History of forensic science assignment

Law

The history of Forensic science i. e. applying “ scientific” principles to legal questions has a long and intriguing history. Notable examples include: In 44BC following the assassination of Julius Caesar the attending physician proclaimed that of the 23 wounds found on the body ‘ only one’ was fatal. In the 5th century Germanic and Slavic societies were believed to be the first to put down in statute that medical experts should be employed to determine cause of death. In 1247 the first textbook on forensic medicine is published in China which among others things documents the procedures to be followed when investigating a suspicious death.

In medieval England pressure from the church halted the practice of hanging women thought to be pregnant. A convicted woman could escape the death penalty if she ‘ pleaded her belly’ providing a physician could prove that she was in factpregnant. Inspired by the study of anatomy medicolegal textbooks begin to appear by the end of the 16th century. The 1887 coroners act ensured that an integral part of the coroners’ role was to determine the circumstances and the medical causes of sudden, violent and unnatural deaths. Mathieu Orfila was a towering figure in the emergent field of forensics.

Often called the “ Father of Toxicology,” he was the first great 19th-century exponent of forensic medicine. Orfila worked to make chemical analysis a routine part of forensic medicine, and made studies of asphyxiation, the decomposition of bodies, and exhumation. He helped to develop tests for the presence of blood in a forensic context and is credited as one of the first people to use a microscope to assess blood and semen stains. He also worked to improve public health systems and medical training. Born a

Spanish subject, on the island of Minorca, Orfila first studied medicine in Valencia and Barcelona, before going to study in Paris.

His first major work, Traite des poisons tires des regnes mineral, vegetal et animal; ou, Toxicologie generale, was published in 1812. After a failed attempt to set up chemistry professorships in medical colleges in Spain, he returned to France. In 1816, he became royal physician to the French monarch Louis XVIII. In 1817 he became chemistry professor at the Athenee of Paris, and published Elements de chimie medicale, on medical applications of chemistry. In 1818 he published Secours a donner aux personnes empoisonnees ou asphyxiees, suivis des moyens propres a reconnaitre les poisons et les ins frelates et a distinguer la mort reelle de la mort apparente. In 1819 he became a French citizen and was appointed professor of medical jurisprudence. Four years later, he was made professor of medical chemistry. He became dean of the Faculty of Medicine in 1830 and reorganized the medical school, raised educational requirements for admission, and instituted more rigorous examination procedures. He also helped to establish hospitals and museums, specialty clinics, botanical gardens, a center for dissection in Clamart, and a new medical school in Tours.

During his long career, Orfila was called to act as a medical expert in widely publicized criminal cases, and became a notable and sometimes controversial public figure. Exacting in his methods, Orfila argued that arsenic in the soil around graves could be drawn in to the body and be mistaken for poisoning. He conducted many studies and insisted that testing of soil be part of the procedure in all exhumation cases. He was a prominent

member of the Parisian social and intellectual elite, and a regular attendee (and host) of salons in the 1820s and 1830s.

But his zealous activities as dean, his prolific writings on polarizing issues, and his ardent pro-monarchist politics made him numerous enemies. After he was removed from his post as dean during the 1848 revolution, a commission was set up to investigate illegal or irregular acts during his tenure, but found none. By 1851, he was rehabilitated and elected president of the Academy of Medicine. Alphonse Bertillon was a French criminologist and anthropologist who created the first system of physical measurements, photography, and record-keeping that police could use to identify recidivist criminals.

Before Bertillon, suspects could only be identified through eyewitness accounts and unorganized files of photographs. Bertillon began his career as a records clerk in the Parisian police department. His obsessive love of order led him to reject the unsystematic methods used to identify suspects and motivated him to develop his own method, which combined systematic measurement and photography. In 1883, the Parisian police adopted his anthropometric system, called signaletics or bertillonage. Bertillon identified individuals by measurements of the head and body, shape formations of the ear, eyebrow, mouth, eye, etc. individual markings such as tattoos and scars, and personality characteristics. The measurements were made into a formula that referred to a single unique individual, and recorded onto cards which also bore a photographic frontal and profile portrait of the suspect (the “ mug shot”). The cards were then systematically filed and cross-indexed, so they could be easily retrieved. In 1884, Bertillon used his method to identify

241 multiple offenders, and after this demonstration, bertillonage was adopted by police forces in Great Britain, Europe, and the Americas. But bertillonage was difficult to implement.

