Forensic Photography: Shaping and redefining evidence collection and the Criminal Justice System

Karlyn Brown

HON 490

December 2019

Abstract

Forensic photography is an irreplaceable skill. Evidence photographs are extremely important to investigators, particularly when the evidence is submitted into the court room. With the transition of photography from film to digital, forensic photography skills have degraded. Cameras have become minicomputers and are more advanced than ever. With these incredible capabilities, amateur photographers have come to believe that the camera can take its best picture on automatic mode, otherwise known as program mode. Program mode does not allow for the adjustment of settings such as aperture, which controls the depth of field and is vital for crime scene photographs. By examining the history of photography in law enforcement and discussing modern day issues, this research aims to prove that proper forensic photography training and equipment must be available, and that it is an irreplaceable skill in law enforcement.

Chapter 1: Introduction

Photography can be defined as "the process of producing images by the action of radiant energy and especially light on a sensitive surface such as a film or optical sensor" (Merriam-Webster, Incorporated). Since its invention, photography has changed the world. It has influenced social media, journalism, capitalism, and namely the criminal justice field. The integration of photography into criminal justice and crime scene investigation has not come without its issues. Improper funding can leave investigators ill-equipped, unawareness in the importance of the skill can hurt departments, and lack of proper training can lead to idiosyncrasies that can have an entire case thrown out of court. To highlight the importance of proper training in evidence collection, mainly through photographs, it is vital to understand how forensic photography has shaped and redefined evidence collection and the criminal justice field.

Photography has become a mainstream practice in the twenty-first century. Social media platforms are centered and created around photographs, namely applications such as Instagram, VSCO, and Photoshop. This mainstream integration has demanded that more consumer-friendly cameras be developed. These consumer-friendly cameras come with a less-expensive price tag yet boast the camera quality of a professional model. Because of this marketing, many think that the camera's program mode, the setting where the camera automatically chooses the aperture and shutter speed for an evenly exposed photograph, is sustainable enough. As evidence suggests in every work force, lack of training and education leads to neglect and mistakes. The same is true for forensic photography. Investigators feel more comfortable leaving a camera in program mode and letting the machine do all the work. However, this can have many negative consequences. Namely, a camera is a computer and although complex, it is nowhere near as complex as the

human eye and brain. With the optic nerve containing more than one million nerve cells, the human eye can focus on 50 different objects every second (15 Facts about all-things eyes). Without knowing how to properly adjust the camera for various settings, inaccurate evidence photos are taken. In the book *Advanced Crime Scene* Photography by Christopher D. Duncan, he states "True and accurate bloodstain photography requires an honest commitment to both recording a sufficient number of images in order to ensure that the scene is fully documented and a commitment to creating images of excellent quality so that an examiner who was not present at the crime scene can perform a viable reconstruction." For example, cameras have a light metering system. When a camera is pointed at a scene, bright colors such as white reflect a lot of light, making the image *overexposed*. In a dark scene filled with blacks, there is not much light reflected meaning that the image comes out *underexposed*. It is important for the photographer to recognize this and vital that they possess the skill to correct the image. In forensic photography, this becomes relevant when photographing a dark crime scene. Although you can alter the camera to lighten the photos and make it appear as it is daytime, that is not accurate to the scene. The exact lighting conditions of what the human eye saw is what needs to be replicated. What can be used to remedy this is an 18% grayscale card, or other metering tricks that are often taught in the classroom or on the job. This is also important when photographing bloodstains on difficult surfaces such as on a backlit window. The photographer must know how to balance and utilize their flash in a manner that also illuminates the foreground, thus making the evidence tape and bloodstains visible.

Departments must also compete for funding. Most agencies are run by the city or government. This means the funding comes from taxpayers. Because of this, each and every expense must be account for. This trickle of money is often times controlled by those of higher

rank in a department. For small departments, managers might not realize the importance of investing in quality camera equipment for evidence collection. It seems like extra work when a $70 digital camera can scrape by. The average cost of a professional camera ranges from $3,000-$12,000. This does not include the price of quality lenses, which easily adds another few thousand dollars (Gallagher, 2017). To start, a department can expect to spend anywhere between $5,000-$7,000 on camera equipment.

