THE USE OF FORENSIC SCIENCE IN THE CRIMINAL JUSTICE SYSTEM OF CAMEROON

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A DISSERTATION

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DECLARATION

I hereby declare that this dissertation is the result of my original research carried out within the framework of the doctorate program in Criminology at Selinus University, Italy. I hereby admit that this dissertation has never been submitted to any examination board for the award of any other degree. All the sources used have been duly acknowledged.

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Selvia Lem Tsibong
LL.B (Buea), LL.M (Bamenda)

DEDICATION

To

my daughter **Afanwi Samantha Ambebe**

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ABSTRACT

Criminal investigators increasingly rely on forensic evidence but many observers claim that unreliable forensic science has contributed to wrongful convictions. When used effectively within a thorough investigation, forensic evidence can improve case outcomes and mitigate the risk of wrongful convictions. The aim of this study was to gain an understanding of the extent to which forensic science is used in the criminal justice system of Cameroon. A qualitative research design was used to collect primary data from police investigators in the Anglophone regions of Cameroon where criminals have exploited an ongoing socio-political tension to carry out illicit acts. Secondary data were collected from articles, observation reports, the internet as well as criminal reports from police departments. The study found out that international courts and tribunals such as the ICC, ICTY, ICTR, SCSL, ECCC, STL, SPSC, as well as instituions like the ISO, IEC, ICRC, INTERPOL, IAI, TIAFT, IABPA are international and institutional framworks on the use of forensic science from which Cameroon can draw inspration. The Constitution of the Republic of Cameroon, the Penal Code and the Criminal Procedure Code form the legal basis of criminal matters. The Criminal Procedure Code contains provisions of rules of evidence implying that forensic evidence could be helpful in shaping the process of proof in criminal investigations. The study also revealed a general awareness and use of forensic science by Cameroonian police investigators in criminal investigation. Kits for fingerprints and photography are equipment mostly used during investigations. Investigators make use of public hospitals to help confirm DNA cases. However, the facilities and tools are not adequate to deal with common cases and scenes of crime satisfactorily. The need for modern technology to improve on investigation was expressed by investigators. The study has identified a number of challenges which contribute in hindering the effective use of forensic science investigation which include: inadequate training of police investigators, no clear investigation procedures and standards in the collection, preservation, and processing of physical evidence, lack of modern equipment and tools for investigation, shortage of forensic labs as well as the lack of cooperation between state agencies and the police core. From the findings, we recommend that Cameroon law enforcement agencies should be properly trained on the significance of forensic science in crime investigation, more forensic laboratories should be established, the functioning of a framework or body regulating the forensic practice should amplified and modern equipment and tools should be provided to investigators.

Keywords: Cameroon, crime, forensic science, investigation, justice system

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF ACRONYMS AND ABBREVIATIONS

CSI	Crime Scene Investigator
DNA	Deoxyribonucleic Acid
ECCC	Extraordinary Chambers in the Courts of Cambodia
ECHR	European Convention on Human Rights
IABPA	International Association of Bloodstain Pattern Analysts
IAI	International Association for Identification
ICC	International Criminal Court
ICRC	International Committee of the Red Cross
ICTR	International Criminal Tribunal for Rwanda
ICTY	International Criminal Tribunal for the former Yugoslavia
INTERPOL	International Criminal Police Organization
ISO	International Organization for Standardization
RPE	Rules of Procedure and Evidence
SCSL	Special Court for Sierra Leone
SPSC	Special Panels for Serious Crimes in East Timor
STL	Special Tribunal for Lebanon
TIAFT	International Association of Forensic Toxicologists

TABLE OF CASES

TABLE OF STATUTES AND REGULATORY INSTRUMENTS

INTERNATIONAL INSTRUMENTS

1. European Convention for the Protection of Human Rights and Fundamental Freedoms, 1950
2. The Minnesota protocol on the investigation of potentially unlawful death, 2016
3. United Nations Economic and Social Council, 1945
4. United Nations, Charter of the International Military Tribunal - Annex to the Agreement for the prosecution and punishment of the major war criminals of the European Axis ("London Agreement"), 1945
5. ICTR Rules of Procedure and Evidence, 2008
6. ICTY Rules of Procedure and Evidence, 2015
7. Regulations of the ICC adopted by the judges of the Court**,** 2004

NATIONAL INSTRUMENTS

Cameroonian instruments

1. Law N^{o} 96/06 of January 1996 to amend the Constitution of 2nd June 1972
2. Law N° 2005 of 27 July 2005 on the Criminal Procedure Code
3. Law N^{0} 2016/007 of 12/07/2016 relating to the Penal Code
4. Law No 2006/015 of 29 December 2006 on Judicial Organisation
5. Law No 2006/016 of 29 December 2006 on the Organisation and Functioning of the Supreme Court
6. Law No. 2011/028 of 14 December 2011 setting up the Special Criminal Court
7. Law No. 2017/012 of 12 July 2017 to lay down the Code of Military Justice

CHAPTER ONE

GENERAL INTRODUCTION

1.1 Background to the Study

Contemporary law enforcement has greatly expanded its ability to solve crimes by the adoption of forensic techniques and procedures (Inman and Rudin, 2001). The application of forensic science to assist in the gamut of activities in the criminal justice system has been recognized worldwide (Lee and Pagliaro, 2013). It is a complex discipline that interacts with a range of fields including science, policing, government and law (HL, 2017). Forensic science which has been defined as a group of scientific disciplines that are concerned with the application of their particular area of expertise to law enforcement, criminal, civil, legal and judicial matters (Prahlow, 2010) has been absorbed as part of national security as it helps in investigating almost all kinds of crimes. Past and current utilization of forensic science indicates that it may deter a would-be-criminal from committing crime, as she/he may fear that he could be traced and apprehended. It can also induce admission or confession, and in many cases saves much time in the investigation and prosecution of offenders (Prahlow, 2010). The role of forensic science has greatly expanded in the last several years as it has contributed significantly to both the investigative portion of the justice system as well as in the adjudicative function (Howard and Henry, 2019).

Despite the improvements of forensic science in developed countries, Africa, on the other hand, took quite some time to embrace this emerging science (Williams and Villet). It happened in the late 20th century in Africa. The field crept arduously into the African Criminal and Legal Justice Systems and is still in developmental stages. This discipline over some few decades has helped law enforcement agencies across the African continent to solve complicated crimes. However, evolving and emerging sophisticated crimes will require parallel sophisticated techniques and crime investigative approaches (Ludwig and Fraser, 2014). The anticipation of fully embracing forensic science in Africa may therefore be contrary to the necessary enabling environment, facilities, expertise and funds allocated for forensic science. This is evident in the yearly financial budget for Science in most African Countries (Karikari et al.).

In Cameroon, high level of unemployment, poverty, rural-urban migration, wide income disparities as well as an under-equipped police force have continued to fuel criminality. According to a report by (OSAC, 2019), street crime in Cameroon is endemic in major metropolitan areas,

and ranges from opportunistic to violent in nature. Low-level and more sophisticated criminals continue to target wealthy Cameroonians, expatriates, and members of the diplomatic community. Criminals continue to robe expatriates as well as locals inside and outside their residences, on the street, in restaurants, and in shops. Pickpockets operate at virtually all large gatherings and soccer matches, as well as at airports. Thieves often attempt to distract a victim by asking questions or bumping/jostling them, allowing an accomplice to snatch valuables. Often, thieves use knives or razor blades to cut valuables out of pockets, handbags, or backpacks. Thieves may also approach a victim and place the tip of a knife or other sharp object in the victim's side, while leading the victim to an isolated location or crowd before taking or demanding money. Thieves routinely use motorcycles to conduct drive-by snatchings of purses and other valuables. Theft by intimidation or extortion is also a common tactic, with criminal groups brandishing machetes or pistols and using them in the face of resistance or non-compliance. Generally, there are upticks in street crime, thefts of occupied and unoccupied vehicles, residential break-ins, highway banditry, and armed robberies in the months of November and December due to the holidays. These crimes often escalate to violence, especially when victims resist or fight back as victims are expected to comply with the demands of criminals as much as possible. Many crimes involve an "inside man" and target individuals or locations associated with payrolls, money transfers, or large sums of cash. Home invasions by gangs occur in wealthier neighborhoods, especially at locations without 24-hour guards and residential security enhancements (e.g., perimeter walls, window grilles, solid-core/metal doors). Carjacking remains a concern throughout the country and has led to deadly confrontations. Violent crime, including armed robbery and carjacking, has increased in the Littoral region.

Criminal investigation in Cameroon is regulated by the Criminal Procedure Code[1]. Investigations are directly placed under the supervision of a magistrate acting as a state counsel, who in turn is answerable to the Attorney General at the level of the Court of Appeal. Investigations are carried out by the judicial police and gendarmes who act as auxiliaries of the state counsel. The duties of the judicial police are performed by judicial police officers, judicial agents and all other civil servants or persons to whom judicial police duties are assigned by law. They are responsible for investigating offences, collecting evidence, identifying offenders and accomplices, and bringing them before the legal department.

[1] Law N°2005 of 27 July 2005 on the Criminal Procedure Code

Traditional detective methods alone may be less effective in to emerging crimes and providing safety for Cameroon (Johnson, 2013). It is thus needful that the Cameroon police force continues to develop and diversify their modes of operations in policing to help combat crimes (Chijioke, 2013). This study thus seeks to investigate the effectiveness of forensic science which is a modern detective technique as well as its contribution to the success of criminal investigations in Cameroon.

1.2 Statement of the Problem

Forensic evidence plays an important role in the criminal justice system by examining physical evidence in support of investigations and subsequent prosecution (Peterson et al.). Forensic sciences are now generally regarded as the indispensable handmaiden of the criminal investigator (FBI, 2007). This discipline over some few decades has helped law enforcement agencies across the African continent to solve complicated crimes. However, evolving and emerging sophisticated crimes will require parallel sophisticated techniques and crime investigative approaches (Ludwig and Fraser, 2014).

In Cameroon, it has been reported that under-equipped police force continue to fuel criminality in Cameroon (OSAC, 2019). Numerous high profile cases have demonstrated the harsh reality that despite the availability of current crime scene technologies, specialized equipment, and sophisticated forensic laboratory analysis, the effective utilization of physical evidence in crime solving is only as good as the knowledge and integrity of the crime scene personnel and the objective legal system that supports those functions (NRC, 2009). It is yet unknown whether the judicial police and gendarmes who are responsible for investigating offences, collecting evidence, identifying offenders and accomplices, and bringing them before the legal department, effectively use forensic science. Also, whether forensic evidence contributes to the success of criminal investigation in Cameroon remains unknown. In order to fill this knowledge void, this study is designed to explore the use of forensic science by criminal investigators in Cameroon

1.3 Research Questions

1.3.1 Main Research Question

To what extent is forensic science used in the criminal justice system of Cameroon?

1.3.2 Specific Research Questions

1. Which legal and institutional frameworks guarantee the use of forensic science in the criminal justice system?

2. Are there criminal cases in Cameroon for which the use of forensic evidence would be helpful in cracking?

3. Does Cameroonian police investigators use forensic science in criminal investigation?

4. What are the challenges faced in the use of forensic science in criminal investigation?

1.4 Objective of the Study

1.4.1 Main Objectives

The main objective of this study is to examine the extent to which forensic science is used in the criminal justice system of Cameroon.

1.4.2 Specific Objectives

1. To examine existing legal and institutional frameworks that guarantee the use of forensic science in the criminal justice system.

2. To analyse criminal cases for which the use of forensic evidence would be helpful.

3. To examine the use of forensic science by Cameroonian police investigators.

4. To investigate the challenges faced in the use of forensic science in criminal investigation.

1.5 Research Hypotheses

1.5.1 Main Research Hypothesis

The use of forensic science contributes significantly to the criminal justice system.

1.5.2 Specific Research Hypothesis

1. The use of forensic science in the criminal justice system is backed by Legal and institutional frameworks.

2. There exist criminal cases in Cameroon which the use of forensic evidence would solve.

3. Cameroonian police investigators use forensic science to investigate crimes.

4. Several challenges undermine forensic science utilization in criminal investigation.

1.6 Significance of the Study

The present research seeks to enhance understanding on the use of forensic evidence in the criminal justice system of Cameroon. It is hoped that the findings will incite concerned authorities to take proper measures to integrate and/or intensify the application of forensic science practices while designing policies and programs that facilitate criminal investigation in Cameroon. Low-level and more sophisticated criminals continue to target wealthy Cameroonians, expatriates, and members of the diplomatic community. Criminals have robbed locals inside and outside their residences, on the street, in restaurants, and in shops. The assumption is that laying more emphasis on the use of forensic science will strengthen the quality and effectiveness of the criminal justice system. This shall ultimately lead to interventions that are better tailored to meet the country's needs and thus allow for more effective and sustainable protection of the population. More importantly, an increased use of forensic science in the criminal justice system will go a long way to reduce crime wave.

1.7 Scope of the Research

This research examines the use of forensic science in the criminal justice system of Cameroon. It seeks to examine the existing legal and institutional frameworks that guarantee the use of forensic science in the criminal justice system of Cameroon. In addition, it examines criminal cases for which the use of forensic evidence would be helpful in cracking and also examines the use of forensic science by Cameroonian police investigators. Challenges faced in the use of forensic evidence in the criminal justice system are investigated. The work basically deals with criminal law. To achieve the objectives, other areas of the law are studied such as Legal History, Human Rights, and Constitutional Law among others. Other disciplines such as Sociology, Psychology, Anthropology and Geography have also proven to be of relevance.

1.8 Research Methodology

To understand and appreciate the use of forensic science in the criminal justice system of Cameroon, this research was carried out with the use of primary and secondary methods of data collection. Primary data were collected from police investigators in the Anglophones regions of Cameroon where criminals have exploited the ongoing socio-political tension to carry out illicit criminal act. The police investigators chosen for data collection in this study are those believed to be matured in the area of criminal investigation and also have the ability to understand the rubrics of forensics.

The design to collect primary data was qualitative. With the use of the qualitative approach, data was generated in the form of words. The type of interviews that were performed was an in-depth semi-structured type with the help of topic guides. Individual interviews were conducted and the data transcribed from the blog notes into Microsoft word documents for use.

Secondary data was collected from information contained in secondary sources such as the Internet, works of learned scholars and researchers, observation reports as well as criminal reports from government police departments.

To have a clear understanding on the content of the data collected, the legal method of data analyses was used namely: the dogmatic method and the casuistic method. The dogmatic method was used to develop a rational and logical reconstruction on the understanding of the application of forensic science in the criminal justice system as reflected in different legal theories. This method consists in the systematic, analytically evaluative exposition of the substance of forensic science. It further assists in the description of the literal sense of international law, statutes, and precedents, amongst others, intertwined with many moral and other substantive reasoning.

The casuistic approach involved the examination of existing cases, facts and other information that are directly or indirectly related to the use of forensic science in crime investigation. The reasoning on the jurisprudence on the application of forensic science are analyzed. The essence is to make use of the satisfactory justifications on decisions which judges have developed and arrived at in cases that directly touch on the use of forensic science in the criminal justice system.

1.9 Theoretical Framework

Forensic Science, like many other professions, has a long-standing history of discovery and development. It is more than just a science: it is known as an integrated science with the greater effort of an investigation. The essence of science is the scientific method.[2]

According to Ribaux and Margot, general classifications of crime analysis forms as well as a broad variety of methods, models and computerized systems have been developed during recent years. However, their relative importance in the analysis process is still difficult to understand (Ribaux and Margot, 1999). One of the main reasons, according to these authors is that the different pieces

[2] Daubert v. Merrell Dow Pharmaceuticals Inc. 509 U.S. 579, 593 (1993). "Science is not an encyclopedic body of knowledge about the universe. Instead, it represents a process for proposing and refining theoretical explanations about the world that are subject to further testing and refinement" (emphasis in original).

of usable information belong to separate research territories, that evolve independently with very little consideration of their relation with the broader information systems of the police.

Ribaux and Margot submit that forensic science intelligence is divided according to the type of trace being collected, for instance traditional marks like footwear marks, tool marks, biological markers, or by the coordination of physical data such as in drug intelligence. Their combined exploitation was suggested many years ago for intelligence purposes, but forensic science has, so far, failed to provide models of how they can be used in a coordinated way; how the different pieces of data are to be combined; and what is their relative participation in the whole analysis process. Consequently, only separate and small parts of the problem have been independently approached, mainly from a formal and technical perspective, even if those works have some generic flavor (Ribaux and Margot, 1999).

A solid methodology for crime analysis is therefore needed and must be built around a coherent and well considered framework. The relative participation of the different specialities and the treatment of specific types of data should be explicit, allowing a global resolution of problems. The computerisation of the process is not an aim in itself, but the derivation of appropriate computerised systems can be an important spin-off of modelling and design (Ribaux and Margot, 2003).

Ribaux and Margot proposed a framework for crime analysis that fully integrates forensic case data (Fig. 1). This framework aids to understand the relationships between forensic science and crime analysis, the design of specific intelligence processes and computerized systems, the interpretation of new situations in the light of what is already known, and the integration and organization of the knowledge originating from these new experiences. It also provides an opportunity for initiating the debate about management of memory and treatment of uncertainty.

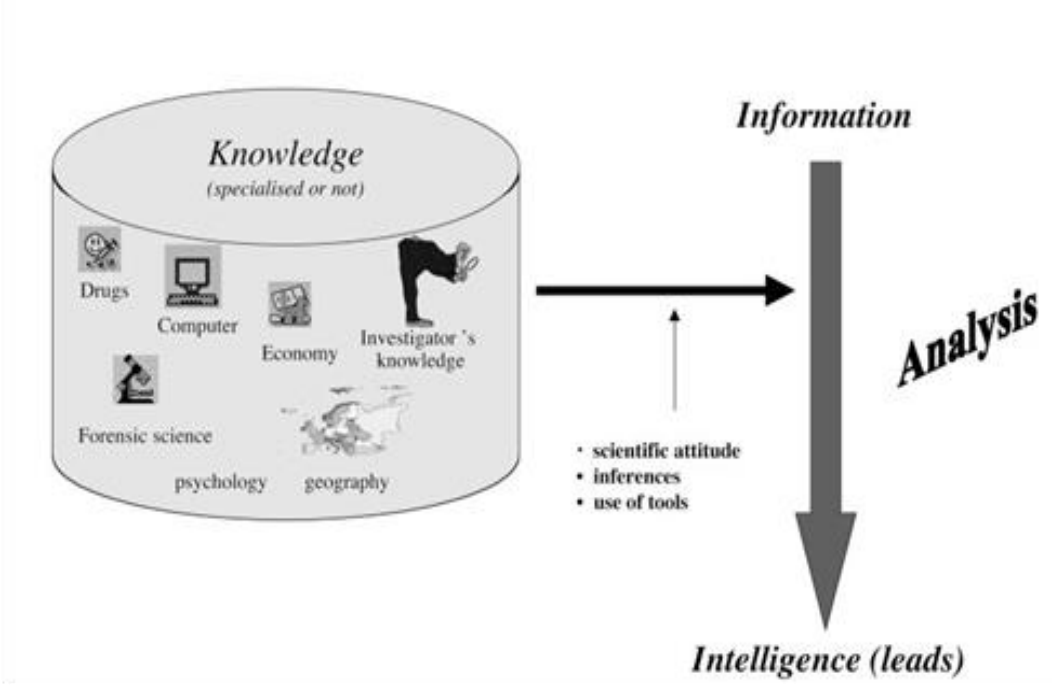

Figure 1: From information to intelligence

The magnum opus of Sir Francis Bacon who was a lawyer and the Lord Chancellor of England under the reign of King James I, titled "*Novum Organum"*[3] describes his first theory of the scientific method. According to Bacon, the scientific method, is a process of examining the natural world, and discovering important truths about it. He stated that scientists should be impartial observers without any preconceptions that might cause error in the scientific record. With continuous observations, patterns will emerge, giving rise to truths about nature. Science is therefore a method of investigating, understanding and describing the physical universe. This idea is reflected in forensic investigations, such as forensic chemistry, forensic biology and pattern featured evidence (fingerprints and firearms).

Two general rules of reasoning have been established by scientists, the first described as "inductive reasoning", which holds that arguments are viewed as strong enough when, if the evidence were to be true, then it would be unlikely that the conclusion is false. In other words, repeating patterns are identified and the pattern data are used (theorizing from the definite to the natural). Put differently, in inductive reasoning, the conclusion is reached by generalising or extrapolating from

[3] Bacon F "**Novum Organum**" Original from 1891, (Joseph Devey J, Collier PF and Son (eds), New York, 1922). https://www.google.com/books/edition/Novum_Organum/Xc9xDgHgvaYC?hl=enandgbpv=1andprintsec=**frontcover** (accessed on: 24 March 2022).

specific cases to general rules. The second is termed "deductive reasoning" in terms of which arguments are deductively valid, involving a process of reasoning[4] from one or more statements[5] (premises) to reach a logically[6] certain.[7] Regardless of the reasoning, the observations made and experimental work that is done, constitute the scientific method.

The scientific method is a fundamental aspect of science whereby a hypothesis is developed based on observational experiences, and then tested through experimentation or other impartial methods to confirm or refute the hypothesis. Forensic science is no different as fundamental aspects of science led to the development or evolution of forensic science, grounded in observational experiences throughout time, continuously tested to confirm or refute formalised hypotheses.

The Hypothesis and its Testing

According to Sir Karl Popper, a philosopher from Vienna, all science begins with a prejudice, a theory or a hypothesis (Popper, 1959). Popper says that the scientific method should be initiated from presumed knowledge that will lead to self-questioning, whilst keeping an open mind to change in beliefs within a context of scientific thinking, based on three entities: using empirical evidence (empiricism); practicing logical reasoning (rationalism); and possessing a skeptical attitude (skepticism). This is normally followed by a series of experimental tests and collection of empirical data to either support or disprove the hypothesis. To classify an endeavor of forensic science as science, the initiating scientists should be able to state a hypothesis and discover a way to test the hypothesis(Popper, 1959).

Following some forensic science principles, Robertson et al., (2016) argues that scientific methods are rapidly become dated and therefore proposes how such evidence ought to be interpreted and incorporated into the court process. They refer to three traditional principles that are followed in forensic science when interpreting evidence. The first principle includes the "Locard Exchange Principle". According to this principle, perpetrator will either leave marks or traces on the crime scene, or carry traces from the crime scene.[8] Originally, this principle referred to latent prints,

[4] Merriam Webster (Reasoning-the drawing of inferences or conclusions through the use of reason).
[5] Merriam Webster (Statement- a report of facts or opinions).
[6] Merriam Webster (Logically- relating to, involving, or being in accordance with logic).
[7] Internet Encyclopedia of Philosophy, "Deductive and Inductive arguments" https://www.iep.utm.edu/ded-ind/ (accessed on: 24 March 2022).
[8] Encyclopedia.com "**Locard's Exchange Principle**" https://www.encyclopedia.com/science/encyclopedias-almanacs-transcripts-and-maps/locardsexchange-principle (accessed on: 25 March 2022).

footwear impressions, fibers, broken glass, but over time, it has been developed to include pollen, touch DNA, etc. Although the principle assumes that a mutual transfer of "tracks" takes place when two objects or persons come into contact with one another, modern day technology presents scenarios in which perpetrators are identified without two objects or persons physically coming into contact with one another in order to transfer "tracks." Locard's exchange principle combines the question of the identity of the original source of transferred material, and the activity that led to the transfer and modification during and after the transfer. Many experiments contributed to the principle of transfer under certain conditions within multiple forensic disciplines.[9] However, transfer and loss through time is universal and can either be transferred through legitimate contact or alleged contacts. The exact time transfer occurred is not always possible to determine, although some studies were conducted to determine whether an observation could result by chance only or by specified contact.[10] Locard's exchange principle provides reliable information about past events, with the highest uncertainty arising from the reality of the alleged circumstances.

The second principle is called the "Principle of Individuality". According to this principle, two objects may be indistinguishable but no two objects are identical.[11] This means that every object, artificial or natural, is unique, although they may appear similar or identical. According to Popper, Locard's Principle and the Principle of Individuality should be regarded as principles only, as they do not fall within any standard definition of a law of science (Popper, 1962).

The "Individualisation Principle" constitute the third principle which is to the effect that if enough similarities are seen between two objects to exclude the possibility of coincidence, then those objects must have come from the same source (Robertson et al., 2016). This is the principle with

[9] Curran JM, Triggs CM, Buckleton JS, Walsh KAJ and Hicks T "Assessing transfer probabilities in a Bayesian interpretation of forensic glass evidence" 1998 Sci Justice 38(1**):**15–21**.** Also, Grieve MC "Back to the future – 40 years of fiber examinations in forensic science" 2000 Sci Justice 40(2**):**93–99**.** Also, Wiedermann A et al. "Probabilistic evidential assessment of gunshot residue particle evidence (Part I): likelihood ratio calculation and case pre-assessment using Bayesian networks" 2009 For Sci Int 191(1–3**):**24–35**.** Also, Carter JF et al. "The distribution of controlled drugs on banknotes via counting machines" 2003 For Sci Int 132**:**106–112. Also, McDermott SD and Willis SM "A survey of the evidential value of paint transfer evidence" 1997 J Forensic Sci 42(6):1012–1018**.** Also, Lowe A et al. "The propensity of individuals to deposit DNA and secondary transfer of low level DNA from individuals to inert surfaces" 2002 For Sci Int 129(1**):**25- 34**.** Also, Wickenheiser RA "Trace DNA: a review, discussion of theory, and application of the transfer of trace quantities of DNA through skin contact" 2002 J Forensic Sci 47(3**):**442–450**.** Also, Phipps M and Petricevic S "The tendency of individuals to transfer DNA to handled items" 2007 Forensic Sci Int 168(2–3):162–168.

[10] Stoney DA Transfer Evidence: In the use o**f** statistics in forensic science (Chichester UK Ellis Horwood 1991) 107-138.

[11] Wittgenstein Tractatus 1922. Wittgenstein's original text says "Von zwei Dingen zu sagen, sie seien identisch, ist ein Unsinn, und von Einem zu sagen, es sei identisch mit sich selbst, sagt gar nichts" (Tractatus 5.5303). Translated as "Saying two things are identical is nonsense, and saying one thing is identical with yourself says nothing".

the biggest impact on forensic science. It is followed in many comparative arguments where unknowns are compared to known samples of a known source, from handwritings to fingerprints.

Scientists like Sir William Herchel, Dr. Henry Faulds, Sir Francis Galton, and Sir Edward Richard Hendry, realised a need for the necessity of identifying persons (IAI, 2011). These scientists over time developed and contributed to ways of positively identifying individuals by means of their fingerprints. Similar discoveries were made by firearm experts such as Calvin Goddard, Major Julien S. Hatcher and others, who discovered ways of connecting firearms to cartridge casings left behind at fatal crime scenes (Hamby, 1999). As far as handwriting is concerned, Albert S. Osborn and others proved that the way a person writes can be traced back to that individual.[12] A number of chemists, microscopists, physicists and biologists continued the development of scientific methods relating to the identification of persons (kirk, 1963). For decades, these practices of identification and individualsation were applied to physical evidence and successfully admitted in international courts of law. It was, and is still is, considered of great value in courts. It should be noted that demonstrating similarities and differences was initially performed without a clear understanding by the examiners of the scientific foundation underpinning it. As time progressed, courts became more aware of the forensic science methodology that should inform and ground such an exercise, leading to a greater awareness of, and subsequent requirement to explain basic scientific laws and principles, rather than stating facts, observations or methods.

1.10 Definition of Terms

For better understanding of the research work, it is important to explain some key terms in detail. These include:

Forensics

The noun "forensics" refers to the art of debate, deriving from the Latin word "forum", for example, the court as the place to debate. The Merriam Webster Dictionary[13] describes the adjective "forensic" as:

- belonging to, used in, or suitable to courts of judicature or to public discussion and debate a lawyer's forensic skills

[12] Osborn AS "**Questioned Documents**" (Rochester New York 1910). https://duienforcers.wildapricot.org/resources/QuestionedDocuments_Osborn_LawyersCoopPub **Co_1910.pdf** (Accessed on: 5 November 2021).

[13] Merriam Webster: On-Line Dictionary "Forensic" https://www.merriamwebster.com/dictionary/Forensics?utm_campaign=sdandutm_mediu =serpandutm_source=jsonld (Accessed on: 3 June 2022).

- argumentative, rhetorical forensic eloquence
- relating to or dealing with the application of scientific knowledge to legal problems, forensic medicine, forensic science, forensic pathologist, forensic experts.

The adjective "forensic" is designated to connect with a public debate or more specifically, a court of law.

Science

It is the "science" component of "forensic science" that causes some confusion in modern society. The lay person believes science offers hard facts, definite conclusions, and uncompromised objectivity, and they do not understand the real reason for the existence of science. Judges and juries implicitly accept that science possesses a measure of legitimacy and credibility before it is deliberated in court. The science portrayed in the courtroom should be credible in order to deserve the trust it enjoys with the public, legal professionals and juries. When the scientific validity is questioned, the trust will dissipate and the scientific method should be revised.[14]

Forensic Science

Forensic science is a multi-disciplinary subject drawing principally from chemistry and biology, psychology and social sciences. Forensic science describes the application of scientific techniques and knowledge to legal problems and law enforcement. Forensic science has been absorbed as part of policing and national security as it helps in investigating almost all kinds of crimes, disasters and suspected behavior of individuals (Prahlow, 2010). Forensic science provides multiple options that would help in tracking and apprehending perpetrators of such dastardly acts by agents of the criminal justice system. Forensic evidence provides an additional option that could be better than witness testimonies and confessions (forced or otherwise), the reason being that forced confessions are obtainable from suspects following the application of extreme torture, and false witnesses are procurable in impoverished societies. These would eventually lead to a miscarriage of justice. But it can be ameliorated by the provision of empirical forensic evidence, a sub-set of forensic science.

Forensic science shelters many areas of sciences and consolidate them together to create an area of science called forensics. Forensic science uses chemistry (pH and other chemical tests, spectroscopic analysis, chromatography,), biology (fingerprinting, entomology, DNA testing,

[14] Pyrek KM Pioneers in Forensic Science: Innovations and Issues in Practice (CRC Press 2018). From the paper of Koppl R **"**How to improve Forensic Science**"** 2005. https://econwpa.ub.unimuenchen.de/econ-wp/le/papers/0503/0503001.pdf **(**Accessed on: 3 October 2022).

behavior, hairs), and physical science (ballistics, blood spatter analysis, structural analysis). Forensic science is an umbrella term that has numerous areas under it. At a crime scene, there are many experts who cover different fields as per their specialties. In broad term, all these people are referred to be forensic scientists (Cardinetti and Cammarota, 2006).

