Accomplishing Technical and Investigative Expertise in Everyday Crime Scene Investigation

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Abstract

This research, situated at the intersection of sociology, science and technology studies and police studies, provides the first sociological account of Crime Scene Investigator (CSI) training in England and Wales. Focusing on the acquisition and everyday enactment of CSI expertise, this qualitative, ethnographic investigation asks (1) what are the roles, practices and expertise of the CSI and (2) how is the CSI's expertise developed in training and enacted in everyday work. These questions are explored through participant observation at the main training centre for UK CSIs, observation at crime scenes, interviews with trainees during and after their training and visual methods.

By unpicking the visible and invisible components of CSI work, I analyse how CSIs are trained to document crime scenes and explore the practices of transforming a potentially relevant object from these locations into artefacts that meet the requirements of courtroom scrutiny. I demonstrate how CSIs engage actively and reflexively with the requirements of different conceptions of objectivity and the changing demands placed on them. They continually and performatively negotiate and delimit multiple boundaries, from the very literal in demarcating a crime scene to claiming their position within the investigative hierarchy in each interaction. Unlike other discussions of boundary work, for the CSI this is iterative, requires constant effort and is embedded in their routine practice. Within police environments, the CSI has scope for such boundary work. In the courtroom, however, crime scene investigation is narrowly defined.

This thesis develops our understanding of the CSI and crime scene investigation as a practice. It stresses the significance of taking this actor seriously in any account of forensic science and investigative practices. By viewing the CSI as simply an evidence collector, or not considering her work at all, the expertise and pivotal role of this actor in the meaningful and efficient use of science in policing is blackboxed. My detailed qualitative analysis of the CSI's role, work and specialist expertise contributes a necessary account of a key actor in the police and criminal justice system.

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Abbreviations

ACPO	Association of Chief Police Officers
AP	Aggrieved Party
CID	Criminal Investigation Department
CJPOA	Criminal Justice and Public Order Act
CoP	College of Policing
CPS	Crown Prosecution Service
CRFP	Council for the Registration of Forensic Practitioners
CSC	Crime Scene Coordinator
CSE	Crime Scene Examiner
CSEW	Crime Survey for England and Wales
CSI	Crime Scene Investigator
CSM	Crime Scene Manager
DfES	Department for Education and Skills
DSLR	Digital Single Lens Reflex (Camera)
EVC	Externally Visible Characteristics
FdSc	Foundation Degree in Science
FSAC	Forensic Science Advisory Council
FSSoc	The Forensic Science Society
HCSTC	House of Commons Science and Technology Committee
HPPP	Human Provenance Pilot Project
IP	Injured Party
MPS	Metropolitan Police Service
MO	Mass Observation Archive
METL	Minimum Effective Training Level
MRI	Magnetic Resonance Imaging
NIFS	National Institute of Forensic Science

NOS	National Occupational Standards
NPIA	National Policing Improvement Agency
ONS	Office for National Statistics
PCSO	Police Community Support Officer
PDP	Professional Development Portfolio
PTB	Practical Training Block
SEMTA	Science, Engineering, Manufacturing Technologies Alliance
SIO	Senior Investigating Officer
SOCO	Scenes of Crime Officer
SSK	Sociology of Scientific Knowledge
SSU	Scientific Support Unit
UCAS	Universities and Colleges Admissions Service
UFSE	Using Forensic Science Effectively
VCSI	Volume Crime Scene Investigator

Chapter 1 Introduction

This research sits at the intersection of sociology, science and technology studies and police studies. In this thesis I explore the training and everyday practices of Crime Scene Investigators (CSIs) in England and Wales in order to investigate the knowledge and expertise involved in the examination of crime scenes. I study the objects the CSI produces at crime scenes and the role both the objects and the CSI play in negotiating the position of this actor in the wider investigative processes and criminal justice system.

In this chapter, I document the gap in the existing literature and the contribution of this study to sociological knowledge. Having highlighted where this study sits in relation to existing work, I provide some brief notes on terminology and summarise the chapters of this thesis and their contribution to the thesis as a whole.

1.1 Investigating the Crime Scene Investigator

Crime scene investigation is the front line by which forensic science methods are incorporated into police investigations. They are present in a plethora of fictional and non-fictional media, from *CSI: Crime Scene Investigations* to *Forensic files*, Patricia Cornwell's Scarpetta novels to detailed accounts of specific, real cases, such as Wambaugh's (1989) account of the first police use of DNA profiling, *The blooding*. Central to such accounts are the processes of and expertise in examining crime scenes for evidence of the perpetrator(s) and using such evidence to either garner a confession or to be used in a trial. In a time where CSI work is so present in media and entertainment forums and is subject to a huge interest from the public, with notions of the 'CSI effect' not only discussed in terms of altering understandings and courtroom requirements but also in terms of the number of individuals training in related disciplines to follow this as a career, the lack of research on the CSI is noteworthy.[1] Forensic science and forensic technologies have been normalised in our cultural landscape. Yet even in the science and technology studies community, with a few exceptions, the evidence or 'expert' witnesses are the foci of studies, whether that is the negotiation of expertise in the courtroom, or the development and interrogation

[1] See Cole and Dioso-Villa (2006) for a detailed account of the different ways 'CSI effect' can be operationalised.

of the credibility of certain forensic processes in the production of evidence. The CSI in particular, and the police in general are overlooked. I too initially ignored crime scene investigation as a research topic in its own right, opting instead to consider the integration of scientific technologies into police investigations more generally. The resulting research, however, demonstrates how complex, interesting and fruitful a detailed consideration of the role and routine work of the CSI actor can be.

The CSI is an important stakeholder in the routine use of science in the investigation of crime. As Stanley and Horswell write:

> [t]he proper processing of a crime scene is the lynchpin of successful forensic investigations. The skills, knowledge and attitudes of crime scene investigators comprise both the strength and the potential weakness of an investigation. No matter how rigorous later laboratory analyses are, they are worthless if the evidence collected at the scene does not include samples of sufficient size, both for all the required analyses and to represent the natural variation that exists, if control and reference samples are not taken, or if the packaging, labelling and storage are inappropriate (Stanley & Horswell 2004, p.57).

It is unsurprising that Stanley and Horswell (2004) in this book chapter which forms part of an edited volume entitled *The practice of crime scene investigation* (Horswell 2004), stress the significance of the CSI's role. It is rather straightforward to see that if you analyse irrelevant samples and/or contaminated samples information derived through forensic techniques will have little or no investigative value. Wider evidence in England and Wales suggests that the attendance of a CSI at a crime scene has a noteworthy effect on the criminal investigations in terms of the outcome and in reassuring victims and witnesses (Green 2007, p.342).

The only existing study of CSI everyday work in England and Wales, conducted by Williams (2001; 2004; 2007; Williams & Johnson 2007) suggests, particularly in the 2001 and 2007 publications, that CSI work is an "improvised" and "imprecise" practice. Williams and Johnson do however document some of the complexity of the issues that the CSI must pay attention to in the completion of routine work:

> … examiners are required to be simultaneously attentive to a series of considerations that relate to their conduct, including the technical adequacy of their search, collection and preservations practices; the organisational adequacy of their records of attendance and actions at the scene; the investigative adequacy of the nature and significance

> of the methods used for the physical evidence; and the legal adequacy of the methods used for the conduct of the examination and the recovery of the relevant material artefacts (Williams & Johnson 2007, p.363).

And, as this thesis also attests, these decisions occur within organisational and bureaucratic parameters:

> This is especially important when examiners are making professional judgements about scene searching in the light of their knowledge of scare resources, the range of alternative demands on their time and a concern with the measurement of individual and group performance by the use of a restricted range of indicators (Williams & Johnson 2007, p.363).

The accounts provided by Williams in terms of the mundane processes of examining volume crime scenes (i.e. Williams 2001), and later in relation to sources and collection of material at crime scenes for forensic analysis in particular (i.e. Williams 2007) as well as more general accounts of police forensic practices (i.e. Williams & Johnson 2007), are crucial in situating the CSI within investigative as well as forensic processes. CSI work, as further explored in this thesis, is far more than a simple process of bagging and tagging evidence. It requires negotiation and expertise at both the levels of scene examination and interaction. Expertise developed through formal training and *in* the professional practice of the CSI helps shape actions at these scenes and the ways protocol is enacted in specific case contexts. Therefore, notions of imprecision or improvisation are, in my opinion, unhelpful descriptions of crime scene work. They have too much negative baggage and appear to undervalue the numerous tacit decisions that take place and the expertise involved in such work. This is not to suggest that crime scene work is always pristine and clean. Nic Daied (2010, p.75) refers to the investigative process itself as one which involves bringing together "troublesome knowledge", knowledge which comes from different sources with different levels of authority attached. The complexity of different knowledge sources that must be obtained, double-checked and cross-referenced for points of convergence and divergence presents investigative processes as messy. In crime scene work, a substantial part of CSI expertise is in the process of rendering messy objects and practices into clean and evidentially (and scientifically) resilient objects that move out of the geographic and temporal space of the crime scene. This thesis examines the development of CSI expertise, instilled, developed and refined through routine work, formal

training and socialisation which allows the CSI to negotiate successfully their position within the investigative process and navigate the fine line between messy and clean practices.

In this thesis I present the first sociological study of CSI training in England and Wales and the first to explore and articulate the differences between training and routine practice in CSI work. To date and to my knowledge, no study has considered the epistemological, practical and professional processes that contribute to the emergence of the CSI. By providing an account of routine work, training and the everyday ways the CSI negotiates her position within the police force, criminal justice system and investigative process, this research adds texture to our understanding of the earlier parts in the investigative process, which either remains implicit or ignored in existing research. It also foregrounds the importance of practice as a site of knowledge production in its own right (rather than solely the performance of existing knowledge).

Williams and Weetman suggest that:

> Writing of forensic science as 'enacted' at specific sites - at the crime scene, in the laboratory, in the briefing room, in interviews and in the court - reminds us of the complexity of the social and scientific contexture that we presume when we think of forensic science support to investigations (Williams & Weetman 2013, p.381).

My account is concerned with this enactment within the police environment and by the CSI. However, in addition to acknowledging these differing sites of enacting forensics, these sites also represent environments where different understandings of the expertise, occupational jurisdiction and unique roles of relevant actors are negotiated. As this thesis attests, the CSI can be viewed as situated at or on a boundary, working across differing sites, constantly needing to secure her position within the investigative and scientific hierarchy.

Furthermore, by documenting the mundane, everyday practices, observing the completion of scene examinations and interviewing active and trainee CSIs, this thesis contributes to the emerging literature foregrounding the forgotten stakeholders in the routine use of forensic genetics in law enforcement. Machado and Prainsack (2012) provide a detailed account of prisoners as stakeholders in the use of forensic DNA technologies. Whether convicted using forensic evidence or just having their DNA on a national DNA database, these prisoners are clearly important and overlooked actors in the routine use of such processes.

Exploring Portuguese and Austrian prisoners' understandings of forensic technologies and the practices used by the police in the investigation of crime, Machado and Prainsack demonstrate the complex ways prisoners make sense of forensic technologies and practice and, most significantly what can be learned from detailed study of those intimately involved in the use of such technologies.

Whereas Machado and Prainsack (2012) provide much needed context and analysis to the subjects of forensic technologies, the users of forensic science and methods within the police still remain absent from extant literature. To go some way in combating this dearth, I utilised ethnographic methods to investigate the role, training and practices of the CSI. I completed participant observation at the National Policing Improvement Agency's Forensic Centre (the main site of CSI training in England and Wales), conducted semi-structured interviews with trainees and with more experienced CSIs and observed CSIs working at crime scenes. Based on this data, I explore how the performance of crime scene investigation is instilled in new recruits and enacted *in* the practice new recruits as well as the intricate ways in which the completion of seemingly routine tasks incorporates numerous decisions that have potential ramifications for later parts of the criminal justice process. Looking at the professional dynamics and interplay between different actors in the everyday use of forensic science and forensic processes in police work, crime scene investigation becomes visible as a boundary and emerging occupation, sitting betwixt and between different occupational arenas, such as the crime scene, the police station, the courtroom and the laboratory, constantly negotiating and renegotiating their position in the investigative and scientific process.

Although courtroom expertise is discussed briefly in this thesis, the sites of activity in this thesis are within the police station, the Forensic Centre and, most importantly, the crime scene. By focusing on the crime scene as the site of origin for many of the items that are later used as evidence, my research is well placed to acknowledge and explore the mediated ways in which objects become evidence and are imbued with meaning and investigative relevance and the significance of the CSI in these processes. From this perspective, crime scene investigation appears as a complex assemblage of technical, tacit and practical accomplishments, integral to understandings of the CSI's developing occupation but both blackboxed within her working practices and by the existing literature

which often ignores this important stakeholder in the routine use of science in law enforcement.

This research is a case study on the distribution and enactment of scientific expertise in a non-scientific professional space. By focusing on the development and implementation of CSI work through the eyes of CSIs themselves rather than official accounts alone, this thesis demonstrates the complex interwoven ways crime scene practices are enacted at a grassroots level. It also provides a critique of more common STS accounts that focus on high profile cases, ignoring the details of the everyday use of such technologies in work.

1.2 A note on terminology and context

Not all police forces have 'Crime Scene Investigators'. The forty-three, operationally distinct police forces in England and Wales use a variety of different names for CSIs, from Scene of Crime Officers to Forensic Investigators. These differences in name do not relate to major differences in their roles or responsibilities but represent local force preferences and priorities. As the established training route for this role is the Foundation Crime Scene Investigator Learning Programme and official Home Office documentation also uses CSI to refer to these actors, I will use CSI throughout.

Within the multitude of different names for the CSI, there is one distinction that is important to note. The DNA Expansion Programme, discussed in Chapter 3, marked a specific point where greater Home Office investment in the investigation of volume crimes resulted in the development of specific CSI roles concerning volume crimes. Volume crimes denotes the majority of crime that takes place in England and Wales (Association of Chief of Police Officers (ACPO) 2002, p.3). It is an umbrella category for "[household] burglary, theft of (and from) vehicles and robbery" (Jansson 2005, p.1). These roles also have a varied nomenclature from Volume Crime Scene Investigators, to Crime Scene Technicians. In some police forces they are specifically employed to examine a certain type of crime, most often vehicle crimes. To confuse matters, however, those employed as CSIs but only part way through their training are also called CSIs yet are only able to examine volume crime scenes.

CSIs are generally civilian members of the police force. This means that they do not have the powers of a police constable. In some police forces, however,

CSIs are also police constables. (The civilianisation of the CSI role is discussed in Chapter 3).

In this thesis I adopt Williams' (2007, p.204) concept of the forensic artefact, described as "deliberately created objects of attention and analysis, [...] treated by those who encounter them later in the narrative of any particular criminal investigation as the equivalent of, or stand-ins for, the real-world objects from which these artefacts were constructed." Viewed as such, forensic artefacts are knowledge objects as well as items which stand in for real world items from a specific geographical and temporal space. This process of producing forensic artefacts is not a solely scientific endeavour. Instead, it is part of an investigative, legal and scientific nexus. Forensic artefacts, whether they are reports, photographs or objects removed from crime scenes which may or may not need scientific mediation to be rendered meaningful, are the material result of enacted expertise. Their production is a practical accomplishment and decisions about what should and what should not become a forensic artefact depend on numerous investigative, scientific and legal factors. In everyday practice, CSIs do not speak of forensic artefacts. Instead, they often use exhibits to refer to potential evidence collected from the scene. They might refer to fingerprint exhibits as 'lifts' and DNA exhibits as 'swabs'. Forensic artefact is used in the place of such terms to foreground the work that takes place in creating such objects.

In terms of context, this research is very much situated in a specific place and time of change. Empirical research data was collected in the early stages of police reforms. In mid 2010 these changes were laid out by the Home Office (see Home Office 2010) and beyond budgetary issues that were still under review by HM Treasury, other changes were announced, including the "phasing out" of the National Policing Improvement Agency (NPIA). At the time the NPIA were responsible for a number of projects attempting to improve policing through the use of technology and training, and was the main provider of CSI training in England and Wales. The government proposed to move certain NPIA functions to other existing police organisations and construct a number of new organisations. Most significant for this research was the way that CSI training is now provided by the newly branded College of Policing (CoP). The training still occurs in the same location by the same members of staff but under the umbrella

of the CoP. As this is a relatively recent change and the research was completed when training was provided by the NPIA, I refer to the Forensic Centre training facility as the NPIA Forensic Centre and NPIA documentation as this was what was in use at the time of my ethnographic work.

In October 2010 following a detailed spending review, budget reductions to the 43 police forces in England and Wales were announced. These rather dramatic decreases, equated to each force having their budget reduced by 20% over four years (see HM Treasury 2010, p.11). Since this announcement, police forces have attempted to make savings, reducing their outgoings while maintaining the same level of service to the public. Substantial changes have taken place. At the time the fieldwork and data collection for this research occurred, the effects of these cuts were not very visible. Now however, with further changes such as the closure of the Forensic Science Service (FSS) and talk of potential police force mergers and/or merging of specific back office functions, like the department under which crime scene investigation sits, it is clear that this is time of transition.

1.3 Chapter summaries

Chapter 2 contains an account of some of the most relevant theories for the current study. I start by providing a discussion of different ways practice has been theorised, documenting a conceptual vocabulary for later chapters. I then turn to boundary work and boundary objects as useful tools in articulating the way the practices of CSIs relate to the wide legal system as a whole.

In Chapter 3 I provide an account of the development of the modern police and contemporary methods of utilising science in the police's identity practices. I document shifts in the site of expertise in the police use of identity technologies and consider some of the recent literature on the use of science in the criminal justice system. This review highlights the absence of the CSI in existing accounts and ends with a consideration of the emergence of crime scene investigation in the police forces of England and Wales.

The research methodology is discussed in Chapter 4. I describe how access was gained to the research sites, my research design and my reflections on the process of completing qualitative research within the secretive police force. In particular, I document my personal and professional development through the

course of completing this research. I provide some brief background to the training undertaken by CSIs in order to contextualise the methodological decisions made throughout this study. The Learning Programme and participants' perceptions are explored further in Chapter 5.

In Chapters 5 to 8 I examine the data collected via empirical qualitative methods. In Chapter 5 I detail the intricacies of the training undertaken by CSIs, situating the Foundation Crime Scene Investigator Learning Programme within wider employment frameworks, such as National Occupational Standards (NOS). I then explore my participants' backgrounds and perceptions of the Learning Programme. Throughout these accounts experience is viewed as central due to its significance in the way that trainees understand the line between the expectation of crime scene work at the Forensic Centre and the realities and wider pressures experienced at real crimes scenes. I suggest that rather than a compliance drift, a term used by Innes (2003) to articulate the way that ignoring protocol in an exceptional circumstance can become normalised and routinised malpractice, the Forensic Centre actively institutionalises this drift in the Learning Programme without the underlining negativity associated with Innes' term. Trainees are taught to expect differences between Forensic Centre and everyday crime scene practices. Therefore, although Innes' definition of compliance drift may be useful in articulating the lived experiences of the CSI as she starts examining crime scenes outside of the Forensic Centre, this shift away from formal protocol and the use of individual expertise and experience to complete the CSI role as expediently as possible is both expected and, within reason, accepted at an institutional level.

In Chapters 6 and 7 I provide detailed ethnographic accounts of the visible and teasing out the invisible aspects of certain parts of CSI work. Both of these chapters help to present to the reader some of the complexity associated with this role and how the CSI navigates across a number of different arenas in the course of her everyday work. The focus of Chapter 6 is on the ways the CSI is trained to record the scene both in term of paperwork practices and how photographic practices are used as a means of recording but also representing the crime scene. Through an analysis of these processes, I argue that crime scene photography and crime scene work serve to provide the first interpretation and narratives surrounding a specific crime scene. Crime scene photography

and paperwork practices represent a specific way of understanding the crime and the geographical space. These practices form a site where the CSI actively and reflexively engages in performing mechanical objectivity. Crime scene photography and paperwork also help create continuity and links between different aspects of the scene examination process, such as helping to place forensic artefacts produced at and removed from a crime scene, with the contexts of geographical space.

Chapter 7 is concerned with the practices that surround trace at the crime scene and the centrality of meaningful forensic artefact production in CSIs' understandings of their unique expertise. The ability to identify meaningful forensic artefacts both in terms of the data following laboratory analysis and being able to articulate how such data might impact a police investigation is central in participants' narratives. In this chapter, I stress some of the differing expectations on the CSIs within the course of completing their role and as they cross between different occupational environments. In particular, I use the notion of administrative objectivity (Lynch et al. 2008) to document and analyse the way paperwork practices can stand in for and mask more complex processes unless a problem is identified and further scrutiny takes place. Yet, whereas this concept has been used in relation to the movement of forensic artefacts between different geographical locations, it is clear that it also has utility in the way we see and discuss crime scene practices in general and the role of the CSI in the courtroom interaction. In particular, CSI competence is demonstrated not through the information they ascertain or their track record alone. Instead, the focus lies on the successful completion of the accompanying paperwork and the consistency between different items of paperwork completed during a scene examination. These finds raise questions about how we understand the integration of the CSI and CSI work in to the different environments of the criminal justice system, such as the police investigation and the courtroom.

CSI investigative practice is the focus of Chapter 8. In this chapter I provide greater context and texture to our understanding of the integration of the CSI into the investigative practices of the police. I start by examining the term "investigator" in official literature and the formalisation of investigative practices as part of wider professionalisation processes within the police force, through the notion of 'investigative mindset'. This term appears as the professional habitus

of the CSI. I also explore how the power of 'forensics' as an investigative tool has led to 'forensics' and 'investigative' becoming conflated. Although this, in some circumstances, serves to place the CSI in a heightened position, I argue that this works to undermine the significance of CSI work. If forensic practices are seen as intrinsically investigative, the special expertise involved in making sense of crime scenes and distinguishing the potentially meaningful from the meaningless is hidden - an element so key to the CSI's understandings of her unique skill (as per Chapter 7), is overshadowed.

I end this chapter with an analysis of the differences between a CSI's investigative practices and investigative mindset and the investigative methodologies available to the detective (as the representative of the police officer's investigative work). Mapping out the investigative role of the CSI in comparison to the detective, enables the articulation of the parameters of CSI's investigative function, tying together the variety of practices completed by the CSI in routine work into a meaningful assemblage.

Chapter 9 contains my reflection on four key areas where this research contributes, signposting ways in which the current study could be extended through further research.

Chapter 2 Theorising crime scene practice

In his discussion of the Sociology of Scientific Knowledge (SSK), Shapin (1995) highlights the central role of everyday practices. He states that a sociology of scientific knowledge is "concerned to show in concrete detail the ways in which the making, maintaining, and modification of scientific knowledge is a local and mundane affair" (Shapin 1995, p.304). By considering the way that processes, objects and interactions are understood rather than their innate, if any, value, scientific knowledge in this framework is viewed as constituted in the social realm. Both SSK and ethnomethodology have concentrated on the mundane, everyday interactions of individuals and the role of such interactions in notions of credibility and expertise.

Although SSK approaches can be criticised for their lack of broad normative claims (for example, Mercer 2002), the current study aims to explore, describe and analyse in detail the practices and training of the CSI alone. In particular, this research focuses on the performance of expertise in CSI work and how different aspects of such practices come together in flexible ways; how the CSI knows what she knows.

The term "practice" is, however, inherently vague. It is laden with assumptions about what is and what is not practice, what does and what does not require expertise or skill to perform and how we conceptualise the relationship between knowledge and practice. In the most straight forward sense, Cook and Wagenaar (2012, p.4) define practice as "any kind of activity the meaning of which (including the purpose) is derived from a given context. Scratching your ear is not a practice. Bricklaying, teaching, playing football, and brain surgery are". In doing so, this definition already foregrounds the context of action and the place of context within (or at least as part of) practice. Practice, as this chapter will demonstrate, is not only viewed as enactments of knowledge but occurs in a given physical and cognitive context. Furthermore, practice too can play an *active* role in the unfolding action.

In the chapters that follow, numerous aspects of CSI work are unpacked and examined, deconstructed and put back together to aid the reader in understanding the complex ways in which the CSI is engaged in knowledge production and labour that requires substantial expertise. Although this chapter focuses on a discussion of practice, throughout this thesis, work and practice are

used synonymously to acknowledge both the centrality of practice and our understanding of practice in making sense of crime scene investigation work as a whole. It also better enables us to unpack notions of expertise and understand the intricate ways the CSI draws on different sources of knowledge in the routine completion of their everyday work.

This chapter and thesis as a whole takes an approach in line with Nicolini (2013). Rather than advocating a specific method based on an existing model, for example, ethnomethodology, Nicolini suggests using the most relevant points from different practice theories that best explain the specifics of a given phenomenon. Although one needs to be careful for ontological consistence when using concepts from different theories, one need not follow a specific approach from beginning to end. Nicolini signposts a way that through careful consideration and avoidance of the potential pitfalls of using theoretically contradictory processes, different aspects of different theories can be draws on to unpack and explore practices. He demonstrates the way that practice theories (not theory) can be viewed as a toolkit, providing different concepts for use in analysis and sense making.

The chapter starts by considering some of the ways in which practice has been conceptualised in the past. In the first part of this chapter, I explore the shift away from seeing practice as something that is the linear result of following protocols or enacting specific, clearly delimited and articulated expertise. Looking at this view of practice through a notion of technical rationality provides a way of highlighting some of the key facets of a practice based epistemology, particularly in terms of what is absent in a technical rationality account. This provides a background to a discussion on the importance of thinking about practice as an integral part of action, knowledge and context, interlinked with numerous different facets of everyday life. The integration of different aspects within practice (as an umbrella category for numerous actions, thought processes and wider terminologies (such as experience)) do not however, need to be placed in a hierarchy. Cook and Wagenaar (2012), for example, argue that practice is actually the field within with knowledge and context exist.

The chapter ends with a discussion of different boundary concepts. These are useful here because of the need for the CSI to negotiate the area of expertise,

the areas in which CSI practice has value and relevance and how practice is used to negotiate this expertise.

2.1 Technical rationality

Earlier accounts of practice have focused on a specific way of viewing rationality. Common in the aftermath of World War II, this rationality, referred to as "technical rationality", is defined by Schön (1983, p.21) as "instrumental problem solving" involving the "application of scientific theory and technique". Technical rationality is presented as linear, clean and straightforward. You spend time gaining knowledge of techniques and processes. This knowledge equips you to perform certain practices. The *application* of knowledge and expertise is the simple part of the process. The difficulty lies in creating the knowledge that is late enacted. In short, there is a clear hierarchy of "research over practice" (Schön 1983, p.27). Status is attributed to those doing the research and creating knowledge rather than those enacting that knowledge in practice. This knowledge and expertise is "unambiguous" and "stable" (Schön 1983, p.23). In this account, processes appear linear, simply enacted and based around a positive epistemology of practice (Schön 1983, p.31).

Technical rationality presents work as a site where a number of predefined frames can easily and unproblematically be placed on social events providing an interpretive framework and a structure within which necessary actions are clearly defined. It does not acknowledge that there is a difference between practice (as action) and following instructions. Lynch (2002) among others has highlighted the substantial existing knowledge and expertise required to follow a simple recipe, let alone when it comes to complex work place action. Furthermore, an emphasis on the mundane aspects of everyday action is central to ethnomethodology, particularly as a site of meaning generation.

The linear way in which practice and knowledge are conceptualised and understood through the positivist epistemology of technical rationality appear overly simplistic even with a very limited understanding of practice. We know from our own experiences how following rules, completing even the simplest of tasks, require something from the doer. Similarly, there are often multiple different ways a task can be completed to gain the same result. Some may be more efficient than others whereas others may be more accurate when completed

time and time again. What is most absent technical rationality, however, is an acknowledgement that work and practice are messy, uncertain, complex and changeable. Although technical rationality may provide a neat and contained way of conceptualising practice, it does not facilitate a meaningful articulation of how practices are enacted when protocols are not strictly followed.

When you start to examine critically technical rationality, it is clear that it raises more questions than it answers. In particular, when one considers CSI work's contingency on time and context, uncertainty and ambiguity are everywhere. As later chapters will demonstrate, at real crime scenes the ideal scenario of doing all the things that would make a crime scene robustly and completely examined is unattainable within the confines of police work and the institutional demands placed on these actors. Therefore, *how* we understand, acknowledge and articulate these processes of translating taught knowledge on specific practices into action (and the other factors affecting and informing such actions and directives) need to be placed within a different, more textured understanding of "how professionals think in action". Schön (1983) provides one such way through his detailed account the reflective practitioner, discussed in the next section.

Technical rationality is not the only account that oversimplifies the role of individual agency in routine practice, often ignoring the presence or significance of an uncertain context. The 'received view', described by Cook and Wagenaar (2012, p.4), is the idea that individuals "articulate the situation that confronts them as a particular kind of problem, after which they apply the relevant knowledge (including rules, procedures, and so on) that enable them to solve the problem." Although the 'received view' (or views) as described by Cook and Wagenaar are more nuanced than technical rationality above, they still underestimate (or even ignore) the role of practice as an active and embodied part of routine action. As such, received views do not facilitate an explanation of action as it happens; it helps explain after action has taken place (Cook & Wagenaar 2012). Received views do not take into account our histories, our experiences and knowledge that "inform the essential context of our actions" (Cook & Wagenaar 2012, p.14).

The biggest problem, however, with technical rationality and these more straightforward views of practice as solely the enactment of knowledge, is that they are often accepted without question. We see the learning process as linear. We learn how to do things and then we complete them and, for many this means

that practices are seen to occupy a clear and unproblematic place within accounts of everyday action. It is only when unpicked, that technical rationality and simple accounts of practice become visibly problematic, not just for the observer but for the individual involved. It provokes discomfort. It pushes someone to provide a rationale for action beyond the typical "protocol states that you must do X and then Y". As the later chapters highlight, this is noteworthy in CSI accounts through the generalised distain for classroom training and the inability to articulate imperative or generalisable rules to justify action (or in some cases inaction). Instead, it is something that needs to be contextually defined. This is, put simply, what Schön means through the term 'reflection-in-action'.

2.2 Reflection, context, knowledge and practice

In Schön's (1983) account of 'how professions think in action', he foregrounds the dynamic way work takes place. Schön provides a thorough description of the reflective practitioner, a practitioner who employs a process of reflection-in-action along with a number of other strategies defined by Schön in the accomplishment of everyday practices. In doing so, Schön presents us with a conceptual vocabulary so that we can actually start to unpack some of the decision-making occurring in everyday working practice. In such an account, "tacit knowledge", knowledge that one has but cannot articulate (Polanyi 1967), is not used as a simple explanatory tool or black box to describe the rationales behind action. Although present, Schön (1983) moves us past tacit and embraces the messiness of everyday life. In doing so, he raises questions about how, when faced with so much uncertainty, we negotiate everyday practice, and particularly in relation to work, how we do this with competence and consistency.

By the same token, however, Schön also claims that our ability to articulate our own practices is not necessary in order to trust our own actions. What we manage to do in everyday life should be celebrated as an achievement. Schön's conceptual vocabulary is useful in explaining and foregrounding the work and learning that occurs before, during and after action. It is a cycle, a way of viewing the practice that can include a process of reflection both on the event (reflecting-on-action) and reflection during the event (reflecting-in-action). This reflecting-in-action can including seeing something as something else (seeing-as), that is seeing a problem as a similar problem the actor has dealt with in the past, or "doing-as", doing as an actor has done in relation to an arguably similar problem

in the past. In Schön's account, reflecting-in-action is a central organising feature. It shows the presence of individual theory building in everyday work (as a process of learning as well). Reframing problems that individuals are faced with in their everyday work into something known or knowable from a repertoire of examples we hold, as opposed to ambiguous and uncertain, is a site of learning, and claiming knowledge and expertise can be developed iteratively and often *in* practice, rather than solely *a priori*.[2] Schön articulately questioned the received logic that practice is the result of knowledge rather than part of a wider process.

Although embedded in examples from different fields, including management, architecture and psychology, Schön's account is still, however, focused on the typical work of professions, whether that be the encounter with the trainer and patient in the case of the junior psychologist or the process of actually solving design problems with the aid of a trainer in the architecture example. Wagenaar (2004), however, situates practice as something that is interesting also in more mundane (occupational) settings and not just in relation to the "professional" action of the group. Through the example of Judy, Wagenaar explores administrative work in an immigration office as practice and demonstrates the centrality of uncertainty in routine work, even work that could be viewed as processual. Although Judy is a lawyer, it is the work that she does surrounding this the core "lawyering", which is of interest to Wagenaar. Together, Schön and Wagenaar help us understand and move past a vision of work as taught, linear and an enactment of clearly defined imperatives, to work and practice as embodied processes, contingent on numerous factors and enacted *within* specific contexts.

Aiming to "make the implicit explicit: To question the taken-for-granted and self-evident in our understanding of administrative work" (Wagenaar 2004, p.644), Wagenaar rejects the Cartesian epistemology situating acting and knowing as one in the same. He claims that we can know through acting, but this is not always about or necessary to be able to render this acting explicit.

[2] This is clearly reflected in the police studies literature by Waddington (1999) through the notion of canteen culture – the canteen as a site where stories are shared, and collective understandings and experiences crystallised.

Judy deals with refugees' claiming legal status. Part of the Dutch government Department of Implementation Policy, it is Judy's job to make sense of contested immigration law and put them into guidelines and rules for those in the field offices making decisions on cases. However, as Wagenaar (2004) demonstrates, this is only one part of her day to day work. Instead, her situation is much more haphazard, with numerous other tasks diverting her away from what her official role actually entails. These tasks, ranging from helping with cases where the field operatives do not know what to do, to controlling the scheduling of immigration hearings, all take place outside of the official account of her job. Stressing her overflowing workload as just part of her job as opposed to a systemic, organisational problem of work allocation, her everyday work reality is characterised by a lack of control.

In presenting administrative work as practice, Wagenaar (2004, p.643) suggests there are four central features, "contextuality, acting, knowing, and interacting." Through contextuality or situatedness, Wagenaar claims and convincingly demonstrates, not only how all work takes place in a context but the way that context can affect the working practices. Using Lave's (1988, p.151) concept of "setting", Wagenaar expresses how "[i]nstead of passively reacting to the constraints of a particular context, the term "setting" denotes that the actor purposively seeks out those element of her environment that are relevant to the task at hand." Individuals can fill in the gaps of instructions based on the context.

The second and third core features, acting and knowing are particularly relevant when one thinks using another one of Wagenaar's (2004, p.646) concepts, "rules in action". Wagenaar uses rules in action to highlight the way that Judy presents her actions as *described and designed* by rules. Rather than acknowledging the expertise and complex interplay she enacts in what appears to be routine work, she defines it in a way that may prove to undermine the skills required to successfully negotiate work. The interaction of rules with other rules, however, presents a situation where decision-making becomes infinitely complex. Making sense of these rules, which should be placed at the top of any hierarchy when making decisions and those that can be left out, are important factors. As Wagenaar (2004, p.646) suggests, in the face of complex problems, Judy "designs – or, more precisely and less cogitatively, *produces* – solutions." Practice is not about the simple enactment of prior knowledge or arriving at truth.

It is about producing solutions that are acceptable to those in specific contexts. Things are not resolved in advance of action. They are resolved *in* action. Although rules are important in structuring a given situation, Wagenaar claims that they are both part of the problem (in constraining action) and solution (in guiding action).

This leads to his final core element, interaction. Stressing the way that knowledge is communal, Wagenaar emphasises how "[a]dministrative practice is inherently dialogical and interactive" (Wagenaar 2004, p.651). Practice does not take place in a vacuum and rarely takes place without some interactions with other people. This interactive element and acknowledged communality of knowledge helps us understand why people completing the same processes take consistent action. With knowing and doing separated out, it is knowledge interaction and context that are central in facilitating an environment where different actors will, in general, come to the same or similar conclusions and complete the same or similar practice action.

Wagenaar (2004) demonstrates the complexity and uncertainty involved in negotiating everyday actions and embodied reflections that often sit outside our core work. Although Judy is a lawyer and therefore occupies a well-established profession and professional context, the work described here, the ease with which anyone who has ever worked in a busy office can relates and the skill involved in successfully negotiating these everyday problems, is important. Wagenaar allows us to see some of the often overlooked texture in everyday work practices which contribute quite heavily to the lived experiences of actors. Furthermore, as Judy herself demonstrates, substantial parts of this work occur with the actor unaware of how miraculous it is.

There are numerous parallels here to crime scene investigation. Learning a set of specific, definable skills is only the start of the process of gaining competence in the acceptable and successful examination of crime scenes and negotiating the inherent ambiguity of everyday practice. Both Schön (1983) and Wagenaar (2004) foreground how practice, and particularly mundane practices, are interesting and dynamic. They are active negotiations, layers upon layers of decision-making that does not necessarily mean everything is decided in advance. This –in-action of practice, and of reflection, is key.

Cook and Wagenaar (2012) unpack further the notions of and relationship between practice, knowledge and context. Although it is clear that these components are important, it is how they interrelate in Cook and Wagenaar's account that is central to our understanding of practice. In particular, their account of practice demonstrates how it is far more than simply the result of an interaction between knowledge and context, as presented in technical rationality or one of the versions of the received view discussed above. Practice is active within the process and they foreground the importance of considering practice in it's own right and not necessarily always looking to dig under the surface for what is "really" happening. As per Wagenaar (2004) and Schön (1983) mentioned above, knowledge is not necessarily a prerequisite for action. Cook and Wagenaar's scope, however, is wider. Critical of the way the relationship between practice, knowledge and context has been understood in past theories, Cook and Wagenaar see knowledge and context as things that can be explained *within* practice. They are "evoked within practice" and "artefacts generated within practice" (Cook & Wagenaar 2012, p.18).

Treating knowledge and context as parts of practice, Cook and Wagenaar present three terms to help in understanding how practice is negotiated: "actionable understandings"; "ongoing business"; and "eternally unfolding present". Actionable understandings are working definitions that rely on a mutually agreed understanding of the case in point. Whereas in the police literature, the 'definition of the situation' (see, for example, Innes 2003) is a way of articulating the description and agreement of a mutual understanding of what has happened, actionable understandings more broadly conveys the uncertainty of all practices and how elements comes together. On-going business they state, "points to a dynamic, developmental, often taken for granted and unproblematic background against which and within which problems and opportunities of community's practice arise and are dealt with" (Cook & Wagenaar 2012, p.21). This background is reminiscent of Judy's account in Wagenaar (2004) where core actions are situated within contexts where numerous other things are taking place, decisions are being made and workloads are being managed at the local level and viewed as individual problems rather than something systemic. The eternally unfolding present foregrounds the dynamic way the past and future are both present in routine sense making but also acknowledging that it takes place in the present. The present is the site of meaning generation – pre-defined ideas

are not necessarily just enacted. Eternally unfolding present documents that practice can have an "epistemic dimension". The authors stress that "It is for this reason, in our view, that knowledge cannot be seen as enabling practice because practice is a necessary condition for knowledge, not the other way round" (Cook & Wagenaar 2012, p.24).

Although the discussion in the previous sections does not provide us with a detailed and acceptably articulated theory of practice (or even theories of practice) per se, what it does do is go some way in doing what Cook and Wagenaar state is so important about a theory of practice. In identifying the core purpose of a theory of practice they state, "Differently put, a theory of practice has to be able to explain how actors arrive at effective and responsible courses of action with only limited information about the situation at hand and inherently fallible guesses about the future" (Cook & Wagenaar 2012, p.18).

This need for consistency and agreement, is a core part of Pollner (1987) discussion of mundane reason. Situated most clearly in the ethnomethodological tradition, Pollner argues that mundane reasoning is built on our routine assumption that we occupy a shared space, shared reality and we experience things objectively in a real, tangible world out there. Reality, in short, "is virtually self evident and thus truly mundane" (Pollner 1987, p.x). The fundamental paradox of this mundane idiom, as Pollner (1987, p.35) states, is that "an account of a real state of affairs cannot validate itself." Therefore, in reverse, as researchers, in order to investigate the mundane, we need to be part of the mundane idiom; it is not possible to investigate from outside. Yet even with this acknowledgement of the socially constructed nature of the (mundane) reality we occupy, Pollner allows us to simultaneously see practice and mundane reasoning as *experienced* as real.

In everyday practice, mundane reason is an accomplishment. However, it is not just about avoiding contradictions, but an assumption about the existence of coherence and that there is only one version of events or one explanation. In general we maintain this. When it comes under question because of competing explanations, each claiming objectivity and truth, Pollner, refers to these as "reality disjunctures". "A disjuncture exists as long as participants are assumed to have observed he same object, at the same time, from the same place." (Pollner 1987, p.77) and this can be dissolved through questioning these specific

parameters. More common than not they are surface questions, questions that do not undermine the assumed singular, objectivity world, but just specific details, for example, whether or not a driver is aware that they are driving over the speed limit (and are aware of the speed limit). Even those questions at a foundational level, however, Pollner claims never fundamentally undermine our real, singular, objective world. Coherence needs to be maintained, whether that is by disproving or discounting another claim.

An awareness of this assumption of a singular world, however, is important for us as sociologists. Pollner is critical of the way "experts" often prioritise their understandings of individuals' accounts over the individuals' accounts themselves. Sociologists are too included in this criticism. However, these negotiations of the real world, do not provide us with an understanding of the ways the real world is maintained and ownership over certain spaces and practices are negotiated in action. This is also not considered or included in the previous discussions of practice. Although, as will become apparent in the following chapters, the negotiation of working space, expertise and the right to complete practices with authority are dependent on a, at least reasonably, unified understanding of what an actor can and cannot do, or can and cannot know based on the practice, experience and expertise. In order to investigate this, I now briefly turn to boundary work and boundary objects as useful conceptual tools in unpacking the performance of demarcating and bridging boundaries in crime scene investigation.

2.3 Boundaries in crime scene investigation

The CSI's role spans a number of different occupational arenas. This raises questions about how this role sits within the scientific, police and courtroom environments. What is the CSI's specific role and expertise? The lack of a consistently articulated occupational space is highlighted throughout this thesis.

'Boundary work', introduced by Gieryn (1983) in his discussion of phrenology, is a way of conceptualising the negotiations that take place in demarcating and claiming the right to specific, (scientific) expertise over a named other group(s). Although his original concept of boundary work related to scientists carving out, maintaining and protecting their professional jurisdiction and right to having *the* expertise in a certain area over religion and other 'scientific' disciplines, boundary

work has proved to be a useful, pertinent way of describing and encapsulating the process of demarcation of both *specific* expertise and *the site* of such expertise in a number of different fields. It acknowledges the tensions that exist between different knowledge communities and recognises the significance of the work that goes into and the outcome of boundary work for the groups involved.

The battles between science and religion, science and engineering or science and 'science', as discussed by Gieryn (1983), are rather large areas to negotiate. Burri (2008) provides a smaller scale example of boundary work. She uses the notion to unpack the professional dynamics and occupational jurisdiction in a radiology department with the introduction and routine use of a new technology in medical imaging, a Magnetic Resonance Imaging (MRI) machine. Prior to the introduction of MRI machines, medical imaging generally involved some kind of radiation and therefore the production of medical images was limited to specially trained staff - radiologists. With the introduction of MRI scanners which do not involve the use of radiation, Burri documents some of the discussions that took place and the discursive repertoires utilised by radiologist to justify why MRI scanners should be situated within radiology and operated by radiologists. Employing a combination of boundary work (Gieryn 1983) and distinctions (Bourdieu 1984), Burri documents the themes and accounts drawn on in the initial justification to house the MRI machine within radiology as well as the practical everyday discussions that help to place individual expertise in operating and producing MRI images in hierarchies dependent on audience and affiliation.

In Burri's account, this medical imaging equipment serves as "material and epistemic resources that are deployed in practices of boundary work and distinction" (Burri 2008, p.35). This highlights the ways in which boundary work and distinction relate to the availability of technology, the physical location of the machines, the site of legitimate expertise and the distinctions between individual employees about the accumulation of this legitimate expertise. Linking back to the earlier discussion of practice, it also foregrounds the *context* of action and how, like Cook and Wagenaar (2012) suggest, in some circumstances we can manipulate and impact on the context of practice rather than just passively accepting. What this discussion of boundary work adds however, is a level of active, targeted decision-making, where practices not only reconfigure and

reconstitute the technology but also the actors' (in this case radiologists) identities.

Burri demonstrates the complexity in which the material landscape and social processes converge in the negotiations of occupational space. Decisions such as the site of the MRI scanner in a hospital are often made only once and therefore could have a lasting effect on the practical use and ownership of such technology. Burri also shows that MRI remains a preferred diagnostic method restricted to specific conditions. This division affects the future use of the technology and the expertise of its operators. This expertise is demonstrated, in part, through the production of medically acceptable images that serve the purpose for which they were requested.

Both Gieryn (1983) and Burri (2008) deal with tensions between two or more knowledge communities at a specific moment in time in response to a particular issue. The CSI's performance of boundary work differs. It is small scale, iterative, mundane and under constant negotiation. Rather than occurring on the big stage of scientific publications, government committees or council meetings, it is completed in everyday interactions with stakeholders in the criminal investigative process (including victims, witnesses, suspects, wider police personnel, laboratory scientists and court personnel). It is situated in practice. This thesis contributes to the theoretical writings on boundary work by showing that this work is not always discursive but can be performed through practices and technological assemblages, embedded in everyday practices and understanding of practice. Boundary work then becomes a dynamic, theoretical tool in understanding and conceptualising both change and the status quo at different points in time and in relation to different groups and social and technological processes. What is particularly noteworthy, as discussed in the following chapters, is the way the CSI actively delimits her role, practices and expertise and how this expertise and performance is understood and experienced in such starkly different ways between police and legal audiences. The CSI is constantly constituting and reconstituting her occupational identity in interaction with different actors and within different environments.

Whereas boundary work emphasises the articulation, negotiation and reinforcement of boundaries through high level discussions and everyday practical action, another concept which forms part of my theoretical framework

also uses notions of boundary but not as something to be constructed, built up and cemented in place. Instead, it is something that helps to bridge boundaries, arenas or social worlds where different expectations, aspirations and motivations mean that cooperation is dependent on a level of coherence between parties. This concept, "boundary object", was first introduced by Star (1989) and then Star and Griesemer (1989). They defined boundary objects as:

> objects which are both plastic enough to adapt to local needs and the constraints of the several parties employing them, yet robust enough to maintaining a common identity across sites. They are weakly structured in common use, and become strongly structured in individual-site use. These objects may be abstract or concrete. They have different meanings in different social worlds but their structure is common enough to more than one world to make them recognizable, a means of translation. The creation and management of boundary objects is an key process in developing and maintaining coherence across intersecting social worlds (Star & Griesemer 1989, p.393).

As this definition suggests, boundary object is used to refer to, demonstrate and explain how cooperation is possible when seemingly disparate groups work together with different objectives and understandings of the task(s). Refer to these groups as people from "different social worlds", Star and Griesemer state that boundary objects enable people from these different social worlds to work effectively without a consensus on the purpose and meaning of the task. This 'interpretive flexibility', the flexible and fluid ways objects are understood across different social groups / social worlds / interest groups while maintaining a level of coherence and cooperation with meaning, is a key facet of boundary objects.

Boundary objects are not necessarily physical objects (a map for example). They can be immaterial, such as processes themselves and organisations. This is further stressed when Star (2010, p.603) states that boundary objects are n-dimensional in the sense that they are "at once temporal, based in action, subject to reflection and local tailoring, and distributed throughout all of these dimensions". When understood like this, boundary objects appear as these multi-dimensional entities with each social world able to see what they require. Yet, each of these dimensions has a common, consistent and coherent core which allows the integration of different actors and relevant processes. As such, boundary objects are objects facilitating translation and in some cases transposition, yet with a core that links everything together.

One obvious problem with boundary objects, particularly when juxtaposed with boundary work, is the lack of agency attributed to the boundary object which, in itself, appears to play a key role in helping to bridge social worlds in a way that is mutually beneficial, whether the object is seen as something material or processual (or both). Boundary work, however, is an active process. When understood and conceptualised as such, the boundary work involves interaction and constant negotiation. The CSI's current role appears to embody a level of hybridity and liminality through this negotiation process. Yet my study of the training, routine practices and some of the everyday interactions of the CSI demonstrates the level of mutual dependence between other relevant actors and CSI as a passage point. The objects they produce through their routine practices move between different physical and disciplinary sites (including the police station, laboratory and courtroom) and are translated and rendered legible and meaningful through numerous laboratory and investigative processes. This research articulates some of the complex intra and interrelations within CSI practice and between CSIs and other stakeholders in the contemporary use of science in policing.

The artefacts produced through the completion of crime scene examinations need to speak to a number of different audiences in a consistent yet audience specific way. These background meanings such as the location of a piece of evidence and the type of information it may or may not hold condition the type of analysis it undergoes at the laboratory and the investigative value that could be attached to the results. Forensic artefacts move around (at least metaphorically) between these different spheres of use and help facilitate both the investigation of crime and the communication of information between the different audiences from the victim to the jury.

In his analysis of the concept of boundary object, Fox (2011) is critical of the descriptive and under-theorised ways boundary object has been used in the extant literature. He claims that calling a certain object or process a boundary object is a useful explanatory tool but such accounts do not explain the boundary object itself. Instead 'boundary object' acts as a blackbox. Fox also emphasises the way that boundary objects can both inhibit and enable, they can be positive in aiding cooperation and the adoption of new technologies, processes and so

on, but also act as a block to such adoption.[3] His account displays the ways in which innovation and technological adoption may be predictable through careful construction and manipulation of boundary objects. Yet, also, his specific example of the development and adoption of methods of surgical sterilisation, highlights how the innovation or innovative technology can itself be the boundary object, bridging between different knowledge and practice communities.

Fox demonstrates the need for a more detailed consideration of boundary objects, but makes one particular claim that requires further analysis. He situates the boundary object as "[i]n some ways the antithesis of Gieryn's (1983) boundary work" (Fox 2011, p.71). This thesis utilises these two concepts together. Boundary work takes place in constructing a defined space for CSI work to occur and CSI expertise to be understood, but this is a process of constant negotiation. This negotiation, however, is contingent on processes of active sense making and framing by the CSI. These methods incorporate the use and manipulation of boundary objects as an occupational tool in translating CSI work and the results of such work into meaningful objects that travel between the numerous relevant arenas in the investigation of a crime and prosecution of a suspect. In such ways, it is apparent that these objects bridge different areas of investigative and scientific work. Therefore, although fixing boundaries and bridging boundaries may on the surface appear to conflict, the use of these two concepts acknowledges both the CSI's need for boundaries and the requirements of bridging but not destroying such boundaries in the use of CSI work in investigative practice. This thesis considers, to some degree, the ways in which the occupation of crime scene investigation and the specific expertise of the CSI are delimited from the wider police force through the objects they create at the crime scene (Chapters 6 and especially 7) and the investigative element of CSI work as officially described and performed within the Forensic Centre (Chapter 8).

2.4 Conclusion

This discussion from this chapter has provided both a background and some of the conceptual tools necessary to unpick the learning and practices of the CSI. This has been done by providing a vocabulary to describe and understand how

[3] This potential for positive and negative boundary objects and boundary roadblocks is also highlighted by Carlile (2002).

routine decision-making takes place (reflection-in-action, seeing-as, rules-in-action) and by acknowledging the mundane idiom as present and linked to how we enact practices so that the "real" world is maintained or saved from disjuncture. Adopting an approach that foregrounds descriptions of action ahead of (over)theorising, the following chapters provide a detailed account of mundane action in a not so mundane setting – the crime scene. Utilising different concepts from the practice literature, as Nicolini (2013) suggests, and STS work on boundaries, facets of CSI practice are unpacked and analysed whilst maintaining the voices of participants describing and discussing their work.

Central to the accounts above, is the emphasis on considering both context and practice not as empty concepts. Contexts are not completely external and uncontrollable and practice is not just an enactment of knowledge but an embodied process that can lead to knowledge production in its own right. The combination of practice and boundary concepts help to highlight some of the more instrumental uses of practices and knowledge in the routine performance of crime scene investigation, from delimiting space in which to work and the parameters of the expertise embedded in their practices, to how interact with each other in the communication of outcomes. Overall, however, practice, context and knowledge, are all viewed here as practical accomplishments and we need to be open and receptive to seeing them in their different guises.

Chapter 3 Policing, identity practices and the Crime Scene Investigator

This chapter contextualises the CSI within a history of the UK police, a history of identification, in the existing sociological literature on forensic technologies and in the practices of crime scene investigation. I start by discussing the emergence of the modern police force and the use of forensic science in identity and investigative and practice. Science provided new objective ways for the police to record identity focusing on one specific site as the unique feature which will help differentiate individuals - the body. The body was seen as "stable and inescapable" (Cole 2001, p.2); individuals may have multiple identities but they only have one body. The body was an authoritative text that could be rendered legible (Scott 1998; Lyon 2001). Contemporary surveillance also uses this in its "desire to tap into the body to obtain information untainted by the subject" (Lyon 2001, p.309). Not only does this reiterate the fallibility of the individual but produces and constructs the body as a trustworthy source, a body that does not lie. Exploring certain methods used to discipline and record the human body and reflecting on the central role of match, sameness and identity in contemporary accounts of forensic DNA, I situate the CSI in the account through changes in the division of expertise. Some academics, however, take the importance of the body further seeing it as a readable document and a means of identifying innate criminality (Lombroso 1911) or as a container of genes that may be useful in predicting potential future criminality (Nelkin & Lindee 1995; Rose 2000; Wright & Boisvert 2009; Walby & Carrier 2010). This is also briefly discussed.

This chapter situates some of the important forensic practices of the CSI, namely DNA sampling and fingerprinting, within their historical contexts. It explores the origins of police methods of scientifically recording individuals and the introduction of a distinct occupation within the police, involving the exploration of crime scenes for materials that scientific analysis may render meaningful.

3.1 From crime to criminal: Modernity, the police and the criminal body

3.1.1 Contextualising the modern police

The cultural, social and political transformations of modernity provide an important backdrop to developments in policing and police practice. Industrialisation changed the shape and format of the way individuals lived their lives in the new, modern era. With the increase in social and geographical

mobility, small communities were no longer able to identify every member on sight and differentiate between community members and 'outsiders'. People moved around more freely due to improvements in transport, and more anonymously because of their new found mobility, larger settlements and the development of distinct, geographical spaces: the modern city. For Simmel (1903), the modern city and its plethora of stimuli led the individual to become desensitised to what is around them and adopt a blasé outlook. Discourses of disengagement in a city of strangers differ dramatically from arguably romanticised accounts of living in communities before modernity. Park (1967) presents a picture of life before modernity where collective responsibility and a collective respect existed that helped maintain and reinforce social order. He states that at this time "the community, including the family, with its wider interests, its larger purposes, and its more deliberate aims, surrounds us, encloses us, and compels us to conform; not by mere pressure from without, not by the fear of censure merely, but by the sense of our interest in, and responsibility to, certain interests not our own" (Park 1967, p.104). Durkheim (1893) classifies these changes in the society through a shift between two notions of solidarity, mechanical solidarity to organic solidarity. Mechanical solidarity encapsulates the close-knit communities with homogenous morals and beliefs and, in modernity shifted to the disparate, heterogeneity of organic solidarity where individual work processes are interdependent but society is made up of individuals rather than communities. The depersonalisation of society through the division of labour and bureaucratisation of working processes even more evident in today's society, is similarly highlighted by Weber (2001) as a distinctly modern phenomenon.

In Bauman's (1993) account of modernity, order is maintained through avoiding or removing anything ambiguous from social life. The ultimate, ambiguous entity is the stranger. Bauman suggests that modernity involves losing a level of freedom in place of a level of security. The stranger still has this freedom and so should be feared and avoided because she cannot be controlled. In a society of strangers there is a greater need for resources of social control and recording individuals. With this backdrop and fear of the unrecorded stranger, it would be easy to overstate the safety and community self-regulation of pre-modern, rural living and assume that recording individuals did not occur prior to the Industrial Revolution. However, documents such as the Doomsday Book, church records and even 'wanted' poster are just three ways in which

individuals have been systematically recorded in the pre-modern period. However, modernity, particularly in this Baumanian account, stresses the need for accountability, the ability to stabilise identity both in terms of links to civil rights and welfare provision but also in line with wider fears, present at the time, of increases in crime (Higgs 2001; Lyon 2001; Marx 2001; Stalder & Lyon 2003; Torpey 2000). In the sections that follow, I briefly consider two responses to this shift in society – namely the emergence of the modern police force and the development and implementation of methods used to record individuals, beyond oral testimony of identity.

