

FORENSIC SCIENCE UNDER SIEGE

*The Challenges of Forensic Laboratories
and the Medico-Legal Investigation System*

KELLY M. PYREK



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**THE CHALLENGES OF FORENSIC LABORATORIES
AND THE MEDICO-LEGAL DEATH INVESTIGATION SYSTEM**

Kelly M. Pyrek



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To the outstanding individuals in the crime labs and medico-legal offices who seek justice for the living and for the dead.

To Judi and Tony, with love and gratitude.

FOREWORD

Kelly Pyrek is a passionate person. She is passionate about forensic science and understands the importance of timely, high-quality forensics to the criminal justice system. More specifically, she understands how science and technology can be used to help the police, prosecutors and the courts to make certain that guilty people are convicted of crimes and innocent ones are not harmed.

I had the great pleasure to have met Kelly several years back. She edits a forensic nursing magazine which I've contributed to and I've spoken at a seminar she helped coordinate. During that time and later we discussed a wide variety of forensic science issues and the ways in which forensic science in the United States could be improved. From those very preliminary discussions came the idea to write a book on the topic and interview many people to get their opinions on the issue at hand. Kelly's enthusiasm for forensic science and its potential contribution to the criminal justice made this book a reality.

In 16 chapters, Kelly covers the scope and breadth of forensic science from a public policy point of view. Through in-depth interviews of knowledgeable people, she explores the field and examines the problems, real and imaginary, facing this profession and explores some of the bright spots on the horizon.

Kelly deserves kudos for taking on this complex field and for her enthusiastic support of those who daily labor in the trenches to help forensic science meet its potential to improve the criminal justice system in our country.

Barry A.J. Fisher
Los Angeles, California

PREFACE

“There is nothing more deceptive than an obvious fact.”—*Sherlock Holmes*

Forensic science is under siege. If you are a practitioner in the field currently, you already know this. If you are a stakeholder in the criminal justice system, you already suspect this. And if you are an interested layperson, you are about to discover this.

Forensic science is so ubiquitous that its terminology has become a part of our everyday lexicon and its images burnished into our collective consciousness. Forensic science is familiar because we are voyeurs at heart; weekly, we tune in to watch the fictional character Gil Grissom collect evidence at crime scenes and Jordan Cavanaugh conduct autopsies. For a dose of reality, we dial up Dr. Henry Lee or Dr. Michael Baden providing commentary on a high-profile crime on cable news. And for a nice session of armchair sleuthing, we turn to the case re-enactment shows that allow us to try our hand at solving crimes like the professionals.

Forensic science is approachable, like a de-clawed cat, because it has been reduced to the lowest common denominator. Stripped of its complicated science and mundane technical details, and sexed-up for the cameras, forensic science for the masses is a slick, sophisticated, manufactured commodity, heavy on soundbites and stereotypes, and light on substance.

Forensic science is a look-but-don't-touch proposition. We are allowed to leer, through played fingers in front of our eyes, at the horrors of man's inhumanity to man, but it is a sanitized peep-show; the gore and the grit have been removed, leaving a sheen and a sparkle that simultaneously dazzles and deceives.

A steady diet of this forensic science fact and fiction creates a real-life conundrum. Unrealistic expectations are fostered, misperceptions fester unchecked, and assumptions about what forensic science can and cannot achieve are negatively impacting the provision of forensic science services and, ultimately, hampering the operations of the U.S. criminal justice system.

The next 16 chapters will escort you on a journey through the inner workings of forensic science, introducing you to how and why this field is under siege, and why it matters so greatly to the future of the adjudication of criminal cases. Forensic science affects deeply every individual alive—and dead—on the planet today. In life, forensic science can condemn, acquit, or exonerate; in death it can help determine and explain causation. For this reason, it is imperative that every individual understand how forensic science and its practitioners truly function, and why the outcome of this contentious, win-at-all-costs war over forensic science has direct implications for all members of society.

As we will see in subsequent chapters, engaged in battle most frequently are social scientists and legal scholars vs. forensic practitioners in a tussle over, if you will, ownership rights: Who owns forensic science, who has the right to dictate to it, and who will ultimately assume leadership over a field with immense power and strategic access to all three levels of U.S. government—legislative, judicial, and executive. The feud is triggered by allegations of errors, fraud,

and malfeasance on the part of forensic service providers that undermine criminal justice, and fueled by disagreements over a diverse plank of issues ranging from the very definition of science and its purpose, to the admissibility of forensic evidence in a court of law, to the effects of a significant paradigm shift some commentators say is occurring at the nexus of law and science—the place where forensic science lives.

