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IMPACT OF DEMONSTRATIVE-FORENSIC EVIDENCE IN CONTEMPORARY JUSTICE DELIVERY

John Bulus Mahwel*

ABSTRACT

In the quest for effective justice delivery in contemporary society, the legal system must adapt to evolving societal dynamics. This research explores the contemporary role of Demonstrative Forensic Evidence in modern justice, focusing on its admissibility, nature, and utility in judicial proceedings—particularly within the Anglo-American (common law) legal tradition. The objectives of this research are: (i) to determine when and by whom demonstrative aids may be presented in court; (ii) to examine the legal framework governing such evidence in Nigeria and other jurisdictions; (iii) to assess its evidential value and impact in judicial proceedings; (iv) to evaluate its reliability and limitations; and (v) to recommend ways to enhance its application in Nigeria. This research employs a doctrinal approach, drawing from academic literature, legal commentaries, and appellate court decisions from Nigeria and other common law countries. Findings reveal two primary challenges: a lack of technological and scientific literacy among legal professionals, and inadequate legislative provisions to guide the use and admissibility of Demonstrative Forensic Evidence in Nigeria. This research underscores the value of this evidence in strengthening courtroom advocacy, judicial decision-making, legal education, and legislative responsiveness. Significantly, this research recommends improving the authentication process for demonstrative evidence, particularly electronic records. It also calls for legal reforms and the introduction of e-discovery protocols to support its broader application in Nigeria's legal system.

1. INTRODUCTION

Generally, evidence is the demonstration of facts before a tribunal or court. It may be adduced orally, documentarily, or demonstrably through audio, visual or tactile means. Our ability to recollect events accurately from memory is hampered by limited retentive capacity arising from imperfection. Neurophysiological findings indicate that information received visually sticks longer in the memory than auditory information. Likewise, the evidence presented visually tends to have a greater impact than verbalised evidence. Inarguably, lawyers are the major characters in the courtroom and thus, a Counsel is expected to use every legal means to convince the judge or jury.

The quest for better methods of 'convincing' the trier of facts, especially in the United States and Britain during the second half of the Nineteen Century, led to the conceptualisation of a potent form of judicial evidence known today as Demonstrative-Forensic Evidence. With this novel method of courtroom advocacy, trial attorneys began to experiment with visual aids like drawings, sketches, paintings, and later photographs. They employed these aspects of Demonstrative-Forensic Evidence to illustrate or depict facts in issue that a witness ordinarily cannot explain sufficiently in the witness box. While the Bar

experimented with a visual aid, the Bench unhesitatingly set the rules of admissibility through landmark decisions.

Technology has broadened the scope and application of demonstrative evidence so much so that virtual court sittings, live video links, application of three-dimensional models, holographic images, computer-generated simulation, computer animations, *et cetera*, are now commonplace. A contemporary judge or lawyer cannot thrive on the Bench or at the Bar without learning the essentials of demonstrative forensic Evidence. The study shall examine the admissibility, nature, role, fallibility, and solutions to the problems of Demonstrative-Forensic Evidence against the backdrop of the enabling legal frameworks in Nigeria and other common law jurisdictions, notably the United Kingdom and the United States of America.

The thematic questions upon which Demonstrative-Forensic Evidence shall be dissected in this study are: When and how can the court admit it into evidence? What rules of admissibility govern it? What types of this genre of evidence are admissible in judicial proceedings? How can it gain wider application in Nigeria?

1.1 Conceptualisation of Some Relevant Terms

The subject matter of forensic science, and for that matter, Demonstrative-Forensic Evidence, is a little intricate. Some of the issues involved in demonstrative-forensic trials emanate from sciences with different terminologies and concepts; this has to be clarified to give a better understanding of this long-abandoned field in Nigeria. A holistic examination of the concepts and the terminologies involved in demonstrative forensic science would be too encompassing. However, few are selected and discussed in this part.

1.1.1 *Evidence*

The term evidence continues to elude a precise definition owing to its different perceptions by different scholars in the field. "Evidence is not capable of exact definition because it belongs to the procedural aspect of law."[1]Evidence in the law relates to any of the material items or assertions of fact that may be submitted to a competent tribunal or court of law as a means of ascertaining the truth of any alleged matter of fact under investigation before it. Court decisions are to be based on truth founded on evidence, and a primary duty of courts is to conduct proper proceedings to hear and consider evidence. The law of evidence is made up largely of procedural regulations concerning the proof and presentation of facts, whether involving the testimony of witnesses, the presentation of documents or physical objects, or the assertion of a foreign law. The many rules of evidence that have evolved under different legal systems have, in the main, been founded on experience and shaped by varying legal requirements of what constitutes admissible and sufficient proof.[2]

Several definitions of the term evidence abound locally and internationally, with little or no uniformity for one to be generally accepted without another.

• Lecturer Department of Commercial Law, Faculty of law University of Jos. Email: mahwelb@unijos.edu.ng or johnmahwel@gmail.com

1 Joash Ojo Amupitan, Evidence Law Theory and Practice in Nigeria: Innovative Communication, Lagos,2013, p.1

2 Heinrich Nagel and Jerry Norton (Editors) "Evidence Law" available at https://www.britannica.com/topic/evidence-law/Party-testimony accessed on the 1oth May, 2024.

The work highlights some of these definitions for scholarly purposes. Firstly, Tapper defines evidence thus:

> The evidence of a fact is that which tends to prove it, something which may satisfy an inquirer of the fact's existence. Courts of law usually have to find that certain facts exist before pronouncing on the rights, duties and liabilities of the parties, and such evidence as they will receive in furtherance of this task is described as 'judicial evidence.[3]

This definition furnishes more problems than it solves the question of conceptualisation of the term evidence. It leads to further classification of evidence as judicial evidence, legal evidence, or logical evidence. Though it has some credits owing to its descriptive view that evidence is that which must satisfy the court or the jury

Wigmore,[4] while stating that it is of little practical consequence to construct a formula defining what is to be understood as "evidence", nonetheless provided a thought-provoking definition when he said:

> What we are concerned with is the process of presenting evidence for the purpose of demonstrating asserted fact. In this process, then the term evidence represents: any knowable fact or group of facts, not a legal or a logical principle, considered with a view to its being offered before a legal tribunal for the purpose of producing a persuasion, positive or negative, on the part of the tribunal, as to the truth of a proposition, not of law or of logic on which the determination of the tribunal is to be asked.[5]

Wigmore's conception of evidence provides for this work, the foundation and the basics of this research, as forensic evidence is captured under any knowable fact or group of facts, not a legal or logical principle, but also of scientific or technological bases. What is of concern with this definition is the fact and the process of proving such facts.

A more comprehensive definition of evidence is given by Phipson[6] thus: "Evidence is a testimony, whether oral, documentary or real, which may be legally received in order to prove or disprove certain facts in dispute." This gives us the notion that evidence is that which is required to prove or disprove disputed facts, and it could include any scientific or forensic fact, as the case may be can be admissible in law. However, his definition suffers from some setbacks as he took for granted certain facts that require no proof in a court of law as well as the fact that evidence is by no means restricted to admissibility. It also deals with the exclusion of facts such as bad character evidence, similar fact evidence, opinion evidence and hearsay evidence.

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3 Tapper, C C; Tapper on Evidence. 9th ed. London: Butterworth, 1999 at p. 1 Print. As cited in Joash O Amupitan: Evidence Law Theory and Practice in Nigeria, Innovative Communication, Lagos,2013.

