

The challenges of procuring forensic evidence and criminal proceedings in Kenya

Boaz Oyoo Were¹

Abstract: The present paper explores the challenges of procuring forensic evidence in Kenya and the impact of those challenges on the criminal justice system. In particular, this article explicates that the effective administration of criminal justice in Kenya partly, and importantly, relies on forensic science. With a growing population nearing fifty million people, coupled with the threat of terrorist attacks, the Kenyan government has every good reason to enhance its surveillance and forensic capabilities not only in the service of its population, but also in the service of criminal justice. Although the challenges in procuring forensic evidence in Kenya fall in the cracks of political, institutional, professional, ethical and cultural, it remains to the good sense of the Kenyan government to be able to mitigate these challenges by enhancing the capacities and capabilities of key docketers such as the national security and the Ministry of Health. This is because these two docketers are critical for their forensic science services and, hence their interconnection with the criminal justice system.

Keywords: Forensic science, law, crime, and criminal justice system.

1. Introduction

The present paper examines the importance of forensic science in Kenya with a view to exploring its medico-legal applications amidst prevalent challenges. It is worth mentioning that the full range of human criminal conduct is becoming more complex day by day, not only due to technological advancement, but also due to the fact that human beings on their own are limited in knowledge (bounded rationality) and hence rely on science and technology to enhance their knowledge and understanding of facts. Indeed, without scientific and technological innovations, those who commit crimes in secret (out of the public view) would be less likely to be brought before courts of justice. The nature of human being is such that even if caught red-handed committing an offense, he would still deny and cry out for justice (cry more than the bereaved). Sometimes the human conduct makes objective truth to be difficult to achieve in our justice system. However, scientific methods are increasingly being developed to shed critical light on human conduct and to obtain some knowledge that approximates the objective truth, free of bias

¹ Ph.D. Candidate, Faculty of Law, University of Szeged, email: boazwere@hotmail.com.

and prejudice. This is what forensic science is capable of doing.² All over the world, forensic science has become a critical component of evidence in both criminal proceedings and civil proceedings. In many jurisdictions around the world, the justice system would likely yield a travesty of justice if forensic science was not part of the admissible evidence. The critical role of forensic science is appreciated world over and this has also become well entrenched in the Kenyan justice system.

Kenya borrowed its legal system from the English common law of England and Wales. This provides the foundation of the adversarial system of criminal justice, whereby the prosecution party and the defense party robustly compete against each other to persuade the courts that their side of evidence is more convincing than the other (opponent's) side. In the Kenya's criminal justice system, the police and prosecution agencies must have enough evidence to prove beyond reasonable doubt in court that the defendant is guilty of all the different elements of the criminal charges labelled against them. More precisely, in Kenya, the police normally carry out crime investigation, while the *onus probandi* (burden of proof) squarely lies with the prosecution as opposed to the accused person. Like in other jurisdictions outside Kenya, the criminal justice systems in Kenya requires the prosecution to prove both the guilty conduct (*actus reus*) and also the guilty state of mind (*mens rea*) as specified in the criminal law and procedural criminal law. The procedural criminal law in Kenya regulates the powers of the criminal justice agencies to thoroughly investigate, robustly prosecute, and appropriately punish criminal offenders for their behavior. It must be reiterated, however, that other than the burden of proof, there is also another aspect of criminal law that put emphasis on the standard of proof. What this means is that unlike in civil law, the standard of proof needed to find guilt in criminal law is normally very high. In the case of criminal law, guilt is normally proved by "evidence of guilt" beyond reasonable doubt. But in civil law, guilt is proved by "evidence of guilt" on the balance of probabilities, which requires a lower standard of proof, and therefore less evidence indicating guilt, than the proof beyond reasonable doubt in the case of criminal law.³ In the Kenyan legal system, a court will reach a decision on the basis of facts alleged and proved by prosecution and defense lawyers.

Just like in other jurisdictions, there are specific criminal offences that are common in Kenya. These include assaults, sexual offences, homicide, and property offenses. Moreover, Kenya has also been experiencing occasional terrorist attacks by the Al-Shabab organization based in Somalia. The Al-Shabab terrorists have been using bombs, guns, grenades, and other explosives in their attacks on the Kenyan soil. Investigating weapons normally used by the Al-Shabab requires know-how in forensic ballistics, bombs and hazards. Since the power of criminal investigation lies in the hands of investigating agency (police), and the burden of proof lies with the prosecution agency, it means that both agencies must

² C.H. Wecht and J.T. Rago (Eds), *Forensic Science and Law: Investigative Applications in Criminal, Civil, and Family Justice*, Taylor & Francis Group, LLC, 2006.

³ N. Cross, *Criminal Law & Criminal Justice: An Introduction*, Oliver's Yard 55 City Road London, Sage Publications Ltd., 2010.

collaborate and procure sufficient evidence to secure victory in criminal trials. It is needless to mention that the people who commission crimes usually try to hide their identity and, if possible, destroy any evidence that they think might link them to the crime. Investigation officers normally get invited to the scene of crime after the offender is long gone. What is normally left behind at the scene of crime is physical evidence. However, the physical evidence might be big objects such as buildings or miniscule (trace evidence) such as hair or fiber. In order for evidence to be usefully procured for purposes of criminal justice, a robust application of forensic process is required. This means that forensic practitioners must meticulously and conscientiously collect and analyze relevant samples at the crime scene. Unless this is done, then the court, the prosecution party and the defense party may not agree on how to prove or disprove certain facts simply because the evidence presented lacks probative value. When evidence is said to have “no probative value”, it means that it provides no relevant information to the trial court. This means that the application of forensic science is very fundamental to the criminal justice system. In many cases, the application of forensic examination and analysis has helped in turning crime exhibits into potential means of solving some, but not all high profile crimes in Kenya.

Forensic science may be conceptualized as the application of science to a criminal investigation and court proceedings, particularly in criminal and to some extent in civil proceedings. Ideally, it entails crime scene investigation and evidence collection, identification, analysis and interpretation of potential evidence such as DNA, fingerprints, digital evidence, drug analysis and footwear marks. In some cases, the evidence collected from the crime scene undergoes transportation and storage for preservation as future evidence. The place of forensic science in the criminal justice system is central in criminal prosecutions in almost all jurisdictions around the world. This is because contemporary forensic science is capable of providing proof of one or more material facts in criminal proceedings. It is now believed that both crime scenes and crime victims can provide criminal investigators with clues as to what happened, how it happened, when it happened, and most importantly, who did it. Due to technological advancement in science, criminal investigators are now capable of examining trace evidence such as skin, hair, and clothing fibers, as well as DNA, blood, and fingerprints. Moreover, in murder cases, investigators are able to examine wounds, trace patterns of blood loss, and the amount of decay. They are able to analyze all of these sets of evidence in order to reconstruct an accurate scenario and determine who did the crime. In Kenya, forensic science has become a significant contributor to crime investigation and the resolution of broader criminal cases in the Kenyan courts.

The remainder of this article is organized as follows. Part two discusses the background and development of forensic science in Kenya, part three provides an understanding of the criminality, law and forensic science in Kenya, part four discusses the reliability and relevance of forensic evidence in Kenya, part five explicates the challenges of forensic science in criminal proceedings in Kenya, and part six provides a conclusion.

2. The Background and Development of Forensic Science in Kenya

There is very scanty information on the background and development of forensic science in Kenya. Although the Kenyan legal system is based on the English common law tradition, forensic medical services in Kenya are not modeled on the English coronial system. Before Kenya's independence in 1963, forensic science was not well developed. Instead, police and magistrate courts were given the powers to resolve cases of concern based on very little forensic science. However, after the independence in 1963, Kenya developed interest in training medical personal that could be relied upon on providing information relating to sudden deaths, accidents and homicides. However, the Kenyan authority did not view it important to establish a coronial system. Indeed, the country lost an opportunity to build the facility and put an infrastructure for a coronial system. In other jurisdictions with coronial systems, it is expected that an effective and efficient coronial system normally enables a coroner to provide timely and reliable answers on the causes of deaths that occur under certain circumstances. In Kenya, the government has been using the City Mortuary that was built during the colonial days in Nairobi, to handle the bulk of the forensic cases in the City. Such cases often involve deaths related to homicides, suicides and accidents. But the City Mortuary has its own challenges. It was initially built for a 145 capacity, but almost six centuries after independence, the Kenyan national government and the subnational government (i.e. Nairobi City County government) are yet to allocate resources for its renovation and expansion.⁴ The City Mortuary mainly conducts autopsies on corpses to ascertain the cause of death. However, the other challenge that the facility is currently facing is lack of adequate personnel with forensic training and skills to respond to the high demands of the services.