The measuring tools needed frequent recalibration and maintenance; the process was labor intensive, requiring rigorously trained, highly motivated and competent technicians, and was expensive. When individuals were measured several times, even well-trained officers made their measurements in different ways and sometimes failed to obtain the exact same numbers. Measurements could also change as the criminal aged. Eventually, police departments began to abandon bertillonage in favor of fingerprint identification, although some elements, such as the inventorying of basic information and features, scars, tattoos, and the mug shot, were retained.

One of Bertillon’s most important contributions to forensics was the systematic use of photography to document crime scenes and evidence. He devised a method of photographing crime scenes with a camera mounted on a high tripod, to document and survey the scene before it was disturbed by investigators. He also developed “ metric photography,” which used measured grids to document the dimensions of a particular space and the objects in it. By the mid-1890s, Bertillon had achieved international celebrity, through articles in popular publications, exhibition displays, and international expositions.

He fought vociferously against those who advocated fingerprint identification —but eventually incorporated fingerprinting into his system, albeit

grudgingly. He also worked to further the development of other forensic scientific techniques, such as handwriting analysis, galvanoplastic compounds to preserve footprints and other impressions, ballistics, and a dynamometer which measured the degree of force used in breaking and entering. The Sherlock Holmes type detective, the man who smells a letter and tells at once that the murder was committed by a bald headed man wearing eye-glasses, may seem a far-fetched creation of the novelist.

His exploits have been over-drawn for the purposes of fiction, but his methods are sound. Above all things, he is a scientist. In the whole United States there is no Sherlock Holmes – no detective who studies crimes objectively and dispassionately, just as an entomologist studies a bug for identification. The Europeans are far in advance of us in this respect. There are no fewer than four chairs in as many European universities occupied by men who are professors of crime detection, the new science called “ criminalistics. These men have laboratories in which the minds and methods of criminals are studied. In Graz, Austria, for example, you will see collections of all the know poisons of Europe, the sword-canes and rifle-canes with which assassins lie in wait to kill, plaster models and accurately drawn plans of crimes, the skulls of men who have been killed by blows on the head. Students who take the course in criminalistics are expected to look at a skull and say: “ This man was killed by a hammer blow. ” One graduate caught a murderer who had left behind him nothing but a derby hat in which there was a single hair. Look for a man between forty-five and fifty, partially bald with gray-streaked hair. ” The police found him. Why did the scientific detective say that? Because by chemical and microscopic means it had been

determined that there was perspiration in the hat; one of the hairs was gray, and it was the kind of hair that drops out a head that is growing bald. All modern science has been drawn upon in this tracking of the criminal. 1. The hand of a criminal. 2 & 3 Plaster casts of footprints made with a booted and a naked foot. 4. Imprint of a criminal knee.

The scientific detective determined that the imprint was left by striped trousers made in Manchester. 5. A certain burglar bit a section out of a piece of cheese and threw the rest away. This is a cast of the bitten section. It showed that one tooth was missing and it enabled the police to find the burglar. Professor Gross, who founded the chair of criminalistics in the University of Graz, could look at the footprints of a man and determine whether he had been walking or running, whether he had been carrying a package or not, and even whether he was suffering from a disease.

Bertillon, who did far more than give us the measurement system of classifying convicted criminals, went so far as to gather information on to methods used by Parisian shoemakers in nailing heels in place; for each shoemaker used a definite number of nails and hammered them in according to a plan of his own. Bertillon had only to look at a footprint in order to deduce the probable maker of the shoe that left the imprint. The first step taken by a European criminalist is to make a scientific study of the scene of the crime.

He uses either the scientific method of photographing devised by Bertillon – a method that makes it possible to measure with the utmost refinement on the photograph the distance of one object from another – or else he makes

an accurate drawing, noting the exact position in which every object is found. Sometimes he even makes a three-dimensional plaster cast. He looks always for what is technically called “ the error in the situation” – in other words, the little unforgotten thing or act that betrays. Gross once found the dead body of an old man swinging from a chandelier.