One very important argument that we will explore is the allegation by critics that forensic science is deficient in scientific methodology and rigor—with the extremists asserting that it is utterly lacking in science altogether—and the response from forensic practitioners, stunned by the charges, that forensic science was born from and is steeped in the traditional sciences. Both sides sputter at each other's stances, incredulous that the other would make such naïve, "unsubstantiated" claims, totally devoid of empirical data and ridiculously reasoned. In Chapter 10, we explore these claims and try to offer various perspectives on the definition and purpose of science in whatever iteration exists these days—applied, natural, pseudo, or pure.

I wonder, as we call into question the very science that presumably explains our world, do we also question the meaning of truth? If science is the ultimate pursuit of truth, are we only hurting ourselves if we decimate one of the foundations of reason and rationalism? And are we getting into dangerous territory when we, with prescience, decide that one thing is science and the other is not? While science lays one mystery to rest, it creates still others to ponder. Are we guilty of pigeon-holing and packaging science to our liking, as a social construct and a byproduct of a consumer-driven country, so that it more easily explains the world that we have crafted and subjugated to our will? I believe the very nature of science perpetuates ongoing discovery; and that science is not a finite entity capable of being restrained. I believe further that science is the ongoing building of knowledge, a journey instead of a destination. But that is an upsetting concept to some commentators who expect finiteness and certainty from their favorite brand of science.

Another issue going to the heart of this book is the fact that members of the public—potential jurors—are confused and upset when more of science in general, and forensic science in particular, is demanded from it that it can rightly yield. Consumers of popular culture and the mass media expect absolutes in certainty, validity and reliability; however, as Cohn and Cope (2001) observe, "The first thing to understand about science is that it is almost always uncertain." The uninformed place science on a pedestal, assuming it is neutral and objective when it is inherently political, a commodity used to prove or disprove almost any hypothesis. Science is relied upon to help us explain the mysteries of our world, but can it be trusted implicitly? We hear about conflicting studies, fraudulent research, bias, and errors, and dubious assumptions and conclusions. Science is a slippery slope; as one scientist remarked, "Is science always right, or is it increasingly less wrong?" Sort of turns your world upside down, doesn't it?

Not only must forensic science operate on this belligerent scientific plane, but it also must survive the medico-legal turbulence created in the courtroom. Much of this book examines the symbiotic relationship of the law and forensic science, two dissimilar entities co-existing in an intimate association that mimics the six relationships found in the biological incarnation of this scientific term symbiosis: Parasitism, in which the association is disadvantageous or destructive to one of the entities and beneficial to the other; mutualism, in which the association is advantageous to both entities; commensalism, in which one member of the association benefits while the other is not affected; amensalism, in which the association is disadvantageous to one member while the other is not affected; neutralism, in which both entities are unaffected, and competition, in which both organisms are harmed.

You may draw your own analogies, but for example, to me, parasitism occurs when a defendant is wrongfully accused, while mutualism occurs when there is proper adjudication of a criminal case and justice is served. There are varying degrees of commensalism and amensalism throughout the criminal justice process; while neutralism is generally rejected, and competition seems to be the order of the day. Kudos to Rudin and Inman (2001) for recognizing that the adversarial nature of the U.S. legal system, rife with personal attacks, very much throws symbiotic relationships out the window: "Often it is much easier for an attorney to try to discredit the testifying expert than the evidence itself. It is a sad commentary on both professions when much of the discussion is focused on either perpetrating or defending oneself from attacks, rather than attempting to understand what the evidence is telling us. We are invited participants in the judicial process; without the lawyers, none of us would have a job. Yet, to best assist the judicial system in analyzing, interpreting, and understanding physical evidence, we must maintain our objectivity, autonomy, and identity; we cannot become simply a pawn of either side of the system."

Going to the heart of much of the debate addressed in this book is the controversy of the autonomy of forensic service providers; while the forensic science community wants self-determination, critics assert that forensic science is a veritable Wild West, complete with rogue cowboys and hired guns, and that the field is completely lacking in oversight and quality control mechanisms. A better system of checks and balances is needed, commentators assert, to prevent analyst and examiner bias, curtail and prevent errors, expose fraud, and in general, optimize the field. Most forensic practitioners would agree that this is a mutual goal, but they bristle at the way in which they and their work is denigrated and dismissed by commentators in ivory towers and not in the trenches. It is the blanket indictment of forensic science that causes so many practitioners to become hostile and defensive, even when they have no reason to be; it is a defense mechanism cultivated after years of accusations that may or may not actually bear any legitimate weight.