In the period after independence (1963), the Kenyan Ministry of Health established the division of forensic and pathology services. The aim was to absorb forensic practitioners in the Ministry so that they are able to provide more services in response to the ever-increasing demands. This means that the Ministry of health needed to hire trained pathologists and other trained chemists and biologists with forensic science training. The main challenge the Ministry of health faced was that Kenya lacked adequate facilities and the infrastructure to train these personnel. Instead, most of them obtained specialized training outside the country and then when they came back into the country, they instead joined the private practice, which is more lucrative than government jobs. Although the Kenyan government has succeeded in training more pathologists, most of them still lack adequate forensic training. But even as the Kenyan government makes effort to train more pathologists, there is also need to train more toxicologists. It is often the need that both practitioners work hand in hand to analyze samples and provide a coherent finding to the crime investigating agency. However, in order to build adequate capacity in forensic science in Kenya, the government needs to invest not just in

⁴ A. O. K. Olumbe, *Forensic Medicine in Kenya: A Personal View*, East African Medical Journal, Vol. 77, No. 1, January 2000, pp. 60-62.

the training of more pathologists and toxicologists, but also in equipping them with adequate latest skills in criminalistics. This means that while a toxicologist is trained in medications and other substances to determine the harmful effects of poisons, his or her training should also include how to relate those substances to crime. At the same time, while a pathologist is trained on the examination of cells and tissues (materials from the body) to determine the presence of harm or disease, he or she must also obtain training on how to relate their findings to crime.

In Kenya, it is typical of the government forensic pathologist to handle all the forensic workload to determine the cause of death. But this work would be insufficient if there is no forensic chemist to conduct further toxicologist tests. In some cases, the government forensic laboratory which includes the government chemist who handle the toxicological cases would be used to provide forensic service to high-profile cases. However, there have been complaints that the government's chief chemists (toxicologists) often work under tight secrecy and thus tend to deprive the pathologist of the toxicological results that are needed to be included in the autopsy report. In the Kenyan countryside, homicide cases are normally handled by the "pathologists" (general practitioners) at the government hospitals who do not have any prior training in forensic medicine or pathology.⁵ This only happens in death cases during hospital admission. But there are other murder cases in the countryside, most of which do not get the attention of pathologists, but are left to the police authority to handle. In such cases, the police who are also not trained in forensic science would only record such deaths in the occurrence book (OB) and then transport the body to the nearest mortuary for autopsy. It is not surprising, however, that some bodies get interred without autopsies being conducted on them due to the absence of government pathologists in the countryside public hospitals.

Since the number of forensic pathologists in Kenya is relatively very small compared to other jurisdictions in Europe or America, it also means that those that are available are not able to adequately attend to the ever-increasing number of cases that require the procurement of forensic evidence. It means that many such cases are heard before courts of justice, but without the admissible forensic evidence. Moreover, the majority of pathologists employed by the government are mostly stationed in Nairobi (Capital City) and some other cities such as Mombasa and Kisumu, but there are none of them in other parts of rural Kenya, yet it is important that they are adequately and fairly stationed to cover all public medical facilities in the entire country. In Kenya, pathologists play a very significant role in the criminal justice system. They are not simply doctors who study the cause and development of disease or death, but one of their main responsibilities involves performing autopsies on dead bodies, some of which are as a result of natural causes of death, while others are as a result of accidents, homicides and suicide. The nature of their work includes anatomical pathology, histopathology, and dermatopathology. The anatomical pathology mainly involves performing the

⁵ *Ibidem.*

diagnosis of disease based on the gross, microscopic, chemical, immunologic and molecular examination of organs, tissues, and whole bodies (autopsy). Histopathology primarily entails the microscopic examination of various forms of human tissue. Dermatopathology mainly involves focusing on the skin and the rest of the integumentary system as an organ. The forensic pathology performed by these practitioners normally focuses on determining the cause of death by post-mortem examination of a corpse or partial remains and making a report that can be used to by the justice process to either support the cause of death or reject the cause of death.

It is important to mention that forensic pathology is just one component of forensic science services that have been developed in Kenya. Its service has also been useful to the Kenyan justice system, especially in the examination of child abuse, sexual violence, intimate partner violence, expert witness testimony, and other aspects of crime scene investigation, including chain of custody processes. This service is normally offered by the Ministry of Health personnel and their findings are made in form of reports, which are then forwarded to the police authority for further investigations. However, there are other forensic services that are also provided by government agencies through the Ministry of Health. They include DNA testing, bloodstain pattern and toxicology. It is important to mention that the other components of forensic science services in Kenya are normally provided by the police department. They include forensic ballistics, digital forensics (i.e. forensic audio and video analysis), forensic fingerprint identification, bomb, explosive and hazard, and crime scene photography.

The fundamental argument of the present paper is that the challenges bedeviling the procurement of accurate forensic evidence in Kenya is largely due to the inability of forensic experts and investigative agencies to adhere to and ensure strict quality standards. This inability poses serious challenges not only to the criminal justice system (i.e. in criminal proceedings), but also in civil proceedings. As the Kenyan population continues to swell, so is the rate (frequency) of crime. Also, as business is increasingly becoming global, so is the corresponding increase in global fraud and cybercrimes, which can potentially harm an individual's security and financial health. These challenges prompt the need for relevant and robust forensic services. The primary importance of forensic services is to be able to secure accurate evidence, and in so doing, strengthen both the investor and public confidence in the quality standards of forensic process and services. Indeed, the ability of the courts of law to dispense justice considerably depends on the inculcating or exculpating forensic evidence. Due to advancement in digital technology, the incidences of digital crimes are also on the rise in Kenya and there is a great need for the Kenyan authority to come up with a national strategy for forensic services.

It is important to mention that due to complex corruption crimes that bedevils Kenya, it is imperative for the Kenyan authority to target its resources in developing digital forensics capable of accurate data acquisition so as to serve as a deterrence to fraud and corruption incidents. Indeed, a technology aimed at

e-discovery and data analysis can help the Kenyan investigative agencies identify, collect, recover and preserve electronic evidence quickly and accurately, for court dispute resolutions. There is need therefore for Kenya to advance its capabilities and keep pace with crimes in this new technological age. It cannot be overemphasized that Kenya needs to build forensic capability that is designed to effectively respond to the current threat of new crimes. The country should be desirous of developing the necessary skills and innovative practices that would assist in countering the threats of crimes that it faces. The need for a national approach to forensic science delivery should top the government's security agenda. Despite these ideal observations, the biggest problem still lies with the commitment of forensic practitioners to remain loyal and committed to work ethic. There are instances where reports of forensic evidence are deliberately doctored or interfered with for purposes of defeating justice. Also, another problem is lack of adequate facilities, equipment and instruments (tools of trade) with which to collect samples and conduct analyses that are accurate, reliable, and believable.

Previous research shows that forensic science not only makes a huge contribution to the detection and prevention of crime, but also plays a critical role in the investigation and collection of evidence. More often than not, certain crimes tend to be very serious and the way such crimes are investigated and evidence is collected could either boost or fail to boost public confidence in the criminal justice system. Indeed, strong forensic processes are capable of creating a climate of public satisfaction in the investigative process and this could also lead to deterrence for potential criminals. There is a tendency of criminals committing crimes at will if the law enforcement agencies lack strong forensic processes.

Forensic science in Kenya involves a diversity of actors ranging from crime scene investigators to laboratory technicians and other specialist scientists. Indeed, a broader array of actors from the domain of criminal justice system (i.e. police officers, prosecution officials, and court officials) may be considered as stakeholders in forensic science.⁶ This gives rise to plurality of actors with different knowledge and experiences. Kenya may still require a complex system of experts capable of developing rigorous standards for testing and analyzing forensic data. Judicial officers, particularly judges have an important role to play in ensuring that forensic evidence meets quality standards. Judges as the gatekeepers of forensic evidence must ensure that the underlying methodology used in procuring forensic evidence is not only acceptable, but is also capable of providing reliable and relevant evidence. In other words, the judge may accept or reject forensic evidence depending on whether its investigative uses is scientific or unscientific and ethical or unethical. Even though forensic experts are capable of fashioning a set of scientific evidence, courts still must be able to follow through the linguistic guidelines to determine the adequacy of such evidence for purposes of establishing material fact during a criminal trial.

⁶ C. Lawless, *Forensic Science: A sociological introduction*, New York, Routledge, 2016.

