

Fourth Edition

Criminal Justice Technology in the 21st Century

LAURA J. MORIARTY

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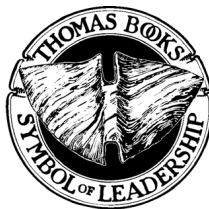
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CRIMINAL JUSTICE TECHNOLOGY IN THE 21ST CENTURY

Edited by

LAURA J. MORIARTY

(With 21 Other Contributors)



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To the next generation of technology creators and users

Henry
Jim and Maggie June
Laurel Elaine

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He is a critical scholar whose teaching and research seek to answer whether a better and more equitable world is possible (spoiler: It is if we know where to look). He is published in *Youth Violence and Juvenile Justice*, *Police Quarterly*, and *Crime & Delinquency*.

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PREFACE

The fourth edition of *Criminal Justice Technology in the 21st Century* comes just about five years after the COVID-19 pandemic when technology took a more prominent role in our everyday lives and, more importantly, in the criminal justice system. Ideas that once were mere thoughts from academics pondering the future have become everyday realities. While most areas of life came to a standstill as the pandemic ensued, the criminal justice system could not stop. Crime adapts more seamlessly than other aspects of society, and as such, the criminal justice system needed to adapt as well. With this in mind, the contributing authors were asked to consider the pandemic and its impact on evolving technology and advancements to address crime. Likewise, other societal concerns focusing on law enforcement and its questionable use of force, at times, have escalated the need for technology to ensure that “over-policing” in minority neighborhoods and accountability is established (or not) as a way to deescalate violence, whether police brutality or protester police violence. The impact of technology remains to be seen, but there is real hope that such technology can begin to shed light on what is happening in these volatile situations.

With this in mind, either the current contributors have updated their chapters from the Third Edition, or we have new contributors focusing on the abovementioned issues. The first chapter by Sam Nunn is almost a total rewrite of his previous chapter. He does an excellent job at providing an overview of technology from his point of view and experience. It is a revelation to see just how much has changed in his 40-year career. His “tales” help the reader to see how technology has been used and updated, serving many areas within the criminal justice system. What is smart is his take on AI as it relates to the justice system and how he sees AI addressing critical issues that will surely be at the forefront for decades. When I was a child, “The Jetsons” (cartoon) was the most advanced technology we knew. Now everything from “The Jetsons,” including smart watches, cell phones, FaceTime calls, Facebook, etc., is a reality. We will not see if Sam’s predictions come true, but it is an interesting “what do you think” game to play.

The following three chapters focus on technology in specific areas of the criminal justice system. AnnMarie and Gary Cordner updated their original

chapter focusing on policing and technology. This updated chapter highlights new technology in light of the pandemic while also addressing what happened at the Trump rally that resulted in an assassination attempt on the former president. Joe Fazari contributes a new chapter on technology in judicial administration. Joe provides a comprehensive overview of court technology based on his vast experience serving in court administration and teaching court administrators. As background, he discusses the challenges of implementing technology, which sets the stage for acceptance of specific types of judicial technology. Likewise, he thoroughly presents current court technologies and concludes with future possibilities. Janice Joseph's chapter completes the first section of the text with her updated chapter on technology in prisons.

Section II focuses on technological advancements in specific areas, such as body-worn cameras (BWC), firearms, victim safety, digital forensics, and artificial intelligence (AI). Three chapters are updated, and two are new additions.

Body-worn cameras are an essential mainstay of policing for protecting citizens and the police. In their original chapter, Martin Koen and James Willis provided an overview of the perceived benefits and drawbacks of BWC. They, along with Gretchen Dowd, now shift the focus in their update to what is known about cameras, their relationship to civilian and police attitudes, and their effects on police behavior. Likewise, they expand the reach of cameras, specifically in criminal courts.

David Mackey and Michael Davidson's new chapter on firearms technology details weapon systems and body armor technologies that are mission-critical for modern law enforcement. A brief discussion of the evolution of firearm technology provides an understanding of the functionality and safety features of handguns. Data on the use and misuse of lethal force are presented. Functions and dysfunctions of less-than-lethal weapons such as conducted energy weapons, oleoresin capsicum, and impact weapons are explored with an emphasis on recent court decisions limiting their use. The chapter concludes by discussing the recently updated National Institute of Justice standards for the rated capability and testing procedures for hard and soft body armor.

Nicolle Parsons-Pollard and I updated her original chapter on the technology used to assist victims of crime. The update includes information on reporting and notification systems and technology to assist in active school shootings. Robyn McDougal updates her previously coauthored chapter on digital forensics, providing current trends in this area. This section's last chapter is new and written by Jason Burkett, Patrick Lowery, and Jess Smith. They focus on AI and law enforcement, providing an overview of the current uses of AI by law enforcement and the issues and considerations that arise from using it.

