Article Title: Understanding Crime Scene Examination through an ethnographic lens

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Abstract

Ethnographic methods offer huge potential in better understanding the professional profile, skills, expertise and working practices of the Crime Scene Examiner (CSE). However, to date, their use to study the CSE has been limited. We draw on our research on the CSE within England and Wales and studies from other settings to demonstrate some of the complex negotiations and everyday practices that take place in the performance of crime scene examination. We focus specifically on their training, activities and role, and what an ethnographic lens adds to existing knowledge on the processes and practices of completing crime scene examination work.

Introduction

Ethnography, broadly understood as the "integration of first-hand empirical investigation and the theoretical and comparative interpretation of social organisation and culture" (Hammersley & Atkinson, 2007, p. 1) in specific settings, has a fruitful history in the study of both policing and scientific practice. Whether one is interested in police work (for example, Holdaway, 1983; Manning, 1977) or police training and socialisation (for example, Chan, Devery, & Doran, 2003; Fielding, 1988; Loftus, 2010; Van Maanen, 1973), ethnographic methods are recognised as best placed to get under the surface of police institutions, which have traditionally been portrayed as suspicious of outsiders (Brewer, 1991). Science and technology studies scholars too have used ethnographic methods to explore what occurs within the scientific laboratory setting. Latour and Woolgar's (1979) seminal work, *Laboratory Life*, reports an ethnography of a laboratory, tracking the activities that go into the production of scientific facts. Their account draws into focus the numerous "non-scientific" actions heavily involved in producing scientific outputs that are often viewed as "objective" and true. Ethnographic methods allow us to see and acknowledge the many interconnected practices and processes that take place, often hidden by the claims we make about the world around us and usually missing from the quantitative accounts of policing, formal training manuals and reported outcomes of policing practices. Ethnography then, has much to offer in our understanding of the Crime Scene Examiner (CSE), an actor who has been described as occupying an often contested landscape between science, law enforcement and the public (Kruse, 2016; Wilson-Kovacs, 2014; Wyatt, 2014).

In practice, ethnographic methods enable the researcher to become immersed in the formal and informal activities of a given community. They might involve observations, different types of interviews and participation in the activities of the group, with the aim of giving a thick, detailed description and analysis. The practice of using forensic science in the criminal justice system of any country takes place in a complex environment with numerous individuals, expertise and knowledge brought together. Most analyses of forensic practitioners in general and CSEs in particular adopt a quantitative stance to present the bigger picture and provide policy recommendations (for example, Kelty, Julian, & Robertson, 2011; Ludwig, Fraser, & Williams, 2012; Tilley & Ford, 1996). Such accounts are useful in highlighting the parameters of the CSE role and the different skills attributed to them. However, such accounts do not (1) facilitate an understanding of the complex negotiations and everyday practices that take place in the performance of crime scene examination, (2) examine the place of the CSE within investigations and wider police and scientific work, or (3) discuss the roles and effects of technological development on the CSEs skills portfolio. In this article, we draw on ethnographic findings from our published (Wilson-Kovacs, 2014; Wyatt, 2014) and unpublished research from England and Wales, as well as that from other countries to explore these themes and demonstrate the utility of ethnographic methods in the study of the CSE as an important actor within the criminal justice system.

Though both using ethnographic methods, our foci differ slightly. Wyatt's work concentrates specifically on how individuals learn the skills to do CSE work and how this work and role fits into the wider practices and infrastructures of the criminal justice system. In this context, ethnographic methods are best placed to allow a detailed understanding of the everyday practices involved in completing CSE work. It provides access to aspects of their work often rendered invisible in extant scholarship, such as the importance of interactions between the CSE and other personnel involved in

the investigation of crime, and the different ways the CSE's expertise and role are understood by other occupational groups.

