The Relationship Between Forensic Art and Criminal Investigations

An Honors Thesis (HONR 499)

by

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Abstract

Forensic art is a multimedia representation of investigative information for cases involving unknown suspects, fugitives, and missing persons. Since the 19th century, freelance artists and law enforcement officers have produced forensic media of wanted individuals in order to generate leads from the public. As the method of forensic art gravitates towards high-tech computer software programs, the career outlook of forensic artists is jeopardized. I describe the qualifications for becoming a forensic artist and categories of this artistic discipline, so readers can gain a better understanding of the training and skillset required for a specialized career. Through my analysis of traditional and modern forms of forensic art, I show that artists create purposeful media that has significant value for investigators.

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Introduction

On November 9th, 1971, at the New Jersey residence of John Emil List, the neighbors saw that the lights were on and could hear music playing. The scene inside was anything but lively. Authorities were alerted by neighbors that something was amiss in the List household. List’s mother, wife, and three children lay dead on the floor from multiple gunshot wounds. Handwritten notes recovered from the scene revealed that List had murdered his family in order to “free their souls.” Although the police quickly established John Emil List as the primary suspect, authorities could not locate him. Weeks passed without the discovery of any new information. Police believed that he had already taken on a new identity and was on the run (Ramsland, n.d.).

Police continued to investigate the murders, and by the mid 1980s, detectives had made numerous attempts to generate leads on List’s whereabouts. Frustrated, they took an unconventional step — they contacted a forensic artist. In 1987, a police artist created sketches that reflected an age appropriate John Emil List. These drawings were posted in nationwide publications, and a year later, America's Most Wanted hired artist Frank Bender to sculpt a clay bust of List for an episode of the show. A caller soon reported that a man using the name “Bob Clark” fit the description of the killer. Through fingerprint analysis, “Bob Clark” was determined to be the fugitive John Emil List (Ramsland, n.d.).

Of all the investigative techniques used to track this heinous criminal, the contribution of forensic artists was credited with breaking the case and leading to the successful capture of the fugitive (Ramsland, n.d.). Today, the contributions of sketch artists can be found in various media outlets. Last fall, a news station in Jacksonville, FL, reported the case of an unidentified man suspected of carjacking, robbery, and murder. A notable sketch artist in the area was
contacted to assist in the investigation (Inclán, 2014). While these two cases differ in regard to geography, time, and criminal offense, they both exemplify the influential nature of forensic artistry during the investigative process (Inclán, 2014; Ramsland, n.d.).

The practice of forensic art has been a method for human identification for over a century (Zimmerman, 2006). As noted above, this application of artistic skills to police investigative techniques is an effective technique for generating information on a variety of cases. This paper explores the origin of forensic art and how these artistic techniques have evolved over time with advances in science and technology. The paper includes a historic look at forensic art and raises questions about the practicality and usefulness of certain methods. This includes a detailed account of how artistic practices differ from scientific-based practices implemented in laboratories, as well as addresses criticisms of past and current forensic art techniques used by the criminal justice system. Finally, the involvement of practicing forensic artists in future criminal investigations will be explored.

This paper is written to be accessible to several audiences. Readers with a general interest in criminal investigations, but who might not have prior background knowledge of the criminal justice system, may be interested in the research of nontraditional investigative techniques. Readers do not need a background in art to comprehend the styles of forensic art discussed throughout the paper, although individuals who have studied art will have a better understanding of the various mediums and processes for creating art. Fine art professionals may benefit from this paper by discovering an applied art beyond the normally aesthetic focus. Criminal justice professionals involved in criminal investigations may find the information in this paper useful in understanding the uses of forensic art.
Sources

The most valuable material for this paper came from forensic artists with decades of practical working knowledge in the field. The material gathered and utilized for this thesis incorporates the expert opinions of forensic artists, including Lois Gibson, Stephen Mancusi, and Karen Taylor (Gibson, 2008; Mancusi, 2010; Taylor, 2001). Additional scholarly sources on forensic art provided background on scientific techniques that function as procedures for establishing the legitimacy of a work of fine art. The experience of researching the subject matter brought attention to the fact that very few scholarly articles discuss the merits of forensic art in relation to criminal investigations. This leaves it underdeveloped and "ripe" for further research.

Karen Taylor (2001) is the most prominent forensic artist and is the author of the book *Forensic Art and Illustration*. This valuable, comprehensive source contains detailed accounts of historical events, cases, and descriptions of a wide range of forensic art techniques. The majority of forensic artists who have published material in the past decade refer to Taylor's book. The publication is so accredited in the field that it serves as a reference in the *Standards and Guidelines for Forensic Art and Facial Identification* from The International Association for Identification (IAI). Although the use of forensic art in the United States dates to the early 20th century (Taylor, 2001), the limited sources on the subject suggests that academic scholars have overlooked this field, given its interdisciplinary nature. As such, *Forensic Art and Illustration* remains a principal source throughout this thesis paper. By comparison, other sources, while offering valuable insights into historical information and artistic techniques, have limitations. Some of these sources function as basic how-to guides for budding forensic artists, while others lack the depth that *Forensic Art and Illustration* is able to provide on the multifaceted subject matter.
The Basics of Forensic Art

The objective of forensic art differs from the other art forms. Art is often viewed as a luxury, with the appreciation — not necessity — of art maintaining its status in societies throughout history. Most professional artists aim to create visual products that are innovative, beautiful, and captivating. Unlike such “fine” art, forensic art is not intended to appeal to the general public or even a niche, nor is it created to be a perfect or beautiful representation of a subject (Gibson, 2008). Not every case requires the assistance a forensic artist and not every example of forensic art has led to the closing of a case. Nevertheless, forensic artists have made significant contributions to numerous criminal investigations (Taylor, 2001).