Like the physician taking the Hippocratic Oath of "First, do no harm," the forensic practitioner takes his or her own pledge; as the American Academy of Forensic Sciences (AAFS) notes, "The forensic scientist's goal is the evenhanded use of all available information to determine the facts and, subsequently, the truth. Some place their faith in forensic science to the degree that they are under the impression that it is absolute, infallible and unassailable. In truth, it is a manmade construct, dependent upon manmade machinery, man-calibrated accuracy, man-led action under manmade protocols, and analyzed by man—an altogether human construct." Instead of a reckless community playing God, it is a thoughtful, concerned group of professionals searching for the same kind of answers—but in their own way. As Inman and Rudin (2001) observe, "The reputation of forensic science has been significantly tarnished in recent years. A number of unethical, unprofessional, and immoral acts have been clearly perpetrated and we condemn them. However, because of the public impact of forensic investigations and analyses, they often become fodder for journalists, the most well intentioned of whom has little or no scientific expertise and likely no forensic background. We cannot allow the media or political bodies to police our profession, especially in the forum of public opinion. We must enforce standards from within the profession; if we are unwilling to monitor analyst integrity on our own, it will be done for (and to) us."

As philosopher John Locke once remarked, "It is one thing to show a man that he is in error, and another to put him in possession of the truth." As we will see throughout this book, forensic service providers and critics are locked in a battle for the truth, each determined to take the other down the road to redemption they see fit to pursue. It is a journey fraught with the same kind of tension to be found in the adversarial nature of the law and traversed with

the same spirit of contemplation that should characterize all medico-legal endeavors. In Chapter 9 we discuss the oft-cited paradigm shift affecting forensic science, a concept suggested by social scientists, watched keenly by legal practitioners, and debated by forensic professionals. Rudin and Inman (2005) opine, “The forensic science paradigm has already shifted. Both the profession and the practice have changed significantly over the last decade, for more reasons than merely the introduction of DNA typing into the forensic lexicon. The question is, will we, as a profession, actively determine the direction of shift as it continues, or will we sit passively while others make those decisions for us.”

It is grossly unfair to depict all forensic practitioners as deceitful, biased, careless individuals with hidden agendas. Yes, there are a few people who have given the field a bad name, but to classify an entire profession as liars and cheats is undignified and incredibly disingenuous. What I have come to realize about the forensic science community is that it is filled with individuals too dignified to stoop to the level of those who would attempt to engage them in mud-slinging. Not only are they much too busy to be caught up in a round of finger-pointing, they know they must conserve and direct their energy toward the one thing that matters: The evidence that must be analyzed, or the decedent on the autopsy table. In both cases, the task at hand will yield valuable information used to answer the questions that arise. Anything else is subjugated, and rightly so. However, it seems to me that on occasion, it would benefit the forensic science community to respond to the intellectual and scientific taunts, if only to use it as an opportunity to correct the misperceptions, clarify the issues, and resolve the disputes whenever possible. To this end, I was gratified to find the following passage penned by Rudin and Inman (2006): “While the many observers of forensic science comment vociferously and frequently, the forensic community is comparatively silent. We must understand that we invite reinvention by leaving a vacuum; if we do not take positive action, the consumers of forensic science will fill the void and define our profession for us. Although input from both the consumers of forensic science and from the academic disciplines from which it is derived should be welcomed, we cannot let others define our practice and our profession.”

Forensic practitioners simply want to be respected for their knowledge, abilities, and contributions. For far too long they have been misunderstood, unappreciated, and expected to accomplish their goals without adequate resources, infrastructure, and support. They want to be understood, and they want the stakeholders in the criminal justice system to appreciate their limitations. They also want these stakeholders to have realistic expectations for the caseloads they handle, and the immense pressures they experience daily. As we will see in Chapters 4 and 7, the attacks on these forensic science professionals are numerous, and as we will see in Chapters 5 and 8, the grim realities faced by forensic laboratories and medico-legal offices only add to the pressure-cooker environment.