Section III is labeled “going forward.” The chapters in this section present challenges to utilizing technology, especially regarding civil liberties. Francesca Spina contributes a new chapter focusing on constitutional challenges to new technology used in the criminal justice system. As new technology is created, we must adhere to the protection of civil rights. Similarly, David Mackey and Michael Davidson’s new chapter focuses on surveillance technology with a laudable goal of manifesting law and order. However, as they discuss, balancing this law-and-order perspective against civil rights/liberties is very important. The other two new chapters in this section focus on technology-assisted crime and victimization and how to stay current in an ever-changing field.

Don Hummer and Jim Byrne conceptualize technology-facilitated crime as techno-crime at work, techno-crime as work, and techno-crime after work. Theirs is a unique way of considering techno-crime, and it significantly contributes to this section “moving forward.” They address three issues related to this typology of techno-crime, focusing on the cause, prevention, and control of these technology-facilitated crimes, exploring the link between new technology and lifestyle changes, documenting the limitations of current techno-crime prevention and control strategies, and discussing the potential for governments to use the threat of technology-facilitated crime to justify policies and strategies that move us one step closer to a surveillance society.

Lastly, Raven Muñoz provides many suggestions for staying current in an evolving field especially when books and other sources remain static. As she notes, the technology discussed within this book will most likely have changed by the time it is published. Thus, having specific places to look for new, innovative technologies in the criminal justice system keeps us all current.

This fourth edition, with more than 20 contributors, highlights the most current thinking about criminal justice technology. The book is longer than the previous editions but has fewer chapters. This is the result of paring down what is included in this new edition. The hope is that these chapters will be the most relevant and useful to both the expert and the neophyte. Criminal justice technology will continue to advance, and we must keep abreast of new trends. Hopefully, Chapter 13 will help us do this until the next edition!

L.J.M.

ACKNOWLEDGMENTS

There are 21 contributors to this new edition. The new edition would never have been without their willingness to write chapters to present their expertise. Some of the authors have been included in every edition; others are new to this edition. One thing is true: all are scholars with a passion for advances in technology. It amazes me how much each contributes by either summarizing the current state of affairs or having a vivid imagination that allows for unique perspectives on the future.

The third edition marked my advancement from Virginia Commonwealth University to Monmouth University as Provost of Academic Affairs. In those 10 years, I stepped down as provost, returning to teaching during COVID-19. It was quite an adjustment. Then I retired early to spend more quality time with my family. As a retired Professor Emeritus, I thank my former university, Monmouth University, for allowing me to use many resources, including the library, office space, printers, and computers. It also has been very helpful to talk with colleagues from my former places of employment, including Monmouth, Virginia Commonwealth University, and Western Carolina University. They have served as reviewers and as a sounding board for my thoughts and questions. I thank them all, especially Helen Leary, for putting up with all the printing! Likewise, the chair, Nick Sewitch, of the Department of Criminal Justice, the Dean, David Golland, of the School of Humanities and Social Sciences, and Provost Rich Veit and his staff have been a tremendous help navigating the “retirement” waters while still working on a project.

Several individuals provided blind reviews of the chapters. Their comments were very instructive to the authors and helped me make good decisions about what to include in this volume. Other colleagues are good friends who always have my back: Patricia Grant, Radek Ostrowski, Beth McConnell, Christine Benol, Bob Jerin, and Nicolle Parsons-Pollard.

Michael Thomas and the Charles C Thomas Publisher staff have been very responsive and patient. I am indebted to them all for encouraging the newest edition and always providing a receptive workplace.

Finally, I thank my family. As my dad would often say, “But you’re retired.” It took a bit of understanding to “get” that I wanted to finish working on this

last project before I truly cut the ties to creating academic scholarship. While I will still dabble now and again, I'm very happy to have this be my last hoorah and to be doing so with such a great group of collaborators.

Like my brother says, "Life is short. Eat dessert first!" I intend to do that and much more in retirement.

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**CRIMINAL JUSTICE TECHNOLOGY
IN THE 21ST CENTURY**

Part I

TECHNOLOGY INFRASTRUCTURE, LAW ENFORCEMENT, JUDICIAL ADMINISTRATION, AND PRISONS

Chapter 1

SPINNING TECHNOLOGY'S TALE: STORIES ABOUT THE TECHNOLOGY INFRASTRUCTURE OF CRIMINAL JUSTICE

Samuel Nunn

Imagine the entire collection of all technologies that have ever existed. Imagine all the processes, devices, components, modules, organizational forms, methods, and algorithms in use and ever used. If we were to list these in a catalog, their numbers would be vast. This is the collective of technology, and we want to explore how it evolves.