Defining Forensic Art

Forensic art is a visual, multimedia presentation of material that is designed or intended to elicit information about a wanted individual. The word “forensic” pertains to occupations that relate to case investigations or court presentations, thus any art that is used for investigative and legal purposes can be considered forensic. The subject, media, and type of forensic art vary in their natures; however, all forensic art shares the same objective of presenting investigative information through graphic means (Taylor, 2001). Drawings, paintings, and sculptures can be resources for locating and identifying a wanted criminal, missing person, or unknown deceased person (Mancusi, 2010).

Art vs. Science

Although the term “forensic” has a scientific connotation, forensic artist Stephen Mancusi (2010) distinguishes this art discipline from forensic science. A scientific field, such as chemistry or physics, normally offers concrete examples in that everything is either “black-or-white.” Forensic art operates in a “grey” area because the artist does not strive for the same accuracy as a
scientist. The notion of probability with regard to accurately portraying the likeness of a person is different than the probability of, for example, a DNA test proves to be accurate. As Mancusi states, the end goal of forensic art is to generate leads for investigators (Brooks, 2012). Forensic creations do not need to be perfectly accurate, nor does the depiction need to be museum-quality (Page, 2013). Mancusi notes that forensic artists have an extensive background in forensic techniques, but he maintains that forensic art is a true art form because the main skillset revolves around artistic talent (Mancusi, 2010).

In contrast, longtime forensic art expert Karen Taylor does not view forensic science and artistry to be distinct fields. Taylor believes that forensic art is a conjuncture of art and science. Forensic artists utilize similar principles and concepts to those of a forensic scientist, but they depict their work visually. Forensic artists are experts at crafting visual presentations, and they use scientific knowledge to improve the efficacy of the artistic process. For example, an artist may have knowledge of cognitive psychology and behavioral science, which can help during interviews with an eyewitness. When working with deceased persons, an artist may have to be able to understand anthropological data in order to effectively create a visual representation of the subject. Knowledge of facial anatomy and craniofacial growth is also important for accurately representing the proportions of a human face (Taylor, 2001).

Mancusi and Taylor differ on whether forensic art constitutes primarily an artistic or a scientific practice. Mancusi insists that forensic art is first and foremost an art form, and that scientific knowledge is secondary to artistic ability (Brooks, 2012). Taylor holds that both extensive knowledge of science and art are equally important in creating successful forensic art (Taylor, 2001). Both, however, agree that science is the foundation for forensic art, but that ultimately a forensic artist is a trained individual who is skilled at crafting visual presentations of
data. Scientific techniques may be helpful in the process of creating a two-dimensional or three-dimensional work of art, but a forensic artist does not need to strive for the same accuracy as a forensic scientist (Brooks, 2012; Taylor, 2001).

**Qualifications for Forensic Artists**

An individual who works as a forensic artist, whether as a criminal justice agency employee or a freelance artist, assists in criminal investigations and prosecutors' case presentations in court. Typically, a forensic artist is skilled in different mediums of art and can produce a wide range of investigative aides, such as composite sketches, image modifications, and facial reconstructions (Standards and Guidelines for Forensic Art and Facial Identification, 2010). Forensic artists come from a variety of backgrounds: some practitioners started as police officers, while others were established artists who were recruited by agencies (Taylor, 2001).

Further education for forensic artists bridges the gap in areas of expertise. Police officers are qualified to conduct interviews and testify in court. However, officers who do not have any schooling in art may need to enroll in courses that help develop their artistic competencies. Likewise, freelance artists may be accomplished in their craft, but they may also find that studies of state law and interviewing techniques better qualifies them as candidates for a career in forensic art (Taylor, 2001).

Taylor states that the insight of a forensic artist "requires artistic skill in conjunction with psychological or scientific knowledge" (Zimmerman, 2006). Forensic artists may find that scientific knowledge helps them understand data for constructing anatomically correct artwork; however, a background in science is not a qualification for becoming a forensic artist. When an artist needs scientific insights to achieve the facial likeness of a subject, the International Association of Identification (IAI) suggests that forensic artists seek assistance from a forensic
anthropologist, a pathologist, and/or an odontologist (Standards and Guidelines, 2010). For example, a forensic pathologist could provide guidance to an artist by interpreting the information from an autopsy in order for the artist to create a postmortem drawing or sculpture (Taylor, 2001).