2.1 Forensic Investigation

Forensic investigation refers to the use of science or technology in the investigation and establishment of facts or evidence to be used in criminal justice or other proceedings. According to Kent, the forensic process is composed of the following phases; a collection of data from the crime scene, the examination of all collected data both manually and automated, analysis of the results of the examined data, the last phase is the reporting of the analyzed results (Kent et al., 2006).

Crime

The term crime simply connote an act which is gravely wrong in a moral sense, a deplorable act; a shame. Legally, crime means an act that the law makes punishable; the breach of a legal duty treated as the subject matter of a criminal proceeding.[15] It is an illegal act; an act punishable by law.[16] An offence against the State that is punishable. The act or omission may also be civilly actionable. Prevailing legal thinking takes the positivist view that any conduct can be declared criminal, so everything from murder to a failure to renew a television licence can be a crime. Most legal systems require that the accused person should exhibit *mens rea* ('a guilty mind') as well as having carried out the *actus reus,* being the physical requirement. Thus, in theft the accused must have taken the thing (although this is interpreted differently in different systems) and have intended to deprive the true owner of his ownership (although this too can be formulated differently in different systems). Motive is generally irrelevant. A crime is sometimes distinguished from delicts and contraventions, especially in the civil law jurisdictions: a crime is a serious crime, a delict a major offence and a contravention a trivial breach of the law. Crimes are also distinguished from offences, the latter being considered more trivial. The common law world has had a distinction between crime (grave) and misdemeanour (slight). Another common distinction is between *mala in se,* or 'bad in themselves' or they are *mala prohibita,* 'bad because prohibited', as being against public policy.

[15] Garner B. A., Black's Law Dictionary, (8th ed., Texas: West Publishers, 1999)
[16] Robert A., Chambers 21st Century Dictionary (Rev. ed., Chambers Harrap Publishers, 2004)

Crime Scene

A crime scene is any location that may be associated with a committed crime. Crime scenes contain physical evidence that is pertinent to a criminal investigation. This evidence is collected by crime scene investigators (CSIs) and Law enforcement. The location of a crime scene can be the place where the crime took place, or can be any area that contains evidence from the crime itself. Scenes are not only limited to a location, but can be any person, place, or object associated with the criminal behaviours that occurred. After a crime scene has been discovered, it is important that measures are taken to secure and protect the scene from contamination. In order to maintain the integrity of the scene, law enforcement must take action to block off the surrounding area as well as keep track of who comes in and goes out. By taking these precautions, officers can ensure that evidence that is collected can be used in court. Evidence that has become contaminated, tampered with, or mistreated can pollute the scene and cause a case to be thrown out of court.[17]

It is important that everything that occurs during the analysis of a crime scene is documented. It is the job of the initial responding officer to make sure that the scene has an extremely coherent and summarized documentation. The documentation should include the officers' observations and actions while at the scene. The initial responder is in charge of documenting the appearance and condition of the scene upon arrival. The initial responder will also gather statements and comments from witnesses, victims, and possible suspects. Several other documents are also generated so that a crime scene's integrity is kept intact. These documents include a list of who has been in contact with evidence (chain of custody), as well as a log of what evidence has been collected.

Justice

Many people have a different definition of the term. For some, justice is viewed as a process. It is the process or result of using laws to fairly judge and punish crimes and criminals. Others may see it as the maintenance of what is just, or the administration of what is just especially by the impartial adjustment of conflicting claims or the assignment of merited rewards or punishments. This view appears wider than the first since it recognizes that justice applies to both civil and criminal situations as well.

Though the concept of justice may actually differ in every culture, society or class of persons, it usually entails a scheme, or system of law, or a fair, just, or impartial legal process in which every

[17] Wikipedia, **"**Crime Scene" available at www.en.wikipedia.org/wiki/crimescene accessed 16/3/2015

person receives his or her due from the system, including all rights. The Black Law Dictionary defines the word Justice as the fair and proper administration of the laws. This definition is quite suited for the purpose of this research. Justice is the determination of rights according to the rules of law.

Criminal Justice System

According to Blacks' Law Dictionary, Criminal Justice System means the collective institutions through which an accused offender passes until the accusations have been disposed of or the accessed punishment concluded. The system typically has: Law enforcement (police, sheriffs, marshals), the judicial process (judges, prosecutors, defence lawyers), and corrections (prison officials, probation officers, and parole officers). This can also be termed Law enforcement system. Criminal justice system is a series of organizations involved in apprehending, prosecuting, defending, sentencing, and jailing those involved in crimes - including law enforcement, attorneys, judges, courts of law, prisons

CHAPTER TWO

LITERATURE REVIEW AND CRITICISMS/CHALLENGES OF FORENSIC SCIENCE

2.1. Literature Review

Much work has not been done on the use of forensic science in the criminal justice system of Cameroon. Although there exists a myriad of literature in this area of research in Africa and in other developed counties, none of these researchers had carried out a thorough research on the use of forensic science in the criminal justice system of Cameroon as obtainable in developed countries. This is particularly worrisome, as crime in Cameroon has gone sophisticated and organized. The review would therefore cover relevant studies on the use of forensic science with a view to helping build up a literature base for this field of study.

In 2005, Congress directed the National Academy of Sciences (NAS) to conduct a comprehensive study of forensic science in the United States. That study, completed by the Committee on Identifying the Needs of the Forensic Science Community, culminated in a 2009 report (the National Research Council (NRC). This report states that "for decades, the forensic science disciplines have produced valuable evidence that has contributed to the successful prosecution and conviction of criminals as well as to the exoneration of innocent people. Over the last two decades, advances in some forensic science disciplines, especially the use of DNA technology, have demonstrated that some areas of forensic science have great additional potential to help law enforcement identify criminals. Many crimes that may have gone unsolved are now being solved because forensic science is helping to identify the perpetrators"(NRC, 2009). According to NRC (2009), further advances in the forensic science disciplines will serve three important purposes. First, further improvements will assist law enforcement officials in the course of their investigations to identify perpetrators with higher reliability. Second, further improvements in forensic science practices should reduce the occurrence of wrongful convictions, which reduces the risk that true offenders continue to commit crimes while innocent persons inappropriately serve time. Third, any improvements in the forensic science disciplines will undoubtedly enhance the Nation's ability to address the needs of homeland security. The results of this study creates an awareness of the usefulness of forensic science in the criminal justice system. The study is however limited to the United State of America.

Researchers have published many alternative ways of conceiving forensic. The dominant model called 'forensics', is defined as a series of scientific disciplines that assist the criminal justice

system. For instance, chemistry, biology, physics or computer sciences, are viewed as core enabling scientific disciplines and associated technologies. Forensic chemistry, forensic biology or computer forensics are technical applications of the enabling disciplines based on the exploitation of samples collected at the crime scene and transmitted, in a more or less formalised way, by the police or the justice system. All the forensics disciplines share their subordination to the requirements of the criminal justice system, underpinned by jurisdictional, political and organisational philosophies, as well as being subject to specific legislation. These disciplines mostly (if not exclusively) serve the Court process. In the forensics model, crime scene is considered as a separate police technical activity science (Inman and Rudin, 2001); (Margot, 2011)

According to Lambrechts, the purpose of forensic investigation is to collect facts that can serve as evidence before a court of law; through which the associative part of an accused in the commission of a crime can be proved, with the purposed to resolve the crime. He stated that the effectiveness of accurate forensics is always closely linked to other factors. The forensic investigator should not rely on presumptions, but need to prove a crime by mean of evidence (Lambrechts, 2002).

The authors of the book titled *"Criminal Investigation"* said the objective of forensic investigation is to establish that a crime had actually been committed, to identify and apprehend the suspect(s), recover stolen property and to assist in the prosecution of the person(s) charged with the crime. The investigator needs to be sure that the right person is arrested for the crime. These authors define a forensic investigator as someone who gathers, documents, and evaluates evidence and information and this is accomplished through the process of investigation. According to the authors, an investigator should be a specialist, should know the elements of the specific crime under investigation, and he/she should search for the truth. In addition, a forensic investigator should be blessed with a more-than-average portion of legal know-how, thoroughness, patience, and perseverance and with good luck in abundance (Swanson et al., 2003).

According to Swanson et al., (2003), successful forensic investigators have the following characteristics: Invariably have a strong degree of self-discipline; use legally approved methods and are highly ethical; have the ability to win the confidence of people with whom they interact; do not act out of malice or bias; include in their case documentation all evidence that may point to the innocence of the suspect, no matter how unsavory his/her character; know that investigation is a systematic method of inquiry; use their own initiative and resourcefulness; have wide-ranging contacts across many occupations; make use of experts from many different fields to help the investigation onward; learn something from every person with whom they come into contact,

knowing that the wider their understanding of other factors/things the more effective they will be, have the sensitivity and compassion to do their job without causing unnecessary anguish and avoid becoming calloused and cynical from their contact with criminals, keeping in mind that the criminal element does not represent everyone.

The work of the Chief Judge of Edo State, Hon. Justice C.O. Idahosa, titled *"The Use of Forensic Science as an Investigative Tool-Wither Nigeria"* was developed as a wakeup call to all organs of government involved in the administration of criminal justice. It focuses on forensics by starting from the detailed history of the evolution of forensic science. He explained that the Police and other security agencies rely on eye witness or circumstantial evidence to resolve crimes. Beside the fact that eye witness accounts can and do create problems, there are several limitations to eye witness accounts of criminal activities. It is for instance not in doubt that, where several persons are present, when an offence is committed, the account of the act given by these persons can and do differ. This leads to the creation of doubts, which as all lawyers know have to be resolved in favour of the accused. Furthermore, many criminal acts are committed without witnesses except the perpetrators. According to the Chief Judge, several high profile crimes have gone unsolved principally because there were no witnesses. For each of these high profile cases, there are hundreds of cases involving persons of low profile which go unsolved and unsung. It is not claimed that, with forensic investigation, all cases, shall willy nilly, be solved. Some criminals will still get away. The point however is that a greater percentage of cases shall be resolved if this tool is employed. It becomes harder and more difficult for criminals to get away with the use of forensic science as a tool for investigation. The author said there are over thirty sub-divisions of forensic science, ranging from forensic accounting, through forensic document examination, forensic DNA analysis, forensic entomology to forensic serology, computational forensics etc, all of which deal with various areas of study, for the purpose of analyzing evidence to be presented in court. All these sub-divisions help in one form or the other to resolve issues in criminal or even civil cases.

According to this author, it has become real through television that ordinary folks see the use of forensic science as an investigative tool. He states that, such popular films or television series like CSI, Cold Case, Bower, Law and Order, NCIS, Waking the Dead, bring the case of forensic science to homes. They are also nonfiction, real life cases dramatized in such series as "Forensic Files", "The New Detectives", "Body of Evidence", which show how real cases were solved using forensic science. He goes further to say that, the good thing about forensic science investigation is that the results are like the universal symbol of justice, that is, the blindfolded lady with the

scales and a sword, which depicts justice as blind, in the sense that it is no respecter of persons. In the same vein, forensic science results are blind in the sense that it does not care or take into account the parties involved. Thus just as forensic science can aid an investigator in getting the perpetrator of a criminal act, it also helps in exonerating a person falsely or wrongly accused.

The work of the Chief Judge also mentioned how in the United States of America, an NGO known as Innocence Project set up in 1992, has helped to free many persons who had been wrongly convicted through post-conviction DNA testing. The common problems that led to these convictions in the first place were: wrong identification by an eye witness or the victim; invalid or improper forensic science; overzealous police officers or prosecutors and inexperienced or inept defence counsel/Judge. From the work of this author, one can see how important forensic science can be helpful in criminal investigation. There is however no mention of an all-embracing forensic techniques and no detailed recommendation on the path to enable us achieve this.

In the work of Yinka Shokunbi on "*Forensic Examination as a vital tool in solving crime",* he clearly advocated on the need to employ forensics in fighting crime. His work only emphasized on forensic pathology and didn't spell out the way out of the quagmire. Dr. Charles Emeka Ochem, in his classic work *"Relevance and Admissibility of Electronically Generated Documents under the Nigerian Law of Evidence"* was very vehement in his clamour for the inclusion of electronically generated evidence in the Evidence Act. This he advocated can be achieved through the amendment of the Evidence Act to make provision for electronically generated evidence. This yearning has however been provided for in the recent Evidence Act, 2011. This work is however on a specific line of call on the numerous areas of forensic evidence available in modern times following the technological breakthrough.

The book titled "*Forensic science: the basics"* and authored by Siegel Jay and Mirakovits Kathy is a comprehensive book that touched on where forensic science fit into the criminal justice system. Chapter twenty-one of the book tagged "Forensic Science and the Law" explained the process of criminal investigation. According to the authors, once a crime is reported or discovered, the police will launch an investigation. In large police departments, crime investigation is performed by detectives. They take overall charge of the investigation. Part of the investigation will be a search of the crime scene. This is a critical phase because much or all of the physical evidence of the crime will be found at the scene. Crime Scene Investigation, part of the search of the crime scene is carried out by crime scene investigators. They collect, preserve, and package the evidence and have it sent to the forensic science lab for analysis. As the investigation proceeds, this may be a

continuing process. Before a trial, witnesses may be deposed. This is an evidence-gathering process for the attorneys who question witnesses outside the courtroom. In this setting, witnesses are under oath and the questions and answers are recorded. If there is a preliminary hearing and/or trial, forensic scientists may be called to testify as expert witnesses. In some cases, reports written by forensic scientists that set out their findings may be admitted in lieu of actual testimony.

The authors elaborated on three important considerations that affect the use of forensic science in the criminal justice system during the investigation process namely: the admissibility of scientific evidence; Forensic science laboratory reports and their legal status as well as the role of the expert witness in court. According to the authors, the most important and most studied is the admissibility of scientific evidence (Siegel and Mirakovits, 2010). The work however failed to address the challenges that may be involved in the criminal justice investigation process.

Gardner T. J. and Anderson T. M. in their book titled *Criminal Evidence; Principles and Cases,* did a highly commendable work by exhaustively dealing on the use of scientific evidence in criminal matters in an eighteen chapter book (Gardner and Anderson, 2016). The book majorly focuses on the use of forensic evidence among others in the administration of criminal justice system. It extensively analyzed the use of sciences and scientific techniques in criminal justice system by focusing on the modern forensic sciences such as DNA genetic profiling, forensic entomology, forensic computer, trace evidence, Ballistics and firearm fingerprinting and the stage to stage procedure on how to go about the entire process in cracking crimes. It started by analysing crime scenes; how to secure and protect it, and explained how collection of samples from the crime scene can be done and the chain of custody required of such collected samples, testing of recovered samples, the matching of the findings from the tested samples, to expert presentation in courts to secure conviction. The content no doubt exposes the fact that it is a very good literature in line with modern trend of fighting criminality. Notwithstanding the praises thus far, its limitation is that the jurisdiction is restricted to United States as the book clearly confined its entire content of forensic evidence to fighting criminality to United States.

Travis, L.F. in his sixth edition book "*Introduction to Criminal Justice"* dealt extensively with the aspect of Law enforcement in the criminal justice system in chapter six of the book (Travis, 2010). He explained three principal decision points contained in the law enforcement component of the criminal justice system namely; the detection of Crime which is the discovery of crime or probable crime by the police; investigation which is the accumulation of information and evidence that links a particular person or group of persons to a particular crime or set of crimes. It is the process by

which formal criminal charges can be brought against identified individuals. He further explained that as an evidence-gathering activity, the principal tools of investigation are search and interrogation. Other tools and skills are employed, depending on the nature of the offense and the resources that are available to the police, for example, forensic analyses, lineups, and surveillance; Arrest is taking a person into custody. Once arrested, a person is no longer free to leave.

The author explained that in addition to search and interrogation, police obtain evidence in a number of ways. The offender's age, race, sex, and size can be determined from hairs found at the scene of the crime. The clothes worn by the offender can be identified from fibers collected at the crime scene. The weapon used in the crime can be ascertained from ballistics examinations. All of these techniques are staples of a forensic scientist's investigation. While rarely employed because of costs and a lack of necessity, the techniques of a forensic scientist sometimes provide the answers to investigators. Although the author touched on the aspect of forensic science as other investigatory practices, he failed to explain in detail how the science can help the criminal justice system in crime investigation.

Bohm R. M and Haley K. N. in their book titled " *Introduction to Criminal Justice"* in their fourteen chapter book dealt with forensic science in line with criminal law (Bohm and Haley, 2017). The book in chapter six tagged "Policing: Roles, Styles and Functions" explained in details forensic fingerprinting and DNA profiling. To them, two of the most significant advances in criminal investigation have been the development of fingerprinting and DNA profiling. Fingerprinting has resulted in the arrest and conviction of millions of criminal suspects who otherwise might never have been brought to justice. That DNA profiling holds even greater promises. It discussed the functions of DNA profiling amongst which is that it is capable of linking or eliminating identified suspects to a crime; identifying "cold hits" where a sample from a crime scene is matched against numerous cases in a DNA database and a positive match is made; and clearing convicted rapists and murderers years after they began serving their sentences. Although the book contains types of forensic tools, it does not contain enough of them been too scanty as very many important types of tools such as forensic computer, entomology, pathology, photography and archeology are left out. Another drawback as identified in the book is the fact that the book is confined to United States of America. This therefore makes its provisions inappropriate for curbing criminality via the use of forensic evidence in Cameroon which is the purport of this thesis.

Kind proposed to outline his own paradigm of crime investigation and the criminal trial during his long career in forensic science. His work represents the crystallization and refinement consequent upon his experience and thinking and provides a much more realistic and useful framework. In his article titled "*Crime investigation and the criminal trial: a three chapter paradigm of evidence",* he presented crime investigation as three 'chapters': The Problem to Find, The Decision to Charge and The Problem to Prove (Kind, 1994). All three chapters contain elements of induction and deduction. He explained the concept of induction to consist of reasoning from the particular to the general. Deduction concept consists of reasoning from the general to the particular. The first chapter in the crime investigation/criminal trial process requires predominantly inductive reasoning in that it considers how various pieces of evidence combine to point to a particular culprit. This chapter starts when the investigator begins his search for the criminal and it ceases when the investigator becomes confident that he has found him. This moment, when the investigator becomes sure that he has the right culprit, is a very important one in the crime investigation sequence. The second chapter is something of a hybrid and it represents the fundamental change in mental attitude which is required in the change from a mainly inductive, to a mainly deductive, reasoning approach to evidence. This chapter begins from the moment when the investigator becomes sure he has the right culprit, and it lasts until the moment when the trial begins. It is during this period that the investigator acts to refine and perfect the case he has elaborated against the accused. During either of these first two chapters the investigator may pose questions to the forensic scientist which deal with "who is guilty of the crime?" although in the second chapter such questions tend more to deal with "what further evidence can I adduce to support my view that X is guilty of the crime?" rather than with "have I got the right man?" In other words, during the second chapter of investigation the investigator tends to search for evidence corroborating a decision he has already made. The third chapter, the criminal trial, is mainly deductive in character in that it considers each piece of evidence in the light of the hypothesis (i.e., the criminal charge) that a named accused person is guilty of the offence. This is the trial itself and it is here that the prosecution puts its case that the accused is guilty as charged. The charge is simply a hypothesis that the accused is guilty of the offence and the court, sitting as a tribunal of fact, is there to decide if this hypothesis of guilt will stand up to open debate in court. Kind in his article also explained the terms which the forensic scientist can express his findings in assessing physical evidence. He however, laid no emphasis on forensic science techniques and tools that can be applicable in the criminal investigation process.

In its analysis of crime scene investigation needs, the International Association for Identification (IAI) discovered that most of this kind of work is performed by sworn law enforcement officers rather than specialized crime scene investigation units or evidence technicians. The report states, "The overwhelming need in the area of crime scene processing is almost evenly divided between more personnel and better equipment and training with many agencies giving equal weight to both needs. Television shows such as 'CSI' provide a very high visibility to the technology involved in crime scene processing and evidence evaluation. Not surprisingly there is a high expectation from the judiciary as well as detectives or other investigators, that this type of equipment and analysis ought to be available everywhere. We all know that's not possible but equipment such as digital cameras are still beyond the reach of many agencies." In addition, alternate light sources, a very elementary tool, are another common item requested but not affordable by many agencies. Another notable area of need is university-based research grants, which the report calls "virtually non-existent." The report adds, "Yet court challenges to any evidence often cite the absence of research or independent (i.e., non-forensic) studies. One common thread throughout the responses from identification sciences practitioners was the overwhelming need for accessible, affordable continuing education opportunities(IAI, 2004)

As stated in IAI (2004), "Technology has advanced all aspects of forensic science to a level unheard of only a few years ago but training has not kept pace with those advances." Most often cited in this report is the lack of funding for training. The report explains that training dollars most often go to the law enforcement side, with support units left lacking. The IAI noted how agencies lamented the FBI's decision to withdraw from the provision of training to the forensic science community. Several respondents to the IAI survey indicated that this training was one of the few places where education could be obtained at little cost to the agency.

The IAI (2004) also admitted the great unrest surrounding competency and quality systems in the forensic science community, and the relatively low number of forensic laboratories accredited by ASCLD/LAB. The report states, "Many recent horror stories involving misidentifications or shoddy laboratory work stem from non-accredited laboratories. In a crime laboratory environment, quality systems such as proficiency testing, accreditation, etc. are a way of life. However, we are quite certain outside that laboratory environment there is less appreciation for quality systems and how best to apply those systems to the types of units that operate in a non-laboratory setting. Fertile ground exists for organizations like the IAI and the accrediting organizations to make these units aware of such quality systems. Individual competency accepted and understood within the

individual forensic discipline is an area that must also be addressed. As one of the survey respondents noted, officers are required to have a certification to operate equipment to detect alcohol impaired drivers and to operate radar equipment. It seems incongruous that those who practice in the forensic disciplines are not required to have any certification or other evidence of competency." The study notes that, with the exception of DNA, there is no universal requirement to ensure examiner competency. The report states, "We recognize that some federal laboratories sponsor their own in-house certification programs available and applicable only to their personnel but that does not solve the larger problem. A movement toward mandatory certification over a period of time will go a long way to ensuring quality results from forensic examinations. An added benefit of certification is the mandatory training required to obtain and maintain certification. Typically, forensic science certification programs require a minimum of 48 hours of continuing competency activities over a five-year period. We have seen a successful example of this in the area of DNA and believe this model will be beneficial to other forensic science disciplines as well." The survey carried out by the IAI outlines some of the problems surrounding the field of forensic science. The jurisdiction of the study is however restricted to the United States of America.

The twenty chapter book titled "*Criminal Law And Procedure"* and authored by John M. S. and John M. S. II is a comprehensive book that touched on the use of forensics in fighting the ugly menace called crime (JOHN and JOHN, 2010). The book in chapter sixteen tagged "Arrest, Interrogation, and Identification Procedures" treated the topic of 'Identification Procedures' used by police. The book mentions that, forensic methods involve the application of scientific principles to legal issues. In the context of police work, forensic methods commonly include fingerprint identification, comparison of blood samples, matching of clothing fibers, head and body hair comparisons, identification of semen, and, more recently, DNA tests. According to the authors of this book, when these methods are conducted by qualified persons, the results are usually admissible in evidence. This book mentions the case of *Schmerber v. California*, 384 U.S. 757, 86 S.Ct. 1826, 16 L.Ed.2d 908 (1966) where the court ruled that obtaining such physical evidence from suspects does not violate the constitutional prohibition of compulsory self-incrimination. Also, the book contains the case of *Gilbert v. California*, 388 U.S. 263, 87 S.Ct. 1951, 18 L.Ed.2d 1178 (1967), where the U.S. Supreme Court held that a suspect could be compelled to provide a handwriting exemplar, explaining that it is not testimony but an identifying physical characteristic. The book also mentions a similar case of *United States v. Dionisio*, 410 U.S. 1, 93 S.Ct. 764, 35 L.Ed.2d 67 (1973) where the Court held that a suspect could be compelled to provide a voice

exemplar on the ground that the recording is being used only to measure the physical properties of the suspect's voice, as distinct from the content of what the suspect has said. The authors also state the *1995 O. J. Simpson murder trial* which demonstrated that, defense lawyers can attack the methodology of forensic procedures as well as the qualifications of those administering them. If the evidence is inherently unreliable, it is inadmissible regardless of whether there were violations of the suspect's constitutional rights.

The book touches on the fact that with the rapid progress of science and technology, forensic procedures are constantly evolving and new procedures becoming available to the police. Evidence obtained through scientific and technological innovations can be both relevant and probative in a criminal case. However, care must be taken to ensure that a new method is clearly supported by research. The book mentions of how the federal and state courts followed the test articulated in *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923), and admitted scientific evidence only if it was based on principles or theories generally accepted in the scientific community. It also contains the case of *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 113 S.Ct. 2786, 125 L.Ed.2d 469 (1993), where the Supreme Court held that the Federal Rules of Evidence supersede *Frye* and govern the admissibility of scientific evidence in the federal courts. This approach causes admissibility of scientific evidence to hinge on such factors as whether the evidence can be tested and whether it has been subjected to peer review. State courts are now divided on whether to accept the newer *Daubert* standard or remain with the classic standard announced in 1923 in *Frye.*

Sharma B. R., an Indian writer in his book titled "*Forensic Science in Criminal Investigation and Trials"* did a very bulky and well-researched work on forensic science in criminal matters in a twenty one chapter book (Sharma, 2020). To him, in today's criminal justice scenario, eyewitness' account, confessions and circumstantial evidence have gone awry. The trials take just too long to keep the witnesses from turning hostile and the criminals are turning intelligent and scientific. It is therefore necessary for the prosecution agencies to rely on something more authentic, more concrete and more productive in terms of convictions without their having to resort to traditional methods. This is so as those methods ends up failing to produce positive results most times. The answer to this is provided by science, as by nature scientific evidence are more or less exact, far more reliable and does not turn hostile under threats as it works on clue materials which are always available.

The book contains a detail analysis of different modern types of forensic evidence and how to go about the entire process in cracking crimes no matter the level of sophistication. It is so detailed

that it explained from the point of collection of evidence from crime scenes, testing, matching, to expert presentation in courts to secure conviction of the criminal. Some of the types of forensic evidence contained in the book include forensic psychology, computer, voice analysis, DNA profiling, track marks and body fluids. This is clearly a very good literature in line with modern trend of fighting criminality with science since criminals have become more sophisticated. Although this is a very rich book in the area of forensic evidence, its limitation is that the jurisdiction is restricted to India as the book clearly confined its clamour for the introductions of full fledge forensic evidence to fighting criminality to India.

Alan Axelrod and Guy Antinozzi, in their book titled "*The Complete Idiot's Guide to Forensics"(Alan and Guy, 2007)* did a very well-researched and detailed work on forensic science in criminal matters in a twenty two chapter book. To them, it takes more than deductive reasoning to solve a criminal case; eyewitness' account, confessions and circumstantial evidence are no longer sufficient to solve crimes following the technological advancement level with which crimes are currently being perpetuated, criminals having turned more intelligent and scientific. It has therefore become necessary for the prosecution agencies to employ something different from the usual traditional methods that will be more authentic, more concrete and more reliable in terms of trials and convictions/exonerations. This has become necessary as the usual traditional methods mostly ends up failing to produce the desired results needed to solve crimes. Forensic science therefore comes in handy, which is an approach to criminal investigation that uses the tools, techniques, and processes of science and technology to identify, recover, and analyze crime scene evidence so that this data can be presented effectively in a court of law. Forensic science is so necessary at this point as the results from the analyzed evidence are certain, reliable and more or less exact to address criminal and even civil matters. The twenty-two-chapter book contains a well detail analysis of a host of modern types of forensic evidence and the stage by stage procedure in solving crimes irrespective of the sophistication level of the crime. The book explores the history, present and future of police work, with special emphasis on that aspect of police work called forensics; the process of discovering, collecting, analyzing, and presenting evidence to prove the truth and falsity of particular criminal issues in law. It focuses on criminal investigation in general and forensics in particular. It begins with detail explanation of the police arrival at the crime scene, how investigators size up the scene and interrogate suspects, witnesses, and victims. It discusses the evidence investigators look out for, how they find it, gather it and analyze it, the tools and techniques they use in the process. The book takes a look at what investigators do at the crime

scene and in the medical examiner's office where scientific analysis of the recovered evidence are analyzed.

A large chunk of the book is devoted to thorough explanations of many modern branches of forensic science some of which are forensic toxicology, entomology, psychology, odontology, geology, anthropology computer, voice analysis, DNA profiling, track marks and body fluids. It also explores police communications and intelligence gathering, the science of lie detection, and went as far as explaining certain extreme investigative methods which are the hypnosis, psychics and the use of truth serum. Put succinctly, the book explains in details from point of collection of evidence from crime scenes, testing, matching, to expert presentation in courts to secure conviction/exoneration of the culprit.

Without any iota of doubt, Alan Axelrod and Guy Antinozzi did a very good literature work in line with modern expectations of fighting criminality as the traditional methods were no longer up to date with fighting crime. This is because forensic science acts as match going by the sophistication level criminals operate due to improved technology and innovations. In spite of the wealth of knowledge in the area of forensics contained in this book, its limitation is that the jurisdiction is restricted to United States of America.

K. M. Pyrek in his 16-chapter book titled "*Forensic Science Under Siege. The Challenges of Forensic Laboratories and the Medico-Legal Death Investigation System"* escort you on a journey through the inner workings of forensic science, introducing you to how and why this field is under siege, and why it matters so greatly to the future of the adjudication of criminal cases**.** In 16 chapters, Kelly covers the scope and breadth of forensic science from a public policy point of view. Through in-depth interviews of knowledgeable people, she explores the field and examines the problems, real and imaginary, facing this profession and explores some of the bright spots on the horizon. The work of this author mentions that forensic science as an applied science must be prepared for challenges under the ever evolving standard of admissibility of evidence, as well as closer scrutiny of all forensic disciplines (Kelly, 2007).

2.2. Criticisms/Challenges Surrounding Forensic Science

According to Kelly (2007), the forensic science discipline is making its mark on the worlds of science, the law, and medicine in ways that we are just beginning to comprehend and appreciate. The awesome power of forensic science to deliver a conviction or an acquittal in the court of law is being questioned, challenged, and scrutinized as never before. Forensic science is

simultaneously celebrated and vilified to the point where the constant torrent of kudos and the criticism blur to create a confusing, muddled picture.