Suicide was the verdict of the police, and suicide was the first conclusion Gross drew. Then he studied his drawing. There was no chair near the man! Somebody must have hung him to the chandelier. The doctors assured Gross that the man had died a natural death! Then the real search began. Gross found that the old man had been left in charge of two servants. One night, after he had fallen asleep, they decided to go to a dance. When they returned they found their charge dead. Frightened, the valet suggested that it would be well for them to make it appear as if the old man had committed suicide.

Together they hung him, but they forgot to kick over the chair. These men deal not only with the physical facts of crime, but also with the psychology of criminals. It is important to learn everything that can be learned of the loves and hates of thieves and pickpockets, their superstitions, and their slang. The criminal mind is not a normal type. It is firmly believed by thieves, in Europe at least, that something must be left on the scene of the crime to avoid detection. One man left behind two or three matches torn from a block of the kind given away in cigar stores.

Professor Reiss, of the University of Lausanne, picked them up. He ordered all the suspects searched. A block of matches was found in the pocket of

one. The two incriminating matches dovetailed into the stubs. We need laboratories in America like those described above. Although the term criminalistics is often used interchangeably with the term forensic science, it is in fact as the American Academy of Forensic Sciences (AAFS) acknowledge a distinct discipline that operates along with other disciplines under the umbrella of forensic science.

According to the American Board of Criminalistics, criminalistics is defined as that profession and scientific discipline directed to the recognition, identification, individualization, and evaluation of physical evidence by application of the physical and natural sciences to law-science matters. In outlining the type of work criminalists undertake the AAFS note that ‘ criminalists analyze, compare, identify, and interpret physical evidence’ and that ‘ The main role of the criminalist is to objectively apply the techniques of the physical and natural sciences to examine physical evidence’.

In relation to physical evidence, The following passage form the AAFS demonstrates the diverse nature of criminalistics. ‘ Physical evidence may be anything: evidence so small that a microscope is needed to see it, or as large as a truck. It may be as subtle as a whiff of a flammable gas at an arson scene or as obvious as a pool of blood at a homicide scene.

The enormous range of material challenges the ingenuity of the criminalist who examines and identifies hair, fibers, blood, seminal and body fluid stains, alcohol, drugs, paint, glass, botanicals, soil, flammables, and safe insulating material; restores smeared or smudged markings; and identifies firearms and compares bullets, tool markings, and foot prints. ‘ The National

Institute of Justice notes that trace evidence is one of the most diverse forensic disciplines because it includes the analysis of hair, fiber, paint, glass, soil, and other particulate matter.

Trace evidence analysis can also include the analysis of botanical material, arson/fire debris, explosives, and/or impression evidence. By definition, therefore, a trace evidence examiner will be called upon to analyse a wide variety of evidence and as such will be proficient in such things as microscopy, spectroscopy, photography, and other analytical instrumentation. The United States army defines ballistics as the branch of applied physics that studies the motion of missiles or projectiles of all types and the conditions that influence that motion; which put simply means the study of firearms and ammunition.

When ballistics are examined within a legal context the prefix forensic can then be applied. A very useful defintion of forensic ballistics appeared in a U. S. House Bill back in 2000, which stated that forensic ballistics is “ a comparative analysis of fired bullets and cartridge casings to identify the firearm from which the bullets or cartridge casings were discharged through the identification of the unique characteristics that each firearm imprints on bullets and cartridge casings. The following videos demonstrate how this “ comparative analysis” takes place in the real world. Introduction “ Is it [death investigation] an enlightened system? No, it’s not. It’s really no better than what they have in many Third World countries. ” (Dr. Werner Spitz, Former Chief Medical Examiner, Wayne County, Detroit, Michigan) The first thing one must realize is that the word “ system” is a misnomer, when used in the context of death investigation in the United States. There is no “

system” of death investigation that covers the more than 3, 000 jurisdictions in this country.