Along with the digital and photography movement, television has also influenced law enforcement. Entertainment is flooded with shows, movies, and series where a crime is solved in an hour or less. Unrealistic technology and techniques are highlighted constantly. This is known as the *CSI effect*. One forensic scientist estimates that 40% of the "science" on CSI does not even exist (Schweitzer & Saks, 2007). This has come to hurt law enforcement, especially in court cases. If evidence is not presented in a way that the jury can relate to what they have observed on television, it can create a subconscious bias and result in acquittal. For example, jurors might compare real photographic evidence to the evidence they have observed on CSI. If it does not compare, they can rule it out in their mind as viable evidence. The CSI effect has come to shape the defense and prosecution in a way previously unexpected. Instead of viewing a case unbiasedly, jurors have preset expectations of evidence. One study examined newspaper reports of homicides in England. What was discovered that brutal homicides were more frequently covered than the "run-of-the-mill" murders (Robbers, 2008). Biased media coverage does little to hinder the CSI effect. It is important to note that two trains of thought exist. The first is that jurors possess an unrealistic expectation of forensic evidence, and thus do not convict because reasonable doubt exists. The second is that television shows give confidence in forensic science, almost in a blind abundance, and jurors *do* convict even when the evidence is lacking.

The purpose of this research is to highlight the importance that forensic photography has in law enforcement and its influence in the court room. Forensic photography has become an important staple in the criminal justice system. Not only can it portray an accurate depiction of the events that occurred at a scene, it allows for proper identification and reconstruction of the crime scene and victim(s). Without proper training, evidence photographs will be taken inaccurately and incorrectly, defeating the purpose of the evidence photographs. This study examines the history of forensic photography, its evolution from film to digital, and the emerging social expectations that dictate forensic evidence in the court room.

Chapter 2: Literature Review

The literature review examines the sources used in this research paper. From the history of photography and its implementation into the criminal justice world, to modern day issues that forensic photographers face, the sources cover a wide range.

The first article, *Photography: A Means of Surveillance? Judicial Photography, 1850 to 1900* by Jens Jager examines the early use of photography in the criminal justice field. When cameras were first invented, they were expensive and accessible only to those trained to use them. Photographs became a status symbol. Using photographs as a mean of surveillance and identification for criminals was seen as degrading, and not only the public but law enforcement stood against the practice as well. As transportation systems advanced, so did criminals. Travel across countries was an option and the small-town beat cop wasn't sufficient enough. Technology in photography also became more accessible and means of criminal identification was becoming more developed. Jens Jager works at the University of Hamburg, Germany, where he has published numerous books in English as well as German.

Other sources discussed in this research are the Federal Bureau of Investigation (FBI) and the International Association for Identification (IAI). The FBI is known as the parent organization for law enforcement, thus creating guidelines and policies for federal, state, and local agencies to follow. The Bureau employs over 100 forensic photographers trained to process any scene. The IAI is another accreditation agency that is highly revered by forensic photographers around the world. The IAI holds workshops and forums to train forensic photographers properly and to discuss modern issues facing the field. The IAI also has specific requirements for forensic photographers to become certified such as three years' experience in the field.

Christopher D. Duncan, the author of *Advanced Crime Scene Photography* makes many supplement arguments to the research in this paper. This book encompasses the techniques on how to photograph difficult crime scenes and objects. It has terminology that a beginner photographer would not comprehend but is made as a supplement to a forensic photographer's arsenal. In the first chapter, Duncan explains that even with the most expensive camera, by using program mode the photographer is achieve the same effect as a disposable camera. To make a good photographer it is important to know how to work the camera and be smarter than the computer. Duncan himself is a senior crime scene investigator at the Houston Police Department and is a member of the International Association for Identification.

The Honorable Donald Shelton, published on the National Institute of Justice, offers valuable insight on the CSI effect and its influence in the court rooms and on evidence. As a judge himself, he can see the influence of social trends in the court room and on his jury bench. It is often feared that television shows such as CSI and Law & Order give jurors an unrealistic idea of evidence and prosecution methods. Without enough evidence or with the lack of forensic

evidence, jurors might not prosecute a defendant. One juror even complained because “they [prosecution] didn’t even dust the lawn for fingerprints.”