As stated by James and Nordby in their book titled "*Forensic Science: An Introduction to Scientific and Investigative Techniques",* "legal challenges to many established forensic science techniques are being made. The law is questioning whether evidence such as fingerprint and hair comparison is truly scientific". According to these authors, the natural sciences from this adversarial position remain theoretical, while the forensic sciences remain pejoratively practical. They therefore advise that the forensic scientist must work to counteract this misguided view without appearing defensive. These authors state that while the natural sciences are said to be, among other things, theoretical, orderly, controlled, pristine, certain, and consist of pure knowledge, the forensic sciences are said to be practical and applied, disorderly, contaminated, chaotic, uncertain, and comprised of conjectures on the part of its practitioners (James and Nordby, 2003). James and Nordby add, "Unlike the carefully controlled experiment set up in a laboratory, consider the slightly smudged half fingerprint on a glass. If forensic science is conjectural, operating in chaotic situations where data are likely to become contaminated, can we trust the fingerprint as evidence? The so-called covering law model of natural science accounts for expectations of scientific certainty which no forensic science allegedly approximates: epistemically certain laws of nature cover and, thereby, through deduction, explain cases."

As explained by James and Nordby, forensic scientists must develop reasoned opinions by recognizing evidence, distinguishing it from coincidence, and applying a sound method. The method must allow for happenstance and uncertainty, carefully acknowledging room for relevant future discoveries. Most importantly, as reflected in the history of science, it must leave room for error. These authors also state that "Scientifically reliable methods help forensic scientists develop reasoned opinions, views that may not be proved conclusively true, but views toward which the explanatory patterns emerging from the evidence, together with the evidence itself, most unambiguously point. Reasoned opinions developed from scientifically acceptable methods avoid subjective, unsupported, and untested hunches and guesses. While the observation may be correct, its truth is merely coincidental. Since truth often hides among the debris of coincidence, a method, one that reveals the truth more often than not, earns the mantle of reliability."

In the foreword of the book titled *"Forensic Science: An Introduction to Scientific and Investigative Techniques"*, Starrs states, "Forensic science, being a branch of scientific inquiry, must often reconcile itself to affirmations that sometimes are only a hen's kick away from

categorically positive positions, but are, nonetheless, marked by uncertainty to a greater or lesser degree. But that is the lot of any pursuit of knowledge when verging on the ultimate." According to Starrs "legions of uncertainties in the forensic sciences" manifest themselves constantly, but adds, "That is not said in criticism of the forensic sciences, but in recognition that forensic science is bottomed on a combination of rest and motion. The many accomplishments of the forensic sciences can give it just cause for encomiums, but, being scientific in nature, it cannot rest on its laurels. He thus advises that the discipline must ever be in motion seeking new pathways to the scientific truths that will emerge only from innovative scientific inquiries into those uncertainties that demand attention"(Starrs, 2003).

Regarding uncertainties, Starrs asserts that "guesstimates" abound in forensic science. For example, time-dating, which he calls a "perturbing complexity," is a challenge in the forensic discipline of fingerprinting and ballistics. (Was the print left at the time the crime was committed? Was the gun fired at the time of the crime?) Starrs also points to forensic pathologists who are "constantly besieged to provide more exact statements on the time of a person's death" or asked to determine the precise sequence of the creation of stab wounds or bullet holes. (Can the wounds be sequenced so that the first wound can be differentiated from the last wound? Can the bullets be chronologically timed in order, with respect to the other wounds?) Starrs notes, "The interest of the public, fed by the media, in forensic science and concomitantly, the belief that forensic science has all the answers, has risen in a geometric progression, but forensic science moves more lumberingly in its research and development according to an arithmetic formulation. Soon, if we are not exceedingly careful to rein in the public portrayals of the forensic sciences to a more realistic scientific level, the forensic sciences will be found to be wanting in credibility by juries failing to measure up to public image. Worse yet, forensic scientists, to keep pace with this public misperception of forensic science, will render opinions as experts in the courts by expressing more scientific assurance that they should or can."

James and Nordby (2003) emphasize, "How one's opinion is constructed determines its certainty. The certainty of forensic explanations is measured by assessing their explanatory justifications. This, in turn, involves showing first that the explanation is justified, and second, that the explanation is better justified than any available alternative explanation. In this forensic setting, certainty assessments address the scientific explanation's rational justification, leaving the question of the explanation's truth and role in legal deliberations of the court. This allows for a

clearer understanding of requests for certainty assessments when scientists are asked by attorneys to attach some degree of certainty to their work product."

Nordby could identify the challenges existing in the criminal justice system when cases come down to mere semantics. As stated by him, "Scientific opinions involve interpretations of and inferences from data which can be subject to challenge on scientific grounds. The argument must be developed in the spirit of rational disagreement in either science or the law." Nordby sees scientific disagreements as scientific process, but these arguments and opinions must have purpose: "Forensic scientists have a scientific obligation to present their reasoning as clearly as possible, showing how their conclusions follow from the scientific work applied to a given case." In addition, Nordby asserts, "Good science, and good forensic science, produces reasoned opinions." He also states that when the court asks for a statement of certainty, it must remain solidly within the methodological realm of forensic science. According to him, Scientists shouldn't navigate scientific waters with an eye fixed solely on conclusions. Instead they must navigate with a critical eye focused firmly on the methods dictated by logic.

James and Nordby say that opinions should be held with what scientist Charles Sanders Peirce called "contrite fallibilism." James and Nordby explain, "By this is meant an awareness of how much we do not know, and the humility to acknowledge the possibility of making mistakes… Forensic scientists must develop an intellect not too sure of what must remain uncertain, not too uncertain about what must remain sure. In the spirit of intellectual honesty and judicial prudence, the best advice for the forensic scientist to carry from the scene to the lab and into court throughout a long career comes from a 20th century Viennese philosopher, Ludwig Wittgenstein: 'Whereof one cannot speak, thereof one must remain silent.'

Forensic scientists are expected to demonstrate logical acumen in applying the scientific method and they are expected to explain their application of science to the problem at hand clearly, accurately, and responsibly. In this light, Nordby (2003) admonishes the forensic scientist to own his or her conclusions: "Once you, as a forensic scientist, write something in a report, or say something under oath, you own that forever, good, bad, or indifferent." With this comes two scenarios; Nordby explains that forensic scientists' statements may either appear to be "overly definitive or precise" or appear "overly inconclusive or imprecise." Nordby adds, "When a degree of precision expressed by a conclusion fails to mirror the available precision among the data, red flags ought to fly."

Going back to the issue of semantics within the context of expressions of certainty, forensic scientists face danger in using pejorative language when using words such as likely or indicates the implication is that there is some degree of probability or even certainty to these claims. Nordby admonishes, "When couching claims with these words, the forensic scientist must be prepared to supply a foundation for the probabilistic nature of the attendant opinion." The absence of this foundation will, of course, open the scientist up to attack by the defense and cause counsel to probe for underlying scientific weaknesses, whether real or imagined. "My fear is that in the courtroom, some of those who testify may have a mentality of, 'You are either with us or you are against us,' and that colors how the person delivers his or her testimony," says Carol Henderson, J.D., director of the National Clearinghouse for Science, Technology, and the Law at Stetson University, and a visiting professor at George Washington University. "If you are a forensic scientist, you cannot be an advocate for one side or the other; you are there because you have examined the evidence and you are going to testify to exactly what the evidence tells you, no more and no less."

In Kiely's book chapter titled "*Forensic science and the law"* in the Book titled *"Forensic Science: An Introduction to Scientific and Investigative Techniques"* she remarks, "The important aspect of this increasing dependence on the scientific method as a basis for determining dispositive facts is the fact generated, not the method used to generate it. The existence or nonexistence of a matter of fact depends largely on the theory of fact-finding used by the fact seekers. The antagonism between forensic scientists and the courts can be encapsulated in two questions: How far can forensic scientists go in making definitive statements about crime scenes and/or linking a suspect to them because they have a microscope? How far do we let them go because we have a constitution? The importance of these questions lies in the recognition of how far and on what empirical basis such statements can be made at all, and the impact they may have on a jury in causing such match testimony, albeit given in a qualified manner, to be taken as true by a jury. The concern has always been that a scientist's testimony that a hair or fiber obtained from a suspect was consistent in all respects or not dissimilar will be internalized by jurors as statement of a definitive match. It is important to realize that . . . the opinions of most forensic experts are routinely couched in such qualified terms"(Kiely, 2003).

The presentation of expert testimony is one of the primary ways in which forensic science and the law clash and create difficulties for jurors who must decipher intimidating, complex technical data proffered by seemingly bulletproof scientific titans. Scientists and attorneys do not speak the same language and uphold polar-opposite approaches to reasoning, and therein

is the challenge of the reconciliation of divergent techniques to search for the truth. Starrs (2003) notes, "Even though forensic scientists may be respectful of the limits of their own scientific inquiries, they may nevertheless chomp at the legal bit which curbs them in the legal forum. The law proceeds at a pace moved by restraint and conservatism. Indeed the law's detractors in the scientific community often perceive the snail's pace of the law's acceptance of science to be a bone of much contention. Science, on its part, can and does make gigantic strides with new insights and almost magisterial new-found instrumentation." Starrs continues, "The law's methodical pace, therefore, is seen as pitted against the rapidity of scientific advances, while forensic scientists are seemingly left to grouse and muddle through their discomfiture with the legal rules that bind them. . . . The last thing forensic scientists should extol is the lifting of the barriers to the admission of what Peter Huber has aptly and tellingly termed 'junk science.' . . . A syncretic frame of mind is necessary to reconcile the divergent views of science and the law so that forensic scientists can function advantageously and harmoniously with two masters, one in science, and the other in law."

James and Nordby (2003) state, "Lawyers and forensic scientists enjoy a close, yet often uneasy relationship. Forensic scientists must not forget that lawyers have moral and legal obligations that often generate conflict and misunderstanding among those with scientific minds." James and Nordby observe, "Without the underpinnings of high ethical standards, forensic scientists may become what is known in the profession as hired guns. The student considering this profession should resist the temptation of selling whatever opinion is needed by defense or prosecution. Not all hired guns become forensic frauds merely through nonexistent or meaningless credentials. Properly educated, experienced scientists may also act as gunslingers through ignorance or misapplication of method. This might involve purposely omitting relevant tests or suppressing relevant results. Many such experts may develop an entirely unjustified sense of their own scientific abilities and observational powers. Generally, such experts offer firm, certain, and conclusive opinions designed to fit the relevant courtroom advocate's agenda. Such a forensic expert may even resort to defining scientific error as any interpretation that disagrees with his or her own." James and Nordby add that celebrity is not part of the equation: "In the real forensic sciences, individual scientists always work as members of a larger team, perhaps with other specialized scientists, law enforcement investigators, prosecutors, defense attorneys, judges, juries, and the media, each contributing his or her efforts toward the bigger picture of a public trial, or an investigation capturing the public interest. The job of a forensic scientist is not one of

glamorous celebrity." But the cult of celebrity is difficult to avoid. Whether it is the expert witness who is larger than life in the minds of jurors, or the glamorization of forensic science as the Hollywood starlet in its own right, the perception of the public is becoming increasingly significant to the legal and forensic science communities. Forensic science is vilified through the so-called "CSI effect," a modern-day crucible in which the very tenets of forensic disciplines and the criminal justice system are reworked like alchemy of old. James and Nordby (2003) state, "Forensic scientists must be prepared to battle dubious cultural expectations, either inappropriately elevating or denigrating the powers of science. Such expectations are usually generated through crime novels, popular theatre, movies, and television. These inappropriate expectations, when found among jurors, lawyers, and even judges, can negate conservative scientific testimony."

James and Nordby (2003) observe, "The philosophical foundation of the criminal justice system remains to protect the innocent and to ensure that the truth emerges for any matter before the court, thereby ensuring that justice is done. Given the number of cases to be heard, however, the criminal justice system has the potential to sacrifice values of truth and justice to organizational efficiency. While crime laboratory scientists may pride themselves as being independent finders of fact, most operate under police jurisdiction or administration, and many scientists, perhaps unconsciously, develop the attitude that they work exclusively for the best interest of the police or the prosecutor. When emotions overcome reason, a zealous forensic scientist may intentionally or inadvertently deny real justice. Results are misinterpreted, or worse, falsified. Such flawed science may not be easy to spot, since it can only appear through the results of the scientific investigation. While no one can attain anything close to a perfect harmony of reason with emotion, forensic scientists at least have a duty to strike the best balance possible under life's most difficult circumstances. Of course, completely satisfying this duty remains both difficult and elusive."

Joseph Polski, chief operations officer for the International Association for Identification and chairman of the Consortium of Forensic Science Organizations, remarks[18], "There certainly are instances where mistakes have been made in forensic science, and you can't deny there are people who have done some very egregious things. However, I don't think there is a general feeling among the members of the forensic science community that we're losing the battle. I think that, to some extent, this give and take and discussion about how we can

[18] Joseph Polski's perspectives of forensic science in the book titled "*Forensic science and the law. In: Forensic Science: An Introduction to Scientific and Investigat*ive Techniques" by James SH and Nordby JJ.

improve forensic science is healthy. In the next few years at the national level there will be some fairly high-level reviews of the field, and out of that, I think, will come the identification of areas that need more research and probably a much more solid basis for conclusions, especially in the pattern evidence arena." Having said that, however, Polski says one must consider the source of the criticism. "Much of the negative commentary on forensic science comes from the scientific research community, which sees applied science as sort of a poor stepchild. With the increasing visibility of forensic science, the field is a target for that kind of criticism. Some of the people saying that the system is broken are in a lofty position and can expound upon their views, but I am not sure that they want to participate in improving the field."

Carol Henderson, J.D., director of the National Clearinghouse for Science, Technology, and the Law at Stetson University, and a visiting professor at George Washington University[19] says that many critics haven't kept up with the times. "They either don't see the bigger picture or they haven't seen what strides have been made in forensic science over the years," she says. "Many positive developments, such as the accreditation of forensic laboratories, have occurred and made a difference. I don't think forensic science is broken, even though there have been a few major problems along the way. But problems were identified, and systems were reviewed to see how changes could be implemented."

Henderson says that a few high-profile white papers criticizing forensic science have inflicted some damage: "Randolph Jonakait wrote and published an article many years ago, and I actually wrote a letter to the editor in response to it. He was analyzing the situation by referring to a study conducted in 1978, and I'm thinking, 'We have to look at what has been going on since then.' Yes, a case could be made on all the things that are presumably wrong about forensic science, but on the other hand, as learned people, we can't ignore the strides that have been made in the field. The issues are that we need more funding, not just for DNA analysis, but for medical examiners' offices and other units of the crime labs, which are woefully underfunded. There must be a concerted, coordinated effort among all those involved in the forensic science and legal communities. We can't just say forensic science is broken, or say that it's impossible to fix it."

[19] Carol Henderson's perspectives of forensic science in the book titled "*Forensic science and the law. In: Forensic Science: An Introduction to Scientific and Investigat*ive Techniques" by James SH and Nordby JJ.

"I'm always somewhat concerned when things are not perfect, but in life nothing is perfect, so my concern is somewhat limited," says author and forensic science media consultant Lawrence Kobilinsky, Ph.D., a professor and science adviser to the president of John Jay College of Criminal Justice[20]. "In my opinion, science has become much more important in the criminal justice system, and what has brought that about, of course, is DNA. People are much more cognizant of what science, especially DNA, can do and that has been brought about by the more than 25 forensic science programs on television right now. Problems don't happen every day, but when you hear about them, it goes against the grain of what people expect from forensic science and it gets publicized. Suddenly everyone is saying, well, now we have a science that helps us make decisions in the criminal justice arena, but if there are questions about ethics and people who are not doing their jobs and making mistakes, can we still trust this science? I hear that, and I understand that reaction, but we must look at the bigger picture and the tremendous progress we have made using forensic science correctly. We must be vigilant about problems when they do occur, but we also need to face these problems head on, address the issues in question, and figure out ways to resolve the problems so they are avoided in the future."

Many forensic service providers wish that observers would notice the many contributions forensic science and forensic pathology make to society. Michael Dobersen, M.D., Ph.D., coroner for Arapahoe County in Colorado and president of the Colorado Coroner Association, notes[21], "When something good happens, you don't necessarily hear about it. The regular day-to-day practice of forensic pathology and how we are tied into the criminal justice system is just as important as news about the big cases that are solved. On the other hand, perhaps our best legacy is that we are not making headlines all of the time. We're an integral part of the system, and the system is working, contrary to popular belief. It's only when headlines are made do people pay attention, and it's negative attention. Practitioners must hang onto the quiet determination they have toward their jobs, knowing that the behind-the-scenes efforts that we put into the system do pay off. Every day we see the good in what we do, even if it's a seemingly little thing like comforting a decedent's family member, but that's not what is promulgated to the public. They are more interested in hearing about that high-profile murder case."

[20] Lawrence Kobilinsky's perspectives of forensic science in the book titled "*Forensic science and the law. In: Forensic Science: An Introduction to Scientific and Investigati*ve Techniques" by James SH and Nordby JJ.
[21] Michael Dobersen's perspectives of forensic science in the book titled "*Forensic science and the law. In: Forensic Science: An Introduction to Scientific and Investigati*ve Techniques" by James SH and Nordby JJ.

Henry Lee acknowledges the existence of detractors, as well as the increased duress under which so many forensic practitioners work[22]. "I have been in the field almost 40-some years now and forensic scientists are under the most pressure I have ever seen," Lee remarks. "In the early days, the police and the prosecutors had very few expectations of forensic laboratories and medico-legal offices. It was basic stuff, like comparing fingerprints, bullets, or tool marks, but in recent years, forensic science has seen tremendous advances in technology that has enhanced the concept of individualization. So everyone expects more of the forensic laboratories in particular. But at the same time that we face so much pressure, we have too many forensic scientists who are not as prepared or as adequately trained and educated as they should be. And yes, there are scientists like Fred Zain who did not actually do the experiments they testified to in court. But sometimes it is not the forensic scientist's fault that the lawyers misinterpret things. My concern is that there are scientists on the witness stand who do not have the guts or integrity to say, 'Wait a second, that is not what I am saying,' and instead, they let an erroneous or misleading interpretation be presented. There are unintentional errors, and then there are those errors where a scientist knows a result is a mistake and allows a misleading conclusion to be accepted as truth. That type of inexcusable mistake should not be made." Lee is quick to condemn the pseudo-scientists that give the profession a bad name. "Just like in any other field, we may have a few bad apples who are not genuine, and who provide interpretations beyond scientific principles. They are not forensic scientists, but they claim they are, and the public doesn't know the difference." Lee also points to the so-called "CSI effect" as having an impact on the perceptions and expectations of forensic science: "Jurors watch CSI and they think every case should work like CSI−by the second commercial we should have all of the answers. Or they think, 'Well, just spray a chemical, shine a light source, and the forensic evidence should just pop out in plain view.' But in reality, it doesn't work that way, and when it doesn't, of course the public gets upset; they entertain the perception that the forensic scientist is incompetent or that forensic science is working the way it should. Forensic scientists should have the professional integrity to call it as it is, no more and no less. Let the evidence show us and tell us the facts." Lee continues, "Unfortunately, forensic scientists are being squeezed by an adversarial legal system; the prosecution, of course, wants us to link the suspect while the defense lawyer wants us to exonerate the suspect. When the prosecution uses us as expert witnesses, the defense instantly says we're biased. It doesn't matter how fair we are, if

[22] Henry Lee's perspectives of forensic science in the book titled "*Forensic science and the law. In: Forensic Science: An Introduction to Scientific and Investigat*ive Techniques" by James SH and Nordby JJ.

you become a defense expert, the prosecution says we're prostitutes, or that we are hired guns," Lee says. "When you give your testimony, each side will accuse you, try to beat on you, and try to discredit you, and that's why I made the suggestion that forensic evidence should be the neutral, objective friend of the court. In other words, it must become a court-appointed expert witness, and not for the prosecution of the defense; it should be independent. Maybe that would relieve some of the pressure on forensic scientists." Lee says he is bothered by critics who assert that forensic science is broken because it is not akin to the sterile confines of a clinical laboratory and thus is somehow less rigorous. "Forensic science is not a pure or pristine scientific discipline," Lee emphasizes. "We have no control over the samples that come into the forensic laboratory. It's a different ball game than clinical laboratories where you can go to the stockroom and get a fresh, clean sample of unlimited quantity to test or analyze. When we go to a crime scene, we find the victim lying in questionable surroundings, the body decomposing. There is no such thing as a clean sample at a crime scene. For example, you have the dirty, blood-stained clothes of a suspect retrieved from a garbage dump. That's all you have to work with, so it's unfair of anyone to say you did not meet scientific principles because this sample tested is contaminated; of course it is contaminated. But what can the forensic scientist do about it? Nothing. Some scientists don't understand that; they say every experiment demands controls. For example, I was working on an investigation related to a possible homicide aboard a cruise ship. I wanted to conduct an experiment by using a mannequin, and people probably criticized me, saying, why don't you use real people? Sure, how many of you want to volunteer? Let me see how many times I can push a live person off of a balcony! There is no way to replicate a sample. Critics say we lack scientific principles and controls, but they don't understand the nature of forensic science." Lee continues, "The beauty of forensic science is that it uses scientific principles as well as things like logic, intuition, and the ability to put the pieces of the puzzle together to solve the case. I have been involved in six or seven thousand major cases, and no two cases are alike. That's why when forensic science is criticized, it is by the people who really don't understand it. They think everything should be black and white, but unfortunately, in our profession, many times it is gray." Lee says he has identified three critical areas of need in forensic science related to the underlying criticisms of the field. The first area is related to the need for greater autonomy of and involvement by forensic practitioners in their own field. Lee explains, "Currently, the utilization of forensic science and forensic evidence is not controlled by forensic scientists but by police detectives; whatever they collect from the crime scene they send to the crime lab, and the crime lab doesn't have any say in the

matter of what is collected or how it is collected and preserved. Very few forensic scientists like me go to the actual crime scene to investigate−it's not like CSI. Most forensic scientists stay in the laboratory and accept whatever is given to them. In the adjudication process, it's the same thing; prosecutors decide which evidence to introduce in the case, and the judge decides what to accept into the courtroom, so forensic scientists really don't have any say in the entire process from crime scene to court. There should be a better team approach and more involvement from the forensic field."

The second area of improvement is funding, Lee emphasizes: "Proper funding is not just for buying a piece of equipment for the crime lab, it's also for the education and training of forensic scientists and also for the detectives because they are part of the forensic team; they must be trained on how to properly recognize, collect and preserve forensic evidence. We also need funding for the education and training of lawyers and judges, teaching them about the expectations and limitations of forensic science." The third area of improvement, Lee says, is creating opportunities for and funding additional research in forensic science: "We need practical, applied research as well as theory. Yes, we can do a lot of statistical calculations, but what do they mean? Everyone wants a number and a bullet-proof interpretation attached to it, but sometimes we don't have that. For example, in a hit-and-run case we find a big chunk of skin from the hairline that matches biological samples from the car, and it's a match. Now, attorneys want a statistical value attached to it, and we just don't have a value. People in other professions have to understand this, but it would help to have more research in forensic science to improve our conclusions."

Richard Saferstein[23], Ph.D., a forensic science consultant and author, says that with a higher profile comes greater scrutiny and criticism, but that the field of forensic science is strong enough to handle it. "Given the high-profile nature of many cases, particularly with the advent of DNA, the forensic community has moved to the forefront of investigations," Saferstein says. "Years ago, forensic science was seen as simply a way to confirm police leads, and now it is generating leads and suspects, through DNA, for the police; then when the police do produce a suspect, the courts expect that the evidence we analyze would add a level of objectivity to the case that might be missing with conventional evidence. The level of service is quite high, but there are always going to be issues and mistakes that arise. While it's the function of the press to report these situations, it does not report the other 99 percent of cases that go right. People must bear in mind that there is

[23] Richard Saferstein's perspectives of forensic science in the book titled "*Forensic science and the law. In: Forensic Science: An Introduction to Scientific and Investigat*ive Techniques" by James SH and Nordby JJ.

no national crisis, and there is no evidence that the forensic science community is deficient. Problems do arise every now and again, and things fall through the cracks; do I like saying that? No. But it happens, and the question is, how can we address these problems? You can't ever avoid problems, but you can have systems in place with which to address the source of the problems."

"Errors in forensic science, as well as the criticism they trigger, undoubtedly compromise and diminish the overall effectiveness of the profession," notes forensic pathologist and law professor Cyril Wecht, M.D[24].,. "It harms the criminal justice system in many ways, but the field is also fighting unrealistic expectations. We're never going to achieve the exaggerated fictional status of television forensic shows, where crimes are solved in a matter of minutes and all the manpower and equipment in the world is available to the crime lab. However, we should have the wherewithal to address crime labs' backlogged cases and workloads. There's no good reason why thousands of rape kits are sitting on the shelves of forensic labs around the country, and not being tested. It's symbolic of what's wrong with the system. Not to politicize the issue further, but in a country as affluent as ours, billions of dollars can be spent on warfare but what about the importance of criminal justice?" Wecht continues, "Of course, if health and education can be shortchanged, then you can bet that criminal justice also will be shortchanged, and that undermines and delays the effective delivery of justice in this country. Funding is so essential, and what the forensic science community needs is mere chicken feed compared to the defense budget; we're not talking about billions and billions of dollars to get it right. People must understand that investing in criminal justice and forensic science can save the country money. If you can quickly solve a murder case because the forensic science community has what it needs, think of what the system has saved by way of manpower hours and overtime pay, not to mention the cost of the trial that can be obviated when definitive scientific evidence shows where guilt lies. From an economic standpoint, there is no question that giving the forensic community what it needs and helping it resolve its problems, benefits everyone."

To understand the role of forensic science in wrongful convictions, Garrett and Neufeld reviewed the trial testimony in DNA exoneration cases to determine the validity of the forensic analysts' statements(Garrett and Neufeld, 2009). According to the study, in 60% of the 137 trial transcripts they examined, the analysts provided "invalid testimony," which they defined as "testimony with conclusions misstating empirical data or wholly unsupported by empirical data". Examples

[24] Professor Cyril Wecht, M.D's perspectives of forensic science in the book titled "*Forensic science and the law. In: Forensic Science: An Introduction to Scientific and Investigat*ive Techniques" by James SH and Nordby JJ.

included analysis interpreting non-probative evidence as inculpatory, discounting exculpatory evidence, presenting inaccurate statistics among others. The invalid testimony was provided mainly in cases involving serology and microscopic hair comparison, because, as the authors noted, most of the cases in the study set involved sexual assault−cases in which biological evidence of that nature was routinely collected. The Garrett and Neufeld study shed light on an empirically under examined aspect of forensic practice−trial testimony yet the authors were careful to note the study's limitations. For example, they noted that their data−drawn primarily from cases involving sexual assault−were unrepresentative of criminal cases in general or current forensic testimony. They also made no claims to the prevalence of invalid testimony.

Gould and colleagues attempted to identify the factors that statistically differentiate wrongful conviction cases from innocent-defendant cases that resulted in pretrial dismissals or acquittals at trial ("near misses") (Gould et al., 2013). The authors compared a set of wrongful convictions to a control group of near misses and, using logistic regression, identified a set of 10 statistically significant factors that influence the likelihood of a wrongful conviction. The factors included "the age and criminal history of the defendant, punitiveness of the state, Brady violations, forensic error, weak defense, weak prosecution case, family defense witness, non-intentional misidentification, and lying by a non-eyewitness". Forensic science contributed to the wrongful convictions by compounding other mistakes rather than correcting them or through officials' failure to use it because other evidence of guilt made the forensic evidence appear non-probative. The study included a qualitative analysis by an expert panel of criminal justice stakeholders, who found that "the most common forensic error was improper testimony at trial by a state's witness who overstated the precision or inculpatory nature of the results" and that errors in laboratory testing or fraud were less frequent. As the authors observed, "In these instances, it appears that the state used forensic science merely to confirm its case rather than provide a rigorous, independent assessment of the defendant's guilt". On the other hand, the authors found that properly used forensic science evidence increased the likelihood that innocent-indicted defendants would have their cases dismissed.

Cole has argued, viewing forensic science as a discrete item on a list of contributing factors may be unhelpful. Instead, the "function of forensic science should be to correct false theories developed by police as well as to support true theories"(Cole, 2012). This framework−thinking about forensic science as a system factor−supports the argument that the role other criminal justice actors play in the use of forensic science evidence should be addressed (Dioso-Villa, 2016).

The Norfolk Four false-confession case illustrates the limitations of the power of proper forensic science evidence to correct erroneous police or prosecution theories about criminal events, especially when other powerful forms of evidence, such as confessions, are present. (Wells and Leo, 2008) reports that at the start of 1997, investigators with the Norfolk Police Department arrested four Navy sailors for the rape and murder of a young woman. After lengthy interrogations, the sailors gave false confessions, which they subsequently retracted. Each of the four defendants provided biological samples for forensic DNA testing, the results of which excluded each as the source of the semen found on the victim. Knowledge of the exculpatory DNA results should have prompted the investigators to reconsider the guilt of the original four defendants. Instead, the prosecutors continually reshaped their narrative of how the crime occurred and sought additional suspects to explain away the inconsistent biological evidence.

From all said and done, it is now very clear that this area of the law in Cameroon is seriously or grossly lagging behind. The serious setback of this area to the criminal justice system has called for the need to embark on this voyage of inquiry and research. Cameroon cannot continue to wallow in the dark as it relates to the employment of forensic evidence on a full scale in our criminal justice system. This research work intends to fill up the gaps observed as lapses in the various literatures analyzed.

CHAPTER THREE

THE USE OF FORENSIC SCIENCE IN CRIMINAL INVESTIGATIONS UNDER INTERNATIONAL LAW

3.1 Introduction

The use of forensic science to establish the truth in domestic criminal investigations has developed considerably over the past century. However, little attention has been paid to how international law interfaces with expert witnesses and forensic science experts in particular (Klinkner, 2009). According to Klinkner, the use of expert witnesses will continue to be imperative for the future administration of international justice because of the complexity of trying perpetrators accused of genocide, crimes against humanity, war crimes and/or the crime of aggression. Laroche and Baccard think that, if access to crime scenes and their protection improve, and if investigators gain access to crime scenes relatively quickly after the alleged crime, it can reasonably be expected that forensic evidence will play an increasingly important role in international courts (Laroche and Baccard, 2013). This chapter therefore focuses on the use of forensic science under international law and in the context of criminal investigations.

3.2 Evolution of the use of Forensic Science by International Courts

Laroche and Baccard summarised the evolution of the use of forensic science by international courts. According to these authors, the early twentieth century saw forensic evidence as secondary to eyewitness evidence. During trial held by the Nuremberg International Military Tribunal, exhibits as presumably tanned human skin samples, glass jars containing human fat soaps and bludgeons were introduced as evidence, but no forensic examination was performed.

While only few investigations were conducted on mass graves in other ad hoc tribunals, for example, ICTR or ECCC, concealed remains of victims and execution sites became a significant focus of investigation for ICTY, which supervised large-scale exhumations and autopsies involving specialists from various disciplines, including archaeologists, pathologists, anthropologists, odontologists as well as forensic photographers, radiographers, and so on. Mortuaries, operational several months per year, were set up in Balkan countries such as Kosovo, Bosnia, and Croatia. Other experts were included at a further stage for complementary examination in the field of DNA, ballistics, entomology, palynology, geology, and others.