No nationally accepted guidelines or standards of practice exist for individuals responsible for performing death-scene investigations. No professional degree, license, certification, or minimum educational requirements exist, nor is there a commonly accepted training curriculum. Not even a common job title exists for the thousands of people who routinely perform death investigations in this country. This report describes a study that focused on the establishment of guidelines for conducting death investigations. Purpose and Scope of the Study

The principal purpose of the study, initiated in June 1996, was to identify, delineate, and assemble a set of investigative tasks that should and could be performed at every death scene. These tasks would serve as the foundation of the guide for death scene investigators. The Director of the National Institute of Justice (NIJ) selected an independent review panel whose members represented international and national organizations whose constituents are responsible for the investigation of death and its outcomes. The researcher organized two multidisciplinary technical working groups (TWGs).

The first consisted of members representing the investigative community at large, and the second consisted of an executive board representing the investigative community at large. The study involved the use of two standardized consensus-seeking research techniques: (a) the Developing A CurriculUM (DACUM) process, and (b) a Delphi survey. In this report, the

author does not attempt to assign responsibility for task (guideline) performance to any one occupational job title (e. g. , Guideline D4 is performed by law enforcement personnel).

Research design and selected methodology focused on the establishment of performance guidelines for death-scene investigations. The research design did not allow TWGs to assume investigative outcomes during the development phase of the project; therefore, no attempt was made to assign a “ manner” of death to individual guidelines (e. g. , Guideline C2 applies to homicide scenes), to maintain objectivity and national practicality. The author does not claim to be an expert in the science and/or methodology of medicolegal death investigation.

This research was based on the collective knowledge of three multidisciplinary content area expert groups. The focus was on the death scene, the body, and the interactive skills and knowledge that must be applied to ensure a successful case outcome. The balance of this introduction outlines the study design and provides basic background information on the selection of the National Medicolegal Review Panel (NMRP) and TWG memberships and the research methodology, its selection, and application. The study findings (investigative guidelines) follow this introduction. Study Design

Identification of NMRP and TWGs The methodology selected for this occupational research required collection of data from a sample of current subject matter experts, practitioners from the field who perform daily within the occupation being investigated. This “ criterion” was used to identify

members of the various multidisciplinary groups that provided the data for this research. The following groups were formed for the purpose of developing national guidelines for conducting death investigations. National Medicolegal Review Panel NMRP members represent an independent multidisciplinary group of both nternational and national organizations whose constituents are responsible for investigating death and its outcomes. Each member of NMRP was selected by the Director based on nominations made by the various associations. The rationale for their involvement was twofold: (a) they represent the diversity of the profession nationally, and (b) their members are the key stakeholders in the outcomes of this research. Each organization has a role in conducting death investigations and in implementing these guidelines. Technical Working Group for Death Investigation (TWGDI) 1.

National Reviewer Network Technical Working Group for Death Investigation (TWGDI) members represent a sample of death investigators from across the country. They are the content area experts who perform within the occupation daily. The following criteria were used to select the members of the TWGDI reviewer network: ? Each member was nominated/selected for the position by a person whose name appeared on the most recent (1995) Centers for Disease Control and Prevention (CDC) national database of death investigation. ? Each member had specific knowledge regarding the investigation of death. Each member had specific experience with the process of death investigation and the outcomes of positive and negative scene investigations. ? Each member could commit to four rounds of national surveying over a 6-month period. A 50-percent random sample (1, 512) of

death investigators was drawn from the Centers for Disease Control and Prevention database. A letter was sent to each member of the sample, inviting him or her to participate in the national research to develop death investigative guidelines or to nominate a person who participates in death investigations.

Two hundred and sixty-three individuals were nominated (17 percent). Nominees were contacted by mail and asked to provide personal demographic data including job title, years of experience, and educational background, in addition to general information (name/address, etc.) necessary for participation in the research. The TWGDI national reviewer network consisted of 263 members from 46 States. The educational backgrounds of the national reviewer network members were as follows: ? Law Enforcement (31. 2%) ? Medical (59. 8%) ? Unknown (9%)

The types of investigative systems represented on the reviewer network were as follows: ? Medical Examiner (16. 6%) ? Coroner (61. 3%) ? Mixed ME/Coroner (22. 1%) The average age of TWGDI members was 47. 6 years. They had an average of 10. 5 years of experience. There were 80. 6 percent (212) males and 19. 4 percent (51) females in the group. 2. Executive Board Representatives from each region were selected to maintain consistency within regions across the United States. These representatives made up the TWGDI executive board. Criteria for selection to the TWGDI executive board were as follows: ?