3.1.2 The emergence of modern policing

Prior to 1829, policing in the UK was completed through a 'Watchman System'. This locally funded, locally organised and locally accountable system often was part of wider local authority functions, such as lamp lighting and street maintenance (Critchley 1978). "Watchmen" performed the function of the police, patrolling the streets and dealing with crimes and fires. Yet with changes in society and fears of 'moral decay' (Taylor 1997), the watchman system was not seen as the most suitable method of maintaining order. Spearheaded by the then Home Secretary, Sir Robert Peel, the Metropolitan Police Act 1829 was passed, creating the first professional police force in England and Wales, the Metropolitan Police Service (MPS). This did not, however, signal a complete disjuncture from past methods of policing in the metropolitan area, as Emsley states:

> In many respects, and whatever the police reformers and Whig historians maintained, they were not so much 'new' as a significant refinement and centralisation of the old London watches (Emsley 2008, p.73).

It was envisaged that the MPS would function as a template for other police forces (Critchley 1978). Yet, outside of the metropolitan area, establishing police forces was more haphazard. The County Police Act 1839 enabled Justices of the Peace[4] to appoint police constables and set up police forces, but did not make it mandatory. The previous, parochial system of watchmen could remain and function as it had done before. It was only when the Country and Borough Police

[4] The Justices of the Peace Act 1361 introduced Justices of the Peace. These individuals were landowning men, deemed to be law abiding and of good character. They were charged with keeping the King's peace, governing their local area, directing policing and judicial services (Critchley 1978; Burke 2013).

Act 1856 was passed that police forces became compulsory and specific boundaries for each force, beyond the previously used parish lines, were drawn. Taylor (1997) highlights the level of centralisation, at least to county/district level. The government was, however, involved through the orchestration of annual inspections (Critchley 1978; Taylor 1997). This reflects in part, the contemporary structure of the police in England and Wales, of 43 self-governing forces covering specific geographical areas, but with the Home Office defining policing priorities and overarching strategy. At the time, however, the everyday work of the police was very different from contemporary police work. Rather than being concerned with the investigation of crime, police work initially consisted of walking the beat as a deterrent (Emsley 1991; 2008).

In 1829 when the MPS was founded, the Napoleonic Wars were still in the memory of the population. Emsley (1991) stresses that the image of the French military police, the *Gendarmerie,* and their use of a network of informants or spies, meant that the initial police force attempted to avoid similarities with the *Gendarmerie* by wearing non-military uniforms and not using of plain clothed officers. The very first police officers were unarmed, wore top hats and tailcoats, casting a very different silhouette to their military counterparts. In addition, the majority of MPS recruits at outset were deliberately those "who had not the rank, habits or station of gentlemen" (Gash 1961, p.502; Critchley 1978, p.52; Reiner 1985). The police was to be an institution where the working class governed the working class – encapsulated in Peel's principles, a set of nine instructions for police officers. Although there is no evidence to suggest that Peel provided these instructions within nine, defined principles, and the Home Office (2012) suggest that these were most likely articulated by the two first Police Commissioners of the MPS, Charles Rowan and Richard Mayne, they are important in understanding the way that policing was conceptualised at the time as a process of governing from within, based on respect and mutual cooperation. This is particularly present in Principle 7, which stressed the need for the police to gain and preserve the respect of the community they serve and that the police should:

> maintain at all times a relationship with the public that gives reality to the historic tradition that the police are the public and that the public are the police[;] the police being only members of the public who are paid to give full time attention to duties which are incumbent on every citizen in the interests of community welfare and existence (Home Office 2012).

Even with this emphasis in the UK on the police being part of the public and not a standing army coupled with the instilled resistance to secretive, plain clothed, police work (such as the *Gendarmerie* mentioned above), the MPS launched the first, plain clothed, detective department in 1842. This was the beginning of a process of specialisation away from the omni-competent constable, to a police force made up of individuals tasked with specific aspects of the police function.

The history of the modern British police, however, is complex (Taylor 1997) even if, as Reiner (1985) highlights, the emergence of the modern police was, until recently, often discussed as unilaterally good for the country. The emergence of the police fits with wider changes in society discussed above, and a growing concern for crime and 'moral decay', both locally and nationally, at least in terms of the elite (Taylor 1997). However, as Taylor (1997) highlights this does not necessarily mean that there was a huge increase in crime. Rather, it could link to increases in prosecution, which helped to make crime more visible.

In the lower classes, Ignatieff (1979) discusses some of the more problematic aspects of the emergence of the police – the riots, the general public's resistance to these 'blue locusts'. This resistance, suggested by Ignatieff, relates to both the view of the police as the development of standing armies but also the growth in power, the shift from localism to centralisation of certain functions and greater intrusion into the lives of the masses contrasts with other accounts, often from the perspective of the more wealthy, that increases in crime and disorder lead to the need for a police force (Silver 1967).

The introduction of a formal police force with a specific structure was significant in claims that being a police officer is a profession. However, the material practices of police work were initially completed in a rather haphazard fashion. Although the MPS provide a template, "[t]raining was not taken very seriously in many forces until after the 1919-1920 reports of the Desborough Committee" (Reiner 1985, p.52) [5]. Taylor (1997, p.51) reports that "[r]ecruits were often thrown straight into police work with little or no training beyond basic drilling. The skills involved in policing were, for the most part, acquired on the job." The Desborough Committee signalled a major move towards centralisation and, as

[5] This committee was headed by Lord Desborough and was established following the 1918 and 1919 police strikes to review the police and police practices in England and Wales.

Reiner (1985) highlights, an increase in the standardisation of policing practices, administrative work and conditions of employment. It was only in the 1980s, however, that significant changes in the police training methodology took place. Oakley (1994, p.88) suggests that this resulted in a new focus on "student-centred learning, with the trainer shifting more into the role of facilitator, monitor and guide". As I highlight throughout Chapters 5 to 8, this new focus is also reflected in the training provided to CSIs.

A public discourse about fears of and concerns about moral decay helped facilitate the construction of the first police force, while an oppositional discourse relating to the freedom of the individual and the encroachment of the state into local and individual lives framed the police in a more negative light. Arguably, part of this encroachment and interest in control, can be linked to the body and changes in the way that punishment was understood. In *Discipline and Punish*, Foucault (1991) provides, among other things, a historical account of the shift in the way criminals are reprimanded in society from the eighteenth century to the twentieth century. This move from physical, public torture to mental, private incarceration and training is important. In a few decades, "[t]he body as the major target of penal repression disappeared" (Foucault 1991, p.7). Foucault's account presents a far more complex image of the criminal becoming the subject of academic scrutiny. The criminal becomes a topic of research in the context of the emerging human sciences. For some time the "ordinary individuality – the everyday individuality of everybody- remained below the threshold of documentation" (Foucault 1991, p.191). However, the body and mind of the individual in general and the criminal and the mad in particular could become the subject of study and situated in "networks of writings", in "fields of documentation" (Foucault 1991, p.189). Knowing about the individual's body and comparing bodies and constructing norms produced knowledge and helped facilitate power. Power and knowledge, in Foucault's account, are interrelated; they imply each other. The body, as the target of power and the subject of surveillance, generates self-regulating bodies - bodies that assume and know punishment for misdemeanours is certain. Foucault account documents the way in which surveillance techniques and knowledge practices provided an institutional framework in which docile bodies were created.

Foucault also suggests a greater shift in purposes of punishment from the public spectacle of torturing the body to healing the soul. This new penal regime and the introduction of the modern prison, particularly in terms of the way behaviour is controlled, is reflected much later in the practices of recording and indexing bodies, discussed in the next sections. Rather than one individual representing the masses, in modernity each individual who commits a crime is to be punished. Nothing would go unnoticed and the newly developed, ideal prison, the panopticon, embodied this, providing an environment where a prisoner's action could be observed at any point. Thus the individual has to self-monitor her actions. Through observation, the behaviour of the prisoner is brought in line with the expectations. Thus, bodies are acted on and disciplined by the institutions via the individuals themselves.

Identification and individuation appear as problems resulting from modernisation and modern societal structure. The individual was not viewed as a trustworthy entity as appearances could be changed and individuals could move across geographical space anonymously. As class became more fluid, physical signs of class were no longer reliable indicator of someone's identity (Friedman 1993). In short, identity relied on self-reporting or documents. The police, however, could not trust individual self-identification and, as documents could be forged, were concerned with the possibility of individuals providing false identities, especially with their new concern for the habitual criminal. Cole (2001, p.53) notes that the concept of 'recidivism', habitual criminality, only entered the English language in 1886 and the police in the latter half of the nineteenth century required a method to record, and more importantly, catalogue and individuate subjects who came to their attention independently of the subject's testimony. Individuals in general and the criminal in particular were untrustworthy. Instead, the police's trust in 'objective' methods of identification came to rely on science and new methods of identifying personals and potential criminals.

These scientific methods encompassed the natural and the human sciences through the focus on understanding the habitual criminal, or recidivist. As Cole states, "No longer a merely legal category, the repeat offender had become an object of scientific knowledge" (Cole 2001, p.15). I will briefly summarise some relevant aspects of these discourses of scientific knowledge in the following sections, in so far as they add to an understanding of and provide a background

to the CSI's role and practices of identification. Behind these scientific methods of identification is the idea that if we look hard enough, our physical forms are unique, cannot lie and can potentially provide information about an individual's future actions. Furthermore, with the shifts in the way that the police was structured and police work was envisaged, specific actors emerge to complete certain parts of the process of rendering individuals visible and accountable. This shift from focusing on crimes to focusing on criminals, from torture and public punishment to punishment behind closed doors, and an emphasis on the criminal in general and the criminal body in particular as a site of disciplinary power and knowledge, provide a backdrop for future sections of this chapter. This interest in the criminal body and these techniques of classifying and recording these bodies lead to the development of a number of specific experts and areas of expertise (Garland 1985; Cole 2001; Becker & Wetzell 2006a). I turn first to anthropometry.

3.2 Measuring the body: Anthropometry and criminal anthropology

Within the context of a changing society and the development of the modern police force, the police required a scientific method to solve the problem of fixing identity beyond individual testimony, paperwork or photography. Anthropometry was one way in which the body was used to meet this demand. In line with scientific thought at the time, "[a]nthropometry was premised on a proven principle: all human measurements, of whatever kind, obeyed a natural law of statistical distribution" (Kaluszynski 2001, pp.125–126). Using anthropometry in identification viewed the external body as the unique identity document, and when multiple measurements were used together they provided a picture of the individual, different from that of anyone else.

Bertillonage was the most successful of the anthropometric methods utilised at the time (Kaluszynski 2001). Developed by Alfonse Bertillon (1893) in the late nineteenth century, Bertillonage consisted of a threefold process: eleven measurements from the areas of the criminal's body believed to change very little in the course of an individual's life; two photographs of the criminal (one face on and one profile); and a detailed, structured physical description. The Bertillonage record card provided a dedicated space for each piece of necessary information and, as Cole describes:

> included spaces for descriptions of the prisoner's eyes, ears, lips, beard, hair colour, skin colour, ethnicity, forehead, nose, build, chin, general contour of head, hair growth pattern, eyebrows, eyeball and orbit, mouth, physiognomic expression, neck, inclination of shoulders, attitude, general demeanour, voice and language, and habiliments (Cole 2001, p.37).

This long list of details was recorded using Bertillon's morphological vocabulary. This vocabulary provided a means of articulating exact details and standardising descriptions across records (for example, Bertillon provided fifty different descriptors for use when recording eye colour). In addition to this morphological vocabulary, Bertillon defined the specific positions for an individual to adopt when being measured as well as the distance and angle between the subject and the camera in Bertillonage photographs. Prior to their use within Bertillonage, photographs had been used by the police but they were ad-hoc and, on their own, did not meet the police's need for a "systematic, scientific verification of identity" (Kaluszynski 2001, p.125).

The process of creating Bertillonage records was, however, complex. The individual creating these records needed to master the morphological vocabulary, anthropometric measurements and photographic practices. Consistency across all examiners' work was of paramount importance as this helped facilitate the possibility of searching the database for existing records and identifying the habitual criminal. To facilitate consistent measurements and practices, Bertillon insisted that all examiners completed an apprenticeship with him, developing their expertise over time.

Bertillonage, as a technology of identity, facilitated the recording of identity beyond individual testimony, using a combination of measurements, descriptions and photographs. These records also enable two other possibilities: (1) they made the 'scientific' communication of identity across geographical spaces achievable using the *portrait parlé* (a way of sending the Bertillonage record via telegram) and (2) Bertillon's complex filing system meant that individual bodies could be checked against the Bertillonage record cards of the known criminal population (Kaluszynski 2001). In so doing, "Bertillon made recidivism real, concrete, palpable, even utterable" (Cole 2001, p.53). His work helped facilitate penal reforms that aimed to consider an individual's past convictions in current/future sentencing decisions. Prior to this, with no robust means of recognising past offences beyond individual testimony, one relied on records

searchable by name alone (and names can easily be falsified). In enabling one to track the repeat offender using scientific techniques, the habitual criminal appears as a product of modern methods of setting up and managing population databases.

Bertillonage provided a method of both fixing identity and transforming identity into a form of knowledge. This method of recording and cataloguing identity disciplined the body through the knowledge of measurements, markings and physical appearances which meant that the individual was potentially identifiable across both time and geographical space. In particular, the *portrait parlé* was central in facilitating the communication of identity across large areas and national borders because they could be sent by telegram.

For Ginzburg (1980, p.25), the ability to confirm identity absolutely was dubious, stating that Bertillonage "permitted the elimination of those whose details on examination did not match up, but it could not provide that two sets of identical details referred to the same person." Bertillon believed that the description of distinctive marks and the use of the morphological language to describe the body enabled the confirmation of a person's identity. Whereas the quantitative measurements acted as a negative identifier because they could be used to confirm that two records do not match, the measurements combined with physical description were used to confirm identity positively (Bertillon 1896 in Cole 2001, p.45). Bertillon was confident in anthropometry's utility in recording and cataloguing identity. Others extended this utility of anthropometric data, such as Lombroso (1911), claiming it could be used to identify future recidivists, the habitual or born criminals. Whereas Bertillonage and other anthropometric methods aimed to facilitate penal reforms targeted at identifying habitual criminals, or recidivists, so that they can be punished accordingly (and differently to the occasional, opportunist criminal), Lombroso's work was premised on the assumption that external features communicate information about inner predisposition. Physical features such as the size and shape of an individual's skull, a slanting forehead or creases in the cheeks could mean an individual is more likely to be a criminal. Although later in his career, Lombroso did to some extent consider wider factors, including environmental factors, in the development of criminal tendencies (Gibson 2006), his main impetus concerned the physical form of the individual in general and the body of the criminal in

particular. This criminal anthropological approach relied on the body as a specific, discrete and fixed entity, the "naturalistic body" which controls "individual behaviour patterns" (Schilling 2005 in Walby & Carrier 2010, p.262).[6] The criminal is biologically different from the non-criminal and physical features display this difference. Furthermore, Lombroso believed that the criminal also showed signs of being less evolved, with cranial abnormalities that reflect the normal skulls of "coloured or inferior races" (Lombroso 1911, p.48).

Lombroso and criminal anthropologists of the time believed that "[f]ailure to comply with the norms for respectable behaviour and personality development could be detected through trained observation" (Becker & Wetzell 2006b, p.3). As such, the criminal and criminal body became a site requiring scientific and expert mediation, framed by scientific and medical language. For Rafter (2008), Lombroso helped move criminality from the realm of religion and sin, to criminality as something natural that could be understood and explored by scientific means. Lombroso's work involved identifying the physical signs of inner deviance. This deviance related to a specific understanding of the criminal or atavist mind as primitive. Lombroso utilised ethnographic accounts of 'the savage' to understand the psychology of the primitive mind (Becker 2006) situating deviance within an evolutionary perspective (Pick 1989). However, at turn of the twentieth century, the idea that the body was in some way a legible expression of the mind was reasonably established and seemed to support Lombroso's approach.

Rafter (2008) identifies 4 key areas where Lombroso's work is significant, all of which are relevant to this discussion. These are:

> (1) his synthesis of the study of crime with other sciences and fields of inquiry; (2) his use of the medical model to frame nearly all aspects of his new perspective on criminal behaviour; (3) his production of blueprints that gave liberal states new ways of dealing with deviants; and, above all, [(4)] his transformation of criminology from an offshoot of phrenology into a full-fledged science (Rafter 2008, p.84).

Rafter (2008) suggests that Lombroso provided the most systematic combination of different "fields of inquiry" (point 1). This combination of different bodies of knowledge is a key component of contemporary forensic practices and

[6] There is still research taking place today that considers the possibility of predispositions to criminality, intelligence or gang membership. Instead of physical appearance, the research site has moved within the body to the role of specific genotypes whilst also considering social aspects (for example, see Wright & Boisvert 2009 for an account of biosocial criminology).

forensic science. Similarly, the use of the "medical model" (point 2) helped situate the study of criminality and the criminal in science and medicine. In conceptualising deviance as something natural and the criminal not only as born but also as visibly identifiable, Lombroso helps provide a new way of viewing and disciplining the criminal (point 3). The final point (point 4) highlights the significant role of Lombroso's work in the disciplinary differentiation of criminology from other forms of knowledge production about the body, reiterating, most importantly, that crime (and the criminal) could be studied 'scientifically' (Rafter 2008, p.86).

When Lombroso's criminal anthropology and Bertillon's use of anthropometry are considered side by side, Lombroso's work helped to visualise the criminal whereas Bertillon rendered the known criminal visible across time and space. Through this transformation of the criminal body into a site of research and expert scrutiny, both Bertillon and Lombroso displayed a certain approach which not only expressed and asserted the expertise required in the measurement and classification of the human form but the way this should be completed with the appropriate and associated "scientific" accoutrements. Particularly, as Rafter (2008) highlights, Lombroso's methods present an image of the science of the time to the lay observer. Horn (2003, p.82) extends this further by suggesting that "each instrument produced the body anew, giving rise to an index, a threshold, or a capacity that could not have mattered previously." Using the body as a source of information, mediated through the use of scientific instruments, appears in both criminal anthropology and anthropometry in general.

Bertillonage and Lombroso were searching for an absolute authority within the body. For Bertillon, embracing the 'natural laws' of the body in combination facilitated a method of differentiating the known criminal population, rendering potentially new bodies comparable to this known criminal population and providing a method of communicating identity records across geographical spaces. Lombroso's criminal anthropology was not about cataloguing the known criminals as a way of managing recidivism or the habitual criminal. Instead, his work was concerned with identifying the born criminal, using the physical body as a text on which the future of the individual is written.

Neither of these accounts provided a means of cataloguing criminals or understanding criminality that has endured the test of time. However, they represent a step-change in the way that crime, criminality and the criminal are

understood. The methods provided a site in which the development of modern methods could be situated, while also helping to construct the criminal body as a site of expertise and knowledge as well as identification as a pursuit that requires expert mediation. These points are central in the development of criminology as a distinct discipline.

Fingerprinting and anthropometry differ in a number of ways, encapsulated by Cole (2001, p.166) when he states:

> Anthropometry looked like a science; fingerprinting looked like a technology. Anthropometry was observational; fingerprinting was mechanical. Anthropometry evoked the rigors of scientific observation; fingerprinting evoked the efficiencies of mass production. Anthropometry was performed by skilled workers, trained through apprenticeships; the recording of fingerprints was performed by unskilled hastily trained workers (though skilled workers performed the classification). Advocates of anthropometry emphasized quality, measuring identification in scientific terms, according to the accuracy and consistency of the data; dactyloscopers emphasized quantity, measuring identification in the language of industrial production, in terms of processing speed cost, and the size of their bureaus. Anthropometry placed its trust in the conscientious, meticulous, properly trained, disciplined operator; fingerprinting placed its faith in a mechanical process that transferred a bodily inscription onto paper (Cole 2001, p.166).

Whether Bertillonage or Lombroso's criminal anthropology, anthropometry appeared scientific, it conformed to notions of how scientific practice is and should be performed. Fingerprinting, however, was more process-driven. Rather than meticulous recording of minutia by the scientist, the recording of individuating data was left to the unskilled and expertise was required only for the analysis. Fingerprinting also was cheaper. Training in Bertillonage in France involved an apprenticeship with Bertillon (mentioned above) and substantial experience before an individual could be an 'expert'. This high level of skill took time to acquire, it was expensive to have an expert at every police station and it was also time consuming to create a Bertillonage record. In Bertillonage expertise was situated in the measuring rather than the comparison of records and the assertion of a 'match'/'non-match'. Furthermore, Bertillonage was not used to record women's bodies or those of different races. This was due to a variety of claims, such as the equipment was not designed for women's bodies, questions about the intimacy and acceptability of the male police officers measuring women and, in relation to different races, claims about insufficient

variation in non-white bodies to be a useful index. Fingerprinting did not have these problems. The next section explores fingerprinting, a method that not only superseded Bertillonage in the cataloguing of criminals but provided the possibility of using identification techniques in the investigation of crimes (Joseph 2001).

3.3 Blotting the body: dactyloscopy and latent fingerprints

Whereas anthropometric methods of identification and indexing of bodies revolved around the intuitively understandable emphasis on physical features common in lay differentiation and identification methods, dactyloscopy, or fingerprinting, as it is mostly called, moves identity into a more abstract realm. This form of identity still relies on a physical phenomenon on the outside of the body but not something the individual can easily discern for herself in everyday life. Devised by Galton (1892), fingerprints did not present the same problems to identification practices as Bertillonage, particularly in terms of resources and expertise. The publication of Galton's *Fingerprints* (1892) marked the beginning of using fingerprints as a means of identification in policing (Friedman 1999).

Although developed at a similar time to anthropometry, fingerprinting took longer to be accepted as a cataloguing method.[7] In fact, in many areas, it was incorporated onto the Bertillonage cards with the anthropometric data as the main identifiers. Fingerprinting was often used to catalogue women and those of different races as it did not have the claimed problems of anthropometry, mentioned above (Lynch et al. 2008). However, once the authority of fingerprinting was established in practice, it offered a number of benefits over and above Bertillonage. Fingerprinting was far less expensive in terms of staffing, expertise and equipment. In practice, fingerprinting was also simpler with less room for error (at least in the collection of fingerprints). It required very little skill in the generation of profiles meaning it was easier to collect substantial amounts of fingerprints and map the known criminal population. Expertise, instead, was situated in the comparison of fingerprints. The key difference between fingerprinting and Bertillonage is that the latter dealt with identity through the whole body, which sat well with lay discourses on identity. Fingerprinting

[7] For a detailed account of the false history attributed to fingerprinting in the US, see Cole (2001).

concentrated on the minutiae of the ridges on the fingers. Fingerprinting changed the way recording and fixing identity was understood, as stated by Joseph:

> [Fingerprinting's] adoption in late Victorian Britain signalled a changing conception of identity – from a frozen image in a photograph and a string of measurements of body parts to an image of patterned lines and ridges; from a construction that construed identity as emanating from the whole to a formulation of permanent identification from a part (Joseph 2001, p.183).

This shift from the body as a whole to a part, the fingertips, demonstrates a move to more abstract ways of the state recording (the criminal's) identity. However, its utility and accuracy needed to be ascertained. Cole's (2001) account of the history of fingerprinting provides a detailed insight into the assertion and development of fingerprinting as a method of dealing with *absolute* certainties. In contrast to Bertillonage, fingerprinting was established early on as an absolute method of identification. This claimed certainty is still present today where Cole's more recent work has highlighted the problems of viewing fingerprinting methodology as sound (although untested and, in absolute terms, untestable) with errors the result of individuals making mistakes (Cole 2005). This picture of absolute certainty and cost effectiveness was further developed by the potential for fingerprints to provide valuable information in the *investigation* of crime. As Lynch and colleagues (2008, p.10) highlight:

> What is so useful about fingerprints for purposes of criminal identification is that, for the most part, 'finger writing' is inscribed invisibly and unintentionally, whenever the tips of the fingers contact a surface leaving oily traces of ridge and pore patterns (Lynch et al. 2008, p.10)

Rather than simply a method of cataloguing the criminal population, 'finger writing' provided a source of information at the crime scene about who had been in contact with certain things within the site. It helped identify people of interest to the police and had the potential to be useful evidence in court. Courtroom admissibility needed to be obtained. Convincing legal professionals that no two fingerprints are the same and the development of a "distinct forensic profession" (in the form of the Latent Fingerprint Examiner) were key steps in this process (Lynch et al. 2008, p.12). Cole (2001, p.4) states that "[d]actyloscopers had created one of the most seemingly powerful and unshakeable forms of truth around." Part of this acceptance, according to Joseph (2001) was that fingerprinting caught the imagination of the public. Fingerprints could be

displayed to jurors in the courtroom to compare themselves, with the help of the fingerprint expert. The public's imagination was also captured by the potential utility of fingerprints in the investigation of crime. The development and implementation of fingerprinting highlights a change in identity practices, particularly in terms of the position of expertise in the process, from collection to analysis, and the use of identity practices in investigative work.

Sankar's (2001) account of fingerprinting and its development is particularly important because it highlights the significance of *use*. Fingerprinting and the expansion of police powers to collect fingerprints of individuals stresses that this history is not just about the adoption of specific techniques or technologies but about the development of practices and infrastructures that helped to facilitate the routine and unquestioning use of certain methods to document identity. Sankar acknowledges the two-way relationship in how policies and procedures evolve with new technologies and demonstrates how the perceptions of the technology's can affect these procedures and policies, such as the greater inclusion of fingerprints within the repertoire of investigative actions in routine police work. By being able to bring scientific identity practices to the scene of a crime, through examining for latent fingerprints (fingerprints left on objects and surfaces due to sweat from the eccrine glands in the hands), fingerprinting moved into routine police work. These latent fingerprints, although not normally perceivable to the naked eye, could be rendered visible and removed from the crime scene for analysis by the completion of a variety of techniques. Until the introduction of specialist crime scene personnel in the 1960s, these techniques of using a brush covered in a specific powder, moving it in a gentle, circular motion to allow the powder to stick to the sweat left by the finger when in contact with the surface were initially competed by police officers and detectives (Ramsay 1987; Green 2007) (explored in section 3.5).

For Galton (1892), however, dactyloscopy had another function. He believed and hoped that through the analysis of fingerprints "he had found the outward sign of inward character" (Sankar 2001, p.275). This emphasis on utilising an aspect of the physical body as a legible means of identifying the criminal and the mentally ill resonates with the work of Lombroso and wider claims of the potential to gain meaningful information about the individual from their whole body or part, through scientific methods. Regardless of these methodological speculations,

fingerprints provided a real development in the investigation of crime and the utility of information collected from scenes. Furthermore, it marked a shift in the site of expertise in identity practices away from the collection of identity material to the comparison and analysis of such material. DNA profiling, discussed in the next section, follows this framework of expertise but with a different developmental trajectory.

3.4 Entering the body: DNA profiling and DNA practices

Whereas the two previous methods of tracking and documenting identity involved external aspects of the body, DNA profiling goes under the skin (Lyon 2001; Williams & Johnson 2008). This movement inside the body presents new problems for the way that identity is conceptualised, and opening up the body to new threats. Nelkin and Andrews (2003, p.104) state that DNA and DNA profiling in routine police practices present "a distinct set of problems, for unlike fingerprints, tissue samples expose individuals to the risk that the cells will be used for purposes other than identification."

Investigative and identification practices using internal features did not start with DNA profiling; blood type was widely utilised as an investigative tool in the late 1920s onwards (Friedman 1999). Identifying the potential blood type of the perpetrator although useful in providing one way of testing whether the blood *could* belong to certain suspect did not provide a means of linking an individual to a crime more specifically. Following the work of Jeffreys and colleagues (1985), DNA fingerprinting or DNA profiling emerged as a far more discriminating way of linking crime scene traces to individuals. Like the methods discussed above, identifying an individual was done through factors that are beyond the individual's control. Wearing gloves does not protect the individual from the potential brought forward by the onset of what has been termed, "genetic policing" (Williams & Johnson 2008). The "possibility of deriving DNA from unintentionally abandoned biological matter left by criminal suspects at crime scenes" (Williams & Johnson 2008, p.137) enabled new ways of investigating and detecting crime. Whereas the use of fingerprints and anthropometry started as a means of recording and cataloguing individuals, the developmental trajectory of the police use of DNA profiling differed. Its first use focused on analysing material from the crime scenes to generate information in the investigation of the rapes and murders of Lynda Mann and Dawn Ashworth, in 1983 and 1986 respectively.

Following the use of a DNA dragnet, a mass DNA screening, Colin Pitchfork was identified as the prime suspect.[8] His DNA profile matched the police's perpetrator sample and he later confessed to these crimes (Williams & Johnson 2008).

In this case, DNA profiling served two purposes: (1) it exonerated Richard Buckland who had been charged with both murders and actually confessed to the second murder and (2) it singled out Colin Pitchfork who, prior to the dragnet, was not a suspect.[9] Pitchfork's initial attempts to avoid volunteering a blood/saliva sample and later confession when his DNA profile matched the profile of crime scene samples provides an interesting backdrop to later claims that DNA profiling is a truth machine and the fear that DNA evidence supersedes all other evidence and expert testimony as *the* witness (Blake 1989 in Williams & Johnson 2008).

The Pitchfork case also signalled the start of wider processes of using DNA as an investigative tool in police work. The development and implementation of DNA profiling into routine police work, however, took time. Williams and Johnson (2008, p.1) suggest that the trajectory of integrating DNA profiling into police work followed a common course in numerous countries, starting with use in a "few serious crimes, (most frequently homicides and sexual assaults) […] followed by its extensive and routine deployment in support of the investigation of a wide range of crimes including property and auto crime". It was only when these DNA samples were set within a searchable database that the expansion of DNA and its utility in identity and investigative practices reached its current height. On the recommendations of the Royal Commission on Criminal Justice (1993) and with the passing of the 1994 Criminal Justice and Public Order Act (CJPOA) which provided its initial framework National DNA Database in England and Wales (NDNAD) was established on 10 April 1995. The NDNAD was the first of its kind globally. The legislative framework has changed a number of times since outset

[8] This was also the first time that a DNA dragnet was used, although not the first mass screening of identity information in the investigation of a crime. As McCartney (2006, p.179) highlights, "[i]ntelligence screens began in the late 1940s with fingerprints taken en masse from local areas where serious crimes had occurred". DNA dragnets, however, are more contentious for a number of reasons (many of which are shared with fingerprinting dragnets), particularly because of questions surrounding the voluntary nature of giving a sample (those who choose not to volunteer a sample are viewed as suspicious and, in some circumstances, court orders are obtained to take the individual's DNA against their will (Rothstein & Talbott 2006)). For a detailed discussion of DNA dragnets, see Zadok and colleagues (2010).

[9] This case has been in the media again recently due to the appeal on his life sentence and Pitchfork's artistic work in the South Bank Centre, London (see BBC (2009)).

as well as the practices of sampling and retaining such information on the database. However, the development and implementation of the NDNAD was only the beginning of the process. The push to obtain as many DNA profiles from the active criminal population lead to huge investment in volume crime and the forensic examination of volume crime scenes. The DNA Expansion Programme distributed £241 million along with £90 million from police force budgets over five years (2000-2005) to forces to contribute towards the costs of laboratory analysis, infrastructure changes and increases in the workforce that were necessary to meet the demand to expand the number of people included in the DNA database (Forensic Science and Pathology Unit 2005). As McCartney (2006, p.176) highlights, "[t]he funds enabled police forces to increase the sampling of suspects; the recruitment of 650 additional Crime Scene Examiners and other staff; equipment purchase; and the collection and analysis of more DNA material at crime scenes (Home Office Science Policy Unit 2004, p.12)". In order to expand the contents of the DNA database and increase the infrastructure necessary to use DNA in particular and forensic science more generally in police work, a number of legislative changes were needed. They included the Criminal Justice Act 2003, which allowed the police to take non-intimate samples without the consent of the individual when arrested for a recordable offence, an offence which the police maintain a record of. These changes in funding, legislation and practices were central in engendering the wider use of forensic science in routine investigative work and the practices of the CSI in particular.

Unlike in the US where the 'DNA war' was fought most vehemently,[10] in the UK legal objections to DNA evidence where few and were dealt with quickly. This was central in the development of the NDNAD, and, more specifically the development of credibility of the process in routine work. As Joseph (2001, p.183) highlights, new methods of identification depend "on an eventual consensus that cuts across police work, science and government". This consensus was more easily obtained in the UK.

[10] See Thompson (1993) for an account of the DNA war. Another important arena in which the discussion of 'scientific evidence', particularly DNA, occurred was the OJ Simpson trial (Lynch & Jasanoff 1998b). This is explored in a special issue of *Social Studies of Science* (see Lynch & Jasanoff 1998a) and also in Lynch (2002), which is particularly relevant to the current thesis because of the emphasis on trace practices and the performance of 'scientific' expertise at the crime scene and beyond.

Beyond the initial introduction and implementation of such technologies, purposes and uses can expand over time. This is particularly problematic when expansion occurs with limited checks (Lynch & McNally 2009). Dahl and Sætnan (2009) document this expansion in the use and purpose of the NDNAD. In their account, the NDNAD acts as an example and cautionary tale of what could happen to the newer Norwegian police DNA database in the years to come. Dahl and Sætnan use the term 'function creep' to represent the process whereby "personal data, collected and used for one purpose and to fulfil one function have migrated to others that extend and intensify surveillance and invasion of privacy beyond what was originally understood and considered socially, ethically and legally acceptable" (Surveillance Studies Network, 2006, p.9 in Dahl & Sætnan 2009, pp.83–84). Dahl and Sætnan trace how DNA databases, in both Norway and the England and Wales have increased their function and the use of the data contained within these repositories. Function creep can be seen in the shift from the use of DNA in the investigation of a few, very serious cases to more routine deployment in volume crimes. Within the context of the NDNAD, inclusion criteria have expanded as noted above. However, the crucial point Dahl and Sætnan raise is not that functions are expanding but that this expansion has resulted in the addition of new functions that are treated and accepted as neither noteworthy nor requiring detailed consideration. They suggest that although DNA technologies "may contribute to increased security, they may also contribute to increase *in*security" (emphasis in original) (Dahl & Sætnan 2009, p.100; also see Aas et al. 2009). In short, Dahl and Sætnan present an image of police DNA databases as something self-perpetuating, increasing in size and scope without due consideration of other factors, such as human rights issues. Instead, crime prevention agendas appear to marginalise other concerns, a point also stressed by McCartney (2006).

Outside the expanding portfolio of potential uses offered by the development of new techniques and the adoption of existing practices to new areas or groups, literature considering the perceptions of different publics on the utility of forensic techniques, especially DNA profiling, provides context to the public's acceptance of such expansions. Terms such as "forensic imaginaries" (Williams 2010) and "genetic imaginaries" (Gerlach 2004) denote the actual or promissory potential offered by science and technology in the investigative process or more widely in society through genetics. These terms articulate the potential of such

technologies to capture the attention of the public and blur the line between fact and fiction. There are numerous accounts emerging of different publics' understandings of DNA and the potential of DNA in investigative and legal practices. Wilson-Kovacs and colleagues (2012) explore the responses of Mass Observation Archive (MO) respondents to Part 1 of a Directive,[11] which focused on developments in genetic science and technology. The Directive asked for respondents' thoughts on a number of such developments, including "forensic testing and criminal investigations".[12] Placing forensic testing within the context of wider developments in genetic science (such as cloning, paternity testing and genetic testing for inherited medical conditions) showed that for respondents forensic uses of genetic technologies are the most acceptable. Although the MO's respondent population is far from representative, Wilson-Kovacs and colleagues demonstrate the active and resourceful ways certain publics engage, research and make sense of forensic technologies in far more complex ways than inferred in other accounts. This raises questions about claims that fictional portrayals of forensic science are providing unrealistic expectations to certain publics.

Other studies present equally complex views of how specific groups' understand forensic technologies. Accounts of prisoners' understandings of DNA in Austria (see Prainsack & Kitzberger 2009) and in Portugal (see Machado et al. 2011) provide an insight into the ways those who are the subjects of police DNA technologies understand and make sense of their experiences of forensic science in general and DNA technologies in particular. In their co-authored book, *Tracing technologies: Prisoner's views in the era of CSI,* Machado and Prainsack (2012) stress the importance of considering the numerous stakeholders in the use of forensic technologies and the significance of the prisoner as a usually absent actor in such accounts. Throughout their analysis of data from both Portugal and Austria, the authors firmly place the prisoner within discussions about the deployment, development and use of forensic technologies and forensic genetics in law enforcement. Yet, whereas prisoners and literature on the perceptions of other relevant courtroom actors are present in existing literature, such as lawyers (for example, Dahl 2010) and jurors (for example, Ghoshray 2006; Tyler 2006;

[11] Directive is the term used by the Mass Observation Archive to describe the request for responses, issues three times a year. Each Directive includes up to three sections on different topics.

[12] See Wilson-Kovacs (2012, p.289) for a copy of the Directive in its entirety.

Schweitzer & Saks 2007), stakeholders within the police force including those charged with facilitating the use of scientific techniques in the investigation of crime are absent.

The '*CSI* effect' could simply be dismissed as media fallacy, particularly when, as Cole and Dioso-Villa (2006) highlight, this term is used to refer to a variety of different potential effects, from changes in the expectations of jurors based on fictional accounts of forensic and investigative practices, to increases in student enrolment on forensic science courses at university. For Kruse (2010, p.88), *CSI: Crime Scene Investigations* represents "wishful thinking science". CSI presents forensic science as hard science giving absolute answers and simplifying the overall process of investigating a crime and proving culpability. Yet this image, as Kruse suggests, could affect the expectations on actual forensic science and the criminal justice system. In her account, the CSI effect provides an imagined future and is linked to the way fictional accounts perform science. Kruse and those noted above demonstrate the variety of ways in which specific publics gain and operationalise expertise in forensic technologies. Irrespective of the accuracy of such expertise and understandings, they provide a particular cultural landscape within which the use and potential of forensic technologies are made sense of and judged.

Beyond specific publics and at a more infrastructural level, the way specific agencies can control the development and implementation of DNA technologies have also been considered in the literature. Aronson (2008) examines the development of standardised DNA profiling laboratory techniques in the US. Demonstrating the role of the FBI as an obligatory passage point in the process of standardising forensic laboratory practices. Aronson documents the FBI's central role in controlling what counts as acceptable profiling practice and who has the expertise to complete such profiling, which is still evident today. Aronson's work is particularly illuminating because it highlights some of the numerous state and individual actors involved in such decision-making and standardisation. The main theme here is that the expertise in and the processes of using and analysing DNA in investigative and identity work are mediated in part by particular actors with specific interests as opposed to the merit of different scientific practices over others.

This theme is extended by Lynch (2002) in his discussion of the courtroom exchanges between the prosecution and a forensic scientist as part of the OJ Simpson trial. In this account Lynch documents the discursive negotiation of expertise and the construction of the expert witness through courtroom interactions. Overall his account demonstrates the wider issue of how the validity of certain evidential material can be contingent on the performance of the expert witness in justifying the practices of the examination, collection and or analysis of such material.

These two studies exemplify STS work on the intricate processes that have taken place in routinising and standardising the use of DNA profiling in the courtroom and laboratory. However, once again police actors are absent. Although Innes (2003) and McCartney (2006) both highlight the lack of forensic knowledge of senior police officers, this has not been the subject of systematic research. McCartney suggests a key problem with senior police officers not having sufficient knowledge of forensic science is that they often make decisions about how money is allocated and which artefacts from serious and major crime scenes are subjected to scientific analysis. Although the integration of scientific support expertise into the investigative process is discussed later in this chapter and a topic of this thesis, McCartney's point is important in documenting how dependent forensic science's investigative utility is on the expertise of individuals both within SSU and wider police officers understanding how best to harness it.

Forensic science does however have the potential to overshadow other investigative action taking place:

> Increasing faith is placed in forensic science to fulfil a supporting or 'verification' role in investigations; however, forensic science may serve to hide from critical gaze detection practices, where forensic evidence has been afforded "apparent credibility, leaving the process of detection, evidence gathering and investigation hidden. The canopy of science obscures the primitive analytic tools that persist. These technological advances, even those enhancing information processing, have little altered police effectiveness" (McCartney 2006, p.185 quoting Manning 2001, p.84).

McCartney, drawing on Manning, raises concerns about how a reliance on forensic science can potentially lead to laziness in investigative practice and, by extension, can mean that 'non-scientific' investigative avenues are ignored. This is particularly noteworthy when considered against laboratory practices, as McCartney does. The Forensic Science Service (FSS) only complete full DNA

profiling procedures when a 'not guilty' plead is expected (Bramley 2000 in McCartney 2006, p.186). This raises questions about the potential for errors in earlier analyses which is particularly problematic when DNA is trusted as a truth machine. Furthermore, this also has significance for the plea bargaining process. With evidence only fully analysed and subjected to courtroom scrutiny when a 'not guilty' plea is made, the hidden and blackboxed plea bargain process which could result in an individual pleading guilty for a more lenient sentence, can be based on incomplete evidence and incomplete forensic analysis.[13]

Scholars have problematised not only the routine use of DNA in investigative practices and the potential over reliance on DNA technologies, but also issues associated with DNA profiling (function) creeping into new areas, such as physical appearance. The use of molecular biology to gain information about potentially externally visible characteristics (EVCs) is contentious. How we understand 'population', the boundaries of such populations and the potential for EVCs to lead to the stigmatisation of whole populations, reassert stereotypes and affect police investigative practices are just some of the issues at play (M'charek et al. 2012). Attempts to gain even more information from DNA, beyond the 'junk' utilised to create identity profiles, is even more problematic when potentially used to identify nationality/ancestry in border control. Tutton and colleagues (2014) consider the Human Provenance Pilot Project (HPPP), a project by the UK Border Control Agency to use molecular biology in the assessment of asylum applications. Tutton and colleagues provide an excellent example of what can happen when the methods and parameters of using genetic information in one context, initially in criminal investigations, are adopted and extended for use in new environments with little consideration of the implications. With DNA appearing synonymous with identity, the UK Border Agency appear to view any DNA based test as unproblematically providing relevant ancestral information, which it does not. The authors highlight further the problems of viewing DNA as providing truth about national, regional and personal identity, which ignore agency, geographical mobility, and the wider stories of individual refugees.

Risher (2011) discusses these problems with particular emphasis on how databasing practices have helped to exacerbate the racialisation of the criminal justice system more generally. Risher documents how each part of the criminal

[13] The plea bargaining process is particularly problematised by Duster (2012).

justice system in the USA (although relevant more widely) can target non-white populations, from the types of crimes and how crimes are defined (for example, the different penalties for possession of crack cocaine and powder cocaine), through to the use of discretion as a means of racial profiling. Discretion in this context is not limited to the police, but expanded by Risher to include juror decisions and sentencing. Risher demonstrates how practice and technologies can exacerbate existing problems and more widely how DNA technologies offer great potential for the uncritical use in policing, surveillance and research.

With developments in identification technologies and methodologies and their immediate use within the police investigative and legal processes, Lynch and McNally utilise 'biolegality' to conceptualise the "symbiotic relationship between law and biotechnology" (Lynch & McNally 2009, p.284). They explain that

> [b]iolegality refers to how developments in biological knowledge and technique are attuned to requirements and constraints in the criminal justice system, while legal institutions anticipate, enable, and react to the developments. This ongoing process redefines the rights and status of the suspect body and the credibility of criminal evidence (Lynch & McNally 2009, p.284).

Using the development and expansion of the National DNA Database of England and Wales as a case study, Lynch and McNally (2009) demonstrate the way that the law and science come together to create new suspects based on changes and expansions of the parameters in which DNA sampling of individuals can take place, prior to conviction. Based on their discussion, they suggest that "not only is a biolegality an historical relationship between biological innovation and enabling legislation, it is an epistemic relation in which biological 'truth' justifies exceptional legal procedures" (Lynch & McNally 2009, p.296). Lynch and McNally (2009) focus on the biolegal marking on individual bodies and expanding parameters within which such marking or recording takes place. Lawless (2013) extends this by highlighting the ways that the convergence of technology and law can affect other related actors, such as the legal professionals and forensic scientists. Plotting the controversy and debates surrounding LT-DNA profiling, an ultra sensitive method of DNA profiling which can obtain a profile/partial profile from miniscule amounts of DNA, Lawless (2013) explores how legal admissibility and scientific validity are negotiated in relation to this process. This includes whether LT-DNA should be viewed as a process distinct from DNA profiling. Lawless provides an insight into the ways in which innovation might play out in

forensic science and the numerous actors and arenas in which agreement needs to be sought. Plotting the debate in *Forensic Science International: Genetics*, Lawless demonstrates the complexity of the boundaries and boundary work involved in the discussion surrounding LT-DNA in terms of the expertise of the individual, the 'scientific' process and how we define LT-DNA profiling – both on its own and in relation to standard DNA profiling.

A key issue inferred in Lawless' (2013) account is the work that takes place in constructing a 'match' between two (or more) profiles. Forensic practices both in the laboratory and at the crime scene are far less straightforward than they appear in official accounts. 'Match' is far more than a laboratory process; it too is co-produced in the bio-legal assemblage presented in the accounts above. M'charek provides two significant accounts which help us consider this notion of match and ideas of sameness as they appear in literature on legal and investigative practice (namely, M'charek 2000; M'charek et al. 2013). In the first, M'charek (2000) explores the concept of population in discussions of forensic DNA profiling. She states that:

> For, in order to know an individual, forensic geneticists apply a category of population as well. Hence, in order to produce differences (between individuals), geneticists need to presuppose similarities (within a population) (M'charek 2000, p.122).

Considering the importance of reference points in our use forensic DNA technologies provides another insight into how these technologies of truth are contingent on very human practices and decisions. M'charek distinguishes seven different ways in which population is understood and operationalised in forensic practices. Highlighting that "forensics works under the presupposition that the suspect is innocent and that the perpetrator is in the population" (M'charek 2000, p.154), M'charek demonstrates how categories are not natural in these processes. Her focus is on the laboratory practices rather than those that take place in the courtroom, but raises interesting questions about what counts as 'relevant population' when assessing the validity and relevance of certain practices. In doing so, M'charek (2000) highlights the significance of considering the ways in which practices, particularly when left unquestioned, engender certain understandings and assumptions.

These issues of similarity and difference are explored further by M'charek and colleagues (2013) by examining the intricate ways in which sameness is attained

in forensic DNA practices. M'charek and colleagues analyse three types of sameness and how they are achieved through practices rather than as principles. Particularly importance is the way that messiness and a level of ambiguity is an accepted part of the process and how sameness along with other terms such as profile match are practical accomplishments. Although biolegality, discussed above, acknowledges the interplay between the legal and technical aspects of forensic practices, the work of M'charek unpacks further the relevance of considering the everyday practices of actors in the processes of achieving a match in a population.

Another such example of the taken for granted is the suspect identity. Cole and Lynch (2006) document the numerous ways in which suspect and suspect population are constructed, particularly in relation to DNA databasing and DNA data-mining processes. They suggest that:

> [t]echnically, a suspect population includes anyone in the world who has not yet been excluded by the criminal evidence (Donnelly & Friedman 1999), but usually such populations are limited to groups convicted of past offences or deemed likely to include possible offenders (Cole & Lynch 2006, p.40).

Cole and Lynch (2006) are concerned with the ways in which 'suspect population' is operationalised and suspects are identified. They raise questions about the often-heard legal principle, 'innocent until proven guilty'. This raises questions about how we construct the boundaries of suspicion, the suitability of viewing the forensic use of DNA databases as objective and the parameters within which data should be held in such databases. Keeping the DNA of people charged with an offence and constantly searching against them each day means that these individuals are under constant suspicion. Each time a database search is run, an individual who has a profile in a police DNA database is made a suspect and then unmade a suspect (Williams & Johnson 2008). Although Cole and Lynch (2006) use the concept 'unmaking suspect' to refer to such projects as the Innocence Project, and post-conviction exoneration, this idea of unmaking or being unmade as a suspect is important in understanding the complex ways in which forensic technologies and databases management practices impinge on the identity of the individual.

The continuous expansion of these databases and their inclusion criteria appears to be occurring across the globe. This is evidenced most clearly in the

recent edited volume by Hindmarsh and Prainsack (2010). Concerned with the governance of police DNA databases and DNA profiling practices, this collection of papers includes accounts from nine countries at various stages of database implementation and expansion. Although the differing legal systems, varying levels of public trust and power relations between the numerous relevant actors are emphasised in these accounts, what is most prominent are the similarities in the issues faced by these nations and how, based on socio-historical contexts, the ways of dealing with these concerns differ from place to place.

The use of DNA profiling and DNA databasing has changed the way policing is practiced, identity is understood and different publics make sense of these practices. As Lynch and colleagues (2008, p.2) state, DNA is "emblematic of a level of objectivity and certainty unmatched by any other model of criminal evidence" Whether we accept DNA profiling as a the perfect provider of truth or not, its use in investigative and courtroom practices is contingent on numerous humanly mediated processes, from the ways certain scientific results such as 'match' are achieved to the parameters within which individuals are included in forensic DNA databases.

Yet within these accounts of DNA and DNA expertise, the crime scene as an important site in the investigation and the central actors in the routine deployment of forensic science, including DNA, is missing. The next section provides a brief history of the one such actor, the Crime Scene Investigator (CSI). I offer an account of the CSI role, document the CSI's presence in official literature and discuss the limited existing research on the CSI.

3.5 Situating the absent Crime Scene Investigator

The Crime Scene Investigator, or using the original job title, the Scenes of Crime Officer (SOCO), is a reasonably new police actor. Until the mid twentieth century in England and Wales, specialist Criminal Investigative Department (CID), detective officers collected objects from crime scenes for further analysis and dusted for fingerprints (Ramsay 1987; Green 2007). From the 1960s onwards, however, SOCOs emerged. These sworn police officers were tasked with the retrieval of potentially relevant trace material and documenting the crime scene. In the late 1960s, some police forces started to employ civilians in SOCO roles followed by the development and appearance of specific Scenes of Crime

departments appearing in the 1970s (Millen 2000). There is a long history of employing civilians in the police force (Jones et al. 1994). In their account of Scotland Yard, Fido and Skinner (1999) highlight that in the MPS civilians were employed from the 1950s onwards, particularly in administrative and financial roles. Using civilians for certain roles not only reduced costs (as civilian staff were paid less than police officers completing the same roles), but also meant trained police officers could be utilised for other purposes where their distinctive training and skills are best utilised. The upward trend in civilian employment with the police has now levelled off (Jones & Newburn 2002). This process of transferring roles from police officers to civilian staff is referred to as civilianisation.

These shifts in employment and specialisation of certain aspects of the police role highlight a move away from a model of the policing surrounding one actor, the omni-competent constable (Crawford 2008). This actor, trained in numerous areas, was the main point of contact for all public enquiries. Now, with the division of labour, roles have become specialised, fragmented and broken down into specific parts. Individual expertise and job responsibilities have become limited to components of law enforcement.

Flanagan's independent report into policing (2008), reiterates the importance of utilising civilian staff for certain roles. He examines data from the "Workforce Modernisation Pilots", a pilot scheme completed by Surrey Police and the MPS to explore ways in which the police workforce, including civilian staff, and working processes could be restructured and more efficiently utilised. Flanagan states:

> The evidence from the workforce modernisation pilots is that only a small proportion of the tasks that are carried out by the police actually require sworn officer powers. Duties such as taking statements can be carried out by staff; furthermore the evidence suggests that when staff are trained specifically to carry out such a role they can do so more effectively than a police officer trained in a wider range of more general competencies (Flanagan 2008, p.40).

As this quotation suggests, both the use of civilians for certain aspects of police work and the specialisation of specific tasks suggest that civilian police staff can occupy a specific, yet limited, space in the wider processes and functions of the police. From Flanagan's conception of suitable tasks for civilian staff, limited and easily definable parameters appear key in understanding what can and cannot be completed by this staff group.

These changes in policing and this shift to greater specialisation within the institutional working practices of the organisation mirror wider changes in the society. Yet, since this point, the ways in which the CSI and CSI work have been conceptualised in official documents has shifted, overlapping and contradicting each other, highlighting the messy foundations on which the occupation sits. Since the 1960s, science, policing and crime have changed. One of the most important changes to take place is the development of DNA testing techniques and changes in the science, resulting in more sensitive testing methods.

The Touche Ross report (1987) was the first detailed review of scientific support in England and Wales. In direct relation to crime scene investigation, this report provided a list of the different skills the CSI should have and tasks they should complete, including scene photography, the search and recovery of physical materials, aiding investigative officers with their questions and helping to develop useful intelligence about the criminal. This list was extensive and, as Ludwig and colleagues (2012, p.54) highlight, the report acknowledges in a footnote that "no SOCO carries out these tasks and some carry out only a small proportion" (Touche Ross 1987, p.57). Therefore, even within this report, which calls for a level of standardisation in the training and parameters of the CSI role, the work completed by CSIs in different operational settings is diverse. Acknowledged throughout the report is that crime scene investigation involves the combination of standardised, process-style practices and the expertise to judge when such processes are required.

This emphasis on the development of standardised skill sets and the potential investigative advantages of successfully utilising SOCO's skills presented in the Touche Ross report (1987) was also emphasised by Blakey (2000) in his report, *Under the microscope*. He notes that numerous pertinent points about standardisation and routine practice were made in an earlier report, *Using forensic science effectively* (UFSE) (Association of Chief of Police Officers (ACPO) et al. 1996), but were not put into practice. A similar point is made by Green (2007) in relation to the recommendations of the Touche Ross report (1987). These official reports present detailed considerations of the parameters of CSI work both as important but not a priority within the police forces.

Under the microscope (Blakey 2000) was central in documenting some of the pitfalls but also recent changes in the police deployment of science in routine

work. Crucial to Blakey's account was an acknowledgement of the significance of using forensic resources effectively, particularly due to their finite nature. However, this was not possible if Scientific Support Managers (the typical line manager of the SOCO and other areas of scientific support such as the Fingerprint Bureau) were not supported by the wider police force in their oversight of SOCOs and their effective deployment. Blakey states that:

> …some common critical themes emerged during one-to-one discussions and focus groups:
>
> • Day to day management of SOCOs is often poor with little policy to guide or set standards to achieve.
>
> • Competency framework for SOCOs is yet to be developed. No refresher or other training to Minimum Effective Training Levels (METL)
>
> • Absence of meaningful appraisal even where SOCOs were intended to be within an appraisal scheme. Little opportunity for career development.
>
> It is not surprising therefore, against the commonality of these themes, that both SOCO and fingerprint staff often felt frustrated and undervalued (Blakey 2000, p.6).

This report highlights some of the shortcomings of the operational arrangements of SOCOs within the police and their place within wider investigative and police processes. Arguably one of the most significant aspects of this report is its emphasis on a shift in naming from the original Scenes of Crime Officer to the trial in Kent Police where they were "re-designated as Crime Scene Investigators (CSI) in order to raise the profile of the role and reinforce the principle that the personnel are full members of the investigative team" (Blakey 2000, p.8). He followed this by stating that "[t]his is an interesting attempt to enhance the professional status of such officers that will require evaluation in due course" (Blakey 2000, p.8). 'CSI' as opposed to 'SOCO' emphasises that the CSI is more than simply evidence collection. This change of name, places the CSI clearly within the investigative process.

In addition to the discussion of CSIs, Blakey's report also takes the investigation of volume crime seriously (as opposed to serious and major crime). Volume crime denotes the majority of crime that takes place in England and Wales (Association of Chief of Police Officers (ACPO) 2002, p.3). It is an umbrella category for "[household] burglary, theft of (and from) vehicles and

robbery" (Jansson 2005, p.1).[14] At volume crime scenes, irrespective of status as a CSI, they are:

> often the first and sometimes the only member of the [police] force to attend the scene of a crime[;...] evaluate the potential value of evidential material available[;...] record, recover and retain evidence in a manner that maintains the optimum value for subsequent evaluation by [...] other disciplines[; and…] advise Investigating Officers on the most potentially useful and cost-effective approach to the scientific examination of both crime scenes and recovered evidence. (Nottinghamshire Police 2004, pp.2–3).