Numerous sources went into writing this research paper. Although society is obsessed with photographs, the skill of photography has greatly perished. Automatic camera settings that “do it all” leave the camera to take photographs that might not fit the intended desire. Photo-editing applications allow users to adjust the photographs but can only correct so much. With upgraded cellphone cameras, there appears to be no difference between a pro-consumer camera and the phone. However, this is because the photographer is not equipped with the skills to create a quality photograph. This social train of thought bleeds into the criminal justice system and forensic photography. As cameras become smarter, the user has seemingly become more stupid. This research highlights the importance of trained forensic photographers and why knowing how to control the camera means holding all the power.

Chapter 3: Forensic Photography’s Evidentiary Role

Forensic photography has become an irreplaceable field. It helps law enforcement investigate crimes, and the court system prosecute them. However, forensic photography itself is a new and evolving science. Photography has a long history in law enforcement but was not widely implemented into investigations across the United States until the last few decades. Mankind has always been fascinated with the phenomena that concentrated light rays through a small hole can produce and image on the other side. The difficulty was learning how to make this image imprint on a surface and stay.

The world’s first photograph was taken in 1816 by Nicephore Niepce (Photography School Speos). Following, Niepce worked with another scientist known as Louis Daguerre. Together, they planned on creating a photograph that would not only last but would need an

exposure time of minutes opposed to hours. Nicephore Niepce passed away in 1833, and after his death Daguerre was able to develop a method similar to the starting goals. By using mercury flames, the image became visible and required only a brief exposure. This method was recognized by French Academy of Sciences in 1839. To discourage Daguerre from patenting his discovery, the French government offered him a lifetime salary in exchange for the cheap production and further development of the product to assist in making it accessible to the public (Young, 2017). However, photography's history with the police and prison systems did not start until a few decades later. European prison officials experimented with photography, but police did not start to utilize and introduce it until the 1860s, and even then, they reluctantly accepted the practice. In the article *Photography: a means of surveillance? Judicial photography, 1850 to 1900* by Jens Jager examines the history of photography and its early role in police departments is examined. He argues that the term "police photography" can be misleading because the early photographs used in the criminal justice system were in fact not meant for police use at all. These photographs aided early criminologists, who believed that all criminals might have similar physical traits related to the crime(s) they committed. When photography was used in departments, it was mainly as an aid for memory rather than for identification. Why did photography take so long to be implemented into law enforcement as a means of identification, and later as evidence? The author Jens Jager notes that during the nineteenth century, photography was regarded as an upper-class practice for portraits. It was a service that the wealthy could afford and symbolized social status. This association discouraged the regular use of photography, in belief that it would lower the value of social photographs. In fact, the posing used in portrait photography was the same across the board, whether for a wealthy client or a hardened criminal. This made it extremely difficult to distinguish "mugshots" from

commissioned portraits. Photographic technology had not been developed to allow widespread, inexpensive use which meant that to obtain photographs of a criminal, police had to commission a professional photographer. Camera and equipment were expensive and limited in the nineteenth century and only professionals were trained to use them. This took time and money, both of which police had no interest in wasting.

Photography was a new technology and seemed to serve little purpose to the criminal justice system at first. Police officers patrolled areas where they knew every face. Repeat offenders were known, by both officers and the townspeople. This all started to change as technology, namely transportation systems, started to advance. Towns grew into cities, and criminals could travel to new places easier than before. Swiss Attorney General Jacob Amiet is among the first to experiment with photography as means of surveillance. In 1852, the General commissioned a photographer by the name of Carl Durheim to photograph every vagrant. These photographs were taken in the same manor that any commissioned portrait would be of that era. The images were intended as a supplement to the files and as a means of identifying vagrants when they were apprehended again (Jager, 2001). This was a start to a solution of migrating criminals and was intended to discourage the vagrants from moving. This experiment came to an end in 1854 when political powers in the government started to shift. At the same time, some British prisons recorded images of inmates and repeat offenders. This was to ensure that harsher sentences were given to habitual offenders. However, this practice never caught widespread popularity in prisons and petered out after a few years. One of the first journals dedicated solely to photography known as *La Lumiere* published an article in 1854 that suggested the use of photography for criminals (Jager, 2001). Several times since the subject was approached, but no real proof of practice was apparent. Social views strongly suggested that using photography for

police purposes was a way of degrading it. Others in the field saw it as a practical solution to solving identification issues and as a supplement to a criminal's profile. Still, police reluctantly used photography to their advantage. In rare occasions, officials would hand out printed photos of a suspect and ask for any recognition and tips. This technique however was applied when police were frustrated and closer to failure in the investigation than success.