3. Criminality, Law and Forensic Science in Kenya

Criminality is generally understood as any behavior that is contrary to or forbidden by the criminal law of a country. Murder, robbery, burglary, and rape, for example, are conducts that are forbidden by Kenyan law. Yet, such unlawful conducts are still very common in Kenya. However, the primary root causes of crime in Kenya may be attributed to poverty, unemployment, underemployment, mental illness, and alcoholism. But Kenya like many other societies also fits as a society of selfishness and greed and, hence corruption. It has become a common joke in Kenya that an individual who steals a pen gets punished severely by law than an individual who steals ten thousand US dollars (\$10,000) - one million Kenya shillings (Ksh 1,000,000), through corruption. As Johann Schiller (1759-1805) once said, “blame diminishes as the guilt increases.” There have been instances in Kenya, whereby those who steal millions of public resources through corruption are praised as “heroes” instead of being condemned, but those who steal small items such as a lady’s purse are condemned more. One would argue that there is discrimination in the way the Kenyan society perceives criminal offenders. In addition, in high profile crimes where powerful individuals become the victims, government investigating agencies and adequate resources are normally swiftly deployed to bring a closure to the crime. However, in a crime whereby an ordinary individual becomes the victim, poor resources would be deployed and there is usually lack of agility on the government side to bring it to a closure. Article 27(1) of the Constitution of Kenya, 2010, provides that every person is equal before the law and has the right to equal protection and equal benefit of the law.⁷ This means that the Kenyan law provides for equality before the law and both powerful individuals and less powerful individuals deserve equal treatment before the law.

Kenyan laws are hierarchical with the Constitution being the supreme law and statutes are secondary laws. Article 26, sub-articles (1) (2) (3) of the Constitution of Kenya, 2010 provides that (1) every person has the right to life, (2) the life of a person begins at conception, and (3) a person shall not be deprived of life intentionally, except to the extent authorized by this Constitution or other written law. The secondary laws (statutes) that primarily respond to criminal behavior that is contrary to the law of the country are found in the penal code, CAP 63 and in criminal procedure code, CAP 75. The criminal conduct of murder is an offence contrary to section 203 as read with section 204 of the Penal Code, Laws of Kenya. By extension, the other laws that require forensic services are found in several other Acts that are relevant to medico-legal autopsies. They are as follows: investigation of death (Inquest Act CAP 11), the National Police Service Act (National Police Service Act 2011 Section 55(1)), births and death registration (Births and Deaths Registration of Kenya Act CAP 149), Public Health Act (Public health Act of Kenya CAP 242), human tissues and anatomy Act (Human Tissue Act

⁷ See the Constitution of Kenya, 2010, Article 27(1). [Online] at <http://www.kenyalaw.org:8181/exist/kenyalex/actview.xql?actid=Const2010>. Retrieved on May 17, 2021.

of Kenya CAP 252), and Anatomy Act of Kenya CAP 249. All these legal instruments provide frameworks upon which the required nexus between forensic science (forensic evidence) and the justice system (law) become interconnected. The Kenyan justice system consists of the police, prosecuting agency and the courts. Each organization has its own responsibilities and areas of decision-making authority.

Under the Evidence Act CAP 80, laws of Kenya, Section 77 sub-Section (1) provides that in all criminal proceedings, any document purporting to be report under the hand of a Government analyst, medical practitioner or of any ballistics expert, document examiner or geologist upon any person, matter or thing submitted to him for examination or analysis may be used in evidence. Similarly, Section 78 sub-Section (1) provides that in all criminal proceedings, a certificate in the form in the Schedule to the Evidence Act, given under the hand of an officer appointed by order of the Attorney-General for the purpose, who shall have prepared a photographic print or a photographic enlargement from exposed film submitted to him, shall be admissible, together with any photographic prints, photographic enlargements and any other annex referred to therein, and shall be evidence of all facts stated therein.⁸ Indeed, the Evidence Act CAP 80 of the Kenya laws is a statutory instrument that confirms the important relationship between forensic science and law in the Kenyan criminal justice system and process.

The important discussion around criminality, law and forensic science should focus on the nexus between criminality and law, and how they relate to forensic science in the criminal justice system and process. Indeed, the criminal behavior of human beings has contributed to the invitation of forensic science to the legal arena. In some cases, criminality may require little skill or planning, while in other cases it may require more skill and planning. In cases where crimes were commissioned with little skill and planning, crime detectives would be more likely to collect evidence and determine how the crime was committed. However, in cases where crimes involved high skill and planning, crime detectives would usually find it difficult to collect and piece together evidence and determine exactly how a particular crime occurred. In such cases, detectives would very likely rely on forensic science services to collect and analyze crime scene samples. Once the evidence has been procured through the forensic process, reports are normally made by the investigation agency (police department) and then handed over to the prosecution authority, which will then initiate criminal proceedings. Thus the criminal justice system in Kenya requires that deaths that occur outside hospital facilities must be thoroughly investigated by the police and if there is any suspicion of murder, accident or suicide, then the circumstances and reasons behind it must be understood and if there is culpability then the accused person(s) must be arrested and brought before court of justice. There have been several cases in Kenya involving mysterious deaths either due to murder or suicide. Some of those cases have, however, taken too long without being resolved in criminal

⁸ See the Evidence Act, CAP 80, Laws of Kenya. [Online] at [http://kenyalaw.org/kl/fileadmin/pdfdownloads/CAP.80%20Evidence%20\(Polishing\).pdf](http://kenyalaw.org/kl/fileadmin/pdfdownloads/CAP.80%20Evidence%20(Polishing).pdf). Retrieved on May 12, 2021.

proceedings. This is partly because either there was no reliable forensic evidence to assist the courts or there was no forensic analysis conducted at all.

In Kenya, different types of crime scenes present almost every day. What is important for forensic practitioners, however, is to approximate an ideal practice rather than a reckless practice. Crime scenes require a systematic examination of the environment. Criminal investigators and forensic practitioners must strive to uncover the physical evidence to help identify what exactly happened and if possible who was involved. This process should always be conducted carefully and meticulously to ensure that crucial evidence is collected and, thus fragile evidence is not destroyed in the process. At a scene of crime, the criminal investigators must work as a team to define and secure areas that may contain evidence. They must also examine and document the scene as they collect physical evidence. The evidence collected must be well preserved, well packaged and carefully transported to the forensic laboratory for analysis. If a meticulous process is followed, then the investigators would be more likely to reconstruct the elements of the crime. It is important to mention that the ability of the crime scene team to meticulously conduct its job is more likely to lead to an accurate determination of the facts of the case. Thus, the quality of the evidence and the manner in which it is handled usually invariably impact the ability of the prosecution team and the defense team to argue the facts of the matter and this would ultimately guide the court to come to a good conclusion in rendering its judgement and verdict.

There have been some mysterious deaths in Kenya that have remained puzzling due to the challenges in procuring reliable forensic evidence. One such death was of the then Makueni Senator, the late Hon. Mutula Kilonzo, who was found dead at his ranch on April 27, 2013. According to an autopsy report provided by a senior government pathologist, the late Senator died of a “massive haemorrhage into the chest and cranial cavity due to significantly elevated blood pressure due to several factors including but not limited to excessive ingestion of pseudoephedrine (nasal/sinus decongestant) in combination with caffeine.”⁹ Although the family of the decedent claimed that there was interference with samples taken for toxicology analysis, the court ruled out any such interference. There was a death inquest instituted to unearth the circumstances that might have led to the Senator’s death. Senior Resident Magistrate B.B Bartoo, however, said that there was no evidence of cover up, especially because an independent pathologist, Dr Ian Galder from UK did not testify or send a report alluding to the alleged interference with the samples. The Hon. Magistrate ruled that “It is indeed sad that we lost a dedicated servant to the republic in the manner as it may. I have evaluated all the evidence presented to court through this inquest and I am in agreement with the state that there is no evidence pointing to any person(s) having

⁹ See Kenyan Daily Nation Newspaper by R. Munguti, dated 29 June 2017. "Report reveals what killed Mutula Kilonzo". *Daily Nation*, [Online] at <https://nation.africa/kenya/news/report-reveals-what-killed-mutula-kilonzo--417188?view=htmlamp>. Retrieved on May 21, 2021.

a hand in the cause of death of the late Hon. Mtula Kilonzo.”¹⁰ Despite the court’s ruling, the late Senator’s son alleged cover up and interference with the forensic evidence. Although there were samples collected for forensic toxicology from the room where Hon. Mutula Kilonzo was found dead, the chief Government pathologists alleged that the samples would be taken to some other jurisdiction other than Kenya for reliable analysis. He also added that it would take some months before results would be out. It is not yet clear if the analysis of forensic toxicology was conducted in the most reliable manner.

On July 1, 2016, the body of a Kenyan lawyer, Mr. Willie Kimani, who was representing a client who had made a complaint against the police was found dumped in Ol-Donyo Sabuk River. Mr Kimani, who was 32, went missing along with his taxi driver and client after a court appointment before they were allegedly abducted by some police officers.¹¹ Mr Kimani, his client and their driver were abducted in June 2016 after filing a complaint against one of the police officers. Their bodies were seven days later after their abduction. Four police officers were arrested as suspects following the nationwide protests, with complaints that extrajudicial killings were widespread in Kenya. Pathologist Andrew Gachie who performed the autopsy said Mr. Kimani had 14 injuries to various parts of his body. His skull and genitals had been crushed and he died from blunt force trauma to his head. The pathologist added that Mr. Kimani, his client and the taxi driver were allegedly tortured before brutally murdered.¹² Other than forensic pathology, the criminal conduct that led to the death of Mr. Kimani required other forensic services such as forensic finger prints and forensic DNA and trace evidence to be undertaken since the car in which they had travelled had been successfully traced by the police and found abandoned a few kilometers from Nairobi. This case has remained unresolved and one wonders if the investigating agency was able to procure reliable forensic evidence to support criminal charges against the accused. If indeed reliable forensic evidence was meticulously procured, then there is hope that justice shall eventually be served to the aggrieved party.

