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37 Low-tech

Abstract: We should be careful of overstating the importance of technologies that inspire dramatic narratives. All digital tools and practices have material counterparts, and while some may be less flashy, shiny, and indeed less captivating, they are key players in the fields that we study. This chapter discusses how high- and low-tech operates in tandem and suggests that low-tech must be taken seriously in the development of digital criminological theory.

Keywords: materiality, technology, crime scene investigation, surveillance, observation

Introduction

The technologies through which we tell our stories influence how we view the world. Within forensics, for instance, many different methods and tools (bite mark analysis, lie detectors, blood pattern analysis, to name some) have been hailed as 'the ultimate tool,' 'the most accurate' instrument—as saviors, as solutions to the many problems of establishing truths about crimes and about people (see e. g., Bowers, 2019; Bunn, 2012). What is often forgotten, however, is the complex landscape of other technologies that such methods and tools emerge from. While new digital technologies tend to capture our attention, the epistemic and social cultures in which they exist also consist of more mundane technologies and practices. As researchers, we can acquire knowledge that is valuable for new and emerging digital practices by moving our focus away from the most shiny, flashy, and captivating technologies. For example, in her work *The Carrier Bag Theory of Fiction* (2019), Ursula Le Guin posits that the story of human evolution has predominantly revolved around violence, propelled by the fascination with weapons as technologies that endowed early humans with means to defend, attack, and eat. However, she writes, the carrier bag was probably "the first cultural device … a container to hold gathered products and some kind of sling or net carrier" (Fisher, 1975 in Le Guin, 2019). Carrier bags enabled humans to collect food to bring back to the group, to carry children and belongings across space. An exploration of this development, as opposed to the narrative of the weapon, would tell a more collaborative

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and indeed feminine story of the becoming of technological society. I draw on this analogy to say that we should be careful of overstating the importance of technologies that inspire dramatic narratives. What we choose as our vantage point in research influences what kind of knowledge we produce.

Technologies are tools. As per the drive of the technological evolution, new tools replace old tools and that which was new becomes old. As such they are continuations of each other and exist across a spectrum of technological development. The term *low-tech* refers to technological tools and methods that are different from high-tech. If high-tech is advanced, expensive, and complex, low-tech is an umbrella term for technologies that are more manual, sustainable, cost-effective, and require less expertise to understand and operate. I have through fieldwork in forensic evidence communities examined more closely the ways in which technological tools frequent in the production of evidence and knowledge about crime.

Forensic geneticists, for instance, have intricate and careful procedures for handling and analyzing DNA traces, as do crime scene investigators. When a trace is located, the key aim is to figure out to whom it belongs and how it got there, and different technological tools are used by both expert groups in the process. Highly sensitive DNA detection machines may be used to scan an item in search for a trace. Software programs are then used to visualize information about DNA profiles so that they are easier to read by machines and non-machines (humans), to compare results, and make some estimations about the appearance and genealogy of the DNA owner (see DNA/Big Genome Data by Kaufmann). An ID number is generated to avoid confusion with other samples. Forensic evidence production is in a high-tech perspective a digitized process occurring within the capacities of software systems, digital storage, algorithms, and the internet.

What, then, if we shift our focus to low-tech in the same process? Paper bags with cotton swabs or confiscated items such as clothing and weapons arrive at the lab via regular post alongside a physical paper, which details the request of the police and includes some information about the investigation. The items are examined individually on a desk behind doors that regulate air pressure, by people in protective suits and two sets of plastic gloves. The items and the traces then need storage (a room) in the same way that the digitalized trace needs storage (a database). The room needs an oversight system and items must be kept apart to avoid contamination. From my observations, these high and low technologies appear to operate in tandem, in a sort of forensic ecosystem of material and less-material entities and capacities. An acknowledgment of this confluence allows for a greater understanding of the relationship between the analog and the digital.

Including a discussion on low-tech practices in a book on digital criminology is important as it can be argued that any digital information in contemporary societies has its foundation in some form of low-tech and material entity. Recognizing and understanding these roots is essential for a comprehensive understanding of the interconnected relationship between analog and digital realms and how they influence each other. Moreover, by using low-tech as a starting point, we can acquire a more profound

understanding of contemporary advancements within digital technologies. If we agree that technologies are key to the production of knowledge, then we may come to a better understanding of the world by studying how they work in their contexts. This chapter makes a case for not losing focus on the role of low-tech in relation to high-tech advancements. First, low-tech is conceptualized relative to high-tech, before the role of low-tech in early, modern, and contemporary criminological theory is described. Finally, the ideological properties of low-tech are discussed, both within and outside of criminology.

