained by a person in a profession cannot be passed on from one generation to the other and ultimately everyone has to stand on his own feet and work hard to make a successful career independently. Emphasizing the importance of this aspect of practical training and gathering ones' own experience the hard way, Osborn [10] rightly stated that, *"It is sad indeed that experience cannot be inherited, but each new candidate must in some measure burn his own fingers and take his own beatings, but if he will he can learn something from those who have already gone over the road. With all the advice and warnings and books he cannot quite stand on the shoulders of those who have gone before, but he can avoid some of the muck and mire (wet spongy earth; heavy mud or slush) that otherwise he must wade through. He will inevitably meet defeat now and then and if he is wise will learn its hard but valuable lessons"*. Likewise, Conway [16] also emphasized the need for extensive specialized experience when he stated that, *"Only through extensive experience in evaluating thousands of writings of all classes can one estimate accurately the relative singularity, the relative individuality of a 'point of similarity' or a 'difference".*

Quality of experience is far more important than its quantity: An interesting quote from the famous baseball player, Sam Ewing says that, *"It is not the hours you put in your work that counts, it's the work you put in the hours"*. Usually, the main consideration for being treated as an expert witness is the number of years spent by the expert in a particular post and the total number of cases examined and reported during that period. However, there may be instances where an expert may have spent years together working against a technical post doing mostly administrative work related to that post contributing little toward casework, if any, and as such he cannot be said to have gained the desired knowledge and practical work-related technical experience therefrom. Sometimes, it is observed that a person who has done actual and relevant casework wholeheartedly for five years is more knowledgeable, experienced and competent than the person who has worked for ten years without making any qualitative and significant addition in his technical knowledge and competency; the later may prove to be a square peg in a round hole in this profession.

The authors learned during intensive training under the guidance of senior experts that all experiences claimed by an individual do not necessarily add up to raise the level of his skill and performance; only that experience adds to the competency of the expert which is relevant and is in the right direction. Ironically, in government jobs, instance cannot be ruled out when a person continues to draw salary for a particular work for years together doing practically nothing by himself, smartly en-cashing the work done by others at an appropriate time. This being so, it is the quality of experience gained by an individual that matters rather than its quantity. This point has also been strongly emphasized by Kirk [8], when he stated that, *"The question of what constitutes adequate experience for the expert witness is one which is critical in court procedures and which appears to be poorly understood in many quarters. It is quite common for the witness to be interrogated as to the number of years during which he has worked in a field, the number of pieces of evidence he has examined, and similar quantitative questions. It must be apparent that the amount of his experience is not important beside the question of what he has learned from it. A commuter might well ride the same bus line for years without noting the streets traversed by the bus. The bank clerk may certainly examine signatures by the tens or hundreds of thousands, yet not make himself an expert in handwriting by virtue of his long experience. Qualitative experience, on the*

other hand, may be very limited and still be entirely sufficient for the matter at hand. The trained and skillful investigator may in the course of one or a few hours master a knowledge of the features which are necessary to establish an identity with a particular type of evidence. That short but carefully directed experience combined with a sound background knowledge of identification work in general may be more than sufficient to qualify the investigator as an expert in so far as the particular point of the investigation is concerned".

Further, in order to be useful, the actual experience gained by an expert must be relevant to the technical work for which it is supposed to be made applicable. What Kirk stated years ago has been reinforced by Huber and Headrick [17] when they wrote that, *"It is reassuring that in recent years some courts have adopted a more critical attitude toward the admissibility of expert testimony. They have held that such witnesses are unqualified when they have minimal practical experience, when they have gained their knowledge merely from self-study and/ or a correspondence course, and when they use their expertise as a hobby and not as a profession. One court has held that training as a graphologist or a graphoanalyst is irrelevant for testimony as a document examiner".*

Forensic Document Examination is an applied field requiring multi-disciplinary knowledge and objective approach. In this field, all types of knowledge and (personal or otherwise) practical experiences of one's own and those of others could be useful for problem solving. This is primarily because one expert may not necessarily be specialized or equally qualified in all the disciplines and specialties thereof, but should be wise enough to differentiate between what is important and relevant and what is not for his casework and to use the knowledge and experiences of others who have worked in related fields of study to his best advantage. Hence, varied experiences of all kinds of one's own and others could provide valuable inputs for the problem at hand. However, being an expert, he alone shall be responsible and accountable for the opinion or conclusions drawn from all the observations after their due assessment and evaluation as per the established procedures. Further, following a 'jack of all trades' approach often ends up in being 'master of none' in matters where specialization and super-specialization matters the most. Obviously, trying to know 'everything of something' is much better than to know 'something of everything' ultimately ending up in knowing practically nothing in reality.