While Wilson-Kovacs' work also focuses on these issues, she pays particular attention to the practices, experiences and occupational trajectories of forensic practitioners. Not limited to the CSE specifically, she focuses on those embedded in police forces and working at grass root levels, such as technicians, examiners and other forensic support personnel to explore how this largely civilian culture intersects with that of policing. In particular, she concentrates on the ways in which forensic genetics methods of trace identification, and more recently, those of acquisition and extraction of digital evidence from mobile phones, computers and other electronic devices, are understood by those working in wet and dead box forensics. By looking both at the CSE and beyond, ethnographic methods can help unveil interactions, exchanges and the negotiation of expertise in what Williams and Weetman (2013, p. 379) have called the "otherwise dimly lit socio-technical landscape" of using forensic science in policing.

Like most qualitative research, our studies do not aim to quantify or make statistically generalisable claims about CSE work. Instead, the focus is on providing detailed accounts and analyses of material practices and drawing into relief aspects of CSE work, training and the professional trajectories that are often overlooked in academic accounts employing different research methods.

LEARNING AND DOING CRIME SCENE EXAMINATION: STRADDLING SCIENTIFIC AND INVESTIGATIVE PRACTICES

Learning to be a CSE differs across the globe. In some countries, CSEs are sworn police officers (for example, the US and Sweden). In others, like the UK, this is not a prerequisite, with many CSEs recruited from the civilian population. These jobs are highly sought-after with often hundreds of applications for one vacancy. Once in post, CSEs are subject to detailed training in a variety of trace recovery and investigative techniques. While some studies have highlighted, for example, the key attributes of top CSEs to help recruit the best individuals (see Kelty et al., 2011), little is known about the realities of the training received by CSEs and how this is taken on board and utilised in specific organisational contexts. This is particularly noteworthy with pushes within the UK setting to accredit the CSE role and more broadly to standardise CSE practice (see, for example, Delémont, Bitzer, Jendly, & Ribaux, 2017). Shedding light on some of these processes, Wyatt's study provides an in-depth, ethnographic account of the training and everyday working the CSE in England and Wales. His ethnography, as we discuss below, situates routine CSE work within real world contexts and reveals the institutionally sanctioned understanding of what CSEs should do following formal training. Such a focus allows us to see the complexity of the CSE's role in the investigative process and in relation to trace practices. The CSE straddles both the scientific and investigative spheres. This is important because seeing CSEs as purely evidence recovery technicians, rather than professionals, is a key risk factor in using forensic science in the criminal justice system (Julian & Kelty, 2015). While some CSEs view themselves as evidence recovery technicians - in Scotland, Ludwig et al (2012) found that over 1/3 of surveyed CSEs saw their role as such - ethnographic insights from Wyatt help unpick some of the expertise developed by CSEs, see how the CSE role intersects with different parts of the criminal justice system, and observe how varying understandings of the CSE role affect the perceived limits of the role in different settings.

Wyatt's ethnography took place at two sites. The first was the main training centre (Forensic Centre) for all but one police force in England and Wales, where he stayed, observed and completed the residential element of new CSE training. At the second site, a CSE department, he shadowed CSEs from notification of a potential crime that may require a scene examination through the submission of samples for analysis and completion of paperwork. This allowed him to experience and see CSE work within real police investigations. In this section, we recount and develop a few insights from his ethnography, demonstrating not only the importance of these insights, but how ethnographic methods help us make sense of findings from other, often quantitative, studies.

The observed cohort arrived at the Forensic Centre with a variety of backgrounds, some with bachelor's degrees in forensic science, experience at a forensic science laboratory or from administrative roles within a police force. The observed training was divided into two sections, Module 1 (5 weeks) and Module 2 (4 weeks). Each module had three sections: pre-course learning activities, a residential training course and a portfolio. Wyatt's ethnography concentrated on the second section of both Module 1 and 2 training. Module 1 focused on the basic processes required to examine crime scenes, such as contamination avoidance protocol, effective collection and packaging of trace materials as well as the skills needed to capture crime scenes photographically. Delivered through classroom and crime scene scenarios, this module provided the requisite training for volume crime. Once completed, trainees would return to their police forces and through a process of on-the-job training and reflection, complete a written portfolio to pass the module overall. Module 2 focussed specifically on advanced photographic skills and CSE practices at serious and major crime scenes.