At major and serious crimes, understood here as any crime that does not fit into the volume crime definition above, there are numerous actors of higher authority present at the scene directing action. It is at volume crime scene where, as the above quotation suggests, CSIs have more autonomy and control.

More recent reports, such as the Silverman review (2011), present a different view. Although not directly discussing the CSI or the enactment of forensic practices at crime scenes, the Silverman review is important because of the way it views the future of forensics in policing. One of the key emphases of this report is on collaboration, communication and partnership between industry, policing and academia in the development of forensic science and forensic solutions. We can already see this in recent Association of Chief of Police Officers (ACPO) documentation (for example, (Association of Chief of Police Officers (ACPO) n.d.) and the new Forensic Science Community (or Forensic Science Special Interest Group), formed on the recommendation of the Silverman review to bring academics, end users, policy makers and all relevant parties together in a mutually dependent relationship.

Ludwig and Fraser's (2014) systematically examine thirty six official reports produced in the last 30 years in the UK and internationally on the use and incorporation of forensic science in the investigation of volume crimes. Their analysis identifies a number of prominent themes in several reports. Three of these are relevant for my thesis in particular:

[14] It should also be noted, however, that volume crime, as operationalised in CSI work does not always include all crimes that fit under Jannson's umbrella. For some CSIs, who specialise in volume crime alone, this term may include non-residential burglary (such as that from a warehouse or petrol station). For others, it may only include those that relate to vehicles. This appears to also be true across police force jurisdictions.

> Twenty-one reports emphasising limited forensic knowledge (the value of evidence and uncertainty of the capabilities of forensic science),
>
> Twenty-one reports identifying limited forensic training of investigators,
>
> Thirty reports commenting on the poor use and deployment of resources (particularly crime scene examiners) (Ludwig & Fraser 2014, p.82)

Viewed together, these points stress a concern over the knowledge, utility and training of police investigators in forensic science which is noteworthy particularly with the presence of personnel within police force Scientific Support Units, trained in forensic science and evidence recovery (including, but not limited to, the CSI). For Ludwig and Fraser the most significant issue is that the processes of using forensic science in investigative practices are more complicated than current understandings reflect and practices are not necessarily based on evidence but on historic methods.

Emerging work on the CSI does provide an evidence base and, with the CSI role's more recent foundations, has less of a history. However, as the next section demonstrates, explicit analyse of the intricacies of everyday CSI work are rare.

3.5.1 Normative frameworks and crime scene investigation

The existing literature considering the role and practices of the CSI is small. What is particularly noteworthy is the absence of work which focuses on the enactment of crime scene investigation and not on ways of measuring and optimising performance (for example, Kelty et al. 2011; Kelty 2011). Some have considered the act of doing CSI work. For example, Adderley and colleagues (2012) explores stress and stress distribution in the routine completion of crime scene work using heart rate monitors. Although interesting in providing an insight into the psychological (and physiological) experiences of CSIs in the field, this says very little about the material practices of actually completing CSI work and the types of work it encompasses.

Ludwig and colleagues (2012) present a quantitative account of the understandings of CSI, forensic scientist, fingerprinting examiners and police officers of the role of the CSI in volume crime scene investigations. This work contributes to discussions of integration and how we understand the CSIs role within the investigative process. Their findings from survey data suggest that

although a substantial proportion of their participants view the CSI role as more than 'evidence collectors', a notable number (38%) see the CSI as an evidence collector alone. This issue emerged from a wider study of forensic science and forensic science provision in Scotland. These findings signal an important point about the varying ways different actors who are involved in the routine use of forensic science in policing understand the role and work of the CSI. Furthermore, it draws attention to how such individuals are integrated into the investigative work of the police. Ludwig and colleagues utilise the framework first put forward by Fraser (2000) and extended by Williams (2004; 2008) through the terms of procedural and structural integration. These notions of integration are significant in articulating how the CSI and SSU staff more generally are positioned within the police and utilised in the investigative process. Procedural integration views CSIs as expert collaborators, contributing to the investigation of a crime with their expertise and knowledge and having substantial control over their work. Structural integration, on the other hand, view the actors as technicians, situated in a strict hierarchy with little control over their own work and clear parameters within which their work takes place.

Whereas notions of integration add texture to our understanding and expectations surrounding the role and function of the CSI in contemporary policing and academic literature, Kelty and colleagues (2011) and Kelty (2011) continue the trend of literature focusing on effectiveness. Kelty and colleagues (2011) focus on what they deem are the most important attributes of top CSIs. The identified attributes highlight some of the skills necessary for effective CSI work, such as communication, which are often overlooked. This study also highlights the importance of the physical performance of the role, being seen to do their job at crime scenes, the reports they write about the scene and the evidence they give in court. Kelty and colleagues quote one of their participants, a homicide investigator, who demonstrates the realities of how a CSI's reputation affects the thinking and experiences of wider personnel at the crime scene: "When you go to a scene you don't know who turns up. You wait and see so and so get out of the van and you think, oh no, might as well go home, we'll get nothing" (Kelty et al. 2011, p.183).

Kelty (2011) is, as the article title suggests, concerned with "seven key attributes of top Crime Scene Examiners". Focusing on skills and education, this

account documents relevant criteria in candidate selection processes. She does not, however, consider how these skills could be developed and instilled in staff that are already employed within the role. The article highlights the skills necessary and occupational arenas within which CSIs work. With wider issues such as the need for a high quality CSI to discuss evidence within the courtroom environment and the centrality of well-executed scene management practices (both discussed in Julian et al. 2012) it is understandable why such research on key existing skills for future top CSIs is important in maintaining and safeguarding the quality of crime scene investigation. Some of the attributes raised in this article are discussed in Chapter 5 in relation to the requirements for UK CSIs.

Although it should be noted that Kelty and colleagues (2011) and Kelty (2011) are discussing these processes using data from Australia, the work starts a process of articulating, beyond evidence gathering, the role and skills involved in crime scene investigation. When considered in relation to notions of integration, these skills and qualities go well beyond 'evidence collecting'. They acknowledge the intricate ways in which investigative work utilises numerous actors with specific skills, completing defined processes, come together and make sense of a crime, a crime scene and the police's next steps in such scenarios.

Ribaux, Baylon, Roux and colleagues (2010) and Ribaux, Baylon, Lock, and colleagues (2010) continue with this more normative discussion of crime scene work. Both articles focus on aspects of intelligence led policing. Intelligence led policing focuses on structures and parts of policing that means that more general rules can be applied outside of the details of specific cases. Looking at the ways forensic science can be better utilised, Ribaux, Baylon, Roux and colleagues (2010) suggest a shift in how we understand and utilise forensic science. Rather than the "court oriented paradigm", so common when talking about forensic science, Ribaux, Baylon, Roux and colleagues (2010, p.10) define forensic science as a "the study of traces". Furthermore, they clearly acknowledge the significance of the CSI and crime scene practices when using traces in investigative practice. They operationalise different intelligence frameworks and models that would better facilitate the fruitful interlinking of forensic practices and intelligence led policing. In the second of these two articles, Ribaux, Baylon, Lock, and colleagues (2010) concentrate more on the crime scene practices of the CSI. Acknowledging the normative quality assurance standards that govern

and restrain practices, the authors identify a lack of integration of forensic knowledge across crime scenes and provide suggestions within the intelligence led policing paradigm to achieve this. Although this type of integration is beyond the scope of this thesis, which does not focus on the infrastructural provision for the successful use of forensic science in investigative practice, these articles and policing studies put the crime scene and crime scene actors centre stage.

In STS, Williams (2001; 2007) are the only detailed qualitative accounts of the routine work of the CSI. Choosing to focus on action rather than becoming preoccupied with discussion of what is and what is not forensic science, Williams utilises observation at crime scenes and analysis of the documents produced by the police in the course of scene examinations over a one year period. In Williams (2007) he considers two principles central to the institutional and scientific validity of CSI practices, namely the concepts of exchange and individuation, both discussed in Chapter 7. I mention this work here because through considering practices at real crime scenes and real cases, Williams is able to demonstrate the way these principles can both provide support to and undermine the CSI's work, explored later in this thesis.

In Chapter 1, I document Williams' (2001; 2007; Williams & Johnson 2007) claim that CSI work is an "improvised" and "imprecise" practice. In his accounts, the complexity of the CSI's work practices and the organisational and bureaucratic parameters within which such work takes place are emphasised. However, notions of imprecision or improvisation are, in my opinion, unhelpful. They reframe complex, tacit decision-making and expertise with words that suggest haphazard, unstructured practices. To my knowledge, Williams' study is the only qualitative accounts of CSI everyday work in England and Wales and provides a relevant backdrop as well as a number of useful structures and methods of seeing the CSI and CSI work, discussed throughout the following chapters. However, beyond the work of Williams, the absence of detailed consideration of the CSI as a central actor in the use of forensic science is noteworthy, particularly when official documents highlights some of the key ways the CSI can impact on the investigation of a case as more than a simple evidence gatherer. Overall, the existing research provides useful contexts within which the present study can ground itself and define its scope in advancing our understanding of the CSI and the CSI's routine work.

3.6 Summary

In this chapter I have attempted to provide the reader with background on identity practices, the modern police and the emergence of the CSI as an actor in the police use of science. Beyond the historical trajectory of this chapter is a story of shifting sites of expertise, from the beginning where identity practices required no specific expertise at all in the pre-modern society to the modern society where identity could not be verified through our senses and documents alone. The development of police methods to record and catalogue criminal bodies has changed substantially over time. Expertise in Bertillonage was situated in measuring the body and creating the identity records, not in the searching and comparison of such records. In fingerprinting it was and still is the analysis and comparison of two records, side by side, which requires expert mediation. Even the process of identifying and potentially collecting latent fingerprints at the crime scene was, initially, not seen as a role requiring specialist training beyond the process of which powder to use and how to complete the mechanical process of dusting for prints.

This shift in the site of expertise to analysis is also present in DNA profiling where the collection of DNA samples requires very little skill. DNA profiling, however, developed in a different way. Rather than for recording identity, DNA profiling was first used by the police as an investigative tool. Now, however, with the introduction of the NDNAD, databasing and searching identity records are easier than ever.

DNA profiling has also shifted the site of official identity inside the body. Such movement to a site which cannot be mediated by the subject coupled with wider discourses and unrealistic expectations of such forensic technologies in criminal investigations serve to obscure how the technologies are used and understood. Although a whistle-stop tour, in this chapter I have also presented the current literature in STS and police studies that engages with key issues in using DNA, addressing notions of sameness and population to the function creep of such technologies into new areas with little consideration of the consequences.

Following the specialisation and civilianisation of certain roles within the police in the last forty years, the CSI has emerged as an important actor in the use of these identity practices, particularly at the crime scene. However, existing research does not consider the role, expertise and material practices of the CSI.

If the developmental trajectory of identity methods displayed above is to be used to assert the site of expertise in analysis alone, it would suggest that the CSI role involves very little skill of a technical nature. However, this is questionable. Varying understandings of the skills and knowledge of this actor are presented in existing research, for example in the work of Ludwig and colleagues (2012), but further evidence is required to comprehend the role, expertise and practices of the CSI. The next chapters of this thesis respond to these absences, demonstrate the complexity of routine CSI work and how CSIs themselves view their work as highly skilled, particularly in terms of the expertise necessary to obtain meaningful information from a crime scene.

Chapter 4 Researching the Crime Scene Investigator

Whether interested in police officers patrolling the streets (for example, Herbert 1997), police work (for example, Manning 1977; Holdaway 1983) or police training and socialisation (for example, Van Maanen 1973; Hopper 1977; Fielding 1988; Chan et al. 2003), ethnographic methods are best placed to get under the surface of an institution portrayed as suspicious of outsiders (Reiner 1985; Brewer 1991). Ethnography enables the researcher to become immersed in the formal and informal processes of completing work within the police. Beyond the public domain, Waddington (1999) refers to the informal, subcultural aspects of policing through the term 'canteen culture'. It is important to acknowledge the intricate ways informal interactions between police officers, particularly those of lower-ranks, work to create, engender and reinforce collective understandings of the police officer role and the officer's 'correct' conduct (Hannerz 1969; Holdaway 1983; Waddington 1999).

In line with the existing police officer research and Williams' (2007) study of routine CSI work, this research utilises ethnographic methods. In doing so, it differs from the majority of existing research on the CSI which has taken a more macro-oriented approach, (for example, Millen 2000; Harrison 2006; Kelty 2011; Kelty et al. 2011; Ludwig et al. 2012). In this project, I set out to explore how CSIs make sense of: their position within the police; their role, practices and expertise; and the information ascertained from a crime scene in the course of completing everyday work. I was particularly interested in the multiple ways in which CSIs frame and make sense of events from the worlds of crime and policing, and the way in which they perceive and enact protocol at the crime scene. Interviews and surveys are not suitable on their own to discuss or examine practice (Nicolini 2013), and my concern with practice as well as *how* CSIs *frame* such practices in interview and field talk meant that ethnographic methods were best placed to gain substantive data on the enactment and understanding of CSI work. This approach allowed me to explore CSI work and to develop a detailed and textured understanding of their role, practices and mundane realities. I used participant observation of CSIs during their training and at real crime scenes, interviews with trainee CSIs and visual methods. I address both the mundane and more sensationalised aspects of the CSI's

everyday work, exploring the way protocols are practiced, knowledge is used and expertise is demonstrated.

In the following sections I present my research journey. I document my surprisingly straightforward experience of gaining access to both my research sites and the research data I collected. I provide the reader with background knowledge about the training process, arranging formal interviews and engaging police participants with visual methods. I end by reflecting on the methodological limitations of this study.

4.1 Research Design

4.1.1 Accessing the Crime Scene Investigator in the UK police

The National Policing Improvement Agency (NPIA) Forensic Centre, situated in the picturesque surroundings of rural County Durham, is the only purpose built centre in the UK that provides the officially sanctioned CSI training for police forces in England and Wales.[15] This training programme, entitled 'Foundation Crime Scene Investigator Learning Programme', is divided into two Modules. Module 1 focuses on developing the practical skills to record crime scenes (through photography and documentary practices) and to collect numerous different types of trace material from scenes. It also aims to develop the investigative and procedural knowledge to attend and examine volume crime scenes competently. It not only enables the learning of 'facts' and forensic procedures but also the development of the 'investigative mindset.'[16]

The completion of Module 1 of the Learning Programme is sufficient for a CSI to be qualified to attend a volume crime scene alone. Module 2 builds on the skills obtained in Module 1 but is concerned with attending major and serious crime scenes. Together, these two Learning Programmes provide the technical and investigative knowledge necessary for a CSI to do their job competently across all crime scenes.

[15] It should be noted that the Metropolitan Police Service (MPS) have their own training centre and within this centre they also train Met CSIs. However, it is the Forensic Centre that provides the training for all other police forces in England and Wales. Furthermore, as Fraser (2007, p.390) highlights, the training across the MPS training centre and Forensic Centre in this area is "becoming increasingly harmonised, the aim being to develop a consistent national approach."
[16] The 'investigative mindset' is a term used by the police and covered in detail in Chapter 8.

Both Module 1 and Module 2 include a residential course at the Forensic Centre as a core part of each training programme: Foundation Crime Scene Investigator Learning Programme Module 1 and Foundation Crime Scene Investigator Learning Programme Module 2.[17] Sandwiched between preparatory exercises (Stage 1) and on-the-job mentoring (Stage 3), the Module 1 residential course lasts five weeks and Module 2 residential course lasts four weeks.[18] The time at the Forensic Centre is the only point where formal, standardised training takes place outside the confines of local force practices and processes. Bearing in mind the significance of the two residential courses in CSI development, I was keen to complete at least part of my fieldwork at the Forensic Centre. A training environment such as this would facilitate the explicit discussion of best practice and actively encouraging learning from mistakes without the potential negative consequences of this occurring in real cases. Finally, through the structure of lessons, the courses themselves would provide a review of the CSI's role. Step by step, different practices, from the everyday to the obscure, would be unpacked, explained, tried out and assessed. Beyond the individual sense making and framing processes of each scene or practice, the rationale, remit and responsibilities of a CSI would be presented in a crystallised, institutionally sanctioned, form. Furthermore, fieldwork in this training environment would provide a sample of trainee and experienced CSIs that could be potential research participants.

Capitalising on the existing contacts held by one of my supervisors, Professor Christine Hauskeller, access to the Forensic Centre was developed through emails and a meeting with its management. The management were particularly interested in trainee perceptions of the CSI role and how these change, if at all, between the start of their respective courses and six to nine months after course completion. As Marks (2004) highlights, sometimes the best way to gain access is to complete additional research for the institution free of charge. This 'research bargain' (Brewer 1991) meant that some of my fieldwork time would need to

[17] These two residential module titles have changed to Foundation Crime Scene Investigator Learning Programme Stage 1 and Foundation Crime Scene Investigator Learning Programme Stage 2. For clarity I have continued to use Module 1 and Module 2 because, as discussed in Chapter 5 and noted below, the residential training is stage 2 of a three stage programme both in Module 1 and in Module 2.

[18] These different stages in the training programme are explored further in Chapter 5.

explicitly address their interests. As this facilitated access, it was a reasonable compromise and did not dramatically affect the research data I collected.

In light of this 'research bargain', it was agreed that I would spend some time at the Forensic Centre observing the Module 1 and Module 2 courses and interviewing a number of trainees. I would then interview these trainees again six to nine months after their training. In practice, this meant I completed three weeks of observation via two visits to the Forensic Centre. I attended the first lesson on both the Module 1 and Module 2 courses and then selected lessons to observe based on their content, determined from the lesson titles and discussions with course instructors. I wanted to observe both classroom lessons on specific processes, for example, fingerprinting, so I could gain a detailed understanding of some of the component parts of the CSI role, and also their practical applications through scenario crime scene examinations. In total, I spent the equivalent of two weeks observing the Module 1 course and one week observing the Module 2 course.

During these meetings with management, the possibility of me staying in the Forensic Centre was discussed and agreed. I not only wanted to observe and interview participants during the Monday to Friday nine to five training timetable but spend time with them outside of lessons to allow observation and inclusion in the 'canteen culture' mentioned above (Waddington 1999). Spending my evenings at the Forensic Centre with the participants outside of the classroom enabled me to explore the informal interactions of trainees.

However, even with the emphasis on interaction both inside and outside of the classroom, I was concerned that using the Forensic Centre alone may give an unrealistic or idealised impression of the CSI's role and practices. Although trainees complete scenario scenes, there are many elements that would only be present in real police work, for example, dealing with the public, interacting with other police departments as well as the wider constraints of working in the unpredictable police environment. Bearing this in mind, I also pursued additional observation of CSIs in a UK police force.

With the help of NPIA contacts and my supervisors, meetings were organised with relevant formal gatekeepers at the police station site (this site remains anonymous). I was initially aware that observing CSIs at real volume crime scenes might not be possible at all. However, access was granted with relative

ease on the proviso that it was for a finite period of time. It was agreed I would observe five days of CSI work, each time spending the day with a different CSI. Due to the varying daily levels and types of crime, I arranged to both be within the local area of the police station and to ring the Crime Scene Investigation Department at 8am every Tuesday to confirm that there were volume crime scenes I could attend and staff available for me to shadow.

Throughout the process of gaining research and site access, my approach was top down and this did cause me some concern. This was epitomised in the police station site where a senior employee stated that he had been told to accommodate me. Therefore, although access was granted, I was anxious about the free nature of participants' consent and how those lower down the hierarchy would react to my presence. Access, in my experience and as emphasised by Hammersley and Atkinson (1995), was and is multi-layered. Reeves (2010) notes that this layering incorporates form and informal gatekeepers as well. For me, although senior formal gatekeepers granted access to the sites, this was just the first step of negotiations, from middle management down to, most significantly, my participants themselves as gatekeepers to their experiences.

Fieldwork was completed between 2011 and 2012. Although naming the Forensic Centre, I agreed to protect the identity of participants by not using their names, police forces, locations, removing identifying details from interview transcripts and keeping the exact dates of my visits to the Forensic Centre vague. Similarly with the police station site, although basic data is provided above, its exact location and participants have been anonymised. This means that, in places, some of the quotations and descriptions lack a personal, human touch. Wherever possible details have been left in (but slightly amended, for example changing the number of children then have) to provide the reader with a context for the individual. This is particularly important when most participants talk about crime scene investigation as a vocation and a substantial part of their life. Work never happens in isolation. There are always wider personal contexts to contend with. However, I have tried to find the correct balance between maintaining the anonymity I formally committed to with my participants and the Forensic Centre and enabling the reader to get a real sense of my participants, their thoughts, feelings and experiences.

4.2 Fieldwork at the NPIA Forensic Centre

4.2.1 Ethnographic observation

As the Module 2 course started 2 weeks after the Module 1, my first week of fieldwork was spent observing Module 1 alone. On the first day of observation, I was met by one of my facilitators, escorted to the relevant classroom and introduced to the Module 1 instructors. A desk and chair, positioned in the corner of the classroom, had been prepared for me. The trainees sat at tables arranged in a square with an interactive whiteboard and instructors at the front. This position gave me an excellent view of what happened in the class (even if four participants had their backs to me) and I was able to move around the room when they were completing individual and group tasks. Later, instructors actively placed me in groups and groups allowed me to either observe the whole exercise or move between them.

At the beginning of the first Module 1 lesson, the instructors gave me time to introduce myself to the trainees, explain my project and request their consent to be observed. All agreed to participate with no questions asked. After some initial administrative preamble, the instructors asked trainees to introduce themselves to each other. These introductions gave me useful background information about the participants, from their previous roles within the police to their educational experiences, discussed in Chapter 5.

The first few hours of observation were difficult as participants were extremely aware of me. It was during the first break that a potential entry route opened at the smoking shelter. It provided an environment to speak informally to four Module 1 trainees, outside of the classroom, building up a level of rapport. They then helped facilitate my inclusion into the wider Module 1 group. As Hammersley and Atkinson (1995) highlight, gatekeepers can have both a consciously positive and an unintended, obstructive effect. In my case this meant that I initially developed looser relationships with other, non-smoker members of the class. With the limited time I had in the field, this was a necessary compromise.

The development and maintenance of participants' trust was an on-going, situational accomplishment (Van Maanen 1991; Hammersley & Atkinson 1995). My first week of fieldwork not only provided a site for establishing relationships with the Module 1 participants, but also enabled me to prove through action that

I was not a threatening presence in the Centre. Although I needed to continue to demonstrate this throughout my visits, it set a precedent that I believe I maintained.

During this first week, I also became more comfortable in the training and research setting, as well as refined my research practices. Concerned that my presence could negatively affect the training or experience of participants, I was constantly aware of where I stood in practical exercises and the questions I asked. On the third day, however, I was issued with a camera to take part in the photography practical exercises. Thrown into participating and expected to accomplish the assignments like the participants, I began asking all the questions I would previously have self-monitored out of conversation. Participants answered with patience and this participation in training tasks appeared to further lift some of the barriers between them and me. Like them, I too had to maintain face, to achieve a competent level in photography, and later, through my participation, other aspects of CSI work.

Particularly with Module 1 participants, I became deeply embedded in the learning and research process as a whole and this participation within the training made it sometimes difficult to differentiate myself from the trainees. The Forensic Centre enabled me to obtain a valuable insight into the practices and parameters of the CSI's role and also experience first-hand some of the practical tasks a CSI completes. From the precision required when taking fingerprint photographs to the feel of the plaster of Paris when ready to cast a footwear impression, I had the benefit of the advice of participants and instructors. I embraced this aspect of my fieldwork, knowing that this physical experience of *doing* as well as *observing* CSI work would provide excellent data. Similarly, my experiences have had an effect on my understandings of participants' accounts in the interviews and my ability to identify and ask questions that may not have seemed important if I had not grappled with some of these techniques myself.

This shift in researcher roles from observer to trainee to interviewer enabled me to collect different kinds of data and different insights (Hammersley & Atkinson 1995). However, these multiple roles had a price. By participating, I limited my ability to obtain observation data. Therefore, in my third week when Module 1 participants started completing scene examinations and the associated paperwork from start to finish, I moved away from participation to observation

alone. This enabled me to observe participants putting the knowledge and skills obtained in the Forensic Centre into practice in the context of full scenario scenes. This approach seemed best placed to allow me to experience the doing of CSI work but also consider the sense making practices and use of knowledge by CSIs in action.

These shifts in researcher role also made me more aware of the different types of expertise I developed in crime scene investigation through my time with participants and in the classroom environment. Although my limited experience of 'doing' tasks that form part of CSI work means that I cannot claim 'contributory expertise', I began to develop some 'interactional expertise' in certain aspects of routine CSI work (Collins & Evans 2007), such as selecting suitable fingerprinting powders and brushes, knowing crime scene examination processes and understanding wider crime scene examination requirements.[19] This was particularly useful when discussing practices in the second interviews and within my police force observations.

My second visit to the Forensic Centre lasted two weeks and occurred one week after my first. At the beginning of this visit, the Module 2 course commenced. Entering the classroom in the same way as I had done on the Module 1 course, I was once again allowed to introduce myself and obtain consent from the trainees and instructors to observe the lessons. No one opted out of participating.

Whereas the Module 1 participants were initially a little wary of me, Module 2 participants talked to me from the start, asking me questions about my research and what I was interested in and invited me to have coffee with them during their first break. It seemed that I was a source of curiosity rather than concern with this group. However, there were also differences in the way I was facilitated by the instructors on Module 2. Whereas the Module 1 instructors actively included me in the practical exercises, the Module 2 instructors treated me solely as an

[19] Although it should be noted that Collins and Evans (2007) specifically state that researchers do not obtain interactional expertise by completing participant observation and asking relevant questions, my research took place in a training environment. I sat in classes where specific processes were explained to trainees. During these classes, they took notes on the same information as me (even if my notes also captured participants' interactions, discussions and the more performative elements of being in a classroom). Like the trainees, I was developing the interactional expertise to talk about these processes and practices in detail. I also developed some contributory expertise in certain processes, such as accurately swabbing a surface for DNA or dusting for fingerprints.

observer (rather than participant) and, at times, a confidant. On a number of occasions and without solicitation, the instructors explained what the participants were expected to find at certain scenes, what had been concealed and how the crimes had occurred. Whereas in the Module 1 practical exercises I had the same information as the participants, in Module 2 I was privy to additional information. This complicated my role, particularly when one group had missed a crucial item in a scene examination. Rather than intervene, I began to circulate between groups during this task. Luckily within a few minutes the group had noticed the missed item. Keeping quiet, however, was particularly difficult for me because of the rapport and trust I had built up with the participants.

This second research visit also caused another reoccurring difficult situation. With both the Module 1 and Module 2 participants present at the Forensic Centre, I felt I had to be careful of the amount of time I spent with each group outside of lessons. Unfortunately, the two groups did not mix at all and although participants appeared to understand my predicament and were accommodating, they joked about me 'abandoning' them for the other group. There was very little I could do to get around this. It did, however, highlight how the observer is observed. In fact, Van Maanen (1991) goes as far as to suggest that the success of ethnographic research is based on the observed participants' observations of the observing researcher.

Classroom and practical observations were documented in my field notes. These addressed the course content, participants' responses and interactions during the lessons, and the set-up of scenario crime scenes and participants' interactions with them. My field notes, bound in a large A4 book were coupled with the collection of course handouts (including copies of PowerPoint slides) and scene documentation completed by participants. Handouts provided snapshots of important information from the course and the completed scene documentation record enacted crime scene practice in its official form. Similar to the observation of scenario scenes, these documents provide a valuable insight into the effective utilisation of the different practices and protocols learned through the courses.

My observations started by focusing on as much as I possibly could. I wrote detailed descriptions of participants, environments as well as trainer and trainee talk. Gradually, I realised that this was neither sustainable nor necessary, when my observation day started between 8am and 9am and finished between 10pm

and 1am. Spradley (1980, p.128) suggests that the initial stage of participant observation is akin "to the rim of a funnel […] in which you want to catch everything that goes on." This image of the funnel nicely encapsulates my practices. When I first entered the field, I wanted to keep my focus broad and open. I was unable to write down or remember everything that took place, but I did my best to capture as much as possible, regardless of whether I thought it would be relevant at the time. It was through my research diary that I began to reflect on these practices and areas on which I could potentially focus my attention. This is discussed further in Section 4.2.3.

Beyond observation, field notes, course documentation and ethnographic interviews (discussed in the following sections), additional data sources were utilised during my time at the Forensic Centre. Participant photography, added to the research design in the field, provided significant data and is an excellent example of my emphasis on collaboration, my research being *by* and *with* rather than *on* participants. It is to this data source that I now turn.

4.2.2 Participant photography

Prior to starting my fieldwork at the Forensic Centre, I was aware that photography contributed to a repertoire of practices and skills used by CSIs (discussed in Chapter 6). However, until some of my Forensic Centre participants offered me copies of their photographs (with the consent of the Forensic Centre), I had not thought about using participant photography in my thesis as either a data source or a practical resource in documenting my findings. From the outset, the use of visual data was an integral part of my research strategy (see section 3.2.5 on maps), and in the field I became a bricoleur, "deploying whatever strategies, methods and empirical material...[were] at hand" (Becker 1998: 2 in Denzin & Lincoln 2005a, p.4).

In retrospect, participant photography is integral to this research because it provides a visual, tangible account of the numerous decisions and protocols that are enacted by CSIs in forensic and investigative practice. In essence, these photographs provide a record of participant sense making and framing in action.[20]

[20] In this context, I refer to the real time nature of photography. These photographs provide a visual record of sense making situated in the specific contexts of the scenario crime scenes being examined. This proves useful when discussing the importance of photographic practice in Chapter 6.

Crime scene photography is a site in which knowledge about the scene is articulated and framed. Decisions are made about what is and what is not important. These photographs fit within a framework of institutional expectations about photographic practices and the resulting images, which, as Chapter 6 highlights, structure such pictures. Although these images are not created as a specific form of visual (sociological) data for the purpose of research, they are nonetheless an important aspect of CSI work. As Pink (2007) suggests, there is nothing innately ethnographic about photographs, even those created for their use in ethnographic research. Instead, it is the content and surrounding discourses that make photographs relevant research material. In the case of crime scene photographs, the police purposes of the images (as a way of recording, framing and fixing the crime scene as a site of interest) match my own interest in such data. In the Forensic Centre specifically, they also provide evidence of developing technical expertise in photography and the institutional and investigative knowledge required to successfully and meaningfully document a crime scene.

Photographs also serve a purpose in eliciting memories. Harper (2002) discusses using photographs to elicit participants' memories within an interview context. By presenting participants with photographs, they are used to structure and help facilitate interview talk. In my study, however, photographs elicit my own recollections of processes and practices, adding texture to my written research data. Memories of the different tasks and the intricacies of CSI work are sparked by looking at these images as well as helping me recollect better the sensory aspects of my research experiences. Therefore, beyond the importance of images as a product of CSI work and as a demonstration of participants' sense making, they add texture to my interpretations of my field notes and wider research data.

The photographic images presented in this thesis are produced by participants using digital single lens reflex (DSLR) cameras. The positioning, aperture setting, focal length of the lens, use of external light sources and so on are chosen by participants in relation to the object(s) of interest, drawing on and enacting the technical and procedural knowledge acquired during their courses. There are multiple ways in which protocol can be enacted (Lynch 2002). Also, images can only capture what is deemed necessary to include and not what is

excluded. With such considerations in mind, I had numerous discussions with participants while these and other images were being taken to help me understand the conscious decisions they made in the recording of these scenes. Furthermore, having completed some photography work in the Forensic Centre, my own experiences of 'seeing' and moving around these scenario crime scenes added some of the context omitted from the images. In opposition to Ball's (2005, p.513) argument that police images are generally "treated as reliable" unless proven, CSI photographic protocol implicitly acknowledges the representational nature of photographic images. Although a CSI's photographs may be "treated as reliable" by other members of the police force, this reliability is contingent on the CSI's competent enactment of specific crime scene practices. Photography is both an important aspect of routine CSI work and the resulting images have a set of criteria they must meet in order to be deemed competently captured.

In order to base analysis within these institutionally defined parameters of competence, where possible, I have used photographs signed off by the Forensic Centre. These are photographs deemed of a competent technical and procedural standard for a CSI. Thus, these images are not only the product of practices aligned towards potential evidential use, but are also institutionally sanctioned records of specific scenes and photographic techniques.[21]

Beyond the significance of participants' photography as research data, they also have a descriptive and contextual role to play in this thesis, illustrating techniques and technical knowledge. The use of participants' photographs enables the reader to analyse and examine parts of the data in much the same way as the generally accepted practice of quoting qualitative interview transcripts at length. In the analysis, particularly in Chapter 6, participant photographs are unpicked, image by image, and presented in sets. Both individual images and sets of images are used to make points about CSI photographic practice in terms of technical process, image content and the significance of the order in which images are captured and the resulting narrative of such ordered images.

With the benefit of hindsight, I would have liked to incorporate photography and photographic elicitation into my research design from the start and used a more narrative, documentary method. However, this is unlikely to have been

[21] Unless otherwise marked, the photographs herein were signed off by the Forensic Centre instructors.

possible, particularly with the secretive nature of the police, as discussed above. Therefore, using photographs that were the result of training in crime scene investigation appears to be a suitable middle ground.

4.2.3 Research diary

The research diary I kept each day spent at the Forensic Centre has proved to be a rich source of data in itself. It allowed me to record not only my experiences of and feelings in the field, but also emerging themes in the data, thoughts and questions to investigate the following day as well as information and observations from the evening's interactions. Distinct from my field notes, the diary provided a site for me to document, while fresh in my mind, the organic process of developing relations with my participants, (re)establishing their trust and processes of impression management (Goffman 1959), develop and amend interview questions and interview practices as well as provided a space to reflect on my performance as a researcher within the setting. Writing the diary helped me make time within the busy and tiring fieldwork day to consider these aspects and examine my practices. The following example from my research diary reflects on my practices during the first photographic practical exercise, trying to balance my process of learning to do certain aspects of CSI work, observing trainees complete practical tasks and managing my presence within the tight confines of the scenario scenes:

> Although I took some photographs at the scene house and some at the first car scene, learning to use the camera and gain acceptable images as well as observing and talking to participants was difficult to complete simultaneously. Experiencing the tacit process of taking scene photos, selecting the settings and the complexity involved is important but I need to find the right balance of experiencing this and understanding the practices of participants. During this exercise, I felt as though I was getting in the way of participants who need to practice these skills for their work. The scene house, in particular, was small and with each person carrying a tripod and photographic equipment, it was difficult to for me to move around to take photographs, let alone move between participants. Halfway through this task I switched tactics, put my equipment away and shadowed 2 participants, [participants' names], asking them to talk me through their processes, what they were doing, and their evaluations of the images after each were taken. This worked well and allowed me to get an understanding of what the trainees look for and then the trainer's opinions on these photographs at the end of the exercise. In tomorrow's photographic practical exercise I will start by shadowing and then see whether there is space and time for me to complete some of the photographic

> exercises as well. I need to be very careful not to obstruct their learning and manage my interactions so not to be a burden on participants during these exercises – will try to rotate around the group (Research Diary).

The example above highlights some of my decision-making while within the Forensic training environment but also the use of my research diary as a tool of reflection and evaluation of my practices. This was particularly important with the limited time I had in the field. With only three weeks of ethnographic study at the Forensic Centre, it was imperative that I learned from my own practices and experiences to avoid too many "if only" statements when analysing my data. Hammersley and Atkinson (1995, p.191) suggest that during ethnography there needs to be a "process of progressive focusing [which] means that the collection of data must be guided by the unfolding but explicit identification of topics for inquiry" . In this instance, my research diary played this role.

The research diary also documents my thoughts as they emerged in the field and rationales for my behaviour in certain situations, which would not remain fresh in my mind now. Therefore, it provides an account of my own sense making processes, my own narrative of observing, interviewing, interacting and participating in this environment.

Similar to Module 1 participants, I too was a novice, learning both the skills of research but also some of the knowledge and practices of the CSI at volume scenes. Although to a lesser extent, they too had to complete reflective diaries. At the end of each week, participants were expected to reflect on their learning and areas where they could improve. This additional parallel is interesting in terms of the researcher-observer relation and continuities in the practices of both me and my participants within the Forensic Centre environment. While I was starting my academic and research career, the trainee CSIs too were learning the skills of their craft. One site, however, where the parallel was not so easily visible, despite my attempts to maintain these dynamics, was during the ethnographic interviews completed both at the Forensic Centre and six to nine months afterwards.

4.2.4 Ethnographic interviews

To complement the data sources discussed so far, I completed ethnographic interviews with ten participants, five Module 1 participants and five Module 2

participants (Spradley 1979; Mishler 1986; Holstein & Gubrium 1995; Rubin & Rubin 1995; Denzin & Lincoln 2005b). Interviews occurred in the first week of their respective courses (ten interviews) and six to nine months after their courses ended (eight interviews, four with Module 1 participants and four with Module 2 participants). Whereas my other data concentrated on the sense making process of CSIs in the field, interview discussions revolved around participants' lives, their perceptions, thoughts and experiences in their CSI role. With the ethnographic interview method's explicit acknowledgement of the researcher's and participant's potentially different cultural and linguistic frames (Spradley 1979) and my emphasis on participant sense making, ethnographic interviews seemed best placed to facilitate the collection of meaningful data, foregrounding participants' own language. Participants were asked to describe a typical working day, their occupational history so far, their understanding of certain crime scene processes among other questions. Ethnographic interviews reflect the exploratory and collaborative nature of this research.

Interviews lasted from thirty minutes to one hour, were recorded and transcribed verbatim. Participants were seen and treated as "conversational partners" (Rubin & Rubin 1995, p.11). Creating an equal relationship between participants and researcher has been described as one of the inherent difficulties of ethnographic work (Atkinson 1990; Hammersley & Atkinson 1995; Puwar 1997). However, I attempted to maintain a reflexive awareness of the "construction of the interview itself and [...] a consideration of how the data is generated as a result of previous relationships" (Garton & Copland 2010, p.548). To this end, participant maps provided one way of accomplishing, or at least highlighting, the aimed equality of power. Although I spoke considerably less than participants in the interviews, I was open to answering their questions and when prompted, offer my thoughts or any information they requested. I clarified points raised and requested additional information where something was unclear, normally in the form of asking for examples, so that my own language or assumptions were not imposed on their responses. Although Spradley (1979) suggests the researcher should ask participants for examples (practical usage) rather than meanings (as it implies a lack of clarity in their response), this was not always possible with the numerous police acronyms used in participant interview talk. However, this was more a process of decoding than translating a personal meaning into language accessible to the researcher and, once decoded,

conversations continued as before with acronym usage documented through the interview narratives and fieldwork observations. In fact, outside of the interviews, some of my participants took great pleasure in decoding as many police acronyms as they could remember for me.

4.2.4.1 Pilot interviews

In preparation for these interviews, I devised four schedules, one for the Module 1 and one for the Module 2 participants to structure interviews at the Forensic Centre and one for each of these groups in the follow up interview. I piloted all schedules with three academic colleagues. The pilots were conducted iteratively so I could both test my questions for clarity, substance and flow but also refine my approach, making sure interview questions were well directed to my research questions. On a pragmatic level, the pilots enabled me to test out my equipment and, in relation to the second interviews, the logistics of completing interviews over the telephone. They also provided a site for me to trial my use of participant maps as a data source (discussed in section 3.2.5) both in terms of their utility as research data and the suitability of my specific mapping tasks. Completing these interviews gave me practical experience of effectively questioning and probing participants in relation to the content of their elicited maps and answers to interview questions. On the basis of these pilots, my interview schedules were amended so the shifts between questions were more organic and questions removed so the interview could be kept within approximately forty minutes. Although in the field the first interview schedules were edited again based on my observations, these pilots enabled me to reflect on the actual process of doing interviews. In particular, it became apparent that although I can plan the interview schedule as much as I like, maintaining the natural flow of conversation meant that I would need to raise questions in my predefined areas when they seemed appropriate. This meant that nearer the end of the interviews I needed to actively direct conversation to the outstanding issues. I did this more successfully in some interviews than others, particularly the later interviews where I had practiced and refined my approach.

4.2.4.2 First interviews

The possibility of interviewing a selection of participants was first mooted when I introduced myself to the classes. Aware that no participant may be willing

to be interviewed (Arksey & Knight 1999), I wanted to be transparent and mention this as early as possible so an interview request at a later date appeared reasonable. Aiming to interview a spectrum of participants with differences in age, time with the police, education and gender, I used the information provided by participants when they introduced themselves to the class in the first lessons to select five potential interviewees on each of the Module 1 and Module 2 courses. Only one participant was reluctant to be interviewed stating that she thought there were other people with more interesting stories to tell. Although I tried to put her mind at rest, I did not pursue this further as I did not want it to cause problems with the rapport developed with her and other trainees, particularly when participation was completely voluntary. Furthermore, as this occurred early on in my fieldwork, I was conscious that the way I dealt with this situation was an important place for impression management (Goffman 1959).

All first interviews were completed during my time at the Forensic Centre in the evenings after classes and practical exercises had finished. Unfortunately, the classrooms were the only spaces available where it was unlikely that we would be disturbed. The classrooms, although clean, bright and quiet, were generally full of participants' belongings with walls covered in crime scene photography and educational posters (see Figure 4.1). Although a familiar environment to interviewees, they were stuffy and clinically lit. Concerned about the associations of the classroom as an educational space, the distraction of the surrounding stimuli and the effects this may have on my data (Warren et al. 2003), I used the desk and chair provided to me outside of the square table format where the lessons took place and positioned the participant with their back to the classroom scene facing the plainest walls in the room. I would have preferred to complete the interviews outside of the Forensic Centre environment, but this was not viable due to the Centre's isolated location.

Figure 4.1 View of the classroom (from the first interview location)

During all the first interviews, the participants and I discussed their backgrounds, their routes to becoming CSIs and their reasons for their career decisions. We considered their preconceptions of their role and how, if at all, they have changed since starting their training (an issue readdressed in the second interview). They shared their understandings of fingerprints and DNA samples generally through memorable examples. We also discussed their experiences in their respective police forces, the work environment and relationships between different sections, forces and individuals. Whereas the majority of accounts were recorded digitally, their route to the present and their backgrounds were documented initially through participant maps (discussed in section 3.2.5).

At the point of the first interview, Module 1 participants had not received training on DNA or fingerprinting and, although a number had spent time in their role and all had completed the necessary pre-course material, this was an ideal time to get their understandings and perceptions before Forensic Centre tuition. Module 2 participants, however, had not only received the Module 1 training but also had first-hand experience of fingerprints and DNA in the field. Therefore, although we discussed the same issues as Module 1 participants, the emphasis differed slightly and a few additional areas were covered. With Module 2 participants, we considered their preconceptions about working as a CSI at major

and serious crime scenes set within the background of their volume crime work. During the interviews it became apparent that a number of participants had already attended major and serious crime scenes and were able to draw on these experiences. As all participants had completed the Module 1 course, we talked about this, how this prepared them for the field and whether there was anything they would add to or remove from the course. I sought their experiences of attending scenes and information about how they negotiate the numerous institutional and personal demands placed on them, including interactions with other police departments and members of the public. We discussed their daily routines to gauge what being an operational CSI was actually like. I added two points to the first Module 2 interview schedule from reflecting on my previous week's Module 1 interviews and observations, namely contamination and being a civilian in the police force. As contamination was raised very early in the Module 1 course and references were present throughout the week's lessons, I wanted to know how this is negotiated in practice. Similarly, during the first week, historic tensions between police officers and civilian members of police staff were mentioned. Therefore, we discussed this through their relationships with other departments and other staff members. This provided a fruitful avenue to investigate how they have, in the past, demonstrated and exercised their expertise in these relationships (discussed in Chapter 7 in particular).

Both the Module 1 and Module 2 participant responses varied from wholly descriptive to critical accounts, from short sentence answers to minutes of continuous dialogue. With interviews so commonly used in contemporary society, outside of the research setting (Gubrium & Holstein 2001), participants appeared to know what to expect. However, after the interview, conversation slowly shifted and had a distinctly grounded feel. This time after the interview has been conceptualised by Warren and colleagues (2003) as a site where interviewee interpretations of the interview topics are highlighted. The interviewee controls this time post interview, directing conversation and possibly adding new information, off the record. For Warren and colleagues (2003) existing relationship with the interviewer can affect these leaving rituals. In my experience, both with a developing relationship with participants and the isolated Forensic Centre environment where exiting the interview did not necessarily mean parting company, this seemed to be the case. Participants controlled the time between ending the interview and leaving the interview space. The majority

of participants remained for some time, mentioning new points, asking me questions about my research and whether I got the information I needed. Most participants waited for me to pack away my recording device so we could exit the classroom together, enabling these after interview discussions. In addition to these interviewee-led conversations, it also allowed me to ask them if there were any questions they expected me to ask that I did not and if anything was unclear. In doing so, this time after the interview provided a further means of reflection. These exchanges enabled me to evaluate my own performance in the interview and were later documented in my research diary. Following these types of questions, the subject shifted to what we would be doing later in the evening, normally starting at the point of leaving the classroom. I allowed the participant to decide when exactly to shift conversation in this way but it was also aided by the layout of the Forensic Centre. After each interview we both needed to walk through the common room/bar/canteen area to get to our rooms. It was often at this point that the interviewee and I parted company. They would stay with other trainees, as I would return to my room to deposit my recorder, notepad and transfer the interview recording on to my computer. I deliberately gave the interviewee space, conscious of the amount of time they had willingly given me. I later returned to the group.

4.2.4.3 Second interviews

The second interviews were carried out with participants six to nine months after they completed their Module 1 or Module 2 residential course and revolved around their experiences back in their respective forces putting the knowledge and skills they obtained at the Forensic Centre into practice. These interviews explored if and how their understandings of their roles had changed since the first interview and, using a map exercise, we discussed the boundaries of their role and the differences they see between them as CSIs and police officers and the general public. The emphasis across both the Module 1 and Module 2 participant interviews was on practical experiences of completing CSI work in the police force (as opposed to Forensic Centre) environment. They were also asked about crime scenes they had attended but without collecting any exhibits. Known as negative examinations, these were absent from the Forensic Centre scenarios I observed but Williams (2007) highlights their importance in his research on CSIs. Therefore, through the second interview I gained additional data on the day to

day life of a CSI in the police as opposed to training environment. In addition to these points, Module 2 participants were asked about their experiences of being a fully trained CSI.

These interviews were arranged via email and completed over the telephone, recorded and transcribed. The limited methodological discussion of qualitative telephone interviewing (Novick 2008) and claims that qualitative telephone interviewing is only suitable for specific situations because the absence of non-verbal communication (for example, Creswell 1998; Rubin & Rubin 1995), made me a little apprehensive of completing the interview this way. However, telephone interviews provided me with the flexibility to fit into participants' busy and changeable working days. Eight of the original ten interviewees responded to my interview request (four Module 1 participants and four Module 2 participants) and although I had to rearrange four of the second interviews at the last minute, all eight interviews were completed, with no participant withdrawing. Therefore, the decision to complete telephone interviews, initially driven by the cost of travelling across the country to complete second interviews face to face, worked out very well. Other benefits include the absence of non-verbal communication, seen as a drawback of this method (for example, Creswell 1998; Rubin & Rubin 1995), as it meant there was no problem of misinterpreting such communication (Novick 2008). Instead, interviewees had to articulate the non-verbal, such as a pointing to part of their map or a roll of the eyes. Holt (2010, p.116) sees this "need for full articulation" as a clear benefit of telephone interviewing. I found this also to be the case, particularly when reflecting and analysing interviews that occurred months earlier. This, however, also required me to do the same. From directing the participant to specific places on the maps to signalling my presence throughout the interview with interjected agreements and noises of affirmation, these interviews were distinctly different to the first interviews. By being second interviews, participants were already familiar with the interview and map-drawing processes. These factors also appear to have helped the smooth running of these interviews. Overall the quality of this data is on a par with my first interviews, reiterating Sturges and Hanrahan's (2004) findings when comparing their face to face and telephone interview data.

The formal interviews lasted between twenty minutes and an hour. At the end of the interviews, conversation shifted once again to interviewee-led discussions,

this time focusing on what I had been doing since my Forensic Centre observations and where I was with my research. Unlike in the Forensic Centre, these discussions were far shorter and, as the second interviews were completed over the telephone, the ending was clearer cut. Nevertheless, participants generally continued to speak to me for a number of minutes with the interactions ending as naturally as possible.

4.2.4.4 A note on transcription and transcript presentation

Transcribing interviews is not a simple, self-explanatory process. Like dusting for fingerprints, transcription involves more than simply following a prescribed set of instructions. As a researcher, there is a need to make sense of the interview recording and make the recording fit for purpose as research data. Hammersley (2010) documents some of the decisions involved in this process, ranging from the more general issues of whether to transcribe all the interviews or just certain parts, to how to account for silences, intonation, pronunciation and expression, if at all. Thus resulting transcripts are laden with the theories, assumptions and interpretations of the transcriber (Lapadat & Lindsay 1999). Transcription was viewed as an on-going and integral part of research and not as administration, outside of the research process (Bird 2005). Thus transcription is a situated act in that it is embedded in my research, located within my assumptions and practices as both transcriber and interpreter (Green et al. 1997).

Similar to the discussion of participant photography above, the poststructuralist critique of transcription as a process of representation is important to note. This all made me very aware of my role in the construction of interview data both within the interview (which I interrogated in my research diary) but also in rendering these interview narratives into scripts. I transcribed interviews verbatim although I used conventional spelling throughout (rather than attempting to document participants' regional accents and differences in pronunciation). In a few circumstances where the recording was indistinct, I left blank spaces rather than using best guess. As my focus was on sense making and framing practices, I did not mark the pauses or the length of pauses in participants' speech, nor did I attempt to record intonation. Any additional sounds such as "ums" and "errs" were documented in the transcripts and annotations of physical movements were added when it was necessary to make interview transcripts understandable, such as a movement, pointing to a specific part of

their map. As mentioned above, the need for these movements and other non-verbal forms of communication to be translated into words in telephone conversations meant that these contextual elements formed part of the interview recordings. Although the articulation of my practices above does not overcome the critique of transcripts as construction or 're-presenting', they are useful in enabling me to reflect on my role within the process. Furthermore, Hammersley (2010) highlights it is unhelpful to view transcription as simply a process of construction. Construction infers fiction or manipulation. This data was collected through interviews and aims to represent something independent of me. I may mediate the research process in a multitude of different ways but my research data cannot be understood as fiction or construction alone. Participants may have, at times, provided answers they believed were acceptable for the environment or what I wanted to hear. However, this does not render them inauthentic or useless. For Hammersley (2010) it is important to acknowledge that the metaphors of construction and 'givenness' are important, but should not constrain or limit us in research.

In addition to the problems associated with transcription discussed above and the need to be aware and reflect on transcription as an integral part of the research process, it is also important to note that there is a further stage of transcription that takes place: the presentation of transcript extracts within the chapters that follow. I have tried to make as few amendments as possible however some grammatical errors have been corrected – particularly in terms of breaking up extremely long sentences into shorter ones. Some participants were more articulate than others. For readability, I have removed most of the "errs" and "umms" and, in places utilised the "…" convention to reduce the length of some quotations by removing details that either repeat text already within the quotation or that relate to a different point. I have, however, been careful to present my data in a way that means the reader is also able to analyse and assess my interpretations.

4.2.5 Maps

Maps, presented by Wilson-Kovacs (2005; 2007; forthcoming), were used as a way of eliciting information from participants in both the first and second interviews. I hoped that they would provide a site for participants to reflect on the questions posed (Gauntlett 2007) and their own responses (Wilson-Kovacs 2005;

Bagnoli 2009). Most significantly, I hoped that they would provide a means of actively stressing the co-constructed nature of interview interactions and go some way in readjusting any perceived power imbalance between the researcher and the researched. Although I had hoped that this power imbalance would diminish as they spent more time with me both in the structured training environment and outside of lessons, maps provided a tool to counteract the symbolic gesture and practical necessity of turning on the digital recorder. I acknowledge these maps were drawn in the context of an interview at my request and commentators have problematised the usefulness of researcher notions of empowerment (Millen 1997; Puwar 1997), but I am confident that this method, in general, served these purposes.

Maps placed the parameters of disclosure clearly in the participant's hands and with my emphasis on sense making, it enabled me to consider this in both the production of the maps and in the resulting maps (White et al. 2010). By keeping the map drawing instructions deliberately broad, I hoped to facilitate this by encouraging participants to produce a map in accordance with their own ideas of the task's parameters (Prosser & Loxley 2008). In addition, by asking participants to talk me through the maps after they were completed, a verbal account of the map's contents was elicited.

In the first interview, participants were asked to mark out, in any format they wished, how they got to where they are today. This was only limited by the resources available to participants (I only provided an A3 pad and pen) and time (as it was completed in the interview). Prior to the second interview, participants were asked to draw another map documenting the skills and knowledge that differentiate them as CSIs from other members of the police force and the general public. For this second map, the participants were free to use any resources available to them and as much (or as little) time as they wished.

Once completed, participants were asked to talk me through their maps. Mindful not to solicit biased responses, my questions related specifically to the information documented on their maps. However, at points this was difficult because I had spent time with participants and was privy to information from discussions outside of the interview setting that were absent from their maps. For example, aware that one participant had a young child, I did not question the absence of her child from the map. Yet at the same time, by using maps to

facilitate and structure the initial part of the interview about the participant and their background, my own preconceptions of what was significant and important did not tarnish the research data. Interested in the participants' own prioritisation of their lives rather than eliciting responses to specific targeted questions about their pasts, the absent data was as important as the included data. Therefore, information obtained outside the interview complemented the participants' interview accounts and maps.

The first maps varied from simple lists to more elaborate diagrams documenting simultaneous actions as well as wider factors (see Figure 4.2 and Figure 4.3 for two examples of the varying ways interviewees engaged with the task).[22] Some interviewees simply stated a few curriculum vitae style details and dates (see Figure 4.2). Other interviewees plotted out their journey in a flow chart with adjoining arrows. One interviewee included the changes in the length of her hair over the career (see Figure 4.3). Furthermore, throughout the first interview and not by my request, a number of participants returned to their maps to make amendments and add details. For the duration of the interview, the maps, which I envisaged would be completed in the first ten minutes, became a work in progress until the digital recorder was switched off and control of the pen relinquished. This was not possible with the second map as this was completed and emailed to me in advance of the interview.

[22] All maps have been anonymised and the handwriting has been digitally removed and replaced with my own. All other marks on the maps, including boxes, colours, lines and diagrams are from scanned copies of the original maps. One map was wordprocessed (Figure 3.4 below). With this map, I anonymised the text but otherwise left the content and appearance unchanged.