Forensic service providers need and deserve increased, reliable sources of local, state and federal funding. It's the only way they can add the personnel and equipment necessary to clear cases, address backlogs, and function efficiently, let alone keep up with the increasing demands of the future. Funding is the engine that drives everything related to quality assurance and improvement in forensic science.

Forensic service providers need and deserve adequate infrastructure in order to perform their duties. So much of it is crumbling, inadequate, or downright dangerous. There is a frightening lack of parity among forensic laboratories and medico-legal offices when it comes to the quality of physical facilities, equipment, and available technology.

Forensic service providers need and deserve improved access to top-notch education and training for veterans as well as those who are new to the field. They need to stay sharp, and they must keep pace with the advancing technology that will only increase with each decade.

Forensic service providers need and deserve a system of quality control and improvement that is neither overly punitive nor inadequate to address any cases of true malfeasance or fraud that occur. It needs to be a system that they can live with, enhancing their work but one that is not overly limiting or constraining. They want a partner in improvement, not another taskmaster.

Forensic service providers need and deserve an environment in which they can practice good science. They are accused of trafficking in junk science, when they desperately need funding for research to bolster the science associated with specific forensic disciplines under attack, such as latent fingerprint examination.

Forensic service providers need and deserve improved communication along the entire spectrum of the criminal justice continuum, with all stakeholders involved and with buy-in from key decision-makers and legislators who hold the power and the purse-strings.

Forensic service providers need and deserve a safe haven to air their grievances and concerns without censure. Don't make them jeopardize their futures and their pensions if they identify areas of concern but are afraid to speak up. Create for them an environment that is conducive to improvement without repercussions or professional penalties.

Forensic science providers need and deserve to be added to the top of this country's lengthy list of priorities, especially in light of their relevance to public health and homeland security in addition to criminal justice.

* * *

If you couldn't tell, I feel very strongly about the need to champion forensic science because it is a crucial underpinning of the entire criminal justice system, because it is a pillar supporting the heavy weight of democracy, and because it is a vital component of so many liberties and rights we have come to alternately expect, demand, and forfeit. I also feel very strongly about the need to tell the whole story of forensic science, and not just the one-sided snippets and soundbites that constitute the mass media in an unfortunate era of tiny attention spans. I am bothered by the shallow depth of the majority of coverage of forensic science in the mainstream media. With very few exceptions, reporters crank out versions of the same tired lists of offenders and issues that have been promulgated everywhere for years. A prime example of this is the mileage the media has gotten from the so-called "CSI effect" that is explored in Chapter 13 as part of a larger look at the stakeholders in the criminal justice system; run a search of "CSI effect" on Google, and you'll run out of time before you run out of hits. There is nothing wrong with the exposure to forensic science that the popular culture has facilitated, but I am distressed by the resistance the media has shown to fully understand the deeper issues related to forensic laboratories and medico-legal offices and translate these issues for its consumers. I can criticize the media in this way because I am a member of its ranks. As a seasoned journalist, I understand the need for telling a story beyond the obvious, and for digging a little deeper to expose the undercurrents of any issue. Every time news of a lab scandal or a botched autopsy breaks, the report is inevitably formulaic, and that is disappointing to me. Some commentators have made their names and fortunes solely by riding the media merry-go-round, supplying a requisite soundbite but never really adding to and expanding the dialogue. I suspect we can do much, much better than this. It's a ratings game, and scandals make good ink, but I fear that in the stampede to cover the story, forensic science gets trampled underfoot.

Forensic science is indeed under siege, and it is a death by a thousand cuts. Those inflicting the most damage are the individuals who refuse to become educated about the issues.

The problem is, there are few opportunities for erudition because very few of the debates taking place occur within national forums and even fewer present the issues with meaningful context preserved. Critics and commentators snipe at the forensic science community under the cover of white papers and journal articles with amusing headlines, such as, "Oops! We forgot to put it in the refrigerator: DNA identification and the state's duty to preserve evidence." (I swear I did not make this one up; it came from a law review journal.) All very amusing, but it does nothing to advance productive dialogue about the issues, let alone resolve the problems. Instead, it fans the flames of hostility between the very individuals who stand the best chance to finally effecting real change. The sniping and the finger-pointing must stop, replaced by peace talks that facilitate agenda-building and conflict resolution.