4 Wigmore J.H.A, Treatise on the System of Evidence I n Trials at Common Law. Tillers, P. rev. Boston: Little, Brown, 1983, Volume 1 Section. Print. As cited in Joash O Amupitan: Evidence Law Theory and Practice in Nigeria, Innovative Communication, lagos,2013, p.1.

5 Ibid.

6 Howard, M.N. Phipson on Evidence. 15th ed. London: Sweet and Maxwell, 2000 p.1. and 2.

Gulson[7] defines evidence as the science, arts, or process of ascertaining or verifying facts. This definition, though appears vague but viewed evidence from a broad and holistic perspective. The definition is wide enough to cover natural evidence and demonstrative-forensic evidence as part of judicial evidence. This will be glaring, as will be seen subsequently, how demonstrative-forensic evidence would better afford processes of ascertaining or verifying facts in resolving judicial disputes.

The definitions above would not have been enough without mentioning notable, renowned Nigerian author and jurist like Aguda. According to him, 'judicial evidence' is "the means by which facts are proved but excluding inferences and arguments." His definition was a little different from other authors above as he excludes inferences and arguments from evidence, and it is material to our research because demonstrative-forensic evidence as seen today is a key component means of proving facts in a court of law and forensic evidence has nothing to do with inferences or arguments but pure facts. He argued further that "sometimes the word evidence is used in connection to admissibility, for example, when it is said that something is not evidence, it may mean that the thing is not admissible".[8]

Garner in Black's Law Dictionary defines evidence as 'something (including testimony, documents and tangible objects) that tends to prove or disprove the existence of an alleged fact or the collective mass of things, especially testimony and exhibits, presented before a tribunal in a given dispute.'[9] That even the bloody glove is a key piece of evidence for the prosecution. He went further and broadly defined evidence as:

> …the means from which an inference may be logically be drawn as to the existence of a fact, that which makes evident or plain. Evidence is the demonstration of fact, it signifies that which demonstrates, makes clear, or ascertains the truth of the very fact or point in issue, either on one side or on the other, in legal acceptation the term 'evidence' includes all the means by which any alleged matter of fact, the truth of which is submitted to investigation, is established or disproved. 'Evidence' has also been defined to mean any species of proof legally presented at the trial of an issue, by the act of the parties and through the medium of witnesses, records, documents, concrete objects, and the like…[10]

Our working definition of evidence for this research is that evidence is a testamentary fact that provides for how issues in disputes can be resolved by dispensing or requiring proof through oral, documentary, scientific, circumstantial and forensically by the courts, but excludes argument, prayers, legal conclusion and judgment. Evidence, in this sense, has both legal and technical characteristics but can be judicial evidence.

1.1.2. *Demonstrative-Forensic Evidence*

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7 Gulson, J.R. Philosophy of Proof. London: Routledge & Sons, 1905.
8 Aguda, T. Akinola, The Law of Evidence in Nigeria. 2nd ed. London: Sweet & Maxwell, 1974 at p. 11. print
9 Garner, B.A, (ed) Black's Law's Dictionary 9th edition, West Thomson Reuters USA.2009. p.634.
10 Ibid.

Generally speaking, our laws do not define demonstrative-forensic evidence, even though the Evidence Act[11] only defines 'fact' but not evidence (though the evidence is a fact). Similarly, demonstrative-forensic is not defined; hence, the first major difficulty in this branch of evidence is that of appellation. forensic evidence has been variously referred to as scientific evidence, technological evidence, digital evidence, electronic evidence, and computer evidence. Even though the terms forensic, scientific, technological, digital, electronic, computer etc are not synonymous, the genre of evidence to which these terms are applied and treated in extension as one under documentary and electronic evidence which the Evidence Act[12] recognizes, and thus the terms have been utilized to describe a congruous legal concept, interchangeably.

Essentially, the whole gamut of demonstrative-forensic evidence is about visualisation of what ordinarily a witness in the box would explain to the trier of facts. In the words of Tomsik and Lebovitz,[13] Demonstrative-forensic Evidence 'not only enhances your position in the courtroom, but it also allows the members of the jury to visualise what the witness is testifying about. The United States District Court recognized the role of this unique class of evidence *in Verizon Directories v Yellow Book USA*[14] where it held that 'pedagogical devices or demonstratives have long been recognized in the form of summaries, charts and other aids used by parties to organize or aid the jury's examination of testimony or documents which are themselves admitted into evidence'.

The reception of demonstrative forensic Evidence is based on the following assumptions.[15] First, it is mostly about the visualisation of evidence, substituting the eye for the ear. Generally, it is easier to remember what we see than what we hear. A neurophysiological study conducted at the University of Iowa lends credence to the notion. James Bigelow and Amy Poremba[16] noted:

> In general, we observed that retention was inferior for acoustic stimuli compared to visual and tactile stimuli, whereas retention for visual and tactile stimuli was approximately equal. Similar outcomes were observed in tests of STM for simple, artificial stimuli as well as recognition memory for complex, naturalistic stimuli. The deficit in auditory retention was not attributable to images of common objects presented against a background of either 'lawn' or 'clouds', and heard names of common objects spoken by either a male or female voice. In the recognition session, visual stimuli were presented on a neutral background and auditory stimuli were spoken by a

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11 Section 258 of the Evidence Act,2011. (As Amended 2023)

12 Sec 84, ibid.

13 Timothy S. Tomasik and Jordan Lebovitz, 'Make Sure Your Expert Speaks Our Language'<americanbar.org/abanet> accessed September 29, 2020.

14 (2004) (E.D.N.Y.) 331 F. Supp. 2d 136 per Jack Weinstein.

15 This accords with what Troy Lehman identified as the four principles to understanding the law relating to demonstrative evidence; see generally <https://www.google.com/amp/s/oatleyvigmond.com/demonstrative-evidence> accessed 20th June, 2022.

16 James Bigelow and Amy Poremba, 'Achilles' Ear? Inferior Human Short-Term and Recognition Memory in the Auditory Modality' *PloS One* [2014] (9)(2) 5-6.

> gender-neutral 'robot voice'. Subjects were instructed to indicate whether each stimulus was old or new, and for the old items, to report the context in which the item had initially been presented…

If, according to the report quoted above, information received visually or tactilely makes a better impact than auditory information to that extent, Demonstrative-Forensic Evidence should be more persuasive than other forms of evidence. This is so because the explanation offered using demonstrative aids sticks longer in the mind's eye than any other piece of evidence.

1.2. Admissibility of Demonstrative-Forensic Evidence

The general principle of evidence is that demonstrative-forensic Evidence is admissible only if it is relevant to the determination of the fact in issue. A piece of evidence is relevant only if it is materially connected to the fact(s) in issue.[17] In *J.L. Alston v Trillie Shiver*[18] where the Plaintiff sued for assault, the trial court admitted a replica of an axe handle (instead of the actual object). Since the axe replica was unconnected to the fact of assault, the Supreme Court of Florida had no choice but to overturn the decision and order a rehearing. The court held *inter alia*:

> Demonstrative evidence is admissible only when it is relevant to the issues in the case. Such evidence is generally more effective than a description given by a witness, for it enables the jury, or the court, to see and thereby better understand the question or issue involved. For this reason, it is essential, in every case where demonstrative evidence is offered, that the object or thing offered for the jury to see be first shown to be the object in issue and that it is in substantially the same condition as at the pertinent time, or that it is such a reasonably exact reproduction or replica of the object involved that when viewed by the jury it causes them to see substantially the same object as the original.