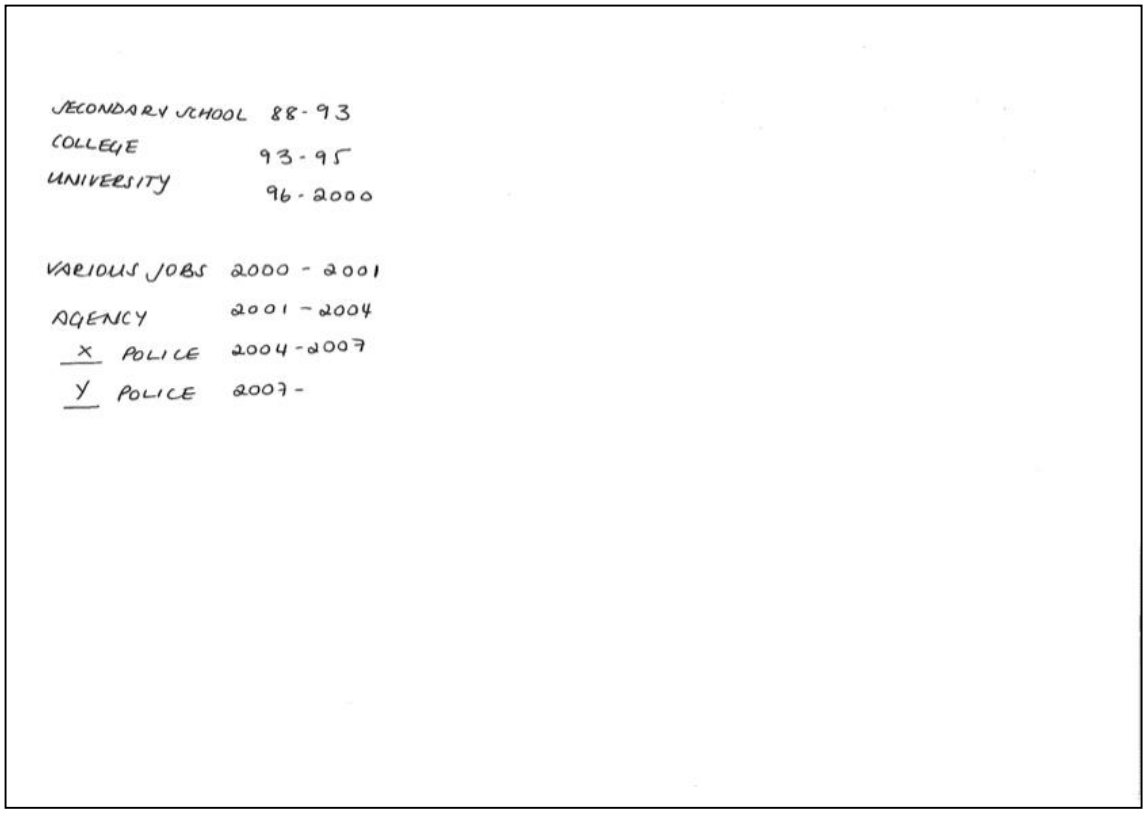

Figure 4.2 Matthew's first map

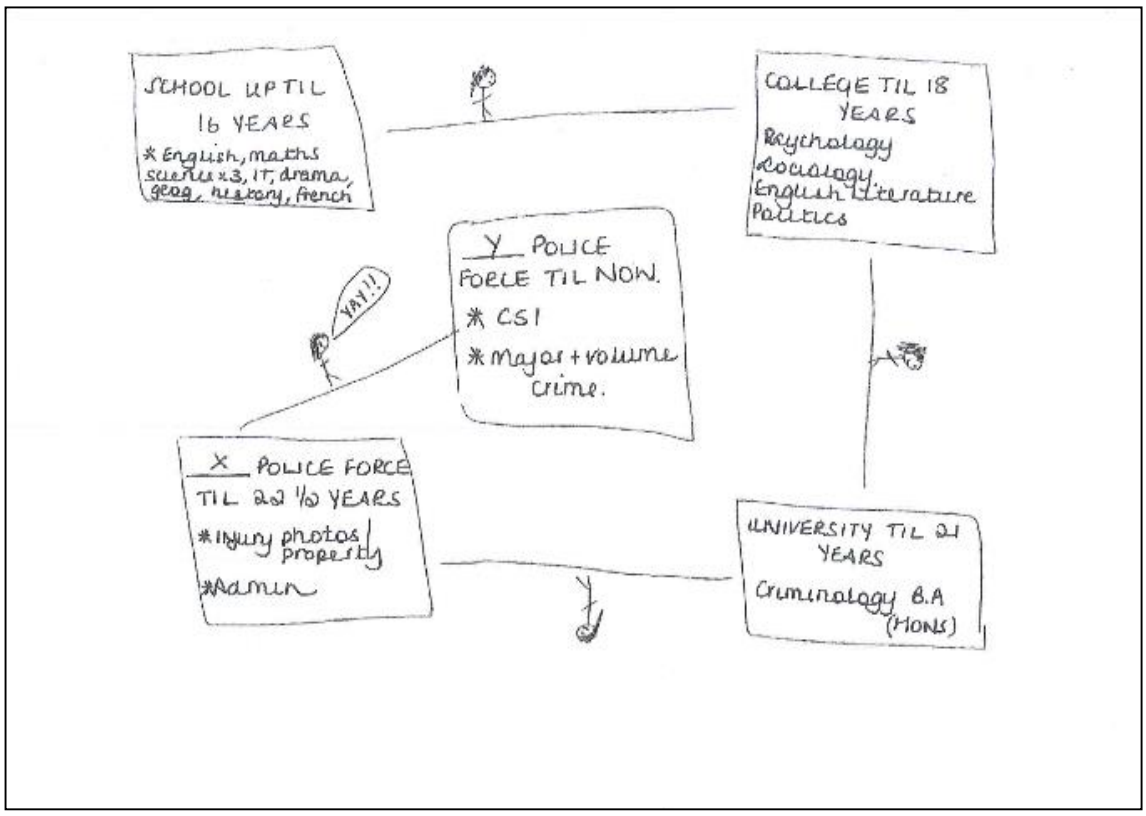

Figure 4.3 Jo's first map

Although varying in content and expression, the first maps still had a level of homogeneity in form – as timelines or flowcharts. I believe this is due to the question asked and the close proximity of interviewees. I did not hear any conversations about the interview but it is likely that they occurred and interviewees entered the room knowing what to expect. Timelines are a valuable tool in allowing and facilitating participant reflections on their pasts and future (Bagnoli 2009), one of the aims of using maps in the first place. Although five participants used their maps to document simultaneous events and overlaps, acknowledging the complexity of their own histories and non-linearity of personal trajectories, I was surprised that more did not utilise this, especially when overlap was evident from their interview talk. In addition, the first three interview participants all asked whether they should start from sixteen years old or later. I reiterated that this was their decision and in later interviews tailored the question to explicitly state that they decide the starting point and parameters of the map. Nevertheless, this level of homogeneity in initial questions and final output provides interesting data on how they collectively framed the questions and factors involved in creating these maps. Furthermore, participant reflexivity was evident through interview explanations and their map's work-in-progress nature. It seems that the use of visual data in conjunction with interviews, in some way, appears to have enabled participants to think in a number of different ways (Bagnoli 2009).

As the second map was completed at a distance, the first map also served the more pragmatic purpose of a training exercise. It is clear that Matthew's map in Figure 4.2 is neither very detailed nor provides information that he may not have been equally willing to divulge verbally. However, as a training exercise, I hoped the interviewees would meet the second map request with an understanding that I did not expect a masterpiece, there were no strict inclusion criteria and that I would ask if anything was unclear. This appeared to work well as I received maps from all interviews and with substantially more content than Figure 4.2. This map exercise, which asked participants to document the boundaries of their role and the expertise that differentiates them as CSIs from police officers and the general public, produced an assortment of responses. Varying in content and scale, the maps ranged from simple spider diagrams to intricate, colour coded webs of interlocking text (see Figures 4.4 and 4.5). One was word-processed (Figure 4.4) and all other maps were handwritten. With the

details included in these maps and the accompanying interview discussions, it was evident that participants had really considered the parameters of their role and presenting the information they deemed important in their maps. By providing a site in which participants could reflect on their role and its relation to other police and lay actors in advance of the interview, the map prepared interviewees to provide comprehensive accounts of their role and associated interactions. From the substantially longer length of responses to questions on their map contents and explanations of their map in general, it was clear that this preparation enabled a greater richness of data to be obtained about this issue that would not have been possible with interview questions alone.

Map making, however, was not only the domain of the observed. Having an A3 pad with me at the Forensic Centre (for the first maps) also allowed me to complete my own maps recording objects and participant movements within specific scenario scenes. Initially scribbled on my field notes notepad during the scenario scenes, these were written up in pencil a more extended format on the A3 pad when I had a solid surface to lean on (see Figure 4.6 for an example of one of these maps). Using arrows to document movement around the scenes, annotations to expand on specific aspects and references to my field notes, these maps helped me capture the scene and scene examination process as a whole. They also included annotations based on participants' accounts when asked to talk me through what they were doing. They document how I as an outsider viewed their practice along with their own rationales for their action. Finally, as video recording these crime scene scenarios was not possible, these maps, accompanied by my field observations, were the best way to enable a consideration of the physicality of doing the CSI work, documenting CSI movements through these crime scene spaces for analysis at a later date (discussed in Chapter 6).

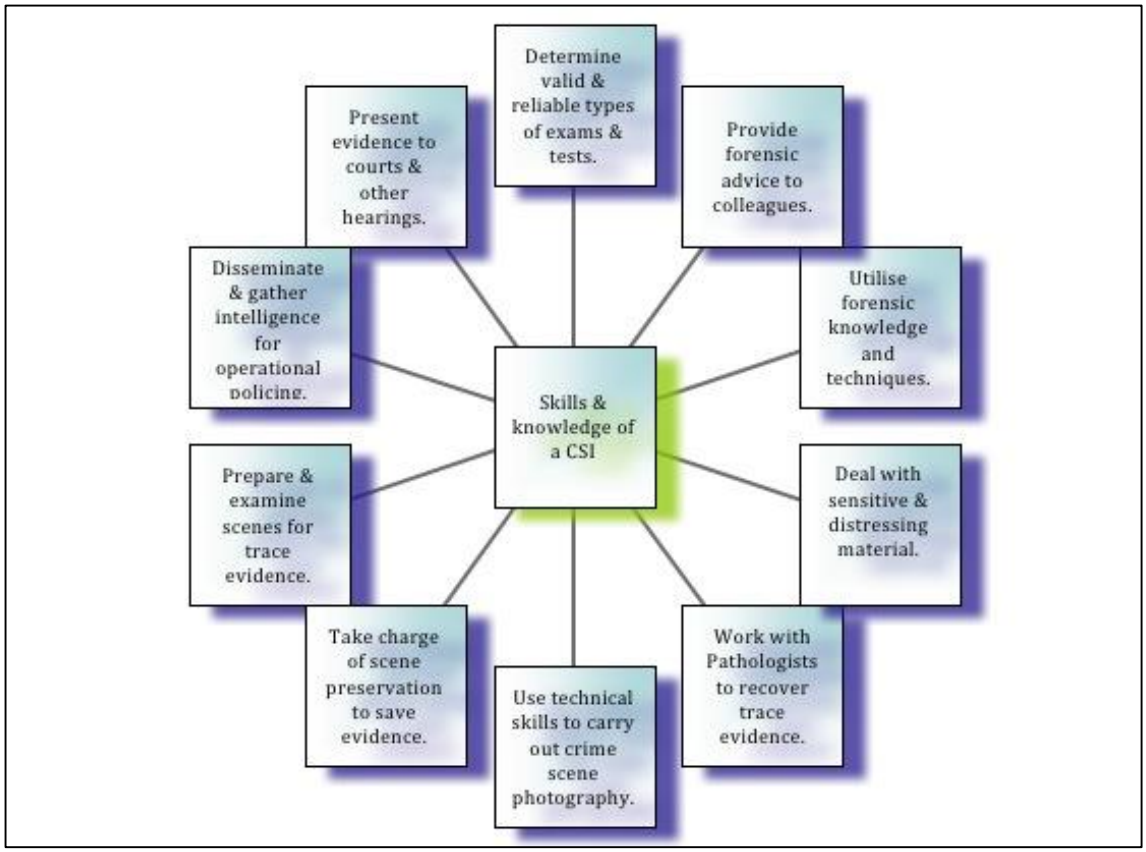

Figure 4.4 Amy's second map

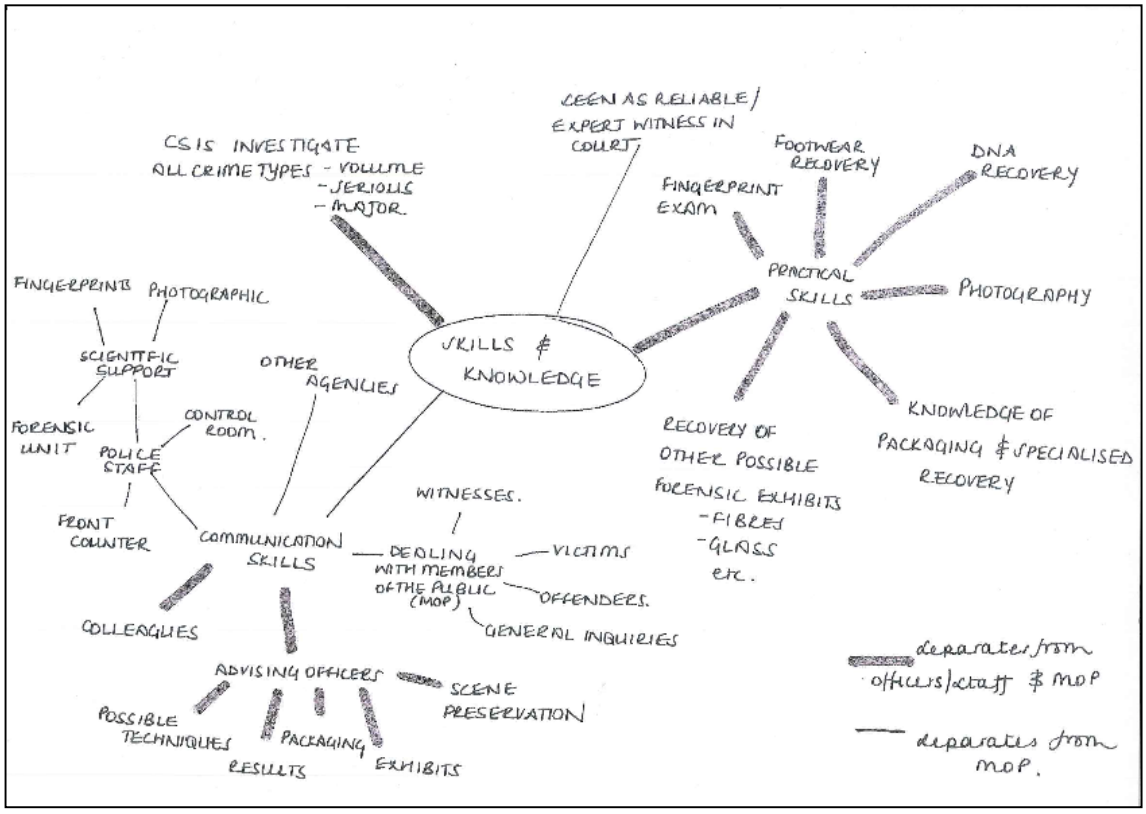

Figure 4.5 Emily's second map

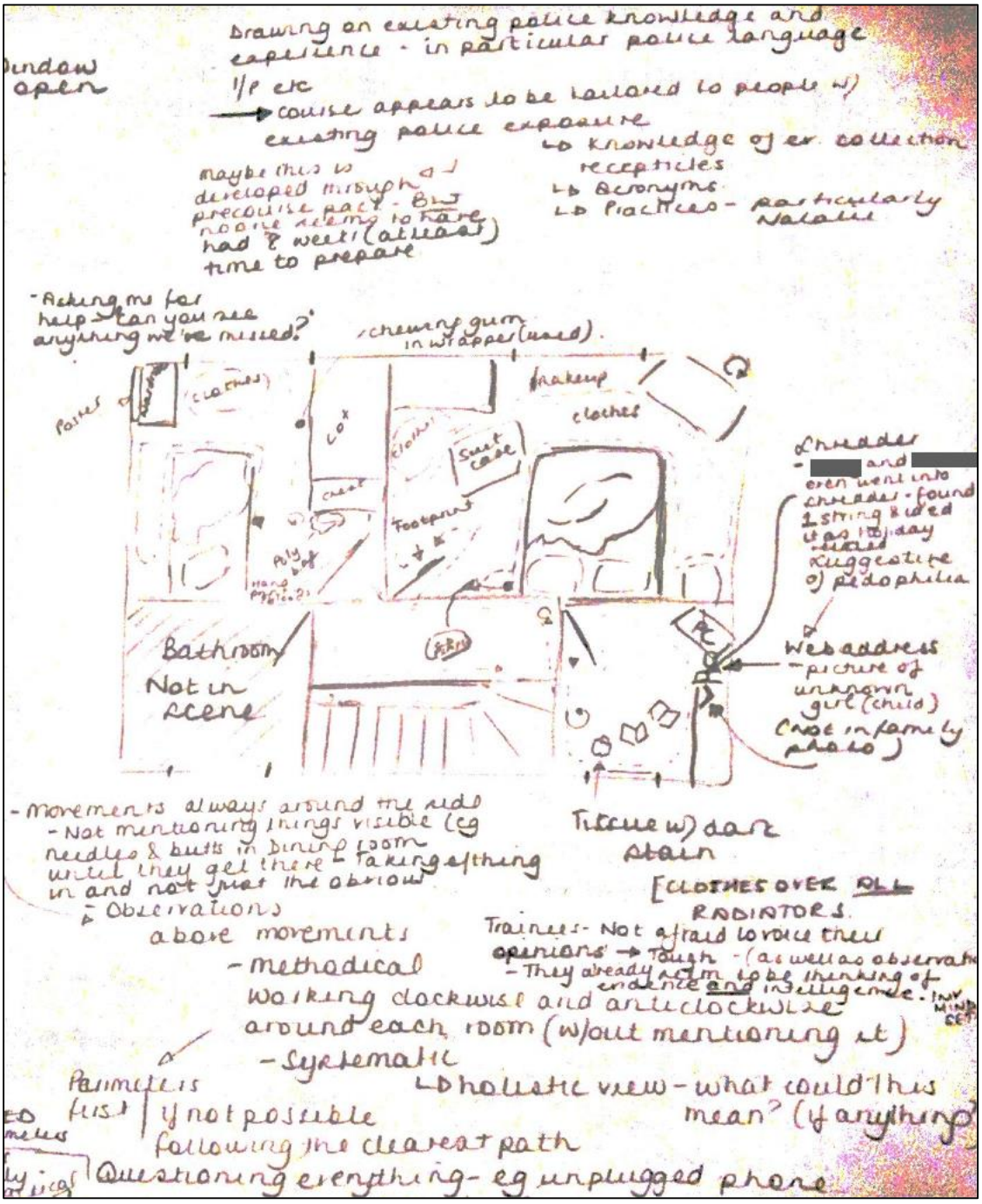

Figure 4.6 Example of one of my maps, documenting a scenario crime scene and examination

4.2.6 Constructing and utilising symbolic boundaries in the field

On arrival at the Forensic Centre, I was presented with my door pass and a visitor's badge to be worn at all times. Similarly, I was one of the very few people at the Centre not wearing a police or NPIA uniform. Throughout my fieldwork, I was clearly identifiable as an outsider and this was something I could not change. However, where possible, I learnt to use these visible symbols of my outsider status to my advantage. This visible outsider status allowed me greater room to make mistakes, ask questions that others might find odd. In essence, my otherness was a tool to justify my different perspective and the different cultural repertoire I used in interacting with participants. As mentioned above, my presence created curiosity with the Module 2 participants whereas the Module 1s answered my questions and understood my questions through the lens of a researcher's idiosyncrasies. I was careful, however, to avoid 'researcher questions,' questions that breached the status quo or appeared out of place when not in the lesson or interview environment. This way of researching became part of the different fieldwork roles I used at the Forensic Centre. Therefore, although these symbols of outsider status were something I could not alter, they proved useful tools in the collection of research data.

This outsider, researcher status was reinforced by the use of my notepad to record my field observations and digital recorder in the interview environment. It became clear early on that my notepad was a point of great interest to the participants. With a full day of lessons, completing interviews, spending time with participants in the evenings and keeping a research diary, the use of a notepad in the field was a necessity. However, as the fieldwork progressed, it became clearer that the notepad was seen as a delimiting line between my professional and personal identities and the research and non-research spaces. Like my awareness of the type of questions I asked, I made a point of never taking my notepad to lunch or with me to the bar in the evenings. During one practical session I tested this further, by 'breaching' (Garfinkel 1967), by not taking my notepad with me. Rather than seeing this was a gesture to make them feel at ease, participants expressed concern that it could be detrimental to my research. This highlighted the significance of the notepad in the construction of social and research space. Furthermore, lunchtimes and the evenings were fruitful in getting to know the participants as individuals and developing the foundations for trust.

Conversations were more equally weighted between the participants and me and I was expected to discuss my life, my family and so on. The knowledge and relationships developed in these times all aided me in my observation and understanding of the data. It highlighted different points and areas of interest that may not have been visible in classroom observation alone. It helped me place CSI sense making and CSIs within their everyday lives.

I would have liked to utilise these existing symbolic boundaries further. However, I was aware that, like trust and access, these boundaries were situational constructs and needed to be developed and reinforced throughout my stay at the Forensic Centre. With very limited time at the Centre, I did not have the luxury of being able to make big mistakes and then re-establish relationships. Therefore, I was careful to strictly maintain these boundaries between research and non-research space. The only deliberate breach, mentioned above, occurred within the research environment and as I immediately returned to normal research practices, it did not appear to change research dynamics. However, had this occurred in the non-research environment it could have had a negative effect on the access and trust developed and redeveloped with participants. Therefore, I made the conscious decision to establish and then use these boundaries, as best as I could, to the advantage of the data collection.

4.3 Fieldwork in a Crime Scene Investigation department

Prior to starting my fieldwork in a UK Crime Scene Investigation department, I had a meeting with the senior CSI and was introduced to the team, allowed to explain my project, the reasons why I wanted to shadow them and request their consent to be observed. They asked questions and appeared generally interested in my research. All gave their consent. The department itself had two Volume Crime Scene Investigators (VCSIs), four CSIs, one Senior CSI and an administrator. The four women and four men ranged in age from early thirties to late fifties. Unlike in the Forensic Centre, these initial introductions did not enable me to obtain information about the CSIs' length of service, previous roles and educational backgrounds. However, these points were later pursued in one to one interactions, particularly in car journeys to and from crime scenes.

During my time within the department, I spent one day shadowing a VCSI, two days shadowing two different CSIs and two days shadowing the Senior CSI.

Some days I attended six crime scenes, whereas others just two. There was also variation in the length of the observation day. Starting at 8am, the CSI's workload affected when the observation day finished. I wanted to see the process from start to finish, from the initial computer screens alerting the CSI that there is a scene to attend, all the way to booking in samples collected at the scene on the computer system and preparing them for laboratory submission. This meant that on some days, observation finished at 4.15pm whereas on other, busier days I was there until 6.30pm. Observing an array of theft from motor vehicle scenes, household burglaries scenes and attempted burglary scenes, my time with these participants was diverse. As the geographical area covered by this particular department was reasonably large, there was substantial time in the car journeys to and from scenes to talk to participants, ask questions about practices and scenes and hear some of the numerous accounts of the memorable scenes they had examined.

At the crime scenes, I carried equipment, held torches, searched for shoeprints and generally attempted, as best I could, to be useful. However, in doing so, it was not possible to make contemporaneous field notes. Instead, I relied on my memory, writing detailed notes immediately after the day's observation ceased. If I was concerned that I would forget a specific point, I made a brief voice recording on my mobile telephone. The emphasis of this stage of my fieldwork was to experience first-hand the operational environment of the CSI. Shadowing CSIs at crime scenes and sitting on the department as informal discussion took place helped me place the Forensic Centre training and CSI role into its everyday context. Without this part of my fieldwork, I may not have fully appreciated the travelling, the constant telephone calls and the pressure to complete scenes as effectively and expediently as possible in their routine work. Although I would have liked to spend more than five days observing, this time was sufficient to enable me to comprehend some of the gritty realities of CSI work.

My time in the police department also made me more aware of the critical attitude of some CSIs to the Forensic Centre Learning Programme. The significance CSIs place on experience over formal, classroom training is a theme developed throughout the following chapters. Being involved in informal conversations about the Forensic Centre and its role in CSI development,

however, required diplomacy. When asked for my opinion, I attempted to highlight some of the good things about classroom training within an experience driven training process, mirroring some of the points of others in the conversation but never criticising the Forensic Centre training. I believe I did this reasonably successfully as the conversation continued as before. In some ways, these two-way interactions clearly signposted the collaborative approach to the researcher-researched relationship. The way these partially reciprocal interactions took place helped to build trust, develop rapport and facilitate more relaxed interactions.

Observing within an operational police environment enabled me to see the different ways actors are utilised and understood within the process. For the first time, I saw the complex computer systems that CSIs had to enter details from each scene they attend, I observed CSIs interact with other police staff and police officers. It enabled me to observe the important communications between victims and witnesses of crime and how these affect and manifest in the resulting work completed by the CSI. Far more than grounding my understandings, observation at real crime scenes helped me enmesh training, crime scene examination and the numerous other relevant actors together within my developing image of the working CSI.

4.4 Negotiating research ethics in the field

Although I thought about the ethics of my research and obtained the necessary university approval prior to my starting my fieldwork, I had not considered in detail the lack of control I would have as a researcher in the field.[23] There were dilemmas at the Forensic Centre, as discussed above, but it was when I went to real crime scenes with CSIs that this was most apparent. At the first crime scenes I attended with two of the CSIs, I was introduced to victims of crime as a colleague or as member of the CSI department. Although I was not directly observing the victim but focused on the CSI completing their routine work, I felt uncomfortable with both being misrepresented and misrepresenting myself, particularly as being a victim of crime can be distressing. I wanted to be open, transparent and give the victim the opportunity to decide whether they were

[23] As my fieldwork in a Crime Scene Investigation department was not planned from the beginning, this was added and the university ethics approval updated prior to commencing this stage of research – See Appendix A.

happy for me to be present and, in the case of household burglaries, enter their home. I did not correct the CSIs in front of the victims as I did not want to undermine my participants 'on stage', but immediately afterwards I explained why I would prefer to be introduced as a researcher, observing the CSI's work. Both understood and introduced me or allowed me to introduce myself at later scenes. This also made me specifically talk to the other CSIs I observed about how I should be introduced prior to arriving at the first scene of the day.

These scenarios did not only happen when attending real crime scenes. During my time at the Forensic Centre, there were particular issues that, although I recorded in my research diary, do not appear in the thesis. Whether this is ethically correct in terms of the research process and the validity of my data is an issue to consider. For Rappert (2010), the way that information is concealed and revealed is an important point to be acknowledged and discussed. Throughout my research process, I made no attempt to omit specific situations or any specific details; none of the inevitable omissions in my research data and research diary are deliberate. Some specific situations are omitted from the analysis accounts. Whereas Holdaway (1983, pp.6–7) reports that he "omitted from [his] notes the fact that the prisoner had been kicked" because "it was too sensitive an issue for [him] to accept", the omissions in this research are less severe. I have omitted reporting some of the personal disagreements between trainees, particularly on the Module 1 course as well as some of the evening discussions at the Forensic Centre that revolved around their personal lives. At the police station, I observed some of the office politics and a handful of sexist remarks which are also omitted from Chapters 5 to 8. These are omitted both because they are beyond the scope of my particular research and were out of the ordinary. In a research project focusing on the everyday, their inclusion would undermine the authenticity of my research data and analysis. These issues did, however, provide me with situations where I needed to think about my role and consider the ethics of my practices. I avoided getting involved in personal disagreements and discussions of participants' personal lives. The hardest however, were the sexist remarks. I did my best to question some of the gendered assumption of participants about doing CSI work (the topic of the conversation in question). However, reflecting now, I feel like I could have done more. By not specifically questioning this point, I may have appeared to agree by omission.

Other more normal aspects of concealment, however, are documented clearly in this thesis. As mentioned above, all accounts have been anonymised. Interviewees have been given pseudonyms, participants' handwriting have been removed and replaced by my own in their maps and identifying details have been removed from interview accounts. Where the latter is the case, I have made this clear by placing a description of the detail in square brackets, for example, when they mention their specific police force or station, I have entered "[police force]". These omissions are pervasive in research but also in everyday social practice (Rappert 2010). We reveal and conceal information when we interact with people and part of the researcher's role is to try and move past these barriers by developing a level of the participants' trust. I believe I managed to do this reasonably well during participant observation and the use of maps helped, in part, to maintain a level of authenticity.

4.5 Analysis of data

With interviews, observation, field notes and visual data, I was conscious of the need to think both within and across my sources during the analysis process and the presentation of my findings. I interrogated my data to try and better understand what each does and does not provide and how my visual data both demonstrate and develop observation and interview discussions. Whereas textbook accounts of crime scene practice present a linear process, it was important for me to acknowledge and document the ways in which different sources and participants' narratives build a more textured and messy picture of routine CSI work. This messiness was also represented in the physical and social means through which I analysed my data. Analysis occurred at three points. The first point was after the Forensic Centre observation and first interviews were completed. The second time occurred after the second interviews took place and the third after the police force observations were complete. Initially, data was open coded and thematically analysed (Miles & Huberman 1994). Following initial coding, themes and subthemes were identified, codes consolidated and analysis focused on the ways in which participants and trainers make sense of practices, the themes and examples participants draw on in their interviews and interactions as well as the factors they use to describe and justify crime scene practices. Where quoted below, participants' accounts refer to the most saturated themes. But due to the multiple stages of data collection mentioned above, the

coding process was iterative and amended and developed as each new data source was added. However, an explanation such as this hides the texture and messiness of my analysis practices as an embodied and embedded practice within the research. Although I initially coded and analysed my data using NVivo software (and I can see the benefits of using software in qualitative analysis), I found myself making numerous handwritten notes, mindmaps and sketches. I began to copy, by hand, chunks of interview text and annotate them using different colours, symbols and sticky labels. It was at this point that I decided to remove the computer from the analysis process, printing out everything and placing it in leaver arch folders. This ability to move paper around, re-order folders, leaf backwards and forwards between different pages and cover the floor with different sheets of research data really helped me develop an understanding of the borders and overlaps in my research and across my data sources as well as the framing and sense-making within it. There was something about having sheets of paper between my fingertips and a pen in my hand that helped these leaves of paper become evocative of my research and etch my research findings and sound bites in my mind. Although the sensory is not addressed specifically in this thesis, these experiences have helped shape the discussion of the data and my own framing practices in the following chapters. Therefore, although my research diary recorded my reflections during the fieldwork, I also reflected on my practices during the analysis. This made me more aware of issues such as my role in the transcription of data, discussed above.

4.6 Conclusion

This chapter has considered the main methods used in this study and my journey through the research process and of developing as a qualitative researcher. During the course of my project, I refined my methods, refined my practices and became more adaptive to the research environment and the numerous unexpected occurrences that, as a researcher, one has to accept and navigate.

The key limitation of this study is the amount of time spent observing in both the Forensic Centre and Crime Scene Investigation department settings. This time was limited by the research sites and by my available funds. Had funds been available and the Forensic Centre allowed it, I would have liked to observe a number of Modules over the course of a year. Similarly, more time in the police

force environment would have given me a greater breadth of data to draw on in the following chapters. It would also have allowed me to develop my approach, test emerging themes and interrogate my data more. Nonetheless, I am confident the data I collected is sufficient for the purposes of this research.

There are ways I could have improved the current study within the parameters of the access I was granted and funds available. With hindsight, I would have incorporated more visual methods into my research both in terms of my own photography and participants' photography. Learning to ask all questions, rather than just assume that certain methods might not be acceptable, was an important process for me. Nonetheless, the data collected still provides a sufficient grounding both in terms of the novelty of having observational and interview data from and on the Forensic Centre training programme, but also in the detailed insights it provides.

Additional data could have been obtained by interviewing trainer at the Forensic Centre. Although my focus was on the process of learning to become a CSI and the material practices that the role entails, the insight of trainers as experienced CSIs and education professionals could have provided further data on the similarities and differences between the training and real world environments and more historical information about the ways CSI training has changed over time.

My research may not, on its own, be sufficient to make wide, generalisable claims about the CSI practices in England and Wales. It does, however, draw into relief details of their everyday practices, situated within participant narratives, understandings and experiences of completing their role. Furthermore, this research also demonstrates how a focus on the minute, everyday actions of a handful of trainees and experienced staff can uncover how certain practices have ramifications that stretch far wider than an individual crime scene and present a complex image of the way justice is enacted and guilt is assessed in England and Wales.

Chapter 5 Becoming a CSI: Negotiating ambiguity in the Foundation Crime Scene Investigator Learning Programme

Since the first Scenes of Crime Officers (SOCOs) of the 1960s, the training of Crime Scene Investigators (CSIs) has changed dramatically. Although proficient in a number of different areas, such as fingerprinting and photography (Touche Ross 1987), for many years the training of the CSI in particular, and scientific support staff in general, was ad-hoc and solely on-the-job (Fraser 2000; Ludwig et al. 2012). Fraser (2000) suggests that scientific support in England and Wales has developed in three phases within the last twenty to thirty years. Engrained within these phases are changes in training and discourses of professionalism. In the first phase, the "artisan" phase, scientific support personnel had limited or no systematic training. Instead, individuals developed their own methods, learned through practice with no official means of formalising or disseminating knowledge. The second phase, "functional professionalism", occurred in the 1980s and included more formalised methods of training, coinciding with the greater use and emphasis on forensic evidence in the courtroom. However, the different areas of scientific support work were isolated with individual practitioners focusing solely on their areas of expertise with no integration. Scientific support worked reactively and focused on *items* of evidence. As Fraser (2000, p.127) states, this meant that practitioners were "divorced from their principal purpose: the investigation of crime." The myopia of the "functional professionalism" is addressed in the latest phase, "integrated professionalism", which Fraser suggests we are either in or moving towards in the 2000s. In this phase, specialist skills are integrated into the investigative process. This emphasis on the integration of scientific support work into the wider investigative process is an important part of contemporary CSI training and wider discourses on the effective utilisation of scientific support in investigative work (see, for example, Williams 2004; 2008; Williams & Weetman 2013). To meet such requirements, and with a backdrop of wider claims of the new professionalised police force, the training of CSIs has become more involved, standardised and rigorous.

In this chapter I explore the training provision and Learning Programme completed by contemporary CSIs in England and Wales. I begin with a description of the Foundation Crime Scene Investigator Learning Programme and the associated professional standards and foundation degree. This is followed

by a discussion of participants' backgrounds, expectations and perceptions of the training they receive. The information on backgrounds outside of the tabulated data, is mentioned throughout this chapter when new participants are introduced. Personal details are, however, limited. Although I acknowledge is important in understanding the potential for pre-existing frames that they may bring to their training and Forensic Centre practice it is done this way because of concerns for anonymity. Nonetheless, as I will highlight in this chapter, the Learning Programme actively facilitates a process of frame alignment (Goffman 1974) or anticipatory socialisation (Merton and Rossi 1949) in Module 1 Stage 1. This serves to attempt to actively align participants to an understanding of the CSI role, circumventing or even removing some of these existing frames from their working thought process and vocabulary. Wider knowledge, particularly from within the police is also useful, as is experience, but this needs to be drawn on through the course of practice, rather than drive practice itself, as this chapter demonstrates.

In discussing the Learning Programme, this chapter documents how trainees emphasise practical experience over classroom training and distinguish sharply between practices as they are presented in the classroom environment and practices as they are enacted at real crime scenes where time and other institutional pressures affect their work. This difference between an articulated and formalised 'best practice', presented and taught at the Forensic Centre, and ambiguous notions of 'acceptable' or 'competent practice' in real crime scene work is a divide which the trainees feel it is difficult to navigate. Traversing this divide involves making sense of the areas where 'best practice' is required and other areas where trainees are able to make decisions about what to do (and most importantly, what *not* to do). This allows CSIs to adjust their practices to complete their work within the wider institutional pressures of their role, absent from Forensic Centre tuition.

Scholars discussing the police officer have highlighted how those in the lower ranks are often able to exercise substantial discretion and power during the course of their routine work (for example, Wilson 1968; Holdaway 1983; Bayley & Bittner 1984; Reiner 1985). This is also true for CSIs at volume crime scenes. As I demonstrate in this chapter, the ambiguities inherent in CSI work require such discretion or expertise to negotiate and are a routine part of practice,

involving the enactment of numerous frames and strategies to make sense of each crime scene within its social and geographical contexts. Whereas variations in the practices of CSIs across different forces (and within forces) are well acknowledged (Williams 2004; Bradbury & Feist 2005; Ludwig et al. 2012), to date no research explores either CSI training or how members of this specific occupational group navigate differences both within and across force borders and how these differences emerge, particularly when new, trainee CSIs almost always follow the same standardised training route. Innes (2003) uses the concept of 'compliance drift' to describe the way inadvertent deviations from formal protocol, particularly in pressurised situations, later becomes engrained and normalised in the (mal)practices of individuals and groups. In CSI work and CSI tuition, however, compliance drift is useful in articulating *participants' understandings* of the divide between best practice and acceptable practice. It does not, however, satisfactorily encapsulate how the Forensic Centre engages with practice, CSI sense-making, autonomy and practical action as an integral part of the Learning Programme and this institutional understanding of crime scene investigation. As I argue, the Forensic Centre tuition both acknowledges and engages trainees in negotiating and bridging the divide between best and acceptable practice *in* everyday work. Rather than describing and then enacting these differences, it is within practice itself and in discussions of practice that CSI reflection on crime scene investigation and constructs the frames they use to make sense of each scene in its own right within the institutional and practical constraints of the British police force. For these reasons I suggest this term should be retired.

The CSI's ability to negotiate the divide between acceptable and unacceptable practices is, however, limited. Even with space for CSI decision-making, it is situated within very strict rules that must be followed (Chapters 6, 7 and 8 address this in relation to specific facets of CSI work). As I argue in this thesis, the CSI occupies a precarious position straddling a number of different but overlapping occupational arenas in which expertise needs to be demonstrated and reasserted through competent practice. Negotiating and constructing the boundaries of their expertise as performed and demonstrated in these different contexts against different and potentially changing standards is an important part of the routine boundary work of the CSI. In order to fully grasp the extent of this boundary work and practice based expertise, this chapter provides the reader with a background

to the Learning Programme for CSIs, a general overview of the formalised understandings of the CSI role and practices in England and Wales, and information about my participants, their backgrounds, expectations and experiences of the Foundation Crime Scene Investigator Learning Programme. As I attest in this chapter, this institutional presentation of the CSI role and the parameters of CSI work provide an interesting context within and against which CSI boundary work takes place.

5.1 Crime Scene Investigator training and accreditation in England and Wales

In England and Wales, candidates who are successful in their applications for CSI vacancies enter a Learning Programme organised through the National Policing Improvement Agency's Forensic Centre.[24] This programme, the Foundation Crime Scene Investigator Learning Programme, aims to give trainees the necessary skills and knowledge to complete their VCSI or CSI role competently. The NPIA state that this Learning Programme, divided into two parts (Module 1 and Module 2), is "[b]ased on the premise that the Crime Scene Investigator (CSI) is a key part of the investigative team this stage aims to teach essential CSI skills and develop the investigative mindset"[25] (NPIA 2011a; NPIA 2011b). Foregrounding the investigative role of the CSI, Module 1 focuses on volume crime and Module 2 develops on existing competencies for the examination of serious and major crime scenes. Following Module 1, trainees are expected to be able to:

- Explain the investigative process and the role of the CSI
- Assess and examine scenes of volume crime (up to and including dwelling burglary)
- Demonstrate the photographic skills required for the role
- Recognise evidence types and interpret their significance
- Enhance and recover fingerprints using a range of techniques
- Use information and intelligence to further an investigation
- Write a statement and present evidence in court (NPIA 2011a).

[24] The exceptions are those who have received in-house training in their police force (although this is rare and limited to VCSIs) and the Metropolitan Police Service who have their own training facility.

[25] 'Investigative mindset' is discussed in detail in Chapter 8. For current purposes it is best understood as the incorporation of investigative thought processes into decision-making and inferences, in this context, about CSI practices at a crime scene.

Having mastered these skills, Module 2 focuses on the skills required for the examination of major and serious crime scenes. Although new techniques of crime scene trace and data collection are covered, such as methods to fingerprint a cadaver, the emphasis is on practical application of existing knowledge targeted to serious and major crimes. The objectives for Module 2 are recorded as follows:

- Assess and examine crime scenes related to serious incidents including:
- Fire scenes
- Suspicious deaths
- Serious crimes against the person
- Use initial crime scene management skills to control the scene of a serious incident
- Use enhanced photographic skills at a crime scene (NPIA 2011b).

Both Module 1 and Module 2 are divided into three distinct training stages (summarised in Figure 5.1 on the next page). Module 1 Stage 1 requires trainees to shadow staff in various departments of their police force's Scientific Support Unit (SSU), such as the Fingerprint Bureau and Photographic Unit, in order to gain an understanding of what each area does. In addition, trainees have to complete a number of workbooks. These workbooks contain questions relating to SSU processes and provide a framework for the trainees' to develop the minimum level of background required for Module 1 Stage 2. It is envisaged that trainees have six to eight weeks to complete the shadowing and these workbooks. Roux and Robertson (2009) stress that one of the challenges of internal training is maintaining the key content but making sure that it is accessible to people with differing levels of existing knowledge. Module 1 Stage 1 appears to serve a purpose in providing a benchmark of the prerequisite knowledge for the residential training of Module 1 Stage 2.

Module 2 Stage 1 requires trainees to prepare a case study on an issue, area or process that highlights a specific learning point, relevant to CSI work, to be presented orally during the Module 2 Stage 2. Those who are enrolled on the Foundation degree in crime scene investigation (see section 5.1.2) also need to submit the case study in a 2000 word essay.

Module 1 and 2 Stage 2 involve the completion of a residential training course which combines classroom lessons on specific techniques and practical exercises to help develop technical skills and confidence in crime scene work. The National Institute of Forensic Science (NIFS) (2005 in Roux & Robertson

2009), in a report on training and education in forensic science in Australia, suggested that rather than seeing education and training as synonymous, education should be viewed as an iterative process of learning to think critically and training should be viewed as a more vocational process. Using this divide, it is clear that the CSI needs both education and training in order to gain both the practical skills in forensics and to develop the investigative mindset (discussed in Chapter 8), the ability to think investigatively in the completion of their work. It is noteworthy that the training programme completed by CSIs is officially titled a Learning Programme, circumventing any potential issues relating to the terminology. Details of the issues, knowledge areas and techniques covered in Module 1 and 2 Stage 2 are provided in Figure 5.2. Module 1 Stage 2 is a five week course, and Module 2 Stage 2 is a four week course. The two residential programmes clearly cover a vast number of different areas. Time spent at the Forensic Centre is intense, with numerous practical exercises and scene examinations. This is particularly true for Module 1 trainees, who are on a sharper learning curve, with numerous new techniques to master and processes to understand. Many spend some of their free time at the Forensic Centre practising techniques until they are confident in their ability and instructors are satisfied with the quality of their results.

Stage	Module 1 (Volume crime)	Timescale	Assessment	Module 2 (Serious and major crime)	Timescale	Assessment
1	Shadowing members of Scientific Support departments.	6 to 8 weeks.	The completion of 11 question workbooks prior to attending the Forensic Centre.[26]	Prepare an oral presentation using a case study of a specific scene examination or process that raised a learning point.	None.	Oral presentation assessed at the Forensic Centre during the first week of Module 2 Stage 2.
2	Residential training course at the Forensic Centre.	5 weeks.	1 two hour written crime scene theory examination, 1 assessed crime scene examination and associated courtroom interrogation and the completion of a learning log and reflective diary.	Residential training course at the Forensic Centre.	4 weeks.	Written crime scene theory examination, assessed crime scene examination, (including a written assessment and courtroom interrogation) and the completion of a learning log and reflective diary.
3	Attend and examine crime scenes with the aid of a mentor.	6 months to 1 year.	Completion of a Personal Development Portfolio.	Attend and examine crime scenes with the aid of a mentor.	6 months to 1 year.	Completion of a Personal Development Portfolio.

Figure 5.1 Overview of the Foundation Crime Scene Investigator Learning Programme

[26] These question booklets cover a variety of topics, drawing on the trainee's experience, research and knowledge gained through shadowing members of the Scientific Support Unit. Some relate to specific departments whereas others focus on aspects of CSI work. The booklets cover the following topics: an overview of the CSI, forensic evidence, fingerprint recovery; crime scene examination: photographic department; Fingerprint Bureau; Scientific Support Laboratory; Submissions Unit; Intelligence Unit; Criminal Investigation Department (CID); and Criminal Court (either England, Wales and Northern Ireland or Scotland, as appropriate).

Module 1	Module 2
Health and safety and risk assessments at a crime scene	Welfare and stress management
Role of the CSI in the investigative process	CSI initial response to major incidents
Information, intelligence and the application of the investigative mindset	The CSI's role at major incidents
Basic forensic principles	Crime scene video
Crime scene photography	360 imaging
Low level and night photography theory	Enhanced photography skills
Injury photography	Bodies at scenes, including body recovery.
Elimination and fingerprint recognition	Blood staining at scenes
Powdering techniques	Post mortem
Physical trace evidence types	Fingerprinting cadavers.
Packaging	Document evidence and high tech crime.
Searching and tracking footwear	Sexual offences
Footwear photography	Fire investigations
Body fluids and DNA	Fire arms
Dealing with suspects, victims and witnesses	Cannabis cultivation and plant recovery
Evidence evaluation	Counter terrorism
Intelligence meetings	Giving evidence at the crown court
Drug recognitions	
Firearm recognition	
Counter terrorism awareness	
Report writing	
Statement writing	
How to give evidence at court	

Figure 5.2 Selection of lesson topics from Modules 1 and 2 Stage 2.

In the final week of Modules 1 and 2 Stage 2, trainees complete a number of assessments at the Forensic Centre and, assuming they pass all these tests and their learning logs are fully completed with learning outcomes met, they return to their respective police forces for the final stage of their training. In Stage 3, Module 1 and Module 2 trainees are mentored by a more experienced colleague and complete on-the-job learning, documented through the completion of a Professional Development Portfolio (PDP). This PDP requires the trainee to record the completion of a number of activities in routine police work and when

this is finished their mentor and staff at the Forensic Centre designate the Module as complete.[27]

5.1.1 Professional standards in CSI practice

There have been a number of standardised frameworks (external to the specific police forces in which the CSI works) against which CSIs and CSI practices have been assessed. Beyond specific qualifications (discussed in section 5.1.2), one of the most important competency frameworks was that provided by the Council for the Registration of Forensic Practitioners (CRFP). The CRFP was formed in 1999. Initially sponsored by the Home Office it was believed that with practitioners paying a membership fee, it would become a self-sufficient professional organisation (Stelfox 2009, p.131). Such an organisation was first mooted in a report by the Royal Commission on Criminal Justice (1993) which "recommended 'the professional bodies assist the courts in their task of assessment by maintaining a special register of their members who are suitably qualified to act as expert witness in particular areas of expertise'" (in Fraser 2007, p.386). Covering a number of scientific support areas including crime scene investigation, membership was obtained by evidencing that you met a number of criteria using cases from the last six to twelve months; formal qualifications, such as bachelor's or post graduate degrees alone were insufficient to demonstrate this.

Kershaw (2009) uses the CRFP as a case study of the way in which accreditation and standards more generally have been addressed in forensic science. CRFP registration had to be renewed and reassessed every four years against current competence. Kershaw (2009, p.563) provides an example of the CRFP "essential elements of competence and guidance for assessors" for the task of "scene examination". This example articulates both a general competency statement or title, "Gathering information, sorting out what the problem is, controlling and managing the scene" and more detailed notes. In this case, they take the form of questions for the assessor to consider:

> Do they gather information from all appropriate sources, both at the scene and elsewhere? Do they use a logical thought process to identify and protect the scene, assess risk and establish safe working

[27] The exception to this is when a trainee is using the Foundation Crime Scene Investigator Learning Programme as part of a Foundation degree programme (discussed in section 5.1.2). In this instance, the PDP is also moderated by Teesside University.

> conditions? Do they make an effort to evaluate the scene and formulate a strategy that best fits the situation before them? (Kershaw 2009, p.563).

Descriptors, such as the example above, provide a framework in which to discuss and understand the role of scientific support personnel and the CSI at the crime scene. CRFP accreditation or membership was, however, an optional process. CRFP allowed a registered member to place the letters "RFP" after her name and state her membership to this selective organisation in courtroom paperwork. Yet in 2009, with the NPIA withdrawing its support and suggesting that police forces do not sponsor membership for relevant members of their SSUs, the CRFP closed.

A wider framework of competence in vocational occupations emerged in the 1980s and, with refinements, has outlived the CRFP. National Occupational Standards (NOS) are defined as "statements of the standards of performance individuals must achieve when carrying out functions in the workplace, together with specifications of the underpinning knowledge and understanding" (National Occupational Standards 2013a). The introduction of NOS responded to employers' requests for vocational qualifications to clearly meet the requirements of the industry and provide a level of standardisation in the scope of training across employers. Unlike the CRFP, NOS cover a vast range of occupations, from those within the police force to engineering and construction, and provide benchmarks of acceptable and expected practice for specific occupations, with standards set and "agreed by a representative sample of employers and other key stakeholders" (National Occupational Standards 2013a). In the UK there are 30 Sector Skills Councils. Each Council relates to a specific industrial sector and identifies and articulates the specific NOS for occupations within their industry. Skills for Justice is the Sector Skills Council providing competency frameworks for occupations, including those in forensic science, legal services, the police and police officers and the armed forces. In particular, they provide benchmark requirements for CSIs in England and Wales (Skills for Justice 2014).

Like CRFP, NOS provide a means of standardising the scope of the CSI role and assessing the required competencies of a fully trained/qualified CSI. The Foundation Crime Scene Investigator Learning Programme is aligned to the NOS for the CSI. It is, however, only in the completion of the PDP that the trainee is required to clearly document how she meets the NOS for the role. The relevant

NOS for crime scene investigation are explicitly covered in the Foundation Crime Scene Investigator Learning Programme and listed in Figure 5.3.

NOS Number	NOS Title
CN301	Start the forensic investigation process for scenes of incidents
CN401	Attend and control the forensic process at scenes of incidents
CN402	Create a photographic record of scenes of incidents
CN403	Undertake forensic examinations at scenes of incidents
CN404	Package, store and transport items of potential evidence
CN601	Evaluate the forensic investigation of the scene
DA5	Present evidence at court and other hearings

Figure 5.3 The National Occupational Standards covered in the Foundation Crime Scene Investigator Learning Programme.

The NOS documented in Figure 5.3 are relevant to both the Module 1 and Module 2 training. The main difference is that in Module 2 the CSI is expected to have the knowledge, skills and ability to meet these standards in relation to serious and major crime as well as volume crime. The example below documents the first three "Performance Criteria" demanded by NOS CN301, entitled "Start the forensic investigation process for scenes of incidents":

> **Performance Criteria**
>
> To meet the standard, you
>
> 1 obtain the relevant information relating to the incident from the appropriate personnel and systems, including its location, nature and persons involved
>
> 2 determine, where relevant, whether arrangements are required to access the scene, and take the necessary actions correctly
>
> 3 assess the information you have obtained and determine correctly who should undertake the forensic examination of the scene, including whether there is the need for a coordinated response with others (National Occupational Standards 2013b, p.2)

The example above illustrates that NOS cover a wide range of activities in single statements. Although not formatted in questions, like the CRFP quotations above, they are equally vague and presuppose an understanding of the scope and requirements of the field which these standards govern. Therefore, they are difficult to apply and match to the specific skills of a particular occupation. The NOS are open to differing interpretations of acceptable practice. Nonetheless,

any set of standards is unlikely to provide a step-by-step account of working processes or expectations. The generality actually helps to capture some of the uncertainty, ambiguity and variety of work completed by the CSI, particularly the complexity involved in unpicking and articulating CSI expertise, a central issue of later chapters.

In the context of the police service in England and Wales, particularly the 43 self-governing forces, it is understandable why an overarching, standardised framework against which CSI competence can be assessed is required. Both the adoption of NOS and the NPIA Foundation Crime Scene Investigator Learning Programme appear to respond to the calls for standardisation in Touche Ross (1987) and Blakey (2000) and offer a level of continuity across the different police forces. Furthermore, having NOS for CSI work is important in the CSI's assertion of competence and professionalism, particularly in the courtroom where NOS, and when relevant having a foundation degree in crime scene investigation (discussed in section 5.1.2), are explicitly used by CSIs as a way of presenting their expertise and competence.[28] Therefore, it appears that NOS not only provide a competency framework that serves to help standardise the skills and experience necessary to work as a CSI in England and Wales but also helps to present the role as a profession.

However, unlike the optional CRFP which had to be reassessed externally every four years, meeting NOS is a requirement for all CSIs and is assessed through continued professional development by department managers and refresher training at the NPIA Forensic Centre every five years.

Kershaw (2009, p.558) suggests that the CRFP served to foreground the "essential unity of the forensic process." NOS, on the other hand, are more wide ranging, with Skills of Justice (2014) claiming that there are NOS for almost all occupations. Yet, beyond notions that the CRFP provided a consistent narrative in forensic practices, both the CRFP and the NOS offer a framework or common language against which practices can be assessed, trained and discussed (Mennell 2006). Standardised frameworks are important in articulating the key practices of an occupation. As opposed to focusing on qualifications per se, developing knowledge and using it in practice is central. Kershaw (2009) furthers

[28] In particular, it should be noted that the Forensic Centre trains CSIs to record that their occupation has National Occupational Standards in the opening paragraph of any witness statement they prepare for court.

this point when stressing that unlike other occupations "[f]orensic practice is different. It is ill suited to a first degree [...] since forensic science is applied science and demands firm foundations in a pure academic discipline" (Kershaw 2009, p.552). Reflecting wider discussions where pure science is preferred over forensic science degrees (for example, House of Commons Science and Technology Committee 2005; Mennell 2006), Kershaw's account emphasises that links are created in learning and how knowledge gained through pure science degrees can infuse forensic science training. This is a theme drawn on in the Australian CSI context, explored in section 5.2. For the current discussion on competence through accreditation, standards and membership, there is an additional option open to CSI trainees in the form of a foundation degree which, once completed, is not only limited to their work as a CSI but is a higher education qualification in its own right.

5.1.2 Foundation degree in crime scene investigation

The NPIA offers trainees, with the agreement of the trainees' line managers, the opportunity to transform their compulsory training, the Foundation Crime Scene Investigator Learning Programme, into a formal qualification. In the 1990s, this was initially a diploma in Crime Scene Investigation, accredited by and offered though Durham University starting in the 1990s. Now, trainees are offered a foundation degree, FdSc in Crime Scene Investigation, with Teesside University who accredit the degree programme and assess programme students. Teesside University is the only university partnered with the NPIA to offer this specific qualification.[29]

A foundation degree is a vocational qualification of a higher level than a Certificate of Higher Education but lower than a bachelor's degree (Ofqual 2012). The Universities and Colleges Admissions Service (UCAS), the body who manages higher education applications in the UK, state that a foundation degree:

> is a degree level qualification which combines academic study with work place learning. Designed in association with employers, they are qualifications to equip people with the relevant skills, knowledge and understanding to achieve academic results as well as improve performance and productivity in the work place (UCAS 2013).

[29] Other foundation degrees for other scientific support staff are available through the partnership between Teesside University and the NPIA, such as fingerprint examiners who can earn a foundation degree (FdSc) in Forensic Practice (Fingerprint Identification).

This combination of academic study and workplace utility is already embedded in the Foundation Crime Scene Investigator Learning Programme with its selection of training methods, focus on classroom learning and practical experience through scenario scene examinations followed by mentoring at real crime scenes through the police forces where the CSI takes up her new role. The requirements for the foundation degree differ only slightly from that of the standard Foundation Crime Scene Investigator Learning Programme (Modules 1 and 2). For the foundation degree, trainees must also write up their case study presentation (prepared in Module 2 Stage 1 and presented in Module 2 Stage 2) in a 2,000 word essay and write a 5,000 word reflective essay on professional practices in crime scene investigation. Unlike trainees who choose not to complete the foundation degree, all work, including PDPs, is moderated by Teesside University.

During my time at the Forensic Centre, the foundation degree was introduced to trainees during the first day of Module 1 Stage 2. This was normal practice. Trainees were asked to decide if they want to complete the foundation degree during their time at the Forensic Centre. At the time of this fieldwork all tuition fee costs were met by the NPIA and there were no additional costs for the trainee (or police force). All trainees signed up for the foundation degree and NPIA staff stated this was the norm at the time of my research. Approximate figures provided by the NPIA (private communication) state that 155 students enrolled on the foundation degree in Crime Scene Investigation. However, since the NPIA removed tuition fee funding in late 2011, no trainees have enrolled. Of the 155 students who enrolled on the foundation degree, 63 have withdrawn and, between September 2012 and June 2013, 17 have completed the foundation degree.

