CHAPTER 1 An Introduction to Forensic Criminology

Brent E. Turvey and Wayne Petherick

The only guarantee that the administration of justice is truly democratic from initiation to conclusion is that the value systems of those who administer such justice are indeed democratic. The most effective means ever found to insure the incultation of such a value system is analytic education. Therefore, the methods discussed, the research cited, and the practices advocated by scientists in their scientific work are to impart the necessary scientific and forensic philosophies required for casework and analysis in these environments. In doing so, we will discuss the various kinds of forensic criminologists currently in practice: the types of analyses they perform in their forensic duties, and their professional interactions with, and even dependence upon, each other.

First, however, we must generally discuss the nature and scope of criminology; the core principles of criminology; and the relationship of both to the legal system. Then we will discuss economic and social factors that are related to the criminal justice system. We will close with a discussion of the relations of both to the legal system. We will then discuss the types of analyses they perform in their forensic duties, and their professional interactions with, and even dependence upon, each other.

This textbook is intended to provide readers with an applied understanding of the principles and practice of forensic criminology, to outline its value within investigative and forensic purposes, and to impart the necessary scientific and forensic philosophies required for casework and analysis in these environments. In doing so, we will discuss the various kinds of forensic criminologists currently in practice: the types of analyses they perform in their forensic duties, and their professional interactions with, and even dependence upon, each other.

First, however, we must generally discuss the nature and scope of criminology; the core principles of criminology; and the relationship of both to the legal system. Then we will discuss economic and social factors that are related to the criminal justice system. We will then discuss the types of analyses they perform in their forensic duties, and their professional interactions with, and even dependence upon, each other.

This entire text is written in the language of science. While forensic criminologists may practice in different jurisdictions, and even in different countries, under varying legal codes, they are scientists first. That science and its practice must exist independent of any court before it is worthy of legal service. Therefore, the methods discussed, the research cited, and the practices advocated...
are universal—they are not bound by province, culture, or the borders around nations. As will be made clear throughout this work, the law cannot dictate what science is or is not; it can only rule on its admissibility.

CRIMINOLOGY

Criminology presents a terminological quagmire to the neophyte.

MacMillan and Roberts (2003, p. 317)

Criminology is the scientific study of crime and criminals. As described in Terblanche (1995, p. 10), “Criminology, broadly speaking, studies crime, criminals, victims, punishment and the prevention and control of crime. The most important role of a criminologist is to study crime, and to interpret and explain crime.” It is also multidisciplinary in both theory and practice.

This inclusive definition brings many researchers and practitioners from a variety of disciplines under the same aegis. However, it also sets strict limits on what criminology is and who practices it. This is owing to the caveat that a criminologist must also be a scientist—involved in the application of the scientific method to problem solving and the subsequent development of scientific knowledge. A useful discussion regarding the relationship between scientific knowledge, the scientific method, and the scientist is provided in Chisum and Turvey (2006, pp. 86–87):

Education in the sciences and specialized training help define a scientist, not just experience, and even this is not enough. Though it often escapes notice, a scientist is actually defined by their adherence to the scientific method when solving problems such as how something works, why something does not work, or how something happened. Anyone who fully comprehends and diligently employs the scientific method is a scientist, lab coat or not. Though these seemingly limited criteria may appear to the uninitiated as a lowering of the bar, they actually raise it. A degree requirement, for example, even in the hard sciences, in no way ensures student exposure to, or comprehension of, the scientific method.

... The scientific method is a way to investigate how or why something works, or how something happened, through the development of hypotheses and subsequent attempts at falsification through testing and other accepted means. It is a structured process designed to build scientific knowledge by way of answering specific questions about observed events through analysis and critical thinking. Observations are used to form testable hypotheses, and with sufficient testing hypotheses can become scientific theories. Eventually, over much time, with precise testing marked by a failure to falsity, scientific theories can become scientific principles. The scientific method is the particular approach to knowledge building and problem solving employed by scientists.

Scientific knowledge is any knowledge, enlightenment, or awareness that comes from examining events or problems through the lens of the scientific method. The accumulation of scientific knowledge in a particular subject or discipline leads to its development as a science. The classic definition of a science, as provided by Thornton (1997, p. 12), is “an orderly body of knowledge with principles that are clearly enunciated,” as well as being reality oriented and having conclusions susceptible to testing.

A strong cautionary is needed here. The use of statistics does not make something scientific. The use of a computer does not make something scientific. The use of chemicals does not make something scientific. The use of technology does not make something scientific. Science is found in the interpretations. Was the scientific method used to synthesize the knowledge at hand, and has that knowledge been applied correctly to render interpretations, with the necessary humility? The relationship of scientists, the scientific method, and science is thus: Scientists employing the scientific method can work within a particular discipline to help create and build a body of scientific knowledge to the point where its theories become principles, and the discipline as a whole eventually becomes a science. And the discipline remains a science through the continued building of scientific knowledge.

Given the requirement of scientific practice, not all of those who study and then go to work in the milieu of crime and criminals are necessarily criminologists. For instance, this prohibition excludes those who perform work within the criminal justice system without both a scientific background and an interpretive mandate.

THE CRIMINAL JUSTICE SYSTEM

“For the way we administer justice is by the adversary proceeding, which is to say, we set the parties fighting.”

Charles P. Curtis, Legal Ethicist (from Curran and Shapiro, 1970, p. 32)

The criminal justice system in most western countries is the network of government and private agencies that deal with accused and convicted criminals. It is adversarial in nature. In an adversarial system, there are always at least
States or counties without a public defender system, the court appoints legal counsel to indigent defendants, being financially unable to afford private counsel. Indigent defendants, being financially unable to afford private counsel, are represented by the public defender. In states or counties without a public defender system, the court appoints legal representatives to indigent defendants from a list of available local attorneys referred to as “appointed counsel.”

Adversarial Friction

These adversarial roles have created a great deal of friction within the criminal justice system and related educational efforts. Criminal justice educators tend to be associated with law enforcement and prosecutorial agencies—as this facilitates research opportunities, student internships, and future employment. Subsequently, criminal justice students tend to be taught and encouraged in that direction—that there are right and wrong good and bad sides to the justice system. This bias is reflected in the general under-representation of defense-oriented or science-oriented counterbalance in criminology texts and criminal justice curriculum. Friction is created when an attitude is taken to the workplace, as those taught in such an environment may treat non-law enforcement-oriented efforts in the criminal justice system with derision or even hostility.

Both authors have witnessed firsthand how pervasive and damaging this attitude can be to the administration of justice. From instructors who convey a very one-sided view of the justice system, to police officers who hold a rigid “us-and-them” attitude; to prosecutors who see everything as black and white—perceiving that anyone who is not on their side, supporting their cause or theory, is an enemy of the state. From the start to finish, there are those who take sides and coerce others to do the same—often to no good end.

For example, one of the authors (Petherick) was involved in the examination of a case involving a police officer who had accused his former girlfriend of stalking him. She was subsequently arrested and charged, and had several related court appearances. The cost to the accused and her family was rising, and the risk of losing her liberty swag back and forth. The family called the author for assistance, and, upon scrutiny, more than a few inconsistencies became evident. As a matter of course and due diligence, a number of witnesses in relation to the case were contacted and further information sought. During one inquiry about the alleged behavior of the complainant (a police officer, recall), the author was asked the question “What have you got against the cops?” Of course, there was no agenda against the police as a whole, but a concern about the behavior of one member alone.

However belligerent and unyielding it might sound, a widespread attitude within law enforcement is that “if you’re not with us, you’re against us.” Consequently, any action or criticism taken against one may well be viewed as being against the group as a whole. This issue will be discussed further throughout the text. Of course, to the vast majority of ethical, law-abiding, and professional law enforcement officers, this view is absurd. To the professional law enforcement officer, any individual actions that harm the citizenry or reflect poorly on policing as a whole are appropriately regarded as careless, to be screened for regularly, and removed upon discovery.
Composition of the Criminal Justice System

The criminal justice system itself is often characterized as being composed of "agencies responsible for enforcing criminal laws, including legislatures, police, courts, and corrections." (Reid, 2003, p. 355). This is similar to the perspective offered in Sullivan (1977, p. 157), "The general view of criminal justice reflects a system of three separately organized functions: the police, the courts, and corrections. Each has a distinct role, yet they are interrelated." This conceptualization, while generally accurate in most countries, is prosecution oriented. As it prevails, many texts and courses on the subject of police science and criminal justice administration have, historically, failed to acknowledge the non-law enforcement and non-prosecutorial components of the justice system. That is to say, they fail to adequately discuss the role of the defense and private forensic examiners—if they are mentioned at all.

With respect to forensic practitioners, this one-sided view of adversarial systems dates back to the time when forensic services, such as evidence examination, death investigation, and mental health evaluation, were housed almost exclusively within government institutions and police agencies. While a community of independent forensic practitioners has long existed in private practice, they were until recently "available only to individuals willing or able to pay for them or those having an attorney or other advocate to secure the services of an expert" (Anderson and Winfree, 1987, p. xix). Consequently, they were few in number. Now the use of private forensic practitioners of all kinds is widespread and even commonplace in criminal and civil courts—especially in the United States. The reason for this change will be discussed later in the upcoming section on forensic criminology.

Suffice it to say that the modern criminal justice system consists of the following major branches: law enforcement, forensic services, judiciary, and corrections. These remain generally the same whether one is in the United States, the United Kingdom, Canada, or Australia. Only the laws and their interpretation vary.

Law enforcement is the branch of the criminal justice system that deals with reported crime. Law enforcement agencies are intended to enforce the law—to ensure that citizens act lawfully and to investigate the nature and extent of unlawful acts. In that capacity they are meant to investigate criminal complaints to establish what happened. When they believe a crime has been committed, law enforcement seek to identify and arrest available suspects. In some cases this may also involve the collection, submission, and/or storage of physical evidence by crime scene investigators. As explained in Sullivan (1977, p. 145):

"It is the job of the police to enforce the law. Thus, officers must remember that they are primarily fact-finders for their department and have no authority or control over the judicial or legislative branches of government. If the police effectively enforce the law, they have done all that is expected.