As the decades progressed, so did photographic technology and its social standing. By the 1870's, photography started its crucial integration into the criminal justice system. Policies began to arise that dictated the photographing of criminals sentenced to over six months in prison, assuring that they could be identified if they come to face the court again. In 1874, the Prefecture de Police in Paris established a criminal photographic register (Jager, 2001). From the point of this establishment, *every* suspect was photographed. Soon however, the register was overflooded with photographs and standards were altered to dangerous and violent criminals. With a similar project running in England, known as the Habitual Criminals Record, storage of the photographs became a pressing issue. Decades later, the sheer number of photographs became overwhelming and demanded a solution. Alphonse Bertillon found a solution.

Bertillon's system was revolutionary to criminology and forensic investigations. A French police officer, Bertillon had always been fascinated with order. He found it difficult to follow the unorganized and unsuccessful investigation and identification techniques that the criminal justice field utilized at the time. Bertillon created a system that allowed for easy identification of repeat criminals by using not only their photograph but scientific measurements of the body. His system recorded measurements of unique physical aspects such as scars, tattoos, and facial features. This system was widely accepted because it was an accurate way to identify criminals and gave us and organization to the unmanageable collection of mugshots that had slowed the system since the 1870s (Jager, 2001).

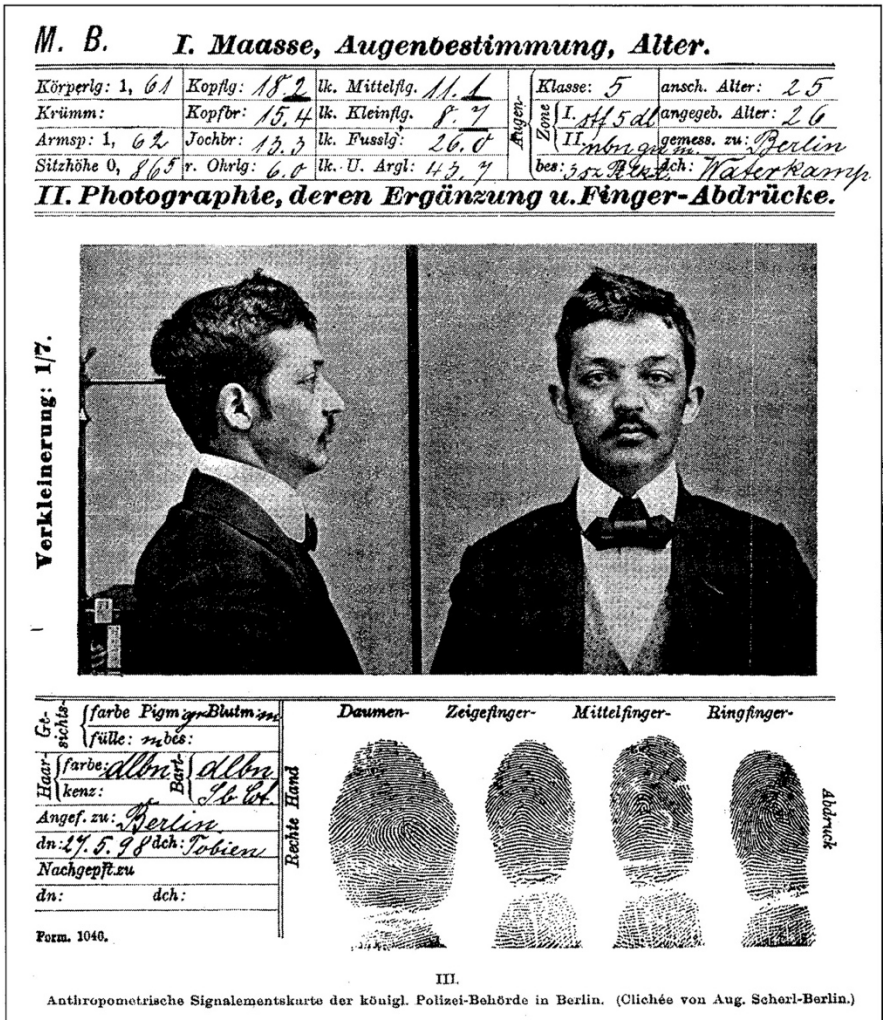

Figure 1: A identification card following the Bertillon system (Jager, 2001).