This unique experience was not extended to the ICC and forensic investigation of mass graves and/or crime scenes remains currently exceptional. Exhumations and autopsies are considered on a case-by-case basis in order to generate focused corroborative evidence, for example, confirming a witness' testimony. Most frequently, use of forensic science concerns issues involving mobile telephones, audio tapes, digital equipment, documents, etc. Clinical examination of victims has been used in an ICC trial for bodily harm evaluation.

Evidence provided by forensic, psychiatric, and psychological examination has been introduced in some cases, for instance, with ICTY or ICTR, and recently with ECCC, mostly concerning assessment of the responsibility of the accused rather than addressing after-effects sustained by victims. Finally, the Bayesian inference represents an appropriate interpretation tool, which can not only take into consideration more than one parameter related to scientific information associated to the recovered trace but also combine many different kinds of traces.

3.3 International Guidelines and Protocols

Between 1984 and 1988 a human rights group in the US, the Minnesota Advocates for Human Rights, consulted with forensic experts from a number of countries and drew up the "Protocol for Preventing Arbitrary Killings through Adequate Death Investigation and Autopsy" (the "Minnesota Protocol")[25]. When the United Nations (UN) became more active in the area, the Minnesota Protocol was incorporated into general principles for the prevention of deaths and adequate medico-legal investigations that were drafted and then adopted by the United Nations Economic and Social Council[26] and the General Assembly in 1989. The UN published the *Manual on the Effective Prevention and Investigation of Extra-legal, Arbitrary and Summary Executions*, in 1991 which includes the principles and a number of protocols to provide States with technical guidance for the conduct of investigations, plus a model autopsy protocol and one for the disinterment and analysis of skeletal remains. The appendices contain charts and diagrams to assist with post-mortem detection of torture and the reporting of injuries consistent with torture.

As far as missing persons are concerned, the *Manual* deals with identification of human remains as a part of the investigation process, rather than as an end in itself. It provides for families to make heard their complaints about the inadequacy of initial investigations, and to be entitled to any

[25] The Minnesota protocol on the investigation of potentially unlawful death (2016) : the revised United Nations Manual on the effective prevention and investigation of extra-legal, arbitrary and summary executions.

[26] Resolution 65 of the United Nations Economic and Social Council

information arising out of any subsequent inquiry, including being represented at an autopsy. This presupposes that the family have some knowledge of the whereabouts of their relative's remains, which is not always the case.

As the need for UN involvement in investigating serious human rights violations increased, responsibility for this was taken on by the UN Commission for Human Rights (UNCHR). In 1992 a resolution was passed that created a standing team of forensic experts and other professionals to support their work in investigating massacres and other human rights violations (1992/24). Each year the UNCHR requests that the UN Secretary-General consult with governments around the world to extend the list of experts able to join the Standing Team.

UN resolutions that followed the creation of the Standing Team aimed to facilitate the implementation of the *Manual* and the establishment of training opportunities to ensure the availability of forensic expertise in countries where these needs were not being met. The rights of families were recognized with regard to ensuring the continuation of the family unit. In Resolution 1993/33, the UNCHR focused on the need to help reunite "children of disappeared persons forcefully separated from their parents with their surviving relatives".[27] Resolution 1994/31 also stressed that the mandate of the Standing Team of experts was to facilitate the reunification of families.[28] In the early 1990s reports of the UN Secretary-General made indirect reference to the effects on families of summary executions and enforced disappearances.[29] It was not until 1998 that the Secretary-General referred directly to a "right" in relation to identification of human remains. His report described the programme established in the former Yugoslavia for "the excavation of mass graves and exhumation of mortal remains for the purpose of identifying deceased missing persons, returning the remains to the families concerned and thereby responding to the right of families to know the truth about the fate of their loved ones".[30]

3.4 The Role of Forensic Science Within International Criminal Tribunals

The role of forensic science within international criminal tribunals is the same as at national levels, that is, to provide information to help answer questions of importance to investigators and to courts of law. This can be simply factual, and therefore noncontentious, or it may take the form of an expert opinion through an inferential process.

[27] E/CN.4/RES/1993/33 Preamble and para. 3.
[28] E/CN.4/RES/1993/31, para. 3.
[29] See E/CN.4/1993/20, 5 February 1993, para. 3 and E/CN.4/1993/20 para. 18.
[30] E/CN.4/1998/32, 5 January 1998, I, D, 3.

3.5 Forensic Evidence by International Criminal Tribunals and the International Crinimal Court

The Statute and Rules of international criminal tribunals set out, with more or less precision, principles for the collection of evidence and principles governing when evidence presented at court will be admitted versus excluded.

3.5.1 Collection of Evidence

The gathering of evidence in international criminal tribunals is based on the adversarial model. The adversarial system or adversary system is a legal system used in the common law countries where two advocates represent their parties' positions before an impartial person or group of people, usually a jury or judge, who attempt to determine the truth of the case (Oraegbunam, 2019).

Courts are not completely bound by strict and technical rules of evidence. This concept is expressed in Article 19 of the Charter of the International Military Tribunal (Nuremberg)[31] which states that "The Tribunal shall not be bound by technical rules of evidence. It shall adopt and apply to the greatest possible extent expeditious and nontechnical procedure, and shall admit any evidence which it deems to have probative value."

Laroche and Baccard identified three types of rules for the collection of physical evidence through searches and other on-site investigations by international prosecutors at the ICC and ad hoc tribunals namely: Power-based rules, Right-based rules and Procedure-based rules.

Power-based rules: According to the Statutes of the ICC or ad hoc tribunals, the prosecutors have the right to collect evidence on the territory of states, but the powers of the prosecutors to do so differ greatly, in particular, their ability to use their own staff to carry out on-site investigations[32].

The ICC prosecutor can carry out on-site investigations using his own staff instead of state authorities on a state party's territory: (1) where the state consents; (2) where the Pre-trial Chamber has determined that the State is clearly unable to execute requests for cooperation; or (3) where certain additional conditions exist, warranting the execution of investigative activity without any compulsory measure. If none of these exceptions apply, the ICC prosecutor may request the state

[31] United Nations, *Charter of the International Military Tribunal - Annex to the Agreement for the prosecution and punishment of the major war criminals of the European Axis ("London Agreement")*, 8 August 1945, available at: https://www.refworld.org/docid/3ae6b39614.html [accessed 14 April 2022]

[32] See for example, Article 54 of the *Rome Statute of the International Criminal Court (last amended 2010)*, 17 July 1998, ISBN No. 92-9227-227-6, available at: https://www.refworld.org/docid/3ae6b3a84.html [accessed 14 April 2022]

to carry out on-site investigations on his behalf or with the participation or presence of his investigators. The states that are not party to the Rome Statute are not obliged to cooperate with the Court unless as members of the UN they are required to cooperate by the UN Security Council. Prosecutors at ad hoc tribunals have a general statutory power to collect evidence and conduct on-site investigations on the territory of UN member states, without an obligation to seek the state's assistance. Prosecutors at ad hoc tribunals are able to request a state's cooperation, which can further be ordered by the court's judges. This mechanism of requests for assistance has been widely used by the STL Prosecutor. They can, therefore, bypass the state authority and seek that a search warrant, for instance, be issued directly by a trial chamber. Even where the trial chamber issues a search warrant, in reality, it is possible to execute the warrant, in the absence of state consent, only where the territory is under the control of international forces.

Although these legal frameworks would suggest that the ad hoc prosecutors are in a much better position than the ICC prosecutor in regards to evidence collection, the practical implementation is different and the ICC and ad hoc tribunals face the same problems in convincing states to render assistance with the collection of evidence.

Other problems occur when international forensic experts have to deal with national authorities: problems of mutual confidence, scientific knowledge and standards, forensic equipment, and facilities.

Right-based rules: A key right of a witness or a suspect is the right to privacy. Even though this right to privacy is not expressly mentioned in the ICC or ad hoc tribunal founding documents, the tribunals have held that this is an internationally recognized human right that must be respected. The right to privacy is not absolute and the investigative act violating it may be justified, according to the European Convention on Human Rights (ECHR), if it (1) has a legitimate aim, (2) is lawful, and (3) is proportionate to its aim[33].

But neither the ICC nor the ad hoc tribunals' statutes and rules address privacy rights pertaining to the collection of DNA and fingerprints from a witness or a suspect. Without consent, a warrant respecting the three conditions aforementioned is usually required to take DNA and fingerprints.

[33] See article 8 of the *European Convention for the Protection of Human Rights and Fundamental Freedoms, as amended by Protocols Nos. 11 and 14*, 4 November 1950, ETS 5, available at: https://www.refworld.org/docid/3ae6b3b04.html [accessed 15 April 2022]

Procedure-based rules: Under Article 56 of the ICC Statute, two procedural rules are of great importance for the collection of physical evidence: (1) the requirement for a chain of custody and (2) the special measures taken when there is a 'unique investigative opportunity'.

Neither the ICC nor ad hoc tribunals mention chain of custody in their Statutes or Rules of Procedure and Evidence (RPE). The ICC prosecutor's regulations express the need for an uninterrupted and recorded chain of custody and trial chambers have mentioned the relevance of chain of custody to establish the probative value of a document or other physical material at trial. There is jurisprudence at the ICTY stating that proof of a chain of custody is not required. Article 56 of the ICC Statute, even if not entirely clear regarding its application, may be very useful when it comes to forensic evidence: the uniqueness of the investigative opportunity applies fully to physical evidence that will deteriorate or may be lost. (RPE). The ICC prosecutor's regulations express the need for an uninterrupted and recorded chain of custody and trial chambers have mentioned the relevance of chain of custody to establish the probative value of a document or other physical material at trial. There is jurisprudence at the ICTY stating that proof of a chain of custody is not required. Article 56 of the ICC Statute, even if not entirely clear regarding its application, may be very useful when it comes to forensic evidence: the uniqueness of the investigative opportunity applies fully to physical evidence that will deteriorate or may be lost.

3.5.2 Provisions for Forensic Evidence at the Ad hoc Tribunals and the ICC

Article 14 of the ICTR Statute and Article 15 of the ICTY Statute state that the Rules of Procedure and Evidence (RPE) of the Tribunal shall provide for the admission of evidence. However, the RPE do not include provisions for the admissibility of scientific evidence. Therefore, the general tests for admissibility and exclusion, found under Rule 89 and Rule 95 respectively, could be applied by the Chamber. For example, Rule 89 of the ICTY's Rules of Procedure and Evidence outlines the general provisions regulating evidentiary matters before the Tribunal: (A) A Chamber shall apply the rules of evidence set forth in this Section, and (B) In cases not otherwise provided for in this Section, a Chamber shall apply the rules of evidence which will best favour a fair determination of the matter before it and are consonant with the spirit of the (ICTY) Statute and the general principles of law. (C) A Chamber may admit any relevant evidence which it deems to have probative value. (D) A Chamber may exclude evidence if its probative value is substantially outweighed by the need to ensure a fair trial. (E) A Chamber may request verification and

authenticity of evidence obtained out of court. (F) A Chamber may receive the evidence of a witness orally or, where the interests of justice allow, in written form.[34]

The procedural rules regulating proceedings before the ICTY, therefore, adopt a flexible approach to the admissibility of evidence. Evidence is admissible if it is relevant, of probative value, not to the detriment of a fair trial and not otherwise excluded on the grounds stated in Rules 95 and 96 of the ICTY's RPE, which were drafted by the judges themselves and fine-tuned over time. These provisions do not contain a detailed set of technical rules.

Fact-finding at the ICTY is performed by professional judges elected by the UN General Assembly, 'who by virtue of their training and experience are able to consider each piece of evidence which has been admitted and determine its appropriate weight'.[35] Arguments for excluding evidence, including scientific evidence, predicated on the shortcomings of lay jurors therefore do not apply. Even though the ICTY may be inclined to admit scientific evidence, in accordance with its broadly inclusionary approach, it does not follow that that evidence will be afforded much, if any, weight in the Tribunal's deliberations. Furthermore, initial admissibility rulings may be reversed at later stages in the proceedings, as and when further information relating to the validity or reliability of proffered evidence becomes available.[36]

The International Criminal Court also provides guidance for the admissibility of scientific evidence. Article 69 (4) of the Rome Statute describes how the Court should determine the admissibility of general evidence based upon its probative value and possible prejudicial effect. It states that this should be carried out in accordance with the Rules of Procedure and Evidence; Rule 63 of which sets out general provisions relating to evidence, whilst Rule 64 advises on the technical procedures for raising an issue of admissibility. The latter rule also states that evidence found to be irrelevant or inadmissible will not be considered by the Chamber, but does not provide any criteria for determining this. More detailed admissibility guidance is provided under Rule 72 for evidence of crimes of sexual violence.

[34] ICTY Rules of Procedure and Evidence, Rule 89
[35] Delalić et al. (Case No. IT-96–21-T) Decision on the Motion of the Prosecution for the Admissibility of Evidence, 19 January 1998
[36] Orić (Case No. IT-03–68-T) Order concerning Guidelines on Evidence and the Conduct of Parties during Trial Proceedings, 21 October 2004, Guideline on Evidence (iv).

In addition to making no mention of forensic or scientific evidence, the RPE of the ICTY, ICTR and ICC do not supply any provisions for the chain of custody of evidence; an important factor for forensic evidence which must be maintained in order to show its integrity.

With only general evidentiary guidance provided by the Tribunals and the ICC, issues of admissibility are often determined within case law decisions (Khan et al., 2010).

3.5.3 Provisions for Forensic Expert Testimony at the Ad hoc Tribunals and ICC

According to case law, an expert‟s testimony is intended to enlighten the judges on specific issues of a technical nature, requiring special knowledge in a specific field[37] and by virtue of some specialized knowledge, skill or training can assist the trier of fact to understand or determine an issue in dispute.[38]

The RPE of the ICTR and ICTY do not provide definitions for what constitutes an "expert", nor explanations of their role and duties. Regulation 44 of the ICC[39] states that the Registrar has to compile and maintain a list of experts accessible at all times to all organs of the court and to all participants in proceedings, following an 'appropriate indication of expertise in the relevant field.'

With respect to expert witness status**,** the qualifications of an expert witness and the admissibility of an expert report before the ICTY were recently discussed in Popović. The Trial Chamber defined an 'expert witness' as someone who possesses the relevant specific knowledge, experience or skills to help the Trial Chamber come to a better understanding and a conclusion on a technical issue.[40] The qualifications of an expert, summarised in the expert's curriculum vitae submitted to the court, authorise the expert−unlike an ordinary witness of fact−to state opinions, inferences and conclusions on matters within the realm of her expertise. The expert is regarded as an assistant to the Trial Chamber or, in the words of one study interviewee, is called 'to teach the court'.[41] Objectivity and independence are not regarded as formal prerequisites for a witness to qualify as an expert.[42] Rather, 'the questions of objectivity, impartiality and independence become relevant to assess the weight to be accorded to that opinion evidence'.[43] Concerns about independence and

[37] Prosecutor v Akayesu, Judgement, 2 September 1998, Case No. ICTR-96-4-T
[38] Prosecutor v GaliĆ, Decision Concerning the Expert Witnesses Ewa Tabeau and Richard Philipps, 3 July 2002, Case No. IT-98-29-T
[39] Regulations of the ICC adopted by the judges of the Court on 26 May 2004. Fifth Plenary Session**,** The Hague, 17- 28 May 2004
[40] See Popović et al., above
[41] ICTY lawyer # 4, personal interview, 1 November 2007.
[42] See Popović et al., above
[43] Ibid.

objectivity should be addressed during cross-examination. Affiliation with a party does not in itself constitute grounds for disqualification. Indeed, forensic scientists are routinely employed by the Office of the Prosecutor, and without this arrangement little scientific expertise or original physical evidence would be available to the ICTY. One study interviewee explained that the expectation is for 'any professional, qualified person in the scientific field to be independent even though employed by the prosecution'.[44] Professional qualifications would speak for an expert's good faith.

Rules 94bis, relating to the testimony of expert witnesses[45], provides guidance relating to the disclosure of expert reports and advice for the defence in accepting or challenging these. Standard practice at the ICTY is to tender and admit expert reports through Rule 94 bis, which provides a timetable for disclosure and other preliminaries.[46] The opposing party is required to indicate whether it intends to accept the expert witness statement, desires to cross-examine the expert witness, disputes her qualifications or challenges the relevance of the witness statement.

Evidence can be denied admissibility on three grounds. First, according to Rule 95, evidence must be excluded if it has been 'obtained by methods which cast substantial doubt on its reliability'. Secondly, in line with Rule 89(D), evidence ought to be excluded if it jeopardises the fairness of the trial. Thirdly, evidence may be excluded pursuant to Rule 89(C) because it lacks probative value. Of these three grounds for exclusion, Rule 95 has greatest salience for the work of scientific experts, as it directly explores the expert's methods of data collection and whether, in light of the way the scientific inquiry was conducted, its results are reliable. Questions of relevance and probative value are the province of lawyers rather than forensic experts.

Provided that no objection is made by the other side, a scientific report can be admitted into evidence without hearing testimony from the expert, so long as the Trial Chamber is satisfied as to the report's relevance and probative value.[47] Comments by several interviewees suggest that scientific evidence is often accepted by defence teams, who dispute only its relevance to their client.[48] In Prosecutor v Popović, the ICTY elaborated on the application of the general requirements of relevance and probative value to expert reports, in terms of:

[44] ICTY judge # 2, personal interview, 3 October 2007.
[45] ICTY and ICTR Rules of Procedure and Evidence
[46] See Blagojević and Jokić (Case No. IT-0260-T) Decision on Prosecution's Motion for Admission of Expert Statements, 7 November 2003, para. 20.
[47] See Blagojević and Jokić, above
[48] For example, ICTY lawyer # 1, telephone interview, 22 May 2007; ICTY investigator # 3, personal interview, 3 October 2007; and forensic expert # 6, telephone interview, 16 May 2007.

> (1) whether there is transparency in methods and sources used by the expert witness, including the established or assumed facts on which the expert witness relied; (2) whether the report is reliable; and (3) whether the contents of the report falls [sic] within the accepted expertise of the witness.[49]

Qualification as an expert does not automatically guarantee the admissibility of the expert's report. The burden lies on the party tendering the evidence to convince the Tribunal that it satisfies Rule 89(C). In Popović, the evidence in question was opposed and its admissibility to be determined after the expert had undergone cross-examination.[50]

With no provisions for expert testimony in its Statute or RPE, admissibility issues under the ICC should be governed by the general provisions for ordinary witnesses as outlined in Article 69 (4) of the Rome Statute, due to the ICC‟s RPE being entirely silent on the issue of experts. According to Article 69 (4), the Court may rule on the relevance or admissibility of any evidence, taking into account, inter alia, the probative value of the evidence and any prejudice that such evidence may cause to a fair trial or to a fair evaluation of the testimony of a witness, in accordance with the Rules of Procedure and Evidence.

3.5.4 Provisions for the Presentation of Forensic Expert Testimony at the Ad hoc Tribunals and the ICC

As stated by Kelly M. P., the presentation of expert testimony is one of the primary ways in which forensic science and the law clash. The judiciary‟s lack of scientific understanding can mean that they are not equipped to confidently interpret forensic evidence. This may lead to a reliance on the expert witness to take on a quasi-judicial role which is outside of their remit (De Smet, 2016).

The ICC provide little guidance regarding the presentation of evidence by the expert at court. However, The ICTY's RPE contain several provisions to facilitate better understanding of scientific reports and expert testimony and to expedite the presentation of this material to the Tribunal.

Rule 92 bis RPE authorises the presentation of summary reports by investigators. These are compilations, derived from multiple sources, which aim to give background evidence of the

[49] See Popović et al., above
[50] Ibid.

forensic examinations, thereby contextualising and reducing the complexity of the findings.[51] Summary reports also save trial time, but they may be challenged as hearsay evidence, thus potentially being of little probative value.[52] In the Milošević case, for example, where court time was at a premium, ICTY investigator Dean Manning provided summary testimony in relation to the forensic investigations conducted at the Srebrenica crime scenes.[53] Similarly, Manning's report for the Krstić proceedings on physical evidence recovered from Srebrenica execution points and mass graves was subsequently also found to be 'highly relevant to the case and admissible under Rule 89' in Prosecutor v Blagojević.[54] This summary report drew on 50,000 pages of autopsy reports, 30,000 photographic images, and 11,000 physical exhibits, many of which were subject to further expert examination.

Rule 92 bis (D) also specifically authorises the admission of trial transcripts of evidence previously given by a witness during ICTY proceedings, provided the evidence does not relate to the acts and conduct of the accused. This includes the admission of expert evidence. In the Blagojević case, statements and transcript testimony of numerous experts relating to mass grave exhumations and examination of the exhumed bodies to determine sex, age, cause of death, etc. from the Krstić trial were admitted in this way. The Trial Chamber was satisfied that the transcript testimonies submitted under Rule 92 bis (D) along with the expert reports submitted pursuant to Rule 94 bis were relevant, of probative value and together provided 'a complete picture of the expert evidence'.[55]

3.5.5 Testing 'Forensic Truth'

Fairness demands that the opposing party in an adversarial proceeding must be given the opportunity to test the truthfulness of evidence presented to the fact-finder. Trial procedure at the ICTY adopts the familiar common law model of examination-in-chief by the party calling the witness, cross-examination by opposing parties, and, if necessary, re-examination to deal with matters brought out under cross-examination. Judges may ask witnesses questions at any stage.

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[51] See e.g. D. Manning (ICTY Investigator), 'Srebrenica Investigations. Summary of Forensic Evidence—Execution Points and Mass Graves', ICTY, 16 May 2000, available at <http://www.domovina.net/archive/2000/20000516_manning.pdf>, accessed 16 April 2022.
[52] Milošević (Case No. IT-02–54-AR73.2) Decision on Admissibility of Prosecution Investigator's Evidence, 30 September 2002, para. 2 (i)–(ii).
[53] Witness Statement by Investigations Team Leader Dean Paul Manning, Prosecutor v Milošević (IT-02–54-T), 24 November 2003, available at <http://www.domovina.net/archive/2003/20031124_ manning.pdf>, accessed 16 April 2020.
[54] See Blagojević and Jokić, above
[55] Ibid.

Testing the reliability and credibility of scientific evidence may involve some or all of the following related issues: the expert's qualifications and status as an expert; the scientific methods adopted; norms of practice; acceptance within the scientific community and validation of methods through publications and peer-review; whether and how the science is produced for litigation; and the novelty of the scientific evidence presented (Edmond, 2000).

According to Schabas, evaluating expert evidence essentially boils down to considering professional competency, methodologies and the credibility of the findings in context (Schabas, 2006). The expert testimony of forensic anthropologist Dr William Haglund, presented to the ICTY in the Popović trial on 15 March 2007, may serve as a detailed illustration.

Dr Haglund's Testimony in Popovic

Dr Haglund's examination-in-chief began in the conventional way, with discussion of his education and qualifications,[56] employment record and relevant experience.[57] Attention then turned to the exhumation work that Dr Haglund and his team had conducted at the request of the Office of the Prosecutor. His testimony covered different grave locations, grave properties, numbers of victims found at each site, positions and conditions of their bodies and the causes of death, along with other physical evidence such as blindfolds.[58] The expert witness report is authenticated by demonstrating its internal logical coherence, external consistency with broader scientific opinion and confirmation through the expert's oral testimony.

There was some pre-existing controversy surrounding Dr Haglund (and one of his colleagues) arising from work during the forensic investigations in question and on a previous occasion. In particular, the anthropological methods employed by Dr Haglund in Rwanda had been criticised by forensic anthropologist and bestselling novelist Dr Kathy Reichs in the Rutaganda case.[59] In anticipation of defence attacks on Dr Haglund's credibility, the prosecution emphasised that Dr Haglund had been cleared of allegations of misconduct and that a formal inquiry had concluded that, despite managerial and logistical shortfalls, the scientific validity of Dr Haglund's archaeological work was not compromised. If errors had been made, they had arisen only through

[56] Popović et al. (Case No. IT-05–08-T) 'Expert Witness Testimony by Forensic Anthropologist Dr William Haglund' Trial Chamber Transcript, 15 March 2007, at 8900.
[57] Ibid. at 8901–8.
[58] Ibid. at 8910–12.
[59] Ibid. at 8922–30.

the accelerated pace of recovering human remains under pressure of time, not from any defect in the scientific methodology itself.[60]

In cross-examination, the opposing party might aim to discredit the expert as a reliable source of knowledge. A cross-examiner could challenge the expert's scientific method or techniques or seek to undermine the expert's particular findings and conclusions. Another strategy is to call counter-expertise in rebuttal (Schabas, 2006). In Popović, one defence attorney dwelt on the allegations of 'sloppy work'[61] levelled against Dr Haglund. He pointed out that the Rutaganda judgment from December 1999 had preceded Dr Haglund's testimony in Krstić, yet neither party had on the later occasion mentioned the ICTR's findings against Dr Haglund in its Rutaganda judgment. Dr Haglund was also confronted with a statement that he had made at a seminar in May 2000, in which he referred to the four grave exhumations carried out by him in Bosnia as a 'four-ring circus',[62] the clear implication being that Dr Haglund's working practices were chaotic, and by his own admission. In a further attempt to discredit the witness, the defence contrasted Dr Haglund's lack of membership in the American Board of Forensic Anthropology, a professional association, with the elevated professional status of the defence expert, Dr Kathy Reichs.[63]

The cross-examination of Dr Haglund in Popović demonstrates the intimate relationship between witness credibility and professional conduct and ethics.

3.6 Some International Institutional Framweworks

There exist international, national and regional institutions that facilitate international cooperation and collaboration in the forensic science field for the purposes of international harmonization through the worldwide exchange and coordination of forensic expertise, information and data. These institutions can render mutual operational assistance and support to achieve appropriate levels of preparedness to deliver forensic services. Most of them bring together professional engineers having qualifications and expertise as practicing forensic engineers to further their continuing education and promote high standards of professional ethics and excellence of practice. Some of these instutions are explained below.

[60] See Popović et al. (Case No. IT-05–08-T) 'Expert Witness Testimony by Forensic Anthropologist Dr. William Haglund', above
[61] See Popović et al. (Case No. IT-05–08-T) 'Expert Witness Testimony by Forensic Anthropologist Dr William Haglund', above
[62] Ibid. at 8971, line 3
[63] Ibid. at 8980.

3.6.1 The International Standardization Organizations and their Standards

International Organization for Standardization (ISO) recognises the importance of standardization in forensic science, promoting the standardization process through technical committees and the development of relevant standards through the cooperation of different departments. The ISO, International Electrotechnical Commission (IEC) and International Telecommunication Union (ITU) are three international standardization organizations, among which ISO was the first to realise the standard's importance for quality assurance of forensic laboratories. It published the ISO/IEC 17025 (General requirements for the competence of testing and calibration laboratories)[64] and ISO/IEC 17020 (Conformity assessment−Requirements for the operation of various types of bodies performing inspections)[65] The Standard ISO/IEC 17025 pertains to the organizational level and specifies laboratory management requirements, with an emphasis on policy and documentation. It does not address the requirements for sampling or testing at the crime scene. The Standard ISO/IEC 17020 provides criteria for inspection bodies in the examination of "materials, products, installations, plant, processes, work procedures or services" to provide certification.

Many countries, including Australia, the US, Canada, Columbia, and others, accredit their forensic science providers under the ISO/IEC 17025 standard. A few countries, such as Estonia, cover accreditation activities for forensic medical examinations of living persons and dead bodies under the ISO/IEC 17020. Additionally, the Netherlands has also introduced the ISO/IEC 17020 to crime scene activities and some other fields, like archaeology (Douglas, 2015).

The ISO Technical Committee of Forensic Science (ISO/TC 272)[66] was established in 2012. It has 28 participating and 17 observing country members as of 15 March, 2021. The secretary unit, set in Standards Australia (SA), is responsible for the standardization and technical guidance in the field of forensic science. The ISO/TC 272 now has two working groups (Review of terms and definitions, Annexes of ISO 21043-4) instead of five working groups that were disbanded in 2020, as well as one liaison organization (International Laboratory Accreditation Cooperation) and several liaison committees (ISO/CASCO, ISO/TC 292, ISO/TC 276, and others). The ISO/TC 272 has issued three international standards (ISO 21043-1:2018, ISO 21043-2:2018, and ISO

[64] https:// www.iso.org/standard/66912.html. Accessed on 19/03 2022.
[65] https://www.iso.org/standard/52994. html. Accessed on 19/03 2022.
[66] Technique Committee ISO/TC 272 Forensic Sciences. Available from: https://www.iso.org/ committee/4395817.html. Accessed on 19 April 2022.

18385:2016), while three other international standards (ISO 21043-3, ISO 21043-4, and ISO 21043-5) are currently under development.

Additionally, there are many other ISO committees and standards relevant to forensic science. Joint ISO/IEC Technical Committee 1 (JTC1)[67] has three subcommittees that are developing standards including ISO/IEC 27042:2015 , ISO/IEC 27037:2012, and ISO/IEC 30121:2015 (Wilson-Wilde, 2018).

3.6.2 The International Committee of the Red Cross (ICRC)

The ICRC provides advice, support and training to local authorities and forensic practitioners in searching for, recovering, analysing, identifying, and managing large numbers of unidentified remains in varying states of preservation. The ICRC believes that even where forensic facilities are highly developed, this is often beyond the capacities of local authorities and forensic practitioners. The ICRC focuses on building sustainable local forensic capacity, as external assistance may not be available for the duration of such projects, which can span decades. The ICRC also promotes the use of scientific best practice and the provision of necessary training[68].

The ICRC's forensic services are adapted to needs, and part of an integrated approach to humanitarian action that includes such matters as protection activities, legal guidance, psychosocial support, health services, economic assistance, access to water and suitable habitation, and reducing the humanitarian impact of weapon contamination.

In the Caucasus, the ICRC helps the families of missing persons to meet their legal, economic and psychosocial needs. At the same time, the ICRC works with authorities to build the necessary forensic capacity and develop mechanisms for improving communication, cooperation and coordination between actors mandated to clarify the fate of missing persons.

The ICRC provides material support, as well as advice and training, to local authorities and first responders for these purposes. The training and advice provided by the ICRC enables first responders to gather and record information that will increase the likelihood of identifying the dead. The knowledge that the remains of their loved ones have been properly handled, and accorded the dignity that is due them, may also be a source of solace to families.

[67] Joint ISO/IEC Technical Committee 1 (JTC1). Available from: https://www.iso.org/committee/45020/x/catalogue. Accessed on 19 April 2022.
[68] ICRC, In-brief: Forensic science and humanitarian action, In-brief, Geneva, ICRC, December 2013. Available at: https://www.icrc.org/fr/publication/4156-forensicscience-and-humanitarian-action. Accessed on 19 April 2022.