There have also been other cases of cold blood murder. On such case was the killing of one Monica Nyawira Kimani on September 20, 2018. Ms. Kimani was allegedly found dead in a bathtub of her Nairobi apartment with her throat slit and her hands tied.¹³ In this particular incident, two suspects were arrested and arraigned before a criminal court. But other than the suspects being produced before the trial court, the investigating agency was required to collect samples from

¹⁰ [Online] at <https://nation.africa/kenya/news/inquest-rules-out-foul-play-in-mutula-kilonzo-s-death-2093060?view=htmlamp>. Retrieved on May 7, 2021.

¹¹ [Online] at <https://www.bbc.com/news/world-africa-36682639>. Retrieved on May 2, 2021.

¹² [Online] at <https://www.bbc.com/news/world-africa-36722205>. Retrieved on May 2, 2021.

¹³ [Online] at <https://www.standardmedia.co.ke/entertainment/local-news/2001298376/dpp-jacque-maribe-jowie-to-be-charged-with-monicas-murder>. Retrieved on May 18, 2021.

the scene and meticulously conduct forensic analysis. It was, for instance, important to do forensic finger prints, forensic DNA, forensic bloodstain, and trace evidence. It is, however, not very clearly if the investigating agency meticulously undertook those forensic services. It was alleged that some objects used in commissioning Ms. Kimani's murder were found hidden in the suspects' compound after a police search was conducted. If indeed this was the case, then there was a necessity to conduct forensic pathology, forensic finger prints, DNA, and trace evidence and try link them with those of the suspects to confirm their presence and possible *actus reus* (guilty conduct). This case is currently active before the criminal court and it is yet to be seen if the investigating agency and the prosecution party managed to procure reliable forensic evidence with which to secure a conviction.

Kenya has also experienced several terrorist attacks by the Islamist militant group. On January 15 to 16, 2019, for example, there was terrorist attack at the DusitD2 hotel complex in the Westlands area of Nairobi, Kenya, which left more than 20 people dead. The Somalia-based Islamist militant group al-Shabab confirmed it was behind the attack.¹⁴ Reports indicated that gunfire and two explosions were commissioned by attackers who were estimated to be between four and six in number. Because the attack involved gunfire and explosives, it became necessary for the criminal investigation team and forensic practitioners to visit the crime scene after the attackers had been neutralized. The purpose would be to collect relevant samples at the scene and then subject them to forensic analyses. This incident necessitated the need for forensic ballistics, forensic DNA, forensic finger prints, and forensic explosives and hazard. It must be mentioned that in this age of terrorism, the Kenyan authority needs to enhance its security capabilities by investing more in digital infrastructure such as CCTVs for surveillance. However, that kind of digital infrastructure would only be useful in the presence of a well-equipped digital forensic laboratory. In addition, all other important components of forensic services must also become a government priority for purposes of procuring reliable forensic evidence and thus, aiding the criminal justice system and process.

Another puzzling death was that of police sergeant, Mr. Kipyegon Kenei. The officer's body was discovered at his Nairobi home in Imara Daima on February 21, 2020 with a bullet wound on the neck. A few days before his death, Mr. Kenei was scheduled to appear before the Directorate of Criminal Investigations (DCI) and record a statement over the alleged arms deal scam.¹⁵ Initial reports by the police indicated that the police sergeant left what had been considered a suicide note. However, a few days later, the police changed the suicide allegation to murder. "Kipyegon Kenei aged 33 years attached to Deputy President's office who was living in the said house was lying dead on the floor with a bullet wound which

¹⁴ [Online] at <https://www.bbc.com/news/world-africa-46880375>. Retrieved on May 27, 2021.

¹⁵ [Online] at <https://citizentv.co.ke/news/dp-ruto-mourns-kiyegon-kenei-officer-who-was-found-dead-at-home-323727/>. Retrieved on May 14, 2021.

had entered through the chin and exited through the head and also hit the ceiling of the said house,” the police incident report read.¹⁶ The officers concluded that Kenei’s death was murder that was later staged as suicide. His killers deleted all communication data from his mobile phone. The investigators established that data on the slain officer’s phone was intentionally flushed out, leaving little to rely on to trace the people he last spoke to before he was murdered. The police added that a suicide note collected from his house on the day he was murdered did not bear his handwriting, police have concluded.¹⁷ Mr. Kenei’s death investigation required meticulous forensic services, particularly forensic ballistics, forensic toxicology, forensic pathology, forensic finger print, forensic DNA, and trace evidence. If at first the police rushed to the conclusion that Mr. Kenei had committed suicide, then they first ought to have conducted forensic finger print to verify if indeed the suicide note found at the scene was written by him. However, upon forensic ballistics analysis, the police now found out that Mr. Kenei was drugged before he was shot dead. It was not clear if forensic toxicology was also conducted, but Mr. Kenei’s death is one such example whereby meticulous forensic services were needed to be undertaken before a final forensic evidence could be procured.

On March 15, 2021, the body of missing National Lands Commission Communications Deputy Director, Ms. Jenifer Wambua, was found lying at City Mortuary. Authorities said the body was brought to the City morgue in Nairobi after having been found dumped in Ngong Forest.¹⁸ Kenyan investigation team (detectives) retrieved CCTV footage at her place of work and preliminary investigations showed that she entered her fourth floor office at ACK Annex adjacent to Ardhi House, and later left carrying her handbag, an hour later. However, detectives were puzzled by how her mobile phone was hours later found in her husband’s car that was parked near the office. It appeared that she was either kidnapped at the parking lot after she opened the car and put the handbag containing her mobile phone, or she willingly dropped the items in the car and left.¹⁹ In this particular murder, it was important to involve forensic services such as finger print, DNA, pathology, and trace evidence. It is not very clear, however, if the investigating agency undertook a meticulous analysis of these forensic services. From the foregoing cases of puzzling deaths, almost all of them except that of Hon. Mutula Kilonzo, appeared to involve murder. The investigation and trial of such murder cases in Kenya usually involves the entire criminal justice system and process. It is important to mention that in the absence of reliable forensic evidence meticulously procured, justice may never be served due to the

¹⁶ [Online] at <https://www.pulselive.co.ke/news/police-report-lists-suicide-note-left-by-sergeant-kipyegon-kenei-who-worked-for-dp/vtjfd2n>. Retrieved on May 9, 2021.

¹⁷ [Online] at <https://www.standardmedia.co.ke/entertainment/local-news/2001362824/revealed-sergeant-kenei-was-drugged-then-shot-dead>. Retrieved on May 18, 2021.

¹⁸ [Online] at <https://www.standardmedia.co.ke/kenya/article/2001406413/body-of-missing-nlc-employee-found-at-ngong-forest>. Retrieved on May 8, 2021.

¹⁹ *Ibidem*.

requirement of high standard of proof (beyond a reasonable doubt) in criminal proceedings.

The Kenyan judiciary has come to appreciate forensic evidence as an important body of facts or information that offer proof in the adjudication of criminal matters. In fact, DNA and finger print evidence are conceived to be some of the most reliable forms of forensic evidence in court proceedings in Kenya. This supports the notion that science and technology is often brutally accurate when procuring material evidence. Although one hundred percent accuracy may not be attributed to science and technology, it is however more likely to provide the highest standard of proof in respect of material evidence. There is urgent need for Kenya to develop and enhance its forensic investigation capacity and capability in order to effectively manage and respond to the demands of criminal justice administration more efficiently. In other jurisdictions such as the U.S., it has long been established since *Frye v. United States* that expert evidence (testimony) must be based on scientific methods that are sufficiently established and accepted.²⁰ In other words, the admissibility of scientific evidence may only be accepted if it is verified that such evidence provides expert opinion derived from a scientific technique, which is generally accepted as reliable in the relevant scientific community. Over the years, the Daubert standard has been accepted in some jurisdictions such as the U.S. This is a rule of evidence regarding the admissibility of expert witness testimony. A party may raise a Daubert motion (i.e. a special motion *in limine* raised before or during trial) to exclude the presentation of unqualified evidence to the court.