For the first time, the Bertillon system made photography a vital aspect of the police system. It was argued among scholars at the time that photography became irrelevant with the introduction of the Bertillon method, but Bertillon himself made a statement that photography was a huge aid in supplement to the system. In fact, in the 1890's use of the Bertillon system started to

fade with the introduction of identification methods such as fingerprinting but photographic aid remained. The photographs became standardized with measurements and information and helped spread the practice globally. With a generally standardized system, communication improved, and police forces started to work together locally and globally. For the first time in the world, there was a concept of a global and international criminal and a system that could aid in apprehending them.

The 1890's were a booming time for photography in police work. The first proper police photographers were employed (Jager, 2001). Officers no longer had to rely on their personal experience and knowledge but had access to a database that supplied them with hard evidence and facts. Photography was still seen as a form of truth and fact socially, even though it was known that the camera could be tricked. Important figures in national policing praised photography and the help it provided. One such figure was Gustav Roscher, chief of the criminal department of police in Hamburg, Germany. He stressed that photography must be used often and to capture criminals in all stages, claiming that their dynamic changes with time the same way any person ages. This booming integration also demanded photography that was a variation from the typical social use of photographs. There had to be a standard rule always followed, in line with Bertillon's thinking. This census not only created the modern-day mugshot but started to create the modern and strong police culture known today. Police photography is different from commercial and social photography and has developed since then.

In the United States, one organization is responsible for developing standards used throughout the years in forensics and the law enforcement field; The Federal Bureau of Investigation. The FBI currently employs more than 110 forensic photographers throughout their

56 field offices across the country (Federal Bureau of Investigation, n.d.). Throughout the twentieth century, training for forensic photography centered around film cameras.

With film, there was no instant gratification of a photograph. Police departments used a 35mm lens camera. This measurement of 35mm is the focal length, better known as how much of the picture will be displayed. When photographing a crime scene, it was imperative that usable photographs were taken. Photo editing software did not exist, and the picture that was developed is what was used. There is no room for screw ups, because once you photograph the scene you cannot go back. It is an investigators job to know their camera and shoot quality evidentiary photographs that will be admissible in court. One thing that a forensic photographer must be familiar with is the Exposure Triangle. The Exposure Triangle consists of three sides; ISO, shutter speed, and aperture (f-stop). Each side of this triangle represents a feature of the camera that influences how a picture is taken and displayed. By adjusting these features, a desired lighting or affect can be achieved. ISO is the camera's sensitivity to light. With film cameras, there is no adjustable ISO. However, as we will see, digital cameras do have an adjustable ISO setting. With a film camera, the same desired effects from an adjustable ISO can be created by changing the second point of the triangle, the shutter speed. The shutter speed is how long the sensor or film is exposed to light. In dark crime scenes, the shutter speed must be lowered to allow more light to enter into the camera, creating a visible image. In sports photography, a high shutter speed is important in order to freeze the athlete in the frame and

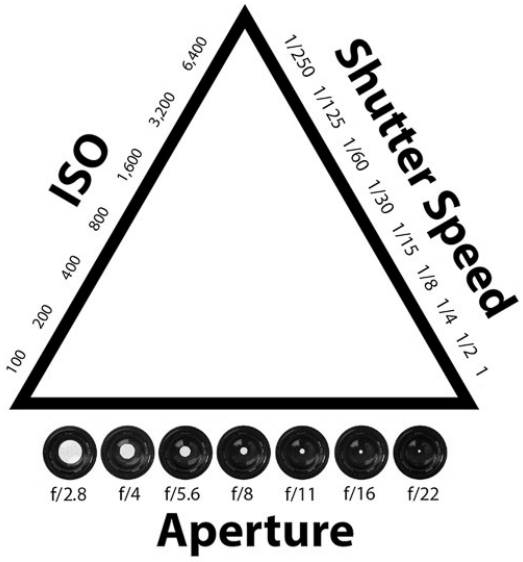

Figure 2: The exposure triangle (Gray, 2016).

capture the perfect shot. The last side of the triangle is aperture. Aperture is how open or closed the lens is, demonstrated in the graphic above. Aperture is the hole the light is focused through onto the sensor. Aperture dictates the depth of field in each image. All three aspects of the triangle influence each other, and it is the responsibility of the photographer to know how to achieve a properly exposed image.