Handwriting examination requires much more experience than other areas: Unlike forensic examination of several other physical evidences where laboratory examination is dependant on generation of experimental data which is considered 'near-perfect' to the extent that, almost always, it leads to similar results under similar conditions; the results of handwriting comparisons are dependent on so many internal and external factors which differ from one case to another and therefore interpretation of data generated therein is much more stringent which requires a higher quality of practical experience and standards of performance. Similar concern has been voiced by Kirk [8], when he wrote in his book that, *"In no field of physical evidence examination do so many people consider themselves competent to decide identities for the simple reason that they have been doing exactly that to some extent during much of their lives. Yet, handwriting examination is a highly technical matter calling for as much or more experience and knowledge than does any other field of physical evidence examination".*

Making and grounding of a document examiner is a long drawn process; there is no short-cut: Professional competency of any practitioner, especially a document examiner, is a function of his understanding and knowledge of basic science fundamentals acquired step by step during his academic studies followed by a special study of principles and practices of the related professional discipline--both theoretical and practical aspects, under the guidance of a senior professional document examiner during internship (or on the job training) for a reasonable or extended period of time as the case may be; as well as, his own self-acquired experience through independent laboratory examination and court testimony in quite a good number of cases spanning over a long period of time. The making and grounding of a document examiner is a long drawn process. During the early years of his independent practice, the influence of teacher and guide under whose tutelage he initially worked could be seen which goes on diminishing as he continues to add his own experience and weight and steadily gains confidence over the years.

PROFICIENCY AND COMPETENCY OF FORENSIC DOCUMENT EXAMINERS:

Ensuring competent performance in forensic science: According to Hadley and Fereday [18], it is impossible to define, and hence recognize, competence in any objective manner in the absence of some form of agreed standards against which to measure performance. Ultimately, competency is the ability to work to the standards set by the profession. Competence is a mix of knowledge, skills, and the application of knowledge (working standards) and behaviour and attitudes. All of these are essential to defining competence. Further, it is possible to be skilled and knowledgeable, but if the right behaviour and attitudes are not portrayed, the practitioner cannot be classed as competent. Incompetent evidence collection or incompetent laboratory work leads to the wrong results being delivered to the judicial system. Thus, training is an important component of competency. However, it is a means to end and not an end in itself. Hadley et. al. [18] has further stated that it may be useful to consider all those who attempt the individualization of evidence in their day-to-day work as forensic scientists, whatever basic science they use to do this. These will be in the main support investigations being carried out by the police or other investigation agencies, e.g., customs and excise and immigration.

Presently, the availability of a well defined Quality Management System (QMS) is an essential ingredient of an accredited laboratory. Indeed, great strides have been made in looking at organizational quality through QMS and accreditation. However, it is important to remember that accreditation of a laboratory does not of itself confirm that the staff of the laboratory is competent enough. Ultimately, competency is by and large an individual attitudinal phenomenon. According to Hadley et al [18], proficiency testing (PT) has been extensively used to measure the performance of forensic scientists. However, this is not true 'workplace performance', that is to say, performance on live casework in typical casework situations. As such, far too much can be read into the apparent assurance such schemes provide. It does have its uses, however, e.g., bench-marking performance against other people or organizations doing the same thing.

Real experience adds to competency and proficiency of an expert: A well groomed and grounded document examiner, by virtue of his real-life and real-time experience, will have acquired a thorough knowledge and understanding of the limitations of his profession and will not fall into the trap of those desirous of seeking his definite opinion on limited data available at a particular point of time, which shall be the real test of his competency. In this connection Osborn [9] has stated that, *".....These contentions in court, often long and bitter, sometimes, however, grow out of document problems that on account of their nature cannot definitely and positively be solved and it then is as important to know what questions cannot be answered as to know the answers..... In many inquiries no opinion whatever is given by one who is competent. The test of competency in many fields is a knowledge of the limitations of a subject and of this the beginner of course knows nothing. The tyro (i.e., beginner, or inexperienced) presumptuously walks along the border line of knowledge and out into the unknown fields where those best qualified fear to retread"*. Huber and Headrick [17], has given a ten-point criterion to judge the proficiency and competency of a document examiner based on his affiliations & credentials, training, and experience. In the opinion of the authors, those related with training and experience are relatively more important than others as they have a direct bearing on competency of the examiner.

Minimum Training Requirements: The Scientific Working Group for Forensic Document Examination, SWGDOC [19] have evolved and published a Standard which recommends a training program covering the minimum requirements and procedures that should be used for the fundamental training of forensic document examiners. The procedures mentioned in the said standards are mainly based on generally accepted reservoir of knowledge and experience of those who are well grounded and established as forensic document examiners. As stated in this standard, the training program shall be the equivalent of a minimum of 24 months full-time training under the supervision of a principal trainer and shall be successfully completed within the prescribed period of four years. The principal trainer himself shall be a forensic document examiner having successfully completed the equivalent of a minimum of 24 months full-time supervised training and shall have a minimum of full-time post-training experience of five years as a practicing forensic document examiner. The prescribed syllabus for the training program covering the specific topics

of instruction are given in Section 7 of the said standard which includes the practical experience gained through the supervised casework in a forensic laboratory and supplemental education like courses, seminars, technical visits and workshops as well. Thus practical knowledge and experiences gained from formal education (i.e., prior to training), during the training as well as post-training are essential and valuable components for becoming a successful forensic document examiner.