Individuals seeking employment as forensic artists may need to enhance their qualifications beyond a Bachelor of Fine Arts. IAI offers a professional certification in forensic artistry whereby an artist can receive a Forensic Artist Certification by completing 80 hours of basic and intermediate training programs, 40 hours of workshop training, and two years of experience in the field. The artist must also have worked on a minimum of 30 criminal cases and submit a portfolio of his or her work. This reflects extensive preparation and apprenticeship for a career in forensic art (“Requirements for Forensic Artist Certification,” n.d.).

The History of Forensic Art

There is abundant literature on forensic science; in contrast, the field of forensic artistry is sparse. From the “wanted” posters of the 19th century to the police sketches circulated on late night television programs today, forensic art continues to demonstrate its value for generating leads. As previously mentioned, criminal justice professionals have been using art as a tool for the purpose of human identification and apprehension for over a century. The landscape of the career has undergone extensive changes, however, because of ongoing advances in technology and the media’s relationship with criminal investigations (Taylor, 2001).

The 19th Century

The first examples of art used as an aid for apprehending an offender can be seen in wanted posters that were popularized in The Old West. The poster would include a drawing or photograph of the known individual in order to generate leads on the whereabouts of the
offender. Sketching human remains also were utilized during that time. For example, in 1888, the infamous serial killer nicknamed “Jack the Ripper” murdered at least five women over the course of three months. Dr. F. Gordon Brown made a postmortem drawing of the killer’s fourth victim, which shows the location and severity of the wounds as depicted in Figure 1 (Taylor, 2001).

The 19th century marked a time when forensic pathologists became increasingly involved in illustrating human cadavers as a new method of analysis. Artistic techniques, such as line drawings and half-tone photography, were increasingly popular. As print technology became more widespread during that century, illustrations where cheaper to produce, allowing artists to publish more detailed and precise drawings (“The 19th-Century Revolution in Forensic Imaging,” 2014).
Sketches also became beneficial for documenting and preserving crime scenes. Though crude by modern standards, the crime scene sketch depicted as Figure 2 was created from accounts of witnesses and police officers for a coroner’s report in 1884 (“Technological Views,” 2014).

Although not an artist, Dr. Alphonse Bertillon made significant progress in regards to facial identification in the 1880s while employed as an assistant clerk at the Paris Police Department. Bertillon devised a method for categorizing a wide variety of body measurements of inmates. Over 81,000 offender cards were kept on record in filing cabinets. Bertillon believed this system would aid the government in holding offenders accountable for using assumed names because the information would be based on physical characteristics. To help in the investigation of fugitives, Bertillon improved the system by buying his own camera and taking high quality photographs of arrestees, making sure to capture profile shots and any angles of unique characteristics of the offender, such as scars or tattoos. Dubbed the Bertillonage, the system was implemented in all of France’s prisons. Years later its influence trickled to the United States where it was adapted by the head of the Illinois prison system (Fisher, 2008).

However, when Bertillon first introduced his method to his superior, his ideas were immediately questioned. Police officers who were not keen on introducing new technologies were dubious of the idea of using photographs and facial identification. Overall, most law enforcement agencies in the 19th century rarely used graphic images of wanted persons or convicted criminals, provided that the resources and technology of the time were not advanced enough to promote such efforts (Fisher, 2008).

**Early 20th Century (1900–1950)**
The turn of the century brought new technology that impacted the efficiency of law enforcement, and past practices were implemented for a growing number of investigations. For instance, composite imagery in high-profile cases brought public attention to wanted individuals. When Charles Lindbergh’s 20-month-old son was kidnapped from the family’s home in 1932, a political cartoonist named Jim Berryman prepared a composite sketch based on the accounts of Dr. John F. Condon, who interacted with the kidnapper when delivering the ransom money. Although the composite sketch did not generate a lead, the man who was eventually found guilty of the crime four years later did resemble Berryman’s sketch (Taylor, 2001).

Photographic evidence became increasingly important for establishing the guilt of offenders at trial. In the 1935 case of serial killer Dr. Buck Ruxton, image modification added significantly to mounting evidence against Ruxton for the murder of his wife and his maid. Ruxton skinned the faces of his victims and removed their teeth as a way of preventing law enforcement from making a positive facial identification. Authorities superimposed a photograph of his wife, Isabella Ruxton, over a photograph of the skull of one his victim’s, which demonstrated to the jury a likely enough match to convict Ruxton on all charges (Good, 2013).

The post World War II era made facial reconstruction and superimposition useful for identifying concentration camp victims. In 1946, Dr. Wilton Krogman performed early experiments in three-dimensional facial reconstruction with the help of artist Mary Jane McCue, who created reconstructive sculptures using data on a cadaver’s sex, age, and race. Photographs of the original head and the reconstruction were then compared side by side. Krogman’s early experiments were so successful that these findings were published in the July 1946 issue of the FBI Law Enforcement Bulletin (Taylor, 2001).