The
criminal
justic
system
This conceptualization has changed little since criminologist and police reformer Elmer Graper wrote of law enforcement duties in the early 1920s (1925, p. 5):

Upon the policeman we depend for protection. He is expected to preserve the public peace. His presence acts as a restraining influence upon the lawless elements who would endanger life and property. When crimes are committed the policeman must bring offenders into court.

Law enforcement officers and investigators work for government entities as dictated by jurisdiction and statute, to include federal (i.e., national), state, county/boroughs, and municipal (e.g., city, village) authorities.

Forensic services refers to the branch of the criminal justice system that deals with the examination and interpretation of evidence—physical, behavioral, and testimonial alike. Government-employed analysts, technicians, criminalists, pathologists, and forensic mental health experts perform a wide variety of forensic services on behalf of the state generally for the police and prosecution. In the United Kingdom, this is done by Forensic Science Services (FSS; see http://www.forensic.gov.uk), which is a government-owned company that exists independent of law enforcement authority. FSS has contracts to provide forensic examinations for law enforcement in England, Wales, and even the Royal Canadian Mounted Police (RCMP). In Australia, government forensic services are provided as an adjunct to the health department. For example, Queensland Health Forensic and Scientific Services are responsible for performing autopsies and forensic analyses out of the John Tonge Centre in Brisbane. Each state has its own regional forensic center. However, law enforcement officers still perform evidence collections and certain kinds of forensic analyses in both countries.

In the United States, however, a large number of forensic professionals work directly for government law enforcement agencies, causing a potential conflict of interest that must be acknowledged and carefully managed. In Australia and the United Kingdom, most government agencies performing forensic services are independent of law enforcement affiliation and oversight.

Another distinguishing feature of the forensic community in the United States is the large number of privately employed, independent forensic examiners. They are regularly engaged to perform examinations for the prosecution and the defense alike. When state or private funds are available, as happens in major cases or those involving financially capable defendants, this community of forensic professionals may be hired to provide a necessary counterbalance within the adversarial system, though access is by no means equal and varies from state to state. It is therefore reasonable to explain that not every available forensic service is an adjunct of the government, though it is more often the case than not.

The availability of forensic expertise is a definite issue within the justice system, as it is a scarce resource. In some jurisdictions (Australia, for example) there are few if any nongovernment forensic labs, and even attorneys in civil cases may rely on state government labs for analyses. It is also fair to say that the lack of available government forensic services, private practitioners, and related funds for either has caused serious case backlogs and delays of justice worldwide.

The judiciary is the branch of the criminal justice system that deals with the adjudication and exoneration or punishment of criminal defendants. This includes everything from arraignment to acquittal; from sentencing to appeal. A judge or jury, referred to as the trier of fact, determines the legal guilt or innocence of a criminal defendant. Subsequently, the trier also decides the terms of punishment, also referred to as the sentence. A short list of those involved in the judiciary includes government prosecutors and public defenders, private defense attorneys, magistrates, judges, investigators for the prosecution, investigators for the defense, investigators for the court, paralegals, court reporters, court clerks, court bailiffs, and the jury, which is drawn from the local citizenry.

Corrections is the branch of the criminal justice system that deals with the probation, incarceration, management, rehabilitation, treatment, parole, and sometimes execution of convicted criminals. Many law enforcement agencies and courthouses have on-site jail facilities to enable short-term incarceration of offenders involved in lesser crimes, or to accommodate the local court appointments of those "visiting" from other correctional institutions. However, federal, state, and county penitentiaries are designed to facilitate the long-term sentences of convicted felons. Additionally, there are hospitals outside correctional institutes that have forensic units providing offender mental evaluations, treatment, and residence. Some of these institutions are government owned and operated (county, state, and federal), whereas others are privately contracted. A short list of those professionals involved in corrections includes probation officers, corrections officers, corrections investigators, corrections counselors, parole officers, intelligence officers, social workers, and members of various parole boards.

Employment in the Criminal Justice System
Most of those students enrolled in undergraduate criminology and criminal justice programs at college or university do so to seek employment or advancement within the criminal justice system. Students work toward associate and bachelor degrees in criminology, criminal justice, and criminal justice.
administration with the following occupations in mind, either immediately or pursuant to specialized postgraduate and graduate education (with assistance from Hoover, 1995):

- Police officer/law enforcement
- Military police/investigations
- Federal investigator
- Evidence technician (a.k.a. Crime Scene Investigator)
- Medico-legal investigator
- Forensic scientist
- Legal aid
- Paralegal
- Prosecutor
- Defense attorney
- Court administrator
- Correctional officer
- Probation officer
- Parole officer
- Social worker

Ironically, none of the preceding professionals are actually criminologists (save those in the forensic sciences, such as the criminologist—as they are by definition scientists working in subdisciplines of criminology). However, success in their work relies in large part on peculiar knowledge of criminology and the criminal justice system. So while they may not become criminologists in practice, study in a related degree program is highly recommended if not required for proficiency, pay raises, and promotions.

This is a good time to point out that criminology itself isn’t just an amalgam of semi-related disciplines. Rather, many disciplines benefit greatly from those with criminological knowledge. As a consequence, professionals with related degrees can often be found putting them to good use in a variety of fields and occupations from human resources, corporate security, to insurance and beyond. The reason is that the study of criminology provides a multidisciplinary foundation relating to government, people, behavior, and law—which affects everything and everyone. So just because one studies criminology does not mean he or she is locked in to a particular career track with limited options. In fact, precisely the opposite is true.

THE DOMAIN OF CRIMINOLOGY AND CRIMINOLOGISTS

Strange as it may seem, the contents and boundaries of criminology have never been adequately defined. (Reckless, 1955, p. 6)

No matter which authority, text, or reference one looks to for guidance, the response is generally the same: the boundaries of criminology, as a field, are broadly and poorly drawn. This hasn’t kept it from being a reliable and valid enterprise when actual scientists are involved, or from providing useful theories and references to those working in the criminal justice system. But it has caused more than enough confusion.

One critical omission from criminology that has helped to restrain vagaries in other professions is the lack of a governing or accrediting body whose purpose is to ensure that standards are met and maintained. While there are a number of criminological organizations around the world, few if any actually dictate membership to the profession through a vetting of educational and professional achievements. This, undoubtedly, has resulted in no small amount of deception and brigandry among its practitioners and may have gone a long way in undermining criminology (and specifically, forensic criminology) as a discipline capable of addressing complex social and legal problems.

The Domain

The domain of criminology is vast, involving any field or practice that intersects with the scientific study of crime and criminality. It looks at these issues from any available angle. As shown in the preceding section, criminology is therefore a field of study that is composed of and informed by an amalgam of subdisciplines. As explained in Reckless (1955, p. 7):

Although criminology is a behavioral science as well as an applied science, it is also a highly synthetic science and not at all an exact science like physics and mathematics. It receives its contributions from experts in such disciplines as biology, anthropology, physiology, medicine, psychiatry, psychology, sociology, economics, law, political science, and penalology and corrections.

Another similar short list of those disciplines that have contributed to the development of criminological theory and research includes "philosophy, history, anthropology, psychology, psychiatry, medicine, biology, genetics, endocrinology, neurochemistry, political science, economics, social work, justice, geography, urban planning, architecture, and statistics" (Williams, 1995, p. 179). Aside from the obvious, these refer to professionals such as the historian who studies criminal patterns of the past, the neurochemist researching neurotransmitter activity in the criminal brain, the economist who studies crime and poverty trends, and the architect who studies and designs prisons.

All these professionals have their fields, and more, comprise or inform the multidisciplinary fabric of criminology as a composite field of study.

A useful way to define some of the discrete edges of that fabric, to identify the domain of criminology itself as it is woven, is to categorize the major
areas of criminological research apart from professionals and their methods, including:

- The study and development of methods of crime detection and reconstruction
- The study and development of methods of criminal identification
- The study of the motives, causes, and consequences of crime
- The study of crime and deviant behavior
- The study of crime rates
- The study of crime victims
- The study of criminal justice system processes, interactions, and outcomes
- The study of crime patterns and deterrence

For example, crime may be detected by the criminalist identifying evidence from a scene and then reconstructed by a forensic scientist combining the results of several other forensic analyses; a criminal may be identified by a crime analyst using modus operandi patterns, or by a criminalist using DNA from the criminal’s blood; criminal motives may be inferred by a profiler, and deviant sadistic tendencies may be inferred by a forensic psychologist; burglary rates in a given neighborhood may be compiled and interpreted by a statistician; victim occupational risk factors may be studied by a sociologist; and the wrongful conviction rate of a particular race may be studied by a legal scholar. Each of these professionals contributes to criminology as a scientific body of knowledge, puts criminological knowledge to use, or both.