In Nepal, the ICRC works with first-aiders, the Nepalese Red Cross and national authorities to enhance disaster response and develop sustainable capacity, including in the management of human remains.

In Mexico, the ICRC and the Mexican Red Cross help to provide protection and assistance – basic medical services, access to water and sanitation, and services for reuniting families – to migrants originating in or crossing through that country. The ICRC also works with Mexico's national medico-legal services to develop domestic procedures and protocols to improve the management and identification of remains , including those of migrants, in order to help provide answers to their families.

3.6.3 The International Criminal Police Organization (INTERPOL)

INTERPOL is an inter-governmental organization that has over 195 member countries. This organisation helps the police force of all member country to work together to make the world a safer place. To acooplish their task, they enable the police to share and access data on crimes and criminals as well as offer a range of technical and operational support. Memeber countries are connected via a communications system called I-24/7. Countries use this secure network to contact each other, and the General Secretariat. It also allows them to access their databases and services in real-time, from both central and remote locations. INTERPOL also coordinate networks of police and experts in different crime areas, who come together through working groups and at conferences to share experiences and ideas. They offer investigative support such as forensics, analysis, and assistance in locating fugitives around the world. Training is an important part of what this organisation does in many areas so that officials know how to work efficiently with our services. This expertise supports national efforts in combating crimes across three global areas we consider the most pressing today; terrorism, cybercrime and organized crime. Officials working in each specialized crime area run a variety of different activities alongside member countries. This can be investigative support, field operations, training and networking.[69]

In 2021, INTERPOL published the "Guidelines for Digital Forensics First Responders" (the "Guidelines"). These Guidelines were prepared by the Digital Forensics Laboratory at the INTERPOL Global Complex for Innovation. They were prepared as technical guidelines to provide information and advice on digital forensic approaches that may be adopted when seizing and analysing different kinds of devices. These Guidelines are solely for the use of law

[69] https://www.interpol.int/Who-we-are/What-is-INTERPOL. Accessed on April 20 2022.

enforcement professionals having the necessary legal basis or authorisation to perform the actions described herein.

Guidelines for Digital Forensics Laboratories outline the procedures for establishing and managing a Digital Forensics Laboratory (DFL), and provide technical guidelines for managing and processing electronic evidence. These Guidelines should be seen as a template document that can be used by countries when considering developing their digital forensics capability. The advice given is intended to be used at both the strategic and tactical levels, in accordance with national legislation, practice, and procedures.

The document is intended for use by INTERPOL member countries. The objective of these Guidelines is to ensure that electronic evidence produced by the DFL is admissible in member countries' courts of law as well as in the international criminal justice systems. The Guidelines focus mainly on two distinct groups: the first is the digital forensics strategists and managers who make decisions for the DFL; the second group includes the technical staff who deal with electronic evidence on a day-to-day basis. In addition, prosecutors, judges and lawyers will also benefit from this document in understanding the digital forensics process, which may be vital for their cases.[70]

3.6.4 The International Association for Identification (IAI)

The IAI originally formed as the "International Association for Criminal Identification" in October 1915 is one of the prominent forensic organization in the world. Through the years it has grown into an educational and certification body with over 6,000 members worldwide. The IAI strives to be the primary professional association for those engaged in forensic identification, investigation, and scientific examination of physical evidence.[71]

IAI's mission comprise of the following goals: Educate members about the most current information and research in forensic identification; affiliate people who are actively engaged in the profession of forensic identification, investigation, and scientific examination of physical evidence in an organized body. In this way, the profession may be standardized, as well as effectively and scientifically practiced; enlarge and improve the science of forensic identification and crime detection; encourage research in scientific crime detection and employ the collective

[70] file:///C:/Users/PC/Downloads/Guidelines%20to%20Digital%20Forensics%20First%20Responders_V7%20(1).pdf. Accessed on 20 April 2022.

[71] Https://host8.viethwebhosting.com/~iai/. Accessed on 20 April 2022.

wisdom of the profession to advance the scientific techniques of forensic identification and crime detection[72].

3.6.5 The International Association of Forensic Toxicologists (TIAFT)

The TIAFT comprises about 1500 members from all regions of the world who are actively engaged in analytical toxicology or allied areas. All members agree to conduct themselves in a professional manner, in accordance with the ethical principles[73]. The organisation has approximately 50 Regional Representatives who represent TIAFT in their respective areas of the world. They process requests for TIAFT membership, are responsible for liaison with related scientific societies in their areas and serve their local TIAFT members as their needs arise.The aims of this association are to promote cooperation and coordination of efforts among members and to encourage research in forensic toxicology.

TIAFT members come from departments of legal medicine, pharmacology, pharmacy and toxicology, hospitals, medical examiners and coroners' laboratories, the police force, horseracing and sports doping laboratories. The association organises annual meetings and regional meetings. The Bulletin is published 3 times a year and is now a colour booklet of 50+ pages. The Young Scientists Committee encourages international collaboration among TIAFT young scientists, organises a half day meeting during each annual congress and awards three annual prizes at each meeting for best presentation, best poster and best publication by a young scientist.

In addition, TIAFT annually awards the Alan Curry Award to members who have a long history of distinguished contributions to the field of forensic toxicology and to the TIAFT organisation and the TIAFT Achievement Award to recognise TIAFT members who are younger than 46 years for outstanding achievements in forensic toxicology through their scientific activities and outputs. TIAFT has several programs to assist members for developing countries through grants to attend the annual meeting, grants for method development and book donations.

3.6.6 The International Association of Bloodstain Pattern Analysts (IABPA)

The IABPA is an organization of forensic experts specializing in the science of bloodstain pattern analysis. The IABPA is currently comprised of approximately 600 members, worldwide, from various scientific, law enforcement, criminal justice and academic backgrounds.

[72] https://www.theiai.org. Accessed on 20 April 2022.
[73] https://www.tiaft.org/code-of-ethics-for-tiaft-members.html. Accessed on 20 April 2022.

3.7 National/Regional Organizations and their Standards

3.7.1 America: ASTM, OSACs and ASB

In 1970, the American Society for Testing and Materials (ASTM)[74] Committee E30 on Forensic Sciences was formed. The Committee, with a current membership of over 600 people, has jurisdiction over 60 forensic standards. The standards still play a preeminent role in all aspects of forensic science, including criminalistics, digital and multimedia evidence, fire debris analysis, drug-testing analysis, collection and preservation of physical and digital evidence, as well as the reporting of findings.

The frequently quoted 2009 National Research Council (NRC) and National Academy of Sciences (NAS) report on strengthening forensic science identified the lack of formal standards as a major issue (Mahmoud, 2009). As a result, the Organization of Scientific Area Committees for Forensic Science (OSACs) was founded in 2014 by the National Institute of Standards and Technology (NIST) and the Department of Justice (DOJ) to strengthen forensic science in the US[75]. The OSAC standards and documents include the OSAC Catalogs Document, Standards Developing Organization (SDO) standards, OSAC Discipline-Specific Baseline Documents, OSAC Technical Publications (coming soon), and OSAC Registry. The OSAC Catalog of External Standards and Guidelines compiled by the NIST is a collection of 700 standards, guidelines, and other documents applicable for OSAC members to assess existing standards and documents already publicly available[76]. It is important to note that the OSAC is not a government-recognized SDO. Therefore, to convert OSAC documents to formal standards, OSAC will need to partner with an SDO (Butler, 2016).

In 2015, the American Academy of Forensic Sciences (AAFS) standard Board (ASB) was established to provide accessible, high-quality, and science-based consensus forensic standards (Martell, 2019). Different from the ASTM, the ASB is an American National Standards Institute-accredited SDO. The ASB does not directly compile standard documents, but endorses standards

[74] The ASTM International. Available from: https://www.astm.org/COMMITTEE/E30.htm. Accessed on 30 April 2022.
[75] The Organization of Scientific Area Committees for Forensic Science. Available from: https://www.nist.gov/topics/organization - scientific-area-committees-forensic-science/osacorganizational structure. Accessed on 30 April 2022.
[76] The Organization of Scientific Area Committees for Forensic Science. Available from: https://www.nist.gov/topics/forensic-science/osac-standards-and-guidelines. Accessed on 30 April 2022.

prepared by other organizations by specifying essential requirements for the standard formulation process[77].

3.7.2 Australia: SA, SMANZFL and ANZPAA NIFS

Australia accredits its government laboratories against the ISO/IEC 17025. However, specific requirements, such as sample recognition and collection at a scene, appropriate sample packaging and labelling, transport of forensic samples, sample continuity, examination, interpretation of results, and reporting evidence, are not specifically covered by the 17025 standards (He and Li, 2022). Thus, the Senior Managers of Australia New Zealand Forensic Laboratories (SMANZFL), working with the Australia New Zealand Policing Advisory Agency National Institute of Forensic Science (ANZPAA-NIFS), developed a framework for forensic via SA (Robertson et al., 2013), (Robertson, 2013). It is a novel approach and was the first time a holistic, non-discipline forensic standard has been developed that covers the whole period from crime scene to court. In four parts, this standard (AS5388) covers the recognition, recording, recovery, transport, and storage of material (Part 1), analysis of material (Part 2), interpretation (Part 3), and reporting (Part 4).

Additionally, SA issues some forensic technical standards, such as the Examination of Ignitable Liquids in Fire Debris (AS5239)[78], Procedures for Specimen Collection and the Detection and Quantitation of Drugs in Oral Fluid (AS4760), and minimising the risk of contamination in products used to collect and analyse biological material for forensic DNA purposes (AS5483). The ANZPAA-NIFS also plays an active role in technical standardization, but only issues professional technical guidance.

3.7.3 Europe: CEN/TC419 and ENFSI

The European Committee for Standardization (CEN) established the CEN/TC 419 Project Committee in 2012 to develop forensic standards. In 2017, TC 419 transferred all its work to ISO using the Vienna Agreement[79]. Now, TC 419 is developing the standards in collaboration with ISO[80].

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[77] The AAFS Standard Board. Available from: http://www.asbstandardsboard.org. Accessed on 30 April 2022.
[78] AS 5239-2011 Examination of ignitable liquids in fire debris. Available from: https://www.standards.org.au/standards-catalogue/sa-snz/manufacturing/ch-041/as–5239-2011. Accessed on 30 April 2022.
[79] The Agreement on Technical Cooperation between ISO and CEN (Vienna Agreement). Available from: http://isotc.iso.org/livelink/livelink?func=llandobjId=4230458andobjAction=browseandsort=sUbtype. Accessed on 30 April 2022.
[80] ISO/TC 272 Strategic Business Plan. Available from: https://isotc.iso.org/livelink/livelink/fetch/2000/2122/687806/ISO_TC_272_Forensic_ Sciences_.pdf?nodeid=18832591andvernum=-2. Accessed on 30 April 2022.

The European Network of Forensic Science Institutes (ENFSI) develops forensic guidelines in Europe. Complying with the ISO 17025, ENFSI has been recognised as an expert association in forensic sciences, aiming to ensure the quality of forensic science throughout Europe. In addition, it publishes best practice manuals and guidelines. Currently, there are 15 best practice manuals and 14 forensic guidelines available for European countries[81].

3.7.4 South Africa: SAAFS, SANAS and SADCAS

In South Africa, the South African Academy of Forensic Sciences (SAAFS), was established in 2018 as our forensic science professional body and for the first time made adherence to a professional Code of Conduct compulsory for its members[82]. Professionalisation is the first step toward ensuring accountability on behalf of the practicing forensic scientists in the country (Olckers et al., 2013). To this end, SAAFS is the only body that represents forensic scientists from all fields and sectors in South Africa. Among its goals are to "encourage the development and maintenance of forensic scientific and ethical standards, to encourage research in the forensic sciences, to encourage co-operation and to deal with all such matters as may affect their common interests in respect of forensic sciences". Its spirit of co-operation has been demonstrated by its well-attended series of webinars where forensic scientists from all over Africa can join a neutral discussion platform each month to meet professional colleagues and discuss relevant issues. These webinars are also attended by an international audience, which enriches the discussion and reminds us that most of the challenges we face in forensic science are not unique to Africa.

The South African National Accreditation System (SANAS)[83] is legally mandated to accredit laboratories in the field of forensic science. SANAS also accredits laboratories all over Africa, and many other countries use SANAS for this purpose. In Southern Africa, some countries use the Southern African Development Community Accreditation Services (SADCAS)[84] for accreditation. Regardless of which accrediting body is used, the FSLs must seek accreditation as

[81] European Network of Forensic Science Institutes. Available from: https://enfsi.eu/documents/forensic-guidelines. Accessed on 30 April 2022.

[82] South African Academy of Forensic Science (SAAFS). Available from: https://www.saafs.org.za/. Accessed on 30 April 2022.

[83] South African National Accreditation System (SANAS). Available from: https://www.sanas.co.za/Pages/index.aspx. Accessed on 30 April 2022.

[84] Southern African Development Community Accreditation Services (SADCAS). Available from: https://www.sadcas.org/. Accessed on 30 April 2022.

early as possible to ensure not only that the lab has been independently reviewed for adherence to international standards, but also that its results are comparable to results generated in other jurisdictions.

Other African networks such as the African Academy of Sciences (AAS)[85] and the African Research Integrity Network (ARIN)[86] could offer new perspectives in the area of forensic science in order to build a positive research culture in Africa.

3.8 Conclusion

The forensic sciences are widely regarded as the tools of justice. In order to achieve justice, there exist international and institutional framworks on the use of forensic science in the criminal justice system. International courts and triunals have been created in the last decades and international prosecutors have been given a mandate to investigate and prosecute those responsible for the world's most serious crimes. These crimes have been within the jurisdiction of the International Criminal Court (ICC), the International Criminal Tribunal for the Former Yugoslavia (ICTY), the International Criminal Tribunal for Rwanda (ICTR), Special Court for Sierra Leone, Special Panels for Serious Crimes in East Timor, Extraordinary Chambers in the Courts of Cambodia (ECCC), Special Court for Sierra Leone (SCSL), Special Tribunal for Lebanon (STL) among others. These tribunals can be said to have set a global stadard in criminal investigations. Most international criminal trials contain at least an element of forensic evidence. Forensic science has increasingly become a very useful tool and each international criminal tribunal has more or less developed forensic investigations.

[85] African Academy of Sciences (AAS). Available from: https://www.aasciences.africa/. Accessed on 30 April 2022.
[86] African Research Integrity Network (ARIN). Available fom: https://africarinetwork.wixsite.com/website/about. Accessed on 30 April 2022.

CHAPTER FOUR

LEGAL BASIS ON THE USE OF FORENSIC SCIENCE IN THE CRIMINAL JUSTICE SYSTEM OF CAMEROON

4.1 Introduction

A strong legal and institutional framework that ensures the use of forensic science in criminal justice system is imperative. It can accelerate the criminal proceedings in a justice system that takes a longer period and ultimately augment the conviction or acquittal rate to a greater extent. This could go a long way to ensure people's access to quick justice. This section attempts to appraise the existing laws and the institutions of Cameroon dealing with the criminal justice system so that the scope of the role of forensic science therein can be pinpointed.

4.2 Legal Basis of Criminal Investigations in Cameroon

Cameroon criminal law and procedure finds its basis in Law N^{o} 96/06 of January 1996 to amend the Constitution of 2nd June 1972 considered as the highest law of the Republic. According to the preamble of this constitution, no person may be judged and punished except by virtue of a law enacted and published before the offence committed. It also stipulates that no person may be prosecuted, arrested or detained, except in the cases and according to the manner determined by law[87]. Most importantly, it states that every accused person is presumed innocent until found guilty during a hearing conducted in strict compliance with the rights of defence. The position under the Cameroonian Criminal Procedure Code is not an exemption as it comes in complementing the flavor provided under the Cameroonian Constitution. This law inspires and breaths more air into the marrows and crones of the country's highest fabric of law by stipulating the rules of criminal investigation. Law N° 2005 of 27 July 2005 on the Criminal Procedure Code stipulates the rules which deal particularity with: the investigation of offences; the search and identification of offenders; the method of adducing evidence; the powers of those charged with prosecution; the organization, composition and jurisdiction of courts in criminal matters; verdict; sentencing; the setting aside of judgements in default and appeals; the rights of the parties as well as the methods of executing sentences[88]. Law N^{0} 2016/007 of 12/07/2016 relating to the Penal Code considered

[87] Article 65 of this Constitution is to the effect that the preamble is an integral part of the constitution.
[88] Section 1 of

as the Criminal Law of the Republic is one of the laws that define the crime and punishment of offenses committed in the territory of Cameroon. The legal system of Cameroon thus, provides the framework for criminal investigation. It specifies the powers, functions and procedures of every institution involved in criminal adjudication.

4.3 The Judicial System of Cameroon

In Cameroon, Ordinance No 72/04 of 26 August 1972 on Judicial Organisation modified by Law No 2006/015 of 29 December 2006 on Judicial Organisation created the following courts which are classified into two groups namely: the trial courts and the appellate courts. Trial courts include: Customary Courts, Courts of First Instance, the High Court and the Military Court. The appellate courts include: The Court of Appeal and the Supreme Court.

Customary courts have competence in civil matters, customary marriages, inter-tribal conflicts, polygamous issues, divorce and inheritance. Customary law courts apply the custom of the parties. They are found in each district of the country, headed by a president. Customary courts only handle matters up to 69000frs.

Courts of First Instance is governed by sections 13,14 and 15 of the law on judicial organisation. According to section 13 of this law, the court of first instance is found in every sub-division. Its area of jurisdiction may however cover several subdivisions by decree of the president of the Republic. According to section 13 (2), the court will be situated in the chief town of the sub-division but may hear matters outside its seat. Such hearings shall be referred to as "circuit courts". Section 14 of this law lays down the composition of the Court. At the bench, there is a president, one or more magistrates, one registrar in chief and one or more registrars. At the preliminary inquiry, there are one or more examining magistrates, one or more registrars. At the legal department, a judicial officer hearing and determining all cases brought to the court. Section 15 of this law lays down the court's jurisdiction to hear civil, criminal and labour matters and also tries simple offences and related misdemeanors with damages of fine charged not more than 10.000.000FCFA.

The High Court is governed by chapter III, sections 16, 17 and 18 of the law on judicial organisation. According to section 16, the High Court is located in every division. Its area of jurisdiction may however cover several divisions by decree of the president of the Republic. According to section 16 (2), the Court will be situated in the chief town of the division but may

hear matters outside its seat. Such hearings shall be referred to as "circuit courts". The composition of the High Court is laid down by section 17. At the bench is a president, one or more judges, one registrar in chief and one or more registrars. For the preliminary inquiry, there is one or more examining magistrates, one or more registrars. At the legal department, one state counsel, one or more deputy state counsels. Section 18 of the law lays down the jurisdiction of the High Court to take on civil, labour and criminal matters not excluding matters dealing with the status of persons, matrimonial matters, grievous misdemeanours and felonies. The High Court only deals with cases which have damages of above 10.000.000frs. Furthermore, the high Court issues prohibitions, mandamus and habeas corpus; restraining excesses and abuses by public offices.

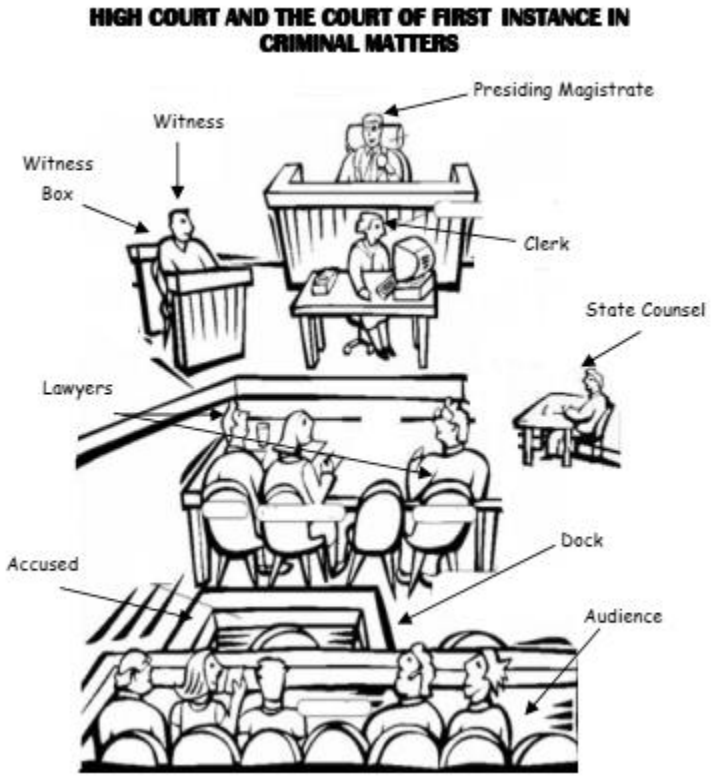

Figure 2: The Judicial System in Cameroon.[89]

The Military Court is governed by law No 2008-015 of 2 December 2008 which organises military justice and lays down rules of procedure applicable before military tribunal. Section 2 of the law

[89] Edited by Justice and Peace Commission: Archdiocese of Bamenda. https://www.google.com/url?esrc=sandq=andrct=jandsa=Uandurl=https://www.justiceandpeacebamenda.org/attachments/article/24/The%2BJudicial%2BSystem%2Bin%2BCameroon.pdfandved=2ahUKEwjfztug8oP4AhVGQ8AKHX9MD-QQFnoECAsQAgandusg=AOvVaw3qhVkkk7fC0xzR4VG0bHK9

makes Military Tribunals special jurisdiction courts. Section 3 provides that Military Tribunals shall be set up in each Region, but depending on service needs, the Head of State may by Decree set up more than one tribunal within the same region or extend the area of jurisdiction of a tribunal to several regions. Composition of the military tribunal is governed by section 4. The Military Tribunal shall comprise: At the Bench, a president, one or more Vice Presidents, two Assessors-In-Chief, one or more Registrars. For Preliminary Inquiry, one or more Examining Magistrates, one or more Inquiry Registrars. At the Legal Department, a State Prosecutor, one or more Registrars. Section 7 of the law deals on the competence of the military court. The Military Court has competence amongst others to carry out trials for theft committed by the use of fire arms, offences committed by military men in a military establishment or in the exercise of their duties, offences committed by civilians in a military establishment which causes damage to military equipment or to the physical integrity of a military man, offences relating to the purchase, sale, production or keeping of military apparels.

Under the Appellate courts, the Court of Appeal is governed by chapter IV, sections 19, 20, 21, 22 and 23 of the law on judicial organisation of Courts. According to section 19, the Court of Appeal is located in every region. However, for service purposes, its area of jurisdiction may cover several regions by decree of the president of the Republic. Composition of the Appeal court is laid down in section 20 of this law. At the bench is a president, one or more vice presidents, one or more judges, one registrar in-chief and registrars. At the legal department is a procureur general, one or more advocate general, one or more deputies of the procureur general, one or more legal assistance at the procureur general's chambers. The court of appeal shall be organised into benches and the general assembly. Section 22 of the above law lays down the competence of the Court to review cases of customary law courts, the courts of First Instance, the High Courts and the Military Courts whose primary judgments were considered unsatisfactory by either of the parties involved, and from reviewing the case, it either passes a new judgment or maintain the original.

The Supreme Court is governed by the Law No 2006/016 of 29 December 2006 on the Organisation and Functioning of the Supreme Court. There is only one supreme court in Cameroon found in Yaoundé. The supreme court is composed of; at the bench, a president, bench presidents, substantive or alternate judges, the registrar in chief of the supreme court, the registrar in chief of the bench and registrars. At the legal department, a procureur, an advocate general and deputies to the procureur general. It tries unsatisfactory cases ruled by the court of appeal, then gives a remedy or sends it back to be retried at the appeal court. It also handles administrative cases and ensures

that judgments of the lower courts are in conformity with the law, seeing to it that case law is unified and law and customs are rightfully interpreted.

4.4. Structures Involved in Criminal Investigations

Cameroon, like other modern states has a criminal justice system involving a number of actors, with the police and court occupying strategic positions (Samgena, 2003). There are two main structures involved in criminal investigations namely: The Legal Department and the Judicial Police.

4.4.1 The Legal Department

According to Section 60 CPC, criminal proceedings shall be instituted and prosecuted by the Legal Department. The Legal Department is therefore in charge of public prosecution in Cameroon. It is the pivot of all criminal actions and it represents and defends the interest of the people of Cameroon in criminal prosecution (Fonkee and Eware, 2020). The Legal Department is present during all stages of criminal proceedings namely: the pre-trial phase, the Preliminary Inquiry, the trial and the post-trial phase.

The Legal Department of the Court of First Instance investigates and where need be, prosecute criminal allegations brought to its knowledge by way of a written or oral information or complaint, or a written report by a competent authority. The operations of Judicial Police Officers and Judicial Police Agents are controlled by the State Counsel, who may visit the Police station or the Gendarmerie Brigade to verify the conditions of people in custody. In the course of such control, the people whose release he orders of his own motion, or people who have been released by virtue of an order of *Habeas corpus,* must immediately be set free under pain of prosecution for unlawful detention against the Judicial Police Officers in charge of the Police or Gendarmerie unit where the person is detained as provided by section 137 (2) CPC.

The functions of the Legal Department of the High Court are identical to those of the Legal Department of the Court of First Instance. The only exception is that its material competence is limited to felonies, save where the State Counsel is appointed cumulatively as State Counsel of the Court of First Instance. The State Counsel of the High Court prosecute all criminal actions filed before the said Court, irrespective of whether the Court was seised by a committal for trial of an Examining Magistrate of a Court of First Instance or that of the High Court. The only instance where another State Counsel may appear before the High Court is in *habeas corpus* action, where

a State Counsel of Court of First Instance may be summoned as respondent detaining the applicant. In such a case, and regardless of the indivisibility of the Legal Department, the State Counsel of the Court of First Instance may appear before the High Court to justify the detention of the applicant.

The Legal Department of the Military Tribunal is charged with investigation and prosecution of the following offences: Military offences and war crimes; crimes against humanity and crimes of genocide; offences related to the acts of terrorism and the security of the state; offences of piracy and unlawful acts against the safety of maritime navigation and platforms; offences committed by servicemen, with or without civilian co-offenders or accomplices, in a military establishment or in the exercise of their duties; offences against the law governing 1st, 2nd, 3rd and 4th category weapons, as specified in the law to lay down general weapons and ammunition regulations in Cameroon and offences committed using such weapons; armed robbery; any offence involving a serviceman or any person considered as such, committed in times of war or in a region under a State of Emergency or emergency measures; offences committed by civilians in a military establishment, causing damage to military equipment or installations, or prejudicial to the physical integrity of a serviceman, or disrupting normal service; offences relating to the purchase, sale, production, distribution, wearing or keeping of military equipment or insignia as defined by the regulations in force. [90]

The organization and functioning of the Legal Department of the Special Criminal Court is provided for by Law No. 2011/028 of 14 December 2011 setting up the Special Criminal Court, as amended he said law, and supplemented by Law No. 2012/011 of 16 July 2012. As per the provisions of section 4 of the said law, the Legal Department of the Special Criminal Court is headed by a Procureur General, assisted by one or more Advocates General and one or more Deputies to the Procureur General. The Legal Department is competent to prosecute cases of misappropriation of public property and related offences, where the value of the loss is at least fifty million francs CFA. The seat of the Court is Yaounde and its jurisdiction is nationwide. The Department investigates complaints, accusations or petitions relating to any of the offences falling under its competence. During this preliminary or judicial investigation phase, the Procureur General acts as State Counsel of ordinary law Courts. He has under his control a specialized corps of judicial police officers, who carry out investigations and rogatory commissions.

[90] Section 8 of Law No. 2017/012 of 12 July 2017 to lay down the Code of Military Justice.

The Legal Department of the Court of Appeal ensures that the criminal law is applied throughout the jurisdiction of the Court of Appeal. In the exercise of his function, the Procureur General of the Court of Appeal shall have powers to directly requisition the forces of law and order.[91] He may instruct the Magistrates of the Legal Department within his jurisdiction to investigate offences of which he has knowledge, to close a case file or to institute proceedings. The Procurer General supervises the activities of the Judicial Police Officers and Judicial Police Agents working within his region of command and submits half yearly reports to the Minister in charge of Justice on their activities and conduct. He may also direct them to obtain any information he deems necessary for the proper administration of justice.

As already mentioned above, the Legal Department of the Supreme Court is the guarantor of the enforcement of the law and represents the people of Cameroon in matters before the Supreme Court. The Legal Department is a party in appeal proceedings, and may raise grounds for the annulment of the decision appealed against. It is the principal party in all criminal appeals before the Supreme Court.[92]

The Mandatory Presence of the Legal Department in Criminal Proceedings

One of the characteristics of the Legal Department is its mandatory presence in criminal proceedings. Justice is rendered in the name of the people of Cameroon, and the Legal Department is charged with protecting the interest of the people of Cameroon at all stages of criminal proceedings. At the level of investigations, the Legal Department directs and controls the investigation carried out by the Judicial Police Officers and Judicial Police Agents. At the end of such investigations, they decide whether the suspect should be prosecuted. Where the Legal Department decides to prosecute, it decides on the mode of criminal prosecution.

Where the Legal Department decides to forward the matter for Preliminary Inquiry, its presence during the proceedings is not mandatory[93] but its opinion must be sought before certain key decisions are taken. This opinion is expressed in the form of written submissions. Decisions of the Examining Magistrate shall be notified to the Legal Department who may appeal against them or request for the nullification of certain Preliminary Inquiry acts, as provided by section 268 CPC.

[91] Section 133 CPC
[92] Section 132 CPC
[93] Section 176 (1) CPC

At the trial level, section 128 (1) CPC makes the Legal Department a principal party in all criminal trials. As stated under section 29 (3) of the Law on Judicial Organization, the Legal Department must be represented at such trials, else the entire proceedings and the decisions of the Court shall be null and void. As a principal party, they may raise any procedural irregularity and siese the competent Court, in view of annulling the irregular act. They equally have the right to make written submissions or address the Court at the end of the trial without being denied the right of hearing or stopped when addressing the Court.

Being the principal party does not imply the Legal Department should be privileged or favoured when it comes to the standard of evidence adduced during the accusatorial trial. As was held by C.N. Menyoli in the case of ***Lorence Acha Mbah Vs The People***[94] even if the law makes the Legal Department a principal party, the Legal Department is only a party in a criminal action and nothing more. Their evidence should be put by the judge during adjudication, on the same imaginary scale as that adduced by other parties.