Furthermore, Demonstrative Evidence is admissible only if it fairly and accurately depicts the material fact(s) in issue. For instance, where a photograph is tendered by a witness, such demonstrative aid must correctly portray what the witness has already stated verbally in the witness box; otherwise, the evidence may be discountenanced. Fair and accurate depiction means that the demonstrative aid should not be exaggerated the facts in issue. The case of *Hannewacker v City of Jacksonville Beach*[19] aptly illustrates this principle. The Florida Supreme Court held:

> A map, plan or picture, whether made by the hand of man or photography, if verified as a true representation of the subject about which testimony is offered, is admissible in evidence to assist the jury in understanding the case. They are frequently

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[17] Federal Rules of Evidence, R401 (US), S109(1) Criminal Justice Act 2003, S109(1) (UK), and Evidence Act 2011, Ss4-13 (Nigeria).

[18] (1958) 105 So. 2d 785, P791.

[19] *(1982) 419 So.2d 308, P310 (Fla.)*

> formally admitted in evidence, and in so far as they are shown to be correct, are proper for the consideration of the jury, not as independent testimony, but in connection with other evidence, to enable the jury to understand and apply such evidence.

The fourth principle is that a piece of Demonstrative Evidence is admissible only if its evidentiary value is not outweighed by prejudicial effect. For instance, a manipulated photograph or video, though relevant, is unfair to the defendant; hence, the court must always be on guard to exclude such an unfair piece of evidence for being prejudicial. There are many other instances where the evidence may be unfair and improper.

The fifth principle is that a piece of Demonstrative Evidence is admissible only if it is not excluded under any rule or law. An example of an exclusionary rule is the provision of Section 84(4) of the Evidence Act, which requires authentication of electronically generated evidence in Nigeria. By that provision, a photograph, video, phone record or any other electronic record not authenticated is inadmissible, no matter how relevant it may be.

Finally, Demonstrative Evidence could be offered as either substantive evidence or illustrative evidence. Although every piece of evidence presented visually, aurally, or tactilely could be demonstrative *strictu sensu,* not all of such constitute Demonstrative Evidence. The differentiation between substantive evidence and demonstrative evidence was elucidated by Jeffrey M. Pollock[20] , thus "Although we colloquially use the phrase 'demonstrative evidence' to refer to visual information, many exhibits such as maps, photographs, document enlargements are substantive evidence. True demonstrative evidence, such as a computer simulation or artist's rendering, is not direct evidence; but is created for trial to explain a concept to the trier of fact. By contrast, a photograph of the site, an enlargement of a document, or a chart showing increasing or decreasing sales is substantive evidence, not demonstrative.

1.3. Types and Classification of Admissible Demonstrative Evidence

The court has become the 'evidentiary laboratory' for testing and approving all kinds of Demonstrative Evidence since the late 19th century, when this genre of evidence debuted in judicial proceedings. It is undeniably so because 'the scope of application is only limited by the imagination of the lawyer'.[21] The task of classifying Demonstrative Evidence is as challenging as the categorisation of judicial evidence, but this study shall navigate through the evidentiary paths and glean from the opinions and decisions of scholars and jurists alike. In *Verizon Directories Corp. v Yellow Book USA, Inc*[22]the United States District Court for New York classified computer-generated exhibits into six heads namely: (i) static images (e.g. tables, graphs, maps and diagrams); (ii) animations (static images shown in rapid succession); (iii) simulations or re-creations (detailed and realistic depictions of events) and (iv) computer models, (v) enhanced images, and (vi) easel writing and drawings created by an expert witness or counsel during trial and in the presence of the trier of facts. But the trio of *Lederman*, *Bryant* and *Fuerst*[23] opine that the phrase 'demonstrative evidence is used

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[20] J.M Pollock, substantive Evidence and Demonstrative: basic of Visual Impact, Available at < https//www.law.com> accessed 12th November, 2024

[21] Ibid.

[22] (2004) (E.D.N.Y.) 331 F. Supp. 2d 136 per Jack Weinstein.

[23] Op Cit (n-Pp42-43)

interchangeably with the phrase 'real evidence' to refer to 'any evidence where the court acts as a witness, using its senses to make observations and draw conclusions rather than relying on the testimony of a witness'. *Troy Lehman*[24] postulates that demonstrative evidence is either Real Evidence or Illustrative Evidence, but *Nick Eddy*[25] iterates that demonstrative evidence is either Substantive Evidence or Illustrative Evidence. Eddy's classification is apt and therefore serves as the model for this work.

1.3.1 *Substantive Demonstrative Evidence*

Substantive demonstrative evidence is also called true demonstrative. It is any medium that is connected to and offers a physical illustration of a fact in issue. It usually consists of evidentiary materials produced before or displayed in the court as a visual aspect of a witness's testimony. Examples include but are not limited to photographs, videos, computer simulations, CCTV footage, and others.

a. Photographs

It is important to know that photographs can be both substantive and illustrative, demonstrative evidence. Be as it may, the general belief is that images appeal better than spoken words. This axiom is truer with images captured in photographs. Nearly two decades ago, the world was horrified by leaked photographs of Iraqi solitary prisoners stripped and manacled in military intelligence cells at Abu Ghraib outside Baghdad. Had the photographs not leaked, millions around the world would not have known the atrocious conduct of the occupying United States forces in Iraq. While writing on the impact of the photographs, a commentator posited:[26]

> Crime-scene photographs, for all their power to reveal, can also serve as a distraction, even a deterrent, from precise understanding of the events they depict. Photographs cannot show us a chain of command, or Washington decision making. Photographs cannot tell stories. They can only provide evidence of stories, and evidence is mute; it demands investigation and interpretation.

Photographic evidence is treated under this head as substantive or real evidence offered in proof or disproof of a fact in issue. The instances when a photograph constitutes the physical or real evidence include but are not limited to the following: possession of books and magazines or photographs highlighting sexual behaviour or intended to arouse sexual excitement for the crime of pornography,[27] possession of nude photographs of children or possession of photographs of minors engaging in sexually explicit activity for the crime of child pornography[28], possession of stolen photographs as proof of stealing and other related crimes.

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24 Ibid.

25 Ibid.

26 Philip Gourevitch, 'The Abu Ghraib We Cannot See' available at <https://www.nytimes.com/2009/05/24/opinion/24gourevitch.htm> accessed June 11, 2024.

27 Pornography is outlawed in some jurisdictions including China, North Korea, Turkmenistan, and the Middle East (except Turkey, Lebanon and, Israel).

28 See Cybercrimes (Prohibition, Prevention, etc.) Act, 2015 (S23(1)(a-e).

The judicial application of photography commenced just about the same time other forms of Demonstrative Evidence evolved in the United States. Garner[29] opined that, against the background of oral testimony at common law, photographic evidence emerged as non-verbal or real evidence in the courtroom. For that reason, the court did not accept photographs as original evidence but as mere descriptive evidence, just like maps, plans or any other visual evidence. Hence, photographic evidence requires oral testimony for accuracy and authenticity. In *Luco v United States*[30] (the first recorded application of photographic evidence), the Respondent successfully used photographs to establish a case of forgery and fraud against the Appellant, who had claimed compensation for land he never owned. The notoriety of photographic evidence was acknowledged in *Udderzook v Commonwealth,*[31] where Chief Justice Daniel Agnew of the Supreme Court of Pennsylvania held:

> In the case before us, such a photograph of the man Goss was presented to a witness who had never seen him, so far as he knew, but had seen a man known to him as Wilson. The purpose was to show that Goss and Wilson were one and the same person. It is evident that the competency of the evidence in such a case depends on the reliability of the photograph as a work of art, and this, in the case before us, in which no proof was made by experts of this reliability, must depend upon the judicial cognisance we may take of photographs as an established means of producing a likeness. The Daguerrean process was first given to the world in 1839. It was soon followed by photography of which we have had nearly a generation's experience. It has become a customary and a common mode of taking and preserving views as well as the likenesses of persons, and has obtained universal assent to the correctness of its delineations-. We know that its principles are derived from science; that the images on the plate, made by the rays of light through the camera, are dependent on the same general laws which produce the images of outward forms upon the retina through the lenses of the eye.