Module 1 trainees started with a lesson entitled 'Basic Forensic Principles', which introduced them to Edmond Locard's work on trace (dust) through the famous, although reductive, phrase, "every contact leaves a trace." Despite no evidence to suggest Locard summarised his work in such a way (Williams, 2007), this phrase, referred to as Locard's Exchange Principle, is central to the CSE role. Over a period of eight months, Williams (2007) observed six CSEs from one police force. Focusing on the practices and methods employed by CSEs, he argued that more can be learned about forensic work beyond the claims of scientific validity and reasoning. Observing CSEs at a variety of scenes, Williams saw first-hand how "every contact leaves a trace" is broken down into two propositions that are central to the CSE maintaining the institutional validity and investigative importance of their role, namely, 'exchange always occurs' and 'individuation is always possible.' By emphasising the ubiquity of trace and the potential of that trace to lead to detailed information that might support a criminal investigation, the CSE role is supported, justified and maintained.

Within the training environment, the importance of Locard's Exchange Principle and its validity were never questioned. However, its introduction to the trainees at the Forensic Centre not only emphasised the potential of trace, but drew on another implication of Locard's Exchange Principle – the potential for contamination. Within this first lesson, the need to do everything to avoid contamination was stressed. Contamination avoidance was achievable through specific CSE practices, such as wearing the correct clothing, being careful as one moves around a potential crime scene and in terms of correctly recording and packaging artefacts.

Following training in contamination avoidance, trainees embarked on detailed photography tuition. This initially focused on learning photographic techniques but was later incorporated into all

practical scenario scene examinations so techniques could be practised and honed. Trainees learned about how to process different forms of trace, the different powders and brushes available for fingerprint lifting, and how to delimit, move around and document a potential crime scene. Throughout this training there was an acknowledgement that while trainees can be told how to do these tasks, they needed to obtain the tactile and tacit skills necessary to complete them. A prime example occurred when students learned to "know" when casting materials were warm enough and of the right consistency to make a cast of a footwear mark. Students gained this knowledge through comparison, through interaction with each other and instructors and often through trial and error. Examples such as this demonstrate some of the knowledge involved in understanding even the most basic instructions from, for example, CSE handbooks. While this emphasis on experience and learning the 'craft' is a core component of accounts of police training, the more experiential aspects of CSE learning and expertise are often absent from existing accounts. Furthermore, the complexity of making sense of CSE work, practices and requirements was only complicated further when the trainees and Wyatt exited the training environment and attended actual crime scenes. The Forensic Centre acknowledged that in the "real world" things are done slightly differently, but this did not prepare Matthew, a Module 1 trainee, interviewed six months after completing the residential training course, for his first scene examination:

> The biggest shock for me was that the first job I went to. It was a stolen car and at the Forensic Centre a car is almost in perfect condition. You could sell it. The outside is immaculate, the inside immaculate and maybe there's a can of coke hidden under the seat and that's it for the car. Even then, there were two or three hours spent with a camera, examining it just for that one can of coke. And then I went in the real world to a scene and the car I went to was just disgusting. You couldn't see the floor. You couldn't see the seats. [...] There was mud, there were all sorts of elements from outside in there and you think it takes me two hours at the Forensic Centre to get a can of coke, then I'm going to be here for two weeks. The real world does kick in.

Matthew infers a clear divide between learning to do CSE work in the training setting and the realities of this work at real crime scenes. Two weeks could not be spent examining a volume crime scene: how one negotiates this divide between the Forensic Centre way and the "real world", is explained most clearly by one of Wilson-Kovacs' (2014, p. 771) participants:

> (I)f you did everything as you were instructed to do as the [Forensic Centre] way, you would find that you probably grind to a halt after about first week, because you would take everything and everything would have to be processed and recorded and therefore you become ineffective, because you're taking 90% rubbish that is not necessary. You know what you want: how much do I need to recover a) to identify a person, b) to identify that there's more than one person, c) can that evidence stand up in court and therefore be judged? Those are some of the key elements there. It may be that it leads you to intelligence-based information or it may be for the prosecution (Crime Scene Examiner).