In Kenya, there is great hope that the country's law enforcement and justice authorities would urge the national government to pay considerable attention on increasing the capacity of forensic science practitioners. In recent years, for example, Kenya has been able to establish tertiary institutions for forensic science training, for instance, Kenya Institute of Security and Criminal Justice. Although this institution was established in the year 2002 to train security, criminology and forensic investigation programs, more of such institutions are required countrywide. The institution currently offers programs from certificate level to diploma where progressive advancement is possible all the way to the Bachelors level. Largely, however, the Kenyan Directorate of Criminal Investigations (DCI) remains the only organization equipped to handle a majority of forensic science services in Kenya.

3.1 The Directorate of Criminal Investigations and Forensics

The Directorate of Criminal Investigations (DCI) is a police department in charge of conducting criminal investigations in Kenya. It was establishment following the enactment of the National Police Service Act of 2011. Specifically, Part V, Section 28 and 35 of the Act outlines the Directorate's mandate as provided for under Article 247 of the Constitution of Kenya, 2010. Prior to its establishment,

²⁰ *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923).

Kenya had the Criminal Investigations Department (C.I.D), which was a department within the larger National Police Force. However, the police force underwent reforms and changed its name to National Police Service following the promulgation of the Constitution of Kenya, 2010. The Kenyan DCI immediately undertook development and growth by expanding its Forensic Directorate. This also culminated in developing a well-equipped Digital Forensic Laboratory (DFL). It must be mentioned, however, that the task of collecting and analyzing forensic evidence by the DCI agents requires that scientific and analytical instrumentation must be undertaken by tertiary qualified analytical scientists. This implies that the scientific underpinnings of forensic evidence must be robust and well established.

The role and functions of crime scene investigation services based at the Kenya's DCI include general crime scene management, collection of trace evidence from crime scenes, fingerprints, footmarks, body fluid, tool marks, and paint. It also entails restoration and verification of serial numbers of motor vehicles, tools, plastics and guns, analysis of crime scene patterns such as glass, blood spatter, crime scene marks, and burning patterns. Other services include crime scene documentation of photography, videography, sketch plan and note taking. It further entails training and giving lectures on matters relating to forensic investigations, presentation of crime reports and findings in courts of law, explosive ordinance disposal and post blast investigations, research on new techniques and methodologies applicable to crime scene investigation duties, and exhibits (evidence) recovery, packaging and labeling. There is an array of forensic services that are provided by the DCI in support of the criminal justice system and process. These services are elucidated hereunder.

3.1.1. Digital Forensic Laboratory

The Digital Forensic Laboratory (DFL) at the DCI includes forensic audio and video analysis. The primary function of the DFL is to identify, seize, acquire and analyze all electronic devices related to all reported cyber-enabled offences. The collected digital evidence is normally presented in a court of law for prosecution purposes. The DFL is substantively divided into different sub-units: computer forensics, mobile device forensics, malware analysis, computer incidents response team, and network forensics. Computer forensic involves the analysis of computer hard drives, for example, workstations, servers, and laptops for purposes of examining ex-filtration of data, retrieving data that is deleted or destroyed by user and recovery of evidence from computer storage media. Mobile device forensic entails analysis of smartphones, tablets and other portable devices, retrieval of deleted text messages, call logs, documents, and mobile browser history. Mobile device forensic also include retrieval of data from GPS units, phone system, iPod, mp3 players, USB sticks and flash drives, and SD cards. Malware analysis mainly deals with how malware functions and the possible outcomes of infection of a given specific malware. This analysis is important in detecting suspicious malware activity in a network, and identifying the source and type of malware and also knowing exactly the impact it might have in an organization affected.

Moreover, the DCI also has been able to develop the capacity for Computer Incidents Response Team (CIRT). The CIRT mainly responds to cyber security incidents when they occur. The main responsibilities of the computer incidents response team include investigating and analyzing security breaches and intrusion incidents, and managing internal communications and updates during or immediately after incidents. It also entails mitigating incidents, and recommending technology, policy and training changes after cyber security incidents. Further, it involves responding to attacks that employ brute force methods that compromise, degrade, or destroy systems, networks, or services. Network forensics mainly deals with E-mail and Social media investigations. This specifically involves tracking email and/or authenticating that messages are not tampered with or forged. It also involves recovering deleted messages from servers, laptops, desktops, and websites. Yet, it also deals with database forensics and eDiscovery and extends to examination and recovery of data from mainframe and networked database systems. The development of the digital technology infrastructure thus makes it possible for the criminal investigators to conduct forensic examination of computer and mobile phones. This makes it possible to undertake sim card analysis, and extract data from mobile phones including uncovering passwords, and hence presentation of expert forensic evidence in court of law.

A majority of the Kenyan population use digital devices everywhere across the country. They use them to communicate locally and globally with ease. These include computers, cell phones and the internet. But these digital devices are also sources for digital evidence. The devices are made of inbuilt technology that processes and stores information that can be used in a criminal way, including sharing illegal images. The important thing to note is that whenever a crime is committed in Kenya involving digital devices, it is expected that the Kenyan government through its DCI investigating agency should be able to access information stored in the digital device and then be able to seize potential digital evidence. Digital evidence is information and data of probative value to an investigation that is stored on, received or transmitted by an electronic device. This evidence is normally acquired when electronic devices are seized and secured for examination. Indeed, unlike other forms of forensic evidence, audio and video recordings may provide a real-time, eyewitness account of a crime. This implies that the DCI investigators can watch or hear what transpired. For example, just as a surveillance video may capture a bank robbery in progress, a hidden camera may record an undercover sting operation.

3.1.2. Forensic Ballistics

The Kenyan DCI has also been able to develop capacity for forensic ballistics for purposes of determining from which firearm a bullet or a cartridge has been discharged. This is normally done by way of identification of unique markings that each firearm imprints on cartridge casing and bullet surface by means of comparative analysis. The core functions of the forensic ballistics include forensic identification and examination of firearms, ammunition, bullets, cartridge cases

and related evidence collected at crime scenes, and autopsies. It is important to mention that firearms usually have numerous metal parts. More importantly, during the manufacture of a firearm, the machining process usually leaves what is commonly referred to as, unique, microscopic markings - tool marks on some of these parts. When firearms are fired, it turns out that these tool marks get transferred to the discharged - spent cartridge casings and bullets. This evidence is usually collected from the crime scene involving, for example, homicide or shooting. The firearm examiners (tool marks experts) would then compare them with a test-fired firearm confiscated from a suspect for comparisons.²¹

Moreover, forensic ballistics also involve gunshot residue analysis and shot pattern examination, firearm serial number restoration, shooting crime scene reconstruction services, and linking firearms to specific crimes and providing investigative leads. These services have been instrumental not only in giving expert opinions before Kenyan courts of law and court martial, but also in generating and populating ballistics data on crime and state weapons. It is very common in Kenya for a person to be found dead at a crime scene, or even to find the victim of a gunshot wound. This normally happens in a cold-blooded robbery/homicide or a heated crime of passion. Investigators from the DCI would be normally required to uncover the evidence and piece together the clues that will lead to the murder weapon. This is usually the case because by conducting good forensic ballistics analysis, the weapon will hopefully lead to tracing and arresting the shooter. In Kenya, the DCI has the capacity and the know-how of forensic firearms identification. In many cases, the DCI firearm examiners are capable of determining if a particular bullet or cartridge case was fired from a specific firearm. This determination can be made due to small, often microscopic markings on bullets or cartridge cases that are invariably unique to ammunition fired from a particular firearm. Even if the firearm examiner would not be able to determine who actually fired a weapon, matching the ammunition to a weapon normally provides vital facts for the investigation.

3.1.3. Forensic Fingerprint Identification

The Kenyan DCI has been able to develop a capacity for forensic fingerprint identification. Presently, the Bureau has over two million records of both suspects and accused persons. Its primary functions mainly include custody and maintenance of criminal records, applying forensic fingerprint science technology to analyze palm, finger, including foot and toe impressions for the purpose of issuance of police clearance certificate. It also serves for purposes of issuance of certificate of previous convictions linking the criminal with crime scene impressions, identifying of unknown dead bodies, providing forensic fingerprint expert evidence in courts of law, data compilation and report writing on crime (Statistics), compilation, publication and distribution of the Kenya police Gazette, and establishing and maintenance of pathology files. When people touch things

²¹ T.F. Kiely, *Forensic evidence: science and the criminal law*, 2000 N.W. Corporate Blvd., Boca Raton, Florida. CRC Press LLC, 2001.

every day wherever they are, they usually leave behind their unique fingerprints. Indeed no two persons may have exactly the same fingerprints. This is so even with identical twins that also have identical DNA. They cannot have identical fingerprints. This uniqueness of fingerprints has enabled the Kenyan DCI to apply forensic fingerprint identification criminal background checks. Moreover, the Kenyan DCI has been able to use fingerprint analysis to identify suspects and solve certain crimes. At the same time, forensic fingerprint identification has helped the Kenyan DCI investigators to track a criminal's record, including his or her previous arrests and convictions.