Late 20th Century (1951–2000)
During the late 20th century, composite sketches by forensic artists became even more prevalent, especially in high profile cases, such as David “Son of Sam” Berkowitz, Theodore Robert Bundy, “The Hillside Strangler,” and John Wayne Gacy. The most memorable composite images of this era depict offenders who committed heinous, violent crimes. These images are especially memorable when the offender has a distinct appearance. For 18 years, serial murderer Theodore Kaczynski, known as the Unabomber, periodically caused widespread panic in the United States through letter and package bombs that killed three people and injured 23 others. From 1987 to 1994, three composite sketches were completed based on eyewitness accounts of a hooded man with aviator sunglasses (Taylor, 2001).

Robert Exter was the portrait artist who created the second composite image using watercolors as seen in Figure 3. After the media circulated his image, the Unabomber halted terrorist activity for six years. Exter speculates that being spotted placing a pipe bomb and having his appearance made known to the public may have caused him to lay low and rethink his tactic (Exter, 2011). Ted Kaczynski was later connected to the crimes because his brother read the published manifesto of the Unabomber and recognized it as his brother’s writing style. Despite the fact that the composite sketches didn’t result in the apprehension of Kaczynski, the publicized sketches may have affected his plans to commit more crimes out of fear of being recognized. The illustration of Kaczynski’s aviator sunglasses and
hood was so famous that the composite went beyond being an investigative tool to becoming an iconic image in pop culture (Taylor, 2001).

Although hand-drawn sketches were popular forms of composite imagery, the technology evolved beyond the pencil-and-paper technique. In the 1950s, an assemblage system patented as "Identi-KIT" consisted of clear acetate sheets of different facial features. The witness would pick the sheet that best represented the suspect’s nose, eyes, etc. and layer each transparent sheet on top of one another until the witness was satisfied with the overall assortment of facial features. Similar procedures were adopted in other countries. For example, the Royal Canadian Mounted Police used plaster masks to help the witness distinguish key features of the offender’s face. In the 1970s, the United Kingdom had a version of a facial composite system known as PHOTO-FIT. At first these composite systems were readily adapted by police agencies, but the rise of high-profile cases in America during the early 1970s renewed reliance on forensic artists who were skilled at composite drawing (Taylor, 2001).

By the 1980s, forensic art had already been used for a variety of investigative purposes, but the training offered to the artists had not been extensive up to this point. In the mid-1980s, the professional organization and training of forensic artists showed significant improvement. Practitioners, for example, could now attend the American Academy of Forensic Sciences annual conference where experts shared their techniques and past experiences in cases. In 1986, the IAI officially declared forensic art to be a discipline within their organization. Experienced forensic artists began publishing manuals for composite artists, and the FBI offered high quality courses that trained law enforcement artists. The television show “America’s Most Wanted” increased the publicity of criminal cases by nationally broadcasting composite sketches and fugitive update drawings (Taylor 2001).
The 21st Century

The early 21st century, however, appears to be witnessing the waning in the employment of forensic artists. New York City has the largest police force in the United States at 35,000 officers, but only employs three full-time artists. Other large metropolitan cities do not employ full-time artists and, instead, seek the assistance of freelance artists on an as-needed basis. In the United States, there are fewer than 100 full-time positions for forensic artists in approximately 40 forensic units (Ortiz, 2014).

Advances in technology have shifted the source of images of wanted persons to surveillance and cell phones cameras, which has contributed to the decrease in forensic art. In cases where the services of a forensic artist could be utilized, departments are eliminating the expense of hiring and training an artist, instead adding this as a collateral duty for select police officers using computer software. Michael Streed, the sole full-time sketch artist with the Baltimore Police Department, believes that police agencies are trying to get the most out of their dwindling budgets during harsh economic times of the Great Recession (Ortiz, 2014).

The popularity of social media accounts has also brought a new element to investigations. Law enforcement agencies can use social media as a source to collect evidence and identify witnesses (Vicinanzo, 2014). Forensic artists could benefit from law enforcement’s growing use of social media because they may find images from accounts that can help them achieve a better visual representation of the subject (Brandon, 2014). Social media can also raise awareness in the community, so digital copies of a forensic artist’s work can reach quickly to a larger audience (Vicinanzo, 2014).

Categories of Forensic Art
The nexus of art and criminal justice has existed for about as long as the establishment of contemporary police departments in the 19th century. From postmortem drawings to digital composite software, what constitutes forensic art has evolved. Today, several categories are used to distinguish between distinct approaches. *Composite imagery, image modification, and facial reconstruction* all are recognized as forensic art because they require a distinct artistic training and skillset, that importantly, help aid investigators. In contrast, courtroom sketches, though a popular form of demonstrative art associated with criminal justice, do not fall under a category of forensic art because this type of art is for news reporting, not investigations (Mancusi, 2010; Brooks, 2012).