Consider the following hierarchy of criminology subjects, featuring forensic criminology, its related subdisciplines and associated specialties:

I. Criminology
   a. Applied Criminology
      i. Community Policing
      ii. Corrections/Penology
      iii. Criminal Justice Administration/Police Science

II. Forensic Criminology
   a. Criminal Investigation
      i. Crime Scene Analysis and Case Linkage
      ii. Crime Scene Investigation
      iii. Criminal Profiling
      iv. Fire Scene Investigation
      v. Interview/Interrogation
      vi. Investigative Practice and Procedure
      vii. Medicolegal Investigation
      viii. Preventing/Defending Investigation
      ix. Polygraph
      x. Threat Assessment or Risk Assessment

III. Forensic Science
   a. Crime Reconstruction
      i. Accident Reconstruction/Forensic Engineering
      ii. Bloodstain Pattern Analysis
      iii. Shooting Incident Reconstruction
      iv. Wound Pattern Analysis
   b. Criminalistics
      i. Drug Chemistry/Analysis
      ii. Forensic Biology
         1. DNA
         2. Serology
      iii. Fire Debris Analysis
      iv. Trace Evidence Analysis
         1. Commercial Materials Analysis
         2. Fiber Analysis
         3. Glass Analysis
         4. Hair Analysis
         5. Soil Analysis
   c. Digital Evidence Analysis
   d. Equivocal Death Investigation
      i. Equivocal Forensic Analysis
      ii. Psychological Autopsy
   e. Fingerprint Analysis
   f. Footwear Pattern Analysis
   g. Forensic Dentistry/Odontology
   h. Forensic Nursing
   i. Forensic Pathology
   j. Forensic Toxicology
   k. Questioned Documents

IV. Forensic Victimology
   a. Firearms & Tool Mark Analysis
      i. Questioned Documents
   b. Crime and Deviance
   c. Crime Statistics
   d. Crime Theory
   e. Criminal Motivations

V. Law
   a. Criminal Law
There are as many different types of criminology practitioners as there are of criminologists and its subdisciplines. One way to distinguish this wide assortment is by their formal association with the profession. First, there are those who refer to themselves as criminologists, and those who do not.

Formally trained criminologists are for the most part social scientists with graduate- or doctoral-level education employed by universities (often dictated by institutional policy and employment requirements). As theoretical as this may seem, such positions are heavy with application, or at least its potential. As explained in van der Hoven (2006, p. 156):

"...it can be stated that criminologists are trained in the social sciences and focus mainly on the causes, explanation and prevention of criminal behaviour. The study field includes the profiling of offenders as well as victims of crime. The main emphasis is therefore on the individuals involved in the criminal act."

Dr Irma Labuschagne (2003, p. 6) rightly points out that criminology not only focuses on individual criminal behaviour, but also on all environmental circumstances, as well as the context within which the criminal was functioning when the crime was committed.

Criminologists specifically study the criminal in all his facets, such as causal factors contributing to the criminal event, predisposition (e.g., personality makeup, genetic factors), precipitating factors, triggering factors, the interaction between the offender and the victim, victim vulnerability, victim rights, role of the victim in the criminal justice process, the criminal justice process, the prevention of crime and victim support, etc. Criminological studies involve personality and sexual deviance, for example the artificial personality, paedophilia, violent offenders, rapists, and phenomena such as domestic violence, school violence and workplace violence.

Criminologists focus on the causes, dynamics, theoretical explanation and prevention of violent behaviour. They also study the offender's patterns of criminal behaviour in the past to predict his or her behaviour in future.

Professional criminologists are easily identified by their formal education—most often at the doctoral level in criminology, sociology, or criminal justice—and by the nature and extent of their research publications. Though infrequently employed by the police in our modern justice system, "it is the police who are relying most heavily on criminological research to make substantial changes in basic structure and methods of operating" (Williams, 1995, p. 182).

As a behavioral scientist, the criminologist is distinguished from those in the medical health professions, such as the psychologist and the psychiatrist, by virtue of a focus on examining causes, interactions, and patterns of criminal behavior rather than specific diagnoses and treatment (van der Hoven, 2006).

We have already explained that some of the work in the subdisciplines of criminology is theoretical and abstract research, related to the identification and scrutiny of various criminal phenomena. Conversely, some of it is practical and concrete, involving the hands-on application of criminological research and analytical processes to resolve questions related to criminal inquiry, legal disputes, and even social problems.

This leads us necessarily to forensic criminology.

**FORENSIC CRIMINOLOGY**

Cuia, quid, ubi, quibus auxilia, cur, quando, quando?

_Offered at the beginning of In the Tracks of Crime by Henry T. P. Rhodes (1952) as the "Maxim of a Roman Jurist"_

It may be argued that forensic criminology first appeared in U.S. literature as scientific criminology in the book _Crime's Nemesis_ by Luke May, published in 1936. He referred to this work as the scientific detection of crime and criminals, coming from the combined perspectives of physical evidence analysis and criminal modus operandi analysis. Avery (1936) states (pp. vi-viii):

"The successful criminologist has no illusions about himself, despite the superman that fiction depicts. He lays no claim to psychic powers or clairvoyance. And yet, he must be more clever than the criminal. The criminologist often fights a battle with wits and statistical cunning. His knowledge of life and men must be immense, his powers of logic and deduction, acutely developed. He must be a thinker for knowledge..."
in every field... Modern crime detection methods and the marvelous developments in the scientific detective laboratories of today bring stupendous odds against the criminal.

It is the purpose of this book to reveal these methods, bring them into the light...

Criminology demands much... Much of this work, especially its application to crime problems, was, of necessity, original; for science has only recently become the handmaiden of the criminologist.

Not surprisingly, this language is essentially an adoption of the writings of Hans Gross (to be discussed in the "Key Historical Figures" section of this chapter), which had significant influence over May, and his holistic approach to forensic casework.

The next major appearance of the concept occurred postcriminalistics, in the text Expert Witnesses: Criminalists in the Courtroom, published in 1967. The authors of this work come from an applied social science background: one is a professor of criminology with a Ph.D. in criminology, and one is a professor of criminal justice with a Ph.D. in sociology. Both are criminologists and both have confronted the issues of expert social science testimony in forensic casework. Their approach to criminology and expert witnessing takes a narrow but important perspective, leaving the investigative, physical evidence examination, and forensic mental health aspects entirely aside. They focused their treatment instead on criminology as it relates to "matters of policing, court processing, and prison treatment" (Anderson and Winfree, 1987, p. ix), where research, theoretical, and process-oriented expertise in criminology becomes important to legal questions and court proceedings, often in a civil context. They explain that (p. 13):

"The presence of criminologists in the court as expert witnesses offering testimony on a broad range of criminal justice practices and procedures, or criminological testimony in criminal trials, has included, and continues to include evidence provided by forensic criminologists trained in criminalistics... Experts are available for every imaginable type of physical evidence and are usually qualified as expert witnesses based on training and experience.

... More recently, owing largely to the expansion of the academic field of criminal justice... to the increased liability of actions of its criminal justice personnel... and to social issues on key constitutional issues... behavioral scientists and social scientists with criminological or criminal justice expertise have increasingly been asked to appear as expert witnesses.

The university-based criminologist, therefore, generally provides expert testimony based on research which transcends and precedes the events or matters before the court and which the expert applies to such matters.

The authors of this earlier work provide deep and useful insight into the role of expert criminologists and social science testimony, which are important threads in the overall fabric of forensic criminology.

Based on the long history of criminology, and the multidisciplinary literature cited thus far, the authors of this text define forensic criminology as the scientific study of crime and criminals for the purpose of addressing investigative and legal questions. This is very similar to the equally broad definitions offered in van der Heuven (2006, p. 153): "Forensic criminology refers to the actions of a criminologist in collecting, analyzing and presenting evidence in the interest of objective proceedings in the judicial process." It is an applied subcategory of general criminology where the abstract and the theoretical meet the practical and the concrete. It involves the proficient, critical, and objective examination of criminal cases and related evidence, fostering the scientific method and subsequent evidentiary interpretations. While there are a number of forensic criminologists in private practice, this field also encompasses many forensic subdisciplines.

In terms of forensic criminology practitioners (a.k.a. forensic criminologists), it quickly becomes evident that there are generalists and there are specialists. As with any profession, the specialist is highly proficient and informed regarding a very restricted area of practice. Forensic criminology specialists might focus entirely on a single subject matter, such as police use of force, risk assessments, security, criminal profiling, threat assessment, presenting evidence, or an area of physical evidence examination such as criminalistics. Forensic criminology generalists, on the other hand, have a broad spectrum of knowledge from multiple areas of study and will have multiple areas of expertise. They are fluent in the theory and application of a broad range of criminology subjects without necessarily knowing all there is to know about a given subdiscipline. There are also forensic criminology generalists with specialty areas of concentration—hybrids of sorts. While being knowledgeable about many areas in general, they have localized strengths by virtue of greater research, skill, or experience in particular areas over the course of their careers.

The distinction between generalist and specialist forensic practitioner is made clearer by a distinction provided in Chisum and Turvey (2007) regarding forensic sciences (pp. 13–19):

Forensic generalists and forensic specialists alike are a requirement for informed forensic case examination, laboratory testing, and crime reconstruction to occur. A forensic generalist is a particular kind of
The forensic generalist in criminology, therefore, understands that informed case analysis is the result of objectively examining a whole related system of evidence rather than a narrow, specialized portion. The forensic generalist considers the totality of the known physical and behavioral evidence and only then frames theories regarding the behavior and circumstances related to a crime. He or she is steered by good science and the scientific method, holding no investment in the outcome. The forensic generalist then tests those theories and the theories of others against the evidence, using a framework of analytical logic and critical thinking to distinguish facts, assumptions, opinions, and inference.

DISTINGUISHING FORENSIC CRIMINOLOGY

The single distinguishing feature of forensic criminologists, with respect to any other type of criminologist, is the expectation that their findings will be submitted as evidence within the context of a formal investigation or legal proceeding. That is to say, their findings are not only bound by adherence to the scientific method, but are also intended to be of sufficient quality and certainty for courtroom use. To that end, they must be prepared to offer their conclusions under penalty of perjury, whether in a written declaration or affidavit, a forensic report, or sworn expert testimony.

While the majority of university-based criminologists are concerned with crime and criminality from a research, process, or theoretical perspective, forensic criminologists have a particular type of examination to perform or a particular set of questions to answer. They are interested in research or theory only inasmuch as it can be applied to forensic analyses or the subsequent interpretations of results in casework. Generally, this will relate to the detection, investigation, reconstruction, and analysis of crime and criminal behavior, as well as to the identification, apprehension, examination, and adjudication of criminals. In civil cases, this will relate to areas of liability as defined by law.