The number of trainees who enrolled and then withdrew is unusually high. A possible reason for this is that recruits signed up without thinking carefully about the reality and requirements of completing a foundation degree. This is particularly noteworthy because of the lack of personal financial cost attached to the qualification.[30] Other reasons are that trainees left the police, did not wish to progress to Module 2, peer pressure of all other students signing up and wider

[30] This change coincided with wider rises in university tuition fees in England and Wales and trainees were required to pay tuition fees themselves.

changes in their personal circumstances. In interview narratives the presence of a formal qualification, directly relevant to their occupation was important in participants' understandings of their role and expertise as CSIs. It is interesting, however, that since funding was withdrawn no student has enrolled on the foundation degree. Investment patterns within the police, as highlighted in Chapter 1, have changed dramatically over the course of completing this research. The current move away from optional qualifications as part of professional development does, however, reflect wider discourses within CSI work where experience, over qualifications and formalised training, is central in competent practice. This point is discussed in the latter half of this chapter.

Before exploring participant expectations of the training, however, it is important to take a brief look at the individuals completing the Foundation Crime Scene Investigator Learning Programme. In the next section, trainee backgrounds are discussed in order to provide the reader with contextual information about those individuals who actually examine crime scenes.

5.2 Forensic Centre participants

Module 1 and Module 2 trainees varied demographically in a number of ways. Collated during their first lessons when trainees were asked to introduce themselves to the group. Sex, occupational history and information on educational background is presented in Figures 4.4, 4.5 and 4.6. I do not have data from other cohorts, as the Forensic Centre does not gather this type of information. Centre staff did, however, comment that the backgrounds of those observed were roughly representative of CSI trainees.

Sex	Module 1 trainees	Module 2 trainees
Female	7	9
Male	5	0

Figure 5.4 Sex of observed groups.

Occupation prior to obtaining CSI position	Module 1 trainees	Module 2 trainees
Police administration (excluding CSI administration	3	
Police forensic related /CSI administration (in Scientific Support Unit)	3	2
Police Constables / Police Community Support Officers	6	
Placement / volunteer work in CSI department following university study		3
Forensic service provider		1
Law		1
Police (unspecified)		2

Figure 5.5 Occupation/area of occupation of observed groups immediately prior to obtaining their CSI position.

Educational background	Module 1 trainees	Module 2 trainees
Left school at or before 18	7	2
Higher education[31] qualification in forensic science	3	4
Higher education qualification in non-forensic science/pure science subject	2	3

Figure 5.6 Highest educational qualifications of observed groups.

Figure 5.4 documents more female trainees on both courses. Module 2 had no male participants at all. I was informed by the Forensic Centre that although the intake across both courses previously included more women, it is now becoming more even. Although Module 1 participants follow this more closely with 5 of the 12 participants being male, the absence of men on the Module 2 course is an anomaly.

No formal record of participants' ages was taken by the Forensic Centre and the age data presented in this thesis was obtained in informal conversations with some members of the group.

[31] This includes Higher National Diplomas, bachelor's and master's degrees.

I discussed the differences between the Module 1 and Module 2 participants' educational and occupational backgrounds with members of staff at the Forensic Centre, both during and after my fieldwork. For them, the classes I observed followed a familiar and expected pattern. Forensic Centre staff explained that it is now unusual for trainees to come directly from outside of the police due to budget cuts. Therefore almost all trainee CSIs have come from another role within the police. Figures 4.5 and 4.6 show that all Module 1 participants did have previous experience within the police force. Module 2 participants were recruited and had completed their Module 1 training prior to budgetary changes and this could be one reason why they have more diverse backgrounds. This difference in recruitment time and its relation to a shift to redeploying staff and filling vacancies from within the police rather than externally could also link to differences in the educational backgrounds of Module 1 and Module 2 trainees. Forensic Centre informants explained that although it is now unusual for police forces to recruit externally, this was not the case a few years ago. At that time, competition was high, with sometimes hundreds of applications for each CSI vacancy (Mennell 2006). Many police forces used forensic science degrees or any degree as an essential criterion in the selection process of new CSIs to help reduce down the number of eligible applicants. In line with this, Module 2 participants had a higher number of degree level qualifications, many in forensic science, than the more recently recruited Module 1 participants.

Kelty (2011) provides a list of essential and desirable criteria to aid the recruitment of those most likely to become top CSIs. One such essential criterion is "demonstrated policing and/or criminal justice experience" (Kelty 2011, p.201). Kelty (2011) also identified having a bachelor's degree (although not specifically in a science subject) as an essential requirement in the recruitment of the most effective candidates for CSI roles, along with an emphasis on recruiting those a little older with life experience. As documented in Figure 5.6, a far higher proportion of Module 2 trainees had bachelor's degrees - 3 had come almost directly from university via work placements or volunteering in crime scene investigation departments.

Kelty (2011) focuses specifically on the Australian case rather than England and Wales. Although this raises questions about the utility of her criteria, Australia with its similar legal system to the UK is a key site of emerging research

on crime scene investigation. Furthermore, the similarities and differences between Kelty's account (and other Australian accounts documented below) and the norms in England and Wales are noteworthy. In Australia, a bachelor's degree is often a recruitment prerequisite (Stanley & Horswell 2004). As such, this criterion is not particularly contentious. Some forces in Australia even require a science degree because employing science graduates saves police forces time and money in training (ibid.). Science graduates already know the science, and therefore "training of recruits needs only focus on their forensic application and on jurisdiction-specific processes and procedures" (Stanley & Horswell 2004, p.61). However, minimum standards in the UK vary between police forces, particularly as the UK appears to have civilianised its scientific support in a more widespread manner to Australia, where a larger proportion of forces still solely have sworn officers completing CSI work.[32]

In the UK, a House of Commons Science and Technology Committee (HCSTC) report (2005, p.45) quoted evidence stating that, for CSIs, "basic literacy and numeracy combined with good inter-personal skills are valued" with no reference to further educational or occupational backgrounds. This same report, quoting the Science, Engineering, Manufacturing Technologies Alliance (SEMTA) (2004) noted that in 2003/2004 there were 4680 staff employed in the forensic science sector in the UK and 990 in the police. Yet it also records that there has been a substantial growth in degree courses in forensic science, outstripping the available jobs in the sector. The abundance of forensic science degrees available varies in quality and relevance. This HCSTC report also quotes evidence to the Committee provided by Deputy Chief Constable of North Wales Police, Clive Wolfendale, who views "the majority of forensic courses as 'a savage waste of young people's time and parents' money'" (House of Commons Science and Technology Committee 2005, p.44). Roux and Robertson (2009, p.585), using data from SEMTA (2004), suggest that in the UK there has been a level of watering down of science content in forensic science degrees. Although The Forensic Science Society (FSSoc), the professional body for Forensic Practitioners in the UK, does accredit certain forensic science courses as relevant to certain occupations (including Crime Scene Investigation)

[32] Due to the structure of the police in the UK, the actual parameters of the CSI role are not uniform across all police forces. There is no existing research that explores these differences. Nonetheless, it is important to acknowledge the complexity of comparison within nation states as well as across national borders.

or certain aspects of practices in forensic work (such as evidence interpretation, evaluation and presentation), whether a course is accredited by the FSSoc is often not considered when assessing job applications (Mennell 2006). This point, in particular, highlights an interesting but alarming juncture between skills and requirements as defined within the forensic science industry and how they are enacted within police forces. Although unable to find information on whether this is still the case, as of February 2014, FSSoc (2014) accredits 69 higher education courses, 49 at bachelor's level, 20 at postgraduate level. All qualifications except one bachelor's degree are offered in UK Higher Education institutions. Of these courses 61 are accredited for crime scene investigation and all courses meet the criteria in "interpretation, evaluation and presentation of evidence."

However, these accounts raise questions about the nature of CSI work – is crime scene investigation scientific work and should we view the CSI as a forensic scientist? Mennell (2006) and Roux and Robertson (2009) in particular, present a view of the CSI and CSI work, or at least the future of the CSI and CSI work is viewed as *becoming* more scientific. According to these accounts, expertise and knowledge of the science and scientific process will become crucial. However, as highlighted in Chapter 6 and Chapter 7, scientific expertise does not appear central in *contemporary* CSI work and candidate selection.

The present discussion on the qualifications available to students and differences between supply and demand in forensic science degrees does not, however, take into account other industries or occupations. There is no evidence to suggest that the way demand outstrips the number of available vacancies is a phenomenon limited to crime scene investigation in particular or forensic science in general. Nonetheless, getting a CSI job is difficult and working for the police already is a good starting point. Amy, a CSI from the north, single and in her early thirties, recounts that seven years ago, well before the current budgetary issues, she was advised to initially try and obtain any job within the police:

> I went to a careers open day at the local memorial hall and they had a forensic stand there. I spoke to a lady and she said that the best thing to do is to try and get a job within the police because this was before the days where you needed a degree to be a CSI, you just needed an A level. So they actually advertised two posts at the same time. One was working in the DNA bureau that was just processing information, data inputting. The second one was a CSI admin assistant which she advised me that if I wanted to be a CSI this one would be more

> beneficial because I would get the chance to go out with them to the crime scenes. So that's where it all started. (Amy, M2, first interview).

Karen, a mum of four from the south-west, was already working for the police when she decided that she wanted to be a CSI. In order to meet the educational prerequisites of CSI vacancies demanded by her police force, she completed a further qualification, as she explains:

> A job came up [as a CSI a while ago] but I realised that I couldn't have applied for it anyway because you had to be qualified to HND level as a minimum. Well I left school at 16 and I didn't have any of it[…] I thought I'd like to do that job but to apply for it meant that I'd have to get qualified to that level which is quite a lot of work. I didn't want to waste my time if I hated the job so I had a 6 week attachment to the scenes of crime department, which I loved[. ..A]s a result of that I did a three year Open University diploma which I finished, luckily, last year which meant I could then apply for this job. So [I've been] interested in the job for a long time[. …O]ne of the reasons for taking that job [*points at map*], the Investigative Support job which I loved […] was because that put me in a better position to apply for this [CSI] job (Karen, M1, first interview).

Karen's journey is presented in the map that accompanied this interview (see Figure 5.7). Juggling work and a young family of five, Karen had a number of minimum wages jobs after leaving school at 16 and prior to starting with the police. She spoke quote openly about feelings of guilt for not spending more time with her children and how hard and satisfying it was getting back into studying whilst holding down a fulltime job. Once joining the police, however, it was nine years before she started her CSI training, with over four of those years completion of her Higher National Diploma as well, just to enable her to meet the eligibility criteria involved a long-term effort, on top of best positioning herself within the police force. Amy also highlights that it is not just about taking any job in the police but those that clearly provide skills relevant to CSI work that are important when positioning oneself to applying for a CSI vacancy. This, however, did not guarantee her a CSI job when one became available. Karen mentioned during other conversations that there were at least 125 applicants for the job she obtained. The need to develop skills and knowledge within the police that are relevant to CSI work was central, yet there was still substantial competition for the role. This was only the beginning of their journeys. Once a CSI position was obtained, participants needed to learn how to be a CSI and do CSI work. Both before and during their training they developed expectations about crime scene investigation and the utility of certain training methods over others. Having

explored the structure of the Learning Programme, professional standards in CSI work and the background of my participants, it is to these expectations that I now turn.

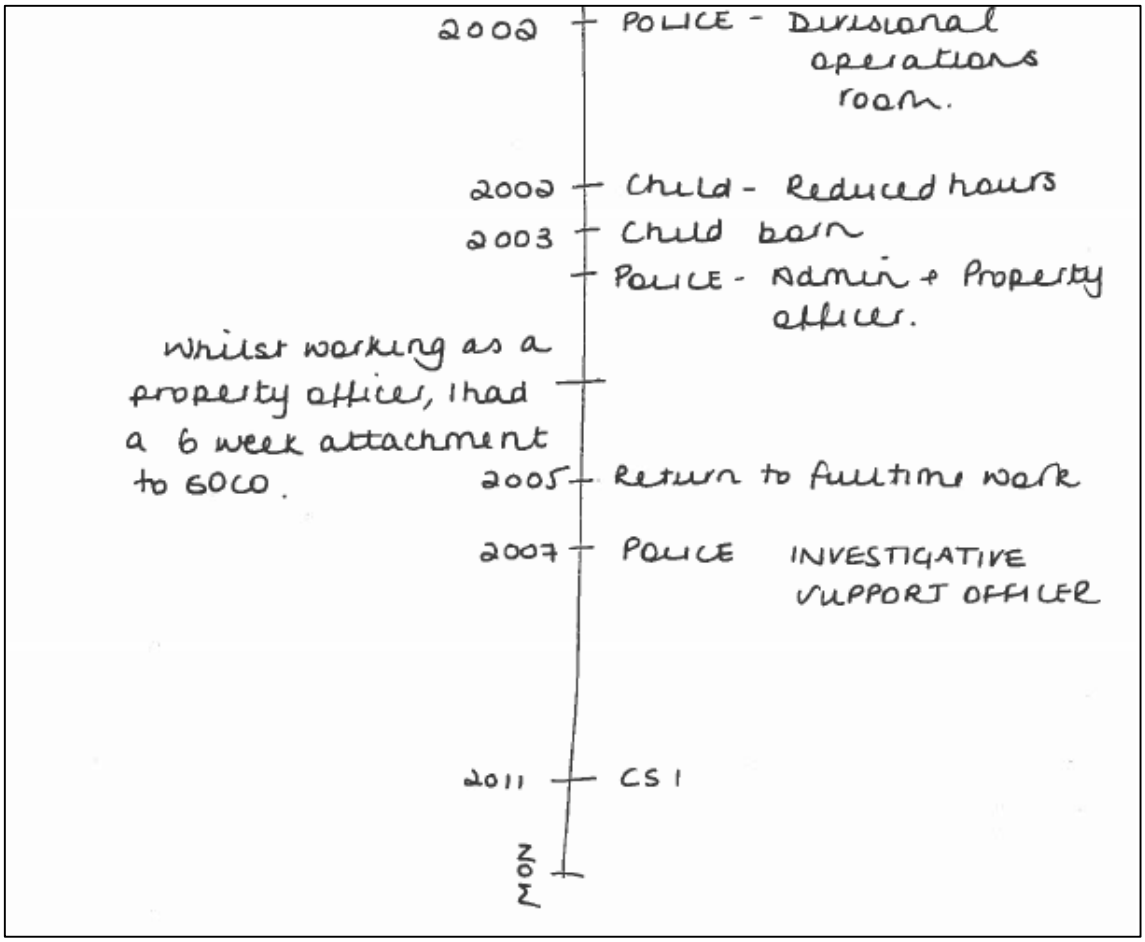

Figure 5.7 Detail of Karen's first map covering her time working for the police.

5.3 Participant expectations and experiences of the Foundation Crime Scene Investigator Learning Programme

Although there are no existing studies of CSI training, accounts of police officer training have used terms such as ‘anticipatory socialisation’ and ‘reality shock’ when considering trainees’ experiences. Anticipatory socialisation, first introduced by Merton and Rossi (1949) occurs earlier than organisational socialisation and is “the process through which individuals prepare themselves for police work prior to entry into the organisation [and] can involve a variety of preparatory activities: information seeking, academic studies, physical training, or simply gaining life experience” (Chan et al. 2003, p.62). More than this, it is the adoption of the norms and behaviours of a group an individual has yet to properly join. Described by Chan and colleagues (ibid.) in their study of

Australian police officer training, “once they have made the decision to join the police, applicants begin a subtle process of adjusting their physical and attitudinal characteristics to those which will be expected of them”. These gradual changes occur both before obtaining the role and throughout the training process.

Whereas anticipatory socialisation is a process whereby the trainee actively prepares for entry into a specific social group, ‘reality shock’, attributed to Hughes (1958), is a reaction to the actual demands of the work and training and, in particular, whether trainees’ expectations of the role are accurate. Chan and colleagues (2003) highlight that the first point where police officer trainees are likely to experience reality shock, dependent on the accuracy of their expectations, is when they arrive at the training centre.

Although Chan and colleagues’ (2003) study was of police officer rather than CSI training, it provides a meaningful comparison when considered in relation to the training structure (including both classroom and on-the-job training processes) and location (within the police service). Both police officers and CSIs are ‘front of house’ jobs, interacting with the public and publically visible. Therefore, although not a like for like comparison, Chan and colleagues’ study provides a potentially meaningful backdrop to assess participants’ experiences in the Foundation Crime Scene Investigator Learning Programme.

For my participants, particularly those on the Module 1, who were all employed by the police prior to obtaining a CSI position, much of the socialisation (at least in terms of the police occupational culture) had already taken place. They brought with them a collection of frames and example cases to draw on in their sense making. Furthermore, they were aware of the organisational structure and some of its idiosyncrasies. As discussed above, the majority of participants spent time researching CSI work before applying for their CSI role - some even attended crime scenes. Karen asked to complete a secondment in the CSI department and others talked, at length, to active CSIs. Being within the police force meant it was easier to obtain information from CSIs about their *actual* work rather than relying on hearsay or media representations. Most importantly, I met Module 1 participants in Module 1 Stage 2 of their training and Module 2 participants after they had completed Module 1 and Module 2 Stage 1. Therefore, trainees’ existing experiences of working for the police, research into the CSI role and the completion of Module 1 Stage 1 (or the whole of Module 1), appears to

have helped align their expectations to the realities of both the Foundation Crime Scene Investigator Learning Programme and CSI everyday work. As such, it is possible that the dominant frames were already engrained in participants' understandings before my first contact with them.

This alignment of knowledge could be one of the reasons for participants' speaking very positively about Module 1 Stage 2 while at the Forensic Centre and the instructors' delivery of classes. Even after a number of weeks at the Forensic Centre they remained upbeat about the utility of the scenario and classroom training in the completion of their role. This continued throughout the second stage of Module 1. Yet, similar to Chan and colleagues (2003), when they returned to the Forensic Centre after working as CSIs (for Module 2 Stage 2 training) and/or spent time completing the CSI role at real crime scenes, my participants' perceptions of the Forensic Centre Learning Programme had changed. They were more critical of the 'real world' (as they referred to it) utility of some of the training they received, as Jo and Amy display:

> I am not 100% convinced about the training but it's a new thing [having the training divided in Module 1 and Module 2].[33] Now you come having done work-based learning and you have a mentor and you do your Personal Development Portfolio and you come initially on your Module 1s having had three months in force and having learnt a lot of the basic things. So, when you come here you don't necessarily learn you sort of refine your skills and it was, I don't really know how successful I think that is because as you've probably realised, the forces are so different that everyone will come with their different levels of experience having learnt different things and that it doesn't make for a very uniform CSI because everything is so different here and we are told to do it your own way anyway so I'm not convinced how successful the courses are. I mean, I'm sure everyone's a good CSI but I'm not convinced that it's the course, I think it's the work-based learning that you learn the most from (Jo, M2, first interview).

> A lot of the scenarios and situations that we are given here are idealistic. If you speak to anybody else you'll find that a lot of the equipment that they've got [at the Forensic Centre] you don't have when you go back in force. So, the situation around tripods, you probably find that when you go back to force, you don't use tripods as often because […] you've probably got one tripod for each office, so you haven't always, regularly got it in your van. (Amy, M2, first interview).

[33] Previously CSI training was delivered through one Learning Programme which covered volume crime as well as serious and major crime. This single course included a nine week residential training programme completed at the Forensic Centre.

Jo was never afraid to speak her mind. In her mid 20s and from the Midlands, she originally wanted to be a Police Community Support Officer (PCSO) but started, instead, in a crime scene investigation department. Headstrong and confident, she dismisses the Forensic Centre in part as a site of learning. Instead, it is place where skills are refined rather than learned and, due to the differences in practices between police forces, she is sceptical of the utility of this training. The Forensic Centre instructors, as Jo states, acknowledge these differences between forces. Amy documents them through her emphasis on the crime scene scenarios (and ways of examining them) as "idealistic". In particular, she notes the differences between the equipment available at the purpose built, well-funded, training facility and the limited supply of even basic items such as tripods in her police force.

In these accounts best practice appears as the pinnacle of practice. Yet this pinnacle is out of reach in everyday work. It can be seen but not embodied or enacted. Although this was routinely accepted and criticised by participants, what was left unexplored was where acceptable practice stops and unacceptable practice starts. This is a point I will return to in Section **Error! Reference source not found.**.

Not all the narratives were negative, however. Interviewees identified specific points that were useful from the Forensic Centre curriculum. One of the most frequent replies related to note writing and the importance of making detailed notes at the crime scene. Another frequent response was the importance of learning about how to package items from the crime scene, as Lucy explains:

> I hate being faced with an exhibit which isn't obvious and easy to package and without [the Forensic Centre's] input I would have been floundering. But to be honest, every scene is different and there are no two scenes that are ever the same so it's all very well having the basics and the foundations but until you're there and by yourself and know the background and everything else, it's really sort of like, I suppose what I learned at the NPIA I'm pulling from the back of my brain, the depths of my memory but it's not an instant, oh yes, I remember doing this, I have to now do this method. You know, it's not as simple as that but it's just that investigative mindset. I'm really bad for walking straight in, powder out, and chucking it everywhere and saying, there's a fingerprint on there. The NPIA made me take a step back and perhaps ask a few questions and get a better idea of what's going on before charging in. Other than that I can't really think of anything. (Lucy, M2, second interview)

Lucy highlights two key areas where participants felt the training was particularly useful: note writing (documenting the scene) and packaging. These elements were seen as key to the routine completion of their work. Beyond these rote-learned practices, for Lucy in particular, the claimed uniqueness of every crime scene means that developing the investigative mindset or investigative aptitude is most important and this is something built up through actually *doing* the job:

> **DW**: What were the most useful points you took away from your first visit to the Forensic Centre?
>
> **Karen**: I think probably the basic stuff. To have knowledge of the basic stuff was obviously quite handy and I think until you start to get out there and start doing it and put it into practice is when you learn the most, so I suppose it was like the underpinning knowledge but probably the most knowledge comes from actually doing the job I think really (Karen, M1, second interview).

For Karen, "the basic stuff" encapsulates the formally learned items addressed above, such as the correct powders for different surfaces and packaging practices. Like other participants, Karen prioritises experience over the knowledge gained in the formal training environment. Yet whereas Karen focuses on the importance of doing the job, other interviewees made clearer statements about some of the issues presented at the Forensic Centre through the emphasis on collecting, packaging and recording anything with the vaguest of relevance to the investigation. As Lucy states below, this left her lost when she examined her first scene in the 'real world':

> It was difficult because the Module 1 didn't actually tell you what to do at a crime scene. It didn't tell you that you arrive, then you assess and then you do this. It wasn't a step-by-step guide which I suppose was good and bad because on the one hand it was bad because you really didn't have a clue what you were doing and it took a lot of time and effort to try and figure out what you are supposed to do but on the other hand it made you think for yourself. So it was useful, but the techniques and stuff I'd done by myself at uni and you know, being out with other people. The photography was invaluable […] I hope I've taken the good points and used them (Lucy, M2, first interview).

Lucy, the youngest Module 2 participant at only 23 and who had a bachelor's degree in forensic science, highlights one of the key roles of the Forensic Centre - it provides the safe environment in which trainees can practice and become competent in a number of processes - from the use of the photographic

equipment and the photographs a CSI should take to the correct powder to use when dusting for fingerprints on certain surfaces. Lucy states that the Forensic Centre training did not tell her "what to do at a crime scene". Trainees are presented with numerous techniques and processes to master as well as procedures one should follow in the course of a scene examination. What Lucy highlights here, however, is not that the training did not tell her what to do at a crime scene but what to do at a *'real world'* crime scene. Whereas the Forensic Centre requires trainees to examine and record the crime scene in great detail, often taking a number of hours at a time, this emphasis on detailed recording does not provide trainees with the necessary knowledge to judge what must and what need not be done at a scene for it to have been examined competently. These accounts document the previously mentioned difference between best practice (as presented at the Forensic Centre) and practices deemed acceptable or good enough in everyday work. Although trainees have the support of a mentor after they complete Stage 2 of their respective Module, the ambiguity surrounding crime scene practices at actual crime scenes was particularly clear in Matthew's account of his first job:

> The biggest shock for me was that the first job I went to I was sent to and 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, M1, second interview).

Softly spoken, Matthew was not adverse to pressure or uncertainty. As a former, semi-professional footballer he was used to making split second decisions and dealing with the consequences. In this account, however, he highlights the difference between expectations and the increased decision-making at an *actual* crime scene. Faced with more decisions than in previous cases, he was taken a back. Not only must he package items correctly and accurately complete scene attendance paperwork but, more so in the 'real world' environment, make decisions about what may or may not be potentially meaningful from an investigative perspective at this early stage. At the Forensic

Centre the need for these decisions was much smaller. Instead, trainees were expected to identify, record and package as much potential evidence as possible.

Negativity towards classroom/scenario based learning, particularly on returning to this type of training environment after gaining experience in the 'real world' is reported in accounts of police officer training (such as Chan et al. (2003). Chan and colleagues (2003, p.9) state that '[o]perational police culture tends to undermine formal training'. Nevertheless, as demonstrated through the participants' narratives above, trainees actively engage in the process of learning and adapting to fit into the occupational environment of their police force. Matthew highlighted this divide between Forensic Centre practices and working in the real world by likening it to learning to drive:

> It's like when you do your driving test. You learn how to pass your test and then you learn how to drive and for me, you learn how to get through the Forensic Centre and then you, inevitably, which I noticed a lot going back this time, there were 9 of us from 4 or 5 different police forces and we all had different ways of doing things and you can't really say the Forensic Centre way is wrong but you can't really say that my force way is right or wrong. (Matthew, M1, second interview)

This comparison to a driving test clearly encapsulates the emphasis on results rather than process in 'real world' crime scene investigation, discussed further in the next section. Matthew's account displays the heterogeneity of practices in 'real world' crime scenes. Therefore, although participant expectations of the training and the role overall seems similar to reality, the divide between Forensic Centre and 'real world' crime scene investigation provides trainees with their first taste of the ambiguities inherent in the completion of CSI work.

5.4 From compliance drift to practice

Forensic Centre instructors acknowledged the divide between practices at the Centre and practices at 'real world' crime scenes. In fact, they stated during the training that they were teaching 'best practice' but only 'competent practice' is expected at real crime scene. The different between the two, however, was left undefined. More significantly, the line between competence and incompetence was never discussed. Although competence is linked with the NOS and Forensic Centre training, learning to strike the right balance is of paramount importance in facilitating the completion of CSI work within the limits of equipment and time at

'real world' crime scenes. These considerations are clear in the narratives of the more experienced trainees completing Module 2:

> It's really hard and sometimes you probably get it wrong and sometimes I do probably get it wrong because you know and you are there and you do what you think's right at the time […] I guess sometimes I've been wrong. I don't know but you just do that sort of thing in terms of making it a bit easier on the time constraints so you make that sort of decision. It's very like, ad-hoc and you kind of look at your evidence as a whole and what else you're going to recover from there and if you've got seven million footwear marks all over the kitchen floor, you know at the Forensic Centre, you would recover all of them but at your burglary scene you decide in your own head which one you think has the most detail in and you recover that one. If there are a billion fingerprints you can't recover them all so you decide which ones are going to prove the most so usually you go for the fingerprint furthest in to the room and you go for the one with the best detail. You kind of make decisions and hope for the best. This helps you in terms of time and just generally bending the rules as much as you can. I know some SOCOs who have completely different ways and they know people who work completely differently to me and I've been out with them and I've been oh my god why would you do that but that's just how people work and if it works for you then you know. I think sometimes people bend the rules loads and sometimes I think people are a bit too sort of stringent but it's just you learn the more you go to scenes and the longer you've been in the job, I think you just learn and learn and learn. I think that's the best way to be a SOCO and grow and, in a way, keep making mistakes and then you know for next time (Jo, M2, second interview).

Jo highlights a number of key points: the varied practices of different CSIs; an acknowledgement that she might make mistakes; and the need to bend the rule in order to meet the organisational demands placed on the CSI. Even though the practices of identifying, recording and packaging artefacts at a crime scene are reasonably standardised, the decision-making processes about what is and what is not packaged, when scene notes are written, what questions victims and witnesses are asked, and in particular, what is *not* done at specific crime scenes, are not discussed in detail either in the training or in participants' narratives. It is only through accounts of the differences between the Forensic Centre and the 'real world' that the need to adapt processes becomes so apparent.

Notions of context are useful justificatory tools for the decisions CSIs make. These are also present in wider accounts of scientific support's role in police work. Fraser (2000, p.129), utilising gap analysis (a process whereby "the gap between what is known (or can be proved) and what is required" is examined)

suggests that the following questions are relevant in "[d]efining investigative needs":

> What do I need to prove?
> What do I need to eliminate?
> What do I need to corroborate?
> What standard of proof is required? (Fraser 2000, p.129).

Although these are a useful starting point and these question appear to structure some of the CSI's crime scene decision-making, (discussed in the following chapters), helping to identify what needs to be done at a crime scene is not the same as providing a categorical list of what can be ignored at a crime scene. Therefore, throughout the Forensic Centre Programme and routine CSI work, there is an ambiguity surrounding what is and what is not acceptable in the 'real world'. Discussions of how to navigate this divide successfully rely on a vague notion of individual judgement that was neither clearly explored at the Forensic Centre nor explained by participants without a singular reference to experience gained in the 'real world'. Even within the framework, as documented by Jo above, individual CSIs complete the role and its component processes in different ways. Doug was the only Module 1 interviewee who acknowledged these differences in the first interview. Unlike Jo, Doug saw developing his practices as a case of adopting those of his more experienced colleagues:

> It will be a case of, obviously, when I go back, I'm going to have somebody who's going to mentor me. Now the lad I'm going back to has been a CSI for, what, 15 years 16 years, so if he doesn't know it now, then you know. He might go on a course and find out he's doing things complete wrong and change his way but if it ain't broke, don't fix it and if he's doing a good working practice and it's been accepted for all these years then I'd have to adopt his (Doug, M1, first interview).

Bearing in mind that after their time at the Forensic Centre trainees attend 'real world' scenes under the watchful eye of an experienced CSI who is responsible for signing the trainee off as competent, this adoption of non-Forensic Centre methods is understandable. By observing the practices of colleagues and their assessor, they learn the shortcuts that allow the more experienced actors to master what they view as the contradictory expectations of best practice and getting the job done efficiently. For other participants, these interactions with more experienced CSIs develop their understanding of potential sources of forensic information:

> It's that level of knowledge and definitely if I go out with [names of mentors] who've got years and years of experience, they do things that wouldn't even occur to me[. T]hey say stop there because in front of you might be this or this which I wouldn't have thought about because I haven't got their expertise of experience I suppose. (Karen, M1, second interview)

Participants and the existing police literature place so much emphasis on experience (over formalised learning). For Karen and others, the time she spent with a senior colleague helped her think beyond Module 1 Stage 2 and develop expertise and confidence at real world crime scenes. Doug envisaged that this time with an established CSI would result in him changing his practices, placing those of colleagues above methods trained at the Forensic Centre. Yet with the acknowledged differences between the police forces in the UK in terms of procedures, structures, job titles and computer systems, it is hardly surprising that local CSI practices are accepted by these actors over and above Forensic Centre doctrine.

Linear, received views of the link between knowledge and practice are rife in professional training (Cook and Wagenaar 2012). They do not acknowledge, among other things, the way that multiple, competing rules and processes are being enacted at the same time. It is not simply about applying rules and this being the end of the process, it is only the start (Wagenaar 2004). Rules interact with other rules (Cook and Wagenaar 2012) and require further agency. These sources of ambiguity are a hurdle the CSI must overcome at each crime scene. What is particularly interesting here is that the CSIs viewed the Forensic Centre training as part of a linear one-way conception of the relationship between knowledge and practice while simultaneously deconstructing this relationship by suggesting that experience is central. Whether this links with pre-existing sense-making frames devised and solidified in their time with the police force either as part of Module 1 Stage 1 or, in the case of all Module 1 participants, their time working for the police before starting their CSI role, is unclear. What this does suggest, however, is that the Module 1 Stage 1 may help remove dominant frames from outside of the police but potentially serves to reinforce common frames from within the police, such as this way of making sense of training in general. Trainees, instead, see experience and the process of actually doing the job as central in negotiating the divide between acceptable and unacceptable practices. As such, and in line with Cook and Wagenaar (2012) and Schön

(1983), practice itself becomes a *site of* learning and knowing and not the *result of* knowledge enacted.

Beyond force differences, interviewees' narratives emphasised the distinct or extraordinary nature of CSI work. This was often done by presenting crime scene investigation as distinct from other occupations (although not specifically within the police force). For example, as Lucy states "every scene is different and there are no two scenes that are ever the same" (M2, second interview). Individualising of practice is a normal part of practice because it requires unique decisions (Schön 1983), even if it may appear similar to previous cases. Particularly when asked about typical working days, each interviewee told me that every day is different. For many this apparent variety was an important part of their decision to pursue a career in crime scene investigation. This constant difference, however, was not evident in my own experiences observing on a Crime Scene Investigation department. Although CSI work involves numerous variables such as type of crime, location, victim and so on, a CSI's working day follows a reasonably predictable pattern. Nonetheless, these claims of the extraordinary nature of CSI work reflect the wider literature on police officer accounts of their roles. Bayley and Bittner (1984) recount the assertion of police officers about the dangerous, potentially life threatening nature of routine police work. Bayley and Bittner demonstrate how these claims of danger or of unpredictability are often used to justify an emphasis on experience based learning, above classroom training. Seeing the classroom learning environment as a site where a paradigm of the 'science of policing' is taught and perpetuated, against the experience based paradigm where policing is seen as a craft, they argue that the two are not incompatible, highlighting "that it is contradictory to say that although every situation is different, experience is crucial" (Bayley & Bittner 1984, p.47). The practice literature, here, however, allows us to see the importance of this statement, not in terms of experience providing a perfect fit for dealing with the unique or new. Instead, however being able to frame and reframe the problem in a way that can be responded to by the practitioner and acknowledging the need for reflection-in-action (Schön 1983) on the problem. The ability to reflect, reframe and practice in the context of crime scene investigation is developed over time, particularly in terms of the confidence to follow and trust one's own practice in such contexts.

Due to the wide parameters of the CSI role, CSIs could be faced with a variety of situations in the course of their working day. For Emily, knowing when she's out of her depth is important:

> [T]hey know that if I do have any problems, I'm quite happy to pick up the phone and ask for help or advice. I'm not ashamed or worried to do that. I'd rather ask a silly question and be told you know the answer and get on with it than not ask it and be doing something wrong. (Emily, M2, second interview).

In the quotation above, Emily, a nervous woman in her late twenties, explains the circumstances surrounding her mentors signing off her Module 2 training as complete. As she states, knowing when to ask for advice is important and central in accounts of competence, beyond frameworks of standards such as NOS.

In their quantitative study of forensic scientist competence, Doak and Assimakopoulos (2007) highlight the importance of 'communities of practice' in the development of laboratory expertise. Defined as "relatively tight-knit groups of individuals engaged in a shared practice who know each other well and work together directly" (Doak & Assimakopoulos 2007, p.202), communities of practice encapsulates the interactions that take place between those of more and less experience in laboratory routines. The term conceptualises the way junior laboratory scientists acquire the tacit knowledge required from more experienced colleagues to complete their job competently. Doak and Assimakopoulos' account documents the significance of these networks in the routine completion of forensic laboratory work, stressing the significance of verbal communication skills as well as embodied forensic practices. This 'interactional expertise', to use Collins and Evans' (2007) typology of specialist expertise, facilitates the sharing of knowledge, beyond written protocol, highlighting the "intricacies of tacit knowledge exchange" (Doak & Assimakopoulos 2007, p.206).

This significance of interactions with, and advice from, the more experienced is presented in participant narratives above. However, it should be borne in mind that rather than minor adjustments to detailed and peer reviewed processes to obtain a result, in CSI work participants talk about these interactions in terms of valid processes and the parameters in which the CSI can exercise freedom in what is done at a crime scene. This side of their personal development occurred in the third stage of the training (through the guidance of their mentor) and after this time through trial and error. Communities of practice, however, is a

problematic term. Learning any practice involves both continuities and discontinuities (Nicolini 2013), things that are familiar and things that are alien, things that fit well with existing practices/understandings and things that (appear to) contradict. Although it does help us view learning as a social, communal process rather than a solely psychological one, it still embodies the received view. Communities of practice are one directional. Knowledge is disseminated from above by the more experienced. It is not necessarily about learning *in* practice but learning through listening. There is a power imbalance and it conflates community and practice when, as Nicolini (2013) state, it is simply practice. It is just one of the many ways that we develop practice but articulating it in such a way stilts our understanding. Talking more broadly about practice, Nicolini (2013 p.81) highlights that "[b]y entering a practice, a novice doesn't just assimilate new competences but also confirms, sustains, and reproduces the social order that sustains it," power is situated in all actors and not just those disseminating the knowledge as inferred in communities of practice. Therefore, I agree with Nicolini (2013) when he suggests that the term 'communities of practice' should be retired. This is also true of another term, present in the police studies literature, 'compliance drift'.

In his study of homicide investigations, Innes (2003) puts forward the notion of 'compliance drift', which:

> refers to the way that when working under pressure on long-running cases deviations from standard practice creep into the work of detectives. There are several causes of compliance drift, but essentially they all result from the perceived need of detectives to maintain the investigative system's efficacy when it is under strain. Compliance drift involves individual officers making adaptive responses in their working practices that circumvent various forms of standard procedure and regulation in order to reduce the pressure being experienced. […S]uch innovations can become rapidly accepted and normalised in the work group (Innes 2003, p.259).

Innes emphasises that these are not malicious acts and provides the example below to contextualise the concept:

> I went off and after digging around I got a good lead and I went back to [SIO name] and showed him what I had. I said to him look give me a couple of officers, I know who I wanted for this not people who were going to mess about, anyway just give me a couple of officers and I reckon we could crack this. But [Office Manager's name] was there saying 'oh you can't do that we've got to follow procedure and put it through HOLMES'. I said to him 'Don't be bloody stupid, by the time

> it's gone through there they'll have cleaned up after themselves and got rid of anything connecting them to the crime. We need to act now if we're going to get them.' To his credit [SIO name] listened to me and anyway we turned up at the address and there's he stuff there in the kitchen cupboard (Innes 2003, pp.260–261).

As Innes (2003, p.261) highlights, the significance of this concept of compliance drift is in the way that it signals that "in principle, compliance with formal procedure is not absolute, thus allowing them to conceive of the utility of adapting their practices". This is important when budgetary considerations and the need to provide results are emphasised. In the example above, protocol does not only appear to hinder the investigative process but appears optional, setting a precedent for future investigations and other members of the investigative team.

Compliance drift may provide a useful framework in which to understand the line between best practice and acceptable practices in participant narratives as not wholly negative. Practices evolve and change over time. Shortcuts are identified and utilised, not as acts of deliberate malpractice but as organically developed extensions of processes at times when other pressures appears to take precedent over normal practice. Compliance drift may also help acknowledge the way these amendments to standard protocol, shift from being used in one exceptional case, to becoming normalised, and routinised in work. In addition, however, it serves to mask the sense-making and expertise enacted through practice.

The line between compliance drift and overt malpractice is predicated on an understanding of the parameters of acceptable practice from police and external (namely the courtroom) audience perspectives. Compliance drift is a useful way of conceptualising *trainees' understandings* of shifts in their practices away from the frameworks taught and expected at the Forensic Centre. It is their way of acknowledging the duality of best and competent practice in the way that routine scene examinations are completed. In contrast to trainees' understandings, however, this term does not adequately frame the way practices at the Forensic Centre and in the 'real world' differ. Compliance drift acknowledges a particular difference that was required in a precise case (and with specific, definable reasons which then becomes natural or normalised in everyday practices). Although not deliberate malpractice, it is against formal protocol. In contrast, the Foundation in Crime Scene Investigator Learning Programme helps facilitate an understanding of how to complete CSI work in the 'real world'. Participants start

their CSI job with an understanding of their role, practices and a selection of frames developed from their own experiences. Module 1 Stage 1 helps realign these frames and understandings so they are more police specific. Modules 1 and 2 Stage 2 provide the skills necessary to practically accomplish the material practices of CSI work as well as an understanding of what best practice involves. Modules 1 and 2 Stage 3, however, occurs in their respective police forces and at real crime scenes. Trainees examine these scenes both individually and with the support of an experienced CSI mentor. In this stage they develop skills to *practice* crime scene investigation beyond the specific processes learned in Stage 2. They learn *how* to reflect-in-action and reframe crime scenes in a way that means they can complete their role with within the institutional parameters beyond their control. This is all a process of negotiating the uncertainty of everyday practice. These interactions with, observations of and experiences of the time spent with their mentors in the field provide a site in which they can tacitly and, at points, explicitly begin to develop the decision-making capabilities to answer the ambiguous question: how much should I do at *this* crime scene? The answer to this question is presented in the detection statistics and the results of both the wider investigation and in the meaningful information ascertained from the scene (or after further analysis). As such, there is no clear definition of what acceptable or competent practice is in relation to best practice. The NOS for the CSI role provide details of what 'competence' in specific situations entails but like any standards, these are broad, inclusive and do not provide the details necessary to identify the boundaries of acceptable practice. Instead, it is the CSI who actively engages in identifying and enacting what is required at specific scenes and areas where flexibility is possible. This is particularly important with institutional pressures to complete numerous scene examinations within a fixed period of time. By including Stage 3 as a clearly delimited part of the Learning Programme and the instructors openly acknowledging that there are ways things are done at the Forensic Centre and they may vary from how work is completed at 'real world' crime scenes, these differences are cemented and placed in an accepted space where alterations to trained protocol can occur and enter everyday work. Whereas in Innes' account compliance drift suggests an inadvertent, not necessarily malicious, institutionalisation of malpractice, in CSI work, it is not malpractice but the acquisition of the skills required to complete CSI work within the institutional confines and competing requirement of the

contemporary police force. CSI work is everyday practice. Compliance drift focuses our attention away from what is actually happening to suggest that the normalisation of different practices over others is more important than the multiple and minute negotiations taking place in routine practice. Rather than focusing on the ways in which practices divert from protocol, I suggest we look more at *how* they differ, not in terms of the similarities and differences but the processes through which the differences happen. If we view practice as a knowledge production process in its own right, it is clear that compliance drift blackboxes the most sociologically interesting aspects of the normalisation of different practices. For these reasons, compliance drift should also be retired and replaced by a notion of practice.

However, this accepted space for expertise and acknowledgement of the flexibility in CSI practices at the crime scene does not extend to the requirements placed on the forensic artefacts the CSI creates at and takes away from the crime scene, such as exhibits, written documents and photographs, discussed in detail in the following two chapters. The Forensic Centre provides an environment in which trainees can hone their skills in specific areas, namely packaging, photography and documenting practices, and these are the processes that are most easily audited. Although the negotiation of best and acceptable practice is practically accomplished in the decisions they make at the crime scene, there is little room for deviations from best practice in the production of the objects of scientific and legal scrutiny.

5.5 Discussion: Negotiating ambiguities in routine CSI work

In this chapter I have provided an account of the Foundation Crime Scene Investigator Learning Programme, undertaken by CSIs in England and Wales. By detailing the contents and structure of this course, I present the reader with an account of the ways in which participants both are presented with and learn to meet best practice principles in crime scene investigation and learn to complete their CSI role in the operational police environment. Qualifications such as the Foundation degree in Crime Scene Investigation and the presence of NOS serve as one means of evidencing expertise and the professional nature of their role.

Participants demonstrate a shift in understandings and perceptions of the Learning Programme over the course of its completion, resulting in a critical

reflection on the sterile, 'unrealistic', Forensic Centre environment. Yet the Forensic Centre is not a realistic environment and although in part it attempts to provide reasonably accurate and varied experiences for the trainees to gain, its purpose as Stage 2 in a three-stage process is to develop specific skills in the performance of crime scene investigation. Using the onstage/backstage language of Goffman (1959), the Forensic Centre Learning Programme allows CSI the time backstage to acquire and hone the practice-based skills required in their occupation. In particular, the development of proficiency in the completion of the material practices of crime scene investigation (discussed in Chapter 6 and Chapter 7). Stage 3 occurs onstage, allowing trainees to apply the technical skills and knowledge obtained in Stage 2 in real crime scenes, performing their role as a CSI, refining and developing the tacit knowledge and expertise in examining a scene for only the most meaningful artefacts and information in practice. Whereas trainees saw this as a compliance drift, an inadvertent but later routinised move away from best practice, I have argued that the Learning Programme clearly facilitates the different ways CSI work is completed in the Forensic Centre and in the 'real world'. Compliance drift is unhelpful in understanding practice. It blackboxes what is occurring and I suggest, as a term, it should be retired.

The Forensic Centre is important because it provides a safe environment in which trainees can develop the knowledge and tactile skills to complete the auditable techniques and processes of their role. However, the investigative side, discussed in more detail in Chapter 8, which allows trainees to make decisions at the crime scene is developed further through experience at real crime scenes and conversations with more experienced CSIs, reiterating an emphasis on interaction *in* CSI practice as central in the development of competence. The CSI must develop the tacit knowledge that allows her to enter a crime scene and differentiate what need not be done as part of her examination while making sure any forensic artefacts produced meet best practice protocol. The expectations on the CSI and notions of best practice, competent practice and incompetence are flexible, evolving and linked, in part, to accountable actions rather than all actions but negotiated in practice. Whereas there are no clear articulations of competence or incompetent practices, it is results in CSI work, both in terms of the correctly produced, auditable forensic artefacts and the resulting utility of information ascertained by the CSI or through CSI work at the crime scene which

are of the greatest significance. By successfully meeting these requirements, as this the next chapters argue, the CSI completes the boundary work necessary to iteratively construct their occupational arena and expertise.

In the following two chapters, I consider in detail some of the material practices of CSI work through the Learning Programme and real crime scene examinations. I explore the ways that the practices come together to present a specific image of the CSI and CSI work and the everyday processes of accomplishing crime scene investigation. Some of the tensions surrounding acceptable and competent practice are reiterated throughout these chapters. The focus, however, shifts. By considering the building blocks of their crime scene investigation process, namely the ways in which the crime scene is recorded (Chapter 6) and how objects are rendered meaningful, removed and packaged at crime scenes, (forensic artefacts) (Chapter 7), these chapters pay attention to the routine enactment of protocol, the development of specific, practical expertise in crime scene investigation and the invisible work that takes place in producing forensic artefacts that are created and removed from these crime scenes. These chapters help develop a clearer understanding of the boundary work (Gieryn 1983) completed by the CSI in practice and add texture to our understanding of the CSI's role in the production of boundary objects (Star & Griesemer 1989), bridging different arenas of the criminal justice system and areas of expertise. Whereas this chapter has provided the reader with a description of the Foundation Crime Scene Investigator Learning Programme, background to my Forensic Centre participants and an exploration of trainees' understandings of the process of *becoming* a CSI, the next chapters explore the mundane realities of *being* a CSI and *doing* CSI work.

Chapter 6 Doing CSI work: Objectivity at the crime scene

As often the first and sometimes only member of the police force to attend a crime scene (Nottinghamshire Police 2004), the Crime Scene Investigator (CSI) plays a crucial role in documenting the geographical space of the crime. In this chapter, I focus on the training and enactment of such crime scene recording practices, namely photography and crime scene reports. I provide a detailed ethnographic account of the ways documentary practices are presented and taught at the Forensic Centre and the development of expertise in the recording of crimes over time. Instilled in the training is a very particular way of viewing and operationalising objectivity in crime scene work. I end this chapter by exploring how these 'objective' records of a geographical space at a specific point in time provide an interpretative framework in which the narratives of the crime scenes and the crimes are constructed through the documentation of the scene. The enactment of crime scene recording practices constitute specific ways of understanding the crime and the site of the crime, framing police understandings and imaginations of the crime and through contextualising wider crime scene work (such as situating any objects removed from the scene for scientific analysis within their physical locations in the crime scene) facilitates a coherence between the different facets of CSI work. Official police narratives of how and why a crime took place may often be constructed at the end of an investigation when a case is being built against a specific perpetrator (Innes 2003; 2007). Yet, CSI practice provides one of the first narratives of such a case through the way crime scenes are recorded, the items noted, the ordering of photographs and the techniques used in their production, in conjunction with the crime scene report.

I begin this chapter with a brief overview of Strauss's understanding of work. This provides a conceptual framework in understanding my stress on the enactment of tasks. This leads into a discussion of invisible and visible work as a way of foregrounding the complexity of work taking place in the completion of what may appear as routine, standardised tasks. I then briefly consider the processes that occur when a crime is reported. This account of reporting the crime facilitates an appreciation of the work that takes place even before it is deemed necessary for a CSI to respond to a crime. The CSI is trained to 'see' the scene and delimit a geographic space into a temporally dependent site of scientific and investigative action, the crime scene. This process of delimiting a

crime scene and the training and enactment of methods to record the crime scene for future reference through photography and crime scene report is then discussed.

I end this chapter by exploring how photographic practice moves beyond notions of objectivity to provide an interpretative framework in which the narratives of the crime scenes and the crimes are constructed through the documentation of the scene. Documents completed by the CSI act as boundary objects, communicating across different occupational spheres and different actors, while remaining somewhat flexible to the interpretation and foci of other relevant actors.

The sections of this chapter roughly follow the chronology of a real crime scene examination. This is deliberate. This ordering, coupled with providing the reader with a textured understanding of some of the important facets of CSI work, enables an appreciation of the iterative and processual nature of scene examinations. For flow and meaningful divisions between chapters, I have separated out a detailed discussion of the objects removed from crime scenes as potential evidence (forensic artefacts), discussed in Chapter 7, and an examination of investigative practices of the CSI, discussed in Chapter 8. Although these divides are artificial in the chronology of a scene examination, Chapters 6 and 7 group together tasks that produce objects from the scene and Chapter 8 helps tie together the work of the CSI into discussions of investigative practice. Together, these chapters provide an analysis of the interplay between Forensic Centre training and routine practice, the agency involved in making sense of crime scenes beyond institutional imperatives and the ways in which crime scene investigation clearly and powerfully affects later processes in the routine use of science in the criminal justice system.

6.1 Visible and invisible work

In his discussion of division of labour, Strauss (1985) offers a conceptual framework to aid the study and understanding of 'work.' Rather than focusing on those aspects that relate to the "differential distribution of rewards to classes of individuals (sex, class, race, occupation etc.) and perhaps especially the dividing up of work by various occupations and professions" (Strauss 1985, p.2), Strauss' account foregrounds the material practices taking place that constitute 'work.'

The benefit of such an approach is that it facilitates a concrete understanding of the ways in which routine interactions, sense making and practices come together to form the sum of the work completed. His approach problematises the term 'work', exploring its component parts. What counts as work is often context-dependent (Star & Strauss 1999). For example, photography in some circumstances can be defined as work but others it could be a leisure activity. Therefore, the site of such work and the definition of such a site are significant in considering the 'work' of the CSI. In relation to practice and practice theory, however, context is more broadly construed. It is not just the context in which the action takes place (for example, at work or at home), but the context of such action (for example, at a theft from motor vehicle crime scene).

Strauss (1985) also speaks of an 'arc of work' to express the totality of work completed, including those things that can be planned for and those that inadvertently crop up during a task which will need to be fixed or circumvented. As such, Strauss' accounts of division of labour and invisible work present a dynamic process of mundane routines. Although Strauss sees his account as relating to the medical environment in particular (as an example of a dynamic and quickly changing work environment) there is nothing to suggest that his analysis cannot be applied fruitfully to slower moving occupational environments.

Strauss' conceptual framework justifies looking at the component parts of CSI work in detail, such as the processes through which a crime scene is documented or a surface is 'dusted' for fingerprints. Work is a site of negotiation between different actors with different processes not necessarily occurring in a single, linear trajectory. Some tasks take place simultaneously in the investigation of crime, with different actors who possess specific skills and knowledge completing specific parts of the process. There are practices that can be easily articulated, and those that become embodied and reliant on tacit knowledge (Polanyi 1958; 1967; Barnes & Edge 1982). Tacit knowledge, in the confines of this thesis, is understood as knowledge that is learned though practice but not through formal rote learning or written procedures. Tacit knowledge, in the words of Polanyi (1958, p.54) is "practical wisdom" which "is more truly embodied in action, than expressed in rules of action." On this account, tacit knowledge is largely rendered invisible in everyday work (Star & Strauss 1999). The divide between visible and invisible work, presented by Star and Strauss, is useful in differentiating the

visible work that results in outcomes, such as crime scene photographs and scene examination reports as discussed in this chapter, and the invisible work in, for example, deciding what is and what is not photographed or recorded in a report. Routine crime scene examination involves tacit knowledge, as well as taught or explicit knowledge along with a variety of visible and invisible processes. As such, it is important to take everyday work seriously and examine in detail the ways different processes are enacted and come together in the arc of work, producing the final outcome. CSI work in its totality is also a component part of wider processes, namely the exploration of suspected criminal activity and the criminal justice system in general. Circumstances of a 'crime' are investigated and, if an individual is understood to be responsible and there is sufficient evidence to support this decision, the case is heard in court. This is the mechanism of justice or formal process of social control in the UK. CSI work is one part of this process.

The purpose of the following sections is not to render invisible work visible per se, but to provide an account and acknowledgement of the complex, and often overlooked, practices that take place in routine CSI work. However, in order to situate the arrival of the CSI at a crime scene, it is important to consider the processes that take place before the deployment of this actor to a specific location. This flow of actions starts when a crime is reported.

6.2 Reporting the crime

There are many ways in which the police can become aware that a crime has taken place. The Contact Centre (who answer 999 calls and non-emergency 101 calls) or the police station reception may receive a telephone call from a victim or witness reporting a crime. Alternatively a member of the police force may observe a crime occurring either in person or via CCTV. A crime may be identified inadvertently through the investigation of a different offence. In short, there is no single way in which potential acts of crime come to the attention of the police. However, once aware, each police force will have a process in place directing the next steps in the investigation. The very nature of volume crime is that they occur frequently and each police force will have procedures in place to decide which crimes should and should not be investigated. Therefore, at this early stage, a reported incident may be treated as not needing investigation, for example, because the likelihood that the perpetrator could be identified may be minimal.

Some types of crime are likely to be investigated whether or not the identification of the perpetrator is probable, such as in domestic burglaries, where scene attendance serves to acknowledge the view that domestic burglary is taken seriously, reassure victims and facilitate a crime scene examination (Tilley et al. 2007). Therefore, far from simply using past experience to identify crimes where scene examination might provide relevant information, the process is far more complex.

The decision whether a CSI attends a crime scene can occur at a number of different levels. In the police force I observed and across Forensic Centre participants' police forces, the Contact Centre had a list of questions they must ask when a crime is reported and, on the basis of responses to these questions, the decision would be made for details of the crime to be passed to the Crime Scene Investigation department. A CSI would then assess these details, thinking about the potential for relevant material to be present in the crime scene space, and call the victim for further information. If the CSI deems it appropriate, she attends the crime scene.

When the CSI arrives at the site of a reported crime, victims, witnesses, police officers but also bystanders, i.e. members of the public, can be their audience. Often arriving in a white mini-van, which may or may not be plastered with police logos and associated police transfers, the CSI steps out already wearing her uniform. CSI uniforms are predominantly black and emblazoned with the police logo plus shoulder lapels with a unique number and an abbreviation for her role, such as CSI. According to my participants, some police forces make CSIs and other public facing civilian police staff dress in similar uniforms to police officers so that their presence at scenes contributes to the public's perception of police visibility on the streets. In other police forces, however, CSIs wear suits.

CSI vans are stocked with tools such as a ladder, camera tripod, a crime scene tent, cordon cones, evidence bags and evidence pots, weapon pots, evidence boxes and mould making kits. On exiting her van, the CSI usually starts by collecting her portable tool box/briefcase and camera bag. These items are brought with her as she approaches the scene. At the Forensic Centre and in my police force observations, it was normal for CSIs to have black, plastic briefcases. Opened up, the base level often contains foam, cut into sections, securing

numerous pots of different fingerprinting powder, a 'Crime-Lite',[34] different types of sticky tape and some fingerprint brushes in protective tubes.

The upper area of the briefcase often contains a large pocket filled with crime scene report forms, small evidence bags, gel-lifters,[35] acetates onto which fingerprint lifts are affixed, individually wrapped swabs and DNA sample kits.[36] In front of the upper pocket, attached via a number of elasticated loops, are numerous permanent pens, scalpels, pliers and a magnifying glass. On top of these typical items, the cases may also contain items that the individual CSI finds particularly useful such as a dentist's mirror or a screwdriver. Even though these standard plastic briefcases were commonly used, four of the nine Module 2 Stage 2 trainees had purchased their own carry case for their crime scene tools, some looking like normal, metal tool boxes and others opting for plastic tool cabinets on wheels. These all serve as nice examples of the ways in which the CSI can impact on the context of their work through the equipment they bring to the crime scene, echoing Cook and Wagenaar (2012), discussed in Chapter 2.