The relationship between high-tech and low-tech

The duality of high and low suggests that they are in some way mutually dependent and as opposites on a spectrum of technological complexity. If low-tech is the 'less smart' version of something newer, it can only exist once higher-tech has been developed. Take the example of communication technology. When phones were first introduced to the police, they were large permanent fixtures on street corners. Patrolling officers could walk over and make a call on the telephone if they wanted to report anything back to the station. Since then, of course, significant changes to phones have occurred—the police do not rely on street corner telephones to communicate any longer but have various digital methods for sharing information. A simple phone is not high-tech today. Instead, that which was once high-tech has since become low-tech through various levels of technological development and sophistication.

There is, of course, a danger in digital criminology to be obsessed with the latest digital device. By overstating the importance of new technologies, we risk understating the value of other tools and methods that accompany actors in the fields that we study, even if they may have more of an actual impact. High-tech depends on low-tech not only in the sense that low-tech had to be developed first for higher-tech to emerge, but every time we engage with high-tech, we are dependent on offline and analog technologies and environments that actively feed into higher technologies. As exemplified by my own fieldwork and outlined in the introduction, the accompanying letter that is sent along with the evidence through the mail holds crucial significance in enabling the capture and integration of DNA results into a data system. Not only are high and low methods and tools different from each other, but high-tech cannot function without low tech. Oftentimes data is collected and managed by offline technologies that are as simple as a paper form, and without these, data cannot be digitized, not fed into systems and not be analyzed by algorithms. That means high-tech and data always have an underlying concrete materiality and material infrastructure (see Kaufmann, 2017, 2023). Low-tech not only accompanies the fields that we study, but there is a relationship here that signifies an interdependent nature between the analog and the digital (see Digital by Wernimont), which we may miss by solely focusing on the newest device.

Studying how low-tech frequents high-tech environments may even give valuable insight into the attractions of high-tech. It helps challenging assumptions and biases

that may be embedded in high-tech solutions and cultures, allowing for a more inclusive understanding of technology and its societal impact. The point being, the way in which we orient our research influences our continued thinking about the field, including the development of theory.

High-tech and low-tech in the development of criminological theory

Many of the core theories in criminology were developed through the use of methods and tools that constituted cutting-edge technological advancements during their time. They were, however, accompanied by technologies that were less shiny but now used for new purposes—things like rulers, photographic cameras, and thermometers. This was at a time when criminologists worked with or on behalf of the police or criminal justice system to find 'root' causes of crime, which laid the foundation for the idea that crime can be studied scientifically (Rafter, 2004). As one of the early theorists, Alfonse Bertillon was the first person to systematize French arrest records to calculate recidivism rates in the 1880s. His innovative filing cabinet system made use of a combination of high and low-tech methods. It was pioneering in that he utilized photography (a high-tech at the time) for capturing the visual characteristics of arrested persons, and other anthropometric measuring tools such as rulers and weight scales to document other parts of their bodies. This system, compiled of both high and low technological methods, enabled the system to be ground-breaking and it was adopted by other Western countries (see Finn, 2017). The Italian school similarly embarked upon extensive documentation of arrested persons, employing a wide range of tools across the technological spectrum. One of Cesare Lombroso's main sources of information for his (now highly controversial) theories were the drawings, writings, and artwork of incarcerated people in Italy, which were analyzed alongside detailed measurements of their bodies (see Kaufmann and Vestad, 2023; Lombroso, 2006; see Labs by Mazzilli Daechsel). Both of these early schools of criminology lay some of the groundwork for future research into biosocial theories (see Rafter, 1997; Rose, 2000). Bertillon's system of identification later became a blueprint for racialized sentencing algorithms in the US (Wiggins, 2020). Core criminological theories developed in Chicago in the 1950s–1980s were similarly dominated by methods for generating data for analysis that were low-tech in their time—many were based on interview data. Through the use of analog technologies, they created a system for explaining and nuancing crime and control functions, i. e., drawing out some advantages and disadvantages of how the police, state, and prison system worked, how neighborhood dynamics influenced crime, and the effects of policy.

Major changes to technological capacities inspire new theoretical perspectives—a change that we see perhaps most clearly in surveillance studies. Significant technological changes have revolutionized the surveillance capacities of the state throughout his-

tory (see Coleman and McCahill, 2011). Historically, surveillance has encompassed "close observation, especially of a suspected person" (Marx, 2002: 8). According to Gary Marx, this definition "[made sense] in an age of servants listening behind closed doors, binoculars and telegraphic interceptions" (Marx, 2002: 10), but does not anymore, as human interactions and practical observation is increasingly replaced by data extraction and algorithmic predictions. Yet it is through these early forms of tech practices that the even-higher-tech mass surveillance could emerge (see Surveillance by Lyon). Further, high-tech data systems are needed to handle the masses of data collected, which means human interference and physical bodies 'disappear' (Lyon, 2001) from the act and field of surveillance, both in the sense that the observed becomes data points, and in the sense that those data points are analyzed by computers.