It is necessary at this point to delineate forensic criminology from other like areas of criminology. This includes its "mother," applied criminology, as well as the areas of police science and criminal justice administration.

Applied criminology is a term that "refers to the application of criminological theory to criminal justice practice" (Helfgott, 2006, p. 419). It is also argued that "Applied Criminology should have a critical edge, casting a discriminat­ ing analytical gaze over the processes of criminalization, crime enforcement, and the criminal justice system" (Stout, Yates, and Williams, 2008, p. 6). Using these descriptions, applied criminology is an appropriate term for characterizing any application of criminological knowledge to any process related to the criminal justice system as we have defined it. This encompasses many areas, including the application of criminological knowledge to the making of laws, the management of police agencies, the management of prisoners, and the treatment of victims, to name but a few. It also includes, as a subcategory, the area of forensic criminology.

Forensic criminology is, as defined, a particular type of applied criminology involving the scientific study of crime and criminals for the purpose of addressing investigative and legal questions. This distinction involves an appreciation of applied criminology as a form of macro-analysis: it tends to involve the nomothetic (group) examination of systems, processes, and their relationships. Alternatively, forensic criminology is a form of micro-analysis: it tends to involve the idiographic (individual) examination of one or more isolated cases and consideration of its internal issues.

Police science, on the other hand, is a general term referring to those subjects relating to the process of policing. Despite the misunderstanding of some, it does not refer to scientific policing or to police officers who are acting in the capacity of scientists. This is in fact a contradiction because police culture
cannot house or cultivate the flower of science—science and law enforcement exist at cross-purposes (Edward and Gotsonis, 2009). However, it is easy to see why those outside the community would make this mistake. It is also easy to see the advantage to those within the community who do not correct these kinds of misapprehensions for fear of losing the aura of scientific certainty with respect to what they know and do.

The term *police science* was in fact coined by law enforcement affiliated instructors working as educators at colleges and universities. It was intended to separate educational programs run by scholarly criminal justice and criminology professors from those run by educators with a background in law enforcement. In other words, its use was initially crafted to signal the existence of a culture of law enforcement within educational institutions that excluded “outsiders” concerned with research and development of knowledge. Though antithetical to university culture, it remains in use within some criminal justice programs that are more vocational than scholarly (see generally, Arom, 1995).

Regardless, modern textbooks on police science focus not on scientific analysis of evidence or even scientific methodology, but rather on police administration, covering such general subjects as “a career in law enforcement,” “criminal law,” “police organization,” and “criminal justice functions” (Sulliva, 1977, p. 14). Police science, then, is a course of study intended specifically to educate the future police officer. This is why “police science departments usually focus more on the technical aspects of policing: administration, management, crime analysis, and the ‘doing’ of law enforcement” (Williams, 1993, p. 141), and not on criminology, forensic science, or criminalistics per se.

As defined, the term *police science* involves the word science in reference to the technical aspects of policing and is in no way meant to suggest that there is a scientific component to the work of police officers or the graduates of such programs. The concept of police science is essentially synonymous with other process-oriented terms covering the same subject areas such as police administration and criminal justice administration (Granes, 1969; Sulliva, 1977; Volmer, 1971). While it certainly falls under the aegis of applied criminology, its technical process orientation, strict law enforcement alignment, and lack of emphasis on scientific analysis or scientific interpretation of anything combine to separate it decisively from forensic criminology. In short, police science refers to a course of study that is specially designed to teach police officers about the criminal justice system and their work in relation to it. Forensic criminology refers to scientific case examination and evidence interpretation for the purpose of providing expert findings in legal proceedings.

**KEY HISTORICAL FIGURES**

There are certain individuals whose work, theories, and publications have been of considerable foundational value to the development of modern forensic criminology, not to mention their enormous contributions to its related subdisciplines. They include European influences in the late nineteenth century, as well as “a small group of people at Berkeley who were endeavoring to establish scientific criminology as an academic discipline” in the first half of the twentieth century (Thorwald, 1966, p. 149). These forebearers, those who used “scientific criminology,” were the forerunners of modern forensic criminology.

**Dr. Johann (Hans) Baptist Gustav Gross**

A thousand mistakes of every description would be avoided if people did not base their conclusions upon premises furnished by others, take an established fact as only possibility, or as a constantly recurring incident what has only been observed once.

—Dr. Hans Gross (1906)

Hans Gross was born in 1847, in Graz, Austria. He studied criminology and the law, and he eventually came to serve as an examining magistrate of the Criminal Court at Czernovitz. It was during this time that Dr. Gross observed firsthand the failings of apathetic and incompetent criminal investigators, as well as criminal identifications made by flawed and biased eyewitness accounts. He also became painfully familiar with the continuous stream of false suspect, eyewitness, and alleged victim accounts that poured into his office as a regular matter of course. These experiences led him to the conclusion that because people were essentially unreliable, and investigators were often their own worst enemy, a methodical, systematic way of determining the facts of a case was needed. In 1893, Gross finished work on his seminal work, Handbuch für Untersuchungsrichter, a System der Kriminalistik [Criminal Investigation: A Practical Textbook for Magistrates, Police Officers, and Lawyers (Gross, 1900)]. It was also a watershed event in which Dr. Gross proclaimed the virtues of science against intuition, and a systematic approach to holistic criminology and criminal investigation against uninformmed experience and overspecialization.

The success of this groundbreaking textbook was, without exaggeration, unparalleled in the history of applied criminology.
The forensic community, as it existed, enthusiastically received System der Kriminalistik. It achieved a fifth edition and was translated into eight languages by 1907. This included versions in French, Spanish, Danish, Russian, Hungarian, Serbian, English, and Japanese, each with an overwhelmingly supportive foreword written by a forensic contemporary impatient to see it printed and adopted in his respective country. As described in Thorwald (1966, pp. 234–235):

You had only to open Grove's book to see the dawn of a new age.... Both of his chapters was an appeal to examining magistrates (his word for criminologists) to avail themselves of the potentials of science and technology far more than they had done so far.

Dr. Gross became a professor of Criminal Law at the University of Czernovitz, a professor of Criminology at the University of Prague, and later a professor of Criminal Law at the University of Graz. With the success of System der Kriminalistik as a platform, he launched other professional ventures that continue to contribute significantly to the development of forensic science. In 1879, Dr. Gross began editing the journal Kriminalistik and forensische Journalistik, a journal to which he was a frequent contributor. He also introduced the forensic journal Kriminalistik, which still serves as a respected medium for reporting improved methods of scientific crime detection. In 1912, he established the Museum of Criminology, the Kriminalmuseum, at the University of Graz.

The significance of System der Kriminalistik to criminology, forensic and otherwise, cannot be understated. It was the first comprehensive textbook to systematically cover the integrated philosophy and practice of scientific criminal investigation, forensic analysis, crime reconstruction, and profiling. Its philosophies have not been diminished by the passage of time and should be required reading for any student of these subjects.

Dr. Hans Gross was a criminologist in the classic sense, a forensic generalist, and he changed the world with his multidisciplinary, scientific approach to criminal investigation and forensic analysis.

Dr. Edmond Locard
Dr. Alexandre Lacassagne (1843–1924) was a professor of Forensic Medicine with the faculty of medicine at the University of Lyon, France. In 1840, he became the director of the Lyons Institute of Forensic Medicine. He was a medical doctor, an anthropologist, and a fervent advocate of combining science with criminology. Dr. Lacassagne also planted very specific ideas in the minds of his students about the potential importance of what we now refer to as trace and transfer evidence in the investigation and reconstruction of a crime (Thornwald, 1966, p. 281):

He had encouraged some of his students to make studies on clues that few or no criminologists had hitherto considered. Thus, he proposed the idea that the dust on clothing, or on people's ears, noses, and fingernails, could provide information on the occupant's and whereabouts of suspects.

Edmond Locard was born in 1877 in Saint-Chamond, France. He was a student of Dr. Lacassagne. In time, he became a doctor of medicine and a master of law, and he would eventually replace Lacassagne as the director of the Lyons Institute of Forensic Medicine.

In 1908, having been inspired by the works of Dr. Hans Gross and Sir Arthur Conan Doyle, Dr. Locard traveled the world to better study how police agencies in major cities were incorporating the scientific method and trace evidence analysis into their investigation and reconstruction of crime. During the next two years, he would visit agencies and colleagues in Paris, Lausanne, Rome, Berlin, Brussels, New York, and Chicago. To his dismay, he found no true police crime labs or even scientific detectives, and the majority of police agencies remained steeped in Boulleegaj (a form of personal identification based on a system of body measurements and photography of features).

In 1999, the Institut de Police Scientifique et de Criminologie was formally created at the University of Lausanne, Switzerland, under the direction of Professor Rudolph A. Reiss (1875–1929). It was the first university to deliver a degree in forensic science covering all major subjects. Professor Reiss had originally offered courses in forensic photography, scene of crime investigation, and identification, and he had been involved in forensic casework since at least 1903. The institute developed from the success of those courses and his tireless efforts.

In the summer of 1910, after having visited with Professor Reiss, Dr. Locard returned to Lyon and persuaded the prefects of the Rhone Department to provide him with two rooms in an attic of the Laboratoire Scientific and judicial officials as assistants. The arrangement was desirable but the accommodations were not the best, as described in Thorwald (1966, p. 283):

The Laboratory was reached through a gloomy entrance hall from which one corridor led to the prison and a dirt-stained door into the dusty caves and archives. Every day Locard climbed the steep winding staircase leading to his laboratory four floors up.
This marked the creation of what has become regarded as the world’s first police crime laboratory, as it was housed under the auspices of law enforcement and staffed by law enforcement agents. However, contrary to some publications, this was not the world’s first forensic science laboratory. The first forensic science labs were not government owned, were often highly specialized, and were commonly housed in universities, as Dr. Locard had experienced in Switzerland with Reiss.