The invention of the flash also revolutionized forensic photography. Since the development of cameras, photographers were limited in the photographs they could take. Dark rooms, nighttime, and caves all proved challenging. In the later half if the 1800s, small flash powders of magnesium were used. This created a bright flash, however, was closer to a mini explosive than the camera flashes we use today. Bulb flashes were developed in the 1920s and offered outstanding portability allowing photographers to travel as they never have before. Forensic photographers were able to record dark crime scenes instead of having to wait for daylight. In fact, one famous forensic photographer gave early flash photography a new meaning. Arthur Fellig, better known as Weegee was an accomplished flash photographer in New York City in the mid twentieth century. With a nickname derived from the Ouija board, Weegee always was the first to arrive at a brutal crime scene. There he would capture raw images before the police. His forensic photographs became a spectacle for the public and brought him fame along with his other work.

Proper forensic techniques with film and flash photography demanded extensive training. One proper shot of each piece of evidence was all that was needed, and yet it was impossible to know if the photograph measured up until after it was developed. In forensic photography books it is consistently stressed to take as many pictures as possible. It is better to take too many, than to have too few. When digital came to the scene in the later part of the century, it was slowly

adopted at first. Seasoned photographers believe that its photographic integrity did simply not match that of film. Prosecutors always believed photographs to be a "true and accurate representation" of the events at a crime scene (Hilderbrand, 2013). Film was seen as true and difficult to alter, while many simply distrusted digital cameras. As the years advanced, so did digital technology. Digital cameras became smarter, cheaper, easier, and higher quality. Police departments started to move away from film cameras, which were more expensive and more difficult to maintain. Some scholars and forensic photographers argue that this switch has led to the heyday of digital photography, but it has not come without its consequences. In the forensics world, evidentiary photographs now lack in the extreme and proper training is rare.

The digital cameras we possess in modern day are minicomputers. They are smart, capable, and achieve things beyond human ability. However, computers are not perfect. They try and make the photograph look ideal but in forensics that is not always what the end goal is. Forensic photography is the "true and accurate representation" of what occurred at the scene and during the commission of the crime. In program mode on a digital camera, the mode in which it automatically adjusts to the present conditions, the camera can under or overexpose an image. It can automatically adjust the triangle of ISO, shutter speed, and aperture to make the picture appeal to human eyes. Yet when photographing a crime scene, it is important to take images that show what the human eye sees. An easy example of when program mode can fail a forensic photographer (it is important to note that someone properly trained will never use program mode) is during a nighttime scene. A pedestrian has been struck by a car and the department needs photographs showing how the nighttime scene looks to the human eye. In program mode, the camera is going to want to use flash to expose the scene and perhaps balance the light it sees. This is not accurate to the conditions. What a trained forensic photographer would do is find the

brightest part of the scene, such as the white on a police cruiser. By filling the frame in manual mode, they will adjust their light meter evenly and then place the camera on a tripod. To take the picture of the scene no further aspects of the triangle will be adjusted. The result is an accurate picture of the nighttime conditions as the human eye sees it.

The rapid advancement of the digital age, including digital photography, has created unrealistic standards for some forensic photographers to live up to. In the court room, prosecutors worry about the *CSI effect*. This effect is the belief that fiction and reality crime-based television shows are influencing a juror's perspective on evidence and eventually their acquittal or non-acquittal. In a study published by the National Institute of Justice, 1,000 potential jurors were given a blind survey that requires them to rank on a number scale what evidence they expected to find in crimes ranging from violent to non-violent. Results showed that 46 percent of participants expected to find some kind of evidence in *every* criminal case, with 36 percent expecting to see fingerprint evidence in every criminal case (Shelton, 2008). These expectations were not a blanket answer and correlated strongly with violent crimes such as murder and rape. The study found that 42 percent of those surveyed watched CSI. The participants who regularly watched CSI had higher expectations for both scientific and non-scientific evidence. Overall, the study did not produce any solid conclusion on whether the CSI effect is a legitimate issue in the court rooms. However, the author notes that CSI might not be the sole influence on a juror's vote and confidence in evidence, but perhaps new age technology. The internet and other electronic platforms have allowed the public masses to access any information at their fingertips but has also become a common source for misinformation. The author, Honorable Donald E. Shelton, goes on to explain that the "jury is always right." The United States Criminal Justice system places its trust in the jury and it is up to lawyers, judges,

and investigators to ensure that jurors understand the evidence being presented to them. “The bottom line is this: Our criminal justice system must find ways to adapt to the increased expectations of those whom we ask to cast votes of ‘guilty’ or ‘not guilty’” (Shelton, 2008).