![Figure 3. Example of a composite image comparison (Gibson, n.d.).](image)

**Composite Art**
According to the *Standards and Guidelines for Forensic Art and Facial Identification*, a composite image is defined as a facial or full-body image in which a representation of a person-of-interest is constructed from a witness’s recollection of a subject (2010). Because the technique involves combining various parts into an overall graphic image, the artist creates what is known as a “composite” (Taylor, 2001). The goal of a composite artist is to create an accurate visual aid that will lead to the identification of the person-of-interest. Most images are portrait renditions like the example depicted in Figure 4. Composite images are also useful for depicting unusual clothing and property as well as distinguishing features, such as scars and tattoo, in cases where photographic evidence cannot be obtained (*Standards and Guidelines*, 2010).

Composite images are provided through a variety of methods: hand-drawn sketches, hand-assembly kits, or a computer software program (*Standards and Guidelines*, 2010). However, both hand-drawn and computer-generated methods require one or more eyewitness. Unlike other forensic art practices that work from a physical example, such as photograph or a skull, composite artists must gather information from the impressions and memory of witnesses in order to create a visual representation (Taylor, 2001).

Composite images are most commonly used in cases where a person witnessed a major crime. The witness may be going through post-traumatic stress after seeing violent acts, so the forensic artist must not only be skilled in portraiture, but also possess the interview skills needed to gather the information necessary to create a composite image (Taylor, 2001). According to Karen Taylor, asking the right questions and understanding human psychology are two important traits of a successful composite artist (*Zimmerman*, 2006). A witness’s account may be very helpful. However, since the artist is dependent upon the memory of another, the artist must treat the process differently than if they were working from a photograph or skull. The composite
artist may have to build rapport with a witness to dispel or diminish any fears or anxieties before sketching can begin (Taylor, 2001).

The interview begins with the witness giving a general description of the suspect so the artist can outline the subject’s face shape and features. The sex, age, and ethnicity provide a foundation for the sketch. Once the face is completed, the artist then prompts the witness to make any minor or major adjustments, such as the size of the forehead, shape of eyes, and thickness of eyebrows. The artist usually signs and dates the front of the sketch and has the witness sign the back to ensure for courtroom purposes that the sketch was not altered at a later time to match the description of the defendant (Wolcott, 2014).

Certain factors of the crime, witness, and interview can alter the outcome of the sketch. For instance, Cameron Pye, a retired facial identification specialist, observed that people were more likely to recall facial features of an attractive suspect (Latimer, 2010). Similarly, suspects with distinctive features, such as big eyes and prominent ears, are also more recognizable. Aside from the traits of an offender, certain people make better witnesses too. Karen Taylor notes that prostitutes are observant witnesses because they are in a line of work where situational awareness and taking into account their environment is essential to their personal safety (Zimmerman, 2006).

Because human memory is fragile, certain aspects of the interview can also be enhanced in order to achieve an image with a greater likeliness to the suspect. It is important that the artist does not lead the witness during the cognitive interview and that the interviewee chooses the terminology. In some cases, the witness may not always use the most technical choice of words. Pop culture references can be a tool that helps witnesses describe features of a person. Victims have used phrases such as “hair like Eddie Munster,” “Tom Cruise eyes,” and “lips like 50 Cent”
to describe a perpetrator. In cases where the artist is out of touch with pop culture, the Internet can be a resource to help fine tune details of the sketch (Latimer, 2010). Taylor points out that reference photos can be a great tool for producing better communication between the artist and witness. An artist has his or her own interpretation of a round face, so photographic resources as seen in Figure 5 help with examples for clarifying to the specifics to witnesses’ verbal descriptions (Taylor, 2001).

In 1989, the Graphic Design Unit of the Special Projects Section of the Laboratory Division developed a collection of facial photographs as a resource for law enforcement. Witnesses could select lips, eyebrows, and other facial features in the *FBI Facial Identification Catalog*, and then information was sent to the headquarters of Special Projects Sections at Washington, D.C. for a composite artist to create a drawing. Although it was one of the first helpful resources for law enforcement agencies, the booklet lacked diversity in the photograph selection with its limited number of ethnic facial features and no representation of female traits (Taylor, 2001). The catalog is a very feature-focused tool, so artists who are currently employed still use the catalog or similar book of facial features as a reference point for helping the witness describe the physical characteristics of a suspect (Wolcott, 2014).

**Technology’s impact on composite art.** The *FBI Facial Identification Catalog* was one of the first resources that appeared to be designed in order to transform composite imagery into a process that could be managed by officers who do not have a background in fine art. However,
the process was flawed. The brain recognizes faces holistically and not as a collection of features, so the low-tech processes of the FBI Facial Identification catalog and similar methods did have the shortcomings of producing inaccurate representations of the subject. The inventors of newer technologies in composite images aimed to produce better results. For example, Charlie Frowd, one of the creators of *EvoFIT*, said, "We are not good at describing and selecting individual facial features, but are very good at selecting whole faces which look like someone we've seen" (Stockdale, 2008).

The *EvoFIT* technology uses a Darwinian fitness* approach to the composite. The witness selects six faces that most resemble the person-of-interest from a group of 18 randomly generated faces. The six faces are morphed into a pool of 18 offspring as seen in Figure 6, where the witness repeats the process until he or she finds an image that is an acceptable likeness. Then the hair and clothing are edited to fit the witness’s description of the offender (Stockdale, 2008).