In any event, once in place at his lab at Lyon, Dr. Locard took to the task of implementing everything he had learned from the publications of Dr. Hans Gross, from the stories of Sir Arthur Conan Doyle, from his study and travels, and from his devotion to forensic science and crime reconstruction. These efforts included foundational research, publications, and the development of practice standards in dust analysis, detailed in Locard (1929), and fingerprint examination.

Dr. Locard also helped establish one of the first forensic science professional organizations. In 1929, after the death of Professor Reiss, Locard returned to Lausanne and gathered with his European forensic scientist colleagues to form The International Academy of Criminalistics. His contributions to scientific criminology and the forensic sciences were nothing short of massive, as summarized in Söderman (1957, p. 25):

He put the analysis of handwriting on a firmer footing, systematized the analysis of the dust in the clothes of suspects, invented a modified method of analyzing blood stains, and invented poroscopy, whereby the pores in the papillary ridges of fingerprints are used as a means of identification.

However, Dr. Locard’s most famous for the forensic axiom that bears his name: Locard’s Exchange Principle. It has been misstated, misrepresented, and misattributed over the years by those lecturing and writing authoritatively on the subject. Confusion in the forensic science community and among students has resulted.

A reference from Locard found in La Police et Les Methodes Scientifiques, in the original French, may be of use to understand what he actually meant (Locard, 1934, pp. 7–8):

[Al recherche des traces n’est pas, avant qu’on pourrait le croire, une innovation des criminalistes modernes. C’est une occupation probablement aussi vieille que l’humanité.]

[Le principe est celui-ci: Tout action de l’homme, et à fortiori, l’action violente qu’est un crime, ne peut pas se dérouler sans laisser quelque marque. L’amiral est la variété de ces marques. Tels des secrètes des empreintes, tantôt de simples traces, tantôt des taches.]

Rough translation:

Searching for traces is not, as much as one could believe it, an innovation of modern criminalists. It is an occupation probably as old as humanity.

The principle is this one. Any action of an individual, and obviously, the violent action constituting a crime, cannot occur without leaving a mark. What is admirable is the variety of these marks. Sometimes they will be prints, sometimes simple traces, and sometimes stains.

In 1935, a Spanish translation of this same general principle was provided in Locard (1935, p. 107):

[A] la recherche de las huellas no es, como se podría creer, una innovación de los criminalistas modernos. Es una ocupación probablemente tan vieja como la humanidad.

El principio es el siguiente: Cualquier acción de la persona, y a fortiori, la acción violenta que es un crimen, no puede acontecer sin dejar algún rastro. El admirable es la variedad de estos rastros. A menudo son huellas, a veces simples trazas, y a veces manchas.

Rough translation:

Searching for traces is not, as much as one could believe it, an innovation of modern criminalists. It is an occupation probably as old as humanity.

The principle is this. Any action of an individual, and obviously, the violent action constituting a crime, cannot occur without leaving a mark. What is admirable is the variety of these marks. Sometimes they will be prints, sometimes simple traces, and sometimes stains.

This principle has been adapted and adopted in its English translation by the forensic science community in the United States. As stated by Dr. John Thornton, a practicing criminalist and a former professor of Forensic Science at the University of California (UC) at Berkeley (Thornton, 1997, p. 27):

Forensic scientists have almost universally accepted the Locard Exchange Principle. This doctrine was enunciated early in the 20th century by Edmund Locard, the director of the first crime laboratory, in Lyon, France. Locard’s Exchange Principle states that with contact between two items, there will be an exchange of microscopic material. This certainly includes fibers, but extends to other microscopic materials such as hair, pollen, paint, and soil.

By recognizing, documenting, and examining the nature and extent of evidentiary traces and exchanges in a crime scene, Dr. Locard postulated that criminals could be tracked down and then later associated with particular locations, items of evidence, and persons (i.e., victims).

Dr. Locard regarded this postulation as both obvious and ancient, and likened the recognition and examination of trace evidence to hunting behavior as old
as mankind (Locard, 1934, p. 7). Prey, for example, in the normal course of drinking at a watering hole, leave tracks and spoor and other signs that betray their presence and direction; the hunter deliberately seeks out this evidence, picks up the trail, and follows. Every contact leaves a trace that may be discovered and understood. The detection and identification of exchanged materials is interpreted to mean that two objects have been in contact. This is the cause-and-effect principle reversed; the effect is observed and the cause is concluded. Understanding and accepting this principle of evidentiary exchange makes possible the reconstruction of contacts between objects and persons. Consequently, the incorporation of this principle into evidentiary interpretations is perhaps one of the most important considerations in the reconstruction of crime.

It is true that Dr. Locard concerned himself chiefly with organizing and systematizing methods of analyzing prints, traces, and stains. He wrote extensively on how to identify and individuate done, how to identify and individuate fingerprints, how to analyze and interpret handwriting, how to analyze and interpret bloodstains, and the like. However, a careful read of his publications reveals that his goals were ultimately those of reconstructing crime through the skills brought to bear by a forensic generalist. As Locard (1934, p. 6) explains, "Criminalistica seeks tools everywhere, in biology, physics, and more particularly chemistry, and proposes solutions to every problem brought up by the criminal investigation." Consequently, he organized and systematized methods of physical evidence analysis in order that criminology might be a scientific endeavor, and well-founded reconstruction interpretations would be possible.

Dr. Edmond Locard was a criminologist in the classic sense, a forensic generalist, and he educated and changed the world with his multidisciplinary and scientific approach to systematic evidence analysis.

**August Vollmer**

August Vollmer taught his students that criminology was not just about research. It necessarily involved the application of knowledge regarding crime and criminals in order to reduce either. He was not surprisingly heavily influenced by the works of Hans Gross, and wrote (Vollmer, 1949, pp. 39-40):

> August Vollmer (1875-1955) was the first Chief of Police in Berkeley, California. He is known for his advocacy of both scientific education and investigations in law enforcement. Helping to accomplish more in professional and reform law enforcement than any other single figure in the history of criminology, Vollmer committed suicide with a bullet to the head November 4, 1955.

Among the several branches of criminology, one of them—criminalistics or scientific crime investigation—does employ the tools and techniques of the scientist. Criminology belongs with the arts, and particularly does this statement apply to that entire field which concerns itself with the study of the causes and prevention of crime. Criminalistics as an art has probably existed since the beginning of civilization, but its development as a system is comparatively recent.

This is to say Vollmer believed that forensic examination of crime scenes and evidence, and should be scientific, while determining precise social causes and remedies for the problem of crime and criminals is less exact—drawn with imprecision and uncertainty given the general ignorance regarding criminology in his day.

A modest biography is offered in MacNamara (1995, pp. 811-812):

[Vollmer] was elected mayor of Berkeley, California, in 1907. In 1899 he was elected president of the California Police Chiefs Association; from 1909 to 1932 he served as chief of Police for Berkeley; in 1922 he accepted the presidency of the International Association of Chiefs of Police; and from 1932 until his death he was an educator, professor of police administration at the University of California...

Vollmer was the most conservative professional. **He was an early advocate of college education for police officers.** He instituted an in-service training program of such rigor and effectiveness that it was copied by numerous police agencies in the United States and other countries. As early as 1922 he inaugurated a single fingerprint classification system and a simple but effective method of classifying handwriting specimens. He also initiated the modern operational approach to criminal investigation. In the 1920s and early 1930s, the Berkeley police laboratory became the model and training ground for police laboratory technicians throughout the country.

...Vollmer was at home with academic criminologists and he respected them... As founder and president of the organization now known as the American Society of Criminology [which presents annually the August Vollmer Award to a distinguished criminologist], he extended his influence considerably. A faithful student of scientific management and public administration, he unnecessarily reauthorized himself...
and experienced. Further background is provided in "Finest of the Finest" (1966).

In 1905, August Vollmer, a self-educated criminologist, noticed that the then 130-year-old city had no police force and decided to start one. His name is still legendary in law enforcement circles for the methods that he pioneered. His stiff rules of conduct are now standardized as a code of ethics for police across the country. His department was the first to use blood, fiber and soil analysis in detection (1907); the first to use the lie detector (a Berkeley cop collaborated in inventing the polygraph in 1921); it was an early developer of a fingerprint classification system (1904) and the first to use radio-equipped squad cars (1928).

Perhaps most significant of all, Vollmer established a school of criminology on the Berkeley campus in 1916, and he sent his men to it. Early detractors used to laugh at the "college cops," but Vollmer's emphasis on an educated policeman has been carried forward and expanded under each of the three men who have succeeded him.

To see his vision through, police officers needed to be educated at university where they were to be schooled in modern methods of crime detection, criminal investigation, and criminal identification. What followed from Vollmer, at least in the United States, was a succession of professional gatherings related to police and forensic science education. These took shape as the result of the combined efforts of academic, legal, forensic, and law enforcement practitioners who met and shared knowledge regarding their common interests. Primarily these interests revolved around the study of crime and criminals, and the methods of their detection, identification, and apprehension. This included the development of the American Society of Criminology as was discussed in the Preface of this work.

His legacy continued through the tremendous efforts of his students for at least a generation.

**Edward Oscar Heinrich**

The camera never lies, but a camera in the hands of a liar is a dangerous instrument.

—Edward O. Heinrich (as quoted in Block, 1958, p. 37)

Edward Oscar Heinrich was born in 1883 in Clintonville, Wisconsin. At age 16, he became a licensed pharmacist in Tacoma, Washington; he worked hard and saved his money, aspiring to a college education and becoming a chemist. In 1908, he realized that goal and graduated from the University of California at Berkeley with a bachelor's degree in chemistry. Soon thereafter, he moved back to Tacoma, where he worked for the city as a chemist and sanitary engineer for the next nine years. This position gave Heinrich his first exposure to forensic casework—it involved frequent requests for investigative assistance from both the police and the coroner's office.

