An Introduction to Forensic Criminology

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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 inculcation of such a value system is analytic education.

Hoover (1995, p. 247)

KEY TERMS

Adversarial System: A legal system in which at least two opposing sides contend against each other for a result most favorable to themselves.

Applied Criminology: The application of criminological theory to criminal justice practice. This includes the application of criminological knowledge to the making of laws, the management of police agencies, the management of prisoners, and the treatment of victims.

Corrections: The branch of the criminal justice system that deals with the probation, incarceration, management, rehabilitation, treatment, parole, and execution of convicted criminals.

Criminal Justice System: The network of government and private agencies that deal with accused and convicted criminals.

Criminologist: An individual who studies and interprets the biological, social, behavioral, and/or cognitive aspects of crime and criminality.

Criminology: The scientific study of crime and criminals, including biological factors, psychological factors, victim traits, punishments, and the control and prevention of crime.

Forensic Criminology: The scientific study of crime and criminals for the purpose of addressing investigative and legal questions.

Forensic Services: The branch of the criminal justice system that deals with the examination and interpretation of evidence, be it physical, behavioral, or testimonial.

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Judiciary: The branch of the criminal justice system that deals with the adjudication and exoneration or punishment of criminal defendants.

Law Enforcement: The branch of the criminal justice system that deals with reported crime.

Police Science: A general term referring to the narrow collection of subjects and disciplines specifically related to police work. It does not refer to scientific policing or to the police as scientists.

Science: An orderly body of knowledge with principles that are clearly enunciated which is reality oriented and whose conclusions are susceptible to testing.

Scientific Knowledge: Any knowledge, enlightenment, or awareness that comes from examining events or problems through the lens of the scientific method.

Scientific Method: An approach to knowledge building and problem solving employed by scientists in which how or why something works or how something happened is investigated through the development of hypotheses and subsequent attempts at falsification through testing and other accepted means.

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 domain of the criminologist; and the relationship of both to the criminal justice system. Then we will discuss forensic criminology and its distinguishing features. We will close with a discussion of key historical figures and modern architects of the profession.

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 (1999, 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.

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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 falsify, 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
two sides in each criminal matter: a prosecution representing the government and its citizens, and a defense representing the accused. As defined in Black (1990, p. 53):

[An adversary system is a] jurisprudential network of laws, rules and procedures characterized by opposing parties who contend against each other for a result favorable to themselves. In such a system, the judge acts as an independent magistrate rather than prosecutor; distinguished from an inquisitorial system.

Ultimately, each side of this legal contest works to convince a judge or a jury that its position is the most correct.

In an adversarial system, all defendants are entitled to an adequate defense and due process, while the burden of proof is on the prosecution. The prosecutor must prove guilt beyond a reasonable doubt rather than the defense being required to prove innocence. Alternatively, the defense must prove only that there is reasonable doubt with respect to the prosecution’s theories regarding their client’s guilt. If a defendant is convicted of a crime, that person may continue to have or need legal representation as he or she moves through the criminal justice system, or he or she may not. This type of system is also found in Australia, Canada, the United Kingdom, and parts of Europe as well.

In the United States, attorneys for the prosecution work exclusively for the government at the county, state, or federal level. They are charged with seeking the truth regarding criminal matters on behalf of the citizenry. Unfortunately, prosecutors are often elected, appointed, promoted, or otherwise advanced based on their conviction rate. This can cause some to be less interested in “truth seeking” and more interested in what they can prove in court to obtain a politically desirable legal outcome. This agenda may also explain why “get tough on crime” strategies are political gold for those who can only gain, and justice system kryptonite for those who have everything to lose (the wrongfully convicted, the wrongfully accused, and any other victims of an errant criminal justice system).

In opposition, attorneys for the defense are not necessarily interested in the truth, but rather are ethically bound to zealously advocate for the best interests of the accused—their client. Some defense attorneys work for the government as county, state, or federal public defenders. Others work in private practice. Defendants with the financial means must hire a private attorney. However, doing so can be prohibitively expensive. 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 or 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 this 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 swung 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 cancerous, 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. xx). 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. 149):

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 Sequence of Events in the United States Criminal Justice System. From the reporting of crime, to its investigation and adjudication with related sentencing and the involvement of corrections to release or capital punishment. Taken from BJS (2004).
This conceptualization has changed little since criminologist and police
reformer Elmer Graper wrote of law enforcement duties in the early 1920s
(1969, 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
ddicted 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, techni-
cians, criminalists, pathologists, and forensic mental health experts per-
form 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 enforce-
ment 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 felons “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 residency. 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 aide
- 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 criminalist—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 semirelated 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, to 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 effects 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.

Rockless (1955, p. 6)