One of the prerogatives of the Legal Department is to control judicial police operations. The State Counsel directs and controls the operations of the Judicial Police Officers and Judicial Police Agents of his jurisdiction when they are carrying out investigations. Pursuant to the provisions of section 137 (3) CPC, he can take over and marshal the investigation at any stage, by personally carrying out all necessary acts within the framework of the investigation. The powers of the state counsel are exercised from the moment an offence is committed, or immediately public order is perturbed. Judicial Police Officers are bound to inform him promptly of any alleged offence, and even where he is not so informed, he can *suo motu* initiate investigations as provided by section 135 (3) CPC. There are certain Judicial Police investigation acts which cannot be carried out without his prior approval. This is the case, for example, with interception, recording and transcription of communications, as well as taking of photographs in private premises. His authorization must be sought before any search already commenced could be continued after 6 p.m. In case of offences committed flagrante delicto, the State Counsel automatically take control of the investigation operations when he gets to the crime scene, unless he decides otherwise.

Generally speaking, the State Counsel is the director of criminal investigations and the Judicial Police Officers act under his control. Judicial Police Officers forward daily, a list of people

[94] (2014) SLR vol. 2pp. 55-63

detained at their units to him.[95] At the end of the Judicial Police investigations, the original of case files concerning offences committed within the jurisdiction and to be tried by the ordinary law Courts, are forwarded to him.[96] Upon perusal of the file, he may decide to prosecute the suspect, close the file or return it to the Judicial Police Officer for further investigation.

4.4.2 The Judicial Police

Before prosecuting a person suspected of having committed an offence, it must be established that the alleged offense was actually committed and there is evidence that leads to the presumption that the accused committed the offence. To this effect, investigation must be opened and this may lead to the arrest of the suspect, the identification of witnesses and gathering of exhibits. The structure in charge of carrying out this preliminary finding is the Judicial Police. Therefore, the duty of Judicial Police is one of the tasks assigned to the forces of law and order and it is usually contrasted with Administrative Police duties exercised by the same Police or Gendarmerie officer.

Samgena, (2003) summarized the difference between the Judicial Police tasks and the Gendarmerie tasks. The first deals mostly with arrest, investigation and identification while the second serves as a back-up in mass crime and high-risk situations, being paramilitary in nature. Their roles in the maintenance of law and order or crime prevention are manifested by numerous arrests affected.

The Judicial Police task is carried out under the control of the State Counsel, by Judicial Police Officers, Judicial Police Agents and any other civil servant or person vested with Judicial Police duties by the law.[97] In each jurisdiction of the Court of Appeal, the Judicial Police shall be under the control of the Procureur General, who evaluates at the end of each year the work of Judicial Police Officers.[98]

Status of Judicial Police Officers

In Cameroon, there are Ordinary Judicial Police Officers and Special Judicial Police Officers.

With regards the Ordinary Judicial Police Officers, these are Police or Gendarmerie forces who are called upon to carry out Judicial Police functions. Section 79 CPC gives an exhaustive list of Police and Gendarmerie forces who have the status of Judicial Police Officer.

[95] Section 34 CPC.
[96] Section 139 CPC
[97] Section 137 (1) CPC
[98] Section 134 (2) CPC

Decree No. 2013/131 of 3 May 2013 to establish the specialized corps of Judicial Police Officers creates a special judicial police unit of bot Police and Gendarme officers, which is attached to the Procureur General of the Special Criminal Court. Their sole mission is the investigation of offences of misappropriation of public property and their competence extends over the national territory.

Concerning Special Judicial Officers, these are public servants and other public employees who have been assigned Judicial Police duties by special instruments, and are called upon to exercise those duties within the limits set by the said instruments. Special instruments determine the conditions under which their workers acquire the status of Judicial Police Officer and they act as such only within the framework of the investigations on domains vested in the given administration. This includes for example the forestry and wildlife official who are empowered by Law No. 94/01 of 20 January 1994 to lay down Forestry, Wildlife and fisheries regulations; to act as Judicial Police Officers in the cases where there is a breach of the forestry law.

With respect to Judicial Police Agents, gendarmes who are not Judicial Police Officers, Police inspectors and constables shall have the status of Judicial Police Agents. They shall assist Judicial Police Officers in performing their duties and shall report to their superior officers all offences which have come to their knowledge. Judicial Police Agents have no authority to take decisions to remand in police custody.

Duties of the Judicial Police

The duty of the Judicial Police consists in investigating offences, identifying offenders and accomplices and bringing them before the Legal Department for prosecution. To this effect, the Judicial Police Officers receive complaint and reports, and conducts preliminary investigations. In addition to their investigation role, they execute rogatory commissions, serve Court processes, and execute production warrants and Court decisions.[99]

The Judicial Police Officers receives instructions from the State Counsel. The State Counsel may stop any Judicial Police Officer from continuing with an investigation and he may reassign the matter to another officer. In such a case, he shall inform the officer's immediate hierarchy of his reason for doing so.[100] This measure enables the State Counsel on the one hand, to check any

[99] Section 82 CPC
[100] Section 83 (5) CPC

obstacle emanating from Judicial Police Officers that may frustrate the implementation of the criminal policy, and on the other hand, to direct the Judicial Police Officers on the work approach.

Judicial Police Officers are empowered to check the identity and situation of any suspicious person, and where necessary, may detain him for a period of not more than twenty-four hours, and search or cause the suspect to be searched.[101]

Under certain circumstances, the Judicial Police Officer may carry out acts out of his territorial jurisdiction, provided he informs the State Counsel of the place of investigation. It is even advisable that when he is carrying out his task out of his jurisdiction of competence, he should act under the cover or protection of the local Judicial Police Officers.[102]

A Judicial Police Officer may, on the basis of a rogatory commission received from an Examining Magistrate or a trial Court, carry out investigation throughout the national territory. He shall be assisted by a Judicial Police Officer serving within the area where he intends executing his mission.[103]

At the close of the investigations, the Judicial Police Officer shall forward the original and a copy of the report on the investigation to the State Counsel.[104] An inventory shall be made of all the objects siezed, and the said objects shall be placed under seal and deposited with the Legal Department. A copy of the report on the seizure shall be given to the person who has possession of the objects.[105]

4.5. Forensic Science in Criminal Justice System

The Criminal Procedure Code is the current procedural law which governs criminal trials in Cameroon. It prescribes the procedure from the point of taking cognizance of crime by judicial magistrates till the delivery of final order of conviction or acquittal or any appropriate order looking into the fact of the case. There are no other specific instruments ensuring the use of forensic science in the Cameroon criminal justice system. However, the provisions of the Criminal Procedure Code on the rules of evidence imply that forensic evidence could be helpful in shaping the process of proof in criminal investigations.

[101] Section 86 CPC
[102] Section 88 (1) CPC
[103] Section 88 (2) CPC
[104] Section 89 (2) CPC
[105] Section 89 (3) CPC

Section 310 (3) CPC provides that the decision of the Court shall be based only on the evidence adduced during the hearing. According to Fonkee and Eware (2020), evidence naturally revolves around two cardinal things: facts and issue. These two combine to form evidence which the court may or may not rely on in determing the merits of the case.

Section 308 (a) CPC provides that, an offence may be estblished by any means of proof, except where the law expressely provides otherwise. This provision of the CPC imples that forensic evidence can be accepted as a means of proof in criminal proceedings. There are three standards means of proof: testomonial evidence, documentartary evidence, and real or physical evidence (Fonkee and Eware, 2020). With respect to real or physical evidence, this is evidence which the court can personally inspect so as to draw inferences and conclusions on the existence or nonexistence of the fact which the evidence seeks to prove. Real or physical evidence permits the courts to reach conlusions on the basis of its own perception an not on that of the witness who directly or indirectly it. It is evidence that in a sence, speaks for itself. Fonkee and Eware (2020) give examples of real or physical evidence to include a situation where the footprints of the accused are found at the crime scene, or his finferprints are found on the wepon used to commit the offence. In a murder case, the visit of the crime scene permits the court to observe and draw inferences from the position of the body of the deceased, traces of blood found on the scene, footprints or tire prints on the crime scene. With progress made in science today, the DNA of the author of the offence found t the crime scene equally consitute real evidence.

The courts in cameroon have, in some cases ordered that a DNA test should be conducted in situations where they had doubts that needed clarifications. In the case of ***Etchi PeterTambe Vs The People***[106], the appellant and one other stood trial on two counts for dissertation. After receiving evidence from the parties, there was doubt on the paternity of the child allegedly disserted. The Court ordered for a DNA test to be conducted to determine which of the accused was the biological father of the child. Even though the test was finallly not conducted because the parties could not pay for it, this case shows that the use of forensic evidence is accepted in cameroonian courts.

The Courts have accepted corrobarative evidence to supplement evidence which has already been adduced. Under the CPC, corroboration is provided by section 311 which bars the Court from basing its decision to convict an accused on the evidence of a co-accused unless it is corroborated

[106] Judgement in Suit No. CASWR/4c/2011 of 11 March 2014

by the evidence of a third party who is not implicated in the case or by any other evidence. Accoding to Fonkee and Eware (2020), corroboration may take the form scientific evidence. In the case of ***Emmanuel Fonjong Vs The People,***[107] for example, the proseution tendered a medico-legal certificate, where as proof of rape, it was attested that the hymen of the alleged victim was absent. The medical report did not state whether the hymen was rupturd long before the day of the alleged offence or on the said day. Even though the Court of Appeal held that the corroboration was not sufficient because it did not establish causal link between the medical findings and the alleged act of the accused, this case is demostrative of the fact that scientific or forensic evidence is applicable in cameroonian courts.

Section 319 CPC permits expert opinion to be adduced if the court finds that it is necesassy for the discovery of the truth. Section 203 (1) provides that, where a technical problem arises in the course of the preliminary inquiry, the Examining Magistrate may, of his own motion or on the application of any of the parties including the insurer of liability, where necessary, make an order for expert opinion and appoint one more experts. According to Fonkee and Eware (2020), expert withnecesses are those who by virtue of their education and experience have become knowlegable, and authorities in their area of specialzation, calling or vocation; whether it is in the field of art, humanities or sience. The expert opinion could be soly documentary, solely testomonial, or documentary evidence followed by testimonial evidence, as provided for in section 217 CPC.

Beofore an expert testifies, the court must ascertain his expertise. Where the expert is among those in the national list of experts as provided for under section 206 CPC, there is no need for his expertise to be ascertained futther. Section 208 (2) provides that, the experts, whose names do not appear on the national list, shall take the oath provided for in section 204 before the Examining Magistrate whenever they are commissioned. Failure to do so shall render their report null and void. The report on the oath shall be signed by the Examining Magistrate and the registrar. Where the person called as an expert is not on the said national list of experts, the court must be satisfied that he has the necessary expertise. According Fonkee and Eware (2020), the question as to whether a person is an expert or not is an issue of fact which is determined by the court before the testimony of the expert. The indicators to giuside the court in arriving at a onclusion are:

[107] Judgement in Suit No. CASWR/8c/82 (1997 ICCLR part 2 at 177).

educational backgrund which could be estblished by presentation of certificates/or credentials; evidence on the area in the field where he has taken extra courses; work experience.

Section 211(1) states that, the expert shall carry out his mission in close co-operation with the Examining Magistrate or the commissioned magistrate he shall, in particular, keep such magistrate informed of the progress of his investigation in order to enable him, at ail times, to take any necessary measures. Sub section 2 is to the effect that, there shall be no violation of the right of the defence, where an order of the Examining Magistrate extends the mission of the expert to fresh facts likely to justify the preferring of an additional count. According to Section 212, where the expert so appointed requests clarification on a point which is outside his field of specialization, the Examining Magistrate may, on the proposal of the expert, appoint any person specially qualified to assist him. The person so appointed shall take the oath prescribed in section 204 and his report shall be annexed to that of the expert.

The task of experts was succintly states by Lord Cooper in the case of ***Davies Vs Edinburg Magistrates***[108] as follows:

> *Their duty is to furnish the Judge or jury with the necessary scientific criteria for testing the accuracy of their conclusions, so as to enable the judge or jury to form their independent judgement by the application of these criteria to the fact proved in evidence*.

The opinion whill therefore be based on facts ascertained by the expert or put before him as the basis for his opinion. Normmaly, he will disclose the said facts beofore being permitted to express his opinion.

At the end of the expert's work, he is required to submit his report in as many copies as there are parties plus one extra copy according to the provision of section 215(1). This report shall contain a description of all activities undertaken by the expert and his findings thereon.

According to sub section 2, where there is more than one expert, they shall submit a joint report; if they have different opinions, each of them shall state his separately in the same report. Sub section 3 states that, the report and the exhibits under seal or their remnants

[108] (1953) SC 34 at 40.

shall be handed over to the registrar of the inquiry. The latter shall forthwith prepare a report of the handing over.

4.6 Conclusion

Most governments have developed rules of forensic science as an advanced scientific technique which assist courts, police systems and private agents and individuals during investigation or cross examination procedure. Cameroon, like any other modern state has a legal basis for criminal investigations. The Constitution of the Republic considered as the highest law of the Republic, the Penal Code which is the main criminal law of the country, the Criminal Procedure Code which is the current procedural law which governs criminal trials and other related laws, form the legal basis of criminal matters. The Criminal Procedure Code contain provisions of rules of evidence implying that forensic evidence could be helpful in shaping the process of proof in criminal investigations. There are two main structures involved in criminal investigations namely: The Legal Department and the Judicial Police. The operations of these two structures are carried out in accordance with the laws governing criminal matters.

CHAPTER FIVE

CRIMINAL CASES FOR WHICH FORENSIC INVESTIGATION IS REQUIRED

5.1 Introduction

Life in Cameroon is increasingly characterized by widespread forms of violent crimes perpetrated on both nationals and foreigners, both for those living in urban and rural areas. Alarming cases of sudden and violent deaths among other deadly incidents committed in the national territory have been reported[109]. Despite the fact that State interventions have focused on increasing security equipment, including the police reform in the fight against crime, creating new gendarmerie units, these criminals still get away with the crimes due to the failure by security forces or investigative bodies to track them down. This section of the work thus attempts to identify crimes which forensic investigation would have been relevant in tracking down the perpetrators. A purposive or judgmental sampling technique[110] was applied in this section of the work to analyzed cases which have been reported with full details. Particular attention shall be paid to crimes committed against a person and property (Thomas and Paulk, 2021). This shall be narrowed down to crimes committed in the Anglophone regions of Cameroon in which criminals have exploited the ongoing socio-political tension to carry out their illicit criminal acts. It should be noted that the commission of these crimes are a violation of the Republic of Cameroon's own constitution, international conventions to which it is a State party and customary international law.

5.2 Background to the Anglophone Crises in Cameroon

On or about September 22 2016, the North West and South West Regions of Cameroon got engulfed in armed conflict between separatist fighters and government forces. While the separatist forces engage in destabilizing government, intimating secession, regular government forces

[109] Crime rates in Cameroon. Https://www.numbeo.com/crime/country_result.jsp?country=Cameroon. Accessed on 22 September 2022.

[110] Palinkas LA, Horwitz SM, Green CA, Wisdom JP, Duan N, Hoagwood K. Purposeful Sampling for Qualitative Data Collection and Analysis in Mixed Method Implementation Research. Adm Policy Ment Health. 2015 Sep;42(5):533-44. doi: 10.1007/s10488-013-0528-y. PMID: 24193818; PMCID: PMC4012002.

(police, gendarmes and soldiers) are charged with securing the territorial integrity of the State and protecting citizens and their properties. It is within this context that the Anglophone population in the Republic of Cameroon is experiencing a human rights catastrophe. While there have been disputes and conflicts in these regions for decades, there has been a sharp escalation of serious violence, crime, and human rights violations since 2016. According to CHRDA (2019) criminal gangs bear much responsibility for the violence as they terrorize local inhabitants, wreaking havoc. It is most likely that much of the violence is intentional and planned, including retaliation attacks on villages, often followed by indiscriminate shooting into crowds of people, invasions of private homes and murder of their inhabitants, and the rounding up and shooting of villagers.

5.3 Crimes Against a Person

Since 2016, at least 4,000 citizens in the Anglophone regions of Cameroon have been killed.[111] The actual number of fatalities, however, is likely to be much higher. Citizens have been shot, beheaded, amputated, stoned, drowned, burned and bombed. Criminals have used stones, machetes, knives, sophisticated and high-calibre weapons, improvised explosive devices, guns and motorcycles to perpetrate killings. Men and boys as well as law enforcement officials, teachers, health-care workers and members of self-defence groups have been targeted in killings. Those responsible for the killings are often unidentified armed men or individuals.

On July 30, 2018, seven youths were killed in the Bakweri Town and Sandpit neighbourhoods of the South Western region of Cameroon by armed men. Reports indicate that five were executed on the spot and two were kidnapped and taken to the village of Maussaka, where they were executed and dumped in a refuge pit.[112] No explanation was given for these killings.

On February 1, 2018, Mr. Ndi Walters was shot at his shop in Bamenda, North West Region of Cameroon by men dressed as civilians but wearing army footwear. He was taken away. A week later, his body was found at the Bamenda Regional mortuary. An autopsy revealed that he had died from hard blows to the chest and forehead and his killers could not be identified.[113]

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[111] Human Rights Watch's field and open source research. Https://www.hrw.org/world-report/2022/country-chapters/cameroon. Accessed on August 30 2022.

[112] The National Times, "Exclusive: The untold story about the Buea extra-judicial killings" (2 August 2018), online: https://natimesnews.com/2018/08/02/exclusive-the-untold-story-about-the-buea-extra-judicialkillings/. Accessed on June 5 2022.

113 Human Rights Watch cites 1800 dead: "Cameroon: Promised Investigation Should Be Independent Government Forces on Rampage in North-West Region City" (May 23, 2019). Online <

On October 25 2018, Professor Mbufong Paul Kuban, Lecturer at the Department of English and Director of Administrative Affairs of The University of Bamenda, North-West Region of Cameroon was assassinated by unknown gun men. In a statement from the University's Deputy Vice Chancellor, Emmanuel Suh Cheo, he was shot dead while going to work. "He was killed by unidentified attackers who followed him to the place where he tried to hide" behind a nearby town hall, Cheo said, calling it a "macabre act."[114] Till date, his killers have not been identified.

On February 1, 2018, in Mbingo-North West Region, two gendarmes were stabbed to death by young men who were never identified.[115] On June 21, 2018, unidentified gun men armed with machetes and guns, launched an attack on a police checkpoint in Mutengene-South West Region, killing Gendarme Officer Adjutant Ngankeu Robinson and injured his colleague by chopping off his hand with a machete. On July 18, 2018, in Wum, the main town in the Menchum Division of the North West region, two police officers at a checkpoint were attacked by unidentified gunmen. Officer Daouda Charles was beheaded. On the night of August 4, 2018, unidentified gunmen attacked the home of Police Commissioner Simon Ekahnjume, killing him in Mutengene, in the Tiko Subdivision of the South West region. On June 26, 2018, two police officers earlier in June in the North West and South West regions were killed by their abductors.[116]

On August 13 2020, the village of Mautu in the South west Region was raided and seven inhabitants killed.[117] The victims, including an elderly man and a pregnant woman known as 'Mami Blessing,' were reportedly shot at close range in their homes. Before these killings, the armed men raided a church on the outskirts of Mautu and shot the church's pastor. Two boys were executed alongside the pastor and another person shot as he tried to escape. The CHRDA reported that they were unaware of any ongoing investigation into the incident.[118]

On August 2020, multiple media outlets reported the beheading of 32-year-old Comfort Tumassang by unidentified persons. The incident took place in Muyuka, Southwest Region. A

https://www.hrw.org/news/2019/05/23/cameroon-promised-investigation-should-be-independent>. Accessed on June 5 2022.

[114] Https://www.voanews.com/a/professor-shot-dead-cameroon-restive-anglophone-region/4630530.html

[115] Amnesty International, Research Report, A Turn for the Worse: Violence and Human Rights Violations in Anglophone Cameroon (London: Amnesty International Publications, 2017).

[116]Journal du Cameroun, "Anglophone crisis: two kidnapped police officers killed" (27 June 2018), online: <https://www.journalducameroun.com/en/Anglophone-crisis-two-kidnapped-police-officers-killed/>.

[117] Center for Human Rights and Democracy in Central Africa (CHRDA)

[118] 2021 Country Reports on Human Rights Practices: Cameroon. Https://cm.usembassy.gov/2021-country-reports-on-human-rights-practices-cameroon/. Accessed on June 5 2022.

video circulating on social media that day showed a woman seated on the ground with her hands tied behind her. She begged for mercy before she was beheaded. Her body was left in the street. Human Rights Watch also reviewed a second video, filmed before the killing, showing unidentified persons interrogating and threatening Tumassang.[119]

On March 2021, armed men attacked Fulani herdsmen in the lower Menchum valley in Boyo, Northwest region, killing at least 10 people, after the herdsmen's cattle had allegedly destroyed a farmer's crops. According to the United Nations Office for the Coordination of Humanitarian Affairs (OCHA), two days later in the same locality armed men attacked Fulani people, killing six people, allegedly to avenge the death of a woman burnt alive in her house in Beneng village.[120]

On July 4, armed men shot and killed Brice Ebangi, a timekeeper at the Presbyterian Church of Cameroon (PCC), as he rang the church bell at 5 a.m. to summon congregants for morning prayers. CHRDA reported that the armed men who entered the village of Bangem, Southwest Region, before dawn, shot Ebangi outside the church building as he conducted his daily bell-ringing routine. The armed men reportedly said Ebangi rang the bell to alert residents to their arrival. According to media, the armed men also arrested and physically assaulted several inhabitants, injuring one individual, looted and burned several houses.

On August 2020, armed men kidnapped and killed Reverend Christopher Fon Tanjoh, a Bible translator and pastor of New Apostolic Church in Batibo in the Northwest Region, who also worked with local NGO Community Initiative for Sustainable Development. The attackers shot Tanjoh in the leg before abandoning him at the entrance of St. John of God Hospital in Batibo, where he bled to death. A condolence letter of the United States to the family and colleagues of the deceased read "The murder of Pastor Tanjoh is a terrible reminder of the dangers humanitarian aid workers face in the Northwest and Southwest Regions of Cameroon. We call for an independent investigation into the killing and for the perpetrators to be brought to justice in accordance with Cameroonian law." The killers of Pastor Tanjoh however remains unknown till

[119] Cameroon: Gruesome Murder of Comfort Tumassang - Civil Society Condemns Human Rights Violation. Ttps://allafrica.com/stories/202008180251.html. Accessed on June 5 2022.
[120] Cameroon Situation Report, 24 May 2021. Https://reliefweb.int/report/cameroon/cameroon-situation-report-24-may-2021. Accessed on August 30 2021.

date. The United States condemned all acts of violence against humanitarian aid workers and call for their unhindered access to those in need in accordance with international humanitarian law.[121]

A group of armed men broke in on the morning of Tuesday, October 30, 2018, around 10 a.m. in Bambui-Northwest region, a rural area 14 kilometers from Bamenda, Tubah district. According to Cameroon Defence Minister Joseph Beti Assomo,[122] they planned to attack the university area and the territorial brigade of Tubah gendarmerie. Around the same time, the Reverend Charles Truman Wesco, born on August 24, 1974 in Washington DC, a Cameroon Bible Fellowship pastor of American nationality, was passing through this place in his vehicle with his wife, son and driver. The convoy was fired at. The American missionary was hit in the temple. He was first evacuated to a health center in Nkwen and then transferred to the Bamenda Regional Hospital where he finally died. According to report,[123] Wesco's body was subject to investigation by police forces and his remains were then transferred to a hospital, where an autopsy was performed in the presence of Cameroonian and American forensic doctors, a U.S. Embassy representative and the commissioner to the Yaoundé Military Court. "During the autopsy, the pellets extracted from the remains confirmed that the shots that killed Reverend Charles Truman Wesco did indeed come from a 12-gauge weapon, Bakary asserted. "The impacts left by the shots were effectively located in the right parietal part of the skull, the right face and the right shoulder of the victim; all things that confirm the position of the shooter stationed on the right side of the vehicle, a position occupied by the terrorists at the time of the incident." However, no forensic investigation was conducted in an attempt to track down the murderers.

On July 1 2021, at about 7:30 p.m., two armed men broke into the home of Fuh Max Dang, a 51-year-old physics teacher at the Government Bilingual High School in Kumba, southwest region and shot him dead in front of his two children. He was also an examiner of physics for the Cameroon General Certificate of Education (GCE) Examination. He had just returned home and was in his bedroom before the gunmen arrived. They knocked on his door and his children said ‘Daddy somebody is looking for you.' That is how he stepped out of his bedroom before meeting

[121] Http://www.cameroon-info.net/article/cameroon-anglophone-crisis-us-embassy-condemns-killing-of-humanitarian-worker-in-batibo-demands-independent-379944.html. Accessed on September 7, 2020.
[122] Https://www.businessincameroon.com/security/0211-8535-cameroonian-government-opens-investigation-into-the-murder-of-us-missionary-in-bamenda. Accessed on July 12 2022.

[123] Https://www.christianpost.com/news/cameroon-details-how-american-missionary-was-killed-journalist-jailed-for-blaming-govt.html. Accessed on July 12 2022.

with the unfortunate situation. His corpse was deposited at the Kumba District Hospital mortuary," said Nyambot.[124]

Father Cosmas Ombato Ondari was reportedly killed November 21 2018 in Mamfe-Southwest region. Onari, a member of the Mill Hill Missionaries, had been serving in the country since March 2017, when he was ordained a priest. He was the second priest killed in recent months in the country. Fr. Alexander Sob Nougi was killed July 20 in the same region where Onari was shot. Nougi was shot at close-range, in an attack that Church officials said was a targeted assassination.

Makue Cyprian, head teacher of Government School Ndop was killed on September 20, 2021, in Ndop, Ngoketunja division of the North West, in his efforts to enable government schools in Ndop open their doors. He was among a good number of head of school establishments and teachers picked up by gunmen in Ndop, as they returned from a divisional coordination meeting of Ngoketunja geared towards school resumption and the reopening of government schools in the division.

According to a Human Rights Watch report, on June 8, at about 7 p.m., in Gom village, North-West region, two armed men broke into the fon's home, harassed the eight people there, including a 72-year-old man whom they beat. At about 7:30 p.m., they shot Nwang Lydia, a 60-year-old woman, in the right leg. Her neighbor, the 72-year-old man who had been beaten, said that the criminals forced him and his wife to carry Lydia in the direction they would lead them. They carried Lydia as far as a bridge about two kilometers from her house, when the armed men told them to leave her there. The men then killed Lydia with a gunshot to the chest. Lydia's relatives recovered her body from the bridge the following morning.[125]

On September 22, 2018, five public high school students were kidnapped and beaten in Bafia-Southwest region. A 25-year-old high school student, Steve, said that five men armed with guns and machetes, kidnapped him and four other students, between 21 and 22 years old, including one woman, early in the morning on their way to school: They beat me up, they hit me and my friends with sticks and machetes on the soles of our feet, in the arms, and in the back…. They cut my right hand. I had a serious wound, and I was bleeding…. They demanded a ransom of 500,000 CFA

[124] Http://www.cameroon-info.net/article/cameroon-anglophone-crisis-armed-men-kill-physics-teacher-in-kumba-402528.html. Accessed on September 11 2022.
[125] Cameroon - Anglophone Crisis: Human Rights Watch catalogues fresh state forces', separatist atrocities against civilians. Http://www.cameroon-info.net/article/cameroon-anglophone-crisis-human-rights-watch-catalogues-fresh-state-forces-separatist-atrocities-against-civilians-403500.html. Accessed on June 5 2022

[$933]. My mom didn't have that amount. She pleaded with them in tears and eventually gave them a sum of 200,000 CFA [US$373] for my release.[126] Steve was released after two weeks. He said he was too afraid to return to school and hid in the bush for four months before relocating to Limbe, South-West region, where he now works as a driver and lives with a relative.

On June 13, 2019, six unidentified persons kidnapped Veronica, a 23-year-old University of Buea student, at about 3:30 p.m. They took her to an abandoned school in Bomaka neighborhood-Southwest region and sexually assaulted her before taking her to their camp in the bush, where they threatened her with death. They released her the next day following a ransom payment of 500,000 CFA (US$933). Veronica said: On the road, I saw six amba boys following me. They were armed: two had guns. They stopped me and ordered me to follow them. They asked me to give them my school bag, which I happened to have with me, with my laptop and a book inside. I got scared and walked with them till the roundabout, when I pretended to collapse, just to call for attention. But no one came to rescue me, and they] carried me. They took me first to an abandoned school, the Government Secondary School Bomaka, where they kept me for a few hours before taking me to their camp in the bush. In the school, one of them sexually assaulted me.[127]

On January 30, 2020, armed men kidnapped Marie, a 19-year-old secondary school student, in Buea, in Cameroon's Anglophone South-West region, on her way back from school. Three days later, they chopped her finger off with a machete.[128] They were armed with machetes and knives. They found schoolbooks in my bag and seized it. They blindfolded me so I could not see where they were taking me. We had to walk for few hours. I was not given food. I slept on the ground outside for three days. They called my father and asked him to pay money for my release. On the third day, when I was about to be released, at 10 am, they cut my finger with a machete. One of the boys did it. I begged them not to, and then they chopped the forefinger of my left hand.[129]

[126] Human Rights Watch telephone interview with Steve, April 1, 2021. https://www.hrw.org/report/2021/12/16/they-are-destroying-our-future/armed-separatist-attacks-students-teachers-and. Accessed on September 4 2022.
[127] Human Rights Watch telephone interview with a 23-year-old University of Buea student, April 5, 2021. https://www.hrw.org/report/2021/12/16/they-are-destroying-our-future/armed-separatist-attacks-students-teachers-and. Accessed on September 4 2022.
[128] Ilaria Allegrozzi, "Targeted for Going to School in Cameroon." https://www.hrw.org/report/2021/12/16/they-are-destroying-our-future/armed-separatist-attacks-students-teachers-and. Accessed on September 4 2022.
[129] Human Rights Watch telephone interview with Marie, February 12, 2020. https://www.hrw.org/report/2021/12/16/they-are-destroying-our-future/armed-separatist-attacks-students-teachers-and. Accessed on September 4 2022.

On March 2019, six armed men kidnapped an 18-year-old student and tortured him in Bamenda-Northwest region. He said they took him to a camp, tied him up, tortured him, and held him captive for four days: I was on my way to school dressed in plainclothes…. I realized a group of boys were behind me, so I started running. They caught me. They warned me at gunpoint that if I moved a single step, I will be shot. They asked me, "Where are you going? Where's your bag?" If I told them I was going to school, they would shoot me. So, I said I was just walking. But they told me they knew I was going to school. They said I am not supposed to go to school while they fight. "All schools should to be shut down," they said. I finally showed them my bag. They found my books and my school uniform in it…. They took me to their camp on a motorbike at a very high speed. They blindfolded me before entering the camp. There, they beat me with machetes and wooden planks on my buttocks and the soles of my feet. They tied me up, my hands and legs from behind, and kept me in that uncomfortable position for three hours.[130] They released him following a ransom payment of 70,000 CFA ($130).