Applying chemistry to casework taught Heinrich the limits of specialization. He learned that to be of use—a fully reconstructive piece—a forensic scientist must have at least a general working knowledge of as many forensic specialties as possible. As a result, he continually made a study of ballistics, geology, physics, photography, hairs, handwriting, paper, and ink; he read every reference text and article he could get his hands on. In essence, he made of himself a forensic generalist, and his reputation grew with the successful employment of his methods to both criminal and civil cases.

In 1916, Heinrich became the chief of police in Alameda, California, and reorganized the department from top to bottom in terms of criminal files, fingerprints, and the employment of more modern investigative techniques. During that time, after the onset of World War I, he also lent his services to U.S. Army intelligence, providing training and performing forensic analysis.

Only a few years later, Heinrich would open his own private lab in Berkeley. To augment his practice, he became a member of the U.C. Berkeley faculty where he lectured on the subject of criminal investigation and served as a research associate in police science. When Heinrich began his private forensic casework, his methods were the exception and not the rule (Block, 1958, pp. 41–42):

Scientific work was little known and often ridiculed. Piecing, without definite direction, took its place—chasing here and there for information, trying to find someone who might know something about the crime.

In every way Heinrich's approach was quite opposite.

That approach—his methodology—was one of the unique features of his whole career.

"Understand this first," he usually said. "Crime analysis is an orderly procedure. It's precise and it follows always the same questions ..."

"Precisely what happened? Precisely when did it happen? Precisely where did it happen? Why did it happen? Who did it?..."
Heinrich would dedicate his life to advancing the cause of scientific investigation through the employment of his methods—working for the prosecution and the defense throughout his career. As recalled in Walton (2004, p. 5):

In Berkeley, the work of Edward Oscar Heinrich laid the foundation for the future of professional forensic sciences. From his laboratory, Heinrich repeatedly demonstrated the value of scientific examination of trace evidence as his meticulous inspections provided the necessary links between the crime and suspects. As a result, his work was in demand by prosecutors and defense attorneys alike throughout the West.

According to Heinrich, the crime scene always contained a variety of clues, and it was up to a scientific investigator to find and accurately interpret them (Walton, 2004). Those interpretations could be combined to form a reconstruction of events that established both contacts and actions. Evidence, to Heinrich, was the only reliable witness to a crime (Block, 1958, p. 43-44):

In the test tube and crucible or through the lens of the microscope and camera I have found in my own practice the evidence of poison, the traces of the deadly bullet, the identity of a clot, the source of a fiber, the telltale fingerprint, the differing ink, the slip of the pen upon which I have turned in dramatic scenes of our courts the rightful title to an estate, of the liberty, even the life, of an individual.

Clues thus found and verified as physical facts definitely related to an action became of enormous importance to clarifying erroneous observations of eyewitnesses.

Heinrich did not regard the interpretation of evidence and its reconstruction as something within the ken of the average person or investigator. He regarded reconstruction as an ordered, disciplined, and scientific practice borne out of tireless dedication to one's personal education, experience, and research (Block, 1958, p. 64):

It is a master of understanding the scientific aspects of ordinary phenomena. Rarely are there two ordinary phenomena involved in the commission of a crime. One is confronted with scrambled effects, all parts of which sparsely are attributed to causes. The tracing of the relationship between isolated points of fact, the completion of the chain of circumstances between cause and effect, are the highest functions of reason—to which must be added the creative imagination of the scientist.

Dr. Paul Leland Kirk

This is evidence that does not forget. It is not confused by the excitement of the moment. It is not absent because human witnesses are. It is factual evidence. Physical evidence cannot be wrong; it cannot perjure itself; it cannot be wholly absent. Only its interpretation can err.

—Dr. Paul Kirk (1962, p. 4)

Paul Leland Kirk was born in Colorado Springs, Colorado, in 1902. He was first and foremost a scientist, but he was also a man of practical application as opposed to pure theory. He was educated at Ohio State University, where he received a B.A. in Chemistry, the University of Pittsburgh, where he received an M.S. in Chemistry, and the University of California, where he received a Ph.D. in Biochemistry. From 1929 to 1945, Dr. Kirk served as a professor of Biochemistry at the University of California at Berkeley.

Later in his career, he would tell students that he was initially drawn to forensic science in his early teaching days when a biochemistry student approached him with a question about a deceased dog and whether it could be determined if the dog had been poisoned. Investigating this issue piqued Kirk's forensic curiosities. Soon after, authorities contacted him to examine the clothing of a rape victim; they wanted to know whether anything on the clothing could be found, at the microscopic level, to associate the victim with her attacker.
Kirk's discovery of fibers from the attacker's shirt and the conviction of the rapist sealed his interest in forensic science and secured his reputation for solid results based on careful examinations. As described in Thorwald (1966, p. 150): "Kirk was a practical man rather than a theorist. As early as 1934 he had concerned himself with the application of biochemistry to criminological questions... He had also dealt with questions of blood testing for many years. He and his pupils published innumerable studies on investigation of blood clues and blood group determinations."

In 1937, Dr. Kirk, while remaining a professor of Biochemistry, assumed leadership of the Criminology program at U.C. Berkeley. He is widely credited with having saved this program from extinction. As described in Turner (1995, p. 323):

August Vollmer, pioneering police administrator in Berkeley, California, was influential in developing university courses dealing with police matters, among them forensic science. At the outset these programs were offered in the criminology context, with the University of California, Berkeley, offering a curriculum in criminology as early as 1933. Dr. Paul Kirk subsequently developed the program in criministics at Berkeley...

The program gained momentum and grew in its reputation under his charge. In 1953, after the completion of his work on the Manhattan Project during World War II, Kirk published the first edition of Crime Investigation, a treatise on criminal investigation, crime reconstruction, and forensic examination that endures to this day as a foundational industry standard with few equals (Kirk, 1953).

Kirk took a much holier, holistic position on the importance of crime reconstruction and criminal behavior than most are aware. He repeatedly discussed what could only be referred to as criminal profiling in both editions of his seminal forensic textbook, Crime Investigation (Kirk, 1953, 1974). He more or less viewed criminal profiling as the natural outcome of physical evidence examination (Kirk, 1974, pp. 4-5):

The study of physical evidence can be a material aid in locating the perpetrator of a crime...

Physical evidence is often very useful to the police investigator before he has a suspect in custody or, in fact, before he even has suspicion of a possible perpetrator. If, for instance, the laboratory can describe the clothes worn by the criminal, give an idea of his stature, age, hair color, or similar information, the officer's search is correspondingly narrowed.

Frequently it is possible to indicate a probable occupation, or to describe a habitat with remarkable accuracy from careful examination of some carefully trifling object found at the scene of the crime. Such facts do not necessarily constitute proof of guilt of any particular person, but they may give a background that is of the greatest value...

As an illustration of the possibilities and the pitfalls attendant upon deductions from laboratory findings, the following example is illuminating: From the examination of a glove left at the scene of a burglary, the following inferences were drawn:

1. The culprit was a laborer associated with building construction.
2. His main occupation was pushing a wheelbarrow.
3. He lived outside the town proper, on a small farm or garden plot.
4. He was a southern European.
5. He raised chickens, and kept a cow or a horse.

As suggested by this passage, Kirk was an advocate for the investigatory use of criminal profiling well before its potential was formally recognized by even the criminal investigators of his time. This advocacy continued in the first edition of Fire Investigation (1969), in which Kirk provided a basic guideline for crime reconstruction and criminal profiling that has not been significantly eroded by developments in either field.

Paul Kirk was a criminologist in the classic sense, a legendary forensic science educator, a forensic generalist, and "one of the foremost pioneers of scientific criminology" and criminologists in the world (Thorwald, 1966, p. 149).

Dr. Marvin E. Wolfgang

...[W]hen a social scientist steps into the arena of adversary games, confronts role conflicts, and subjects the presentation of research to the cross-examination of his mind, he faces problems in the drama that are different from those described in textbooks. Dr. Marvin Wolfgang (1967, p. 21)

Dr. Marvin Wolfgang was a professor of Criminology, Legal Studies, and Law at the Wharton School, and founding director of the Sellin Center for Studies in Criminology and Criminal Law, at the University of Pennsylvania. A brief biography, useful to understanding his tremendous contributions to all of criminology, including victimology, was written upon his death by Kaufman (1998):
Professor Wolfgang, a Philadelphia resident, was acknowledged in 1994 by the British Journal of Criminology as "the most influential criminologist in the English-speaking world."

He expanded the field of criminology by introducing and perfecting a methodology in which great masses of data like arrest records are analyzed over years to discern patterns of violence and crime. Through such longitudinal studies, now common in social sciences beyond criminology, he was able to portray criminal behavior in specific ways, examining subjects like the scale of juvenile delinquency, the relations of violence and their victims and the extent of racial imbalances in sentencing.

For much of this century, academic criminology had concerned itself almost exclusively with psychological studies of the criminal mind and the amassing of anecdotal material. That emphasis was irrevocably altered in 1958 when Mr. Wolfgang produced a study, "Patterns of Criminal Homicide," a deep analysis of 588 Philadelphia murders.

"With that work Professor Wolfgang virtually defined modern criminology," said Richard Rosenfeld, a professor of criminology at the University of Missouri. Mr. Rosenfeld is serving as editor of a forthcoming edition of the Journal of Criminal Homicide that is dedicated to Mr. Wolfgang to mark the 40th anniversary of his work.

One of the more significant findings in that study was that 150 of the Philadelphia murders were what Mr. Wolfgang termed, in the neutral language of sociologists, "victim-precipitated homicides"—cases in which the eventual victim was "the first one in the homicide drama to use physical force."