(Arthur, 2009: 167)

Thinking about a time-based topic—21st-century criminal justice technology—seems to require a temporal perspective that helps us see the nature of *changing* technology. Time is a variable here in many ways. *At any given time*, the technologies available are limited by supply and the state of innovation. *Over time*, the technologies and how they are used evolve within organizations. Suppliers improve their technology products to meet changing demands. Public and private communications infrastructures expand, enabling technology development, use, and diffusion among agencies. From concept to implementation can be a long time for some inventions; for others, the time to build, produce, and adopt an innovation might be less (Hughes, 1994; Arthur, 2009). Artificial intelligence (AI) and machine vision seem to advance by the week (Chen et al., 2021; Hayward & Maas, 2021). Once agencies undergo arduous technological changes, they tend to stick with the new system for a long while (Hughes, 1994). The *time within which technology operates* is also an important factor and

differs among tech types. Some tools must perform their functions quickly or risk failure in that application, while others operate more slowly. Think of emergency dispatch systems versus mapping crime hot spots.

How organizations use technologies, how this use evolves, how it is embedded within agency operations, and how its use changes operations are interesting questions (Colvin & Goh 2005; Weisburd & Braga, 2006; De Pauw et al., 2011; Hollywood et al., 2015; Egbert & Leese, 2021). There is a vast literature here, and reviewing it periodically is useful (Dees, 2003; Lum et al., 2017; Escamilla & Reichert, 2019; Zetter, 2020; Berk, 2021). I am interested in the same questions in this chapter, but I'll take a slightly different approach in looking for answers.

As the opening quote implies, incremental changes and innovations to the technology collective often form the components for future systems. If so, the seeds of a *22nd-century criminal justice technology infrastructure* are rooted in many of the existing elements of our current operating systems. We are now a quarter of the way through the 21st century. To provide a means of discussing the technology infrastructure of criminal justice, I will present a rough chronological tour through some selected portals my research colleagues and I have taken into the operations of technologies in the interests of criminal justice and public safety. My story starts in the back of a police car in 1974. I'll call these stories my *technology tales*. When the tales conclude, I will briefly speculate on the rest of this century.

A Layered View of the Criminal Justice Technology Infrastructure

First, we need to visualize this infrastructure's amalgamated and interconnected nature. I propose a figurative entity comprised of floating layers containing different types of technological systems in use within criminal justice (CJ) and their broad interrelationships expressed as major functions performed within CJ agencies (see Figure 1). Operationally, we can characterize this as a multi-layered structure in which each layer depends on the layer beneath and those beneath it in order to operate effectively. It's a building with five functional levels built on a basement foundation: (1) Communications Infrastructure, (2) Communications Mechanisms, (3) Databases and

Records Management Systems, (4) Decision Support Systems, and (5) Monitoring and Surveillance. Metaphorically, each floor contains offices—that is, combinations of tools, methods, and humans used to accomplish the functional objectives of that layer. The labels in Figure 1 are the names printed on each office door. Behind each door are various socio-technical systems conducting operations of that layer (Geels & Kemp, 2007; Davey, 2016; Duarte, 2021; Arietti, 2024). In a vertical sense, there are many elevators among and between the levels. Horizontally, there are many corridors among offices on each floor. In short, there are many direct and indirect interconnections—more about those in our later tales.

The *foundation* of this building is composed of a resource seldom discussed because it is, in fact, invisible: the *electromagnetic spectrum* (EMS), the ocean of oscillating waves that enables wired and wireless communications (Levin, 1972; Nozdrin, 2021). Communications surf the spectrum. The technology infrastructure of criminal justice rests on this basement. On top of it is the *first floor*: the physical structures and interconnecting linkages that make wired and wireless communication possible. Broadcast radio and television have been long-time occupants; cell towers and fiber optics are comparatively new arrivals. The *second floor* houses the basic devices and methods that CJ personnel use to communicate. It's a funny place for street lighting (see Figure 1), but you'll see why later. Above this, the *third floor* hosts the building's memory (data files and records management systems [RMS]), which, by 2024, has become a huge digital filing cabinet with many drawers in many offices. It only grows. Note that this layer has an overhanging attic of private databases and information aggregators that gather particular kinds of specialized information about subjects and objects that is increasingly necessary to support CJ functions (Ferguson, 2017; Zuboff, 2019). On the *fourth floor*, things get more sophisticated. It is the layer of decision support systems: GIS and risk assessment, predictive policing, data mining, and link analysis, among others. At the top, fittingly given its inherent function, is the *fifth floor*: monitoring and surveillance, the layer where a lot of information integration occurs and where license plate monitoring, video cameras, wire rooms, offender tracking, and others have offices. This floor requires a high-altitude vista, the best way to see and hear things.