Because newer technologies have emerged, police departments have cut back on the traditional paper-and-pencil methods, but not everyone is pleased with the decline in sketch artists. While computed-based composite systems are beneficial to individuals who do not have

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*Darwinian fitness refers to concept of selecting the highest-ranked individuals in a population for reproduction and repeating the process with the offspring (Stockdale, 2008)*
artic skills, the presence of computerized sketching systems does not make hand-drawn sketches obsolete. According to Detective Wayne Promisel at the Loudoun County Sheriff’s Office, forensic artists have an invaluable knowledge of the human face combined with expert interview skills. No machine or new technology can recreate the empathy of forensic artists (Bui, 2013).

Tom Macris, a police artist who formerly worked with the San Jose California Police Department, believes that a digitally produced composite is misleading. Because computer programs generate an image that is photographic, the precise details in the image suggest that the composite is an absolute identity. The sketch quality of hand-drawn composites is more beneficial to investigations because it leaves a wider margin for interpretation. Thus, it’s more likely for people to come forward with a lead on the person-of-interest (Walton, 2006).

Suzanne Lowe Birdwell, a forensic artist employed at the Texas Rangers Evidential Art and Facial Identification Unit, agrees that computer programs do share a disadvantage when compared to freehand drawings. Most programs have a limited index of facial features, which means the witness has a set number of choices. By contrast, an artist can make slight alterations and finesse an image in ways that current computer programs cannot (Page, 2013).

Another drawback of composite images — whether created by an artist or a computer — is the truthfulness of witnesses. Jill Swann notes that a witness once falsified a description of a suspect because the witness was romantically interested in Swann’s partner and used an interview as a way to get his attention (Latimer, 2010). False allegations are not the only problem that arises when working with witnesses. When the witnesses only have an obstructed view of the suspect, the resulting image can be misleading. For example, in 1981 a composite drawing was used as evidence against Neil Ferber who was found guilty of murder and sentenced to
death. While he was on death row, a re-examination of the evidence suggested that Ferber was wrongfully accused and convicted. The witnesses who gave descriptions to the composite artist later admitted that they had only seen a profile view of the suspect. The artist had drawn a frontal view of the suspect, which ultimately skewed the accuracy of the finished product (Taylor, 2001).

Image Modification

Image modifications are a type of forensic art involving an alteration of a photograph or video still image. Artists enhance the image in order to update, clarify, or identify a subject (Mancusi, 2010). The FBI regulates forensic imaging so that enhanced images can be deemed admissible in court. Examples of images that are modified by trained professionals include surveillance, crime scene, and autopsy images. Forensic specialists modify these images by using software to adjust the image's brightness, size, color balance, sharpness, and pixels (Standards and Guidelines: Best Practices for Documenting Image Enhancement, 2005).

However, image modification extends beyond the editing of an original photo. A form of forensic art that involves an artist analyzing outdated images to create a present-day likeness of a subject is called age progression. From missing persons to fugitive updates, age progressions are distributed nationally to give the public an updated image of a person of interest. Methods for recreating the subject vary based on age, so an artist approaches age progressions for children and adults with different techniques (Walton, 2006).

For hand-drawn methods, the artist uses shading and blending to show aging. Although one method is a digital process and the other is a traditional pencil-and-paper method, the work of an age progression still requires an artist who has mastered hand-eye control and the manipulation of facial features (Bailey, 2009). Even advanced computer technology cannot
automate the process of seamlessly executed age progression. The expertise of an artist is required, so the forensic artistry behind an age progression remains a half-art and half-science (Leshchinskaya, 2013).

**Child age progression.** Children’s facial features change rapidly as they age. Parents may find that relatively recent photographs of their children are soon out-of-date. When a child is missing or abducted, a “present” image may be needed in order for a more accurate representation of the child (Walton, 2006). Reports vary on how old the child must be in order to be eligible for an age progression. Most experts agree that missing children younger than the age of two present extreme challenges for an artist due to the child’s significant change in facial growth or lack of family photographs (Walton, 2006; Standards and Guidelines, 2010). Also, the timeframe for an artist to complete a child age progression can be a matter of discretion, but the Standards and Guidelines for Forensic Art and Facial Identification states that an artist should wait to complete an age progression at least two years after the most recent photo of the child was taken (2010).

Forensic artists need a proper knowledge of craniofacial growth and dentition changes to create an accurate age progressions of children. When it comes to craniofacial growth, there are general trends that apply to how all children’s faces mature throughout adolescence and adulthood based on genetic and quantifiable-growth information (Zimmerman, 2006). Growth is not a simultaneous process as some facial regions mature earlier and later than others. As they age, children’s faces tend to change proportionally the most in the lower half (Taylor, 2001). At the age of three, the upper third of the human face is already 70% mature while the lower two thirds has yet to reach near that level of growth (Zimmerman, 2006).
However, age progressions involving growth are challenging for forensic artists. Not all children age the same way, so the artist must critically analyze the facial growth of the parents in order to fill in the gaps that general knowledge of facial growth fail to explain on a individual bases. Joe Mullins, a forensic-imaging specialist at NCMEC states, “We like to have input from the biological family... the ideal situation would be to have photos of the missing child’s parents at the age the child would be” (Zimmerman, 2006). Forensic artists who create child age progressions find reference photos by compiling images of the missing child’s siblings, parents, and other relatives. Also, finding photographs of individuals born beyond the millennium may be easier now than ever. In our photo-obsessed culture, artists have a collection of reference photos at their disposal thanks to the popularity of social media accounts (Brandon, 2014).