He spelled it out even more clearly with a typical example: "A drunken husband, treating his wife in their kitchen, gave her a butcher knife and dared her to use it on him. She claimed that if he would strike her once more, she would use the knife, whereupon he slapped her in the face and she fatally stabbed him."

At the time, terms like "spouse abuse" were unknown, and Mr. Wolfgang did not use it. But with the evidence he had found from the police reports, he was able to define the shape and determine the scale of a not uncommon form of violence that few if any before him had studied in detail. Findings of a similar magnitude emerged from another remarkable longitudinal study, "Delinquency in a Birth Cohort," which was published in 1972 and is generally regarded as Professor Wolfgang's crowning scholarly achievement.

For this study, which, like all his work, was written by hand with a pen, Mr. Wolfgang obtained from schools in Philadelphia the names of 10,000 boys who were born in 1946. After 1963, when the boys turned 18, he and his team of researchers pored through police and court records to determine how many of the boys had police records. They found that 3,400 of the boys, or just over one-third, had records by the time they were 18.

He also determined that it was the youths whose records showed five or more offenses who together accounted for 62 percent of all offenses recorded in the study, and that this group amounted to only 6 percent of the total.

Mr. Wolfgang's conclusion that a few chronic offending juveniles account for a disproportionate amount of crime has strongly influenced legislative bodies and criminal justice policy makers around the world.

Neil Weiner, once his student and now a senior research associate at the Center for the Study of Youth Policy at Penn, said Mr. Wolfgang was often asked to testify in court and before legislative commissions. "He routinely responded to such requests, but, in seeming contradiction, he rarely laid out policy recommendations, whether specific or general. Such things he left to others to infer from his dispassionate and objective studies."

However dispassionate was the form of his testimony, its content was sufficiently stirring to provoke any number of mailed threats. "We keep a folder of these lousy letters," said Esther Lafort, who had been Mr. Wolfgang's secretary for 27 years.

She said the letters came in whenever he offered reasons that the death penalty should not be used or how the distribution of handguns should be curbed. Mr. Wolfgang was proud that his research findings were used in the Supreme Court's decision in Furman v. Georgia, which held in 1972 that the death penalty as then applied by states was unconstitutional.

The career of Dr. Wolfgang as it laid the foundation for future forensic criminologists with a social science orientation is best summarized by his own writing, penned just prior to his death (Wolfgang, 1987, pp. 20-21):

"My acquaintance began in 1965 with the NAACP Legal Defense and Educational Fund, Inc. I gave my first testimony in Federal District Court in Little Rock, Arkansas, in connection with the famous case of Maxwell v. Bishop (1966), which was later pursued through..."
the United States Supreme Court.... Alabama and Georgia followed, all denying with blocks who, like Maxwell, had been convicted of rape and sentenced to death. My last major court experience was as a witness in Gregory v. Litton Systems, Inc. in Los Angeles in 1970, a case involving denial of a job because of a "substantial" arrest record....

Saw these challenges as well met by able scientific minds. And the expansion of often afforded defense. Hence, the defense bar does not often perceive the need, whether on the street, in the factory, or in the courts.

When a social scientist steps into the areas of adversary games, confronts role conflicts, and subjects the presentation of research to the cross-examination of his mind, he faces problems in the drama that are different from those described in textbooks.

Wolfgang also wrote thoughtfully about the ethics of forensic criminological testimony, explaining that science and scientific practice must exist separately from the law in order to serve it. He urged that "[t]he social scientist should not try to convert his design, his data, or his conclusions to conform to the litigation process." (Wolfgang, 1987, p. 31). However, he also appreciated that the aims and rules of litigation were different from those of scientific inquiry. He saw these challenges as well met by able scientific minds, and the expansion of expert testimony by criminologists as inevitable.

**PAST TO PRESENT**

In the past, the majority of forensic criminologists were government-employed civil servants like Hans Gross and August Vollmer—working for law enforcement, the courts, government agencies, or publicly funded crime labs adjunct to law enforcement. After retirement, there is every indication that the greater number had little option other than to live out their life on a government pension, or take up a second career in teaching or security work. There was, as previously mentioned, little perceived need, let alone funding, for independent forensic expertise of any kind.

In many parts of the world, independent forensic expertise is still available only to those who can afford it. In many systems, such as Australia, Canada, and the United Kingdom, there is even a prevailing attitude that if forensic experts are good enough for the government, they are good enough for the defense. Hence, the defense bar does not often perceive the need to, nor can it often afford to, hire privately employed forensic examiners of any kind. This reality hides the quality of forensic examinations in such systems, as there is no real peer review of findings and subsequent criticisms: we simply have no impartial measure regarding the quality of forensic work being done when private examinations are not performed.

In the United States, however, this changed radically upon the Supreme Court decision in *Ake v. Oklahoma* (1985). This decision held that

This Court has long recognized that when a State brings its judicial power to bear on an indigent defendant in a criminal proceeding, it must take steps to assure that the defendant has a fair opportunity to present his defense. This elementary principle, grounded in significant part on the Fourteenth Amendment's due process guarantee of fundamental fairness, derives from the belief that justice cannot be equal where, simply as a result of his poverty, a defendant is denied the opportunity to participate meaningfully in a judicial proceeding in which his liberty is at stake. In recognition of this right, this Court held almost 30 years ago that once a State offers to criminal defendants the opportunity to appeal their cases, it must provide a trial transcript to an indigent defendant if the transcript is necessary to a decision on the merits of the appeal. Griffin v. Ohio, 370 U.S. 286 (1962). Since then, this Court has held that an indigent defendant may not be required to pay a fee before filing a notice of appeal of his conviction, Burns v. Ohio, 369 U.S. 252 (1962), and that an indigent-defendant is entitled to the assistance of counsel at trial, *Gideon v. Wainwright*, 372 U.S. 335 (1963), and on his first direct appeal as of right, *Douglas v. California*, 372 U.S. 353 (1963), and that such assistance must be effective. *Evarts v. Lucy*, 467 U.S. 367 (1985); *Strickland v. Washington*, 466 U.S. 668 (1984); *McMann v. Richardson*, 397 U.S. 759, 771, n. 14 (1970).

Indeed, in *Little v. Estrada*, 484 U.S. 1 (1981), we extended this principle of meaningful participation to a "quasi-criminal" proceeding and held that, in a paternity action, the State cannot deny the putative father blood grouping tests, if he cannot otherwise afford them. *470 U.S. 86, 97*

Meaningful access to justice has been the consistent theme of three cases. We recognized long ago that mere access to the courthouse doors does not by itself assure a proper functioning of the adversary process, and that a criminal trial is fundamentally unfair if the State proceeds against an indigent defendant without making certain that he has access to the same meaningful legal defense as a wealthier defendant. *Ross v. Moffitt*, 417 U.S. 110 (1974). It has often been said that fundamental fairness entitles indigent defendants to an adequate opportunity to present their claims fairly within the adversary system. *Id.*, at 116. To implement this principle, we have focused on identifying the "basic tools of an adequate defense or appeal," *Erick v. North Carolina*, 404 U.S. 283, 227 (1970), and we have
required that such tools be provided to those defendants who cannot afford to pay for them.

To say that these basic tools must be provided is, of course, merely to begin our inquiry.

This decision basically held that because the government has overwhelming access to manpower, money, and forensic experts, the defense must be given parity for the adversary system to function fairly. The ruling is of course an ideal. The reality is that not every lawyer and court understands and invokes Ake appropriately or consistently, as explained in Findley (2008, pp. 929–931):

...[T]he government has significantly greater access to forensic science services and experts than do most criminal defendants. Crime laboratories exist to provide such services to prosecutions; no corresponding institutions exist for defendants. And, because most defendants are indigent, their ability to hire experts is dependent on public funding of legal services to the indigent, which is abysmally inadequate in virtually every jurisdiction. Because funding for indigent defense is so inadequate, defense services are rationed in ways that put innocents at risk, risking disfavors expensive, substantive innocence claims (such as expensive litigation about the validity of forensic evidence), and instead favors more inexpensive procedural constitutional claims. While the Supreme Court in Ake v. Oklahoma recognized a constitutional right to publicly funded experts for the indigent, exercise of that right is dependent on the willingness of a court to order the expenditure of scarce local resources, and on a cumbersome case-by-case, expert-by-expert process for requesting funding. Any risk of failure of that case-by-case process to provide adequate expert services falls on the defendant, and courts have tended to apply Ake narrowly. That system comes nowhere close to providing the level of forensic sciences assistance that is needed, or that is available to the prosecution.

In any case, the rendering of Ake changed the forensic realm in the United States dramatically by requiring the state to fund expert forensic analyses for indigent defendants. It increased the demand for independent forensic expertise of every relevant type, and directly acknowledged the legitimacy of private forensic practice as a necessary part of due process. Despite the majority of key historical figures in forensic criminology having already originated outside government employment, this was a major development because it enabled the number of private forensic practitioners, and private forensic labs, to increase beyond a select few. This reality was forecast in Anderson and Winfree (1987) when they correctly recognized Ake as a “point of things to come” (p. xx) with respect to the development of forensic criminology.

MODERN ARCHITECTS

There are certain individuals whose work and publications over the past 30 years have been of considerable architectural value to the continued existence of modern forensic criminology. They exist in pockets of multidisciplinary professional collaboration around the world, at universities and in private practice in the United States, Australia, the United Kingdom, and even South Africa. Some of these contemporary framers have had a tremendous impact on the authors of this text. This includes Dr. Paul Wilson, a professor of criminology at the University of Detroit-Mercy; Dr. John I. Thornton, an emeritus professor of forensic science at the University of California at Berkeley; and Dr. Daniel Kennedy who was kind enough to provide a foreword to this text. Their continued work and contribution bear mentioning for future generations.