This clear articulation of the purpose of scene examination in England and Wales reflects other findings of experimental studies (for example, de Gruijter and de Poot 2018). Discussing the influence of rapid identification technologies on the practices of CSEs at crime scenes, these authors observed differences between English and Dutch CSEs, framing the Dutch CSEs positively through their work to reconstruct the event with English CSEs said to be "biased towards obtaining

identifications of individuals" (de Gruijter & de Poot, 2018, p. 17). While this emphasis on identification is reflected in the ethnographic work described above, the quotation from Wilson-Kovacs' study (2014, p. 771) and wider ethnographic work, provides detailed accounts and insights into why this might be the case. For example, our experiences in relation to volume crime in England and Wales emphasise the constraints faced by forensic support departments, including limited staffing and tight budgets, all of which affected the scenes attended by a CSE (with many forces operating a triage system), the artefacts removed from scenes and decisions about whether artefacts were sent for forensic analysis. Situating CSE work within their wider organisational setting, as well as focusing on the material practices of CSE activity, ethnographic methods can help understand the realities of examination work within specific police force and local contexts.

So far we have focused on CSE work as a process of delimiting, documenting and collecting items from a crime scene. This, however, is just one part of their routine. Kruse (2016) discusses how they work across "epistemic cultures." Drawing on the work of Knorr-Cetina (1999), she highlights how CSEs straddle different police, science and courtroom "law" knowledge communities, helping forensic evidence to flow between different sites. In this context, the CSE not only has a core role as "the vanguard of the forensic science laboratory at the crime scene", (Kruse, 2016, p. 92), but they work to help bridge and mediate between the different communities involved in the criminal justice system. The CSE has a hybrid role and an ethnographic lens allows one to access this, as demonstrated in the examples below.

Wyatt's ethnography illustrates this straddling and moving between different communities within the UK context. Most vivid within his observations was the role of the CSE in mediating the relationship between the victim of crime, the investigative process, and the potential of forensic science. Often the first and sometimes only member of the police force to attend a reported volume crime, the CSE in England and Wales can be the public face of policing, and has to set the expectations of victims, as Rebecca explained:

> [D]ue to all the television programmes on at the moment [the public/victims] have got an expectation that you will find everything and you will be able to solve the crime in a very short amount of time. And it's basically a case of talking them through what your limitations are and what is actually possible. If you do find anything, what the process then is with that type of evidence and if you're likely to get anything from it. It's just a case of basically talking to them.

Mediating this relationship between victims and part of the investigative process was a crucial element of routine CSE work. CSE accounts also stressed their advisory role as the 'face of forensics' for police officers too. Both these sites provided the CSE with the opportunity to use their training in scene examination and trace recovery and develop their investigative thinking, making sure the trace they recover, the information they obtain and the wider decisions that they make have the most potential to aid the investigation. While learning the material practices of scene photography and trace recovery involved tacit and experiential knowledge, this investigative thinking also requires skills, knowledge and experience developed over and above Forensic Centre tuition. The 'canteen culture' (Waddington, 1999) was also important. 'Canteen culture' is used by Waddington (1999) to encapsulate how collective understandings of the police officer's role, work and correct conduct are imbibed in the canteen and other informal settings through the sharing of stories and experiences of police work. Central in discussions of police work, this process of gaining competency

through these informal means is also stressed in accounts of forensic science laboratory work (Doak & Assimakopoulos, 2007). While there is insufficient space here to do them justice, ethnographic methods are best placed to uncover, document and analyse these "stories" and accumulated experiential knowledge.

The investigative expertise, interactions, roles and skills discussed above stress the importance of the CSE's expertise as far more than that of bagging and tagging; as one of Wyatt's participants expressed, CSEs are "more than forensic hoovers!" Good CSE work encapsulates tacit and experiential skills that go beyond textbook and classroom training and are situated in specific police force contexts. Such accounts reflect Julian and Kelty's (2015) mixed methods study findings from Australia, where they report different understandings of the CSE role in various occupational settings. Despite the wide breadth of expertise associated with CSE work in the settings described above, this variation in understanding of CSE work is most stark in the UK context when one enters the courtroom. Wyatt did not observe actual court hearings, but the scenarios staged within the Forensic Centre with professional prosecutors provided an insight into how CSEs are questioned and the limits of information that CSEs are able to provide in this setting. In particular, focus rested on describing the scene and, where necessary, addressing any discrepancies in paperwork. No opinions were deemed admissible. Discrepancies, when noted, ranged from not numbering the pages of their scene report through to more serious issues, such as not sealing an exhibit.