Under the American jurisprudence, photographic evidence may be admitted if it is relevant, accurately and fairly depicts what it portrays. A photograph may be received in evidence either as a 'Silent Witness' or as 'Pictorial Testimony'. The 'Silent Witness Theory' presupposes that once a photograph is accurately produced from a reliable source, it therefore, speaks for itself like 'a silent witness in the courtroom'.[32] Whereas under the 'Pictorial Testimony Theory', a photograph is admissible only as nonverbal evidence. It is not an independent piece of evidence; hence it must be authenticated by a verbal account of a witness who knows how the photograph was produced. In *Hannewacker v City of*

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29 Ibid.
30 (Supra) @ Pp 532 -543 per Justice Grier
31 (1784) 76 Pa. 3400, Paras. 110-111
32 Keis George, 'Admissibility of Photographic Evidence' <www.lexology.com> accessed November, 11, 2020.

Jacksonville Beach,[33] the Florida Supreme Court elucidated the two theories of admissibility of photographic evidence when it held:

> There are two separate theories concerning the admissibility and use of photographs as evidence. One is referred to as the "pictorial testimony theory of photographs." Under this theory a photograph is admissible as a nonverbal mode of expressing a witness' testimony, a substitute for a description in words. It does not recognize the picture as having independent evidentiary rule. The other "silent witness" theory recognizes that, once properly authenticated, the photograph has independent evidentiary value and can speak for itself.

Additional requirements for admission of photographic evidence in the United States include the following. First, the photograph must be relevant and material to the fact in issue.[34] Secondly, a photograph can be admitted in evidence if it does not offend any provisions of the United States Constitution,[35] federal legislation, the rules of court or any other rules prescribed by the Supreme Court.[36] Thirdly, a photograph may be received in evidence if its probative value is not vitiated by any vice such as prejudice, confusion, undue delay, waste of time, or other factors.[37] The fourth and final condition is that a proper foundation by way of oral testimony has to be laid. The photographer or maker must authenticate the photograph by oral testimony as a true depiction of what it portrays.[38] In *United States v Olatunju Abayomi*[39] the Defendant/Appellant sought to tender photographs through Special Agent, Lane. The photographs were not authenticated and the witness could not identify them as those of the door his team hid behind to survey the Appellant's drug-running activities at the Post Office. Consequently, the trial Judge rejected the photographs. On appeal to the United States Court of Appeal for the Seventh Circuit, the court affirmed the trial court's decision and held inter alia: "The district judge did not abuse his broad discretion in deciding to exclude photographs for which no foundation had been established" which means a proper foundation is a prerequisite to its admissibility.

Unlike other jurisdictions, photographs are classified as documentary evidence in Nigeria hence, admissibility is subject to the provisions of the Evidence Act Section 83 and by extension, Section 84 in the case of digital photographs. From the judicial authorities reviewed thus far, the following are applicable rules for the admissibility of photographic evidence in Nigeria. To begin with, the photograph sought to be relied on must be relevant,

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33 (1982) 419 So.2d P308

34 See Rule 401 of the Federal Rules of Evidence.

35 The case of *Massiah v United States (1964) U.S. 377, 201* aptly illustrates how evidence could be vitiated by breach of a constitutional provision. In that case, the United States Supreme Court per Justice Stewart held that the secret interrogation of the Appellant (in the absence of his counsel) was in breach of his right to a fair hearing guaranteed by the 6th Amendment to the Constitution. Consequently, his conviction was set aside even though the clandestine recording of the Appellant's self-incriminating statements was relevant.

36 See R402 F.R.E of the U.S.A

37 See R403 F.R.E of the U.S.A.

38 See Rule 901(1) of the Federal Rules of Evidence

39 *(1987) 820 F.2d 902, 908*

pleaded in the originating process was the case in *Mrs Lois Chituru Ukeje & One Other v Mrs Gladys Ada Ukeje*[40] or listed in the proof of evidence accompanying a charge.

Secondly, where the photographs are produced from film negatives, they are only admissible if the film negatives and printed photographs are jointly tendered in evidence. The tissue of law was expressed in *Alhaji Isiyaku Yakubu Enterprise Limited v Teru*[41] where the court held 'Photographs are secondary evidence. They become admissible only when the negatives are also tendered. However, in this age of digital Photography where negatives are stored electronically, it becomes necessary for the Photographer to be called to testify. See *Musa v. State* (2019) 1 SCNJ 543 at 567, (2019) 4 NWLR (Pt. 1662) 335. In the instant case, the Photographs were tendered without the negatives. There is no evidence that they are digital. Even if they are digital, the Photographer was not called to testify. The court below therefore rightly expunged the Photographs (exhibits K – K5).'

The third rule of admissibility is in respect of digital photographs. Statutorily, such photographs are computer-generated evidence[42] thus, the criteria for admitting electronic record would apply *strictu sensu*. Notwithstanding the fact that the conviction and sentencing for culpable homicide were affirmed, the Court of Appeal in *Davou v COP, Plateau State Command*[43] expunged Exhibits "P6A" and "P6B" (digital photographs) for noncompliance with the requirements for certification of computer-generated evidence.

*b. Computer Simulated Evidenc***e**

Even though computer animations and computer simulations are computer-generated evidence, they differ in creation and purpose. A computer simulation may include a video but it comprises calculations that form the basis for the expert's testimony. If they are used to illustrate facts in issue, they are animations (demonstrative) but if used as substantive evidence, they are called computer simulations.[44] In *Commonwealth of Pennsylvania v Michael Seger*[45] , the Pennsylvania Supreme Court differentiated them thus:

> In a simulation, data is entered into a computer, which is pre-programmed to perform certain calculations by applying, for example, the laws of physics, mathematical formulas, and other scientific principles in order for the computer itself to draw conclusions and to attempt to recreate an incident. The end product of a simulation represents the computer program's conclusion of what happened. And the results of the computer simulation serve as the basis for the testifying expert's opinion of what happened.

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40 (2014) 11 NWLR (Pt. 1418) 384, Pp 402-403, paras. F-E SC

41 (2020) 16 NWLR (Pt. 1751) 505, 538 Paras. C-D per Abiriyi, J.C.A.

42 EA, 2023 (as amended) S84

43 *(2019) LPELR-47040, Pp14-15, Paras. D-D* per Uchechukwu Onyemenam, J.C.A. Similar decisions were reached in *Badung v COP, Plateau State Command (2019) LPELR-47038, Pp14-17, Paras. F-A* per Uchechukwu Onyemenam, J.C.A., and *Dalyop v Plateau State Command (2019) LPELR-47031, Pp14-16, Paras. D-D* per Uchechukwu Onyemenam, J.C.A. and *Akortsaha v IGP & Others (2022) LPELR-56985 Pp 23-25* per Muslim Sule Hassan, J.C.A.