Dr. Daniel B. Kennedy

Dr. Daniel Kennedy holds an M.A. in Sociology, a Ph.D. in Educational Sociology, and is currently an emeritus professor of Sociology and Criminal Justice at the University of Detroit-Mercy. He began his career as a civilian crime analyst with the Detroit Police Department in 1966. Over the next decade, he also served as a counselor for the Federal Bureau of Prisons, as a probation officer in Detroit, and as a senior administrator of two police academies in southeastern Michigan.

Dr. Kennedy has been a practicing forensic criminologist since the 1980s, and is frequently called to court to testify in cases involving state police agencies, municipal police departments, and county sheriff's departments. His testimony generally involves explaining the appropriate standards of care for the use of deadly force, vehicle pursuits, emergency psychiatric evaluations, prisoner health care, prevention of prisoner suicide, positional asphyxia/excited delirium, and “suicide by cop.” Also, he evaluates lawsuits concerning premises’ liability for negligent security in the private sector involving properties both in the United States and overseas. He specializes...
in crime foreseeability issues, appropriate standards of care in the security industry, and analyses of the behavioral aspects of proximate causation.

The authors regard Dr. Kennedy's most influential works to include the textbook *Applied Sociology for Police* (Kennedy and Kennedy, 1972); and his extensive body of research publications on the subjects of criminal profiling, negligent security, and premises liability, including "Premises Liability for Negligent Security" (Kennedy, 1993); "Role of the Criminalist in Negligent Security Cases" (Homan and Kennedy, 1996); "Problems with the Use of Criminal Profiling in Premises Security Litigation" (Homan and Kennedy, 1997); and "Psychological Aspects of Crime Scene Profiling: Validity Research" (Homan and Kennedy, 1998).

Dr. Kennedy's current research focus includes terrorist behavior and sleeper cells.

**Dr. John I. Thornton**

Dr. John I. Thornton holds a doctorate in Criminalistics, and is an emeritus professor of Forensic Science at the University of California at Berkeley. In a career that has spanned more than 45 years, he has authored more than 250 publications in the areas related to forensic science, to include methods of evidence analysis and interpretation, crime reconstruction, and professional ethics. He has also examined more than 800 homicide cases and testified in court as an expert on more than several hundred occasions.

Dr. Thornton was a student of the late Dr. Paul Kirk, mentioned previously. Upon Kirk's death, Thornton assisted with editing the completed manuscript for the second edition of Kirk's seminal text *Crime Investigation* (1974). He also worked in California at the Contra Costa Sheriff's Department crime lab for nine years as a criminalist, several more years as the supervising criminalist, and then for one year as laboratory director. Following that, he taught as a professor of forensic science at the University of California at Berkeley for 24 years.

To the benefit of his profession, Dr. Thornton has served as president of the California Association of Criminalists, chairman of the Criminalistics Section of the American Academy of Forensic Sciences, and chairman of the Ethics Committee of the California Association of Criminalists.

The authors regard his most influential works to include "Uses and Abuses of Forensic Science" (Thornton, 1983); "Courts of Law v. Courts of Science: A Forensic Scientist's Reaction to Daubert" (Thornton, 1994); and "The General Assumptions and Rationale of Forensic Identification" (Thornton, 1997). Among his most recent contributions to forensic criminology is an ethical canon for crime reconstructionists published in Chisum and Turvey (2007).

Dr. Thornton is currently semiretired, working as an evidence specialist and crime scene investigator for the Napa County Sheriff's Department, just north of San Francisco.

**Dr. Paul Wilson**

Professor Paul Wilson is a criminologist and forensic psychologist who describes himself as a "generalist" in terms of his academic work but has developed an interest in recent years in forensic criminology issues. He has been Chairperson of Sociology at the University of Queensland, Foundation Dean of Humanities at the Queensland University of Technology and Director of Research and Acting Director at the Australian Institute of Criminology. For eight years he was Dean of Humanities at Bond University and is currently Chair of Criminology at the same university.

Professor Wilson has also held several appointments in North America. He has worked and lectured at the Seattle Crime and Justice Research Centre in Seattle (largely in the area of rape investigation), the University of California at Irvine (on risk assessment and medical negligence), and Simon Fraser University in Vancouver, Canada. During these appointments, he worked with prominent American criminologists Henry Pontell and Gill Gels and published articles on medical fraud. In 1990 he spent six months as the Rutgers University Library Fellow in New Jersey, with Professor Ron Clarke working on situational crime prevention techniques, a program that led to Clarke and Wilson establishing a crime prevention unit within Australia's national telephone carrier.

Professor Wilson has coauthored, edited, or written over 30 books, including *The Two Faces of Distance* (coauthored with the internationally acclaimed criminologist Professor John Braithwaite who was Wilson's first Ph.D. candidate, is renowned for his work on reintegrative shaming, and won the Stockholm prize for criminology in 2006). Wilson's *Black Death* (which was based on evidence he gave in a landmark Australian
case assessing the reasons why Aboriginal Australians had such a high rate of violence. The Other Side of Rape was another seminal work because it was the first detailed examination of unreported rape in Australia. His coauthored textbook (with Professor Duncan Chappell) The Australian Criminal Justice System is now in its fifth edition, and together with Sydney Morning Herald journalist Malcolm Brown, he coauthored Justice and Vigilantes, a book that assessed the failures and successes of forensic science in major criminal cases in the Antipodes.

Professor Wilson is especially interested in the courts of appeal. His book Who Killed Leanne (with Catherine Crowley) pointed to the dangers of tunnel vision in police investigations of murder cases and his recently published Forensic Lust: The Untold Story (with Dianne McIntyre) outlined the problems of convicting on DNA evidence alone. He currently teaches courses in miscarriages of justice and is working on several other cases, one of which is before the Queensland Court of Appeal for a record-breaking third time.

As well as having prepared reports and given evidence in many criminal and civil proceedings, Professor Wilson has presented evidence in some major cases. These include the Rabie case, the first major test in Australia of the right of government to extend the time that prisoners serve in prison because of their propensity to commit future violence; a number of civil cases involving the rights of criminological experts to give evidence in Australian courts; an investigation into several controversial cases relating to the acceptability and effects of any, of bondage material, brochures, and adult bookshops. He has also given evidence in Bali, Indonesia, in the case of Schapelle Corby, accused of smuggling drugs into the country, and is on the list of Expert Witnesses for the International Criminal Court in The Hague.

Professor Wilson has recently published a book, and a sequel, of profiling in terrorism prevention and is currently researching, with others, the effects of unacknowledged and sometimes misleading forensic evidence presented in court. He has also recently completed a study on the effectiveness of CCTV. In 2003 he was awarded the Order of Australia Medal for his contributions to criminology.

Moving Forward

Each of these authors has contributed mightily to the purposes of forensic criminology by virtue of casework, a commitment to higher education, and extensive publications in their respective areas of criminological interest. Students are encouraged to seek out the works of these authors, read them carefully, and keep them in their personal libraries for future reference.

As forensic criminologists, we need to remember our roots. We need to remember those who came before us—their work, their words, and their purpose. We need to remember that while the practical aspects of criminology have fallen by the wayside for many, it is a science that can be applied to real-life problems in real-life situations, especially where the law is concerned. But not lightly, and not carelessly. There are many players, and there are many rules. In the words of Wolfgang (1987, p. 34):

The litigation process has a different set of operating procedures than does scientific inquiry. Scientific evidence is judged within the context of legal rules of evidence, especially doctrines of conclusiveness, that do not always coincide with the rubrics of evidence in the manner in which they order knowledge of empirical reality... The preceptors of science must be alert to these constraints and be prepared to accept challenges outside their disciplines by others trained in the premises of law, the adequacy of logic, and the rigors of reasoning.

The remainder of this text will be dedicated to educating criminology students and the forensic criminologist practitioners in the nature of forensic criminology, the kinds of examinations performed, the types of professionals involved, and the rules of law that govern their work such that they will meet these challenges successfully.

SUMMARY

Forensic criminology is the scientific study of crime and criminals for the purposes of addressing investigative and legal questions. This chapter reviewed how this type of criminology was developed from the broader applied criminology and how it differs from police science. What a science is, what scientific knowledge is, and the importance of the scientific method were discussed at length. It was further noted that the single distinguishing feature of forensic criminologists, with respect to any other type of criminologist, is the expectation that their findings will be submitted as evidence within the context of a formal investigation or legal proceeding.

The four major branches of the criminal justice system were discussed at length, including law enforcement, forensic science, judiciary, and corrections. It was further noted that the boundaries of criminology, as a field, are broadly and poorly drawn. The vast and various subdisciplines of criminology were discussed in an attempt to illustrate this breadth and to outline these boundaries for more informed study.

The history and origins of forensic criminology were discussed, with specific mention of the major contributors: Dr. Hans Gross, Dr. Edmond Locard, August Vollmer, Edward Heinrich, Dr. Paul Kirk, and Dr. Marvin Wolfgang. The importance of, and difference between, generalists and specialists in forensic criminology was also outlined in detail, and it was explained that the specialist

...
is highly proficient and informed regarding a very restricted area of practice, while the generalist has a broad spectrum of knowledge from multiple areas of study and has multiple areas of expertise.

Finally, the importance of precedent-setting cases in the United States was discussed, including Ake v. Oklahoma, where it was recognized that every individual has the right to independent forensic expertise. It was noted that this is particularly important to forensic criminologists because without such rulings the checks and balances presented in other fields for peer review are not present, and the system cannot function fairly. As mentioned, these cases have opened the door for many independent forensic criminologists to make substantial contributions to various areas of forensic criminology, allowing for the continued existence of this field.

Review Questions

1. For a dispute to fall under the banner of criminology it must be ________.
2. Name the three elements involved in the definition of a science.
3. T/F Those who work in laboratories are considered scientists.
4. T/F In an adversarial system, the defense must prove innocence.
5. T/F Forensic science procedures are most often employed privately.
6. T/F There is no governing body for criminologists.
7. Define and explain Howard's Exchange Principle as it is used today.

REFERENCES

References