Is an individual trained in another area of forensic science competent to conduct questioned handwriting examinations? In this connection, Huber and Headrick [17] have since reported that in all comparative sciences including handwriting comparisons, identification process of analysis, comparison and evaluation (ACE) are common to all disciplines of forensic science. However, the steps involved in analysis and evaluation are different for each discipline and must be learned separately and independently. Since, handwriting samples encountered in forensic document examination completely differ from those examined in other disciplines, education, training, and perspectives of a person practising in the field of handwriting examination differ significantly from that of a person practising in other forensic disciplines. Therefore, other than an understanding of scientific method and the fundamental sense of evidence, the many fields of forensic science have little in common. Thus, the above authors have emphasized that despite the fact that the principles of identification and comparison are common to all forensic disciplines, the materials to which they are applied differ materially from one discipline to another, and hence without fulfilling the minimum training requirements of a forensic document examiner, any individual working in other forensic disciplines shall not be equally competent to conduct handwriting examinations.

EXPERT WITNESS AND LEGAL POINT OF VIEW

An expert witness is a person who possesses special skills or knowledge, acquired by way of training and experience, not normally possessed by a layman, and is, thereby permitted to draw conclusions or to express opinions that are otherwise inadmissible in testimony. Accordingly, an expert opinion is the informed opinion of an individual with applicable professional or domain knowledge. No specific qualification has been prescribed by law. Only consideration is that level of competence must be greater than what can be achieved by simple exposure to a Questioned Documents laboratory. This being so, every secretary of every document examiner would be qualified to testify as expert witness. However, some witnesses are considered unqualified or irrelevant to depose as expert witnesses when they have negligible practical experience, when they have gained knowledge through self study or a correspondence course, when they use their expertise as a hobby rather than a profession; and, when they have been trained as graphologists or grapho analysts.

CONCLUSION

Creativity is the essence of life; new experiments, new experiences and new learning are the necessary motivation to move ahead. It broadens our perspectives and can help to overcome our biases and prejudices. According to **Osborn [9]**, both knowledge and experience are the basis of intelligent action in any field, a fact which is nonetheless necessary and significant as an expert-witness in a court of law. Our past experiences shape our personality which gets reflected in all our utterances and behaviour in everyday life. The real-experience which is self acquired through apprenticeship in normal course of routine over a reasonable period of time, obviously becomes self-evident and speaks for itself.

As already described above, there are so many stages and kinds of learning experiences which one goes through the career starting from induction till his or her maturity into the profession; such as, theoretical concepts, apprenticeship training, practical experiences-both self acquired and those shared by the instructors, experiential knowledge, lay knowledge, clinical knowledge, intuition, and educated guess, etc. All such modes of learning and experiencing have got some value in development of professional skills and expertise. However, in actual practice involving physical evidence examinations, final conclusions have to be drawn only from those parameters which could be scientifically proved and demonstrated by logical reasoning. Observations based on all other subjective parameters like the intuition, or educated guess etc., have limited utility and relevance during the initial stage of investigation and not in drawing final conclusions. The development of skill and expertise, its progression and refinement obviously depends on the interest,

hard work, labour and diligence invested by the trainee as well as his organization, besides the quality of training thus imparted, retraining and mandatory proficiency testing which has a bearing on his overall performance and competency.

Like all other professional disciplines, a document examiner gets matured and grounded in the profession by following a well planned and systematic training program. As described in detail by Bishop [20], the training program of the FDE's is very elaborate, stringent and time-consuming which includes among others the reading literature and research papers on forensic document theory; proper evidence handling; studying the scientific method, historical foundation of the forensic document examination field, copybook styles, and ethics; and presenting court testimony. The majority of the training program consists of practical experience in thousands of inter-writer comparisons, with the trainee receiving feedback from the trainer based on discussion of the results. As the training progresses, trainees learn how to solve similar problems themselves. However, no two cases are exactly alike, the facts and circumstances of each case being unique and different, there is no single recipe which can be prescribed for the examination of each and every case of this nature. It therefore goes without saying that systematic training including hands-on practical experience under the supervision of senior document examiners has a profound effect on the successful career of the FDE. Proper training allows the examiner to acquire and preserve expertise and provides the necessary foundation to minimize bias and human error in the examination process. Every FDE has to go through the aforesaid process of development of expertise and refinement of skill which is a slow and steady, long drawn consuming exercise requiring lot of hard work, diligence and patience. However, exceptionally speaking, blinded by success, if someone's knowledge and experience goes to the head, he may go berserk; his knowledge no longer remains a blessing, it becomes a curse. At this stage of life, when knowledge becomes arrogance, it is the worst form of ignorance. "Men are born ignorant, not stupid. They are made stupid by education", says Bertrand Russel. Further, opportunistic ladder if any, used to shine one's intellect is nothing but leap in the dark. Finally, it is also necessary to bear in mind the fine balance one needs to create between all forms of knowledge and ignorance because the resultant effect of neither of these two can be underestimated by a fully groomed and grounded professional. In this context, the authors may like to reproduce a classic saying from Upanishad:

"Into blind darkness pass they

Who worship ignorance;

Into still greater darkness they who

Are content with knowledge".

(Isavasya Upanishad)

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