44 Dean A. Morande, 'A Class of Their Own: Model Procedural Rules and Evidentiary Evaluation of Computer-Generated "Animations," *University of Miami Law Review* (2007) 4(61) P1072.

45 (2006) Pa. 896 A.2d, P1186.

c. Video/Still Motion Pictures (As Real Evidence)

Despite the danger of manipulation, the general belief is that evidence recorded on video[46] appeals better and sticks longer than other strands of evidence. Just like a photograph, a video can be both substantive and illustrative. Meaning it may be used as real (physical) evidence if it is directly connected to and offers a visual representation of the fact in issue. Examples in this regard would include videos of armed robbery attacks, videos of stolen property, and pornographic videos as evidence of child pornography.[47] The admissibility criteria for a video or motion picture are relevancy and laying of foundation. Judicial authorities unequivocally classify videos as documents and not computer-generated evidence. In the recent case of *Isaac Enabuzo v The State (2022),*[48] the Appellant contended that Exhibit G (video of the deceased body) was not authenticated as electronically generated evidence and therefore, inadmissible. The Supreme Court discountenanced that argument and held:

> …So, exhibit G is not real evidence, it is a document and admissible as such. It is within the province of the trial court to ascribe probative value to documentary exhibits tendered before it, therefore, the appellant's disagreement with exhibit G, on this ground, is totally unwarranted. His argument touching on section 84 of the Evidence Act is also baseless because that section deals with "admissibility of statement in documents produced by computer". Exhibit G is a video recording, in which "visual images are embodied", it is not a "computer output" - [Section 258(1) Evident Act]. So, the issue of whether the conditions stipulated therein were applied in this case has no place in this appeal.

Since video is a document, the requirement for certification would apply if the video sought to be tendered forms part of public records. The second admissibility criterion can be satisfied by calling a witness to give a verbal account of how, who and where the video was produced. Once the two admissibility conditions are met, the video goes into evidence, whether by consent of the parties or not. In *Paul Tyoapine Tsegba & Another v The Registered Trustees of Mission House & Another*[49] the Appellant contended that the witness through whom the video was tendered was not the maker and thus, no proper foundation for admitting the evidence. On appeal, the Court of Appeal affirmed the decision of the trial court's decision. In any case, the overriding consideration of the court is whether the video sought to be tendered is relevant to the resolution of the fact in issue.

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[46] Video has been defined as 'a sequence of images processed electronically into an analog or digital format and displayed on a screen with sufficient rapidity as to create the illusion of motion and continuity available at <https://www.wordnik.com/words/video> accessed January 20, 2024. It also refers to any digital moving picture including a computer file in video formats such as MP4, MOV, M4V, AVI DivX, FLV, DVD, Blu-ray disc, analog tape, et cetera <https://www.pcmag.com/encyclopedia/term/video> accessed January 20, 2021.

[47] See Section 23(1)(e) of the Cybercrimes (Prohibition, Prevention, etc.) Act, 2015.

[48] (2022) 10 NWLR Pt 1839 @553 paras. C-F per Augie, J.S.C.

[49] (2018) LCN/10667 P39 (CA) per Joseph Eyo Ekanem, JCA. See also similar decision in *All States Trust Bank PLC v Registered Trustees of Mission House International & Others* **(2018) LCN/10727, Pp68-70 (CA) per** Jummai Hannatu Sankey, J.C.A.

1.3.2. *Illustrative Demonstrative Evidence*

Broadly speaking, illustrative demonstrative evidence could be described as any piece of evidence (tactile, audio-visual or visual) other than real evidence that a witness (expert or non-expert) may use to explain, illustrate or summarise oral testimony. The utility of illustrative demonstrative evidence was aptly captured by Rosman[50] : "Words may be a lawyer's primary tool, but they're not the only tool. Well-crafted images, charts, diagrams, and photographs can make your briefs more interesting and persuasive, and law schools would do well to incorporate instruction in visual presentation. A chart can persuasively show factual and legal points; a diagram can explain a case's procedural history, and a photograph can save five pages of your brief." Essentially, there is no substantive evidence but mere aids to understanding oral evidence. Examples include graphs, aerial photographs, Google Maps, diagrams, sketches, drawings, 3-D models, animations, anatomical models, et cetera.

a. Statistical/Probabilistic Evidence

Statistical evidence has been defined as evidence regarding the relative incidence of a specific event or attribute within a population or group comprising similar people or cases.[51] Statistical evidence may be used in cases where the materiality of events or numbers may be in issue. It has been suggested that this unique strand of evidence may be employed to support expert opinion evidence in the evaluation of DNA evidence, evaluation of trace evidence, evaluation of pattern-matching evidence, and causation of illness or injury.[52] In most common law jurisdictions, probabilistic or statistical evidence is admissible in both civil and criminal proceedings as highlighted in the following cases. In *Sally Clark v Regina,*[53] the Appellant was convicted by a majority of 10 to 2 in the Crown Court at Chester of infanticide of her baby Sons Christopher and Harry. She appealed the conviction and lost in October 2000. Her husband believed she was innocent and by a reference to the Criminal Case Commission, the conviction was overturned.

Unlike other jurisdictions, statistical or probabilistic evidence is not admissible in Nigeria. This point was emphasised by the Court of Appeal in *All Nigeria Peoples Party & Another v Alhaji Saidu Nasamu Usaman & 320,*[54] where the court interpreted Section 57 of the Evidence Act, 1945. The court held:

> …I am in no doubt that statistical analysis does not fall within the items contemplated under section 67(1) of the Evidence Act requiring the tribunal or court to form an opinion on. In fact, the tribunal in the present case did not request for an opinion from the parties nor does it require a statistical analysis

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50 Adam L. Rosman, 'Visualizing the Law: Using Charts, Diagrams, and Other Images to Improve Legal Briefs' Journal of Legal Education [2013] (63)70-81.

51 Jonathan J Koehler and Daniel N Shaviro, 'Veridical Verdicts: Increasing Verdict Accuracy through the Use of Overtly Probabilistic Evidence and Methods' *Cornell L Rev* [1990] (75) (2) 247-279.

52 <https://royalsociety.org/-/media/about-us/programmes/science-and-law/science-and-law-statisticsprimer.pdf> accessed June 30, 2021.

53 (2003) EWCA Crim 1020, Paras 174-77

54 (2008) 12 NWLR (Pt 1100) P68, paras A-D per Aboki, J.C.A."

> of an expert to enable it determine whether a candidate has been duly elected by a majority of lawful votes at the election.