All individuals are further equipped with a specialist camera bag. In addition to a camera, this bag may also contain a couple of lenses, memory cards, necessary chargers, maybe a spare battery, a separate camera flash, pens and a selection of L shaped scales in varying sizes, used as a reference point in photographs.

CSIs invest in their crime scene kits, whether this is through purchasing specific camera attachments (discussed later in this chapter), carry cases or specific tools, such as a dentist's mirror. All of these tools contribute to the CSI's ability to examine crime scenes and produce forensic artefacts. They likewise add to the visible performance of crime scene investigation to police and lay audiences. Once arrived at the crime scene, one of the CSI's first steps is to define, spatially, the crime scene.

[34] A Crime-Lite is a common brand of LED torch with different filters enabling it to be used for numerous different lighting requirements at crime scenes. Those often carried in the portable briefcase are reasonably small at approximately 22cm in length and 4.5cm in diameter.
[35] Gel-lifters are latex sheets which are used to lift dust patterns or dusted fingerprints. They are an alternative to lifting prints with sticky tape and are available in a variety of sizes (and can be cut to size).
[36] DNA sample kits contain all the equipment a CSI needs to swab an area for DNA, including pure water, swabs, containers and an evidence bag. These thin, A4 sized plastic packages are very light and portable, slotting neatly into the CSI's briefcase.

6.3 From scene of crime to crime scene: delimiting and exploring the area of forensic interest

The crime scene is the main occupational environment of the CSI. It is the site where they are able to draw together the training and experience they have gained in the practices of recording the space and identifying the investigatively meaningful from the meaningless. Defining a space as a crime scene is a central part in this process. It involves the enactment of specific processes, decisions about where to place the boundary between crime and non-crime. If the CSI were to get the boundary wrong, this could remove evidence and other avenues from the police investigation. Central to this emphasis on the crime scene as a key occupational environment is the CSI's ability to claim ownership over the space. Williams explores this point, stressing the role of two principles in material crime scene practices. These two principles, "exchange always occurs" and "individuation is always possible" (Williams 2007, p.199), are clearly important for trace practices and discussed in the next chapter. For the current discussion, however, it is the significance of these two principles in facilitating the CSI's claim to ownership of and authority over the crime scene space. These principles, that exchange always happens when two objects come into contact and that individuation of an exact source from a single fragment of substance at a crime scene is always possible, stresses the potential for contamination, the need for care and control over such a space and the significance of expertise in avoiding such problems. Most significantly, however, these two principles "are used to construct an investigative space in which the naturally occurring 'scene of crime' as a place or a person in which a crime had occurred or whose body had become the subject of an assault is transformed into a 'crime scene' in which a repertoire of investigative actions are given authoritative priority for an indeterminate but limited time" (Williams 2007, p.203). Williams' (ibid.) account clearly acknowledges the temporality of crime scenes and the significance of transforming a scene of a crime into a crime scene for a distinct period of time, particularly in terms of giving "investigative actions […] authoritative priority". Williams does not, however, account for *how* a geographical space is redefined as a crime scene for a limited time. What affects the decision of where to place the boundaries of the crime scene? How does one differentiate between irrelevant space and a crime scene? What practices are used? The process of

defining the crime scene is important not only with respect to the investigation of the specific crime. It is also important in terms of the interconnected ways in which CSI work and practices affect the authority of the CSI across different social and technical arenas; delimiting the crime scene is a process of delimiting the distinct occupational space of the CSI. In a very literal sense, it is boundary work in action both in terms of defining the boundary of a physical space but also in claiming specific expertise within the bounds of that delimited space.

Ludwig and colleagues (2012, p.58) suggest that crime scenes can be conceptualised as "'site[s] where people belonging to different worlds and talking different languages gather' (Mol & Mesman 1996, p.425)." This phrase encapsulates the differing and overlapping processes of police and lay actors within these specific spaces. In doing so, Ludwig and colleagues inadvertently highlight the importance of CSIs claiming their site and confines of expertise and right to a legitimate voice in relation to specific aspects of the crime scene, its examination for forensically useful information and, in the context of this chapter, its documentation. The crime scene needs to be frozen in time. Like other forms of evidence, the crime scene must be preserved, recorded and, as such, created as an epistemological space, a space that demands practical action from the CSI, a place of knowledge production and data gathering, discursively constructed in paperwork and evidence practices and situated in a specific temporal context. In volume crime scenes, it is often the CSIs frame practices that construct and define each individual scene.

Based on a number of vague factors, discussed below, the CSI delimits what is the crime scene from its surroundings. As I argue, this is one of the first ways in which the CSI impacts on the narrative of a case, directing wider understandings of the crime, the context of the crime and the possibility of apprehending and convicting a perpetrator. Throughout this process, preconceptions about the crime scene must be controlled, limited and, if at all possible, completely removed from actions.

Notions of delimiting a crime scene may awake in the reader images of yellow tape and orange cones signifying the important and protected area. Tape and cordons are, however, used at serious and major crime scenes where there are often two cordons, an 'inner cordon' and an 'outer cordon' and a specifically defined route of access into these crime scenes. Although crimes always need

to be clearly defined, at volume crime scenes these visual methods of marking the perimeter are rarely used. At the Forensic Centre, Module 2 Stage 2 of the Foundation Crime Scene Investigator Learning Programme provides trainees with guidance on the process of positioning different cordons in relation to serious and major crime. However, neither Module 1 Stages 1 nor 2 provides trainees with detailed guidance on *how* to demarcate a crime scene. When asked about this process, the general response from Module 1 instructors, trainees and experienced CSIs at real scenes was that they use the 'natural borders of the scene'. When questioned further, they were able to provide some examples to help me understand these 'natural borders'. One such example, related to theft from motor vehicle offence where the natural borders are either the vehicle itself or, if one is interested in its immediate vicinity or the vehicle's bodywork, a metre or so outside the vehicle. Another example, a household burglary, set the boundary of the property, including garden as the border. The use of 'natural' and the imbued meaning of logical, as though it were self-explanatory, highlights the role of tacit understandings within CSI practices. However, more than this, it could be viewed as a process if "seeing-as", as discussed in Chapter 2. Schön (1983) utilises seeing-as as a way of discussing sense-making through what we already know - seeing a problem as a similar problem we have faced before, so affecting practice as it takes place. In this context, for example, it could both be from previous crime scenes, but also from reflecting on their own experiences. The perimeter of a property's plot is how, in everyday terms, one might delimit the space of a house (whether a crime has taken place or not).

Interactions with colleagues in the form of sharing experiences were also mentioned as important in making decisions about crime scene limits, once again reiterating that practice does not happen in a vacuum, it happens with the interaction and involvement of numerous different actors (Wagenaar 2004). Nonetheless, delimiting a crime scene is a generic part of each scene examination. Strategies are used based on culturally embedded understandings of property, closeness as well as practical concerns about controllable spaces – if a crime scene boundary is placed too widely, it is harder to control access. However, rather than being provided with a list of criteria against which to decide the limits of the crime scene, the Forensic Centre programme focused on developing the experience to make these decisions through practice. Beyond this claim of natural borders and an emphasis on experience stressed at the

Forensic Centre, there are textbook accounts of where to place crime scene boundaries:

> The boundaries should encompass the centre of the scene where the crime occurred, any paths of entry or exit, and any areas where evidence may have been discarded or moved (Saferstein 2010, p.28).

Saferstein's account is just one example of what these 'natural borders' actually are in a more direct and accessible manner without removing the importance of context present in the Forensic Centre use of 'natural borders'. These are provided in both spatial and cognitive terms. It requires the CSI not only to identify the central space of the scene but also make sense of each scene individually and think about the potential actions of the perpetrator in the area. Although a number of different crime scenes may have the same or very similar borders, one must consider the points of entry and the points of exit, the space where the crime took place and a perimeter where it is believed that evidence could have been discarded. Enacting Saferstein's instructions, the crime scene of a household burglary is likely to match the boundaries of the property (including outside space) like the participant's example above, but this is dependent on the specific details of crime, space and observable details.[37] What was most telling for me about the identification of the crime scene boundaries was the straightforward and unquestioning way participants, particularly Module 1 trainees, adopted and became adept at defining the limits of scenes. Whereas practices such as photography (discussed in section 6.4.1) caused substantial problems for trainees, required practice and constant support from instructors, delimiting a crime scene space was done straightforwardly and perceived as unproblematic.

Saferstein's definition relates to the practices of the First Attending Officer (FAO). In the context of volume crime scenes, however, the FAO is often the CSI. The possibility that a police officer might have delimited the crime scene before the CSI arrives was mentioned during the Forensic Centre training. However, it was stated that the CSI had the final decision on where the boundary would lie (based on the forensic potential and evidence within the scene to make the final decision). In my police force observations, the presence of a police

[37] It should be borne in mind that delimiting a serious or major crime scene involves a number of other processes both in terms of the boundaries of the scene but also in differentiating between inner and outer cordons and routes of entry into the crime scene.

officer was not guaranteed and at a number of the scenes I attended the police officer arrived after the CSI. Thus, although the CSI may not define the crime scene alone, from my observations it would be inaccurate to see this as something completed solely by other police actors.

How a crime scene is delimited and later examined has clear implications for how the crime (and scene) is understood. The potential for multiple and differing perceptions of a crime scene is a point that Burney and Pemberton (2013) discuss in relation to the work of Hans Gross, often seen as one of the founding fathers of criminalistics. Burney and Pemberton (2013) stress the reflexive way Gross envisaged the crime scene examination process. For Gross, the trained investigator was able to see past her initial preconceptions – based first on the information given to her before arriving at the crime scene and then when she initially arrives. Gross saw these preconceptions as natural, but it is necessary to get past these problems of perception as "a logical and operational prerequisite for the crime scene's epistemic status as a field of latent, objective material traces that can be utilised as such for the purposes of investigation. The crime scene as a space of hidden but objectively apprehensible traces, therefore, is not merely the site for the deployment of a highly structured way of seeing, but is in fact *produced* by it" (Burney & Pemberton 2013, p.20, emphasis in original). Developing these skills of seeing and producing both crime scenes and objects from within them, was clearly an important part of the training process. This process of creating crime scene knowledge needs to occur beyond basic senses, such as sight, and pre-conceptions need to be identified and controlled.

Learning to 'see' within the crime scene was directly addressed in the Forensic Centre training in terms of how perceptions can cloud an individual's judgement. The first scene examination completed by Module 1 Stage 2 trainees at the Forensic Centre occurred immediately after their training on perceptions. This training aimed to highlight to participants the significance of their own perceptions through the limits of their visual capacities via a number of optical illusions, a sample of which are reproduced in Figure 6.1.

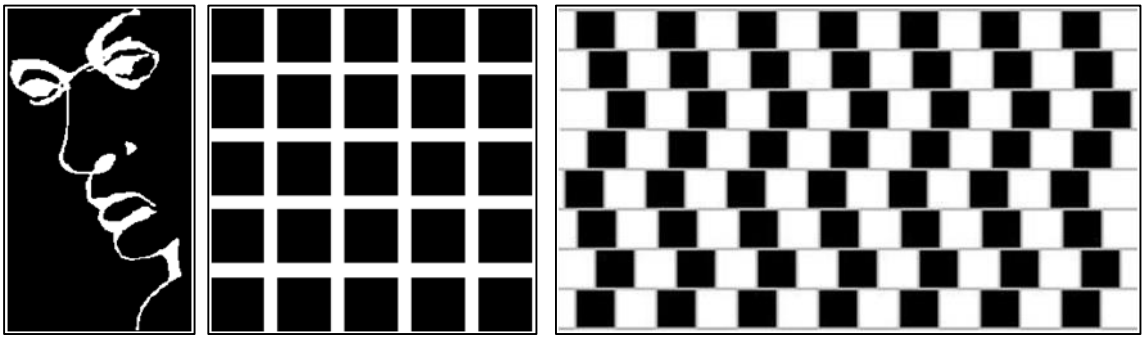

Figure 6.1 Optical illusions presented to Module 1 Stage 2 trainees (Forensic Centre Handout).

The optical illusions above each present two different scenarios. The first picture shows a face or the word 'liar'. The second and third requires the trainee to decide whether to trust her vision or to think carefully about what she sees. The second image is made up of a grid pattern of white lines on a black background that appears to have grey spots at all of the junctions between the horizontal and vertical white lines. The third image, although appearing otherwise, is made up of parallel horizontal lines. Each image demonstrates a different way in which trusting normal perception may hinder or even distort crime scene work. Optical illusions like these were employed in the context of a lesson on perceptions with a total of eleven images presented to the trainees. This process helped to make trainees aware that they needed to question their initial perceptions and try to detach themselves from the scene. A methodological need to step back, questioning what participants see and what they do not see was carried into the afternoon's scene examination exercise, the first of many scenario scene examinations completed by trainees over the five weeks spent at the Forensic Centre.

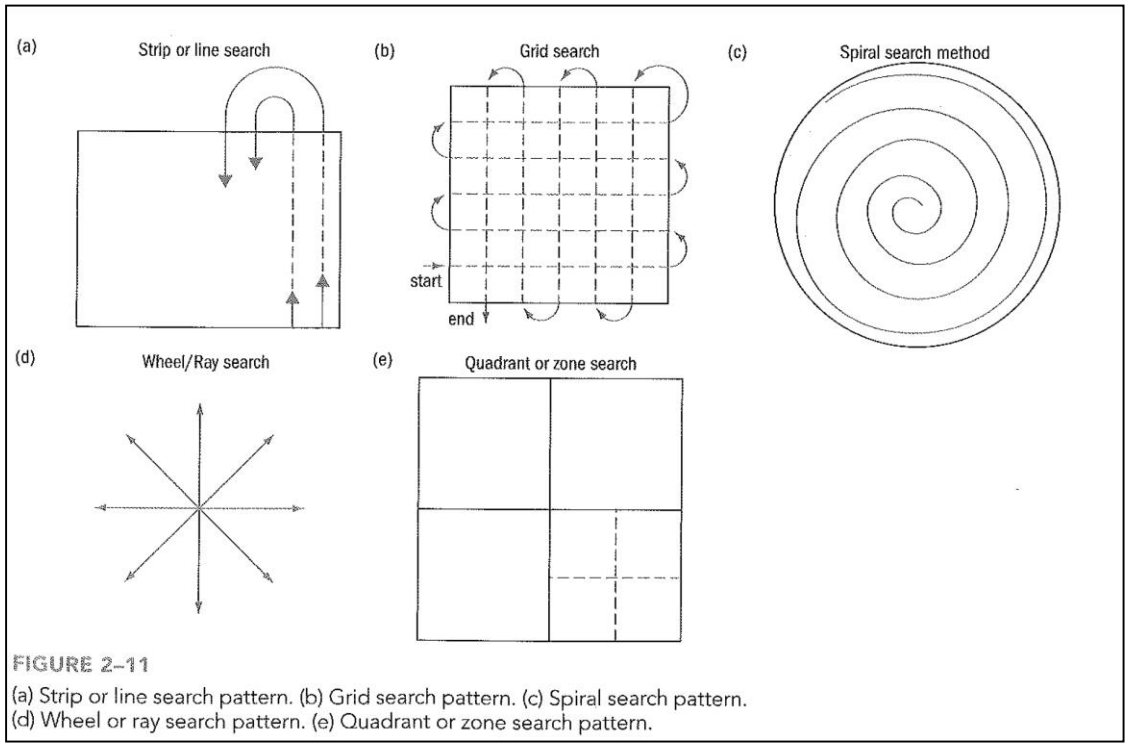

FIGURE 2–11
(a) Strip or line search pattern. (b) Grid search pattern. (c) Spiral search pattern. (d) Wheel or ray search pattern. (e) Quadrant or zone search pattern.

Figure 6.2 Crime scene search patterns (Saferstein 2010, p.37).

One of the ways used to instil a level of detachment from the crime scene focused on how the students were taught to approach and search the scene. Saferstein (2010) provides a list of different methods with an accompanying diagram, illustrating a variety of search patterns or strategies, reproduced in Figure 6.2.

Each of these search strategies demonstrates the need for systematic consideration of the crime scene space, a point reiterated throughout Forensic Centre tuition. Although only "(b) grid search pattern" and "(e) quadrant search pattern" of the five identified by Saferstein were mentioned by name in Module 1 Stage 2, the need to be methodical was a central part of CSI processes during all aspects of crime scene investigation. The first crime scene scenarios completed by trainees encapsulated this need for a systematic approach. The exercise tasked trainees, working in pairs, to examine two scenes paying particular attention to the health and safety risks of the environment and the objects they believe to be significant in the investigation of the crime. Once trainees had examined the scenes, they briefed one of the instructors on what they had found and what evidence they would recover/record from the crime scene. One scene was reported as a residential burglary and the other a theft from a motor vehicle. These two scenarios enabled me to observe interactions

at this very early stage of the investigative process before practice had helped the CSI trainees to refine their methods.

From the beginning of the scenario, trainees were methodical. Although the pairs I observed did not adhere to a specific search strategy such as those presented by Saferstein above, trainees discussed the way they would approach and move around the scene. When I entered the scene my eyes flitted around the space and mentally noted the cigarette butts on the floor, syringes on the window sill, a smashed Jack Daniel's bottle on the table and a bloody handprint on the back of the door. The pairs I observed, however, did not mention these objects on entering the scene. Instead, they moved slowly, anticlockwise around the first scene room, a dining room, discussing objects within their direct vicinity.

These processes and the emphasis on seeing crime scenes in a controlled and methodical way, links with the constant emphasis both at the Forensic Centre and in the observed CSI department of the need to be 'objective' when examining crime scenes. In this exercise, the trainees needed to balance the tunnel vision necessary to consider each aspect of the scene in detail (embodied in the search pattern methods in Figure 6.2), and the need to take a more holistic view of the crime scene space. The CSI ought to note context, the potential actions of the perpetrator(s), and other information which may prove useful for identifying potentially relevant material for forensic analysis. Understandably, at this early stage, trainees had yet to comprehend the level of detail they were expected to remember - trainees not only needed to know that there was, for example, a carrier bag in the corridor but also the brand of the carrier bag. Similarly, they should have noted down not only the presence of a cigarette butt but whether the cigarette butts were from manufactured or hand-rolled cigarettes, and where appropriate the brand, condition, shape and amount smoked. As they moved further into the training process, the emphasis on being able to take a more holistic approach to the scene was developed. It was not the ability to note down every single aspect of a crime scene, but the ability to identify the areas where these specific details are necessary. These practices of noting details and moving in specific ways formed the repertoire of acceptable methods used to examine crime scenes and avoid mistakes based on the trainee's subjectivity. They also signalled a trajectory within the process of learning to see and record a crime scene. Participants start by moving methodically around scenes in a

predefined search pattern, noticing details primarily but without forgetting context. Then, as experience is developed both within and outside of the Forensic Centre, it is the context that is most significant and primary in the search strategy. It is the context of objects that are central in signalling to the trainee to notice and note down specific details.

The day after trainees received the lesson discussed above about scene examinations, they started their photography training. Photography, as we will see in the next section, is significant in the Forensic Centre's account of CSI objectivity, expertise and recording crime scenes for other relevant actors.

6.4 Documenting and reproducing the crime scene

The practices above concentrate on the need for the CSI to question their senses, particularly their visual perceptiveness.[38] Although "seeing-as" might be useful in terms of delimiting a crime scene, when it comes to examining a crime scene, CSIs are expected adhere to methodological search strategies, reflecting on their practices *in* action without bring in assumptions from past experiences. Although such search strategies and ways of seeing the scene are important in enacting this detachment in the scene examination process, CSIs are also required to document each scene they attend. This involves taking a number of photographs and writing a scene report.

The practices involved in crime scene investigation include the production of forensic artefacts. This term, discussed in Chapter 1, is used in place of exhibits, swabs or evidence. 'Forensic artefact' and Williams' accompanying definition[39] foreground some of the deliberation and production practices that go into making these artefacts and removing them from the crime scene. Using forensic artefacts helps to acknowledge the mediated and mediating role of these objects in their creation, analysis and use in the police investigation and courtroom.[40]

[38] Other senses are also important to CSI work, particularly smell. Module 2 participants all recounted the important role of their olfactory skills in serious and major crime work. Some talked about the importance of smell in estimating the amount of time an individual had been dead. Others recounted the odours released and experienced during autopsies. Odour is clearly significant in the sensory experience of completing crime scene investigation work.

[39] For ease, Williams (2007, p.204) states that forensic artefacts are "deliberately created objects of attention and analysis, [...] treated by those who encounter them later in the narrative of any particular criminal investigation as the equivalent of, or stand-ins for, the real-world objects from which these artefacts were constructed."

[40] The making of forensic artefacts is discussed in relation to contact trace materials in Chapter 7.

Documenting the crime scene photographically and through paperwork practices is also a process of forensic artefact production but different from those produced and discussed in Chapter 7. When reports and photographs are considered (and images are not used individually), I use a variation of this term, namely 'contextual forensic artefact'. The contextual forensic artefacts help to situate other forensic artefacts within the confines of a particular crime scene; they provide *coherence* within crime scene examinations and across the forensic artefacts produced at specific scenes. As discussed in the next chapter, the presence of a fingerprint, DNA trace or specific fibre in a crime scene is not necessarily useful unless there is a clear, well documented account of where it was found within the crime scene. For this reason, the next sections concentrate on two of the ways in which the CSI creates contextual forensic artefacts and a coherent narrative both of the crime and crime scene practices. Also considered is the significance of the processes of creating contextual forensic artefacts in the CSI's performance of objectivity.

6.4.1 Crime scene photography

In his instructional account of crime scene investigation, Horswell (2004) states that crime scene photography means that:

- evidence can be:
- *reassembled* during the investigative process;
- *reviewed* by investigators and the principle actors;
- *reinspected* by all stakeholders in the investigation and prosecution processes;
- *relocated* to the courtroom;
- *recreated* in the courtroom;
- *retold* by witnesses; and
- *reconstructed* by witnesses (Horswell 2004, p.125 emphasis in original).

These bullet points present the significance of photography in providing context both in terms of the police investigation and in courtroom interactions. Horswell articulates the importance of photography in reconstructing and reimagining the crime scene. Photographs mediate the understandings of many actors and can play a role in directing the lines of enquiry that take place based on the information present in the images. With so few people actually attending the crime scene itself, it is important that the CSI captures the scene in a specific way.

Training in photographic practices starts in Module 1 Stage 1, where the trainee completes a pre-course workbook on photography. At the Forensic Centre the trainees start to use a digital single lens reflex (DSLR) camera and receive detailed tuition on how to use the camera and take pictures of the crime scene in a standardised way, as I will explain in the following sections.

6.4.1.1 Using the camera

Photography was a central component of Module 1 Stage 2. In the first week of the residential course, trainees received three full days of tuition on photography alone, moving from the purpose of certain camera functions and components to taking photographs in a number of scenario crime scenes, designed to help them develop the technical skills to capture these images at an acceptable standard. Later in Module 1 Stage 2, participants also had tuition in night photography. In addition to this formal tuition, photography was part of all practical exercises after the three days of training. Thus trainees were given time and the opportunity to refine their skills, develop experience and gain confidence behind the camera.

Learning schedules for photography were structured in the following way. The first lessons introduced the different terms for parts of the camera, their functions such as the histogram (which helps assess the level of contrast in the image) and terms such as 'depth of field' and 'focal length of lens.' I was told that it was common for police forces to provide Nikon DSLR cameras, often model D300. Although a number of participants had this camera or at least this brand, two participants were using Canon DSLR cameras which appeared to function very differently to the Nikon equivalents. Those with the same camera model (or brand) could share understandings and experiences of the various settings. As part of gaining competence in photographic practice each trainee needed to develop a tacit and tactile understanding of her equipment. For the trainees, the functions and functionality of the cameras were the most difficult parts of the Module 1 programme to master, as the following Module 2 interviewee highlights when reminiscing on her photographic training:

> [Photography] made me cry more than anything. Learning how to use the camera properly because I couldn't understand it to begin with[. ..] Someone tried to teach me it without actually taking the photos and it wasn't until I said I do not understand what I'm doing here that they

> said, come on, let's go outside, let's play around with the camera, take a whole load of photos, take them deliberately wrong and then how would you correct it to take the correct photo. That's how I learnt to use my camera. (Emily, M2, first interview).

For Emily, like many of the trainees, learning to utilise the functions of the camera was a challenging experience. The safe environment of the Forensic Centre provided a site for Emily to take photographs (even if the setting were incorrect) and learn through a process of trial and error. Competence in adjusting settings to alter the resulting images was an important part of student learning - not only did it emphasise the need to be able to take good photographs, but also identify and assess their own images to see how they could be improved. The need for 'tweaking settings', as participants referred to it, and retaking photographs reduced throughout their stay at the Forensic Centre and, by the time they were examining whole crime scenes from start to finish, photography became second nature. The camera was no longer an external source of stress but any extension of themselves. Until this was the case, one of the instructors was always on hand during the practical exercises I observed and willing to provide feedback and advice on images.

Before arriving at the Forensic Centre, a number of trainees expressed that they were concerned about the photography training in particular:

> I knew photography was always going to be my biggest problem. I mean, I'm happy taking photos of my kids, you know, just your basic level […] but the science behind it, I do kind of struggle with it a bit if I'm honest. The whole focal length of the lens and I'm just like, erm. (Matthew, M1, first interview).

Matthew was apprehensive about the 'science behind' the camera, giving the focal length of the lens as an example. Other trainees, like Doug, looked forward to photography training:

> **DW:** But which parts of the training programme are you looking forward to the most?
>
> **Doug:** Err. Everything. Everything's new. I go in open minded. Ideally, photographs because it doesn't matter what scene you go to you're going to take photographs. Sometimes it's the case that you've got to get it right first time. So photography, yeah, and fingerprints. You know, how to get them. Just more or less everything (Doug, M1, first interview).

Both Doug and Matthew identify photography as a technical process. They anticipated that the level of skill required to capture institutionally acceptable

images is high and, as Doug states, “sometimes it’s the case that you’ve got to get it right first time.” Although lifting a fingerprint is clearly a situation where one needs to get it right first time, photography can be seen in the same way. Crimes scenes change over time, particularly those outside and subjected to the weather. Also, once a CSI has left a crime scene and the scene has been ‘released’ and enters back into normal, everyday use, there is no way to acceptably recreate the crime scene as it was prior to its release.

When this is considered in relation to interviewees’ second maps, photography is specifically mentioned in all but one map and the camera mentioned by all but one trainee as the piece of equipment they could not do their role without. Learning to competently use these complex DSLR cameras in order to document crime scenes was an important part in interviewees’ understandings of their role.

6.4.1.2 Crime scene photography in practice

At the same time as starting to master camera functionality, trainees had to learn to utilise the camera to produce images that meet police and courtroom requirements. The requirements, however, were not discussed in detail at the Forensic Centre. Instead, this training initially occurred through explicit descriptions of required photographs within scenario scene examination instructions. Through these instructions, trainees were provided with a list of objects that needed to be photographed within each scenario scene. One such scene was a case of criminal damage to a car. The instructions for this scenario crime scene required students to take “general photographs quartering vehicle; long, mid-range and close up of word ‘prick’; long, mid and close up of glove number front nearside wheel” (Forensic Centre Handout). At this point, the term ‘quartering the vehicle’ and the need to take long, mid and close up shots of points of interest had not been discussed in the classroom. These were terms the trainees understood from Module 1 Stage 1 training and previous experience within the police force. When I asked participants during a practical exercise why they needed to take long, mid-range and close up shots, they explained that they were to provide context. Similarly, quartering the vehicle means capturing the vehicle at each corner to show the vehicle and its surroundings. The images captured by one of my participants are documented in Figures 5.3 and 5.4.

These images, taken in the Practical Training Block (PTB), illustrate ‘quartering’ of the car (Figure 6.3), the mid-range shot of the word “prick” and the long, mid and close up shot of a glove (Figure 6.4). Each of the car quarters provides the viewer with contextual information about the position of the car. Situated within a bus stop, next to a litter bin and a shop frontage, the car appears reasonably well kept and the damage seems to be limited to the word ‘prick’ spray-painted on to the nearside of the car. Approximately halfway under the rear, offside wheel there is a glove. These images, thus, present the viewer with an understanding of the result of the crime and the context of any objects of interest and spatial distribution of the crime – in this case, the car, the wording and the glove – prior to any police intervention. Were the glove to be removed from the crime scene and examined at the laboratory, these photographs would provide investigators and other staff with information about where the glove was originally. Taken together, and as individual images, photographic practices produce contextual forensic artefacts that represent the scene as a whole.

Figure 6.3 Quartering the car.

Figure 6.4 Close up of word 'prick' and long, mid-range and close up photographs of a glove.

Articulations of criteria for identifying the required photographs for each crime scene were not offered at the Forensic Centre. Yet, Horswell (2004) in his manual of crime scene investigations does provide some normative statements about what should be photographed at a crime. He details:

> The photographic record should be comprehensive and should include the general layout of the premise or features of an area. This will depend on the seriousness and circumstances of the crime.
>
> The photographic record should illustrate the relative position of rooms, the state of those rooms, and the position of houses in streets in relation to the crime scene.
>
> Footprints, shoemarks, tyretracks and toolmarks should be photographed with a scale before casting. A close-up and position photograph should be taken.
>
> Photographs should be taken from a number of angles, or positions including those described by witnesses
>
> A series of photographs should be taken from the point of entry to the point of exit.
>
> Detailed photographs should be taken of potential evidentiary material, such as, the body; injuries; weapons; trace material; cartridge case/s; damage and other relevant items.
>
> As the scene examination progresses, further photographs should include new potential evidentiary material found and visualised, or areas of importance were previously concealed (Horswell 2004, pp.126–127).

Horswell puts into context the wider expectations of photographic practices. His list of instructions details the multiple requirements of crime scene photography and other factors which so far have remained absent, such as the use of a scale in images so the exact size of items of interest are discernible. Scales are external reference points in the interpretation and contextualisation of pictures. Particularly with photographs of fingerprints and footwear marks, a scale is central in making the photograph meaningful. For example, the scale allows the size of the footwear to be known and also means the minutiae of wear patterns on the soles of shoes can be compared in detail. The presence of a scale in a photograph of a footwear mark means that the photograph and its contained details as evidence in its own right. In processes of recording crime scenes where context is a crucial factor, scales are an independent constant within the wider changeable framing practices used in photographically capturing

a crime scene. Whether this is quartering the vehicle or taking multiple images of the same object from different distances, the CSI makes numerous decisions about what is and what is not in the camera's frame (and, by extension, of significance) among other more technical decisions about the shutter speed, for example, which have an effect on the resulting image. Technical decisions and narrative construction can converge in numerous ways. Consider the most prominent aspect in a photograph that catches the eye, namely the very objects that appear in focus in the image. This presentation is controlled by manual focusing and the image's depth of field, which are both decided and enacted by the CSI. Depth of field is the range of distances within an image that remain crisply in focus. By varying camera settings, the depth of field can be made larger or shallower. Photographic strategies like these, beyond the role of the outer frame of the image, direct the viewer's attention to certain parts of the image and have a clear role in the way that forensic practices are completed. During the first lesson on photography at the Forensic Centre, one of the instructors even stated that depth of field is the single most important part of police photography. Depth of field helps the viewer to see a three dimensional image from a two-dimensional photograph. This emphasis on in the right focus was continuously stressed throughout the Forensic Centre training.

Similarly, the exposure of the image can strongly affect the suitability of a crime scene photograph, particularly when correct exposure is not possible in the given setting. In such situations, instructors remarked that it is acceptable for certain aspects of the photograph to be underexposed when they are not the focus of the image. Hence, a range of factors affects the focus of the image, thereby directing the viewer's attention to specific aspects in the photograph. Throughout the use of the camera and the types of images that CSIs are expected to produce, there is an emphasis on learning how to 'see' a crime scene and how to apply the technical skills to capture such images. The lack of CSI interference is evidenced in two ways. Firstly the absence of the CSI and CSI paraphernalia in crime scene photographs presents the photographs as records of an untouched crime environment. Secondly by following the ambiguous protocol on the types and numbers of images expected of different items in the scene, such as the 3 different distances above, which both structures photography and, in doing so, helps the CSI avoid some preconceptions about the crime. Both points stress the idea of 'being objective' and reflects extant work

on scientific objectivity, specifically mechanical objectivity. In their historical account of scientific objectivity from the late 18th century to the present day, Daston and Galison (1992; 2007) chart the varying ways of documenting, seeing and recording images of and in science. Focusing specifically on scientific atlas, Daston and Galison plot the changes in documenting scientific knowledge about the world through three phases. These phases with distinct 'epistemic virtues', virtues strived for in the pursuit and dissemination of knowledge, are referred to as 'truth-to-nature', 'mechanical objectivity' and 'trained judgement'. Each of these ways of seeing, recording and understanding the role of such scientific atlas presents a specific means of accomplishing objectivity through a collection of related actors – from the scientist, to the artist and engraver. Daston and Galison document the numerous actors involved and some of the debates that took place in relation to recording practices. 'Truth-to-nature' was common in the 18th century and concerned with capturing and documenting the typical through the production of images where the ideal type is produced through artistic and scientific mediation in reference to multiple samples. 'Mechanical objectivity', on the other hand, emphasised an absence of "wilful intervention" in the final scientific image (Daston & Galison 2007, p.121). As they define, Daston and Galison state mechanical objectivity is:

> the insistent drive to repress the wilful intervention of the artist-authors, and to put in its stead a set of procedures what would, as it were, more nature to the page through strict protocol, if not automatically. This meant sometimes using an actual machine, sometimes a person's mechanised action, such as tracing. However accomplished, the orientation away from the interpretative, intervening artist-author of the eighteenth century tended (though not invariably) to shift attention to the reproduction of individual items – rather than types or ideals (Daston & Galison 2007, p.121).

Rather than attempting to document 'the typical', image making was mechanised and the resulting images were to be presented without amendment. Photography helped to facilitate in part this focus on the specific over the typical, although Daston and Galison stressed that the invention of photography was not a cause of this change in scientific representational standards. Daston and Galison's account is particularly important here because of the way that scientific images provide a specific way of freezing, framing, seeing and, most importantly, disseminating particular information (clearly for an atlas to be a useful tool in science, it needs to be reproducible – including the important images it contains).

They argue that understandings and the enactment of scientific objectivity have occurred in a number of different, sometimes overlapping, ways over time.

It is clear from the account above that mechanical objectivity in representational practices involves images produced without the *appearance* of human mediation or intervention. It was the epistemic virtue of objectivity, the removal (as much as possible) of the individuals involved in the creation of scientific images that was important. Early on in *Objectivity*, Daston and Galison explain that:

> [t]o be objective is to aspire to knowledge that bears no trace of the knower - knowledge unmarked by prejudice or skill, fantasy or judgement, wishing or striving. Objectivity is blind sight, seeing without inference, interpretation, or intelligence (Daston & Galison 2007, p.17)

In mechanical objectivity, multiple images of the same phenomenon began to be presented side by side, leaving it up to the viewers to standardise the view themselves. Drawing on the analysis of objectivity in Daston and Galison, it is noteworthy how in CSI photographic practice the lack of human intervention is performed and documented. Objectivity, here, is achieved through adherence to a number of procedures and documented in the resulting images, even if these procedures are not always formally standardised. 'Being objective', as trained performance, was documented above in relation to Figures 5.3 and 5.4.

Standard photographic practices, such as long, mid-range and close up pictures, actively engage with the importance of frame, focus and context in understanding the requirements of crime scene photography. CSI practices deliberately confront and attempt to circumvent questions about the authenticity and validity of photographic practice through the images themselves by presenting a vision of mechanical objectivity. Part of this process of documenting the lack of human intervention is by not deleting images from their camera memory cards until transferring all images onto a CD-ROM (as this would mean image numbers are not consecutive). Similarly, photographs should be taken in a trained 'logical' order, which differed from my original lay perception, as mentioned above. This 'logical' order, nonetheless, demonstrates an accepted and expected process in the examination of the crime scene. These practices safeguard the mechanical objectivity of the camera and unmediated nature of crime scene photography as an accurate representation of the crime scene and arguably an objective, distanced account of the crime for specific audiences,

namely those outside of crime scene investigation. The CSIs acknowledge the difficulty and the techniques used to produce acceptable crime scene images. It is those that *use* these images later in the process that may treat them as though they adhere to mechanical notions of objectivity.

Crime scene photography involves skill and expertise. In the photography training, the mediating role of the CSI in creating records and representations of the crime is acknowledged, for instance in the practices of safeguarding photographic processes from claims of intervention described above. As such, photographic practices deliberately conform to mechanical objectivity based understanding of knowledge production and dissemination. Some instructions, such as the need for photographs from differing distances, appear vague, yet they require practical implementation by CSIs. The enactment of such processes clearly involves a level of expertise, which allows the CSI to mediate the relationship between the photographic records they create and their interpretation as evidence. The requirement of mechanical objectivity underlying CSI work, therefore, is twofold. It related not only to the variable ways of seeing and recording, but it is also a process of actively demonstrating the CSI's own role and significance in the crime scene space. By safeguarding the crime scene through techniques of documentation, the CSIs further outline their occupational jurisdiction. For this reason, the underlying requirement of mechanical objectivity also can be viewed as a tool to delineate the boundaries of CSI work.

Although photographic practices were central in trainees' narratives and Forensic Centre tuition, the use of cameras at scenes of volume crime was far less consistent at real crime scenes. In the scenes I observed detailed photography was uncommon. Instead, focus was on specific aspects of the crime scene. Whereas at the Forensic Centre the entire crime scene would be documented, in real world CSI photography the images often focused on specific aspects. In Figure 6.3 and Figure 6.4, as an example, the car may not have been quartered but the three photographs of the glove from different distances would have been taken together with the three photographs of the word 'prick'. Yet, specific requirements of consistent documentation, such as multiple images, not deleting images and not having their equipment in their photographs, were

mentioned.[41] Nonetheless, photographic images are not the only way that the CSI records the crime scene. One other way is through the crime scene report, discussed in Section 6.4.2. Prior to this, it is important to examine how the requirement of 'being objective' is performed when intervention is needed to provide the photographs with a form of narrative and evidential significance.

6.4.1.3 Enhancing images

The training in relation to camera functions focused on the ability to capture images with the acceptable levels of exposure and contrast as well as the required long, medium and close up shots at specific crime scenes as stressed above. Yet, whereas these processes see the scene as something to capture in its current form without alteration, there are certain circumstances where enhancement is required and allowed (within specific parameters). One such example of this is the use of a camera flash to aid the clarity of certain parts of or objects in the crime scene.[42] Yet, the introduction of flash photography to Module 1 Stage 2 participants added another level of technical difficulty to their photography tuition. More camera settings needed to be considered, the differing types of potential flash, such as bounced flash, reverse bounced flash, fill in flash and so on and, in some circumstances, over or under exposure of specific areas of the crime scene was necessary to facilitate acceptable photographs of the important elements of the scene – for example, a view outside the window of certain areas.

Emphasis on documenting the crime scene, its details and context as it was prior to police or CSI intervention is also important when images are enhanced through the use of a flash. Saferstein states in his manual "[t]he most important prerequisite for photographing a crime scene is for it to be unaltered" (Saferstein

[41] This last point resulted in some discussion with one CSI I was shadowing at real crime scenes. He stressed that sometimes having no evidence of the CSI's presence in images is not possible. He gave the example of a recent crime scene where the crime, a theft from motor vehicle, had taken place on the side of a busy road. With nowhere to park except right behind the vehicle, it was not possible to omit the CSI van from crime scene photographs. As such, there are parameters in which this lack of CSI equipment is enacted. He stressed that beyond the van, however, equipment such as torches, briefcases and camera bags should never be visible in crime scene photography.

[42] It should be noted that in victim photography, such as the photographs of an assault victim, these would normally take place in a photographic studio within the police station with the paraphernalia of such an environment – controlled lighting, umbrella shaped light reflectors and any necessary props to render injuries visible to the camera. This is another example of enhancing images.

2010, p.31). The use of flash photography is referred to as 'enhancement' rather than alteration by Forensic Centre trainers. Unlike physically moving items in a crime scene, enhancing a photograph with the use of a flash makes certain aspects clearer to the viewer which otherwise may have remained hidden. Enhancing an image using light is acceptable but there are strict processes in place to document how an image has been enhanced.[43] For instance, the practice of taking multiple images of each object and, in particular, of taking pictures of the object prior to illumination provides documentation of the illumination process and justification for the use of a camera flash or torch. The clear process of capturing multiple images first without and then with added lighting is supposed to document that the lighting, and only the lighting, has changed between the before and after images. Figures 5.5 and 5.6 below provide two examples of this.

Consider Figure 5.5. Here the focus is the wheel arch. This was an example of 'fill in flash', using the flash to illuminate areas that would otherwise be in shadow. Although there is no object of interest in this image, the wheel arch was chosen as easily available at the Forensic Centre for students to practice 'fill in flash'. The details now visible show parts of the wheel void, indistinct in the first image. Taken during an exercise on the use of flash to fill in for the absent light source, this lighting allows the viewer of the photograph to see that there is nothing on the tire and nothing inside the wheel arch.

[43] These processes are not necessary when, for example, the whole scene is in darkness because of the time of day or location. Instead this is specifically in relation to scenes where light is added with the purpose of illuminating a specific object or aspect.

Figure 6.5 Using flash to enhance images - Original (top). With flash (bottom).

Figure 6.6 Using flash to enhance images - Long and mid range shots. Original lipstick close up (bottom left). Lipstick close up with flash (bottom right).

Figure 6.6 shows a lipstick, underneath a car, half obscured by shadow. This was part of a scenario scene completed by Module 1 trainees specifically practising photographic techniques. The photographs are used to document a number of things: the position of the lipstick from a distance, from mid-range and close up and then with and without the use of the camera's flash. This documents that the lipstick in evidence bag ABC1 (for example) is the lipstick in the photographs; that there were no other items around this object, hidden in the shadow of the car's undercarriage. Viewed together, the photographs in Figures 5.5 and 5.6 serve to show to the trained and untrained eye details of the scene in evidentially relevant ways, documenting how the image has be enhanced.

There are of course, other methods of enhancing images that occur in less transparent ways. One such practice is the consistent use of polarising filters. Polarising filters help to reduce the glare on reflective surfaces such as windows and car bodywork. Although polarising filters do not remove glare completely, they allow the camera to capture what is behind the glass, for example, without it reflecting all the light into the lens. This type of filter was used in Figure 6.6. Without a polarising filter it may not be possible to identify the items that are visible through the windows of the car without a large amount of reflection. In contrast to the use of flash, however, there is no imperative for the CSI to declare the use of this filter in their practices by first taking a photograph without the filter followed by a photograph with the filter (or even to note the use of a filter in their scene examination reports). A reason for this difference in making the documentation techniques explicit is that polarising filters do not change the images alone. In fact, for most CSIs, the use of this filter goes without a thought. It is left on the CSI's normal zoom lens, attached to the camera. As a result, the filter is considered part of the camera, mediating how images appear and the visibility of details. In line with the account of mechanical objectivity, where technology was utilised to remove the potential for human intervention, polarising filters appear as just an extension of this requirement, allowing more details to be visible in images. Trainees were even advised by Forensic Centre instructors to purchase a polarising filter with their own money if one was not provided by their specific police force. As such, this filter appears part of the camera equipment and not a technical addition or image alteration.

In my analysis of how CSIs document the crime scene so far, I directed attention to the requirement of 'mechanical objectivity' for providing accurate records of photographic evidence. I elucidated how the requirement of mechanical objectivity not only defined the ways in which images of crime scenes were recorded but, furthermore, how it also defined the professional role and self-understanding of CSI work. Extending this point, the next section will briefly portray some of the other ways the CSI has an impact on the images produced and the narrative of the crime.

6.4.1.4 Framing the narrative of the crime

It is clear that in addition to gaining the technical competency in photography, crime scene photography involves numerous other decisions (beyond those relating to camera functionality) when taking images of the crime scenes. In his discussion of the investigative ordering of major police investigations, Innes (2007) uses the term 'master narrative' to articulate the way police officers and investigative personnel make sense of crimes and crimes scenes using their experiences of similar crimes, particularly near the end of an investigation. However, such master narratives can be used to provide a working definition of the crime and test hypotheses. In Chapter 5, the significance of experience in participants' understandings of competence was elaborated. The ability to articulate experience and communicate it to others through the notions of communities of practice (Doak & Assimakopoulos 2007) and interactional expertise (Collins & Evans 2007; 2013) were shown as important in this process.

CSI photographic practices are prescribed. I have already illustrated how CSIs are trained to take multiple images of the same subject from differing distances. The purpose here was to record crime scenes photographically before any manual intervention and, as I argued, to present the objectivity of crime scene photography as mechanical objectivity to the non-CSI viewer. The creation of mechanical objectivity, however, requires knowledge and expertise to mediate understandings within the CSI community. Multiple images of the 'same' content/phenomenon are recorded and left for the viewer to interpret. This, surely, leads to further questions about how the CSI photography process is considered by viewing its results, such as in courtroom environments where images are often accepted unproblematically unless specific issues are identified. Nonetheless, the rule that no pictures should be deleted during the course of a

scene examination, can impact on such courtroom proceedings and the understanding of the CSI's ability to do her job. Let me explain. It became clear that reflexivity is incorporated into prescribed photographic practices. CSIs demonstrate the divide between absence and presence, in frame and out of frame through the multiple images they take and their care to make sure inauthentic objects (such as camera bags and examination equipment) are not present in these images. These long, mid-range and close up images provide the audience with context to the photographs – there are no obvious omissions and, in doing so, some of the numerous decisions involved in successful crime scene photography are masked. By making sure that no images are deleted from the memory card, the appearance of objectivity is maintained. However, this also means images that are clearly not of an acceptable standard (for example, nothing in the image is in focus) remain on permanent record and could serve to undermine the expertise and competence of a CSI, particularly in this courtroom environment. This issue is discussed in more detail in Chapter 7.

The current focus on the wider practices, necessary to photography in general (such as selecting aperture setting and deciding the depth of field) as well as more optional additions (such as utilising flash photography and polarising filters), has shown their integral role in the visual experience and sense making of these images. All of these practices were shown to exhibit a double function as they, on the one hand, provide the trained eye with a visual, tangible account of the numerous decisions and protocols that are enacted by CSI in forensic and investigative practice. On the other hand they also acted as a record of CSI sense making and framing in action.[44] Although as Saferstein (2010, p.31) stresses in his textbook on crime scene investigation that photographs "cannot stand alone [… but] they are complementary to notes and sketches", the use of photography and the power of the visual image in presenting or being deemed self-explanatory is a significant point when communicating a crime scene and a crime to relevant parties. During the training, the significance of such images to communicate with wider police and juries was emphasised.

Given all this emphasis on photographic skills and techniques, however, the training itself did not acknowledge the narrative power of the images captured by

[44] In this context, I refer to the real time nature of photography. These photographs provide a visual record of sense making situated in the specific contexts of the scenario crime scenes being examined.

the CSI. Rather, the focus remained on the practices that enable the communication of the photographs' objectivity – the multiple images of the same subject matter from different distances, and so on. Thus, the more literal sense in which CSIs frame the crime scene and, by extension the crime, was absent from these discussions. Instead, framing practices focused on maintaining the credibility of CSI images of the crime scene and those objects deemed relevant by the CSI to photograph numerous times.

With respect to the beginning of this chapter, and coming back to the different forms of knowledge involved, the invisible work of crime scene photography has a secondary effect on the way that the crime scene is understood. The ordering of photographs, what is in focus, present or absent, all provide the viewer with the interpretative flexibility to understand crime scene images in a number of different ways. Though by providing some ways, it still excludes other possibilities. Figures 5.3 and 5.4, for instance, direct the viewer to a number of different pieces of information which may or may not be relevant: the car was parked in a bus stop; the car was in reasonable condition; and the spray painted word is the only visible damage. The perpetrator is likely to have worn the black glove placed under the offside front wheel arch. These are all rather simple ways in which some of the information presented in the photographs can be seen as meaningful. If the CSI had not taken multiple images of the glove, it would not be signposted as potentially relevant. Photographs provide the viewer with information within the camera frame, not outside it. Unlike a redacted document, one is not privy to the knowledge that something has been (deliberately or otherwise) withheld.

Gibson's (2013) work with the Justice and Police Museum in Sydney is useful here in highlighting the flexible ways in which photographs, particularly crime scene photographs can be understood and interpreted. Gibson examined numerous boxes of historic crime scene photographs from the 1890s to the 1970s where, beyond a brief label stating the nature of the crime, all other details have been lost. Although Gibson (2013, p.244) was concerned with wider questions on the sensory experience of such images, he highlights that without a clear articulation of what the viewer is seeing "these photographs offer something richer than certainty: they prompt endless questions and unsettling accounts of the real, material lives and places that have been pressed as luminous energy on

each photographic sheet." Although these "endless questions" are often present in real scene examinations and police investigations, even when more contextual information is present, the flexible ways in which crime scene images can be understood is limited in part through the invisible work involved in crime scene photography. For example, what is in focus, the depth of field and visible parameters of the crime scene direct attention to specific points in the crime scene and methods of performing objectivity such as, the multiple images from differing distances of objects the CSI help to reinforce a view of crime scene photography as an enactment of mechanical objectivity. Together, these methods provide boundaries to the interpretation of the crime and the crime scene and limit the potential narratives available to describe and imagine the crime. These boundaries display the key role of the CSI in enabling and disabling specific narratives of the crime and crime scene through their photographic practices. The viewer can work within the framework set by the CSI's photographs and accept these records as 'objective' or question them. These records, nonetheless, play a role in the emerging narrative of the crime and help illuminate the differences between the critically and reflectively enacted notions of objectivity in crime scene photography, and the objectivity assumed through the use of a camera.

Photography is not, however, the only way the CSI records a crime scene 'objectively' and contributes to the emerging narrative of the crime. Scene examination reports provide a more literal narrative and, as the next section attests, clearer links and coherence between the different aspects of the examination of a crime scene and the material practices of crime scene investigation.

6.4.2 Scene examination report

Crime scene photography is only one of the various methods used by CSIs to record a crime scene. Another method is through the scene examination report written by the CSI at the crime scene. In parallel with photographic practices, the scene examination report is relevant to understand how trainees are trained in ways of seeing a crime scene space and how they are taught to document it, in this case on paper rather than in images. Part of this process involves instilling coherence and a narrative that is consistent with associated crime scene photography. Chapter 8 explores the investigative process and how investigative

decision-making is introduced into the contents of the scene examination report. Although CSI paperwork is not limited to scene examination reports (for example, specific forensic artefacts require paperwork in the form of exhibit bags), the report serves a number of specific purposes, listed below from a slide presented at the Forensic Centre:

- To identify all recovered items of evidence
- To exactly describe their original location
- To act as an intelligence report
- To use as basis for statements
- To refresh memory in court
- To record continuity of evidence
- To facilitate disclosure (NPIA Crime Scene Investigator Learning Programme, Module 1 Handout).

As the bullet points suggest, the process of taking notes at the crime scene and producing a report of the space helps in drawing all different parts of the examination process together – not only does it describe the reported crime and the physical environment but provides further information in relation to the forensic artefacts removed from the scene. The report offers a site for additional information to be recorded (beyond that present in the photographs or on the packaging of specific forensic artefacts). Completed on a pro forma at the crime scene, these reports contain numerous boxes for set information, such as crime number, the time the CSI arrived and left the crime scene, details of the crime told to CSI before examining the crime scene, a description of the crime scene and the forensic artefacts (and their corresponding exhibit numbers) created at the crime scene. In the police force I observed, these written accounts were entered verbatim into one of the force computer systems when they returned to the station.

At the Forensic Centre, the training received in relation to these reports included a lesson on the information that should be included and the analysis of two example scene examination reports. Learning from errors, one of these reports was an example of unacceptable practice. It lacked details about the scene, and the CSI's actions, and was littered with assumptions about the scene, the crime and the perpetrator(s). In comparison, the other report was an example of good practice. It was more detailed in recording the scene, and tentative in any statements about possibly relevant items at the scene. The quotation below is a description of the scene from the example of a good crime scene report:

> In the presence of the householder Mr Smith, I carried out a visual examination of the premises. Premises consisted of a semi-detached house situated in a rural location, open access down the drive and rear of the property. Property bordered by 1.8m high hedges to the front and rear.
>
> Exterior doors and windows found to be locked and secure, with the exception of the front bay, living room window. *Noted apparent instrument mark damage* along closing edge. Bay window consisted of five separate glass panes each measuring fifty centimetres across by 80 centimetres high. Extreme right pane (when viewed from the outside) broken. Majority of glass missing from the frame seen lying in the flower bed, below the window and also on the inside living room floor, (below the window). *Noted what appeared to be blood distribution* on broken edge of glass, still in the window frame. Also noted a handkerchief, which *appears blood stained*, lying in garden to the right of the broken window.
>
> Examination of inside of the broken living room window *revealed a number of fibres* on the window frame catch. Noted a half full 'Teacher's Whisky' bottle on the fire hearth, and a plain piece of paper bearing an *apparent footwear impression,* lying on the floor (NPIA Module 1, excerpt from example scene examination report, my emphases).

This example helped to instil in trainees the need for details and logical progression in their written account. This trained, logical progression reflects topological search patterns (see Section 6.3) as well as the CSI's training in photography and photographic ordering. In the report, the text moves the reader around the crime scene, situating points of interest within the account. Any points of interest are recorded tentatively, using conditional language. For example, in the report above care is taken not to state categorically that there is blood in the crime scene. Instead there is "what appeared to be blood distribution". Only the "number of fibres" is not prefixed in a way to suggest uncertainty although the use of "fibres" as a description is, in itself, vague. This tentativeness serves to avoid claiming something *is* relevant to a police investigation when further expert analysis is necessary to make such a claim. Although in the Forensic Centre tuition this method of using "apparent", "appears" or "potential" was presented as a way of performing objectivity through assuming nothing, it clearly does assume that the prefixed item might be of significance. These words serve to illuminate specific areas where expert mediation in the form of laboratory analysis or fingerprint comparison is necessary to make certain objects meaningful.

The presence of such a statement in the report serves also to justify the ensuing action of the CSI, namely creating a forensic artefact from such items of potential relevance. Reports not only present the photographic records in written form, it provides a site for a description of the environment and for drawing the attention of the reader to specific aspect of the scene. It allows any items created at and/or removed from the scene to be recorded in official paperwork. Rather than solely a record of the scene, crime scene reports are a site in which the actions of the CSI can be ordered and contextualised, creating coherence between the different records and results of crime scene practice in the geographical space. In addition to photographs, it is clear that these reports provide another frame within which to understand the crime. Those points noted by the CSI in such a report about the general space and, in particular, the points of interest, prefixed by conditional language, serve to limit the scope of the reader to interpret the crime and scene in multiple different ways. This reader, namely police and criminal justice system personnel, can question and disregard the CSI's record. However, it does provide an early narrative and a starting point in the interpretation and investigation of a crime.

These reports, in particular, are also helpful in identifying some of the invisible work completed by the CSI prior to the production of forensic artefacts. Crime scene reports document a silent dialogue between the CSI and the crime scene space, made visible through the items noted as potentially relevant within the scene. In the above example report, "[e]xterior doors and windows found to be locked and secure, with the exception of the front bay, living room window" documents a CSI's (invisible) search for points of entry or exit from the crime scene. Each window has been checked and deemed secure. This is not visible through crime scene photographs and nor would it be visible had the CSI not noted such action within the report. Although the elegance of the writing and the level of detail presented in the example report is far greater than those I saw completed at real crime scenes, these written records provide the reader with an account of the CSI's sense making within the scene.