On November 4, 2019Armed separatists kidnapped three female students in Bamenda's Ntarikon neighborhood on their way home from school. The students, who were 14, 18, and 20 years old at that time, attended Government Bilingual High School Ntamulung, about one kilometer from where they were kidnapped. The armed men blindfolded the students, took them to a separatist camp in Ntanka village, and beat them. Human Rights Watch spoke with one of the students, Maria, her parents,[131] and a witness to the kidnapping.[132] Maria recounted her experience: At the camp, we were handed over to a group of 10 people who asked us why we were going to school, and before we could say a word, they started beating us furiously. They used cutlasses and planks to beat us on our buttocks and under our feet as well as on our thighs and faces. The beating lasted some 30 minutes and left us with bruises on our bodies…. The pain was unbearable. I cried all

[130] Human Rights Watch telephone interview with an 18-year-old student from the North-West region, April 3, 2021, and April 9, 2021. https://www.hrw.org/report/2021/12/16/they-are-destroying-our-future/armed-separatist-attacks-students-teachers-and. Accessed on September 4 2022.
[131] Human Rights Watch telephone interviews with Maria's parents, November 2019. https://www.hrw.org/report/2021/12/16/they-are-destroying-our-future/armed-separatist-attacks-students-teachers-and. Accessed on September 4 2022.
[132] Human Rights Watch telephone interview with a 27-year-old man, November 2019. https://www.hrw.org/report/2021/12/16/they-are-destroying-our-future/armed-separatist-attacks-students-teachers-and. Accessed on September 4 2022.

through the first night in their camp.[133] The students were released on November 7, 2019, following a ransom payment of 1,130,000 CFA ($2,100).

On May 20, 2020, Jim, a 24-year-old University of Bamenda student, said that some men stormed his university residence in Bambili, Bamenda, and kidnapped him and at least eight other students. Jim said: It was about 4:30 p.m. when four boys, one with a gun, the other three with machetes or knives, came on foot. They stopped all students who were in front of the hostel and threatened us with death. Some bailed their way out with money. Others, like me, who were poor and had no money were kidnapped. So, the boys took about nine of us, including four or five girls. We walked for about three or four hours in the bush.[134] The armed separatists took the students to two camps, the first of which was an abandoned school, and kicked, slapped, and beat the soles of the students' feet with machetes. The fighters released the students after five days following ransom payments ranging from 100,000 CFA ($186) to 500,000 CFA ($933).

On August 5, 2020, armed men kidnapped a teacher from his home at 7:30 a.m. At a camp where he was taken, he said he found 16 other hostages, including other teachers and parents of students. They beat the soles of his feet with machetes for the three consecutive days and hit his arms and back. About a month later, on September 3, they released him following a ransom payment of 300,000 CFA (US$560), which he needed to borrow.[135] A farmer witnessed eight men kidnap the teacher in broad daylight: "This teacher has been a community teacher for a long time and has invested a lot to improve the lives of the children in the Bafia community. His kidnapping came as a shock to the community."[136]

On July 2019, Eight armed men, wearing plainclothes and *gris-gris* amulets and carrying guns, stopped a bus at a checkpoint between Njinikom and Belo of the Northwest region. They checked all 17 passengers' identity cards and bags and pulled out Andrew, a teacher, and three others (two men and a woman). They took these four to a camp, shot Andrew in the left leg, and released him four days later. He spent six months getting treatment at the hospital. He recounted his ordeal after

[133] Human Rights Watch telephone interview with Maria, November 2019. https://www.hrw.org/report/2021/12/16/they-are-destroying-our-future/armed-separatist-attacks-students-teachers-and. Accessed on September 4 2022.
[134] Human Rights Watch telephone interview with Jim, April 8, 2021. https://www.hrw.org/report/2021/12/16/they-are-destroying-our-future/armed-separatist-attacks-students-teachers-and. Accessed on September 4 2022.
[135] Human Rights Watch telephone interview with a 42-year-old teacher in the South-West region, March 22, 2021. https://www.hrw.org/report/2021/12/16/they-are-destroying-our-future/armed-separatist-attacks-students-teachers-and. Accessed on September 4 2022.
[136] Human Rights Watch telephone interview with a 39-year-old man from Bafia, May 2021.

the fighters found his teaching certificate: They took four of us to their camp. They interrogated and threatened us with death. They accused me of teaching. They forced me to say I will no longer teach. They beat me with machetes and on the second day they shot me in the leg…. They shot me because I am a teacher.[137]

On August 1, 2019, armed men with hunting guns, knives, and pistols believed to be locally fabricated stopped a teacher at a checkpoint in Takija Mankon-Northwest region, searched his bag, and then kidnapped and tortured him at their camp, including by burning his body "all over" with a lighter. They released him six days later following a ransom payment of 700,000 CFA ($1,191). He recalled what happened: The men found out I was a teacher. "According to the laws of Ambaland, this a crime, punishable by the death penalty," they said to me…. I was taken to a camp and tortured there. They tied up my hands and feet together behind my back with a nylon rope; they hung me in this position and burned me. They left me hanging like this for several hours. I was almost dead when they put me down.[138]

On July 13 2021, armed individuals abducted at least 60 men, women, and children in the village of Mmouck Leteh in the Southwest Region. On July 15, a local administrator told the BBC that gunmen entered the village late at night, moved through the community kidnapping persons–many of whom were at a local snack bar–and led them away at gunpoint to an unknown destination. According to the BBC, a significant number of the victims were children between the ages of 12 and 16.[139]

On Sunday 13 December 2020, three chiefs were reportedly abducted by armed men in Mile 14-Dibanda, Buea Subdivision of Fako Division, South West Region. CHRDA gathered from very close sources that on the said day, the chief of Mile 14, Chief Ikome Emmanuel Ngalle, and his counterparts from Mile 15−Lower Bokova, Efande Emmanuel Ewule and Mile 16–Bolifamba, Kombe Simon Monyonge, were in an occasion of the former's home-opening ceremony. At around sunset, denizens were seen running into the house for safety as they saw Separatists fighters

[137] Human Rights Watch telephone interview with Andrew, March 6, 2021. https://www.hrw.org/report/2021/12/16/they-are-destroying-our-future/armed-separatist-attacks-students-teachers-and. Accessed on September 4 2022.
[138]Human Rights Watch telephone interview with a 49-year-old teacher, August 14, 2019. https://www.hrw.org/report/2021/12/16/they-are-destroying-our-future/armed-separatist-attacks-students-teachers-and. Accessed on September 4 2022.

[139] 2021 COUNTRY REPORTS ON HUMAN RIGHTS PRACTICES: CAMEROON. Https://cm.usembassy.gov/2021-country-reports-on-human-rights-practices-cameroon/

approaching the chief's house (old house). The armed men went to the house, knocked at the door fiercely. A relative in the chief's house opened the door and the assailants requested the chief's whereabouts. The household was threatened with sporadic gunshots that were fired in the air. This caused the family members to provide them with information on where the chief was, and immediately they went to the venue where they kidnapped the three aforementioned chiefs amidst the ceremony. This caused chaos as all persons present at the ceremony ran helter-skelter for safety as the men continuously fired bullets in the air. Minutes after the chiefs were taken into the bush, "one notable at the chief's palace received a call from the boys who told him to come and take chief home. Unfortunately, he reached there and saw the chief's lifeless body that was abandoned in the bush. He alerted family members and elements of the BIR who came and transported the corpse to the morgue." a relative said.

The attacks and killing of chiefs have been so spontaneous. In July 2018, 7 Fako chiefs were abducted and one of them, Chief Mbanda Njie Williams of Lysoka Moliwe village died whilst in the custody of the abductors. On 12th August 2018, His Royal Highness Itoh Esoh, Paramount ruler of the Balondo people, Ndian Division of the SWR was shot dead on his way returning home from church after a Sunday service. On November 6, 2020, Chief Molinga Francis of Liwu la-Malale was shot and killed and his palace was set ablaze. Such attacks on traditional leaders is an affront to the tradition, cultures, and customs of the people.

CHRDA strongly condemns these attacks on Traditional Rulers and urges the members of the Non-State Armed Groups to desist from all sorts of attacks on the civilian population as this violates the very laws enshrined in the International Human Rights and International Humanitarian Law.

Sexual violence has become rampant in Anglophone Cameroon in a wide range of contexts, and to a wide variety of women, urban and rural, with tragic repercussions for the victims and, to date, few consequences for the perpetrators as they are unidentified in many cases. In most cases, young children under the age of ten are victims. Parents are left to fight the ill on their own. Cameroon's Penal Code punishes any person or persons who by physical or moral violence forces a woman, including an adolescent to have sexual intercourse with him. The punishment is imprisonment for five or ten years. The UN documented more than 4,000 cases of sexual and gender-based violence in this volatile region in 2020. Chishugia and Franke reports the rape of a four-year-old girl received in the emergency unit of a hospital in Buea-South West Region with active bleeding from her

vagina and anus (Chishugi and Franke, 2016). The history related to her case began earlier that day while the patient was playing outside. While her single mother was taking care of her siblings inside of their house, a boy of unidentified age approached her and offered to buy her a sweet. Her mother was first alerted that something was amiss when she heard her daughter crying outside of the house. When she went to investigate her daughter's cries, the girl's mother was horrified to find her daughter with tears streaming down her face and clothes soaked in blood. When questioned, the girl reported that a boy gave her a sweet and then introduced his organ (penis) into her vagina and anus. She reportedly screamed for help but was unheard because the boy had taken her inside an unfinished building. The examining gynecologist noted the child had heightened psychological distress due to fear and pain, demonstrated by her inconsolable crying. During examination in the emergency unit, it was noted that her vulva and vaginal hymen had been destroyed with a tear extending through the perineal body from her vagina to her anus. There were multiple lacerations around the anus leading to destruction of the anal sphincter tone. A surrounding hematoma of the genitalia and rectal region was noted. The patient was taken to the theater and under general anesthesia the lacerations were cleaned and the perineum and anal sphincter were sutured to obtain haemostasis. Initial HIV serology was negative. Hepatitis B, C, chlamydia, and syphilis testing were also negative. However, preventative matters were taken, and the patient was placed on prophylactic HIV treatment along with pain killers and antibiotics. Due to blood loss from the trauma, a one-time blood transfusion was done. Follow up care for the child and mother included repeat testing for HIV, chlamydia, hepatitis, and syphilis. The female nurses at the hospital provided psychological counseling for the mother during her daughter's stay.

5.4 Crimes Against Property

Criminals have targeted citizen's objects protected under law including schools, mosques, churches, prisons, hospitals and markets. Many social infrastructures had reportedly been destroyed by unknown persons. The education authorities have often reported the damage or destruction of schools by unknown persons. In some areas, criminals destroyed bridges linking villages, such as in Kubroshosh, State of Borno. Attacks on health centres have also limited the enjoyment of the right to health.

On February 19 2020, the Moderator (Rev. Fonki Samuel) of the Presbyterian Church in Cameroon (PCC) issued a press release stating that unidentified individuals set fire to the Presbyterian Church in Mbufong-Bali in the Northwest Region. A February 17 video on social media showed members

of the church lamenting the loss of the church building.[140] Researchers were able to geolocate the general location of this event with a high degree of certainty, supported by good quality video. The analysis of a video, according to a report from the Cameroon Anglophone Crisis Database of Atrocities shows the burning of the church was likely filmed in Mbufung, Bali, North-West Region, Cameroon on February 18, 2020, between the hours of 09:00 and 18:32 (Cameroon Local Time), with the church likely having burned down the previous day (February 17, 2020). While there is nothing in the video to assist in identifying the persons and/or parties who may be responsible for burning down Mbufung Church, there are several allegations on social media and news sites. Team members found the information to be inconsistent and could not reach any conclusions as to what persons or parties may be responsible for the burning of Mbufung Church.

On June 8 2022, unidentified armed men burnt down the Mamfe District Hospital, situated in Manyu Division bordering Nigeria in the Southwest Region of Cameroon. Local sources say the armed men first opened fire with automatic weapons before setting the structures ablaze on the night of Wednesday, June 8. "Almost all the structures have been destroyed by fire except the pharmacy," a hospital source revealed.

On 26 March 2021, a UN convoy, composed of two vehicles with seven staff members, was conducting a monitoring mission to Munyenge village in the South-West region. Shortly after entering Ikata village, a group of armed men opened fire on the convoy with automatic weapons. The attack did not lead to any loss of life nor injuries among the mission participants, but the two vehicles were seriously damaged. The Humanitarian Coordinator in Cameroon, Mr. Matthias Z. Naab, strongly condemned the attack perpetrated against a United Nations convoy in Ikata village, in the South-West region of Cameroon.[141]

OCHA reported three attacks on healthcare services in the North-West (NW) and SW regions. A nurse of a medical NGO was killed and two other medical staff from a local NGO were injured in the NW. Other medical staff were abducted, and cholera samples were destroyed in SW.[142] OCHA also reported four staff of a local NGO abducted by unidentified armed elements when

[140] 2020 Report on International Religious Freedom: Cameroon. Https://www.ecoi.net/de/dokument/2051530.html. Accessed on June 5 2022

[141] United Nations, Cameroon. https://cameroon.un.org/en/134117-humanitarian-coordinator-cameroon-strongly-condemns-attack-united-nations-convoy-south-west. Acessed on July 28 2022.

[142] Https://www.humanitarianresponse.info/es/operations/cameroon/document/cameroon-north-west-and-south-west-situation-report-no-40-28-february

returning from a distribution activity in Widikum-Northwest and Two incidents of humanitarian food aid truck diversion by armed men reported in the North-West region.[143]

Students, teachers and schools in Cameroon's Anglophone regions have had a devastating impact on children's right to education due to several attacks from unidentified groups and individuals. These criminal attacks do not just cause immediate physical and psychological harm, but they jeopardize the future of tens of thousands of students. It is therefore the responsibility of Cameroonian authorities to investigate and prosecute attacks on education and provide forensic and justice system support.

A 131-page report,[144] documents scores of education-related attacks in the English-speaking North-West and South-West regions between March 2017 and November 2021. Criminals have killed, beaten, abducted, threatened, and terrorized students and education professionals; harassed and intimidated families into keeping their children out of school; and burned, destroyed, damaged, and looted school buildings.

On April 2017, the Government Bilingual High School-Northwest region was burned this school between 9 and 10 p.m.[145] Thomas, a teacher, described the attack: "They burned the staff room, the principal's room, and the library. We rushed there but struggled to quell the fire. All school records, books, and other documents were burned. Even some computers were burned.

A former student of the school and a relative of another former student provided the same account of the events. "It was a shock to see the library completely burned," said a 21-year-old female former student. "For students like me who could not afford textbooks, those books in the library were very important."[146]

[143] CAMEROON: North-West and South-West Situation Report No. 42 As of 30 April 2022. Https://www.humanitarianresponse.info/en/operations/cameroon/document/cameroon-north-west-and-south-west-situation-report-no-42-30-april-2022.

[144]"They Are Destroying Our Future: Armed Separatist Attacks on Students, Teachers, and Schools in Cameroon's Anglophone Regions,". Https://www.hrw.org/report/2021/12/16/they-are-destroying-our-future/armed-separatist-attacks-students-teachers-and. Accessed on July 28 2022

[145] Human Rights Watch telephone interview with Thomas, May 4, 2021; Human Rights Watch telephone interview with a 21- year-old former student at the Government Bilingual High School, Jakiri, May and June 2021; Human Rights Watch telephone interview with a community leader in Jakiri, June 2, 2021. Https://www.hrw.org/news/2021/12/15/cameroon-armed-separatists-attack-education. Accessed on September 23 2022

[146] Human Rights Watch telephone interview with a 21-year-old former student at the Government Bilingual High School, Jakiri, May and June 2021.

Figure 3:What was left of the office of the bursar of the Government Bilingual High School in Jakiri after it was burned down between March and April 2017.[147]

Figure 4:What was left of the principal's office at the Government Bilingual High School in Jakiri after it was burned down between March and April 2017

[147] Https://www.hrw.org/report/2021/12/16/they-are-destroying-our-future/armed-separatist-attacks-students-teachers-and.

Figure 5:A cow grazing in front of the abandoned Government Bilingual High School in Jakiri, which has been shut since 2018 following the attack in in 2017.

The high school, which had enrolled between 1,000 and 1,400 students before the crisis, finally shut down in 2018 and remained closed through at least late April 2021, as evidenced by two videos filmed at that time showing the abandoned school, the burned administrative block, and goats and cows grazing on the surrounding land, indicating the school's lack of use.

About 10 armed men with guns and machetes raided the Government High School in Ashong village-Northwest region in October 2017 and threatened to kill eight teachers if they did not close the school. Human Rights Watch spoke with two teachers who witnessed the attack and a local official. Students had stopped attending school weeks before, so they were not there during the attack. However, due to government pressure, teachers continued to go to school, and this school remained open-without students-even after the attack.[148]

A 32-year-old teacher recounted how at least six armed men disrupted a meeting to discuss the resumption of classes in Government Secondary School, Konene on September 2018: The men came with motorbikes and twisted the sign board of the school. They were at least six; they had machetes and hunting guns. I was outside, waiting for the meeting to start. I saw the amba coming.

[148] Human Rights Watch telephone interview with a female teacher at Ashong high school, June 2021. Https://www.hrw.org/report/2021/12/16/they-are-destroying-our-future/armed-separatist-attacks-students-teachers-and.

They shot in the air and forced all of us [the teachers and the principal] to flee. I was very scared. I escaped towards the bush and so did other teachers. While running, at least two teachers got injured. They attacked us because they thought we were traitors: traitors because we wanted to do our job and teach and offer the students the education they deserve and have the right to.[149]

Just before dawn, armed men stormed the Presbyterian Secondary School Nkwen, Bamenda on November 5, 2018 and abducted 79 school children from their dormitories.[150] According to media reports, the students, aged 11-17, were kidnapped along with their principal, a teacher, and a driver.[151] All attempts made by the government of Cameroon to discover where the students were taken to failed. Forensic investigation technique would have helped to discover the location even before the students, the principal, the teacher, and the driver were released on November 7.[152]

Armed separatists attacked Morning Star Nursery and Primary School; Holy Rosary Integrated Comprehensive College, Mendankwe on June and September 2020 located in the same compound, twice.[153] The first time, in June 2020, they came at about 7:30 p.m. and forced teachers at gunpoint to hand over money and valuables, including telephones and computers. Then, they broke into a female secondary school dormitory and "scared the girls to death because of their guns."[154] The second time, in September 2020, between 10 and 15, the men with hunting guns and machetes and dressed in plainclothes came at about 6 p.m. They threatened the Catholic sisters managing

[149] Human Rights Watch in-person interview with a 32-year-old teacher from the North-West region, Nicosia, Cyprus, August 2019. Https://www.hrw.org/report/2021/12/16/they-are-destroying-our-future/armed-separatist-attacks-students-teachers-and.
[150] Jonathan Pedneault, 'Free Cameroon's Kidnapped School Children," Human Rights Watch dispatch, November 6, 2018. Https://www.hrw.org/news/2018/11/06/free-cameroons-kidnapped-school-children.
[151] "Dozens of students abducted in Cameroon by alleged separatists," Al Jazeera, November 5, 2018, https://www.aljazeera.com/news/2018/11/5/dozens-of-students-abducted-in-cameroon-by-alleged-separatists. Accessed on September 4 2022.
[152] Tabi Marriane Enow, "Kidnapped PSS Nkwen students released," Journal du Cameroun, November 7, 2018, https://www.journalducameroun.com/en/news-in-brief/kidnapped-pss-nkwen-students-released/ Accessed on September 4 2022.
[153] Human Rights Watch telephone interview with a female teacher at the Morning Star Nursery and Primary School, November 4, 2020; Human Rights Watch telephone interview with a male teacher at the Morning Star Nursery and Primary School, November 6, 2020; Human Rights Watch telephone interview with a female teacher at the Morning Star Nursery and Primary School, November 11, 2020; Human Rights Watch telephone interview with a female teacher at the Morning Star Nursery and Primary School, November 14, 2020.
[154] Human Rights Watch telephone interview with a female teacher at the Morning Star Nursery and Primary School, November 4, 2020. https://www.hrw.org/report/2021/12/16/they-are-destroying-our-future/armed-separatist-attacks-students-teachers-and

the school and attempted to kidnap for ransom the abbess (the head nun), who the other sisters had hidden. No children were at school when this happened.[155]

Armed men attacked Presbyterian School, Kumbo with more than 200 students present on November 3, 2020 and kidnapped 11 teachers. They held and threatened the teachers in their camp in the bush before releasing them on November 6. Human Rights Watch spoke with Reverend Fonki Samuel Forba, the Moderator of the Presbyterian Church of Cameroon, and one of the abducted teachers.[156] According to Forba: "The children ran away in different directions, all very scared…. The teachers were taken to a camp far in the bush. While the teachers were not mistreated, they were given a warning that they should not teach, that the school should remain shut."[157]

Human Rights Watch learned of one attack on a school through a video posted on social media in January 2019 that shows a group of Cameroonian soldiers around a burning school building and an interview with a resident of Widikum town, North-West region.[158] The University of California, Berkeley's Human Rights Center and Bellingcat, an investigative journalism collective, geolocated the video, which appears to have been filmed in Eka village, North-West region.[159] The video did not show who lit the fire and scientific investigation could be of help to track down the criminals. The attack seriously damaged the school, which remains closed as of September 2022.

[155] Human Rights Watch telephone interview with a male teacher at the Morning Star Nursery and Primary School, November 6, 2020. https://www.hrw.org/report/2021/12/16/they-are-destroying-our-future/armed-separatist-attacks-students-teachers-and

[156] Human Rights Watch interview with Samuel Fonki Forba, November 4, 2020; Human Rights Watch interview with a teacher at the Presbyterian School, November 10, 2021. https://www.hrw.org/report/2021/12/16/they-are-destroying-our-future/armed-separatist-attacks-students-teachers-and

[157] Human Rights Watch interview with Samuel Fonki Forba, November 4, 2020.

[158] Tweet, Israel Ayongwa, January 11, 2019, https://twitter.com/iayongwa/status/1083760705239638016?s=20. Accessed September 4 2022; Tweet, Israel Ayongwa, January 11, 2019, https://twitter.com/iayongwa/status/1083802717733060608?s=20. Accessed September 4 2022.

[159] "Verified incident: School burning in Eka," Scholars Portal Dataverse, 2019, https://dataverse.scholarsportal.info/dataset.xhtml?persistentId=doi:10.5683/SP2/QF5HP7. Accessed September 4 2022; Bellingcat, "How Schoolchildren Became Pawns in Cameroon's Anglophone Crisis."

Figure 6: A screenshot from a video posted on twitter in January 2019 showing a group of Cameroonian soldiers around a burning school building in Eka village, North-West region.[160]

On December 18, 2017, residents of Kembo in South Western Cameroon reported how fire was set to most of the houses in the village. In April 2018, a group of armed men attacked Aki, a village in the South West region, and set fire. At the end of April 2018, the centre of the village of Munyenge was set ablaze and the sounds of gunshots were captured by amateur video footage. Three residents explained how villagers ran into the bush to avoid being shot with one villager killed. Satellite images show large portions of the village burned to the ground.[161]

[160] Twitter, @iayongwa, January 11, 2019, https://twitter.com/iayongwa/status/1083760705239638016?s=20; https://twitter.com/iayongwa/status/1083802717733060608?s=20

[161] Human Rights Watch cites 1800 dead: "Cameroon: Promised Investigation Should Be Independent Government Forces on Rampage in North-West Region City" (May 23, 2019). Online < https://www.hrw.org/news/2019/05/23/cameroon-promised-investigation-should-be-independent>. Accessed September 4 2022.

Figure 7: Burning of Munyenge. Source: CHRDA

Video footage from May 2018 of the village of Kuke Mbomo documented burning houses, the presence of ammunition, and chaos within the population. By the end of the month, many houses had been destroyed. Satellite images also reveal extensive fire damage across villages in the Southern regions of Bekora, Kumukumu, Kwakwa, and Bole.[162] In Wone, witnesses provided first-hand accounts of armed men arriving on the scene and setting fire to the entire village, including their homes, and to a neighbouring village.[163]

On December 3, 2018, in Meluf, Bui Division, North West region, armed men set fire to 40 houses. The CHRDA investigated the attack. At about 5 p.m., a witness saw the armed men drive into the locality and throw explosives on houses along the road at St. Augustine College junction. All the houses caught fire, including hers. A 70-year-old man, with visual and hearing disabilities, could not hear neighbours' warnings and was burned alive in his home. A witness said that when the armed men attacked the village, everyone ran. Forty houses were partially or completely destroyed.[164]

[162] https://www.bbc.com/news/world-africa-44561929. Accessed on September 7 2022.
[163] Ibid.
[164] Cameroon's Unfolding Catastrophe (2019). https://www.chrda.org/news/reports2019/cameroons-unfolding-catastrophe-2019/. Accessed on September 5 2022.

After Meluf, the armed men went to Romajai, a village in Nso, Nkum Subdivision, Bui Division, on December 4, 2018, and set fire to dozens of houses along the road. A victim told CHRDA that he had fled on learning of the armed men operations on December 3, but upon his return, he realized that his house had been razed to the ground.[165]

In May 2019, following what Human Rights Watch describes as a "rampage" in Mankon, Bamenda, in the North West, 70 homes were burned, prompting the government to promise an investigation.[166]

Armed robbery has remained a source of continuous threat, harassments, violence and intimidation in the Anglophone regions of Cameroon. Armed robbery was considered a crime as stipulated by the Cameroon penal code of 2016. In August 21, 2020, the management of MINTAYEN Cooperative Credit Union Limited published a press release informing its members and the general public that on Friday 21st August 2020, its Head Office at Sonac Street Bamenda was a victim of an attack by unidentified armed men between the hours of 9:45 am and 10 am. Though the ringleader of the Cooperative Credit Union robbery was shot to dead by the Cameroonian military, more investigation would have been done to track down his accomplices.[167]

Figure 8: Bamenda: Alleged ringleader of the MITANYEN Cooperative Credit Union robbery gets shot to death by the military

[165] Ibid.
[166] Ibid.
[167] https://betatinz.com/bamenda-alleged-ringleader-of-mitanyen/. Accessed on September 27 2022.

Denizens informed CNA how the rate of robbery attacks at Miss Bright Street Bomaka Buea-Northwest region is alarming.[168] In a month, over 4 petty businesses and homes had been attacked at night by unknown gunmen. This left the people in panic and fear and as a result, they shut their doors as early as 8 pm

The photo below shows bruises sustained by a petty trader while trying to flee from two gunmen who tried to rob her at her business place.

Figure 9: Bruises sustained by a petty trader while trying to flee from 2 gunmen who tried to rob her at her business place.[169]

The lady explained: Two boys met me at my business place, I was alone that night. They pointed a gun at my head and asked me to give them my phone and the money I had on me. I tried begging them but they didn't listen. The one holding the gun asked me to kneel at a dark corner. While all that was happening, many things went through my mind. I am a single mom and I have no one else to pay for my child's fees. What if I gave them my phone and all the money I had on me, where will I have another to pay the fees? Moreover, with a gun pointed at me, these boys must have taken drugs and one can never predict their next move. These thoughts gave me courage. I started running in the dark and they followed. I was happy to have lost them. That was where I got

[168] Cameroon News Agency. https://m.facebook.com/CAMEROONNEWSAGENCY/photos/a.871141382998914/4176641525782200/?type=3andsource=57andlocale2=ms_MYand__tn__=EH-R. Accessed on September 27 2022.

[169] Source: Cameroon News Agency. https://m.facebook.com/CAMEROONNEWSAGENCY/photos/a.871141382998914/4176641525782200/?type=3andsource=57andlocale2=ms_MYand__tn__=EH-R. Accessed on September 27 2022.

all these bruises," the lady recounted. Like her, two bar operators and home have suffered violent attacks at Miss Bright Street. Denizens said they needed intervention because the attacks did not seem to end anytime soon.[170]

5.5 Conclusion

There has been an increase in the rate and number of crimes committed in the past few years in Cameroon and especially in the Anglophones regions. Most of the violate crimes recorded were targeted towards a person (murder, kidnapping, battery, Robbery, Sexual assault). Property crimes included thefts and destruction of property. There is increasing difficulties in tracking down the perpetrators of these violent crimes. This difficulty can be attributed to the lack or inadequacy of scientific tools and technique used during investigation. With the help of forensic method of investigation, it would become easier to track down those responsible for the deadly crimes. This would go a long way to deter potential criminals from wreaking havoc to the society. It is worth noting that under international human rights law, Cameroon has, as all governments do, an obligation to protect the rights to life, personal liberty, and security of students, teachers, academics, and all education staff.[171] Attacks on schools and education facilities, and more generally, failure to respect the right to education are deemed a serious violation of international human rights law.[172]

[170] Ibid.
[171] International Covenant on Civil and Political Rights (ICCPR) acceded to by Cameroon in 1984, arts. 6, 9, and 10.
[172] Geneva Academy of International Humanitarian Law and Human Rights, "What amounts to 'a serious violation of international, human rights law'? An analysis of practice and expert opinion for the purpose of the 2013 Arms Trade Treaty," August 2014, pp. 5, 22, 37.

CHAPTER SIX

THE USE OF FORENSIC SCIENCE BY CAMEROONIAN POLICE INVESTIGATORS

6.1 Introduction

This chapter examines the extent to which police investigators in Cameroon use forensic science in criminal investigation. Information was elicited from criminal investigators who were representatives of various police stations and involved in crime investigation. It starts by examining the level of awareness amongst police investigators in the use of forensic science, forensic facility available for forensic investigation, the availability of qualified personnel, structures of investigation, duration of investigation, standard procedures as well as protocols followed during investigation. It closes with a discussion of the content of the investigation report.

6.2 Awareness about Forensic Science

Information obtained from respondents indicate that they are aware of the relevance of forensic science in criminal investigation. All respondents also indicated that they have used forensic science during criminal investigation. In the course of the interview, one of the respondent expressed himself as follows:

> Forensic investigation has to do with professionalism and must be carefully carried out in order not to distort any evidence. In most situations, you need to restrict intruders from getting to the crime scene in order not to tamper with any evidence. You can then go into the place where the crime was committed to look for evidence that can help in getting the criminal.

A respondent from another police station said;

> It is the process of identifying and collecting possible evidence that would be helpful to the investor in identifying who the perpetrator is. Evidence obtained is very helpful in criminal prosecution. You can cordon off the crime scene by using the yellow tape so as to prevent people from tampering with the remaining evidence. On arrival at a crime scene, we usually cordon

> off the place, do searches of the scene, collect whatever evidence available and use a laboratory to do confirmatory test.