Wyatt (2014) draws on these ethnographic observations to argue that, at least in volume crime scenes, the paperwork has the potential to blackbox the legitimacy of the trace they packaged and removed from the scene. He stresses the importance of paperwork in claiming CSE work and resulting artefacts as objective, and the ease with which this can be undermined if any small, basic administrative issues are identified. In this context, administrative mistakes were taken to infer the potential of contamination (i.e. if you are not careful with your administration, how can we trust you were careful in your trace recovery practices?). As highlighted by Kruse (2016), through mediating relations between the trace and wider arenas where forensics are used, the CSE aids the flow of "evidence to be" between different sites, actors and audiences. Whereas in the police their expertise may be actively sought to help guide the investigation, in the courtroom, the CSE's expertise is functional and demonstrated within their paperwork practices.

PROFESSIONALISATION AND THE CSE ROLE

Ethnographic methods have also proved particularly useful in understanding how the CSEs' occupational profile has been professionalised, not only as discussed above, but also in documenting the impact of technological change on their skills portfolios. While the relationship between policing and technology has been examined through an ethnographic lens (for example, Chan, 1996; Manning, 2008), less is known about how forensic examiners understand the impact of innovation on their professional trajectories. Incorporated in the broader hierarchical structure of police organisations, these professionals have been rendered invisible (Wilson-Kovacs, 2014). In contrast to analyses concerned with improving the skills and resilience of CSEs or Wyatt's research that focused specifically on the CSE, Wilson-Kovacs' work provided a grounded analysis of police forensic support in volume crime investigation. She focused on the specific meanings her participants attached to their actions and explanations, and the ways in which CSEs understood their contribution to crime

examination and reflected on new forensic methods of trace identification, such as Rapid DNA and the development of digital forensics.

Wilson-Kovacs used semi-structured interviews and in situ observations of exchanges with stakeholders involved in the governance and application of Rapid DNA technologies at different levels of seniority. They included forensic support personnel such as CSE, supervisors and coordinators as well as the manager of the scientific support unit. Observations of workshops for the providers of these technologies and a documentary analysis of official documents were also used to strengthen the reliability and epistemological validity of interview data.

The findings unveiled the complex professional exchanges within which CSE's skills are mobilised and the contexts in which such skills are acknowledged. While the invisibility of the CSE's role was often illustrated by self-descriptions of their occupational group as "backroom boys" (Wilson-Kovacs, 2014), who are tasked to extract evidence without much substantial interpretation, their contribution has extended beyond trace lifting. Participants' past and current duties, employment background, and training received were used to reflect upon and identify what the CSE saw as values relevant to their job role and expertise in relation to crime detection and management. Unlike Wyatt's new recruits, most of those interviewed by Wilson-Kovacs honed their forensic skills as fingerprint examiners in the 1970s and 1980s and regarded this field as one that offers greater specialisation and skill. The adoption of new skills, such as lifting DNA trace from scenes of crime, mattered less to individual values and expertise. It was traditional forensics skills, such as fingerprinting, and years of crime scene attendance that were far more important to their profile.

Such accounts also help capture the impact made by the advent of forensic DNA to investigative practice and the DNA Expansion Programme in the UK,[i] which resulted in the transformation of institutional practices, from adjustments in the ways in which forensic DNA traces were submitted for analysis, to the tightening of rules surrounding the admission of DNA evidence in court and the escalating application of forensic DNA tools in volume crime examinations. Through individual testimonies, accounts highlight how the heterogeneity of forensic practices and their embeddedness within the broader police culture are made sense of by different actors. They also help illustrate the ways in which the police officers working closely with forensic teams have been equally cognisant of the contribution made by the latter (Wilson-Kovacs, 2014).