The emphasis on crime scene reports as records of CSI sense making is noteworthy when taken out of the crime scene context and placed within the criminal justice system. These reports function as a memory aiding tool for the CSI when writing court statements or preparing for a court appearance. Yet,

these reports are also a method of documenting the CSI's objectivity (according to police and legal standards) in the course of examining the scene. Both photographic practices and scene reports utilise topological search strategies as a way of structuring the presentation of crime scene records. In the scene report, however, prefixing each item where expert analysis is required with conditional language, presents CSI action as more mechanised. Practices appear well defined and executed with precision and a lack of individual agency. Photography utilises search strategies, protocols surround the number and types of images expected in a routine examination and the technical apparatus of the camera to maintain the appearance of objectivity. Crime scene reports differ in that the objectivity is presented in the conditional language, in the potential to be cross referenced with scene photographs and in the coherence it provides between the numerous products of a crime scene examination (photographs, forensic artefacts, witness testimonies). The crime scene report contains a breadth of information, tying together the action of the CSI at the scene. The practices of recording the crime scene on paper and with a camera in tandem serve to emphasise a lack of manual intervention. Yet, like the discussion of mechanical objectivity and photographic practices above, lack of manual intervention is also something performed thought the CSI's recording practice. Official records of the crime scene involve directed actions, strict adherence to photographic and writing practices in which displaying a lack of preconceptions becomes a practical accomplishment through the course of competent CSI work. By actively engaging in the requirements of scene reporting protocol, presenting crime scene reports as a solely descriptive process (ignoring the narrative element of such documents), CSI's engage in presenting their work as enacting mechanical objectivity.

6.5 Discussion: Objects, objectivity and bridging divides through practice

Throughout the discussion of crime scene photography and documentary practices, there has been an emphasis on the absent stakeholders, such as the police personnel, the legal professionals and juries. Photography and scene examination reports serve to situate exhibits, witness statements, suspect's accounts and laboratory results within the confines of the case being discussed. The material practices of taking photographs or writing reports are not unique to the CSI's skill set and neither is the technical competence to utilise the functionality of a DSLR camera. Rather than photography per se, the CSI's expertise is linked to the knowledge of the *expected* photographic images from particular scenes and the requirements of *crime scene* photography.

Crime scenes are seen-as and done-as previous scenes so ensure expected photographic practice is achieved. This knowledge of expectations developed through formal photographic training exercises, communication with more experienced staff and the completion of scenario and real crime scene examinations, serve to cement an understanding of anticipated images for different types of crimes that becomes embedded in routine practices. The emphasis on 'assuming nothing' in the text of the crime scene report and the reports role in tying crime scene photography and specific objects potentially removed from the crime scene together within a single, straightforward account of the crime scene examination is also crucial to the Learning Programme. The need to record certain pieces of information on paper and, where appropriate, use conditional language serve as a record of the CSI's enacted expertise, even if the details of such enactment are invisible in these documents.

Although this process of 'assuming nothing' is clearly a practical accomplishment, completing crime scene examinations in this way does foreground the importance of practice is generating subtle theories and narratives about a specific crime in the minute practical decisions that take place when confronted with an expansive space to delimit, document and define as a crime scene. Furthermore, the performance of mechanical objectivity serves not only to support these theories and narratives as facts, but allows the CSI and wider police personal to occupy the same, singular reality and avoid what Pollner (1987) refers to as reality disjuncture (discussed in Chapter 2).

Assumptions about what a crime is and how it should be documented are embedded in the photographic and documentary practices discussed in this chapter. These practices are theory building, they operationalise rules about recording, 'assuming nothing', camera settings and so on, all at the same time. Yet the resulting objects produced through this complex assemblage of practices, contexts, technologies and knowledge, are condensed down into a linear, straight forward account of the crime scene, masking the agency of the actor and the knowledge production occurring both *in* and as a result of practices. Yet this contribution and the skills involved in such actions are absent from participants' oral accounts and potentially overlooked when viewed by other police and legal personnel. Even at the Forensic Centre the ability to articulate photographic requirements for crime scenes in general were very limited. In the context of this chapter, I had to draw on textbook accounts as a starting point for discussion.

The processes discussed in this chapter, broadly construed, help to visually standardise and fix in time a crime scene, help to demonstrate the CSIs jurisdiction over the crime scene as an occupational space as well as her role in defining the limits of a scene and the limits of her work environment. In photographic practice, it is the combination of the camera and articulated practices of documenting the unaltered nature of images. As I have argued, these practices demonstrate an understanding of crime scene records as mechanically objective (Daston & Galison 1992; 2007). Yet, some procedures, such as the strategy of taking crime scene photographs from different angles and distances, also took into account the fact that photography itself is not devoid of human mediation. On that account, numerous photographs from different angles help avoid claims of CSI intervention in relation to aspects of the scene.[45] Objectivity, broadly construed as the absence of any human mediation whatsoever, is an unrealistic goal. This is acknowledged implicitly in CSI training and photographic protocol. Yet photographic practices provide a clear guidance about the number and types of images expected as a method of *performing* mechanical objectivity rather than necessarily agreeing with its underlying assumptions about the use of technology in recording the 'truth'.

[45] At serious and major crimes, there are also documents to log who has entered the crime scene and for what period of time.

The scene examination report utilises the notion of mechanical objectivity in a different way to crime scene photography. CSIs are trained to move methodically around the crime scene without jumping to items that may seem on the surface obvious or important. Written accounts of such movements are detailed, descriptive and through the emphasis on 'assuming nothing', conditional language is used when the reader's attention is drawn to specific items that might be of relevance to the investigation. When the photographs and scene examination report are examined together, the mechanical objectivity of such records can help avoid potential courtroom concerns that the scene was either altered or potential evidence overlooked at this early stage of the investigation.

In the account of crime scene photography and documentation, context appears as an artefact of recording practices rather than a variable within the enactment of practice alone. In line with Cook and Wagenaar's (2012) contention that knowledge and context should be viewed as occurring *within* practice, one can see from the discussions throughout this chapter that decisions made at the scene, from the technology used through to what is in and outside of the crime scene, construct the context of the crime and the experience of the CSI and context of their practices. It is also clear that the context in which CSI practice takes place is actively affected by the tools (and the setup of those tools) brought to the scene by the CSI; the context of CSI work is not wholly independent of the CSI. Although a crime scene does take place in real physical context (at least in terms of the crimes discussed in this thesis), understandings and reflection on the context are mediated by understandings of the required practices necessary to document the crime and to make sense of what may or may not have happened in this specific temporal and geographical space. The context of action is part of and written in the practices of crime scene investigation.

Not only do such practices raise questions about what is *not* recorded but also the ways these routine aspects of CSI work discursively construct an account of the crime. The written report, the ordering of the photographs as well as the specific contents of these images all aid the construction of the crime, directing the observer to a specific way of seeing the crime scene. This first police narrative of the crime, constructed through and in contextual forensic artefacts, highlights how these documents mediate later understandings of the crime and scene. The CSI appears as an ethnographer of crime whose practices both

acknowledge the mediated vision crime scene photography and scene reports provide, but also the important ways in which these documentary practices articulate specific understandings of a crime, the nature of photographic evidence and the purpose of these photographs across different occupational environments. This mediation of understandings is an important purpose of photographic and crime scene records. At the core, however, there is an agreement that these records of a crime (unless proven otherwise) are objective. It is this belief that provides a level of consistency (if not consensus) between the differing stakeholders in the criminal justice system. This core agreement that they provide a record of a crime is important in their role in bridging meanings between investigator and lawyer, while also acknowledging the space for interpretive flexibility – as Gibson's project highlights above, with crime scene photographs, particularly when little information is provided, uncertainty needs to be embraced. These records of the crime scene act as boundary objects in communicating the crime to the numerous criminal justice system stakeholders. The significance of photographic and report records produced by the CSI is agreed across occupational divides, even if such records are utilised and made sense of differently by different actors.

These documents constitute a key aspect of the visible work of the CSI. In this chapter, however, by considering the training and invisible work that takes place in the production of photographic and report records, the expertise of the CSI has been foregrounded. Such expertise in documentary practices, performing mechanical objectivity through their *visible* work and boundary work (both in terms of delimiting the physical crime scene space and the CSI's ownership of such space as an occupational environment) are central in understanding the scope and reach of crime scene investigation. Documenting the scene as a whole and performing mechanical objectivity is, however, only one part of the scene examination process. As the next chapter demonstrates, trace practices involve an engagement with another form of objectivity and a more detailed consideration of the integration of the CSI into the investigative (as opposed to ethnographic) role in wider police processes.

Chapter 7 Doing CSI work: Contact trace material[46]

Contact trace material is central to Crime Scene Investigators' (CSIs) understandings of their role. This "minute physical evidence that may be transferred from a victim or crime scene, or vice versa" (Nickell & Fischer 1998, p.54), has the potential to be used as evidence in the courtroom, help define a pool of potential suspects and guide investigative action with or without laboratory mediation. It is the CSI who is tasked with the selection, collection, preservation and documentation of contact trace material at volume crime scenes. In this chapter I explore the processes surrounding trace in Forensic Centre tuition and everyday work and document the important role trace plays, not only in the investigation of crimes, but in facilitating and justifying the role of the CSI in the contemporary police force. As I display, trace practices are central to CSI understandings of their jurisdiction, their job role and place within the investigative process but problems can arise as contact trace material moves between different occupational arenas in the routine use of science in the criminal justice system.

In the course of everyday work, CSIs utilise a variety of names for contact trace material. They may use trace (in the singular for both singular and plural sources) or contact trace material for all items. Some participants separated out DNA and fingerprint trace from other, more tangible types of trace, such as fibres. For simplicity, I use trace to refer to all types of contact trace material.

Whereas in Chapter 6 I focused on developing the skills to record successfully the crime scene space both photographically and through paperwork practices, here I focus on the significance of, and work that takes place in, the production of forensic artefacts from trace. As I attest, forensic artefact production is central in participants' understandings of the unique expertise they offer in the police investigative process. Beyond specific police investigations, trace and the potential offered by trace are important in the negotiation of the CSI's position in the police force and investigative process.

In this chapter I explore the multiple ways that trace (and/or knowledge about trace) is used in CSI everyday work, paying specific attention to the use and discourses of trace in (re)asserting expertise and competence. I start by

[46] I have published an article which utilises some of the quotations and arguments documented in this chapter - see Wyatt (2014).

examining the origins of the often-heard phrase “every contact leaves a trace”, attributed to Edmond Locard. I then shift to the way in which trace and the potential of trace is presented and discussed to trainees in the Forensic Centre and in learning how to convert trace into legally, scientifically and investigatively robust objects, namely forensic artefacts. Particular attention is paid to the centrality of trace in CSIs’ understandings of the unique expertise and knowledge they contribute to the investigative process. Through the performance of CSI work in general, and forensic artefact production in particular, I examine how bad trace, contamination, and discourses of contamination are averted through and utilised in crime scene practice. The discussion of trace and trace practices serves to highlight the centrality of mundane, administrative processes in the production of forensic artefacts and in safeguarding their ability to maintain a focused interpretive flexibility where, at least at a basic level, there is a collective understanding of the significance and utility of such evidence in the investigation and prosecution of criminals.

7.1 Edmond Locard and the concept of trace

In police and forensic circles, trace and the potential it offers in criminal investigations is associated Edmond Locard, quoted as stating, “every contact leaves a trace”. Although often referred to as Locard’s law or Locard’s exchange principle, there is no evidence to suggest Locard uttered this phrase or asserted this notion in such a categorical manner. Williams (2007, p.200) states that “[t]he closest [Locard] seems to have come to any such formalisation occurred in a passage in his *L’enquête criminelle et les méthods scientifiques* (1920) in which he asserted that ‘it is impossible for a criminal to act, especially considering the intensity of a crime, without leaving traces of his presence.’” Nevertheless Locard’s law is important in the crime scene practices surrounding trace. Locard’s most detailed coverage of trace is in a collection of three articles published in *The American Journal of Police Science* in 1930 (i.e. Locard 1930a; Locard 1930b; Locard & Larson 1930). In these articles, Locard use the term ‘dust’ (rather than trace) and provides a number of examples of the uses and practical considerations relevant when using dust as intelligence or evidence in criminal investigations. Stating that “the microscopic debris that covers our clothes and bodies are the mute witnesses, sure and faithful, of all our movements and of all our encounters” (Locard 1930a, p.276), he understood

‘dust’ as an omnipresent source of information. He defines it as “an accumulation of debris in a state of pulverization ...[and this] characteristic of pulverization distinguishes dust from mud and dirt” (Locard 1930a, p.278). “Pulverization” enables us to differentiate between dust and objects found at a scene (for example, a tool or weapon as opposed to a fibre). Locard states:

> pulverization destroys the morphologic state which would enable us ordinarily to recognize these objects by our senses or even with our instruments. On the other hand, the transformation does not go so far as to reduce the object into its ultimate elements, that is, into molecules or atoms (Locard 1930a, p.279).

Without the object reduced to its “ultimate elements” there is a remaining structure, which is used to identify certain substances and objects within the dust. It is these remnants which allows it to be rendered identifiable and, in some cases, meaningful in the course of a police investigation. However, because of this emphasis on meaning, all dust is not of equal value in criminal investigations and Locard provides some characteristics that can make certain types of dust more valuable to police investigations than others. Offering numerous lists of possible reasons for the presence of certain types of dust in particular environments, for example, dusts associated with certain occupations or geographic locations, his characteristics can be classified into three different factors: the rarity of the dust; the location of the dust; and the relationship between the dust and the other knowledge held by the police. In relation to rarity he states:

> "[t]rousers and boots constantly carry the dust and the mud common to calcareous and siliceous roads. Even our clothing carries particles of coal and plaster. It is naturally much more rare to find therein such chemical elements as platinum or tungsten, the presence of which cannot be explained except by professional occupations (jewel[l]er, chemist, or worker in a tungsten-steel factory, etc.). It should be more interesting, still, to find yttrium, erbium, or polonium in even the slightest traces" (Locard 1930a, p.280).

In highlighting the significance of rarity, Locard takes us beyond the notion that *every* item of dust is both identifiable and meaningful. Instead, the rarer the dust the greater value it possesses as a source of information about the perpetrator.

The location of the dust can also be significant in criminal investigations. Whether it is a specific type of dust underneath a suspect’s fingernails or within

the suspect's pocket, certain locations and types of trace are more incriminating than others:

> It is known that pockets are places where the expert has the best possibilities of discovering traces of blood, in the event that the murderer may have cleansed his garments. They are almost invariably selected for study of dust (Locard 1930a, p.283).

Although Locard suggests a number of locations along with general comments on the rarity of composite parts of dust, Locard's account highlights the importance of the skills required to identify potentially relevant avenues in which to pursue dust and how the meanings of dust are inferred and imposed by actors within the context of specific cases. Thus, trace or dust provides a site where the sense making of the police staff or scientists involved is clearly foregrounded. Locard (1930b) highlights that dust need not provide direct evidence of wrong doing. It can just make a person standout for greater scrutiny, whether that be because the mud on their shoes does not match the mud on the route they claim to have taken (1930b, pp.496–499, Case I), or in the case of a fatal stabbing, fresh grass on their sword suggests they recently cleaned it in the meadow (1930b, pp.502–503, Case V). In doing so, the final aspect of his discussion becomes central - the idea of analytic reasoning, of making sense of dust within the context of a specific scene.[47] Analytic reasoning, particularly through the concept of the investigative mindset, will be discussed in detail in Chapter 8. However, for this chapter it is important to note the significance of the interplay between physical attributes and the investigative process. Trace is meaningful only when contextualised, considered and used to direct investigative action (as well as used as evidence). In contrast to the shorthand version of his work, "every contact leaves a trace", Locard was more tentative in his assertions about dust, ending this set of articles with "[n]othing in the foregoing is to be considered as final. I have desired merely to indicate the present state of development of the Analysis of Dust Traces" (Locard 1930b, p.514).

[47] In fact, Locard places the analytic reasoning of the police force as a central component of using dust successfully, calling for the use of literature sources in police education:

> Conan Doyle, before becoming a famous author, had been an earnest student of medicine. At Edinburgh he was a pupil of Joseph Bell, an old army surgeon and hospital physician, who taught him, in addition to the solid principles of legal medicine, the art of analytical reasoning, in which he excelled. I hold that a police expert, or an examining magistrate, would not find it a waste of his time to read Doyle's novels (1930a, p.277).

Dust has now disappeared from the police lexicon but the ownership of the practices surrounding dust identification and collection is the domain of the CSI. In his empirical study of CSI work, Williams (2007) claims that Locard's law is the backbone of the two propositions that facilitates the CSI role and its status in the criminal investigation process. Drawing on observation and document data, Williams (2007, p.195) examines the processes through which CSIs complete their role and argues "that competent crime scene examination is achieved by its attentiveness to two chronically vague propositions whose epistemic status is uncertain but whose organizational uses are powerful and consequential". Williams (2007, p.199) claims that these proposition, "'exchange always occurs' and 'individuation is always possible'",[48] document the centrality of Locard's law in legitimising the CSI's role. The first statement does this through the notion of exchange. The second is a pillar of forensic science more generally – this emphasis on individuation is stressed also by Kirk (1963) as the central component of criminalistics. Both of these propositions are scientifically unproven. Yet, it is clear how they link to crime scene trace in particular. By focusing on individuation and individualisation of material exchanged between objects, trace left at crime scenes become potentially valuable in gaining information about the crime and the criminal.

Williams (2007, p.200) examines how these two propositions appear in routine and exceptional CSI work. His account highlights the dynamic interplay between a concept of trace as the omnipresent, unavoidable residue of action and the expertise involved in identifying and making sense of specific, relevant trace at a scene. Although my own experiences and data do not include or express the second proposition about the potential to individuate all trace and thus render it meaningful in some way, Williams' study and Locard's law provide a backdrop to the importance of considering how trace and its potential is operationalised in the crime scene setting and, as the next section describes, how it is introduced to trainee CSIs at the Forensic Centre.

[48] Williams highlights also how these propositions are a "central resource used by examiners not only to direct and account their own ongoing conduct, but also for the control of the conduct of others..." (Williams 2007, p.199). Therefore, this suggests that understandings of the significance of trace and the practices that surround it are fundamental in delimiting the role of the CSI from that of the wider police.

7.2 Trace and forensic artefacts at the NPIA Forensic Centre

The first lesson of the second day of Module 1 Stage 2, entitled 'Basic Forensic Principles', introduces trainees to many of the different forms of trace they might encounter in the course of completing their role in criminal investigations. Participants entered the room at 9am and one found a yellow, woollen jumper on the back of her chair. Picking it up and moving it to the back of the class, she sat down and opened her folder ready for the lesson. When the instructor arrived a few minutes later, he asked about the jumper and she explained that she had moved it to the back of the room. Gathering the class around the trainee and collecting his ultra-violet torch, he shone the light on her back, illuminating numerous yellow fibres. These fibres, transferred to her jumper-clad back, were said to be there as a result of Locard's law, quoted as 'every contact leaves a trace'. The instructor then went on to consider how the contact could have occurred – was the transfer the result of contact between the yellow jumper and her back or was this from the fibres transferred onto the seat's backrest and then transferred again onto the trainee's back when she sat down? The latter possibility was referred to as secondary transfer and used as a means of introducing contamination to the class, considered in the second half of this chapter.

Substantial time in Module 1 Stage 2 is devoted to developing the necessary theoretical knowledge and practical skills to successfully collect, package and record trace at scenes. Whether successfully dusting, photographing and lifting a fingerprint or casting a footwear mark, participants were expected to execute trace collection protocol meticulously. Processes were discussed, demonstrated to trainees and then practiced within the safe environment of the Forensic Centre. Proficiency is developed over time, learning from their mistakes. The training is organised in such a way that the different procedures and skills required to collect and package specific types of trace are built up gradually and simultaneously with the investigative capacities to evaluate trace for its evidentiary potential. Whereas some processes require a number of days to master, such as fingerprint development and lifting, others are seen more as a process, involving very little skill, such DNA 'swabbing'. Even with the difference in knowledge and skill required to collect the varying types of trace, the identification of potentially fruitful sources of trace material was given equal weight throughout the course.

Participants were thrust into scenario scenes where they are not only required to think about the process work of correct collection of trace but to place it within the context of the specific scene they are examining. Specific details were given to the trainees before and during their scene examinations. Therefore, although trace collection practices were dealt with explicitly within lessons and practical exercises, the trainees were constantly pushed to consider trace within the wider confines of specific and changing scenario cases.

This chapter utilises the term forensic artefact, introduced in Chapter 1. Originating in Williams (2007, p.204), forensic artefacts are defined as "deliberately created objects of attention and analysis [that] are treated by those who encounter them later in the narrative of any particular criminal investigation as the equivalent of, or stand-ins for, the real-world objects from which these artefacts were constructed". Forensic artefact is a useful term because it acknowledges the work that goes into the production of objects removed from the crime scene as well as incorporates the investigative side in trace collection practices. In short, the term encapsulates the complex assemblage of practices involved in creating these objects and *doing* crime scene investigation. Forensic artefact also allows one to distinguish between the normal every day trace of contact, and the trace identified by the CSI as potential meaningful in the context of a criminal investigation. Finally, forensic artefact clearly highlights the way in which the process of collecting trace and rendering it into a standard, evidentiary and investigatively useable form, for example aluminium powder, stuck on clear tape attached to acetate and labelled with a permanent pen, are treated as specific, definable objects – in this example, fingerprints. Forensic artefact production is central to the CSI's role.

Locard's law, with its suggestion that contact however small and for any duration, will result in the transfer of matter was dealt with in two specific ways in the training environment: to highlight the potential of trace in criminal investigations and to illuminate the ease with which contamination can occur. In the 'Basic Forensic Principles' lesson discussed above, the trainees complete hypothetical exercises where they are provided with a crime scene description and asked to identify what they would package, how they would package, what are potential contamination issues and how they would avoid them. One such exercise I observed involved discussing the following scenario:

> A CSI colleague has been dispatched to examine the scene of a burglary, where entry was gained by forcing a ground floor window with what is believed to be a 20mm flat-bladed instrument.
>
> Having been tasked with examining the suspect's motor vehicle, you come across what you believe could be the instrument used to gain access.
>
> Discuss how you would consider packaging it to maximise evidence recovery, but at the same time minimising any risk of potential contamination (Module 1 Stage 2 Contamination Exercise Handout).

My participants had a very clear idea of what should be done in the scenario described above. Different CSIs and different CSI vans should be used to avoid contamination through secondary transfer. Protective clothing including facemasks and latex gloves should be worn. The "20mm flat bladed instrument" should be fixed inside an evidence box using string to secure the item, with the box and any openings sealed shut with sticky tape. After further questioning by the instructor, the participants also decided to wrap the ends of the "flat bladed instrument" in paper and seal them to make sure that trace could not be lost within the evidence box. Participants were advised to place their signature in permanent marker over all the edges of the tape and box to make sure any tampering would be noticeable in order to help document and demonstrate the chain of custody (discussed in Section 7.3). Overall, however, the message of the exercises was clear. Trace collection and contamination avoidance is a threefold process: collect correctly; package correctly; and sign and seal correctly. In doing so, the Forensic Centre programme explicitly acknowledges that trace potential and contamination aversion needed to be considered as interlinked and interdependent processes within the wider practices of correct trace identification and careful forensic artefact production. However, by differentiating contamination as wholly negative from trace as facilitating positive data gathering, contamination (as a form of unwanted or accidental infiltration of a forensic artefact) is moved outside of the standard repertoire of evidentially valid objects.

With notions such as Locard's law informing the way in which crime scenes are understood as sources of information about the crime and the assailant, and the emphasis on forensic artefact production as a central part of the role, it is unsurprising that participants saw trace in general and the surrounding practices of identifying and collecting relevant trace as one of the key aspects of their role

that differentiate them from other members of the police force and the general public. In fact, this was one of the most consistently noted areas of expertise documented in participants' second maps (for examples, see Figures 6.1 and 6.2).

For Rebecca (Figure 7.1), "evidence recovery, packaging and storage" is one of four key facets of her role that separates her from the public and other police staff. One of these four relates to the importance of photography, as there are "no other photographers in force". One focuses on "evidence recovery, packaging and storage" with different types of trace coming out of this box in yellow. The final two are linked through the CSIs important explanatory role ("how forensics can impact an investigation" and "possibilities and limitations of forensics (fact/fiction off TV programmes)"). In the interview, Rebecca expanded on this explanatory or advisory role both in terms of the wider police and general public:

> [Police Officers] don't always understand how the evidence that you collect is either going to help their investigation or ultimately not help their investigation. A lot of officers have got an idea that if you find somebody's fingerprints on something that means that person must have been in that particular house. They don't appreciate the fact that if it's a moveable item it doesn't necessarily place somebody within a house and they can get very excited that we've found fingerprints but when you […] start talking to them about the implications of what you've […] found it's not actually that crucial piece of evidence that they've been looking for so, it's just basically giving them their reality check sometimes. […A]gain, with members of the public they don't always understand, what you're collecting or why you're collecting it and how that's actually going to slot into the whole investigation process so you [have to] give them a bit of an idea of whether we've got a chance of catching anybody or not (Rebecca, M1 second interview).

Rebecca encapsulates this role of explaining the (in)significance of certain items of trace at scenes through giving other police personnel a "reality check." In her account, it seems a little knowledge about forensic potential can be counterproductive if the investigative relevance of trace is overlooked.

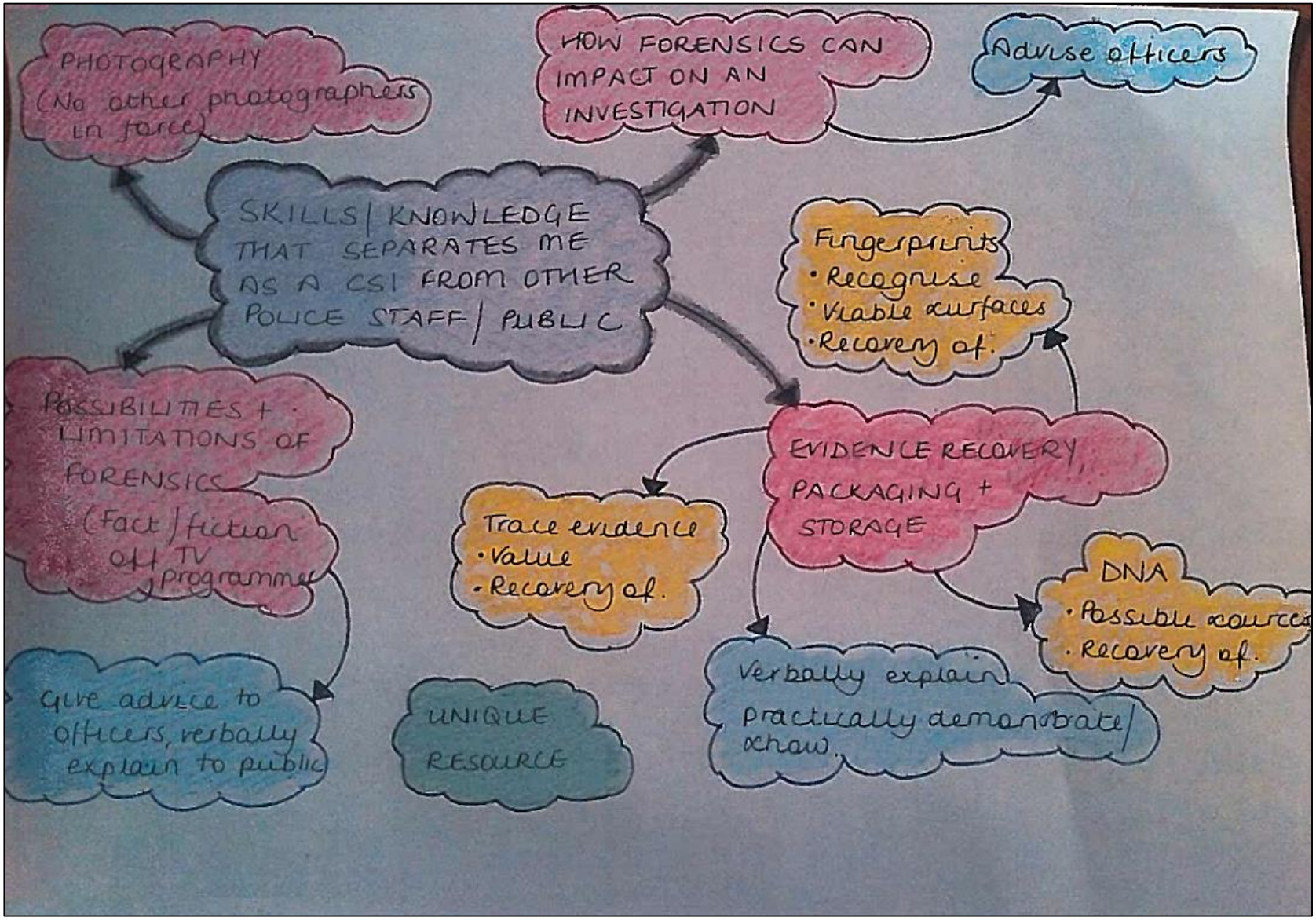

Figure 7.1 Rebecca's second map

Interactions with the general public are framed differently. The emphasis in these encounters is on educating and, where necessary, myth-busting. One important aspect of working against fictional portrayals of crime scene investigation, such as *CSI: Crime Scene Investigation*:

> [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 Rebecca, M1, second interview).

This process of talking with the public, in particular victims of crime, and helping them to understand the potential offered by crime scene investigation was an important part of Rebecca's work. It also provided her another site to negotiate her role and document the difference between her as a CSI and the general public.

For Jo (Figure 7.2),[49] the CSI "think[s] forensic potential and preservation first". The CSI is a "trained observer" and "think to understand the realistic chance of evidence being valuable." In Jo's account, the CSI appears separate from the investigative process as a whole. Instead, the CSI attends scenes with a very specific purpose in mind - to preserve and identify trace and interpret its evidential value.

[49] It should be noted that Jo's map does document some of inconsistencies with Rebecca's map. In particular, Jo states, "CSIs often are seen as aloof as scene attendance is not usually as first officer" and "CSIs seem often underappreciated until scene attendance is required". Neither of these points were present in other participants' narratives or maps.

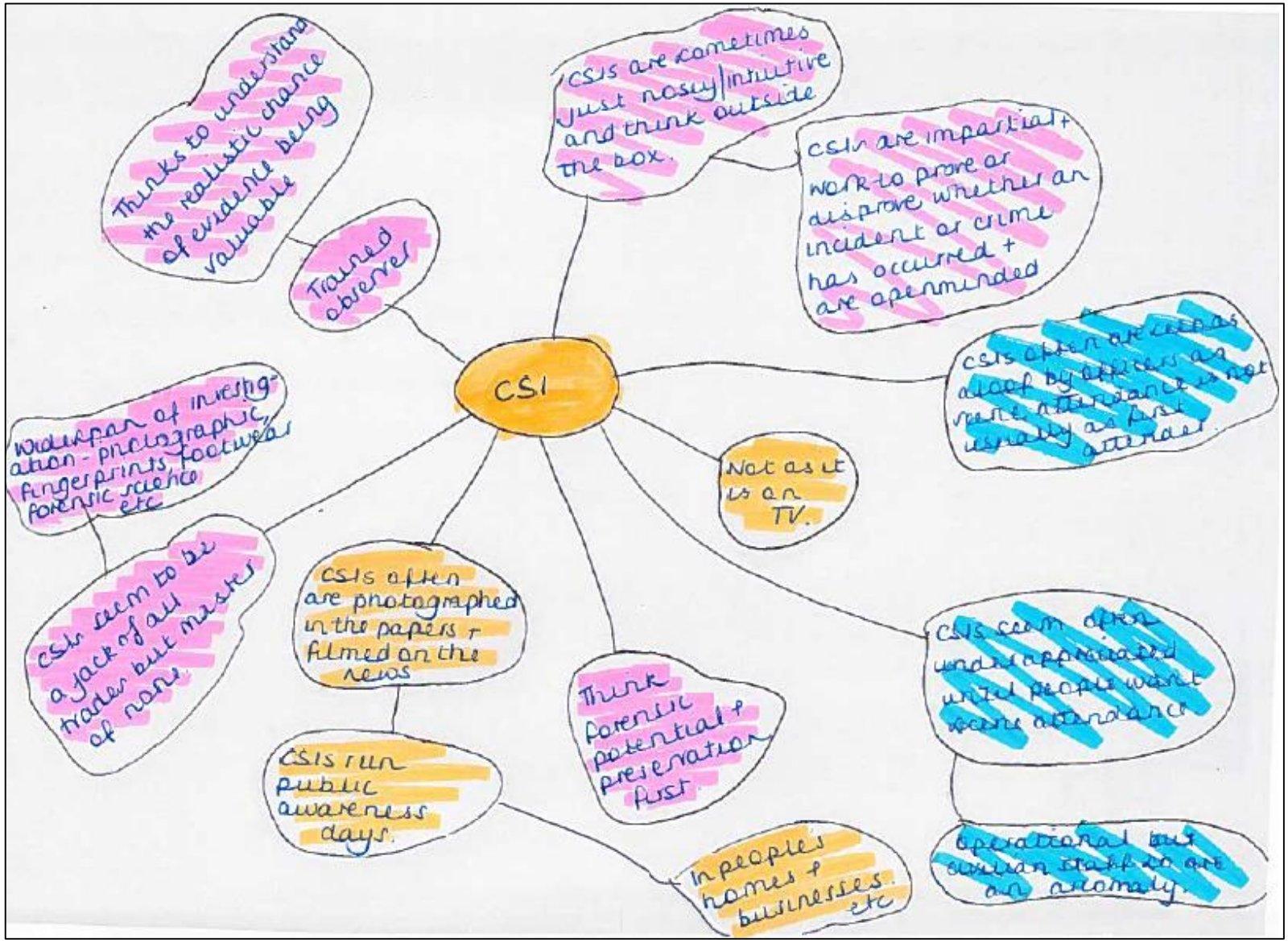

Figure 7.2 Jo's second map

Both Rebecca's and Jo's maps stress the centrality of trace practices in their perceptions of their role as well as the importance of managing expectations, particularly those of the public so that they are aware that CSI work is "not as it is on TV". Across all second maps, participants' responses were similar. All emphasised trace practices, the significance of communication and the CSIs explanatory or advisory role. For some this explanatory role referred solely to the police. For other the public were also included.[50] When questioned on the elements of their role, listed from participants' maps above, responses were similarly uniform. Lucy gave the following example:

> So if an officer comes in here and says you've got a footprint, well it's like, yes and they'll ask, well where was it, how did you get it, what can I do with the suspect's footwear now? So, then I'm pulling on the training and I'm required to explain what happens next and what we do with that evidence. Another example being like, we'll get like found property, erm, like say a push bike and a police officer will jump on the bandwagon that it's stolen and we need to fingerprint it and I'm like, well actually it's just found property. There's no crime as such. Yes, it might be stolen but we don't know it's stolen and if we identify somebody from that bike, all it means is that they've ridden the bike which means nothing (Lucy, M2, second interview).

Lucy provides an example of how her understanding of the potential meaning of forensic artefacts after analysis gives her a site in which to question police officer requests and demonstrate her knowledge. The identification, packaging and interpretation of trace, as well as grounding the potential offered by forensic science within the confines of specific cases, are central in the way that they understand and delimit themselves from other member of the police force and lay publics. Trace in general is not significance. Trace needs to be situated and potentially relevant to the case. Rather than abstract, overarching hierarchies of evidential value with DNA and fingerprints unquestionably on the top, the value of specific items of trace appear context dependent. This context dependence provide a site where CSIs are able to utilise the knowledge gained through their training and operational experience to situate the specific trace in question within

[50] Further examples can be found in Figure 4.4 (page 111) and Figure 4.5 (page 111). In Figure 4.4, Amy notes that CSIs "determine valid and reliable types of examine and tests", have the skills to "prepare and examine scenes for trace evidence" and "take charge of science preservation to save evidence" and "provide forensic advice to colleagues." Emily, in Figure 4.5, breaks down the CSI's role into two key areas – "communication skills" and "practical skills". The former includes "dealing with members of the public" and "colleagues". The later provides a list of the processes and types of forensic artefacts a CSI may produce during the course of their routine work, such as "fingerprint exam" and "DNA recovery." This list of forensic artefacts also includes "knowledge of packaging and specialised recovery".

the confines of individual cases, particularly when in conversation with police officers.

Beyond these interactions with police officers in relation to trace found at particular scenes, both Forensic Centre tuition and operational experiences were significant in trainees' abilities to identify trace that could have potential relevance to a criminal investigation. Whereas I used expertise to describe CSI work, participants were reluctant to use this term. "Expertise" rarely appeared on the maps, even though the second map question included a prompt that referred to the individual's "skills and expertise", and was not used in interview talk. When I asked Jo about why she did not use "expertise", she stated that she sees herself as "middleman, collecting things and submitting them on […] to the experts" (M2, second interview). It is understandable that Jo and other participants were reluctant to use expertise, particularly if they equate this with being an expert. In the courtroom, the CSI who examined the crime scene in question would not be an expert witness (Kershaw 2009, p.558).[51] When asked to elaborate on this "middleman" position, Jo provided a more textured account of what is involved in "collecting things and submitting them on." Far from just picking up "things", this process involves deciding what may or may not be useful, or as she put it, "the realistic chance of evidence being valuable."

> A police officer had gone down to the car scene and picked up three cigarette butts off the floor outside the car and then asked me to examine them for forensics. I could see where they were coming from, you can get DNA from cigarette ends but they don't think about the realistic forensic potential in terms of the Crown Prosecution Service. You've got a cigarette end with DNA on but at the end of the day all that proves is that somebody's had a cigarette next to the car. (Jo, M2, second interview)

[51] Kershaw expands on this situation to highlight the overall paradox of the court in relation to the attribution of expert status to individual:

> [T]he court calls in the expert because the court lacks the expertise in a particular subject – a medical or financial matter, a construction question, the interpretation of digital data. Legal practice requires the court to decide who is an expert on a subject. But how, having admitted that it lacks the appropriate expertise, is the court fitted to make that decision? (Kershaw 2009, p.549).

In practice, however, this attribution of expert status is often straightforward and there are certain actors who act as expert witnesses even when they, like the CSI, have been involved in the specific police investigation. The Fingerprint Examiner is a case in point and the way they are granted expert status and the untested/untestable methodology behind a fingerprint match is problematised by Cole (1998; 1999; 2001; 2005).

Jo's account documents skills of differentiating and contextualising objects at the crime scene and the importance of combining both forensic and evidence-based knowledge.[52] The Crown Prosecution Service requirements are embedded in decisions about what should and should not become a forensic artefact and potentially analysed in the laboratory. Within this, however, is also a stress on the CSI's ability to see the bigger picture. Providing advice about forensics is not just about what may be attainable in different circumstances, such as suitable surfaces for fingerprints or sources of DNA. It involves a clearly investigative element. In the example above the question remains what would be the evidential value of knowing whose DNA is on these cigarette butts?[53]

What participant maps, quotations above and wider analysis demonstrate is that rather than identifying trace per se, CSI trainees claim ownership of what they perceive as esoteric knowledge that allows them to identify sources of potentially relevant trace over and above the omnipresent and unavoidable trace that surrounds all contact (as claimed by Locard's law as presented in Forensic Centre tuition). This ability to identify relevant trace and, in particular, the CSI's capacity to produce forensic artefacts from such trace and explain its potential to police officers provides a space in which they can demonstrate and negotiate their expertise through action, reasserting their ownership of the crime scene as their occupational space (initially demonstrated through their crime scene recording practices discussed in Chapter 6). As such, these objects produced at the crime scene are central in the boundary work of the CSI, demonstrating, delimiting and safeguarding their site and area of expertise.

Interactional practices are also important in the processes of ascertaining specific knowledge about what may or may not be harbouring forensic potential. By speaking to witnesses, victims and the police officers who initially attended a scene, potential sources of forensic trace are identified. The reliance on clear and unhindered communication with these parties is significant. For Emily, this communication, above the material practices of forensic artefact production, is most important:

[52] By evidence based, I mean based within the courtroom system – what is most suitable and likely to be accepted as evidence in court.

[53] It is noteworthy, however, that the intelligence value is ignored in these quotations. Knowing whose DNA profile matches the DNA profile from the cigarette butts might provide important information in the investigation of a crime. However in this account, is their evidential value which is considered (often set within the context of the cost of DNA analysis).

> I think you could teach anybody to powder for fingerprints. Anybody could pick up a brush, stick a bit of powder on the window and fingerprint and recover it. That aspect of the job isn't difficult. It's the other aspects – the communication side and the thought processes, thinking like an offender. [… T]he victim can tell you so much about what's been moved in their homes and stuff like that […] you also start and learn how offenders think within the house (Emily, M2, first interview)

Interactions are central in ascertaining information about crimes and the scene from those with relevant experience, such as victims and witnesses. Building up rapport with relevant individuals is important in identifying potentially relevant trace. It is, however, striking that although Emily stresses the importance of communication process, it is not something taught within the Foundation Crime Scene Investigator Learning Programme or actively facilitated and evaluated in continued Professional Development Programmes (PDP). Instead, it is developed through practice alone and existing ability.

This process of interacting with victims, however, starts before arriving at the crime scene. All my participants both in the second interviews and in force observations stress the importance of calling the victims of volume crime first to talk through the scene, evaluating the forensic possibilities presented and provide the victim with an approximate time for the examination. Throughout the quotations above, although communication is significant, their emphasis was on the questions they ask and their ability to ask suitable questions that facilitated the identification of sources of forensic potential rather than creating a long lasting relationship. Questions focus on practical issues – what has been moved? Where was the item stolen from? Through these types of questions, a system of classification emerges mimicking that put forward by Douglas (1966). In *Purity and Danger*, Douglas argues that ideas of purity and cleanliness situated against the polluted or the impure are a form of classification, significant in the reproduction of social order and control. Douglas' notion is useful here in considering how these systems of classification are mobilised in both general and local levels by CSIs through their encounters with victims and witnesses in the separation of normal everyday trace (i.e. trace that should be there, such as a household burglary victim's fingerprints in their own home) from that which is both relevant to the crime and useful in police investigations (trace that should transformed into forensic artefacts). In essence, the CSI identifies and collects that which is out of place and it is this process of classification which differentiated

the scenes I observed at the Forensic Centre from those I experienced in police force observations. Existing account of CSI expertise suggest that these decisions are made through "developing a theory of modus operandi" (Baber & Butler 2012, p.421) - thinking like a criminal and trying to understand what the criminal wanted.[54] This could also be viewed as a process of seeing-as with classification as reflection-in-action, making sense of the crime scene and relevant objects in the course of their practices. Practice is full of trial and error, developing theories through doing, and the CSIs document this through an acknowledgement of the importance of rote learned packaging techniques and the iteratively and consistently developed knowledge of what may or may not be useful in the investigation of a crime and this is done *in* rather than enacted through, practice.

Although the accounts provided by my participants acknowledge this type of thinking, the interaction element in their accounts moves further than those with specific skills in crime scene investigation. It extends to include drawing on the knowledge of the victims and witnesses to help classify potential trace and identify the matter out of place. At the Forensic Centre, however, the extent to which trainees could engage in this classification process was limited by two factors: (1) the lack of interaction with victims and witnesses during the course of completing scenario scene examinations and (2) an emphasis on producing forensic artefacts from *any* potentially relevant item within the crime scene. Although the Learning Programme was responsible, in this case, for the focus on collecting and recording as much as possible, this is a common difference between novice and experienced CSIs (Baber & Butler 2012).[55]

My police force observations and interviews with participants once they had more experience emphasised time as a far more pressing concern, a point also documented in the literature (see, for example, Smith et al. 2008). At the Forensic Centre one could spend hours examining a scenario theft from motor vehicle scene. However, participants report more expedient methods of scene examination and a more selective approach to forensic artefact production when examining real theft from motor vehicle scenes with the time pressure of having

[54] This is clearly relevant to Emily's quoted interview narrative above (page 218) and discussed in relation to the investigative mindset in Chapter 8.
[55] A similar point is made by Schraagen and Leijenhorst (2001) in relation to forensic scientists. Schraagen and Leijenhorst found those forensic scientists who were better able to identify the modus operandi of the criminal were better able to target their crime scene searches.

numerous other scenes to attend in a day, reports to write and forensic artefacts to submit to the relevant laboratories. This selective approach relies heavily on the interactions with victims and witness and these actors' sense making of the crime and scene. Furthermore, police force level strategies and procedures are in place, framing which crimes and in which circumstances a CSI is to attend a scene.[56] Therefore, although the Forensic Centre provided a site in which CSI could practice and hone their skills of evaluating forensic potential and forensic artefact construction, real life situations facilitate the development of the interpersonal skills needed to obtain and use information from victims and witnesses in identifying potentially relevant trace. These sense-making processes, used to identify the matter out of place, are instilled within CSI decision-making and forensic artefact production. In short, they are encapsulated in CSI mundane practices.

Finally, this also highlights a central point in relation to Locard. By using Douglas' distinction between relevant trace (as dirt) and irrelevant trace within the backdrop of Locard's law, the significance of the multiple sense making processes taking place is illuminated. By drawing on the contextual knowledge of the scene possessed by witnesses and victims, the CSI is able to reframe their accounts within the confines of a forensically-oriented and crime-specific scene examination with the aim of identifying and creating forensic artefacts that will play an effective role in the investigation of the crime. Expectations or tacit knowledge about how people live in their home environments was something constantly questioned when observing operational CSIs, linking back to the previous chapter's discussions of objectivity and the need to assume nothing. However, in highlighting the array of individuals and circumstances they encounter, these processes of classification become necessary because of the often-blurred line between potential forensic artefacts (as the relevant) and every day trace (as the irrelevant). In doing so, dirt in Douglas' usage, is context dependent and the line between perpetrator dirt and everyday dirt is constructed through their interactions with witnesses and victims. Yet at the same time, the CSI must also differentiate the lay knowledge utilised by the victims and witnesses from her knowledge. Mody highlights a similar issue in relation to laboratory work using an example from Rawlings, stating that "almost anyone can

[56] However, there are wider frameworks also in place beyond the specifics of a single crime scene, discussed in detail in Chapter 8.

tell the difference between a 'bloody' knife and a 'clean' one, but only certain people can tell the different between a 'clean' knife and a 'sterile' one" (Rawlings in Mody 2001, p.16). For the CSI, this ability to differentiate not only between forensic potential and the everyday but also to explain this to victims, witnesses and police officers is central in creating their occupational space. One way this is accomplished, absent from participants' narratives so far, draws on an entity, process and negative descriptor that also has the potential to undermine the CSI's expertise – contamination.

7.3 Contamination

With the links between trace and contamination highlighted in the Forensic Centre training and the dramatic way contamination (and claims of contamination) can undermine forensic evidence as displayed in numerous studies of forensic science in the courtroom environment, particularly DNA and expert witnesses (for example, Daemmrich 1998; Halfon 1998; Jasanoff 1998; Lynch 2002), I broached the subject with my more experienced participants. Whereas in Forensic Centre lessons contamination was something that needed to be consciously considered at all times, for these participants, contamination aversion simply came under due process:

> If contamination happens it could potentially ruin your sampling and what have you. We do get a lot of dealings with DNA, more often or not you're going to have some sort of item of DNA potential at a scene, but everyone is pretty good at wearing the correct PPE[57] and bits and pieces like that. (Rebecca, M1, first interview)

> ...fingerprinting you can mess it up and lose it all whereas DNA you got a wet swab or whatever and you know you're going to get a decent sample as long as you don't contaminate it. If you imagine fingerprinting a murder weapon or something and it's there and all of a sudden you've smudged it... (Doug, M1, first interview)

For Rebecca, contamination prevention becomes a process of following guidelines within normal everyday working practices. Doug suggests that contamination is synonymous with "mess it up" in the very visual sense of smudging a powdered fingerprint mark. Contamination, within the CSI setting, unlike in the laboratory, appears to be understood in a far stricter manner. Whereas Mody (2001) demonstrates the interpretative flexibility offered by

[57] PPE stands for Personal Protective Equipment and is the collective noun for the protective clothing worn at scenes such as overalls, latex gloves, goggles, face masks and shoe protectors.

contamination in enabling, disabling and explaining experiment results, the data presented here in relation CSI work and CSI understandings contamination is rigidly and negatively defined.

As suggested in Chapter 6 in relation to contextual forensic artefacts, one of the key ways in which forensic artefacts are questioned in the courtroom is not in terms of the science of their analysis but through administrative practices of producing and documenting the scene and evidence. The interference of courtroom practices in scene documentation can be seen through the adherence to a mechanically objective image of the crime scene demonstrated through CSI photographic practices as well as carefully completed crime scene reports. This interference can be explored further in relation to trace-based forensic artefacts with a different type of objectivity.

Lynch and colleagues (2008) utilise the concept of "administrative objectivity" as a way of foregrounding the chain of custody and its significance in the "practical construction and deconstruction of forensic evidence" (Lynch et al. 2008, p.114). Chains of custody are understood here as "vernacular expressions used in criminal justice systems to assert an identity between evidence collected a crime scene and evidence described in court" (Lynch & McNally 2005, p.298). Chains of custody, as processes of documenting the movements of forensic artefacts and the interactions of such artefacts with individuals, are enacted at all levels of the investigative process. Lynch and colleagues' (2008) specific discussion focuses on courtroom admissibility and how these chains of custody can unravel when these administrative practices are considered in more detail, particularly when mistakes are identified. In the example case Lynch and colleagues discuss, a photocopied signature was identified on a document used to record the (chain of custody) movements of samples between police force and laboratory. This resulted in the actual movements of the sample being explored in more detail. Examining this issue of a photocopied signature brought into sharp relief that the processes of documenting movements only recorded a selection of the actors and processes through which the sample had passed. This all served to question the robustness of the chain of custody and all chains of custody documentation. Had this signature not been photocopied, the chain of custody would have been left unquestioned. This is what Lynch and colleagues (2008, p.135) mean when they use the term administrative objectivity

– it is the ways that administrative processes in this case, "stood for (that is stood proxy for) a more complicated set of organisational agents, operations and records" unless evidence to the contrary is provided. Chains of custody in particular and these administrative processes in general appear to blackbox the forensic artefacts in the generation of objective and admissible evidence.

Administrative objectivity is useful in considering the ways paperwork can enable and disable claims of contamination and, by extension, (in)competence. Whereas expertise and competence in other areas of CSI work are demonstrated through the autonomous decisions they make and record at a scene, contamination is rigidly defined and CSI must adhere to basic contamination avoidance practices. Module 1 participants, in particular, discussed contamination avoidance openly during their initial scene examinations and the Learning Programme provided a site for these discussions within each scene examination (due to often working in pairs and instructors asking questions as they circulated around the different groups). However, what was initially a process of conscious decision-making and the enactment of rote learned processes had become engrained in practice by the second interview:

> [W]hen I started, I had to think about every single thing I did whereas now I just automatically, as soon as I get out of the van, put on a pair of gloves [...] You stop touching things with your hands and use your elbows. You look at where you're walking [...] you get into the habit of doing things which means you don't have to actually think about them so it makes the job a little easier [...] Contamination avoidance definitely does become second nature. (Karen, M1, second interview)

Contamination avoidance becoming entrenched in practices, or "second nature," does not however mean that is it invisible in routine work. During all the scene examinations I observed at the Forensic Centre and in the police force, CSIs were clearly aware of contamination, evident through the wearing of the necessary protective clothing, the packaging items in the correct way (as per the Forensic Centre instructions mentioned above), the meticulous completion of paperwork and the awareness of their physical movements they showed within the crime scene space. When asked why they were doing things in a certain way, trainees generally responded with "contamination avoidance" as an acceptable and self-explanatory justification. However, when I asked about contamination practices outside of specific scene settings, although acknowledging contamination can be a serious issue, avoidance was not always an option:

> I think the major one that we come across is when we've got more than one scene for one office. Like, if you've got a car in a recovery garage and you've got the burglary it came from. We're very aware that one person can't do both and when it comes to major incidents it's very obvious that our seniors are deciding who is on what shift and who could work, who could cover one particular scene and keep other people in place for perhaps people in custody. But as a day to day issue, you know, I've done jobs in the past where it's obvious it's the same people over night. Obvious, screamingly obvious, that's the same group of people going from one car to another but at the end of the day I can't prove that and I can't say that from the word go until I've been to that scene even though it's screamingly obvious. And there is only me on cover in that area so it would be so stupid for me to ring up another area and say would you mind driving for an hour to do a theft from motor vehicle people because I can't do all three because of contamination issues. You've just got to be a bit smart and say that you've been careful about your evidence collection, your note writing and that's the only real issue really. (Lucy, M2, first interview).

Lucy demonstrates in this quotation a number of important points. Had this been a serious or major crime scene, best practice would have been enforced with different vans, equipment and CSIs used to examine each potentially linked crime scene, reminiscent of the first contamination and packaging exercise discussed above. At volume crime scenes, however, resources are limited and adherence to best practice may not be realistic. Instead, and as Lucy states, "[y]ou've just got to be a bit smart and say that you've been careful about your evidence collection, your note writing and that's the only real issue really." Lucy is aware of the potential for cross-contamination but, through the careful production of forensic artefacts, questions of contamination can be avoided. Whereas major crime scenes require potential cross scene contamination to be avoided through the strict separation of actors and equipment used in examining each of the different scenes, contamination can be disposed of in less serious crime scenes through due process. The meticulous completion of administrative records, both internal (for example, tamper-evidence bag text) and external (for example, scene examination report text) to the processes of producing individual forensic artefacts, helps to safeguard the resulting artefacts. Therefore, the CSI evidence recovery procedures play a key role as criteria against which the validity of the forensic artefact is judged.

Actual contamination was absent from the Forensic Centre training and my police force observations. At the Forensic Centre, no samples were sent to the laboratory for analysis and therefore trainees could not experience actual

contamination. However, as inferred above, suggestions of *potential* contamination can be as powerful as evidence of actual contamination in how it can undermine the competence and expertise attributed to the CSI, particularly in the courtroom. Whether that is because a piece of paperwork was incorrectly completed or a sample was not booked out of a computer system properly when it was sent to the laboratory, these are examples of points that could be raised to suggest potential contamination of an exhibit. Therefore, contamination need not necessarily mean entering and muddying the contents of a sample. Instead, contamination, as a critique of practices and a resource in undermining CSI competence, is most often mobilised in relation to procedural errors. This was most clearly demonstrated in the mock court appearance scenarios completed by Module 1 participants at the Forensic Centre. This scenario, based on a scene examination they completed a few days earlier provided a site in which potential contamination could be voiced.

7.3.1 Contamination in the (mock) courtroom

In the court appearance scenario, the instructors, acting as defence and prosecution lawyers deliberately pushed trainees to answer awkward questions on all potential holes in their paperwork and recorded practices. From not numbering the pages on their official statement documents to not recording where forensic artefact exhibits were sent after the scene examination, the questioning across all participants and the mistakes made were reasonably uniform. Each trainee was asked about the measures they took to avoid contaminating the scene and all provided a well-rehearsed account of how protective clothing was worn at all times and access to the crime scene was controlled. Although an error in the paperwork was found in all cases, the instructors identified only one instance of potential, actual contamination they deemed serious – a forensic artefact submitted as evidence but in an unsealed exhibit bag. The participant's explanation for this was that it was a training exercise. In the court scenario this was not an acceptable answer and the instructor, acting as the prosecution used this error to infer that the exhibit could be contaminated from its movements since recovery from the scene or, even worse, exhibit could be from a completely different crime scene altogether.

However, even the errors in the associated paperwork were used to question the validity of their exhibits through notions of possible contamination (either from

unknown external sources or as emblematic of CSI incompetence in contamination avoidance practices). This possibility of contamination was always very much positioned *in* the forensic artefact or in the surrounding forensic documentation; contamination of the crime scene in general was never discussed. These courtroom encounters highlight the significance of CSI practices in blackboxing CSI work, namely forensic artefacts.

7.3.2 Contamination outside of the (mock) courtroom

In the courtroom, claims of contamination may be the remit of the legal counsel and used to question and undermine a CSI's competence. Outside of this environment, claims of contamination are also utilised by CSIs themselves to re-establish their expertise and ownership of (their claimed) esoteric knowledge about trace in specific lay audiences. This was apparent when discussing problems participants encounter at scenes. In particular, contamination was utilised in scenes where the CSI did not create any forensic artefacts and those where CSI attendance was deemed unnecessary. This manifested within interview narratives in a variety of ways. One of the most often heard justifications for the absence of useable trace at a crime scene was the result of a victim's actions after a crime:

> The problem that we have the most is IPs [i.e. victims] contaminating things. Moving things around or, they've been told, or advised which isn't their fault, by our crime centre to recover things inside to keep them safe and they haven't thought about how they're going to recover them and they've handled it and by that point, it's gone out the window. (Rebecca, M1, first interview).