Each member had specific knowledge regarding the investigation of death. ? Each member had specific experience with the process of death

investigation and the outcomes of positive and negative scene investigations. ? Each member could commit to attend four workshops held within the grant period. TWGDI Executive Board DACUM Workshop In November 1996, the TWGDI executive board met in St. Louis to begin developing the national Delphi survey. The survey content was to reflect “ best practice” for death-scene investigation. DACUM is a process for analyzing an occupation systematically.

The 2-day workshop used the investigative experts on the executive board to analyze job tasks while employing modified brainstorming techniques. The board’s efforts resulted in a DACUM chart that describes the investigative occupation in terms of specific tasks that competent investigators must be able to perform “ every scene, every time. A task was defined as a unit of observable work with a specific beginning and ending point that leads to an investigative product, service, or decision. The DACUM chart served as the outline for the Delphi survey. This initial process resulted in six major areas of work.

In attempts to simplify the survey for the members of the national reviewer network, the areas of work were placed into a logical sequence of events (as they might be performed while investigating a case). Within the five major areas of work (Investigative Tools and Equipment was excluded at this point because tools and equipment are “ things,” not procedural steps), 29 tasks were identified. Within the 29 identified investigative tasks were 149 discrete steps and/or elements. Theoretically, each step and/or element must be performed for the task to be completed “ successfully. The results were placed in survey format for NMRP review and pilot testing. National

Medicolegal Review Panel Meeting In December 1996, NMRP met in Washington, D. C. , to review the DACUM chart and comment on the research methodology proposed by the researcher. The members of the panel recommended modifications to the survey design and approved response selections. Respondents would attempt to rate, by perceived importance, each of the investigative tasks/steps and/or elements on a five-point scale. The Delphi Survey The Delphi technique, although it employs questionnaires, is much different from the typical questionnaire survey.

Developed by the RAND Corporation as a method of predicting future defense needs, the technique is used whenever a consensus is needed from persons who are knowledgeable about a particular subject. The goal of a Delphi survey is to engage the respondents in an anonymous debate in order to arrive at consensus on particular issues or on predictions of future events. The Delphi requires at least four rounds in an effort to obtain a well-thought-out consensus. After the first-round results were received, coded, and recorded, a revised questionnaire was developed for round two.

The second-round survey provided each member of TWGDI with the national median and mean scores for each of the task statements presented, as well as their first-round responses. Respondents were asked to compare their original ratings with the median and mean scores and to revise their original evaluations as they saw fit. This procedure was repeated for each of the four rounds of the survey. Final membership in the TWGDI national reviewer network was 146. This number represents approximately 56 percent of the originally nominated members. Guideline Development

During the 6 months of the Delphi process, both the TWGDI executive board and NMRP met to review survey data (to date) and to begin the process of moving task-based data into guideline format. In May 1997, the executive board met for a 2 and a half day working session in New Orleans to begin the guideline development process. The consensus of the board was to establish 29 guidelines based on the national reviewer network data and present them to NMRP for review. Each guideline would have the following content: ? A statement of principle, citing the rationale for performing the guideline. A statement of authorization, citing specific policy empowering the investigator. ? A statement of policy to the investigator regarding guideline performance. ? The procedure for performing the guideline. ? A statement of summary, citing justification for performing the procedures. In June and July 1997, NMRP met for two, one and a half day working sessions in St. Louis and Chicago to review the draft guidelines developed by the executive board and offer recommendations and changes based on jurisdictional variances and organizational responsibilities.

Those sessions resulted in the final draft of the 29 guidelines for conducting death investigations. Training Guidelines The purpose of the second part of the national death investigator guidelines research was to identify training criteria for each of the 29 guidelines. This research is now completed. For each of the guidelines presented in this report," minimum levels of performance" will be developed and verified by the members of the various TWGs. These " training guidelines" will provide both individuals and educational organizations the material needed to establish and maintain valid exit outcomes for each investigative trainee.