See also a similar decision in *Farouk Mustapha & Another v Adamu Mohammed Bulkachuwa*[55] where the Court of Appeal held that the "Statistical analysis does not fall within the items contemplated under section 67 of the Evidence Act requiring the Tribunal or court to form an opinion.

b. Charts

Charts have been described as a graphical representation for data visualisation.[56] *Section 53* of the Evidence Act provides that statements of facts in issue or relevant facts in issue published in charts produced under the authority of the Government are admissible. However, Section 151 stipulates that such statements are admissible without further proof only, if the charts were produced not for litigation. Section 258(1)(a) defines document to include graphs and drawings and by the operation of the *ejusden generis* rule the word 'includes' is used to enlarge the meaning of words and phrases occurring in the body of a statute.[57] To that extent, the section can be interpreted to include a chart. Accordingly, the rules governing the admissibility of documentary evidence would apply *mutantis mutandis*. Charts are not substantive evidence but mere demonstrative aids available to litigants in explaining or illustrating oral evidence. No matter how persuasive charts may be, it is not the duty of the court to produce or 'smuggle' them into proceedings. That was the case in *Boni Haruna & Two Others v Adamu Mu'azu Modibbo & Another*[58] , where the Governorship and Legislative Houses Election Tribunal, Adamawa State *suo motu* drew and relied on a chart in the course of determining the 1st Respondent's petition. On appeal, the Court of Appeal thrashed the court below for descending into the arena.

c. Graphs

Definitionally, a graph is a pictorial representation in an organised manner.[59] It is classified as a document[60] ; hence, its admissibility is subject to the same rules as documentary evidence generally. For instance, if the graph sought to be tendered is a copy of a public document, it must be certified.[61] In the United States, evidence premised on the graph is admissible only when it is offered to prove the contents of voluminous writings, records or photographs.[62] A graph is not substantive but mere demonstrative evidence used to illustrate or explain facts in issue. It is a pictorial representation of evidence that otherwise would be difficult to explain clearly to the court or jury as the case may be.

d. Diagrams

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55 (2020) 12 NWLR (Pt 1739) P449, paras. D-E per Hassan, J.C.A.

56 Available at <https://en.wikipedia.org/wiki/Chart> accessed March 20, 2024.

57 See decisions in *Osayande Uhunmwangho v F.I. Okojie & Another* (1989) 5 NWLR (Pt. 122) P471 per Nnaemka-Agu, JSC and *Kelvin Peterside v International Merchant Bank* (Nigeria) Limited (1993) 2 NWLR (Pt 278) P729, Paras G-H per Niki Tobi, J.C.A.

58 (2004) 16 NWLR (Pt 900) Pp 548-49 paras B-H per Aderemi, J.C.A.

59 Available at <https://www.splashlearn.com/math-vocabulary/geometry/graph> accessed March, 2024.

60 S258(1)(a)

61 Sections 89(e) & (f) and 90(1)(c) Evidence Act 2011.

62 See R1006 of Federal Rules of Evidence, 2018.

A diagram is a graphic design that explains rather than represents[63] and presents the circumstances and positions in which evidentiary items are located in a scene.[64] By virtue of the provisions of the Evidence Act,[65] 'diagram' can be interpreted to mean a document. Thus, diagrams are admissible in Nigeria as documentary evidence. Just like any other strand of evidence, a diagram may be admitted into evidence if it is relevant and fulfils other evidentiary criteria. But in the United States, diagrams are admissible in evidence as pedagogical aids to explain the contents of voluminous writings, records or photographs. The reception of diagrams as evidence in judicial proceedings in the United States began in the 19th century, as evinced by the decision in *Shook v Pate,*[66] where a diagram was used to explain the boundaries between two properties. The court gave the judicial seal of approval thus: "A witness may as well speak by a diagram, or linear description, when the thing may be so described, as by words. It is a common and usual method of pointing out localities and lines.

e. Sketches

A sketch is defined as a rough drawing that shows the main features of an object or scene.[67] As noted in paragraph 3.2.2, the invocation of the *ejusden generis* rule would enlarge the definition of 'document' in the Evidence Act, 2011 to include drawings, artistic renderings and sketches. These documentary visual aids are admissible in Nigeria as documentary evidence. They are used by both experts and non-experts to explain or 'fill in the gap' that oral testimony may not adequately cover. According to Ward,[68] sketches help to break down the monotony of a witness testimony because it would enable the witness to repeat essential evidence in a way the trier of facts can visualise. Sketches may be used to note the location of objects and evidence items within the scene, serve to supplement written or verbal notes and document measurements for use in creating the finished diagram.[69] There is no limit to the use of any of these illustrative demonstrative aids provided the evidence is relevant and fulfils other evidentiary criteria i.e., certification, signing, origin, *et cetera.* In *Adisa v Afuye*[70]the court rejected a sketch map (prepared by the Defendant) because it was unsigned. But in *Egwim v State*[71] the Court of Appeal held that failure to sign the sketch map of an accident scene was immaterial because the Appellant fled from the scene immediately.

Where a party elects to use a sketch map, say in a land matter, she or he must ensure that it is prepared by a surveyor. In *Chief J.E. Babatola v Oba Aladejan, the Alaworoko*[72] the apex court held "The appellant, who is said to be a geography teacher, told the trial court that he drew the sketch map (Exhibit "C). The sketch map is therefore inadmissible in evidence,

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63 <https://www.merriam-webster.com/dictionary/diagram> accessed November 20, 2021.

64 Ashraf Mozayani and Casie Parish Fisher (eds) 'Forensic Evidence Management from the Crime Scene to the Courtroom' (Taylor & Francis Group, LLC 2018) P5.

65 S258(1)(a)

66 (1873) 50, Ala. 91

67 Available at <https://www.britannica.com/dictionary/sketch> accessed march 20, 2024.

68 Judge Gregory H. Ward (Rtd), 'Using Charts, Diagrams, Graphs, & Maps in the Court' available at <www.caltrialpractice.com> accessed April 19, 2014.

69 Ashraf Mozayani and Casie Parish Fisher (eds), P5

70 (1994) 1 NWLR (Pt. 318) P.85, paras. D-E

71 (1999) 13 NWLR (Pt. 635) 338 P. 350, paras. A-B per Nsofor, J.C.A.

72 (2001) 12 NWLR (Pt. 728) P609 per Mohammed, J.S.C.

having been prepared and signed by a person who was not a surveyor, as is required by the law. Exhibit "H" too was not made by a licensed surveyor." Similarly, even if the sketch was prepared by a licensed surveyor, only a certified copy is admissible in evidence. In Peter Onwumelu & Another *v Ezeanya Duru & Five Others*[73]where the Appellant among other grounds, challenged the admissibility of a photograph of a sketch of the land attached to Exhibit K (certified site plan). The sketch was not certified and the necessary foundation for reception was absent. On appeal, it was held that the sketch was secondary evidence that ought to have been certified. As shown above, a party seeking to lead evidence of a sketch must comply with all admissibility criteria.

f. Paintings/Drawings

Drawing has been defined as a picture or image that is made by making lines on a surface with a pencil, pen, marker or chalk and not with paint.[74] Inarguably, the definition of artistic work in the Copyright Act[75]covers painting and drawing. To that extent, the two strands of demonstrative evidence are admissible in Nigeria. Artistic renderings such as paintings and drawings may be tendered in evidence if they fairly and accurately portray the fact for which they are alluded in evidence. The overriding rule of admissibility here is relevancy because extraneous matters have no place in evidence. This demonstrative aid has featured prominently in judicial proceedings in the United States as far back as the 19th century. In *Crowley v People*[76] the court held that portraits and photographs, if authenticated by other testimony have probative value.

g. Video as Illustrative Evidence

Video evidence is discussed here as an illustrative demonstrative aid. The same rules of admissibility as those highlighted in that paragraph are thus applicable. A proponent of video evidence must lay an appropriate foundation as regards its production and connection to the fact in issue. Therefore, it is important for the videographer or any person who actively participated in its production to be called as witness. Failure to lay foundation does not affect admissibility but touches on the evidentiary weight to be attached thereto. In *Donnellan v First Student, Incorporated*[77], day-in-life videos were tendered in evidence through the Claimant's wife. She was not present when the video frames were produced but she laid the necessary foundation by testifying how the accident had negatively impacted her husband's health.

h. Bite Mark Evidence

The proponents of this genre of evidence believe that bite marks could be analysed and matched to culprits. The procedure of extraction and analysis involves photographing bite marks found on victims and the teeth of suspects, producing dental moulds from the suspect's teeth, and then matching the moulds against the photographed suspect's teeth. There are two

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73 (1997) 10 NWLR (Pt. 525) P397, para. E per Achike, J.C.A.
74 Available at <https://www.britannica.com/dictionary/drawing> accessed March 20, 2024.
75 CA, 2022 S108(1)(a)
76 (1881) 83 N.Y. 464, @ 478.
77 (2008) 383 III. App.3d 1040.

major problems[78] associated with bite mark evidence. First, the human dentition has not been proved to be unique. Secondly, the skin is a poor recording medium for bite marks. Bite mark evidence may be useful in solving cases of murder, sexual assault and child abuse.