3.1.4. Bomb and Hazardous Disposal Unit

Kenya has become a country of target by some terrorist groups, especially the Islamist insurgent group known as al-Shabab, based in Somalia. There have been frequent terrorist attacks on the Kenyan soil over the last decade. In particular, the most recent terrorist attacks in Kenya include the attack on Westgate Mall in Nairobi on September 21, 2013 where 67 people were killed and 175 injured. This was followed by another terrorist attack on 22 November, 2014 in Mandera County where 28 people were killed boarding a Nairobi bound bus. Yet, on December 2, 2014, there was another attack in Mandera County whereby 36 quarry workers were killed. Another terrorist attack happened on April 2, 2015 in Garissa in which 148 students of Garissa University College and staff were killed and 79 more were injured.²² Again, there was terrorist attack at the DusitD2 hotel complex in the Westlands area of Nairobi whereby more than 20 people died. The problem of terrorist attacks on the Kenyan soil has become a great concern to security agencies and the criminal justice system. It is important to note that some Kenyan citizens tend to collude with the al-Shabab terrorists and it is the duty of security agencies to use intelligence service to trace and arrest such criminals. In cases where terrorist attacks have been committed using bombs, firearms, and other explosives, it has demanded that samples be collected at the scene and taken to forensic laboratory for forensic bombs and hazards and forensic ballistics.

In some cases, bomb experts in Kenya have come across explosive devices ready to detonate, endangering lives and property and they have been able to neutralize them safely without harm to individuals. The bomb squads (forensic experts) who respond to these situations come from the Kenyan DCI and they are normally highly trained to identify explosives and to dispose, disrupt or render them safe. In a situation where an explosion has occurred, investigators and forensic experts would normally scour the area in order to piece together clues that would help identify the type of device that was used and gather all available physical evidence or witness testimony that could help lead to the perpetrator. Fragments of circuit boards, fingerprints, even pieces of trace evidence have been used to help narrow the investigation and trace the perpetrators. Once perpetrators are successfully traced, arrest is made and they are charged in court through the

²² [Online] at <https://ohchr.org/Documents/HRBodies/HRCouncil/AdvisoryCom/Terrorism/Kenya.pdf>. Retrieved on May 4, 2021.

criminal justice process. The prosecution team normally rely on forensic evidence to argue the case and if the court is well persuaded and convinced, then the defendant would lose and serve custodial jail sentence.

3.1.5. DNA Evidence

The forensic DNA analysis within the criminal justice system started to gain attention in the mid-1980s. However, there has been considerable refinement of DNA analysis methods in crime laboratories. This has enabled even some minute amounts of blood, saliva, semen, skin cells or other biological material to be used to develop investigative leads that may link a perpetrator or victim to a crime scene. Such leads may also confirm or disprove an account of the crime. Due to its reliability and the near perfect accuracy of forensic DNA analysis, the forensic DNA evidence has also become an invaluable piece of evidence for exonerating individuals who have been wrongfully convicted. The successes of DNA evidence in criminal trials in Kenya has led to criminals of sex offenders, for example to be successfully prosecuted and convicted in the courts. In particular, the DNA (Deoxyribonucleic acid) - the “blueprint of life”, which is a genetic material present in the nucleus of cells and is inherited from each biological parent that determines each person’s individual characteristics has been of great reliance in forensic DNA. It turns out that an individual’s DNA is unique except in cases of identical twins. In Kenya, the DNA Fingerprinting is normally conducted in cases where the suspects deny involvement in the victim’s harm or loss. The importance of the DNA fingerprinting is that analyses of the lengths of the fragments reveal that when looking at multiple variable number of tandem repeats within and between individuals, no two people have the same assortment of lengths, except identical twins. This means that this particular technique has a powerful ability to distinguish between unrelated individuals.

3.1.6. Bloodstain Pattern Examination

Bloodstain forensic science has been able to reveal that blood behaves according to certain scientific principles. Bloodstain pattern analysts can examine the blood evidence that was left behind at the crime scene and draw conclusions on how the blood was shed. Bloodstain analysts are able to, for example, categorize the stains by gathering information from spatter patterns, transfers, voids and other marks that may assist criminal investigators in recreating the sequence of events that occurred after criminal act that led to bloodshed. This would require the analyst to basically recognize and interpret patterns to determine how those patterns were created. In forensic science, a bloodstain pattern analysis entails the interpretation of bloodstains at a crime scene in order to recreate the actions that caused the bloodshed. Analysts normally examine the size, shape, distribution and location of the bloodstains to understand what exactly happened or did not happen. By doing so, they are able to assist the investigators with pertinent investigation questions. For example, where did the blood originate from? What is it that caused the wounds? From which direction the victim got wounded? How was the victim

and the perpetrator positioned? What movements took place after the bloodshed? How many perpetrators were possibly present? Does the bloodstain evidence corroborate or refute the witness statements? It must be mentioned, however, that blood samples should always be carefully preserved as it could easily become a transient evidence. This means it could become evidence which by its very nature or the conditions at the scene, will lose its evidentiary value if not preserved and protected, for instance when it comes into contact with the rain.

3.1.7. Toxicology

Toxicology is the study of the adverse effects of poisons. Forensic toxicology assists in the detection and interpretation of chemicals and poisons in medico-legal death investigations. In these investigations, the three main objectives usually involve establishing if toxicants were present in the human body and if at all they were capable of causing death. Also, the other objective would involve establishing if toxicants were in the human body and if at all they were capable of causing certain behavioral changes. Another objective would involve establishing whether if at all there were substances present in the human body and if they were based on prescribed medications or some other exposures. It was not until 1840 that poisoning was thought to be a way to kill unsuspected people and then “get away with murder.” This worked for a while because there were no visible signs of foul play. In that year, however, a French woman named Marie Lafarge became the first person to be convicted of murder by poisoning. Since new methods for arsenic testing were just emerging and the field of forensic toxicology was one of them, there was sufficient evidence to charge Ms. Marie Lafarge with murder. In Kenya, forensic toxicology is normally conducted under the Ministry of Health. However, the Kenyan DCI is usually involved if there is a crime of suspected murder and investigations require forensic toxicology report to be included in the evidence. In most cases, specimens - biological samples are normally collected from a living or deceased person and then analyzed for one or more substances relevant to the matter with a view to establishing the toxicant.

3.1.8. Footwear and Tire Track Examination

There have been occasions whereby criminal offenders try to hide evidence, that is, they try to covering their tracks. For instance, one may burglarize a house and use a piece of cloth to wipe away any fingerprints before going away after the burglary. He might believe that by doing so, he is covering his trail. However, there is still a possibility of tracing such individuals through the impressions his shoes or tires make and be linked to the crime scene. In forensic science, such footwear and tire track impressions are usually referred to as “pattern evidence.” This is because such prints and impressions usually form a unique pattern and therefore they may provide criminal investigators with important information. With that kind of information, criminal investigators are able to trace suspects and conduct a thorough search in their homes to find out if they are indeed in possession of such shoes or tires. This kind of evidence may be used to determine if, indeed, a

suspect was present at a crime scene or not. In Kenya, criminal investigators would sometimes fail to pay considerable attention to this kind of evidence because of the difficulties of trying to match such footprints or tires if it happens that several other individuals had also accessed the scene of crime unknowingly and also left their footprints or tires. But when it comes to thorough criminal investigations, and in the spirit of no stones should be left unturned, such samples must always be collected and subjected to further forensic analysis for evidence.

3.1.9. Crime Scene Photography

Photography of the crime scene has been useful in preserving the history of evidence. Such photographs should always be verified to protect against forgery of documents or any piece of evidence before a court of law. Photography as a forensic tool is important because it helps the criminal justice system with identification and crime scene analysis. Indeed, new technologies have been able to expand the use of crime scene photography. It must be mentioned, however, that photographs are not usually evidence in and of themselves, but rather they provide visual documentation of the scene and locations of evidence within the scene. Photographs taken at the scene of crime are important because they easily allow investigators to recreate that scene either for later analysis, or for use in the court during criminal proceedings. The crime scene photography must, however, be thoroughly and accurately document in order for such photographs to be of good use to the court. This would require, for example, ambient light - light already existing in an indoor or outdoor setting that is not caused by any illumination supplied by the photographer, good camera angles - various positions of the camera with respect to the subject, and color correction - correcting or enhancing the colors within an image. At the same time, photography should provide evidence quality photos. This means that images must be of sufficient size and quality to allow comparison and examination by a qualified forensic expert. In Kenya, the DCI criminal investigators have been able to use forensic photography to present evidence to the prosecution team with a view to persuading the court on certain material facts.