Police departments have strayed from proper training and proper photography equipment because of the cost and then seemingly suitable, cheaper alternatives. Untrained supervisors simply don’t know and understand the quality of equipment needed to produce quality images. The open availability of digital cameras has led to law enforcement commitment in the forensic photography practice dropping. Some departments have cell phones assigned to each unit so quick crime scene photos can be taken. Others simply do not realize and value the skill of a proper evidence photograph. Some hold the belief that the image can be digitally altered and enhanced. Although this is true, a high-quality photograph is still crucial for proper enhancement. Another fact is that Photoshop cannot fix a bad photograph. The pictures taken are evidence and hold the burden of proof. In *Advanced Crime Scene Photography*, Duncan states “photographers can make a strong statement with their photographs by getting close to their subject…For better or for worse, they will compare the photographer’s actual efforts with the fictional characters seen on television. Therefore, crime scene investigators must strive to impress the jury with their photographic abilities.” Like all evidence, photographs must have a chain of custody. Since it is easy to alter them within Photoshop, investigators have programs installed on their computers that track each alteration made to an image. In court, the photographer can explain each alteration to the judge and jury. This is another vital reason in the argument of properly trained forensic photographers. The photographer must be able to thoroughly explain how a shot was taken and how it was altered. With sound knowledge of the

evidence presented, the equipment present, and the techniques used the photographer can help build a solid base of the legitimacy of the evidence.

Chapter 4: Conclusion

Humans are lazy. If there is an easier way to do something, we will find a way. One of these ways has been technology and namely the advancement of cameras and photography. Photography has had a massive influence on society, but also in the forensic and law enforcement world. From relying on a beat cop as proper identification to a national database that can recognize a face, photography has been there each step of the way. Even when other methods faded, photography advanced and transformed with the times. Forensic photography has become an important staple in the criminal justice system. Not only can it portray an accurate depiction of the events that occurred at a scene, it allows for proper identification and reconstruction.

It is important that departments and law enforcement officials recognize the importance of proper training and equipment for forensic photography. Nothing can replace a quality photograph, and Photoshop cannot make a bad picture whole. Society is *obsessed* with photographs on social media, ranging from Instagram to Facebook, and now phones allow cameras to be pocket size and ultra-portable. Everyone is competing to take the best pictures of their children and everyone thinks they have all the tools needed to take quality photographs simply by using the most recent cell phone or program mode on a consumer-pro camera. If the amount of social passion in photography could also be translated to forensic photography, most issues would fade away. Newer technology does not mean it is better, and the user must be smarter than the camera. Photographic evidence is extremely important and is going nowhere. It is up to the law enforcement community to do better and make training more accessible and

widespread. Shows such as CSI and Cops help boost public enthusiasm for the forensic and law enforcement communities. Events such as National Night Out hope to achieve a closer community relationship by highlighting the interesting factors involved in law enforcement. Imagine a booth where children could learn even the basics of crime scene photography and touch a professional camera. It could help inspire the next generation.

Although it will adapt to technological change, forensic photography is here to stay. It is the lack of passion and commitment in the digital age of cameras that has led to the downfall of proper evidence photographs. An entire trial can hinge on one photograph as experts, layers, and jurors depend on the accurate representation of the scene. Nothing is truer than during bloodstain evidence photography. Since experts are almost never at the crime scene, they rely on forensic photographers to obtain all the correct photographs of stains. An overview, mid-range, and close up picture are essential in every crime scene but especially important during bloodstain photography simply because it can show the direction of travel of the blood. The blood stain can prove or disprove an injury theory and be on par with the use of a specific weapon. No two crime scenes are the same yet must be photographed in the same manner with the same procedure. By investing in this procedure and learning how to work a digital camera we become smarter than the computer we are shooting behind and secure proper evidence for an investigation.