Child age progressions are achieved by traditional artistic skills or computer software. The crucial element of age progressions is the technique used to achieve a probable facial growth of the subject, so the process relies more on technique than technology. However, it may be the one category of forensic art where computer programs like Adobe Photoshop outshine hand-drawn methods. Computer programs allow the manipulator to replicate the same photographic-look to the eyes (Zimmerman, 2006). Programs like Photoshop also have useful tools for adding wrinkles and grafting skin texture pattern (Bailey, 2009). Programs in development are moving from morphed images and instead catalog thousands of images based on actual people to speed up the process of creating age progression images (Brandon, 2014).

Age progressions can result in a life-changing event for some people. In the case of Steven Carter, the child age progression led to the connection to his own identity. Carter knew he was adopted from an orphanage in Hawaii, but details from his birth certificate made him question the legitimacy of the document. In searching the National Center for Missing &
Exploited Children (NCMEC) website, he found an age progression of a 26-year-old man who was abducted in infancy. Due to the physical resemblance and birth date of the man, Carter surmised he was the man in the altered image. After further research, he learned that when he was a newborn, his mother had changed his name and race on his birth certificate before placing him in an orphanage. The age progression not only led Carter to discover his true identity, but it also eventually gave him information to find his biological father (Leshchinskaya, 2013).

**Adult age progression.** Thanks to television programs and crime-stopper agencies, stories of most wanted criminals resurface after years of no activity when an artist has completed an updated age progressed image. Besides missing fugitives, adult age progressions are also helpful in generating leads in cases of long-term missing adults. Cases that require adult age progressions, whether for fugitive updates or missing persons, are often high profile and have been sought by law enforcement for years. Adult age progressions may be especially useful in creating new interest when the media is reporting an anniversary or big news story on the case (Taylor, 2001).

*Figure 7. Age progression showing multiple views.*

(Taylor, 2001, pg. 264)
An artist must develop different techniques for aging progressions in comparison to progressions that show growth. Although heredity is an important factor for demonstrating both child and adult age progressions, projecting the aging of an adult takes the knowledge of how lifestyle factors affect the face (Zimmerman, 2006). Lifestyle factors that affect aging include smoking, alcohol use, and chronic illness (Leshchinskaya, 2013).

In a case that multiple lifestyle factors could influence the way the subject ages, an artist may depict a wanted person in multiple views. Larry Porter Chism, a highly intellectual law student, escaped prison while incarcerated for a drug offense. Figure 7 shows that the artist took into account multiple perspectives of the same suspect, including differences in facial hair and eyeglasses. Other examples ambiguous lifestyle factors that would warrant an artist to create multiple views include weight gain, smoking, and receding hairline (Taylor, 2001).

**Facial Reconstruction**

Human remains are another insightful source for a forensic artist. Before an artist can mold the folds and wrinkles of a human face, an understanding of what lies below the surface is required. The skull is made up of 14 facial bones and eight cranial bones, each of these bones so complex that variations in the sizes and shapes are virtually limitless. All humans have a basic structure and shape of the hard and soft tissues in the face, but the slight variations of these tissues create individuality among our species. The details of a skull can suggest age, sex, and ethnic origin (Wilkinson, 2004).

If composite sketches and image modifications require knowledge of craniofacial proportions and development (Taylor, 2001), then the same standard applies to facial reconstruction — plus there must be an understanding of the even more complex relationship between the skull and the overlying soft tissues. Forensic facial reconstruction is two-
dimensional or three-dimensional approximation of an individual’s facial features using information from a human skull or replica. Facial reconstruction relies on the predictable patterns of how soft tissues appear on the skull, so an exact likeness is nearly impossible given that there are too many variables for an artist to get right. However, a facial reconstruction can produce a visual representation of how the subject looked before death ("Standards and Guidelines for Forensic Art and Facial Identification," 2010).

Artists and anthropologists commonly work together to develop a basis of the underlying cranial structure of the skull in concerns to cases that involve facial reconstruction. Law enforcement agencies or medical examiners have a statutory obligation to utilize every resource known to help identify a deceased person. Common methods for identification include fingerprints, dental records, and DNA, but these methods are all comparative, requiring previous records in order for an ID to occur. The work of a forensic artist may serve as a way to bring leads about a name in cases where the identity of the deceased individual is unknown (Taylor, 2001).