Guideline Validation In this initial research, 29 investigative tasks were identified. Each task was developed into a guideline for investigators to follow while conducting a death investigation. Although each TWG believed in the validity of each guideline, no attempt was made to validate actual significance (e. g. , if guideline C1 is trained and implemented, a [%] decrease in poor scene photographs should occur). The researcher is currently developing a national validation strategy for the implementation and validation of each guideline. Why Cases Get Cold

Conventional wisdom in homicide investigations holds that speed is of the essence. The notion is that any case that is not solved or that lacks significant leads and witness participation within the first 72 hours has little likelihood of being solved, regardless of the expertise and resources deployed. Over time, unsolved cases become “ cold. ” Cases most likely to be classified as cold include gang- and drug-related deaths; cases involving immigrants, transients, and homeless or unidentified people; unclassified deaths; and unsolved police shootings.

Cold cases are among the most difficult and frustrating cases detectives face. These cases are, in effect, cases that other investigators, for whatever reason, could not solve. Law enforcement agencies, regardless of size, are not immune to rising crime rates, staff shortages, and budget restrictions. Rising crime rates can tax the investigative and administrative resources of an agency. More crime may mean that fewer cases are pursued vigorously, fewer opportunities arise for followup, or individual caseloads increase for already overworked detectives.

Transfers, retirements, and other personnel changes may force departments to rely on younger, less experienced investigators to work cases, often unsuccessfully. An increase in homicide rates can increase the caseloads for the staff of crime labs and county coroners' and medical examiners' offices. This, in turn, can lead to reports that are delayed for months, increased chances for error, and overlooked evidence. Support services, if available at all, may be spread thin during high-profile cases that force investigative labs to expend large amounts of manpower disproportionately.

These overloads can either slow investigations or discourage some detectives from using the support services at all. Criminalists and evidence technicians can also face backlogs that prevent them both from attending all crime scenes and from conducting prompt followup work. As a result, crucial scientific evidence, especially blood and trace evidence, goes uncollected. Investigators with heavy caseloads may be forced to rely on photographs of evidence or on witness testimony, which may be strongly challenged by defense attorneys. All the obstacles that hamper homicide investigations in their early phases contribute to cold cases.

Cold cases may even allow more murders to be committed. People who have killed once, if not arrested, may continue to kill. Police failure to solve murder cases and to put the offenders behind bars often leaves the community feeling helpless. If they feel the police are not doing their job in protecting the community and witnesses of crimes, members of the community may also be less willing to cooperate with police. How Cold Case Squads Work A cold case squad may be a viable option for a jurisdiction that is plagued by a significant number of unsolved murders.

Some cold case squads are formed because the volume of new cases or police initiatives prevents any work from being done on old cases. Some squads are formed out of convenience when a decline in new murder cases provides departments with the personnel and other resources necessary to begin investigating old cases. The specific duties of cold case squads may vary among law enforcement agencies. Nearly all of these squads review and continue the investigation of unsolved homicides or suspected homicides in which the lead detective initially assigned has retired, transferred, or otherwise left the case.

Cold case squads can be especially useful in locating and working with past and potential witnesses and reviewing physical evidence to identify suspects. The squads may investigate unsolved homicides currently assigned to a homicide detective when deemed necessary by supervisors – usually when the lead detective has exhausted all leads. Cold case squads also perform an outreach and networking role by assisting other jurisdictions with homicide investigations as appropriate. The most important component of cold case squads is personnel; the squads must have the right mix of investigative and supervisory talent.

The staffing model used for cold case squads is determined mainly by whether the squad works full- or part-time and whether it is based within a police agency or a prosecutor’s office. Cold case squads can consist of any of the following: ? Single full-time investigator. ? Squad of two or more full-time investigators. ? Investigators working on cold cases in addition to other investigative duties. ? Former homicide detectives in a part-time or volunteer capacity. ? One-time cold case squads (assigned to high-profile unsolved

cases). ? Occasional squads. Investigators in a special squad based in a district attorney’s or state attorney general’s office. ? Interdepartmental partnerships (county or regional cold case squads). Cold case squads usually include at least the following: ? A supervisor or team manager (usually a lieutenant) from the homicide division, who acts as a liaison among police management, participating law enforcement agencies, the local community, and the press. ? A supervisor (usually a sergeant), who coordinates the daily operations of the team. ? Investigators.