4. Reliability and Relevance of Forensic Evidence in Kenya

It must be made clear that for the consideration of a piece of forensic evidence to be admissible in court, admissibility rules must apply. This means that a piece of forensic evidence must be reliable and relevant (i.e., material and having probative value). Moreover, such piece of evidence must not be outweighed by other countervailing considerations. In other words, any piece of material and competed evidence must not be unfairly prejudicial, confusing, privileged, or simply based on hearsay. To consider forensic evidence as material, it must have some reasonable tendency to help prove or disprove some fact. More important, it also must tend to increase or decrease the likelihood of some fact.

In order to view justice to be truly served in any criminal proceeding that involves forensics, laboratory analysts, investigators and courts must ensure that

the forensic evidence adduced is both relevant and reliable. There is danger and prejudice in over relying on forensics that are not properly procured through the standard operations procedures. Employing such evidence (i.e. of lower standards) in criminal trials certainly leads to the travesty of justice. It is not surprising that some accused individuals have served jail terms based on wrong conclusions made by the trial judge. It is often the case that many investigators, prosecutors, judges and defense counsels are not themselves experts in forensic science. This means that they all tend to rely on opinions made by forensic experts. However, it must be pointed out that unless the standard operations procedures were followed in procuring forensic evidence, such expert opinions based on poorly procured evidence will be unsound. Judges and defense lawyers must always decline the temptation of assuming that technology and science is invariably brutally accurate. Instead, they should be able to thoroughly scrutinize the forensic process and services and, if possible, invite other non-partisan experts to either corroborate or disprove forensic evidence. However, the other fundamental question that must be raised and satisfactorily addressed is to do with reliability in respect of the chain of custody of forensic evidence. When a piece of evidence is, for example, not properly secured from its point of collection to trial, then there is need for the defense attorney to raise such concerns before or during trial, and if possible move a motion to suppress that piece of evidence. It is crucial to suppress the evidence by rendering it inadmissible, especially if it is either contaminated due to handling (i.e. custodial chains) or if it is not relevant, material or competent.

4.1 Trace Evidence

In Kenya, myriad crimes get committed by criminals every year. However, criminal offenders are rarely found at the scene of crime. It is important to mention that the crime scene would ordinarily have both testimonial evidence and physical evidence, but in many heinous crimes, it is the physical evidence that is usually available. This means that criminal offenders commission crimes in a place and at a time where they believe they are not being seen by anyone who could become a potential witness. Since crime investigating agencies are more likely to access physical evidence than testimonial evidence, their success and failure would depend on their ability to recognize, collect, and analyze relevant and reliable evidence. Physical evidence is any material or object which is present on the crime scene no matter whether it is microscopic or macroscopic. The variety of physical evidence that may be encountered at the scene of a crime is infinite. This could range from as large as building to as small as a hair strand, DNA, or dust. The physical evidence which is small in size or microscopic is what is normally referred to as trace evidence. It is a term that encompasses all small pieces of material that are collected from crime scenes and assists in the investigating agencies and forensic scientists with investigation of crime incidents.²³ Trace evidence is

²³ B.P. Maithil, *Physical Evidence in Criminal Investigation and Trials*, Delhi: Selective and Scientific Books, 2012.

sometimes referred to as “silent witness” because it has the potential to tell what actually transpired at the crime scene and who was involved.²⁴

Trace evidence is usually a very small amount of substance that is considered too small to measure. But it is still relied upon as the surviving evidence of a former occurrence or of an action commissioned by some agent. Trace evidence include hair, soil, fiber, cosmetics, wood, fire debris, gunshot residue and pollen, to mention but a few. They are capable of being transferred between people or objects within a certain environment during a particular crime. For instance, paint can be easily transferred from one vehicle to another in a collision. Also, a piece of hair can be left on a fabric in a physical assault. Such events do happen, but many people are usually ignorant of their consequences. Such an occurrence may produce evidence that can be used to reconstruct an event or indicate that a person or thing was present at the scene of crime. Investigators can potentially link a suspect and a victim to a mutual location through trace evidence. Ordinarily, it is almost impossible for a criminal to act, and especially to act with the force that a crime would demand, without leaving behind traces of evidence.

In order for trace evidence to be more useful to the justice system, all sorts of anomalies and serious limitations must be overcome by forensic scientists and investigators. This means that stricter business models in forensic science casework together with normative and compliance processes must be respected and followed during investigations. Since the collection of materials from a crime scene may yield a wealth of information, it is important that forensic scientists and all the investigation team pay considerable attention to all the necessary tasks and to follow through the entire process of sample collection and laboratory analysis with scientific professionalism. For instance, it is always important to know where a sample came from and how it may help in telling the story as a “silent witness.” Forensic scientists must thus be able to meticulously and conscientiously examine the physical, chemical properties, and optical of trace evidence by applying a variety of tools in order to compare samples, verify, authenticate and look for the sources or the likely common origins of each material item. In most cases, laboratory tests would require magnification and chemical analysis. This means that laboratory analysts must be well trained and equipped with the know-hows and they also must use the state of the art facilities that boast reliable equipment and instruments.

In Kenya, the validity, relevance and reliability of trace evidence is often questioned due to myriad compromises by the investigative agencies. Moreover, in some instances, forensic science laboratories and experts work in a fragmented system that makes it difficult to procure reliable trace evidence. In addition, there are instances where the influence of police investigations tend to compromise trace evidence because they often use methods and technologies that have been

²⁴ C.P. Roux, B. Talbote-Wright, J. Robertson, F. Crispino and O. Ribaux, *The end of the (forensic science) world as we know it? The example of trace evidence*, Philosophical Transactions of The Royal Society B Biological Sciences, August, 2015, <https://doi.org/10.1098/rstb.2014.0260>.

improperly validated or a technology that belongs to an unfit paradigm. This very common in rural Kenya (upcountry) where the investigative agencies (i.e. police service) is ill equipped in terms of technology and skills with which to conduct reliable investigations based on trace evidence. Conceptually, evidence with probative value must be associated with a crime and that means that even when it comes to trace evidence, it must be relevant so that it becomes admissible.

5. Challenges of Forensic Science in Criminal Proceedings in Kenya

Despite the public importance of forensic science in Kenya and, particularly to the criminal justice system, the reputation of forensic science has been significantly tarnished in recent years. This is due to a number of unethical, unprofessional, and immoral acts by some forensic practitioners.²⁵ It is important to mention that not all forensic practitioners obey professional code of conduct and work ethic. Some of them doctor findings and produce biased outcome. There are instances whereby the failure to find “expected” evidence in support of a hypothesis leads to wrong formulation of hypothesis. Such biased outcomes are bound to negatively impact on the criminal justice system because justice can never be served if the evidence adduced is biased. Forensic criminalist must always be good at synthesizing and interpreting laboratory results in the greater context of the crime. Unless they do that, there is likely a big risk of misinterpreting the facts. Some forensic practitioners take advantage of the fact that other agents of the criminal justice system have little or no scientific expertise and likely no forensic background to understand the analysis and, thus would absolutely rely on what they (forensic scientists) have to say. This still remains a big problem in Kenya when it comes applying science to law.

It is important to mention that the judicial response to the services of forensic science, particularly in the investigation, prosecution, and defense of a crime is critical to the delivery of justice. It cannot be emphasized, be that as it may, that forensic sciences and the criminal justice system are entwined. Indeed, science of the law should bring victory of justice at the trial. Enormous challenges abound, however, when forensic evidence is presented in our courts of law. This is because court actors (i.e. judges, prosecutors, and defense counsels) may exhibit different levels of scientific understanding.²⁶ In some cases, forensic criminalists may formulate and come up with wrong or irrelevant hypotheses about the crime event. This may lead to contestations by the defense counsels. This implies that the ability of forensic science to expeditiously bring about justice may sometimes be conflicted if not convoluted.

There are myriad challenges that face the Kenyan forensic investigators. On August 7, 1998 when the U.S. Embassy in Nairobi was bombed, the Kenyan bomb experts were ill-equipped to collect samples from the rubble for forensic analysis.

²⁵ K. Inman, N. Rudin, *Principles and Practice of Criminalistics: The Profession of Forensic Science*, N.W. Corporate Blvd., Boca Raton, Florida, CRC Press LLC, 2000.

²⁶ See Terrence F. Kiely (2001), footnote 19.

The Israeli bomb experts had to be flown in to provide their expertise. This was important because trace evidence usually survives the explosion and that means something more can still be gained from a methodical, time-consuming scene investigation.²⁷ It is important to note that investigation of such crimes usually require exceptional knowledge in scene investigative procedures. Since Kenya has been the target of Somali based al-Shabab militant group, it is important that it develops its forensic science capabilities in readiness of any future terrorist attacks. In some cases, terrorists have been able to use improvised explosives to commission heinous crimes. An explosive is any chemical compound or mixture (energetic material) whose purpose is to function by explosion.²⁸ Such chemical compounds usually require expert forensic analysis to determine their origin.