Owing to the fact that the Evidence Act does not expressly mention bite mark evidence, one may argue that it is unknown to our jurisprudence. Nonetheless, that argument holds no water in the light of the provision relating to expert opinion evidence. This is so because whenever the court has to form an opinion on bite mark evidence, the 'scientific opinion of a forensic odontologist' would be indispensable. In other words, bite mark evidence is admissible in Nigeria under expert opinion evidence. So far, there is no Nigerian judicial authority on this strand of evidence; invariably, foreign cases shall be called in aid. The consensus among scholars is that bite mark evidence is unreliable and the following cases are great pointers. In *Ege v Yukins*[79] the Applicant was arrested and convicted of the murder of Cindy Thompson (an expectant mother carrying a seventh-month-old foetus) who was bludgeoned and stabbed to death on 22nd February, 1984. The conviction was primarily based on an unreliable bite mark evidence led by one Dr. Warnick. Following the reversal of other cases in which the same expert testified, the Applicant filed an application seeking a review of the trial on the ground that the principles of fair trial were ignored. The United States District Court for Michigan granted the application. Similarly, in *Eddie Lee Howard v The State of Mississippi*[80] the Appellant was convicted of the murder of an eighty-four-year-old woman based on bite mark evidence. The medical examiner who performed the autopsy did not discover any bite mark but a State's forensic odontologist claimed to have found a bite mark on the deceased after exhuming her body and using a laser light. He claimed the invisible mark on the right breast and the left side of her cheek matched the Appellant's dentition. Years after he was convicted, the American Board of Forensic Odontology (ABFO) issued new guidelines on bite mark analysis. After several attempts, the Appellant was granted post-conviction DNA testing. The 'newly discovered' evidence extracted from the deceased's gown and bedsheet showed no connection between the Appellant and the crimes for which he was convicted. Armed with the 'new evidence' the Appellant filed a post-conviction application and raised the issue of whether the trial court would have reached the same or different verdict had the court considered the exculpatory DNA evidence. On appeal, the Supreme Court of Mississippi set aside his conviction. But in *Bernard Jones v Lou Archulete*[81] the United States Court of Appeals for the 10th Circuit held that the Appellant needed expert testimony to counter the Respondent's bite mark expert evidence.

i. *Palmprint and Iris Print*

Scientifically, it has been established that the human palms and iris are uniquely individualistic. Forensic experts say the human palm contains unique patterns of valleys and

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78 Available at < https://billhaneylaw.com/bite-mark-evidence-under-fire/> accessed January 20, 2024.

79 (2005) 380 F. Supp. 2d 852, P871 (E.D. Mich.) per Lawson, District Judge. The conditional grant of writ of habeas corpus was affirmed by the United States of Court of Appeal for the 6th Circuit in Ege v Yukins (2007) 485 F.3d 364 (6th Circuit).

80 (2020) 300 So. 3d 1011, 1026-1027, para. 69 (Miss.) It would appear that the United States Supreme Court had given judicial seal of approval to bite mark evidence. See Howard v Mississippi (2004) 540 U.S. 1197, 124 S. Ct. 1455, 158 L. Ed. 2d 113.

81 Ibid.

ridges just as the irises are characterised by individual patterns.[82] By means of high-resolution imaging palmprints and iris are photographed, stored, and matched against templates on data banks kept by law enforcement agencies.[83] Palmprint and iris print evidence are not mentioned in the Evidence Act. However, using the *ejusdem generis* rule 'fingerprint impression' mentioned in the Evidence Act[84] can be interpreted to include both. Evidence based on palmprint and iris print could be used to resolve homicide, burglary, forgery, identity theft, and so and so forth. Thus, reliance is placed on the following foreign cases. These unique strands of evidence are alien to Nigeria and expectedly, there is no local judicial authority to illustrate their use.

j. *Survey Plans*

A survey plan can be described as a map indicating the measurement of a tract of land, its boundaries and its contents.[85] The learned author, *Ezeonu*[86] iterated that 'a survey plan is a specialised map of a parcel of land created by thoroughly examining and measuring the property. It determines and delineates boundary locations, building locations, physical features and items of special importance. More than just a map of a property, a land survey plan is an important legal document that displays the exact legal boundaries of a property and applicable aspects of the registered title'. On the strength of the definition and description quoted above, it is clear that a survey plan comprises a demonstrative tool that explains or provides geospatial or cadastral information about a piece of land. Granted, 'survey plan' is not expressly mentioned in the Evidence Act[87] but the reference to 'plan' in Section 53 can be interpreted to include survey plans. By that section, facts in issue or relevant facts contained in plans made under the authority of the Government are admissible in evidence. Just like any other documentary evidence,

Being a demonstrative aid, a survey plan cannot substitute for the oral testimony of a witness. A witness who prepared it or is in charge of its safekeeping is competent to adduce evidence on it. In *Osagiede v Uwabor*[88] the Appellant joined issues with the Respondent on the identity of the disputed land but failed to call the surveyor who prepared the survey plan relied on. While resolving the appeal against the Appellant, the Court of Appeal sitting in Benin held, inter alia:

> …However, the Appellant having regard to his pleading and as submitted by learned senior counsel joined issue with the Respondent regarding the identity of the land in dispute in the instant case. It would therefore appear that since this was not a situation where the Appellant accepted the land in dispute as

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82 Monika Saini and Anup Kumar Kapoor, 'Biometrics in Forensic Identification: Applications and Challenges', Journal Forensic Medicine [2016] (1)(2) 1-6.

83 Iris recognition systems are widely used at the airports in the United Kingdom and the United States.

84 Section 68 Evidence Act 2011.

85 Bryan A. Garner (ed), Black's Law Dictionary (West Group, 1999) P1458.

86 Obumneme Aloysius Ezeonu, 'Survey Plan in Land Cases: Principles, Cases and Materials' (Snaap Press Limited, 2017).

87 Although the Town Planning and Survey Laws of the various states provide for admissibility of survey plans but it is debatable whether such provisions are congruent with the Constitution. The legislative power to enact legislations on evidence vests exclusively in the National Assembly and not the Houses of Assembly.

88 (2014) LPELR-22664(CA) P. 41.