Squads may also contain administrative or “ light-duty” detectives to enable full-duty detectives to devote their time to other cases. These detectives review cases, write case summaries, list evidence and witnesses, and perform workups on witnesses and potential suspects to gather current information such as addresses and recent arrests. Light-duty detectives also compile any documentation or records that are not already in the case file. Using External Resources Squads may also use, as needed, the services of the Federal Bureau of Investigation (FBI) and U.

S. Marshals Service, medical officer’s or coroner’s office, retired personnel, college students or interns, internal or external criminalists or other specialists (forensic, fingerprint, firearms), and administrative staff. A permanent, fully staffed and supported cold case squad can be more advantageous than a temporary or one-time squad because investigative staff and resources focus solely on solving cold cases and are more likely to be applied to cases over a long period. Budget and staff constraints, however, may determine the particular squad setup.

Not all cold case squads reside in municipal police departments. The Naval Criminal Investigative Service (NCIS), like the Army Criminal Investigation Division and Air Force Office of Special Investigations, investigates cold cases involving homicides that occurred on military bases or involved military personnel. The amount of formal cooperation between military and local law enforcement personnel is limited by the scope of their jurisdictions. NCIS is unique among the armed forces investigative services in that its cold case investigations are all performed as undercover operations.

The U. S. Marshals Service has a number of joint-agency fugitive task force units around the nation. Local or state police departments often send an officer to work with the task force, and a cold case squad may gain assistance in this way. Cold case squads should contact their local Marshals' office to determine what assistance may be available for a specific investigation. The FBI assists local law enforcement agencies with cold cases through its National Center for Analysis of Violent Crimes, which is headquartered in Quantico, Virginia.

The FBI formerly helped police departments form cold case squads, but it now focuses its cold case assistance on cases that involve gangs and drugs, as a part of the Safe Streets Violent Crimes Initiative. Choosing Personnel Because cold cases can be very labor- and time-intensive and may require innovative investigative techniques, squads are most effective when they consist of investigators who have significant experience in investigating and prosecuting various types of homicide cases. Traits considered essential for cold case investigators include: ? Seniority. Strong communication and interpersonal skills (including interviewing and interrogation ability). ? Strong

research skills. ? Patience. ? Creativity. ? Persistence. ? High motivation level. ? Enthusiasm for the job. Some cold case squads encourage additional training about modern criminalistic technology and about services for victims' families (such as support meetings and witness protection resources). Cold case squads offer various types of additional compensation, such as the ability to work regular daytime shifts, earn increased salary and rank, and use separate ffices and equipment (including automobiles). The size of the staff determines the number and type (team or individual) of investigations that can be conducted. Several investigators may be assigned to a case depending on its nature, the type of work involved, and the size of the squad. If possible, the cold case squad should be given an office separate from that of the general homicide squad. Separate work space may help prevent cold case detectives from being drawn into general homicide cases, especially high-profile cases that require more resources.

In some instances, officers rotate periodically between general homicide assignments and cold case squad investigations. Reviewing Cases The process by which cases are reviewed and considered for referral to the cold case squad varies. These cases are usually at least a year old and cannot be addressed by the original homicide squad because of workload, time constraints, or the lack of viable leads. Cases are referred to a cold case squad by the homicide squad supervisor or other homicide detectives.

In many instances, the supervisor, either with or without the input and consensus of the squad, decides which cases are referred to the cold case squad. In some instances, prosecutors will reopen cold cases or initiate cold case investigations with state and local law enforcement agencies.

Witnesses that were previously uncooperative or unknown may come forward with information that leads to the reinvestigation of a cold case. Cases are reviewed and prioritized according to the likelihood of an eventual solution.

The highest priority cases are those in which the murder victim, or even a second surviving victim, has been identified; the death was ruled a homicide; suspects were previously named or identified through forensic methods; an arrest warrant was previously issued; significant physical evidence (such as fingerprints, DNA, or shell casings) can be reprocessed for further clues; newly documented leads have arisen within the last 6 months; and critical witnesses are accessible and willing to cooperate.

High (but not highest) priority cases generally are those in which witnesses can identify suspects; information or evidence can identify possible suspects; or the initial investigation identified witnesses who could not be located or need to be reinterviewed.