Forensic toxicology in Kenya has always had its own challenges. There is always the possibility that the death was due to a substance that had been tampered. In many cases, it is usually the case that certain items such as food, drug, and cosmetic, might be tampered with by the poisoner. Sometimes this would happen if the offender has a specific victim in mind and tries to make the crime look like a random death.²⁹ It is important therefore that the criminal investigator needs to remember that any analytical tests done in forensic toxicology laboratory should be able to test almost all different chemical substances that might have been used by the poisoner. Since forensic toxicology laboratories normally have a set of specialized toxicology screens that they utilize, this might become a big challenge to the Kenyan Ministry of Health in terms of resources and facilities to set up different specialized forensic toxicology laboratories. In some cases, Kenya has had to submit samples to a foreign country for specialized forensic toxicology analysis. In the Kenyan criminal justice system, several defenses might be mounted by the defense against the intent. The defense might, for example, argue that poisoning was not the cause of death, poisoning was not homicidal, there was no homicidal intent, the substance in question was not a poison, and the accused had a reason to have the poison in his or her possession. Unless the forensic investigators conduct their forensic toxicology in a meticulous manner, proving poisoning in a criminal trial might prove difficult sometimes.

The other potential challenge facing procuring of forensic evidence in Kenya involves lack of proper care and diligence in procuring trace evidence. Sometimes crime scenes get so messy that forensic investigators may overlook the importance of trace evidence. Hair and fibers, for example, are excellent examples of transfer evidence and they can be found on just about any surface and at any location around the scene of crime. Since hair and fibers have ease of transfer that make them susceptible to being lost by any number of accidental means, care and

²⁷ J.T. Thurman, *Practical Bomb Scene Investigation*, Broken Sound Parkway NW, Suite 300 Boca Raton, FL: Taylor & Francis Group, 2006.

²⁸ *Ibidem*, p. 5.

²⁹ J.H. Trestrail, *Criminal Poisoning Investigational Guide for Law Enforcement, Toxicologists, Forensic Scientists, and Attorneys*, 2nd Ed., Riverview Drive, Suite 208 Totowa, New Jersey: Humana Press Inc., 2007.

diligence must be observed by all forensic investigators so that evidence is not accidentally lost. This means that the specific order in which evidence is supposed to be collected should be based on the transient, volatile, or perishable properties of the evidence as well as the degree of its danger of being lost, destroyed, or contaminated.³⁰ Crimes involving bombs, pieces of hair and fiber evidence should be among the first items to be collected. There are usually several standardized methodologies for collecting and packaging hair and fiber evidence. More importantly, there are instances whereby forensic criminalists overlook the specific steps involved in reconstructing an incident, or ordering crime scene events in space and time. Unequivocally, this is usually a logical process that involves thinking about which event must have occurred first before some other event. The forensic criminalist should be able to meticulously combine facts about the crime scene with the results of physical evidence examinations in order to propose a path through time and space that link each incident to another.

There is still a big challenge with regard to digital forensic services in Kenya. It is undoubtedly correct to mention that digital devices have, thus, become a crucial piece of evidence within forensic investigation processes. This has caused the field of digital forensics to emerge as a central part of modern law enforcement and part of digital forensic evidence in Kenya. Although the proliferation of digital devices in Kenya has presented opportunities for the Kenyan authorities to capture certain criminal conduct on cameras and, thus resulting in substantial changes in criminal behavior, there are instances whereby criminals try to vandalize or uninstall the CCTVs before the commissioning of crime. At the same time, law enforcement agencies in Kenya are experiencing substantial challenges in terms of reliability of digital devices as well as the data quantities that those devices are meant to store. Part of the challenge is as a result of weather conditions. In Kenya, whenever there is heavy downpour of rains, power often goes off and that means that the digital devices stop working. During such periods, criminal events may occur without being digitally recorded or captured. In some cases, the digital devices appear installed but are actually out of service due to technical problems. All the aforementioned challenges are important and deserve considerable attention by the Kenyan authority and the relevant Kenyan forensic practitioners.

6. Conclusion

The present paper has explored the background and development of forensic science in Kenya. The importance of forensic science to Kenya has been well explicated. Most important is the relationship between forensic science and the criminal justice system and process. Despite all the elucidated relevance and criminal justice importance of forensic science, myriad challenges still present. These challenges are mainly political, institutional, professional, ethical, and cultural in nature. Politically and institutionally, policymakers and relevant law

³⁰ J.T. Fish, R.N. Stout, E.W. Wallace, *Practical Crime Scene Investigations for Hot Zones*, Broken Sound Parkway NW, Suite 300 Boca Raton, FL: Taylor & Francis Group LLC, 2011.

enforcement agencies in Kenya must put national security and public health at the top of the government policy agenda. This means that adequate resources should be allocated to national security and Public Health dockets with a view to enhancing the capacities of those two dockets with well-trained forensic scientists. At the moment, enhancing the capacity of forensic scientists in Kenya seems not to be a clear priority for the Kenyan government. As the Kenyan population keeps swelling, it engenders unemployment and that means criminal behavior is more likely to evolve alongside technological advancement. This means that we are already in an age whereby criminal events and incidents are more likely to increase. The question therefore is on how the Kenyan government is positioned to respond to these myriad challenges. In order for the criminal justice system to be served well, the Kenyan authority must be able to increase and enhance surveillance installations in key places, both in public and private so that individuals with criminal intent are deterred from their heinous acts. At the same time, Kenya still lacks adequate tertiary institutions for training experts in forensic science. This has led to the shortage of trained forensic practitioners to serve a population of close to fifty million citizens.

Professionally and ethically, unless the forensic criminalists do their work by being faithful to their professional code of conduct and work ethic, the defense counsel for the defendant will invariably mount resistance to the validity, reliability and relevance of forensic scientific evidence in criminal proceedings. It would be a travesty of justice if the intended application of forensic science to law is frustrated due to lack of ethic and professionalism by forensic practitioners. This might be the case when corrupt forensic practitioners intentionally doctor forensic reports or in some cases yield to political or institutional pressure. Culturally, a majority of Kenyan criminals live in a culture of denial. Even if they are caught on a CCTV commissioning a crime, they are bound to completely deny everything and instead mount a counter-accusation. Such cultural affiliations sometimes go as far as telling the trial judge that the CCTV footage was edited even when nothing like that really happened. Sometimes it becomes difficult for the court to be swayed in a particular direction due to the culture of denial. Although there have been such cases where the CCTV footages are doctored to serve a particular interest, this makes even authentic and genuine CCTV footages become subject of inadmissible evidence. However, despite all the challenges attributed to the forensic science in Kenya, the importance of forensic evidence in the Kenyan criminal justice system and process remains unimpeachable.

References

- Cross N., *Criminal Law & Criminal Justice: An Introduction*, Oliver's Yard 55 City Road London, Sage Publications Ltd., 2010
- Inman K, Rudin N., *Principles and Practice of Criminalistics: The Profession of Forensic Science*, N.W. Corporate Blvd., Boca Raton, Florida, CRC Press LLC, 2000
- Fish J.T., Stout R.N., Wallace E.W., *Practical Crime Scene Investigations for Hot Zones*, Broken Sound Parkway NW, Suite 300 Boca Raton, FL: Taylor & Francis Group LLC, 2011
- Kiely T.F., *Forensic evidence: science and the criminal law*, 2000 N.W. Corporate Blvd., Boca Raton, Florida. CRC Press LLC, 2001

- Lawless C., *Forensic Science: A sociological introduction*, New York, Routledge, 2016
- Maithil B.P. , *Physical Evidence in Criminal Investigation and Trials*, Delhi: Selective and Scientific Books, 2012
- Munguti R., dated 29 June 2017. "Report reveals what killed Mutula Kilonzo". *Daily Nation*, [Online] at <https://nation.africa/kenya/news/report-reveals-what-killed-mutula-kilonzo--417188?view=htmlamp>
- Olumbe A. O. K., *Forensic Medicine in Kenya: A Personal View*, East African Medical Journal, Vol. 77, No. 1, January 2000
- Roux C.P. , Talbote-Wright B., Robertson J., Crispino F. and Ribaux O., *The end of the (forensic science) world as we know it? The example of trace evidence*, Philosophical Transactions of The Royal Society B Biological Sciences, August, 2015, <https://doi.org/10.1098/rstb.2014.0260>
- Thurman J.T., *Practical Bomb Scene Investigation*, Broken Sound Parkway NW, Suite 300 Boca Raton, FL: Taylor & Francis Group, 2006
- Trestrail J.H., *Criminal Poisoning Investigational Guide for Law Enforcement, Toxicologists, Forensic Scientists, and Attorneys*, 2nd Ed., Riverview Drive, Suite 208 Totowa, New Jersey: Humana Press Inc., 2007
- Wecht C.H. and Rago J.T. (Eds), *Forensic Science and Law: Investigative Applications in Criminal, Civil, and Family Justice*, Taylor & Francis Group, LLC, 2006