> described by the Respondent, there was every need for the maker of the document admitted as Exhibit "E" to have been called to answer questions on it to enable the lower court determine the probative value to attach to the document.

k. *Anatomical/Medical Evidence*

Technology has greatly enhanced the quality and quantity of medical evidence in litigation. A vast majority of medical evidence adduced by litigants pertains to radiography[89]. The (*Radiographer Act*)[90] defines radiography as the art and science of the application of various forms of radiant energies on human beings to promote health, treat diseases and produce various diagnostic images including-(a) X-ray imaging; (b) radio nuclide imaging; (c) ultrasonic imaging; (d) thermographic imaging; (e) magnetic resonance imaging; when medically indicated. Evidence derived from any of these subsects can only be adduced by expert witnesses as illustrative demonstrative aids and not substantive evidence. For example, a claimant may use an X-ray photograph, CT scan or MRI scan to establish a case of medical negligence against a physician. Conversely, a physician may use the same set of evidence to deny the claims against him or her.

i. *X-Ray Evidence*

When German Professor of Physics, Wilhelm Conrad, accidentally discovered an X-ray on 8th November 1895[91] little did he know that his discovery would feature prominently in the courtroom. An X-ray or radiation ray is an image that uses small doses of ionising radiation to take photographs of the inner parts of the body – radiographs.[92] Since X-ray is borne out of the electromagnetic process without exception, it is a piece of computer-generated evidence within the ambit of Section 84 of the Evidence Act, 2011. The extensive definition of the document offered by the Supreme Court of Nigeria in *Dickson v Sylva*[93] includes an X-ray plate. That being the case, the rules of admissibility governing documentary evidence pertaining to computer-generated evidence would apply.

In the United States, X-ray images are admissible as business records especially in federally controlled courts in the United States.[94] Aside from that, the rules of evidence in the respective States like Texas also provide for the reception of x-ray evidence. In *In the Interest of J.P.B.,*[95] the Texas Supreme Court among other issues, considered the admissibility of X-ray printed from a computer programme that allowed alteration of images.

m. *Autopsy Report*

Whenever death occurs unnaturally, a coroner is required to conduct the post-mortem to ascertain the cause of death. In the course of conducting a post-mortem, the medical examiner

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89 Radiographers (Regulations, etc.) Act, Cap. R1, LFN, 2004.
90 Radiographers Act, S28, Ibid.
91 https://columbiasurgery.org/news/2015/09/17/history-medicine-dr-roetgens.accidental -x-rays accessed May, 20, 2024.
92 See <https:www.webmd.com/a-to-z-guides/what-is-x-ray> accessed May 21, 2024.
93 (2017) 8 NWLR (Pt. 1567) P. 221, .
94 R703 and R803(6) Federal Rule Evidence U.S.A.
95 (2005) 180 S.W.3d 570 (Texas)

dissects tissues and organs and subjects them to pathological tests. A typical autopsy report[96] comprises photographs of the cadaver, organs or other parts of a deceased body.[97] Be it homicide, suicide or accident, the moment the cause of death is a material fact in issue the prosecution is required to prove it. Although autopsy report is not specifically mentioned in the Evidence Act the phrases 'a certificate signed by a Government pathologist or entomologist' and 'any certificate issued and produced by any officer in charge of any laboratory' in Section 51(1) and (2) aptly describes autopsy report. It is admissible in evidence whether tendered by the doctor who performed the autopsy or any other person who knows of its contents.

The pre-eminence of the autopsy report was underscored by the Supreme Court in *Abbas Muhammad v The State*[98] where it held:

> …But far weightier than all the above oral testimonies is Exhibit C, Medical Report, prepared by PW5 which tallies with the injuries, the Appellant admitted that he inflicted on the deceased that day. The Appellant stated in Exhibit A that he hit the deceased "on the back and again on his back two times". PW5 explained that it was the injury to his lower back, which caused bleeding to his spinal cord that eventually caused the death of the deceased…

It should be noted however, that it is not in every case that the medical examiner's report is necessary to explain the cause of death. Nonetheless, the autopsy report is an invaluable evidentiary material in homicide cases.

1.4. Recommendations

Regardless of the fallibility associated with demonstrative forensic Evidence, it is still ubiquitous in judicial proceedings. According to a popular adage, a problem identified is half-solved. Hence, the following are the recommendations of the researcher on how to improve the application of Demonstrative-Forensic Evidence for a successful contemporary justice delivery:

1. *Proper Authentication of Electronic Records***:** Authentication of Demonstrative-Forensic Evidence especially aspects that constitute electronic records should be done by experts who can testify about the content of the information as well as the devices used to create and present them in the court.

2. *Affordability of Cost*: The cost of hiring experts could be subsidised by the government to encourage greater application of Demonstrative Evidence. If this is not done, the majority of litigants who ordinarily should require such evidence will not get justice. The cost is not what the ordinary citizen who can barely feed, shelter and clothe himself can afford.

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[96] A Forensic autopsy has legal implication because it is primarily performed to determine if death was an accident, homicide, suicide or occurred naturally. See generally, Melissa Conrad Stoppler, 'Autopsy (Post Mortem Examination, Necropsy)' available on <https://www.medicinenet.com/autopsy/article.htm> accessed April 12, 2024.

[97] Ibid

[98] (2017) 13 NWLR Pt. 1583 P427.

3. *Legislative Approach***:** Amendment of Sections 68, 84, and 258 of the Evidence Act as well as Section 17 of the Administration of Criminal Justice Act, 2015 is recommended for the following reasons. First the scope of subject matters that require expert opinion evidence should be expanded to include areas where 'specialised knowledge' is needed. Specialised knowledge would include technical matters and statistical matters. Secondly, the Daubert standard should be incorporated into Section 68 in line with modern trends in the admissibility of demonstrative forensic Evidence. Further amendment to Section 84 is recommended for further amendment because the current practice of authenticating electronic records is subject to abuse, the certificate of compliance should be by affidavit to deter people from falsifying electronic records. Appropriate law and Rules of Court should encourage the application of Demonstrative forensic Evidence. The absence of e-discovery guidelines makes it appear as if 'anything goes' hence, litigants do not know what and how to present demonstrative aids.

4. *Curriculum Review***:** A review of the curricula by the Nigerian Universities Commission and the Council of Legal Education to incorporate all aspects of Demonstrative-Forensic Evidence is recommended. Students at the undergraduate level should be exposed to the nature and role of this genre of evidence in courses like the Law of Evidence.

5. *Professional Advancement***:** Apart from the university and the Law School, the continuous legal education programme of the Nigerian Bar Association is another source of further training for lawyers. It is against this backdrop therefore that this work recommends the inclusion of Demonstrative Evidence as one of the subject matters in the Bar's continuous legal training programme. Senior members of the Bar or even non-lawyers who are versed in the use of complex or technology-driven aspects of this genre of evidence can be invited as resource persons to demonstrate how to utilise them. This will help to expose uninformed members of the Bar to Demonstrative Evidence or rekindle the interests of those with peripheral knowledge. Finally, there should be Training and retraining of Court Officials in the aspect of science and technology is also required for an efficient justice delivery system in Nigeria.

1.5. CONCLUSION

Being a powerful persuader,[99] demonstrative evidence is a veritable tool that an adept trial attorney must possess in the twenty-first century. If facts are the building blocks upon which an evidentiary castle is built, therefore, demonstrative evidence is the bedrock of that castle. It is a powerful persuader, glosses over other kinds of evidence and is a veritable advocacy tool of inestimable visual impact. Axiomatically, twenty-first-century trial attorney can't thrive without applying the full benefits of demonstrative evidence.

[99] See <https://dooleylucenti.ca/demonstrative-evidence-powerful-persuader/> accessed March 10, 2024.