Yet even this high-tech environment is full of low-tech practices. For some local organized criminal networks, for instance, low-tech communication methods can be a way of remaining undetected by digital surveillance tools (Leukfeldt et al., 2017). Low-tech observation and intervention methods also remain at the core of intelligence collection as it is practiced by law enforcements globally, for instance at the French border, where migrants are often registered through paper-based methods that the police may utilize "to avoid that the digital trace would make them responsible of processing their asylum claim" while enabling refugees to tear them apart and "[erase] their legal and bureaucratic history in a certain country" (Tazzioli, 2023: 929). Bonelli and Ragazzi (2014) point to the importance of low-tech practices in counter-terrorism efforts by the French police. Meeting with informants and writing memos, from which arrest or deportation orders are later decided, are favored over high-tech network analyses as the most useful tool for "understanding the structure, the orientations, and the power relations within a group or organization" (2014: 489; see also Haggerty, 2012). Dahl and Svanaes (2020) show how the bodies of covert surveillance officers in Norway become equipped with a skill set of learned, tacit knowledge through years of practice, which enables them to maneuver their bodies for seeing and hearing while remaining largely unseen, similarly to the functioning of modern high-tech solutions such as CCTV cameras. Bozzini (2011) finds that the Eritrean state and military employ low-tech identification paperwork checks at road checkpoints as a means to instill fear in individuals contemplating evading mandatory military service. As these ID documents are not verified or cross-referenced with other data, this low-tech practice primarily serves the purpose of creating a perception amongst those being checked that they are under constant surveillance by a more powerful state, rather than actually logging their movements. These studies tell us that human interaction with low-tech continues to be part of the surveillance toolbox, both as means of observation and for remaining hidden. Studying the use of these technologies reveals something about their role in mediating relationships between actors, and about the means and aims of surveillance and security.

The ideological properties of low-tech

The appeal of low-tech is sometimes linked to a broader ideological stance against technologized society. Its use can represent a step away from the increasingly digitalized and automated workings of the world (see Automation by Mann), for which low-tech can operate as a counterbalance. Outside of criminology, we find initiatives advocating for a (re-)turn to a less technologically dependent society, to 'no-tech,' in which proponents "refuse to assume that each problem has a high-tech solution" (*No Tech Magazine*, 2023). Such initiatives promote a more natural and sustainable approach to technological innovation, which reduces resource consumption and is centered on human interaction and involvement (Tanguy et al., 2023). We find again this sentiment in studies that examine reluctances for adopting new methods and tools, also within law-enforcement. Some studies show that there is a multitude of reasons for why some law enforcement actors may resist implementing new advanced technological tools. Concerns over the consequences of organizational change, budget, or the potential loss of in-depth understandings of knowledge production processes are examples of what may draw actors in the police towards low-tech methods (Chan, 2001; Nhan and Huey, 2012; Vestad, 2024).

In my own work on crime scene investigation practices in Norway, I suggest that this narrative is not so straight-forward (Vestad, 2024). Rather, I find that low-tech is employed as a resource *additional to* high-tech practices, which enables investigators to triangulate results across methodologically different tools—essentially as a means to increase both accuracy and their own technological capacities. While new technologies such as sensitive machines for locating DNA traces have revolutionized the forensic field, low-tech tools, such as manual DNA analysis kits or sniffer dogs, remain key to the crime scene investigations process. Analog tools such as measuring tapes and drawing boards are used to document the layout of crime scenes and mark where trace materials have been collected from alongside virtual software. Using combinations of digital and analog tools enable investigators to gather information about traces while taking an active part in the knowledge production process. Low-tech remains as much a part of the process as high-tech for reasons other than techno-pessimism and challenges the notion that high-tech alone is the driving force of effective investigatory work. As such, the ideological properties of low-tech may even be instrumental in shaping technological development in forensic science.

Conclusion

It is important that criminologists continue to investigate the influences of technological change in the fields that we study. Low-tech may first appear irrelevant—something of the past, something from which the higher-tech we use today has emerged. Recent studies, however, show that low-tech is in continuous development and remains

central to practices across various fields, even (and perhaps especially) in digital high-tech environments. This tells us that criminological research on technology can benefit from also examining the roles of the less flashy and captivating technologies.

In conclusion, recognizing the significance of low-tech practices and their symbiotic relationship with high-tech is essential for a comprehensive understanding of digital criminology. All digital technologies are rooted in a material entity. By studying the interplay between analog and digital realms, we gain insights into the foundations of contemporary digital information that goes beyond the latest digital devices. Finally, by exploring the role of low-tech within high-tech environments, researchers can deepen their understanding of the field and contribute to the development of theory in digital criminology.

Main takeaways

- The interplay between high- and low-tech has been critical to the development of criminological theory.
- High-tech relies on low-tech, as all digital technologies are rooted in a material entity. Low-tech is crucial for enabling the capture, integration, and management of data, without which high-tech systems and analysis would not be possible.
- Digital criminology should be careful not to overstate the significance of the latest technological devices, as this can overshadow the importance of other tools and methods.

Suggested reading

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