One member of the forensic science community told me that what is desperately needed is a single song sheet from which the assembled choir could sing; meaning that to achieve the goal of improving forensic science, there must be clear, unwavering consensus, not just among a few, but among all of stakeholders. This book is designed to serve as a critical mass of information, opinions, and perspectives about what is wrong about forensic science, what is right about forensic science, and what is very much mistaken about forensic science. It is meant to serve as a vehicle for discussion, whether it is practitioner to practitioner, practitioner to lawmaker, or practitioner to critic. This book enumerates the issues, presents suggestions for improvement, and most of all, challenges the assumptions that forensic science is broken. This is not to say that there are not elements of the profession that need fixing; however, I object to the assumption that the field is too far gone. The challenge of writing this kind of book is that there is no definitive ending to the debate; the issues are shifting sands but the principles involved are enduring. Instead of serving as a definitive tome that has all of the answers, it asks more questions. This book is a springboard to further inquiry, as it was designed to be.

It also endeavors to bring the issues of two pillars of the criminal justice system together for the first time. Much attention has been focused on crime labs, but medico-legal offices housing medical examiners, coroners, and medico-legal death investigators, have had less time in the spotlight. Not surprisingly, their issues are very similar, if not identical, and create exciting parallel opportunities for improvement. There is a disconnect, however, between many forensic laboratories and medico-legal offices at the local, state and federal level, which hinders both systems, and this is perpetuated, I suspect, by a lack of understanding of how the systems are symbiotic and dependent upon one another. Not until an event such as 9/11 do we comprehend how the various forensic and medico-legal disciplines come together to identify the deceased, investigate the cause of the disaster, and provide answers for the living and the dead. For too long this link between the living and the dead, and the appreciation that forensic professionals serve dual constituencies have not been recognized by the general public and by legislators, the two groups most affected by and influential upon, respectively, the forensic community. It is my hope that these connections can be made, and a better understanding of the interaction between forensic laboratories and medico-legal offices is fostered.

Most of all, I wrote this book to show the forensic science community that it must take a more proactive stance if it is to weather its time under siege. The community has been silent for a very long time, and when it does respond, it has done so in a largely reactive and defensive manner, which instantly triggers renewed bouts of criticism. As we will see in Chapter 14, the forensic science community has only very recently created a consortium that can act as an entity of like-mindedness and represent the diverse and occasionally divergent interests of its eight forensic service provider organizations. These are honorable people with good inten-

tions, a passion for their work, and the overriding desire to get it right. They are distressed by accusations that they are anything less than disciplined, capable, objective fact finders for the medico-legal system. But they have kept a low profile, and it is incumbent upon them to assume responsibility for the protection of their reputations, the preservation of justice, and the upholding of accurate forensic analyses. They must achieve this through advocacy work, through interaction with the media and with lawmakers, and through diligence in academic-based research and empirical data make their forensic disciplines bulletproof. When this happens, everyone wins because quality is actualized, communication is achieved, and forensic science is validated. The forensic science community must continue to endeavor to voice its concerns and galvanize the appropriate responses to charges laid against the forensic disciplines.

* * *

In 2001 I embarked on one of the most fascinating and rewarding journeys I have ever taken as a journalist who is closing in on a quarter-century of inquiry about the world in which I live. That was when I first discovered forensic nursing. Mind you, I have been a forensic science fan since discovering Sir Arthur Conan Doyle when I was eight; that appreciation has only grown as fate—and a few strategic work assignments—led me down a very fortuitous path. As I started observing, interacting with, and writing about the forensic nursing field I quickly learned how these amazing nurses interact with the larger forensic science community, and that is how I first met an extraordinary group of individuals comprised of crime lab directors, medical examiners, and medico-legal death investigators. Through exploration of the world of forensic nursing I discovered the bigger-picture needs and issues of the forensic science community. I began attending meetings of the American Academy of Forensic Sciences (AAFS), reading journals, and talking to the people in the trenches in forensic laboratories and medico-legal offices across the country. I began seeing a pattern relating to legislative undercurrents, and dire infrastructure and budgetary needs. Being expected to do too much with too little was a constant among the numerous variables facing this field. I am exceedingly fortunate to know a number of remarkable practitioners who are tireless in their devotion to the field and in the sacrifices they make in order to advocate for their profession, serve as a role model for their peers, and in general champion the cause of forensic science at a time when it is very much under siege.

Barry A.J. Fisher has become a professional associate, ally, and friend. His many kindnesses over the years have included encouragement, referrals, long discussions about the state of the field, and earnest dialogue about what must change in order for forensic science to work as effectively as it should. His tutelage has been of tremendous assistance to me as I continue to be an earnest and eager student. Barry is joined by a long list of stellar individuals who were gracious in sharing their time and their expertise with me for this book as well as many other projects.