The above expressions from the respondents indicate that awareness within the police core with regards to the use of forensic science in criminal investigation is not a problem.

6.3 Availability of Forensic Facility for Investigation

According to the study findings, the tools and technology used by the forensic investigators depend on the type of evidence to be collected and the kind of laboratory where such evidence is analysed.

In response to the question on the most common cases encountered in the line of duty and the facilities available to handle them, the following were listed as common cases: Burglary and break-ins, murder/sudden death/suicide/shooting and Robbery with violence. Rare cases were identified to include terror attacks, fire investigation, threatening parcels, animal attacks, bomb explosions, air crashes.

All the respondents identified kits for fingerprints and photography as equipment used during investigation. Respondents indicated that after training, one is issued with a kit which, however, does not contain all tools. Fingerprints/fingermarks kit would contain the following items: lifting tape, copex (for mounting the lifting tape), brush, scissors, magnetic powder for developing, fingerprints on paper, tape for recording, aluminum powder, gloves, swabs and tape. The Photography kit contains the following items: small cab, fuming chamber, painting machine, dark room, chemicals, camera (digital and film colour) and photographic tools and section

Still on the equipment used in carrying out investigations, one police investigator replied:

> We are in possession of equipment that are used to test confiscated items like drugs. It was given to us by the United Nations Office of Drug and Crime. We call it UNDT kit.

In the same vein, one respondent of another police unit explained:

> We have our own equipment that we use for our investigation. This is called the Cellebrite UFED Touch. It has the capacity to mirror the data that is available in the phone even when the security detail is not released to us by the

> suspect. Since digital evidence can stay longer than any other type of forensic evidence, we can then send it to the headquarters in Yaounde for further investigation. In situation where the crime/fraud was committed on other devices other than phone, we have the backing of our Yaounde office to do the investigation for us.

According to other informants, facilities are available for all experts to utilize even though some are not found at all stations, and hence it is tricky to say they are accessible. After the basic training the experts are issued with basic tools and others are added as per the acquisitions by the government. These facilities and technologies are very expensive and there is a big challenge purchasing them. From time to time, the government would supply some basic equipment. Also, there are departments that are given priority due to the emerging issues in general security.

In addition to the facility on forensic methods available to carry out forensic services, some of the respondents said;

> We are trying our best. Although, we don't have capacity to do so much, most especially those of Ballistics, DNA, Computer or Digital forensic, however, we are trying in the area of fingerprint analysis because we have a unit in this command that can handle that. We have specialists in fingerprint analysis and a software that was given to us by the police headquarters in Yaounde and they have also trained our personnel to be able to use it. Also in the area of crime scene investigation we are trying. We usually do that whenever we went to investigate any crime scene. We collect relevant evidence and present them as exhibits during prosecution. Whenever we have any reason to make use of forensic service that we do not have, we usually send such evidence to our Forensic Laboratory in Yaounde.

Another respondent explained that:

> We have equipment for fingerprint analysis like brush, tapes, camera, fingerprint card. For instance, we have the capacity to make use of different techniques using powder dusting, iodine crystals experiment and super glue fuming techniques. We have practiced it here with other members of staff a couple of times. Our station has also mandated it for some of us to go and do trainings about it, which we have

> done and so many of us have mastered it. We are presently working on the fingerprint application software that will enable us collect and store fingerprint of suspects. For now, we are still using the ink to paper method where we compare fingerprints manually and this could be very laborious. Any other forensic related matter is transferred to the national headquarters in Yaounde where they have better equipment. But for us here, we can only do fingerprint analysis.

With regards to DNA analysis involved in crime matters, respondents were asked based on the responsibility they have in this area. A reply from a police respondent was:

> We have the capacity and sometimes make use of public hospitals to help us confirm the DNA of the person in question. Although, we have not had the opportunity to confirm if the blood belongs to human being or not, or whether the suspect was the source of the DNA or not, we mostly use DNA in paternity dispute. However, when it is a murder case, the homicide section is the one that takes over and not our own job.

Still on the area of DNA testing, a respondent explained to the researcher that:

> We collect evidence of vandalisation from crime scene when we go out for investigation and we use this evidence whenever we have to prosecute. The gender based department which constitute one of our units has such responsibility of making use of DNA analysis in prosecution especially in child abuse, rape and paternity dispute cases. For us at the forensic unit we don't usually do cases that have to do with DNA analysis but the organization has been outsourcing expertise from abroad who have come and train us on several occasions.

According to information obtained from other police station, none of them have the capacity to make use of DNA in the course of criminal adjudication but only in civil matter of paternity dispute. It was also discovered that there is no effort whatsoever geared towards having the facility for DNA analysis in their commands. Therefore, the dream of making use of DNA in criminal proceedings among police units is still a mirage.

6.4. Adequacy of Facilities

The researcher also sought to know the adequacy of the equipment that were available and being employed for investigations. A majority of the respondents stated that the facilities and tools are not adequate to deal with the common cases and scenes of crime satisfactorily. The respondents indicated that the equipment available for use is not supplied directly but collected from the government chemist. They, however, said that the basic kit for any forensic expert is only adequate to deal with minor crime scenes and not the major ones. The few modern evidence collection kit available was said to be currently unreliable and not being used because of their complex nature.

One police investigator explained:

> Facilities are often gotten from donors who are based abroad and the process of getting them is often very lengthy and challenging and the equipment cannot adequately take care of our needs of investigations; While the photography and fingerprint kit is adequate to deal with minor cases of burglary, the lifting tapes always get out of stock and the lack of necessary powders while at a crime scene will force one not to collect all evidence available; sometimes, some kits get corrupted resulting to the loss of very sensitive and important data.

6.5. Available Technology

With regards to available technology, all respondents indicated that the available technologies are only relevant for finger printing and photography. They expressed the need for new technology as the one they have is old. The respondents also pointed out that they do not have specialized attires for forensic investigation. They usually use aprons which often leads to the contamination of the crime scene.

> For finger prints, we only do the dusting of the visible finger prints and their manual uplifting. For photographs we use ordinary and digital cameras which have normal lens; We have and use aprons and not the specialized attires for the scenes of crime hence contamination of evidence is high.

According to respondents of another police unit, they do not use any modern technology. They, however, have fingerprint machines known as digital Ruvis work station which is not currently in use and requires training on how to use it.

While some respondents reported that there was a shift from iodine fumes to aluminum powder for dusting finger marks and use of digital cameras which has allowed colour photography indicating the introduction of new technology to them, others revealed that they rarely get new technologies and tools but in case they get them they are sub-standard.

Below is a summary of what other investigators said:

> Since the time I joined the department, there has not been the introduction of any new technology and I have been here for three years; In case we have a new technology, the supplier of the technology teaches us on how to use it. The ones who are present are the ones who are taught. The ones who are taught teach others. Practically you need a lot of time to use new machines but that time is not there. When the use of DNA was introduced I underwent training on sample collection but there were no facilities then; however, a machine was donated recently.

Respondents were asked to give alternatives of what they use in a situation where facilities and technology they needed were not available. While some respondents reported that it was the discretion of the expert to decide on what to do in the particular instance, others said one had no choice to use what was available and leave the rest due to the lack of facilities which often resulted to inadequate collection of evidence. In other words, enough evidence would not be collected due to lack of facilities. You just have to leave them and not expect someone to question your findings and actions.

6.6. Availability of Qualified Personnel for Forensics Investigation

The study also sought to find out the level of education and training in forensics and allied courses that police investigators had or have had since they joined the police core. Specific questions on their qualifications were asked. For instance, the police personnel were asked to cite the minimum qualification any of them has as a forensic investigator. There were mixed responses summarized as follows:

> There is no minimum qualification since any police officer can be a forensic investigator, hence the concept of academia is not very important. The applicants with higher qualifications are selected without paying attention to specific grades; There are no identified minimum qualifications but graduates

> with Bachelors of Science are preferred for selection; Police investigators with a degree in forensic science could not be identified in all the police units. All police investigators were trained in the course of investigation and everyone can carry out an investigation. However, specific training especially in the area of forensics is required to be more apt during investigation. Whenever a police officer is deplored to a particular unit, they start to undergo specific trainings especially in the type of forensic that the unit is specialized in; There are no specific grades for one to be a forensic investigator. One must have been serving as a police officer to be qualified to join the forensic department. Different years have got a different point of consideration according to the need in the field. There are some who are recruited due to their strength in sciences whereas others are recruited due to their hard work and the interest they have in the forensic department.

The respondents were required to narrate how they were selected to join the department in order to find out if there are any selection criteria used in recruiting them. No clear procedures were mentioned though it was clear that all had to be recruited as police officers first. Some of the respondents indicated that the selection criterion was biased in that in some cases it was based on the closeness one had with a top administrator. In other words, it was based on who you know and not what you know. Most respondents, however, indicated that they were first posted as general duty officers and later got a signal of the available position in forensic investigation.

The respondents were required to give the basic training for one to be referred to as an expert of forensic investigation. All respondents stated that one has to be trained in the basic investigation course at the police school. The basic training course comprises: Criminal procedure, the Penal Code, photography, basics in fingerprints, handling of exhibits and general scenes of crime. Thereafter, one needs to do a placement test.

The respondents were asked to indicate if they undergo in-service training and the number of times they have attended. From the findings, not all the respondents have attended in-service courses, but most of them indicated that they had done so. Those who had not attended any in-service course gave various reasons. One of the respondents, for instance, reported having not done the initial training course and so could not attend the in-service courses. The in-service courses are in most cases sponsored by foreign partners.

Informants of another police station were explained that the number of personnel in the forensic core is few and not encouraging. The command can boast of very few trained personnel. Respondents indicated that, although they were other personnel working with the department, they do not have specialized knowledge on forensics. They therefore suggested that the department should recruit personnel who are already expert so that they can focus in their area of specialization. This will give a face lift to the forensic science as a whole and their station would be able to come to terms with modern way of combating crime in the society.

6.7. Departments Involved in Forensic Investigation

There were mixed responses on the number of departments involved in forensic investigation with a majority of responses indicating five to eight departments while the rest of the respondents indicated four departments and below. The following departments involved in forensic investigation were identified: Scenes of crime, ballistic, fingerprint comparison unit, document examination unit, photography and video unit, cyber-crime unit, criminal investigation unit (electronic gadgets especially phones), and bomb disposal unit.

6.8 Number of Investigators

With regards to the number of police officers involved in investigation. There were mixed responses with a majority of the respondents citing four officers while others cited three officers and below. All respondents emphasized that the number of officers were based on the type of crime scene.

6.9 Duration of Investigation

Concerning the duration that police investigators take in concluding their investigation, all respondents indicated that there was no specific time frame for forensic investigations. The time frame depends on the type and technicality of the scene and the persons involved. It was also reported that forensic experts come to court at later stages of the court hearings and usually have their names listed among the last to testify. Sometimes the court process takes long thereby prolonging the duration.

Responses with regards to the duration of investigation are summarized as follows:

> The process of linking the suspects and the evidence is long hence it can be time consuming due to facilities which are old and inadequate; It depends on the type of case but the case by the investigation officer should be taken to court in as soon as possible; Sometimes finger prints analysis can take a year and a photograph can take a day; If the case is delicate it could take longer period; Forensic evidence analysis is done manually and it takes few weeks if the suspect is available.

6.10. Standard Procedure

The study sought to know if there were any standard procedures followed by forensic police investigators. The majority of the respondents indicated there were no standard procedures in place. One respondent explained that crimes such as burglary, robbery or murder have no specific procedure for handling them though there are key activities known to the investigators that should be done in the investigation process for easy identification of the exhibits and reduction of foreign materials which might compromise the scene. The key activities are dependent on the type of crime being investigated as reported by an investigator below:

> When it concerns investigating deaths, one needs to check the entrance and exit of the scene if it is inside a building, and take a photograph of it. Divide the scene into sections by starting from the far end towards the scene. Photograph the body first and then take the fingerprint of the deceased. If the hand is stiff, add iodine solution to water to make the hand and fingers flexible and then release the scene to the investigation officer. For finger marks, apply the chemicals to visible marks and lift the prints. In the case of a house break-ins, you photograph the general view of the entrance and close-up photos then consider the entry and exits. If the surface is good to get fingerprints at the entry point you do the dusting.

Other respondents reported that though there are no specific procedures, the key activities also depend on the type of the scene being investigated and on the experts and that every expert approaches the scene in a different way.

However, few respondents indicated that there were specific procedures to be followed in investigating a crime scene. There is a general procedure given during the trainings which should

be customized to suit a crime scene. The respondents emphasized that the procedures depend on the type of scene. They also indicated that strict adherence to the procedures depends on individuals for those procedures are not documented for different crimes and crime scenes as explained below by some respondents:

> The safety of the officers and people is the priority. The general approach is to assess the scene and check if it is safe to enter. Initiate rescue if there are injured victims and then cordon the crime scene, scan it and assess if you need more experts. Interview the people present at the scene as witnesses and if the people are many at the scene call for reinforcement. Then divide the place in section in order to deal with the smaller unit. Search for the evidence and collect. Document all the collected evidence and label, package it, then scan the scene again and declare the scene as clean for people to occupy; We follow the word SCENE: Secure –make sure the scene is secure for you and the victims. Cordon-cordon off the scene by allocating officers to do so in order to secure the scene. Evidence –interview the witnesses and collect the evidence. Notes –identify the important witnesses and take notes. Evaluate-evaluate the scene.

6.11 Protocols Followed

Although few respondents reported that they were no protocols prepared by their units to follow when conducting an investigation, a majority of the respondents indicated that there are outlines which need to be followed when carrying out an investigation. Some said the outlines are, however, not put into practice. Some of the protocols include: Reporting of the case to the police station, officer in charge assigns someone to visit the scene, the deployment of forensic experts, if the finger marks are visible they then ask for elimination for people who have legitimate access to the area, investigation officer records statements from the complainant and witnesses, and they have to wait for the results from lab officers and if the results are positive the offenders are arrested and charged.

6.12 Content of a Forensic Report

The findings indicate that there are forms to be filled by the forensic expert after investigation with photos attached if available. A summary of the key things to be included as reported by respondents include: an indication of the type of alleged crime, an indication of the time the crime was

committed and place, an indication of the officers involved, an indication of the officer who gave notification concerning the case under consideration, the general description of the scene, detailed explanation of the evidence found as well as the process used in the collection of evidence.

6.13 Conclusion

To reiterate, this section of the study aims at examining the extent to which police investigators in Cameroon use forensic science in criminal investigation. It was discovered that there is a general awareness amongst police investigators on the use of forensic science in criminal investigation. However, most forensic facilities available for forensic investigation are inadequate and outdated. There is also the lack of modern forensic equipment and investigators find it difficult to operate the few that are available due to lack of training. This results to incomplete collection of evidence for criminal prosecution. The absent of clear investigation procedures and standards to be followed by criminal investigators was revealed. This slows down the process of investigation. In addition, investigators do not have proper training as far as forensic investigation is concerned.

CHAPTER SEVEN

CHALLENGES FACED BY POLICE INVESTIGATORS IN FORENSIC CRIMINAL INVESTIGATION

6.1 Introduction

Advancements in forensic science have significantly changed police investigation methods around the world. However, the developing world is faced with challenges that have to be surmounted if forensic science will ever see the light of day. Cameroon is not an exception in this regard. The aim of this chapter is to investigate the challenges faced by police investigators in carrying out forensic criminal investigation. The identification of these challenges would help propose strategies that can go a long way to improve police investigative practices.

6.2 Challenges in the use of Forensic Investigation

A majority of police investigators interviewed thought that forensic investigation is important in the criminal justice system. Respondents however identified the following challenges in employing forensic science investigation: Mismanagement of crime scenes, lack of support services for the collection and preservation of physical evidence, resource constraints, lack of cooperation from victims and witnesses, and the lack of proper supervision of police investigation practices.

A majority of the respondents reported that, time constraints due to excessive workload hinder them from giving more time to conducting forensic investigation. According to the respondents, investigation officers are overburdened with law enforcement, public order and other responsibilities that compromise the time and attention that would have been used to concentrate on criminal investigations despite the fact that forensic-based investigation demands more time and skills than the traditional investigation based on oral evidence.

The few police investigators who had received specialist training for conducting a forensic-based investigation reported that the trainings are not encouraging. Trainings were ineffective and did not prepare investigators well for undertaking scientific investigation. Some respondents said that the duration of training was too short to enhance their skills.

A majority of the respondents indicated that they faced problems securing and isolating a crime scene which is a critical step in the investigative process. It was revealed that most police investigators were incompetent to conduct forensic assessment of a crime scene. The protection of the crime scene from being contaminated by intruders in order to maintain its originality was a huge challenge. Moreover, the capacity to collect and preserve physical evidence was reported to be inadequate.

As explained by one police investigator with regards to the management of a crime scene:

> People often rush towards the crime scene after the commission of an offence. The public is always curious to know about the crime committed which makes it difficult for the police to keep the people away from the crime scene. This creates a huge challenge for the investigation officers to secure the crime scene. Crime scenes are often contaminated before the arrival of the police. This greatly affects the health of physical evidence in the crime scene.

Admitting the poor management of crime scenes, some police investigators of another police station acknowledged that investigators who primarily attend the crime scenes are not well trained in crime scene management.

Most respondents indicated that they face the challenge of conducting forensic investigations due to the lack of Standard Operating Procedures in the collection, preservation, and processing of physical evidence for forensic examination. The few who had received Standard Operating Procedures did not follow them in carrying out investigations. The reason for non-compliance to procedures included low institutional capacity, lack of trained human resources, and logistic support.

According to another police investigator:

> The absence of policies pertaining to crime scene management also create hurdles in the crime scene investigation. During crime scene investigation, investigation officers are working as per their own understanding, experience and skills. No one is assigned to particular duty at crime scene which creates problem in preservation and transportation of physical evidence thereby damaging the criminal case.

Another respondent explained that:

> The electronic media in movies and dramas are depicting sophisticated crime based stories and print media in newspapers, magazines are reporting similar cases. The act as a source of education to criminals on how to protect themselves by not leaving any physical evidences like finger prints on crime scene. Criminals have now started taking all the precautionary measures during and after the commission of crimes in order not to leave traces that can be used to track them down.

All police investigators in all investigative stations revealed that the support services for the collection and preservation of forensic evidence at the respective police stations were inadequate. According to the respondents, the lack of support services results in the low use of physical evidence. Some investigators reported that transportation problems also caused delays in attending crime scenes. They pointed out that in many cases police could not promptly attend the crime scene due to a lack of available vehicles. One of the investigators narrated the impact of a late response in the following way:

> "Police officers often do not arrive at a crime scene on time because of transportation problems. As a result, evidence from the crime scenes is collected long after the commission of a crime. If a murder case occurred at a distant place in our jurisdiction and by the time the police arrives at the crime scene, many relevant pieces of evidence such as firearms, knives, blood, clothing, tool marks are contaminated by curiosity seekers."

Respondents therefore felt that not improving on the response time for a crime scene which they believed would improve the quality and quantity of evidence collected from crime scenes could leads to the contamination of evidence.

Another police officer explained that, in a situation where they succeed in the collection of physical evidence, the proper preservation of the evidence became another challenge. According to respondents, the absence of adequate storage facility makes it difficult to properly preserve recovered evidence.

Many respondents revealed that police officers were not receiving the required financial support for necessary investigative functions. Some respondents believed that due to financial constraints

they were unable to conduct proper criminal investigations resulting in weak investigation reports. Another police investigator added that, for conducting pathological or radiological examinations of poor victims (for example, a rape victim, unidentified corps) the investigation officer had to bear all expenses related to the investigation. This was seen as a burden on the investigation officer.

Respondents further highlighted that lower-ranking officers who mostly conduct the vast majority of investigations faced the challenge of lack of close supervision from senior police officers such as the Assistant Superintendent of Police and Assistant Commissioner who have as responsibility to constantly supervise and monitor the investigation process.

As explained by one police officer:

> The supervision of junior police officers by senior officers in conducting forensic investigation can have a significant impact in obtaining forensic evidence. The senior police investigators have the responsibilities to supervise junior investigators. Sometimes, however, due to heavy workloads it is not always possible for them to perform this responsibility. As a result, police investigators work without guidance from supervising officers as to how investigations should be conducted.

Information elicited from respondents also indicated that the courts pay less attention to the physical evidence obtained from investigations. This has a negative effect on the performance of the police officers. Investigation officers constantly struggle to convince the court about the importance of physical evidence in criminal investigation. Elaborating on this challenge, one police officer said frustratingly:

> Eyewitnesses are given preferences in courts which is very senseless. Evidence obtained from eyewitnesses could be totally false. I have never seen a genuine eyewitness. How can someone explain or recall, for instance the color of a shirt if the interaction was for a short while? And here people claim that they have witnessed a murder in the dark of the night.

Challenges were also mentioned in the area of DNA analysis. Respondents indicated the lack of equipment to carry out DNA analysis. DNA cases are often sent to the national forensic lab in Yaounde for analysis due to the lack of forensic labs in the country which is very costly and time consuming. As explained by one respondent, the DNA section of the lab has some amount of

backlog which increases every year. This delays the release of the result of an investigation and creates deadlocks of judicial procedures in the courts. The backlog also slows police investigations and gives the criminal more opportunity to cause more harm. It results to the loss of a witness, undue imprisonment as well as lower the public confidence in the judicial system.

As explained by the head of one police station:

> The forensic lab in Cameroon does not provide forensic expert opinion in some criminal cases. Error in evidence collection and sending process, as well as inadequate amount of evidence is a big challenge. The finger or footprints analyzed in this lab is never clear. The lab also lacks; equipment, adequate Standard Operating Procedures, skilled human resources, particularly in DNA and digital forensic section.

6.3 Conclusion

Without the application of forensic science, the process of criminal investigation in most criminal cases is incomplete. In the absence of an eyewitness, forensic evidence helps in the conviction of criminals. In Cameroon, investigation officers carry out forensic investigation which helps to establish facts related to a case before the court of law. Despite its importance, the investigation officers are faced with various problems in conducting forensic criminal investigation. The problems include untrained investigation officers, contamination of physical evidence, lack of proper training on forensic investigation, lack of equipment and tools to handle physical evidence, lack of Standard Operating Procedures in the collection, preservation, and processing of physical evidence, transportation of physical evidence, shortage of forensic labs as well as the lack of cooperation between state agencies and the police core. These challenges contribute in hindering the effective use of forensic science investigation in the country.

CHAPTER EIGHT

GENERAL CONCLUSION AND RECOMMENDATIONS

8.1 General Conclusion

It is safe to argue that without the application of forensic science, the process of criminal investigation in most criminal cases is incomplete. In the absence of an eyewitness, forensic evidence helps in the conviction of criminals. The investigation officers are constantly engaged in the collection of forensic evidence which may be digital or physical in nature, which is analyzed in forensic lab to establish facts related to the case before the court of law. Forensic science investigation therefore plays an important role in the criminal justice system by aiding law enforcement agencies to solve complicated crimes. Advancements in forensic science have significantly changed police investigation methods around the world.

While crime is a staple part of almost all societies globally, the rate of criminal activities in the Cameroonian space has grown at an alarming rate. The popular crime prevalent in Cameroon include stealing, assault, burglary, rape. This trend continuous to change to more complex criminal activities including terrorism, bomb blast, kidnapping, drug trafficking, money laundry and political assassinations. In the Anglophones regions of Cameroon in which criminals have exploited the ongoing socio-political tension to carry out their illicit criminal acts, crimes which forensic investigation would have been relevant in tracking down the perpetrators are being committed. Most of the violate crimes are targeted towards a person (murder, kidnapping, battery, robbery, sexual assault). Property crimes include thefts and destruction of property. Attacks on schools, education and health facilities are continuously being recoded in spite of the fact that failure to respect the right to education in Cameroon is deemed a serious violation of international human rights law. It is worth noting that under international human rights law, Cameroon has, as all governments do, an obligation to protect the rights to life, personal liberty, and security of students, teachers, academics, and all education staff. There is increasing difficulties in tracking down the perpetrators of these violent crimes. This difficulty can be attributed to the lack and inadequacy of scientific tools and technique used during investigation.

In order to achieve justice through the use of forensic science, there exist international and institutional framworks on the use of forensic science from which Cameroon can draw inspration. International courts and triunals have been created in the last decades and international prosecutors have been given a mandate to investigate and prosecute those responsible for the world's most serious crimes. These crimes have been within the jurisdiction of the International Criminal Court (ICC), the International Criminal Tribunal for the Former Yugoslavia (ICTY), the International Criminal Tribunal for Rwanda (ICTR), Special Court for Sierra Leone, Special Panels for Serious Crimes in East Timor, Extraordinary Chambers in the Courts of Cambodia (ECCC), Special Court for Sierra Leone (SCSL), Special Tribunal for Lebanon (STL) among others. These tribunals have set a global stadard in criminal investigations as most international criminal trials contain at least an element of forensic evidence. Forensic science has increasingly become a very useful tool and each international criminal tribunal has more or less developed forensic investigations.

Cameroon, like any other modern state has a legal basis for criminal investigations. The Constitution of the Republic considered as the highest law of the Republic, the Penal Code which is the main criminal law of the country, the Criminal Procedure Code which is the current procedural law which governs criminal trials and other related laws, form the legal basis of criminal matters. The Criminal Procedure Code contains provisions of rules of evidence implying that forensic evidence could be helpful in shaping the process of proof in criminal investigations. The two main structures involved in criminal investigations are: The Legal Department and the Judicial Police. The operations of these two structures are carried out in accordance with the laws governing criminal matters.

Although the level of forensic science use has increased in recent years, its effective use and understanding of its value can be limited. It is in this light that knowledge about the uses of forensic science in criminal investigation was sought. The study identified a general awareness amongst police investigators on the use of forensic science in criminal investigation in Cameroon. To use forensic science effectively, forensic evidence will be significant in the successful detection of crimes but many investigators may fail to recover or adequately exploit other physical evidence present at a crime scene due to limited understanding of its potential.

This study highlight that the forensic science training received by police officers is inadequate, resulting in limited understanding of the potential contribution of forensic science to an investigation. The limited training on how to best carry out forensic investigation, as well as how

forensic science can be used to aid in an investigation is a proof of a lack of awareness particularly at the operational level of what can be effectively achieved when using forensic science. Basic training courses are relevant to improve forensic knowledge to enable police officers understand basic processes in forensic investigation. Forensic science training courses appeared to lack standardization and investigating officers primarily learned through trial and error from first-hand experiences or via information passed on from colleagues. Effective and appropriate training, whether for newly appointed investigators or as continual or refresher training for experienced staff is necessary to ensure staff have the knowledge to carry out their roles effectively.

An important issue identified is that many police investigators appear to have limited understanding of individual roles and the processes involved in the use of forensic science. For example, effective communication, which this study identified as lacking, is not an isolated problem but is contingent on multiple elements including the individual roles involved, the policies and training of police investigators, available technology, the timescales and developments in the particular case, and the requirements, expectations and pressures of the criminal justice system. This is not a matter of simply sitting down and talking more productively, but an inherent difficulty in the process of crime investigation. Forensic science is one aspect of technology amongst many technologies available in policing which is used for particular purposes such as the investigation of crime. As central actors in this process, how the police respond to, develop and use new technologies is an influential factor in how forensic science is used and integrated into policing practices.

The findings of this study therefore suggest that forensic science is ineffectively used in Cameroon. There are a number of underlying factors, in addition to those identified in this study that appear to be relevant to identify the causes of this outcome. An important issue appears to be that the processes required to effectively use forensic science in the investigation of crime are more complex than generally recognized. With regards to the use of new forensic technology, it appears that its full potential is rarely exploited.

8.2 Recommendations

Cameroon law enforcement agencies should be properly trained on the significance of forensic science in crime investigation.

Forensic science as an academic discipline should be introduced into Cameroon higher institutions, particularly in Cameroon police colleges and law schools.

There is need for establishing more forensic laboratories in Cameroon considering the alarming increase in crime rate, and the proper funding of the available ones.

Also, there should be proper funding of research in forensic science in Cameroon. There should be the enactment of a law for the admissibility of forensic evidence in the court of law.

There is a need for the establishment of framework or body regulating the forensic practice in Cameroon enforcing the proper code and ethics for the conduct of forensic investigation

Modern equipment and tools should be provided to police force for carrying out crime scene forensic investigation.

There is need for a clear investigation procedure and standards that are followed by all actors in order to reduce friction and slow the service delivery.

There is need to conduct a further research on the detailed capacity of the officers to handle specific crimes in other departments involved in issues of crimes.

This research work recommends that providing the aforesaid facilities by the concerned authorities to the police force will help to increase the efficiency of forensic infrastructure in the country and will build the capacity of investigation officers to solve the criminal cases rapidly through scientific means.

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APPENDICES

Appendix 1: TOPIC GUIDE

SECTION ONE: Structures

1. Are Cameroonian criminal investigators aware of the importance of forensic science in the criminal justice system?
2. What is the educational level of forensic investigators in Cameroon?
3. Do criminal investigators use forensic science during investigations?
4. Are there standard procedures for conducting forensic investigations in Cameroon? If yes probe for details.
5. If No in 4, how do you conduct the investigation?
6. Which are the departments involved in forensic investigations?
7. In a single case how many officers are normally involved in the investigation?
8. Which protocols are followed when conducting an investigation?
9. What is the average time an investigation would take from first stage to final stage?
10. Are there policies which govern forensic investigations? (Probe for those policies.)
11. What is included in a forensic investigation report?

SECTION TWO: Training and practice

12. Which are the minimum qualifications for a forensic investigator?
13. Are forensic investigators trained in Cameroon?
14. How does the training relate to the practice?
15. Which is the criterion used to select forensic investigators? (Probe for details.).
16. Do you go for in-service training in forensic investigations? (Probe for number of times.)
17. Are forensic investigators different from other officers in the service? (Probe for personal opinion and attitude.)

SECTION THREE: Tools and technology

18. Which are the common cases in forensic investigation that you have encountered? (Probe for other cases which are not common.)
19. Which facilities are available for investigations?
20. Are the facilities adequate to deal with those crimes? (Probe for details.)
21. Which of the mentioned facilities do you commonly use? (Probe for reasons.)
22. Which technology do you commonly use? (Probe for available technology.)
23. Has there been introduction of new technology in your field of operation? (Probe for the new technology and when it was introduced.)
24. How often do you get new facilities and new technology in the field of your operation? (Probe for reasons.)
25. What happens if new technology is introduced? (Probe for case narration of what happens.)
26. In the absence of the required facilities and technology what happens? (Probe for case experiences.)

SECTION FOUR: Challenges

27. In your view, how is forensic investigation in Cameroon?
28. What are the challenges that a forensic investigator encounters while on duty in Cameroon?
29. Has there been any effort to solve these challenges? (Probe for the narrative of how it has been solved).
30. In your opinion, how can we address these challenges?