Findings also showed how CSEs understand Rapid DNA technologies in relation to established forensics techniques and integrate them within broader reflections on the impact of forensic genetics on crime investigation, professional cultures, and individual trajectories. For instance, when considering the utility of Rapid DNA techniques, the professionals interviewed demonstrated how although useful in serious and major crime cases, the new forensic DNA technology would have limited application in the processing of volume crime. The ethnographic approach used here allowed for an in-depth understanding of how forensic routines are embedded in investigative and administrative processes and helped illuminate the underexplored aspects of volume crime investigation and the intricate organisational settings within which this occurs. It further showed how in volume crime, the CSE's expertise and skills were circumscribed by a set of organisational values such as managing such incidents effectively, considering cost-saving rationales, overcoming the over-reliance on DNA trace and appropriate risk management, also reflected in Wyatt's work discussed above.

As such, ethnographic methods have facilitated our understanding of the ways in which the on-going professionalisation of the field has occurred as a complex mix between the application of forensic methods held to a high scientific standard, organisational processes and government initiates. The development and introduction of new technologies to CSE work, such as Rapid DNA technologies, can also blur the line between the work of the CSE and that of the forensic scientist, as well as between the crime scene and laboratory (Ribaux, Crispino, Delémont, & Roux, 2016). Yet, as Wilson-Kovacs (2014) showed, while the duties of CSEs have expanded, this diversification was more often than not identified as leading to professional fragmentation. The changing nature of crime and the fast rise of digital forensics has further amplified the fragmentation of the CSE role in England and Wales.

Given the increased prevalence of digital technologies, patterns of crime are changing and the use of traditional forensics declining. Digital technology has enhanced the capacity for individuals to commit crime, which in turn has led to different types of evidence and new challenges for crime scene examination and forensic science more generally (Crispino, Roux, Delémont, & Ribaux, 2019). It is commonly agreed that as a discipline, digital forensics follows established scientific ways of reasoning and trace identification (Casey, 2011). In this respect, the traditional CSE is, theoretically at least, excellently placed to observe the collection of digital artefacts from physical locations identified as crime scenes. With the rise of digital forensics, the concept of the crime scene has been extended to digital devices themselves, and in this context, the CSE's portfolio of skills becomes less useful in the extraction and analysis of digital evidence. Current research (Wilson-Kovacs, on-going), suggests that one area where the CSE's abilities have been increasingly put to successful use has been the triage of digital devices for digital forensics laboratories and mobile phone data extraction for investigative officers, using specialist software.

Conclusion

In this short review, we have drawn on our own research and that of others to highlight the significant contribution ethnographic accounts of crime scene examination can make in the study of forensic practices. Ethnographic study permits the unpacking of official accounts of the CSE role and the observation of negotiations between formal training and work routines. Together and separately, our research and that of the few other scholars who have completed ethnographic research on the CSE, facilitates an appreciation of the complexity of the CSE's role, their often hidden expertise, and the different understandings of their position within and across the many different sites of the criminal justice system. The CSE role is neither static nor exists outside of socio-technical landscapes where issues such as (limited) police funding or technological development are significant. Emerging wet forensic technologies (such as rapid DNA technologies) as well as the increased prevalence of digital forensics, further complicate the practices and professional profile of the CSE. An ethnographic lens allows us to gain a deeper knowledge and understanding of existing and emerging practices with detailed inclusion and acknowledgement of the local context of work. The thick descriptions and analysis facilitated through ethnographic study, used in conjunction with other methods of inquiry, such as more quantitative and or experimental methods (for example, de Gruijter and de Poot, 2018), have the potential to help support, contextualise and develop CSE education and accreditation programmes, and explore the implementation of new techniques and technologies into routine CSE work. In short, an ethnographic lens has a lot to offer the academic and practitioner literature on crime scene examination.

Notes

[i] For a discussion on this, see McCartney (2006).

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[i] For a discussion on this, see McCartney (2006).