Digital cameras have become computers. It is simply easier to let the camera do all the work, and peace of mind knowing it can be enhanced on a desktop. In many ways the passion for photography has deepened, but at the same time it has lost its quality. It is important for forensic photographers to know their camera. They must be equipped with proper equipment and have a passion for the job they are completing. As Ansel Adams once said, “It is the photographer, not the camera, that is the instrument.”

Bibliography

15 Facts about all-things eyes. (n.d.). Retrieved from Versant Health: https://versanthealth.com/blog/15-facts-about-all-things-eyes/

Duncan, C. D. (2015). *Advanced Crime Scene Photography.* New York: CRC Press.

Federal Bureau of Investigation. (n.d.). *Photographic Operations*. Retrieved from Federal Bureau of Investigations: https://www.fbi.gov/services/laboratory/forensic-response/photographic-operations

Flint, K. (2017, November 18). *A short history of flash photography.* Retrieved from Spectator: https://www.spectator.co.uk/2017/11/a-short-history-of-flash-photography/

Gallagher, F. (2017). *How Much Does a Professional Camera Cost?* Retrieved from Improve Photography: https://improvephotography.com/50151/much-professional-camera-cost/

Gardner, D. S. (1946). The Camera Goes to Court. *North Carolina Law Review*, 235-246.

Gouse, S., Kaman, S., Girish, H., & Murgod, S. (2018). Forensic photography: Prospect through the lens. *Journal of Forensic Dental Sciences*, 2-4.

Gray, E. (2016). *The Exposure Triangle- A Beginner's Guide.* Retrieved from Photography Life: https://photographylife.com/what-is-exposure-triangle

Hilderbrand, D. S. (2013). A brief history of photography as evidence. In D. S. Hilderbrand, *Footwear: The Missed Evidence* (pp. 113-115). Wildomar: Staggs.

International Association for Identification. (2019). Retrieved from International Association for Identification: https://www.theiai.org/

J. Paul Getty Trust. (n.d.). *Weegee (Arthur Fellig).* Retrieved from The J. Paul Getty Museum: http://www.getty.edu/art/collection/artists/1851/weegee-arthur-fellig-american-born-austria-1899-1968/

Jager, J. (2001). Photography: a means of surveillence? Judicial photography, 1850 to 1900. *Crime, History, and Societies*, 27-51.

Lanh, T. V., Chong, K.-S., Emmanuel, S., & Kankanhalli, M. S. (2007). A Survey in Digital Camera Image Forensics.

Merriam-Webster, Incorporated. (n.d.). *Photography.* Retrieved from Merriam-Webster: https://www.merriam-webster.com/dictionary/photography

National Library of Medicine. (2014, June 5). *Alphonse Bertillon.* Retrieved from Visible Proofs: Forensic Views of the Body: https://www.nlm.nih.gov/exhibition/visibleproofs/galleries/biographies/bertillon.html

Photography School Speos. (n.d.). *Niepce and the Invention of Photography.* Retrieved from Photo Museum: http://www.photo-museum.org/niepce-invention-photography/

Robbers, M. L. (2008). The Social Construction of Reality in Forensic Television Shows and its Effect on Criminal Jury Trials. *Criminal Justice Policy Review*, 84-102.

Roberts, M. L. (2008). Blinded by Science: The Social Construction of Reality in Forensic Television Shows and its Effect on Criminal Jury Trials. *Criminal Justice Policy Review*, 84-102.

Schweitzer, N., & Saks, M. J. (2007). The CSI Effect: Popular Fiction about Forensic Science Affects the Public's Expectations about Real Forensic Science. *Jurimetrics*, 357-364.

Shelton, D. E. (2008, March 16). *The 'CSI Effect': Does It Really Exist?* Retrieved from National Institute of Justice: https://nij.ojp.gov/topics/articles/csi-effect-does-it-really-exist

Smith, S. M., Stinson, V., & Patry, M. W. (2011). Fact or Fiction? The Myth and Reality of the CSI Effect. *Court Review: The Journal of the American Judges Association*, 4-7.

Valier, C. (1998). Scientific Methods of Criminal Investigation, Criminology, and Historiography. *True Crime Stories*, 88-105.

Young, R. (2017, February). *The Birth of Photography.* Retrieved from Napoleon: https://www.napoleon.org/en/young-historians/napodoc/the-birth-of-photography/