Not everyone I contacted for an interview for this book wanted to speak to me. Many declined my invitation to talk about the issues because they feared professional repercussions, or felt that everything that could be said about the issues had been already. Several individuals felt there wasn't much merit in the project, and while I won't name names, I am frustrated by their near-sightedness and their declining of an opportunity to add their perspective to the mix. One individual taunted me about my ability to garner honest, open opinions on difficult topics, much less offer anything new to the dialogue. Again, while I would never presume to be the authority on the issues facing the forensic science community, my motiva-

tion for writing this book was to create a critical mass of information that would summarize the issues and articulate in some meaningful way the need for greater consensus-building both internally and externally of the field, as well as the importance of communicating a progressive agenda to the decision-makers who determine the future of forensic science within the criminal justice system. In the several years leading up to this project, it appeared to me that commentators were not only asking the questions, but supplying the answers, and the practitioners themselves had very little to say; not because they had nothing to offer, but because they relegated their opinions to the few small opportunities to provide comment in the press. And quite often it was a defensive tactic in the midst of attack, not a proactive stance when battle was not being waged in the media.

Rudin and Inman (2006) perhaps say it best when they comment, "Observers feel justified in commenting . . . that the field is not sufficiently self-critical. Historically, we tend to justify, explain, and rationalize before we agree to make substantive changes. Why is this? Much of the problem lies in the very fact that our job is to defend our work on a daily basis. It is easy to confuse defending our work with defending ourselves. There exists an underlying fear that human fallibility is not an option. This very real fear is fueled in large part by the vociferous and condescending attacks of legal observers, often through the public channel of the media. Sometimes, this unfortunately has been the only way to force a wayward lab to open itself to independent review, providing a justification on which the critics can hang their hats. However, as a general approach, it is not an effective tool to promote openness, transparency, and positive change."

Throughout this book you will be presented with the strong views of critics, commentators, and champions of forensic science. I don't think that all critics are evil, and in fact, many of them have made well-reasoned arguments and valid statements that should be considered carefully. Some of the critics are full of bluster and bother, and while they are buoyant on their own cloud of hot air for now, they have to come back down to earth—and to reality—at some point. A few critics expressed to me their sincere desire to improve the forensic science community, and I believe them. But they don't have to win me over; they have to win over the forensic practitioners they may have alienated with their collective tirades. I think that if everyone can come to the peace-talks, open minds will abound and overcome.

If there is one overriding thought I would like you to take away from this book, it is that the sky is not falling. Don't read and digest the headlines without discernment because isolated incidents occur in every profession; mishaps are isolated and not systemic, and certainly not exclusive to forensic science. Do they signal the need for attention? Most definitely, and the forensic science community is very aware of the necessity for a deeper foray into the issues. While Rudin and Inman (2006) insist that the forensic science community must define its own agenda, they recognize that it is not a solo endeavor: "We must accept that practicing criminalists are not going to single-handedly solve many of the challenges facing the forensic profession today. We simply do not have the time, monetary resources, academic resources, or, in many cases, adequate education and training. We must actively solicit assistance from and seek partnerships with our clients, those in the legal profession, and from our roots, the academic 'feeder' disciplines that form the basis of our applied science. Furthermore, forensic science needs to be an ongoing and formalized academic endeavor, supported with concomitant funding, human resources, and competent direction. If we cannot develop and support our opinions based on science, rather than policy, then those who like to refer to working criminalists as technicians will be entirely justified."

As we will see in Chapter 16, there are numerous new opportunities to study these imperatives, share perspectives, and draw conclusions that will gain traction in the real world. Instead

of pointing fingers, within the next several years we can hope for productive, proactive approaches to resolving the issues that for far too long have been allowed to undermine the great strides taken in forensic science. After all, isn't a dialogue is much better than a monologue when it comes to determining the future of something as important as forensic science?

REFERENCES

- Cohn V and Cope L. *News and Numbers: A Guide to Reporting Statistical Claims and Controversies in Health and Other Fields*. Second edition. Blackwell Publishing Professional. 2001.
- Rudin N and Inman K. The shifty paradigm. *CAC News*. 2006.
- Inman K and Rudin N. *Principles and Practice of Criminalistics: The Profession of Forensic Science*. Boca Raton, Fla.: CRC Press. 2001.

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