Cases of moderate priority include those in which preserved evidence can be processed and analyzed through modern technology (such as an automated fingerprint identification system, DNA analysis, or DRUGFIRE, a computerized program that tracks signatures on spent shell casings) and whose status as a homicide can be reclassified depending on the results of the additional laboratory analysis. Cases that generally receive the lowest priority are those in which no known physical evidence or witnesses are available to help identify a suspect.

Cold case investigators usually start by reviewing the case file, talking with all previous investigators tied to the case, and obtaining any notes they may have that are not in the case file. Investigators are particularly interested in reviewing or locating any gaps of information in the case, including people mentioned in statements that do not have a corresponding interview report in the case file, undocumented investigative actions (such as search warrants without documentation of service), and so forth. Any available evidence is assessed for future usability and additional analysis. The original suspect is rarely reinterviewed.

After reinterviewing significant witnesses and working all viable leads, if no suspect can be identified, the detective writes a summary documenting the followup investigation and recommending either further investigation or inactivation. A homicide case can be closed either through arrest of the suspect or by administrative action. The arrest of a suspect renders a case closed regardless of whether the suspect is convicted or even brought to trial. A case may be closed administratively if the suspect for which the department has probable cause either has died or has been prosecuted for another crime and is behind bars for life.

The Lindbergh Kidnapping On March 1, 1932, Charles Lindbergh Jr. , the 20-month-old son of the famous aviator, was kidnapped, and although a ransom of $50, 000 was paid, the child was never returned. His body was discovered in May just a few miles from his home. Tracking the circulation of the bills used in the ransom payment, authorities were led to Bruno Hauptmann, who was found with over $14, 000 of the money in his garage. While Hauptmann

claimed that the money belonged to a friend, key testimony from handwriting analysts matched his writing to that on the ransom notes.

Additional forensic research connected the wood in Hauptmann’s attic to the wood used in the make-shift ladder that the kidnappers built to reach the child’s bedroom window. Hauptmann was convicted and executed in 1936. Ted Bundy Although serial killer Ted Bundy was responsible for an estimated 30-plus murders, there was little physical evidence to connect him to the crimes when he was arrested in 1975. Two years later, having been convicted only of kidnapping, Bundy was preparing to stand trial for murder in Colorado when he escaped and headed to Florida.

There, he killed three more people early in 1978, and when he was finally captured in February of that year, the physical evidence in those cases led to his conviction. Most crucial was the matching of a bite mark on the buttock of victim Lisa Levy to the Bundy’s distinctive, crooked and chipped teeth. He was convicted also of the murder of 12-year-old Kimberly Leach based on fibers found in his van that matched the girl’s clothing. Bundy was put to death in 1989. Forensic science is shedding new light on one of the most notorious murder cases in British history.

In 1910 American born Dr Hawley Harvey Crippen was found guilty and subsequently hanged for the murder of his wife Cora. Crippen is said to have poisoned Cora, dismembered her body and then buried her remains in the cellar of their London home. However, in a remarkable twist to a case that has spawned intrigue and interest for almost a century a team of forensic scientists from Michigan State University believes that modern forensic

science proves that the remains buried in Crippen’s cellar could not be those of his wife.

The forensic team behind this amazing finding was David Foran, a forensic biologist and director of MSU’s forensic science program, forensic toxicologist John Harris Trestrail and genealogist Beth Wills. The basis for their claim arose from DNA analysis conducted on a microscope slide sample that was presented as evidence during Crippen’s trial. During the trial forensic pathologist Bernard Spilsbury testified that the sample revealed an abdominal scar consistent with Cora Crippen’s medical history, testimony that helped convince the jury that the remains were those of Cora.

The simple premiss underpinning extremely complex forensic DNA analysis is that if Dr Hawley Harvey Crippen murdered his wife and disposed of remains, then those remains would share specific DNA characteristics with Cora Crippen’s living relatives. However, they do not! As David Foran notes “ We took a lot of precautions when doing this testing… We just didn’t stop. We went back and started from scratch and tested it again. The DNA in the sample is different from the known relatives of Cora Crippen. ” Which of course begs the question, whose remains were buried in the cellar?