*Figure 8. Two-dimensional skull reconstruction (Taylor, 2001, pg. 409).*
Two-dimensional reconstruction. The first step of the reconstruction process is determining the tissue depth. Forensic artist Karen Taylor recommends that the artist adheres vinyl markers to the landmark areas of the skull Figure 8. After assessing the tissue depth data, the artist then approximates the contours of the face. During the drawing process, artists may want the anthropologist nearby in order to gain input on the facial features. Dental specialists are also valuable as they can share their expertise on the dentition of the skull (Taylor, 2001).

In a similar fashion to composite images, it is best for the artist to draw intentionally ambiguous areas on the face where limited information exists because adding extra details may be inaccurate and mislead the public from a range of potential “fits”. After the artist has rendered an approximate likeliness of the subject’s face, the next step is for the artist to determine an appropriate hairstyle. Again, the artist can create one primary sketch that has a generic ambiguous hairstyle, but the artist may also show multiple versions of the sketch with other hairstyles as well (Taylor, 2001).

Figure 4. Three-dimensional skull reconstruction (Taylor, 2001, pg. 468).
Three-dimensional reconstruction. Three-dimensional facial reconstruction requires the same steps for marking the skull as two-dimensional reconstruction. After placing the vinyl markers, the artist works directly on the skull by setting prosthetic eyes in the sockets. The artist will then apply strips of clay on the frontal view of the skull as a way to mimic the depth of tissue and then focuses on sculpting individual facial features to resemble a final product like the middle image in Figure 9. Although two-dimensional artwork is typically a faster approach, a sculpture may be more advantageous because the skull is a three-dimensional shape. The sculpture provides multiple dimensions and may influence the way a person recognizes the subject (Taylor, 2001).

Conclusion

Professionals in the criminal justice system have varying opinions on whether or not forensic art is a useful investigative tool. Some people view the field as a “dying art,” while employed forensic artists advocate for the advantages of sketching. However, when poorly rendered composite sketches like Figure 10 become viral on the Internet, public opinion on the usefulness of forensic art may be negatively affected (Ortiz, 2014).

Forensic science offers quantifiable data, but forensic art, on the other hand, does not hold any numerical value. Critics of forensic art may not view this application of art as
successful as the scientific work completed in forensic laboratories. For one reason, it is hard to quantify the end results of a sketch. Law enforcement agencies do not have the resources to calculate arrest and conviction rates of cases that featured the work of a forensic artist (Bui, 2013).

Because of the difficulty of determining an artwork’s success, critics of forensic art may suggest that the field is waning, especially with the introduction of computer software programs (Bui, 2013). Although hand-drawn sketches are not perfect, the major benefit of forensic art is that it does serve as a physical representation of evidence that was previously intangible (Page, 2013). Aside from instances when witnesses purposefully deceive an artist or have an obstructed view of the subject, the result of a composite sketch completed by a trained artist will at least look similar to the offender. Even sketches with poor artistry or resemblance still have generated tips and leads, which is the ultimate objective of forensic artists anyways (Gibson, 2008).

From the composite sketches in the Unabomber case to the bust replica of fugitive John Emil List in the 1980s, the field of forensic art has evolved beyond what innovators like Dr. Alphonse Bertillon might have envisioned in the 1800s. Forensic artists have generated composite art for a number of cases, and these artists bring human interactions and understanding to an interview that computer software does not provide. Age progressions have demonstrated that investigations are an ongoing process, and child age progressions have the profound ability to reunite families. Facial reconstruction aids in identifying deceased persons and can bring closure to grieving family members (Taylor, 2001).

Forensic art always provides the potential to aid an investigation, so its contributions vary from case to case. Composite images, age progressions, and facial reconstruction aids have shown their value to investigators and community members whenever a break is made on a case
that might have otherwise never received attention from the public. However, whether they are successful in the goal of facilitating an end result in investigations, all categories of forensic art help bring forth collaboration between law enforcement agencies and communities (Taylor, 2001).

Technology may serve as an economical alternative to forensic artists, but creative minds remain a necessary part of the process. Investigators should try every method possible for solving crimes and should seek assistance from professionals; artists included. Creativity is needed for any investigation because creative individuals can easily come up with new ideas, solutions, and techniques. Their contribution is especially important to the artists themselves, whose employment at law enforcement agencies give them an opportunity to use their artistic skills as a way to positively influence the outcome of ongoing investigations. The problem is that the structure of law enforcement procedures can rely too heavily on traditional viewpoints, so creativity in the process is often stifled. This leaves limited room for forensic artists to create a lasting impact in the criminal justice system (Kinnee, 1994).

Despite the difficult economical times that law enforcement agencies face, forensic art remains a valuable component of criminal investigations (Ortiz, 2014). This multi-disciplinary field requires more than artistic skills — it’s an extensive knowledge of anatomy and interviewing tactics. It should not be overlooked solely due to budget cuts or technological advances. Ultimately, investigators should utilize every feasible resource to generate leads on cases involving serious violent crime and missing persons. The fact that forensic art can significantly change the course of an investigation (Taylor, 2001) is enough to assert that forensic artists’ input should not get lost amid modern society’s rapid reliance on computer programs.
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