> So sometimes, don't get me wrong, they [victims] are lovely, but sometimes they can hinder you sometimes by trying to tell you too much and when they're try and talk you around the house, what's been touched, you have to sometimes say to them try not to touch that because the offender's touched that because they're then just adding their own fingerprint on top of the offender's fingerprint. (Emily, M2, first interview).

For these participants, two points are raised: victims lack forensic knowledge and because of this lack of knowledge they can inadvertently contaminate objects at the scene. Other members of the police are not providing sufficient advice to victims before the CSI arrives because they too do not have the expertise of the CSI. The CSI, in these conversations, constructs the parameters of her role in

opposition to other members of the police force who infringe on her ownership of trace practices.

However, the limits of general forensic awareness (or lack thereof) remain vague. One participant explains how she uses the victim's potential to contaminate as a means of creating a physical space in which to examine the scene:

> I'll quite happily explain to them [victims] what I'm doing and why I'm doing it and explain to them specific things. […G]enerally people are quite interested in your job and they want to know. They can be over enthusiastic a lot of the time so you just have to politely explain that you can't fingerprint everything but you generally get a good response to people like that. [But if they get too close, I sometimes] pretend that there is some sort of 'DNA area' and that they can't breathe on it or anything like that, which is true but it's just not to the extreme that sometimes I'll say. Or I'll say you can't smoke by here because the powder's flammable which it is but it's never going to just blow up in your face. Otherwise, I'll just say please can you just be quiet. I'm trying to concentrate. (Jo, M2, first interview).

This lack of forensic awareness held by victims of crime is not, however, attributed to perpetrators. In fact, the perpetrator's forensic awareness was one of the other methods used to justify the absence of forensic artefacts at the scene. Most often this was in the form of the educational potential of television programmes such as *CSI: Crime Scene Investigation.* One participant even voiced concern about the information she provides to victims about what is and what is not forensically possible:

> [Y]ou have to judge your audience and how you speak to them [victims] and how much depth you go into but at the same time you don't want to be. Erm, I find myself, probably, explaining things a little bit too much and then thinking, am I teaching somebody how to commit the perfect crime? Then I start retracting things once I've said something. I'm like, oh God, I shouldn't have said that. I've now told them that if they ever committed a crime that if they touched a particular surface we'd never find their fingerprints (Rebecca, M2 second interview).

In this quotation, Rebecca expresses the fine line between explaining what she is doing and highlighting points that could help others commit crimes undetected. In other situations, however, more colloquial accounts of offender's glove wearing practices are drawn on in their explanations:

> I would recover a fingerprint on a daily basis and DNA every other day. That's very broad but it depends on what sort of crime scenes you're

> going to and things like that but it's quite common on our city division where I work to get fingerprints. Whereas where you look at some of the more rural divisions everyone wears gloves. (Emily, M2, first interview).
>
> Actually finding fingerprints is a different matter because it differs because in the summer you'll find a lot more than in the winter because people are sweatier and they're not wearing gloves and all the rest of it. (Lucy, M2, first interview).

In the above quotations, factors external to the specific crime scene, victim and perpetrator are discussed as relevant, such as the season, geographical location and the presence of gloves. This divide between forensic artefacts and trace in general was one of the key methods used to explain scene attendance procedures and negative scene examinations - the examination of a scene where no forensic artefacts are created. In these cases, the presence of trace is not questioned. Instead, it is the presence of trace that could be turned into useful forensic artefacts that is missing:

> At every house you go to someone will say "fingerprint the door handle because they definitely touched the door handle" or "fingerprint the light switch, they've definitely touched the light switch" but I'm like, that's the whole point, everybody touches the light switch and everybody touches the door handle. So, the amino acids in your fingerprints are just overlaid and overlaid and overlaid so you're not going to get a fingerprint on stuff like that. Whereas people are under the impression that they've definitely touched that and there's a fingerprint there. Or, they're a bit disappointed in you. They're like, it's not very exciting really. It's just like a bit of powdering. You don't have all these fancy things that they have on *CSI* and that's because they do exist but, a lot of the time, we just don't have the funding for a lot of the fancy kit. And, it's not classed as major enough crime. We could get the crime lab down and chemically enhance the whole house and bring up a shed load of fingerprints. It's just not realistic for the sort crime we do on a daily basis. So, obviously, predominately, on CSI, it's murders, multiple rapes and robberies so obviously you do go to that extreme level but when it's just a house burglary or a broken into car you don't have the resources available to do that sort of examination so it a little disappointing to people sometimes. Erm, but generally people are quite interested in your job and they want to know. They can be over enthusiastic a lot of the time so you just have to politely explain that you can't fingerprint everything but you generally get a good response to people like that. (Jo, M2, first interview).

The frail nature of trace, the potential for scenes to be contaminated by actors both before and after the crime, as per the case of overlaid fingerprints discussed by Jo, as well as the lack of evidential significance of trace in particular contexts

provide a means by which CSIs are able to explain to victims and police officers why they have not created forensic artefacts at a specific scene. Williams (2007, p.201) draws on negative scene examinations as a site where "secondary elaborations" of Locard's law are used to suggest "such failures were seen to result from their own or others' inability to discover what must have once been there at the crime scene or on the body, clothing or equipment of the suspect." Williams' discussion also includes other factors such as question marks over other visitors to the scene and weather conditions affecting the retention of trace at a scene. However, this querying of the competence of other CSIs to identify potential trace was not present in any of my interactions with trainees and experienced CSIs. Therefore, whereas Williams paints a picture of the CSI and the CSI role as similar to that put forward by Cole (2005) in his account of latent fingerprint examination, namely that although the methodology used in fingerprint comparison has never been tested, the fingerprint community claims it has a zero methodological error rate. Errors, instead, are the result of individuals making mistakes. In my research this emphasis on individual incompetence was absent. This may be due to police force protocols, such as scene attendance policies, which limit the number of scenes a CSI is required to always attend and other local processes in place to make sure CSIs only attend scenes where there is a high likelihood of potential forensic artefacts (through methods such as calling the victim of the crime to discuss the crime mentioned above and assess the forensic potential before attending the scene (Green 2007). These force scene attendance policies can be seen as a method of avoiding the negative scene examination. Once again, this is not about the absence of all trace but about avoiding scenes where it appears that there will be no trace that is worthwhile transforming into forensic artefacts. Only one participant stated that in her force they attend the scene of every reported crime and there was an expectation that they would not have a negative scene examination:

> If we have negative examinations we're highly criticised because there should always, well, 99.999% there should always be some form of evidence because "every contact leaves a trace" doesn't it, so we probably average 1 a month, negative exams because we're highly criticised so, I would say we average about 1 a month[. ..]We do always try to find something even if it's just a sample of wood from where they've broken in or a glass sample and I've taken a sample of sawdust off the floor where, it was an open shed and somebody's walks in and taken the tools. Well, I've taken a sample of the sawdust off the floor because if they've walked in that sawdust, possibly you

> could trace it back and get their shoes so, yeah, very rarely do we get a negative result. (Karen, M1 second interview).

Although Karen draws on Locard's law as a means of explaining why negative scene examination are frowned upon in her police force, attendance at all scenes and the need to collect and find trace of some type at the scene, similar to Williams' point above, for other forces, it seems Locard's law need not be asserted and maintained through the collection of trace of all types. This may be a result of the current financial crisis – in my police force observations, participants were happy to talk about previous practices and previous submissions procedures where budgetary constraints were not such an important consideration. Even now, however, if there is a reasonable rationale, forensic analysis can take place on more obscure objects, as Rebecca explains:

> I went to a car and there was one of these little plastic tubes with three filter tips in it, the four one was missing but it was pinched at the end and I was like hmm. From watching my friends who smoke rollies, they tend to bite the filter out of the end of it and make their rollie and this had been chucked down on the floor and I thought that might be worth a try [as a source of DNA]. So, I put a little story forward to our submissions bureau about why I think it would be good and it came out with a full DNA hit on it. We're trying to play around a bit with stuff like that rather than just going for the obvious stuff all the time. And as long as you justify why you're sending something off then […] they'll give it a try, pass the word around and then obviously, people will start looking out for things like that at the scenes they're going to (Rebecca, M1, first interview).

With Rebecca's example above there is still some room for the CSI to manoeuvre in wider police force decision-making. Even in these sites, CSI expertise over trace is accepted when it can be articulated in an investigatively relevant manner. In Rebecca's example above, the forensic potential of the plastic tube is only identifiable through the combination of her knowledge of sources of DNA, namely saliva, and of the embodied process of constructing a roll-up cigarette from tobacco, paper and a filter.

7.4 Discussion: Forensic artefact production, administrative objectivity and the paradox of the Crime Scene Investigator

In this chapter I have documented some of the different ways trace is significant in the articulation and demonstration of CSI expertise and crime scene jurisdiction. Participants clearly view forensic artefact production, widely

construed to including the numerous ways potentially meaningful trace is identified as well as the material practices of packaging, recording and sampling trace, as central to their role, a site of their unique expertise and their contribution to the investigative process.

Locard's law, so central in justifying the significance of trace and, by extension, the importance of the CSI, may be discussed in absolute terms at the Forensic Centre and within participants' narratives – every contact, for whatever duration, will result in the transfer of trace between two or more objects. However in everyday practice, trainees operationalise a very specific understanding of this law in their selection of relevant object to transform into forensic artefacts. Rather than assertions about the nature of contact and exchange in general, the potentially meaningful is separated out from the potentially meaningless by situating trace in specific crime scenes and specific crimes. Far from "forensic hoovers" (Jo, M2, first interview), the identification of potentially meaningful trace and the production of forensic artefacts require expertise, communicative competence and attention to detail in packaging and paperwork practices. Through the routine performance of scene examinations and the interactions they have with both wider police personnel and lay publics, the CSI demonstrates her competence and the specific expertise in the practices surrounding trace, so central to her understandings of the unique contribution to the investigative process. Participant accounts present trace practices as a form of esoteric knowledge, distinct from that trained and utilised by the wider police force in the investigation of crimes (a point discussed in relation to investigative practices in the next chapter). Yet it is noteworthy that this esoteric knowledge, beyond packaging, is developed *in* crime scenes and through reflecting-in-action, building theories about the crime and drawing on all resources to hand to produce meaningful forensic artefacts. I also suggest such knowledge is central in safeguarding their utility and ownership of the crime scene as an occupational space.

Bearing in mind the importance of forensic artefacts in the negotiation of occupation space, scenes where no forensic artefacts are created have the potential to undermine the CSI's boundary work. In these negative scene examinations, it is discourses of contamination that act as explanatory tools, maintaining their professional integrity, status and safeguarding the CSI's claim

to expertise. This would not, however, be possible, if the CSI did not offer an advisory and explanatory role in communicating with police officers and victims of crime articulating these problems to the wider publics.

Many of the practices of creating forensic artefacts from trace have been rendered visible, at least in part, through participants' narratives: the significance of thinking like a criminal (a point discussed in detail in the next chapter); the interactional skills necessary to ascertain information from relevant parties to aid crime scene decision-making; and the significance of packaging and paperwork in safeguarding the resulting forensic artefacts from formulaic questioning. Although the CSI has a central role in the production of forensic artefacts, without the interactional processes between the CSI and the wider police force, these decisions would not be observable and, most importantly, the potential meaning of such objects may not be comprehended by the wider police. This "reality checking", helps the CSI to play a role in defining and structuring how the wider police force make sense of crime scene trace. However, this is not absolute. There is still a level of interpretive flexibility in the ways in which forensic artefacts and information ascertained from these artefacts is utilised, understood and viewed by relevant parties outside of crime scene investigation.

In this chapter, I have also demonstrated the way that 'contamination' is used in three distinct ways: (1) as a tool in justifying specific practices and the CSIs jurisdiction over the crime scene space; (2) as a tool in explaining the absence of useable trace at certain crimes scenes; and (3) in the courtroom environment, contamination (or more accurately, potential contamination) is used as a critique of CSI forensic artefact production practices.

A substantial amount of this work and the consequences of such work are, however, invisible in the forensic artefacts produced by CSIs. The CSI appears as an actor actively engaged in the blackboxing process. Removing agency and variation in the production of standardised forensic artefacts. I contend that these practices, particularly highlighted through courtroom interactions are another example of Lynch and colleagues' (2008) concept of administrative objectivity. However, whereas Lynch and colleagues focus on chains of custody as an example of administrative objectivity, my analysis of forensic artefact production suggests administrative objectivity has a wider scope and is much more entrenched in crime scene CSI practice and courtroom protocol.

It is in some way paradoxical that the CSI spends so much of her time performing her expertise through interaction with the public and wider police force, knowledge of trace and packaging techniques and instilling this information in the forensic artefacts, for it to be blackboxed and transformed into an administratively objective record, represented only by an evidence number. These evidence numbers or objective artefacts help in the investigation of a crime then move into wider police circulation, to the forensic laboratory, the Fingerprint Bureau and the courtroom, among other places. They are moved outside of the environment where the CSI mediates understandings, the crime scene, but there is a basic assumption that remains – the forensic artefact is meaningful for the investigation of a crime. This core significance persists even if the interpretation of such importance differs between the numerous occupational environments of the criminal justice system.

In Chapter 2 the concepts of boundary object and boundary work are discussed as useful frameworks within which to consider the work and practices of the CSI. Participants' narratives document the centrality of forensic artefacts and the surrounding (although invisible) expertise in producing these objects both in terms of delimiting the boundaries of their expertise and working practices, and in asserting ownership of the crime scene space (as an occupational environment). These forensic artefacts are, however, important in their own right as boundary objects. The CSI helps to fix the significance of the object in the narrative of a specific crime around which others can exercise interpretive flexibility. This interpretive flexibility allows bridging between different areas of the criminal justice system – the courtroom, the laboratory, and the public - where although a core significance is acknowledged there is no need for consensus between the different environments.

Williams (2004; 2008), building on Fraser (2000) examines the way that Scientific Support Unit (SSU) personnel and practices are integrated into wider police investigative processes. Providing a typology of structural and procedural integration, Williams sees structural integration as one based on strict hierarchies with seniors directly controlling work. The actor is a technician. Procedural integration, on the other hand, sees the CSI as an "expert collaborator" and "acknowledges the distinctive knowledge-based expertise of CSEs and related SSU staff" (Williams 2004, p.22). In short, they are a reflective practitioner

(Schön 1983). Central to this divide between the CSI as structurally or procedurally integrated into the investigative process, is the “degree of control” the CSI can “exercise over their own work and the degree to which SSU staff are able to influence the actions of other stakeholders” (Williams 2004, pp.22–23). This typology is a useful way of conceptualising the varied and variable ways in which the CSI as a resource and the SSU in general can be utilised within the contemporary investigative process. The CSI may view herself as expert collaborators, particularly in terms of trace and forensic artefact production, reflecting on her own practices and situation in the course of deciding next actions based on specific case and knowledge contexts. However, this position is contingent on her performance, interaction and results of work as well as wider institutional frameworks outside of the CSI’s control. The CSI sees her position as integrated procedurally into the wider police investigative process through the way that she acts as a reality checker and expert collaborator in discussions of forensic practices. However, how the CSI is understood in different arenas suggests that integration across different occupational spheres is variable. The courtroom scenarios discussed in this chapter demonstrate how integration, when viewed from outside the police force, can be understood in a starkly different manner.

Chapter 8 Doing CSI work: The investigative mindset and investigative practice in crime scene work

> In the few cases that get into the newspapers, are there not instances of slain bodies found, and no murderers ever discovered? Multiply the cases that are reported by the cases that are NOT reported, and the bodies that are found by the bodies that are NOT found, and what conclusion do you come to? This. That there are foolish criminals who are discovered, and wise criminals who escape. The hiding of a crime, or the detection of a crime, what is it? A trial of skill between the police on one side, and the individual on the other. When the criminal is a brutal, ignorant fool, the police in nine cases out of ten win. When the criminal is a resolute, educated, highly-intelligent man, the police in nine cases out of ten lose. If the police win, you generally hear all about it. If the police lose, you generally hear nothing - Count Fosco, *The Woman in White* (Collins 1860, p.242).

In this astute appraisal of the relationship between police effectiveness and the intellect of the criminal, Wilkie Collins's character, Count Fosco, presents the battle against crime as a battle of minds rather than brawn. There are visible crimes and identifiable criminals. These are the "foolish criminals" who lack the intelligence to mask their handiwork and these are the ones, Count Fosco asserts, we hear about in the media. Collins' fictional account raises important questions and resonates even today. Identifying whether a crime has taken place is not always a straightforward matter. The lines between missing person, suicide, accidental death or murder can be blurred, particularly when a body is not found. In volume crimes these questions of whether a crime has taken place can be rare,[58] but there is the need for someone not only to identify a crime has occurred but to believe it is severe enough to contact the police.[59] Therefore, significant actions take place prior to an event even being investigated as a crime. Once classified as a crime, the investigation could be completely unsuccessful and abandoned. Alternatively there could be multiple avenues to explore and numerous decisions to make in order to identify a suspect or pool of suspects.

[58] Fraudulent insurance claims are a noteworthy exception to the often more clear cut nature of volume crimes.

[59] This is a particular issue with volume crimes. In their quarterly reports (covering the previous 12 months), entitled Crime in England and Wales (for example, Office for National Statistics (ONS) (2014)), the ONS combats the divide between experiencing and reporting crime by considering both data derived from police reporting practices and the Crime Survey for England and Wales (CSEW), a victimisation survey where households are asked to participate. The difference between police statistics and victimisation data is large. Although there are many factors to consider when examining the variations between the two datasets, differences are most stark in relation to volume crimes where although experienced (as documented in CSEW), far fewer are recorded in police data.

Once a suspect has been identified, a case needs to be built against the individual. If there is sufficient evidence, the police might charge the suspect[60] and the case may (or may not) be heard in court. The process is long, with numerous variable involved. The complexity of identifying a crime all the way through to the conviction of the perpetrator is often simplified in fictional television accounts. Instead, the perpetrator, having been shown all the evidence against him, will either confess or try to escape the police (an inference of his guilt), all within the space of an episode. In many fictional account of the investigative process, the perpetrator rarely pleads 'not guilty' and therefore, having identified the culprit, the processes through which the identification and confession were obtained do not come under courtroom scrutiny.[61] In the investigation (and prosecution) of real crimes, this is not so simple. For this reason, I will focus and analyse the investigative work that takes place at the crime scene in this chapter.

Examining the investigative decision-making and recording practices of Crime Scene Investigators (CSIs), I contribute an analysis of what it means to enact 'investigative practice', as police actors refer to it, in crime scene investigation. I provide greater context and texture to our understanding of the integration of the CSI into the investigative practices of the police both in terms of structural and procedural integration, introduced in Chapter 7, and also in terms of delimiting the investigative work of the CSI from that of the detective. I start by examining the term 'investigator' in official literature and the formalisation of investigative practices as part of wider professionalisation processes within the police force through the notion of 'investigative mindset'. This amorphous and ambiguous term is used in official accounts and Forensic Centre tuition to characterise the professional habitus of the CSI.

Outside of the Forensic Centre, the investigative mindset is operationalised through the more colloquial notion of 'thinking like a burglar' in CSI work, and 'the hunch' in accounts of detective work. Although both serve as shorthand ways of encapsulating complex decision-making processes and practice, the reasoning styles used in actually 'thinking like a burglar', utilising an 'investigative mindset' or having a 'hunch' are absent. Using the work of Innes (2003), four investigative

[60] This means that the police believe there is sufficient evidence to convict someone for the crime and, assuming the suspect pleads 'not guilty', for the case to be heard in court.
[61] This is a point of contention for Duster (2012) who highlights the potential misrepresentation of DNA evidence and its surrounding rhetoric of infallibility can and has been used to obtain confessions from ethnic minorities in the US and thus avoiding the scrutiny of the courtroom.

reasoning styles are documented and related to CSI practice, paying particular attention to the importance of investigative decision-making in the selection of objects for forensic analyses. Increasingly, in media and fictional accounts of investigative practices, the power of 'forensics' as an investigative tool has led to a conflation of 'forensics' and 'investigative'. Although this, in some circumstances, serves to place the CSI in a heightened position, as I argue, this also works to undermine the significance of the CSI's work. If forensic practices are seen as intrinsically investigative, the special expertise involved in making sense of crime scenes and identifying the potentially meaningful from the meaningless is hidden - an element so key to the CSI's understandings of her unique skill is overshadowed.

I account for how the CSI's investigative practices and investigative mindset differ from the investigative methodologies available to the detective (as the representative of the police officer's investigative work). I contend that the CSI and CSI expertise differ from the detective in two principle ways: (1) the focus and scope of her investigative role, and (2) her status within the investigative process. The first emphasises the CSI's role in maintaining and managing the geographies of the crime scene and mediating the movement of forensic artefacts across different arenas. This differs greatly from the more holistic approach of the detective, through her focus on the criminal. The second area uses Abbott (1981) to consider the differences between the status of the CSI and the status of the detective in both the lay and police environments. By mapping out the investigative role of the CSI in comparison to the detective, I help enable the articulation of the parameters of CSI's investigative work, tying together the variety of practices completed by the CSI into a meaningful assemblage.

8.1 Introducing and formalising investigative practice in police work

Investigative work is an important component of contemporary policing. Whereas originally and at the time when *The woman in white* was written the "omni-competent constable" was the model under which all visible police work took place (Stelfox 2009, p.32), now there are numerous different actors involved in the investigative process, each with specific, but arguably overlapping, areas of interest and expertise. Peter Stelfox, a former Head of Investigative Practice at the NPIA and former Head of Crime Operations in the Greater Manchester Police, discusses some of the overarching changes in investigative practices that

have occurred in the recent and more distant past. In his account of the criminal investigation, Stelfox (2009, p.27) states that although police work was seen (and is often still seen) as a craft, something learned over time through experience, it is only recently that it was decided that "the investigation of crime requires a distinct occupational practice". The production of *Practice advice on core investigative doctrine* (ACPO 2005) is one of the ways this need to professionalise the investigative process was addressed. *Practice advice on core investigative doctrine* articulates some of the benchmarks of investigative practice and provides general, nationally relevant guidance on the investigation of crimes. Aiming to be the "single definitive document for the Police Service" on investigative practice (ACPO 2005, p.7), *Practice advice on core investigative doctrine* claims to draw on:

> the collective experience of police practitioners, stakeholders, academics and current literature, all the principles which underpin the investigation[. ..] It outlines the legislative and structural changes which have altered the role of the investigator to that of the impartial gatherer of material which will be used by all parties within the criminal justice system (ACPO 2005, p.7).

This document standardises and "alter[s] the role of the investigator to that of an impartial gatherer of material" (ibid.). Though it is noteworthy that *Practice advice on core investigative doctrine* is based on "collective experience" (experience, an important source of capital within the police), the introduction of principles and frameworks in investigative practice, along with changes in the structure and organisation of the police emphasise investigative practice as a distinct area of police work requiring specific expertise and skills. It is not just a descriptive or analytic process. As Innes (2003, p.6) suggests, "investigative work can be conceptualised as being involved in the social construction of meaning." Investigative practice is a process of constructing narratives or rationalisations, constructing frameworks of understanding, adaptable to new information as it comes to light. In this sense, and in line with discussions of practice elsewhere in this thesis, (investigative) practice is a site of knowledge production in its own right while the enactment of forensic techniques can offer information and potential evidence in the investigation of crimes. As I have demonstrated in the previous two chapters, substantial amounts of invisible work takes place in selecting and producing the forensic artefacts that are later used as evidence. In this process (and when necessary) the CSI mediates both the

investigating officer's relationship with, and understanding of, forensic artefacts through her interpersonal skills and technical knowledge of producing such artefacts. Appreciating the investigative utility of certain information is a key part of investigative practice and decision-making. Part of the processes of formalising such practices and decision-making was the introduction of the vague and ambiguous term 'investigative mindset'.

8.2 The investigative mindset

The 'investigative mindset' first appears in official documentation in *Practice advice on core investigative doctrine* (ACPO 2005). Listed as one of the ways the investigator can "mak[e] accountable decisions and minimis[e] the chance of errors" (ACPO 2005, p.7), the investigative mindset seems to provide a level of structure to the investigator's decision-making. Yet, as the manual continues: "[t]here is no process map that will assist the investigator to develop the mindset, it is a state of mind or attitude which investigators adopt and which can be developed over time through continued use" (ACPO 2005, p.60). Presented in such a way, the investigative mindset is a tacit, embodied process with no clear way to be developed or taught. The manual does, however, provide guidance with five principles, central to *using* the investigative mindset to structure decision-making. When used from the very beginning of an investigation, these principles, namely "understanding the source of material; planning and preparations; examination; recording and collation; [and] evaluation" (ibid.), "assist investigators in identifying areas which require development or challenge through further investigative action. It also helps them to make structured and auditable decisions" (ACPO 2005, p.63). The vagueness of these principles, however, and reliance on existing knowledge to meaningful enact them makes it difficult to appreciate how the investigative mindset actually helps decision-making.

Stelfox presents a slightly different understanding of the investigative mindset. Foregrounding its significance in "bring[ing] some order to the way in which [the police] examine material and make decisions", Stelfox (2009, p.164) focuses on the investigative mindset as helping to facilitate a more systematic and considered approach to decision-making in general. For Stelfox (2009, p.168), "[a]pplying the investigative mindset should assist investigators to guard against being influenced by their first impressions of the material". The investigative

mindset here structures decisions by making investigators consider rationales for action and confront any personal biases. Rather than simply organising decision-making, Stelfox's account present it as a safeguard against flawed decision-making. Hunton's (2011, p.62) articulates "[t]he aim of the investigative mindset is to enable investigators to develop disciplined approaches to decision making and to ensure all decisions are relevant, appropriate and can be demonstrated to others". In Hunton's account, emphasis is also placed on non-biased decision-making but he develops on Stelfox's work through the emphasis on demonstrating decision-making to others. The CSI has to be able to articulate decision-making and rationales to colleagues and other institutions in the criminal justice process. The investigative mindset, when understood in this way, is a means of documenting compliance with accountability and transparency requirements by demonstrating that decision-making is structured, considered and can be articulated.

Despite these discussions and definitions shedding some light on what the investigative mindset helps prevent and facilitate, it remains ambiguous, particularly in terms of *how* exactly one makes these ordered and considered decisions and *how* one develops the investigative mindset beyond the emphasis above on experience over time and through practice. Stressing the tacit dimension of acquiring the investigative mindset leaves flexibility and discretion in decision-making practices. The stress on methodical, non-biased decision-making teased out above may have a role in structuring action and official discourse on investigative practices. How useful such an indistinct term is and how such a term is operationalised outside of such documents, however, is unclear. This mindset, as construed above, may be useful in structuring decision-making, but these decision-making processes often remain invisible, at least in their original form. They need to be translated into a form that meets a number of criteria and can be articulated formally in case documentation, to colleagues, to seniors and potentially in a courtroom.

8.2.1 The investigative mindset at the Forensic Centre

The investigative mindset is a key term in the Foundation Crime Scene Investigator Learning Programme. As documented in Chapter 5, the official overviews of Module 1 and 2 Stage 2 both state: "Based on the premise that the Crime Scene Investigator (CSI) is a key part of the investigative team[,] this stage

aims to teach essential CSI skills and develop the investigative mindset' (NPIA 2011a; NPIA 2011b). The investigative mindset was mentioned in my first meeting with Forensic Centre staff and throughout my fieldwork. In the meeting to arrange my fieldwork, I was not provided with a detailed explanation of this concept. The little I could find in the existing literature is referenced earlier in this chapter. When I spoke to participants, the investigative mindset was a reasonably new term for them. For Module 1 participants, although mentioned in their pre-course workbooks (Stage 1), it was only in Stage 2 at the Forensic Centre where they explored, in detail, what the investigative mindset is. Situated within a lesson on the role of the CSI in the investigative process, the role of an investigator was examined, using the following definition from the Criminal Procedure and Investigations Act 1996 which states:

> *an investigator* is any police officer involved in the conduct of a criminal investigation. All investigators have a responsibility for carrying out the duties imposed on them under this code, including in particular recording information, and retaining records of information and other material (Criminal Procedure and Investigations Act 1996, Code of Practice, 2.1).

Understanding 'officer' as employee rather than those who necessarily hold the Office of Constable,[62] this definition was used by Learning Programme instructors to stress that crime scene investigation incorporates an investigative role. Most trainees had 'investigator' included in their job title, such as Crime Scene Investigator or Forensic Investigator.[63] This emphasis on the CSI as an investigative officer however, appeared to serve as a means of empowering these actors to see themselves as key players in the investigative process. It also highlights the significance of the CSI's duties of "recording information, and retaining records of information and other materials (Criminal Procedure and Investigations Act 1996, Code of Practice, 2.1).

Once 'investigator' had been unpacked, trainees were presented with a slide defining the investigative mindset as a "disciplined approach which ensures decisions are appropriate, reasonable and can be explained and justified" (Module 1, Stage 2 PowerPoint slide). This was then broken down into the five

[62] This is the correct terminology for a sworn police officer.

[63] The variety of different names utilised for the CSI was highlighted in Chapter 1. Although there are variations between the exact job requirements of CSIs in different police forces, they are often extremely minor and not linked to differences in the job title. Instead, the job titles relate to local decisions on nomenclature.

principles mentioned in Section 8.2, namely "understanding the source of material; planning and preparations; examination; recording and collation; [and] evaluation" (ACPO 2005, p.60). The purpose of using this mindset in CSI work was then presented on a slide with the following text:

> applying the investigative mindset will ensure that:
>
> - The maximum amount of material[64] is gathered
> - Decisions can be fully explained and justified
> - Material is evaluated at the earliest opportunity
> - Immediate action is taken in relation to it where appropriate
> - Relevant records are made (Module 1, Stage 2 PowerPoint slide).

Although it should be noted that this text is lifted verbatim from *Practice advice on core investigative doctrine* (ACPO 2005, p.63) where it refers to investigative practice in general, these points were presented to trainees as specifically relevant to the investigative mindset in crime scene work. The Forensic Centre's slides and instructors' accounts present the investigative mindset as a means of justifying action, a way of making sense of crime scenes and a framework for making institutionally acceptable decisions. This aligns with my analysis of the investigative mindset in official document above. Throughout my time at the Forensic Centre, trainees were required to be prepared to provide a rationale for every action (and inaction) at scenario scenes and articulate a rationale for any decision. Trainees were told as long as they justify their practices their seniors would not reprimand them, even if their seniors (or other colleagues) disagreed with how they proceeded and would have done something differently. Throughout my observations both inside and outside of the Forensic Centre, however, I was able to see the ways in which CSIs subtly and not so subtly judge the practices of others. It may not mean that someone is reprimanded for doing something a certain way but it appeared to affect the informal ways in which CSIs assess each other's competence and identify those with whom they are willing to discuss their practices or from whom they would accept advice.

Beyond these local negotiations of trust and expertise between participants, the oral rationales for action need to be translated into crime scene reports, such as the text reproduced below. In these reports, the emphasis of investigative practices shift to a process of highlighting what has been considered and

[64] 'Material' in this text is understood to incorporate both objects and information.

discarded rather than why certain processes have taken place. This example relates to the recovery of a stolen vehicle:

> No apparent damage to locks on door or boot. Damage to vehicle exterior: front off side wheel trim chipped; dint and 2 paint chips [on] rear off side door; paint chips to upper part of rear bumper adjacent to boot; three small dints to rear near side door; front windscreen – chip in glass nearside (near to fingerprints), various chips/scratches to bonnet; roof – minor dint adjacent to front offside door.
>
> Tax disc and holder not displayed on windscreen.
>
> Visual examination of vehicle (including wheel arches). No apparent blood or fibres. (Rear nearside wheel arch fibre noted – no value).
>
> Located possible blood smear – internal front offside door, horizontal window frame – Tested negative.
>
> Ash tray empty
>
> Cowling and ignition – no damage.
>
> Sky blue possible paint flakes on front offside seat (Detail from Module 1 Stage 2 participant's crime scene report).

This scene report does not openly document a rationale for current or future CSI decision-making at the crime scene. It is descriptive and detailed. It does, however, report and record the parameters in which the CSI made decisions. Looking closely at the information the report contains, it makes a number of statement and inferences. For example, the "possible blood smear […t]ested negative".[65] The CSI has pre-empted any questions about the thoroughness of her work. Should anyone notice a blood-like mark on the "internal front offside door" from crime scene photographs, it is documented as examined and checked by the CSI. Noting that the ashtray is empty could be interpreted as highlighting that no cigarette butts which might give a DNA sample, are present in logical but hidden locations. Scene reports may not necessarily articulate decision-making, but they do infer that a thorough and thoughtful scene examination has taken place.

The same example scene examination resulted in the production of a number of different forensic artefacts, many of which are not mentioned in the

[65] A Kastle-Meyer Test (KM test) is used by CSI as a presumptive test for blood. This test turns the sample of potential blood pink in the presence of haemoglobin. However, there are limits to this test – the presence of any oxidising agent, such as rust, can cause a false positive. Similarly, it does not distinguish human blood from that of any other animal. This is why a CSI will always record 'possible blood smear' even if the KM test proves positive.

accompanying description above. The list below is taken from a later part of the crime scene report where all exhibit and their accompanying exhibit numbers and descriptions are noted down:

ABC/1	Photography of scene
ABC/1A	Image of footwear mark using scale – front offside wing, above wheel arch.
ABC/1B	Black gel lift of footwear mark off front offside wing, above wheel arch.
ABC/2	Sky blue potential paint flakes – front offside seat base.
ABC/3	Fibre tapings – front nearside seat.
ABC/4	Fibre tapings – rear nearside seat.
ABC/5	Bayonet end of bulb – front nearside foot well.
ABC/6	Glass fragments from front nearside foot well.
ABC/7	Tape lift – internal rear view mirror (lefthand side).
ABC/8	Tape lift – internal rear view mirror (righthand side).
ABC/9	Fibre tapings – front offside seat (driver's).
ABC/10	Fibre tapings – rear offside seat.
ABC/11	Fibre tapings – rear middle seat.
ABC/12	Fingerprints off interior front nearside window
ABC/13	Fingerprints off interior front nearside window
ABC/14	Retail sales/invoice ref 94717011053, glove box.
ABC/15	Harperley valet service receipt dated XX/XX/XXXX, glove box

(Detail from Module 1 Stage 2 participant's crime scene report).

Whereas in the report's scene description details of thought processes and decision-making are implied, the list of exhibits in the report is far less informative. It does, however, document the visible work that has been completed. In stating what has been collected, this list does not engage in justifying why, for example, fibre were taped by seat (rather than by smaller, measured areas within each seat), nor does it provide details of what make or kind of powder was used to dust the fingerprints lifted and transformed into forensic artefacts numbered ABC/12 and ABC/13. These types of decision relate to technical competence and technical knowledge rather than investigative practice. This technical knowledge and competence is developed through the Forensic Centre training as participants highlight in Chapter 5. It is, however, investigative practice that involves the identification of a potentially relevant surface to dust for fingerprints. As documented in Chapter 6 and Chapter 7, investigative thought processes are

interwoven into CSI decisions about what to recover from a scene and how to produce relevant and acceptable forensic artefacts.[66]

The descriptive list of forensic artefacts above and the obscured way decision-making is documented in the report's scene description on the previous page mask some of the skills involved in such processes (documented in Chapters 6 and 7) from view. They serve to deskill the CSI and reinforce an image of their work as devoid of expertise. The thought process of the CSI is present in the description of the scene and what was considered, as well as in the list of exhibits or forensic artefacts produced. However, it is not explicitly articulated in a way that overtly weighs up options and highlights reasons for specific actions over others; it does not clearly demonstrate that an investigative mindset has been utilised. The scene description pre-empts courtroom questions by listing noticed items and specific, relevant details but the list of exhibits, at most, provides texture to the scene description. These numbered exhibits are the results of the CSI using an investigative mindset within the crime scene but the rationales for producing certain forensic artefacts and for recording certain absences over others, so important to articulate within the Forensic Centre training, are absent. As a matter of course, there is no one who will ask for an explanation of crime scene practices at specific real world crime scenes. Instead, rationales for decision-making are only inferred in scene documentation.

If a case goes to court, the CSI may be asked to provide a witness statement. This statement recounts the crime scene and the contents of the CSI's crime scene report in a more narrative way. However, explicit accounts of rationales for decision-making are often absent from these statements as well. As highlighted in Chapter 6, the focus of the statement writing is on 'facts' alone. Trainees were explicitly told that they should not report hearsay or opinion. On a daily basis, discussions of decision-making appear relevant only when other CSIs would have done things differently. One interviewee referred to these conversations as "professional discussions" (Amy, Module 2, second interview). They are a way of both practicing to articulate decision-making and drawing on the experiences of others. These 'professional discussions' of investigative

[66] Although not discussed in this thesis, it should also be borne in mind that these reports also intersect with the other written (and non-written) evidence, such as witness statements from members of the lay publics, victims and wider police personnel. The statements provided by CSIs are discussed on the next page.

practice are a way of testing out rationales for action in a safer environment than the courtroom and developing on their tacit knowledge of acceptable rationales and available investigative practices through their colleagues' interactional expertise (Collins & Evans 2007). Furthermore, it should be noted that the ability to discuss practices openly with a view to improve work is a clear part of contemporary understandings of professional work.

Therefore, within the Forensic Centre as the above analysis demonstrates, the investigative mindset served a number of different but compatible purposes. It provided a framework for making sense of the crime scene, articulating decision-making and interrogating one's decisions at the scene for biases. It was a short hand way of stressing to trainees the need to think carefully about the decisions they make while also emphasising the importance of developing investigative experience over time. However, this lack of a need to clearly articulate investigative decision-making in CSI work appears limited to volume crime scenes.

In their examination of the murder investigation review process, Nicol and colleagues (2004) state that:

> The aims of the review process were to identify and develop investigative opportunities that will progress an investigation, to act as a form of quality assurance in relation to both the content and process of an investigation, and to identify, develop and disseminate good investigative practice (Nicol et al. 2004, p.4).

Each force is required to have a formal review process for murder investigations where the crime remains undetected (when someone has yet to be arrested and charged for the crime) for twenty-eight days or more after a murder has been identified. As the quote above highlights, the review process aims to identify three things: additional investigative avenues to explore; weaknesses in the investigation; and good practice to disseminate more widely. Completed by staff outside of the specific investigative team dealing with the case, reviews occur concurrently with the murder investigations they examine. Part of this process involves the examination of investigative decision-making through evaluating the judgements and documented rationales of investigating officers. It seems, at least in serious and major crime, that rationales are required and evaluated against a set of criteria. Jones and colleagues (2010) provide one such framework which better articulates the criteria against which cases could be

reviewed. They set out a more standardised review process where the specific areas of best practice from official documentation (with references and relevant page numbers) are referenced for each of thirty-one review categories they identify. They suggest that their research and the resulting "murder review tool" helps facilitate a more objective review, that does not rely solely on the reviewer's judgement, which they claim "is as likely to be as inconsistent and subject to the same personal bias as the original investigation" (Jones et al. 2010, p.4). Presenting the use of official documents that provide descriptions of best practice, such as *Practice advice on core investigative doctrine* (ACPO 2005) and *Murder investigation manual* (ACPO 2006), as ironing out personal inconsistencies, ignores that these texts *require* interpretation and are open to multiple and potentially conflicting readings. Yet any review process such as this is reliant on records of decision-making in all areas of the investigation. To fulfil the three purposes of such reviews documented above, the paperwork practices of recording decision-making and rationales for action need to be thorough. This is particularly the case in serious and major crime investigations, where the amount of documentation increases substantially.

At a serious or major crime scene, Crime Scene Coordinators (CSC), Crime Scene Managers (CSM) and Senior Investigating Officers (SIO) direct action. This is one way in which the CSI at a volume crime scene has more autonomy in general than at more serious crime scenes. Bearing this in mind, it is unlikely that the rationale for practices at the serious or major crime scene will be that of the CSI's alone or documented in detail in the *individual* paperwork of the CSI (as opposed to the wider, overarching documents of the investigation produced by the SIO and CSC).

From the above analysis, the emphasis at the Forensic Centre on being able to articulate decision-making helps to train new CSIs to consciously think through their practices and interrogate their decisions at any crime scene, whether completed alone or under the instruction of a CSC, CSM or SIO**.** Rather than a way of making specific decisions, the investigative mindset provides a framework in which all competent decision-making and practices take place. Although operationalised in varying ways in official accounts, including the Forensic Centre, it is the professional habitus of investigative work in general and CSI work in particular. With the need for rationales and thought processes to be subtly

documented in crime scene reports, the CSI's investigative decision-making appears to engage in the requirements of her role. What this need to rationalise practice post facto does do is also leave space for reflection-in-action. CSIs can learn through their actions. It is the skills here in articulating decision-making in oral and paperwork accounts that are central in the visible performance of crime scene investigation. The practice of crime scene investigation, however, leaves space for autonomous CSIs to act and then know, rather than necessarily know then act.

Outside of these formal accounts from both official documentation and Forensic Centre tuition with their emphases on objectivity, accountability and transparency, trainee CSIs present different understandings of the investigative mindset.

8.2.2 The investigative mindset in participants' narratives

The breadth of meaning attributed to 'investigative mindset' presented in the Forensic Centre tuition and official documents was not reflected in participants' accounts. All first interviews with Module 1 participants took place after they had received classroom training on the investigative mindset. Although two interviewees, Peter and Doug were police officers and Matthew was a Police Community Support Officer (PCSO),[67] no other participant had an obviously investigative role prior to starting their CSI training. Existing experience within the police helped trainees become socialised into the police as an institution and obtain their position as trainee CSIs, but this does not mean that they possessed well-developed understandings of what an investigative mindset might be. For many, their only experience of the investigative process in general was through fictional accounts. Rather than structuring the decision-making process, as encapsulated in the official notions of the investigative mindset, participants' accounts stress a different way of operationalising this term. Rather than weighing up options and reflecting on potential personal biases, it is the ability to 'think like a criminal' or 'think like a burglar', as Peter suggests:

[67] The degree to which the role of a Police Community Support Officer counts as an investigative role is debatable. Nonetheless, it is mentioned here because the PCSO has an active role patrolling the streets and access to police officers in the field. Therefore, they are likely to have more first-hand experience of police investigative work than those who were held more administrative positions.

> There's a thinner line between the criminal and a cop. You know you have to think, a lot of the time, you got to think like a criminal has to try to figure out how they've done something and that to me is really interesting. It's not just going in and going, ok, what have I got. You have to put yourself in someone's shoes and sort of walk around (Peter, Module 1, first interview).

This fine line between perpetrator and police is reiterated when there is a suspect in custody. In the following example Doug explains what happens when there is a suspect for the burglary:

> For a burglary where you've got a suspect then you're going to try and get as much to pin against him. If you don't have a suspect then you need to take the fundamentals – your fingerprints and DNA. Would you go around collecting absolutely everything from the house? I'm sure your property store lad would be having a nightmare about where he would store it all. So you got to look at what you can do at the scene. What can you take away from the scene and be able to return it after you've looked at it… yeah the [scenario] scenes are good but, as I say, everybody's ideas come into the pot and we all see how everybody else thing which is good (Doug, Module 1, first interview).

Doug demonstrates the way investigative practices are applied and the specific issues of interest for the CSI are clearly defined by and dependent on the wider context of the police investigation. Thus, this indexical process signals the importance of investigative thinking and decision-making in routine CSI practices (as well as those of the wider police force). Doug also highlights a more practical aspect of CSI work – the need to ask oneself the simple, but significant question: how much do I really need? If I take this object, where is it going to be stored? Investigative decision-making provides the CSI with a tool in navigating this precarious terrain, focusing on the items relevant both forensically and investigatively for the specific case.

Being investigative is far more than identifying the perpetrator and obtaining information from the crime scene to support this claim, it also involves pre-empting what the perpetrator might say in police interviews, as Peter explains:

> A lot of the time it's you saying that they did something and they're saying no I didn't. It's your job to try and think around the argument, think around the situation to prove their lies to be lies basically. Obviously, sometimes they're telling the truth and [… t]hat's why the process is there […]. Whereas with Scenes of Crime that argument isn't there. That evidence is there, that has been put there somehow, that contact has been made, be it secondary transfer - so from me to you to somebody else - that's still something that's happened. You can't argue that it's happened, it's just about figuring out *how* it's

> happened. So in this sense [crime scene investigation] seems a lot simpler as you don't have the politics of the lies. [...] We had a burglary where I found a bit of blood by the door frame, eight feet inside the property with a broken window and he tried to say originally that he fell on the window but didn't actually go in. […] There was no way that it could have bounced or splattered or been thrown. He'd definitely been in there but just hadn't realised that he'd bled in the scene (Peter, Module 1, first interview).

From this account, Peter highlights the way that the investigative role of the CSI differs from that of the police officer due to the absence of judgement. The CSI is expected to collect evidence, but the evidence the CSI collects should be robust against reasonable perpetrator explanations. In Peter's example, had this blood only been on the window frame, the suspect's statement that he broke the window but did not enter the premises could be deemed reasonable and, in the absence of other evidence, would not prove anything. Blood eight feet into a private, burgled residence is far more difficult to explain and, although it cannot prove that the suspect burgled the property, it could be used to place the suspect within the crime scene itself and question the truthfulness of the suspect based on previous claims about only smashing the window. The forensic evidence, however, is interpreted both by police officers and by CSIs. As highlighted in Chapter 6, part of routine CSI work involves the construction of narratives about the crime. Therefore, contrary to this impartiality suggested by Peter through this 'absence of judgement', CSI work involves numerous tacit and explicit assumptions in the course of everyday working practices.

Throughout these examples, however, there is a substantial emphasis placed on experience in terms of investigative ability, reflecting the discussion in Chapter 5.[68] When asked about the significance of his police training in how he completes his CSI role, Peter is adamant that it helps:

> [I]t doesn't matter how many times someone else tells you how you would climb through a window[, ...] unless you've been chasing people

[68] This currency of experience remains a topical point in wider discussions of policing and police reform. Based on the recommendations of the *Independent Review of Police Officer and Staff Remuneration and Conditions* (Winsor 2012), the current decision to remove the requirement for senior members of the police to hold the Office of Constable has received widespread opposition from those who believe operational experience is necessary to effectively manage the police (for example, Metropolitan Police Federation 2013; Police Federation of England and Wales 2013). As the first cohort of direct entry, senior police officers started in 2014 it is too early to judge the effect of this reform. However, opposition accounts highlight, yet again, the significance of experience in police officer accounts, regardless of the potential for transferrable skills from other sectors. Police officer experience appears in these accounts as unique experience, not comparable or achievable in other occupations.

> through windows and you've been seeing them doing it, you've been investigating them and questioning them in interview and seeing what sort of defence, […] the sort of lies they come out with to try and counteract the evidence that you've got, until you've done that, you don't always know where to look on a scene. […] I've got a civilian with 20 years in, of course they're going to be far superior to me, but put a police officer and a civilian next to each other with similar lengths of service, I think the policeman would offer better evidence really and just look, be a bit more lateral thinking perhaps, because again [civilians] haven't had to sit in interviews or a court and argue with someone else as to why something did or didn't happen. You know, they go and they look and they find and, you know, especially with SOCO just because you've looked doesn't mean it's not there and sometime you have to look in different ways and be persistent (Peter, module 1, first interview).

However, for some police officers, thinking like a criminal is seen as a particular skill. For Peter it is the experience of quite literally chasing criminals, observing their movements and understanding how they think that is central in his local notion of the investigative mindset. With other police officers, this 'bobby on the beat' experience is a valuable asset. What is implicit in this account is that Peter believes police experience has helped develop and hone his investigative mindset. In previous chapters, there has been an emphasis on the formal Learning Programme as a means of highlighting the knowledge and skills of the CSI. For Peter, his two years spent training to become a police officer is not mentioned. Instead, it is the police officer experience that he sees as central to his investigative abilities.

Unsurprisingly, all participants who were not sworn police officers believed police officer experience was not necessary to competently complete CSI work. Speaking informally to the more experienced trainees there was no discernible difference between sworn officer CSIs and civilian in their mindsets. This divide, however, was an area of contention, not least because police officers are paid differently (and, in general, substantially more than civilians doing the same job due to having a higher basic rate of pay and being eligible for other allowances.[69]) Therefore, although Doug and Peter saw their police officer experience as making them better investigators than new and early career CSIs, this was not accepted by civilian CSIs. They did, however, emphasise the significance of experience. Experience is viewed as central to many aspects of CSI work and investigative

[69] This account police officer pay versus civilian CSI pay is based on participants' discussions at the Forensic Centre. I have been unable to find clear information on the differences in pay from official sources.

work in general. Stelfox goes as far as to suggest that "[t]he basis of these practical skills can be taught but competence in their use can only really be developed by using them in operational settings" (Stelfox 2009, p.107).

However, this language of 'think like a burglar' is now very much in the public domain. The Metropolitan Police ran a campaign in 2012, entitled "Operation Autumn Nights", which advised residents to "think like a burglar to stop a burglar" (Metropolitan Police 2012). Similar campaigns have been launched all over the country, such as the poster campaign in Antrim, Northern Ireland, depicted in Figure 8.1. Although using the imperative of 'think like a burglar', the focus of the Metropolitan Police's campaign was on how one could minimise the risk of burglary, from leaving a household light on a timer when you are away to always locking your doors and windows. Although a relevant and useful awareness campaign, 'think like a burglar' here is a far less involved process than in CSI or police officer investigative work. It is, however, interesting that this aspect of the investigative mindset, as presented in participant narratives, has entered the public domain as a way of pro-actively attempting to avoid being the victim of crime.

Whereas the majority of participants understood the CSI role as investigative from the very outset, Matthew, even after starting his Module 1 training (including lessons on the investigative mindset), reported that his understanding of the CSI role was that:

Figure 8.1 Police Service of Northern Ireland crime prevention campaign in partnership with the Antrim Policing and Community Safety Partnerships, "To stop a burglary, you need to think like one!" (Anon 2013).

> …it's evidence gather, it's the ability to effectively gather evidence so whether that's done through photography, obviously the fingerprinting and the lifts, fibre lifts, for me it is just the ability to effectively gather the evidence required and, as I said, not just to convict people but eliminate people from enquiries as well (Matthew, Module 1, first interview).

Although Matthew makes an important and valid point in highlighting the way that CSI work is not only related to identifying perpetrators but also exclude other suspects, his emphasis is on *gathering* rather than *investigating*. In the second interview, discussed in Chapter 5, it was Matthew who likened the Forensic Centre training to learning to pass his driving test and then, after that, learning to drive. In his interview, he stressed the importance of developing experience rather than investigative abilities, as these would help him complete his role expediently. This is present when he talks about attending crime scene with experienced colleagues:

> [If] I go out with one of the guys that's been doing it for a long time and it's like bang, bang, bang, bang, whereas with me it's more like (whistles), sit back and think about things. (Matthew, Module 1, second interview)

The centrality of experience, however, in accounts of the investigative mindset is noteworthy, even if Matthew's account above lacks an acknowledgement of the investigative elements of the CSI role. For other participants, investigative work is an important aspect of their job. Yet understanding the investigative mindset as on-the-job experience (either in general or in terms of police officer experience) and through phrases like 'think like a criminal' does not allow for the nuances and important wider effects of this concept. Whereas the investigative mindset is discussed and presented as a professional habitus for the role, its use in routine work is simplified through the notion of 'think like a burglar'. It is clear that the police officer or CSI enactment of 'think like a burglar' differs from the 'think like a burglar' practices of the average lay person who is solely protecting their home from the being burgled. Nonetheless, the focus of official literature and Forensic Centre accounts of the investigative mindset as structuring decision-making and helping develop investigative practices in an accountable and auditable way is not reflected in participants' narratives. Instead, it is a means of embodying the criminal's thought process.

Through the official documents and participants' accounts, although there are many differences in the way that 'investigative mindset' is enacted, all of these ways serve as a normative framework, which, at least outside of official documents, is performed by actors in an environment where investigative action is deemed necessary.[70] The investigative mindset encapsulates numerous tacit and active processes, an umbrella category used to denote the skills and expertise utilised in differentiating between what is and what is not relevant action at different crime scenes. Yet whereas CSIs are trained using the term investigative mindset to describe investigative actions, it was absent from my observations and discussions at real crime scenes and from lay discourses about police practice. At crime scenes, my participants used phrases like, 'I have a funny feeling about this one' (in relation to a case of grievous bodily harm which it later transpired was self-inflicted) or 'if I were a criminal, what would I do?' The latter is more in line with 'think like a burglar'. Experienced CSIs were familiar with the term investigative mindset. However, it is not a term they actively use in their everyday work, even as shorthand for more involved and complex

[70] The investigative mindset could be described as a 'regulatory ideal' (Butler 1993), a normative and powerful framework, performed and reasserted through action. Although this is not explored further here, it is important to note the way such terms help to structure, reinforce and routinise certain ways of completing (investigative) work.

processes. Nonetheless, beyond the complexity that is instilled and somewhat played down by phrases like 'think like a burglar' and the 'investigative mindset', they are useful ways of articulating at speed the embodied process of making investigative decisions. One such phrase that serves a similar purpose and is more common in lay and police literature is the 'hunch'.

8.3 The hunch

A 'hunch' may evoke an image of the lone detective trusting a gut feeling and hunches are rife in fictional accounts of police work, particularly detective work. In his study of murder investigations, Innes (2003, p.190) explores 'hunch' and states that "[t]his notion of an almost intuitive 'feel for the game' emphasises the 'craft' basis of detective work." Hunches "are based upon a combination of experience and perceptual acuity that allows detectives to identify ambiguities, and to inferentially extrapolate causes for them" (ibid.). In this account, hunches are not an innate talent, a clairvoyance or gut feeling per se. Instead, they are a combination of different factors linked to the individual's perception and ability to make sense of these perceptions based on knowledge and experience. The capacity to have a hunch is a process developed over time. The use of hunch, however, as per Innes above, also supports the image of detective work as a craft, something learned through practice and care.

The hunch is mentioned in the *Practice advice on core investigative doctrine*, in a small section entitled, "The unconscious nature of working rules" (ACPO 2005, p.58). This section presents the hunch in a similar way to Innes above:

> Working rules can become so familiar to investigators that they are not always aware that they are using them. This may lead to difficulties in describing how a particular decision was reached. Investigators may refer to these decisions as being based on hunches, gut reaction or intuition, and are unable to explain the rationale behind them, making it difficult for others to understand the decision-making process. In principle there may be nothing wrong in following hunches or gut reactions, but the investigator must expect to account for their decisions to others including victims, witnesses, supervisors, managers, and/or to partners in the criminal justice system (ACPO 2005, p.58).

ACPO acknowledge that hunches might be useful tools. However, the requirement to articulate decision-making means that a hunch, an intuition or a gut reaction is not an institutionally acceptable rationale or justification for action.

Unlike the investigative mindset with its different variables for consideration in the decision-making process, following a hunch or using a hunch to aid decision-making could potentially lead to unconscious (and conscious) personal bias entering the process. The example given in this document is the following:

> [A]n investigator attends the scene of a domestic burglary and decides not to conduct house-to-house enquiries in the vicinity because of an assumption that no-one will tell them anything worthwhile. In this situation, the opportunity to gather information from the immediate neighbours is missed and this may have a detrimental effect on the investigation (ACPO 2005, p.59).

This lack of forethought or blinkered decision-making is a failure identified by Epp (1997) who suggests that some investigators focus on some evidence, ignoring all evidence to the contrary. *Practice advice on core investigative doctrine*, as it was presented in Module 1 Stage 2, stresses the need for reflexivity in the practices of a professional police force and it is clear that self-awareness and a critical approach could help identify and aid the elimination of some bias in routine decision-making. However, any discussion about practices needs to acknowledge the heterogeneous ways in which directives can be enacted. This thesis has highlighted some of the differences between taught best practices at the Forensic Centre and it's the everyday enactment at real crime scenes both in terms of negotiating the CSI's position and practices within the police through the training (Chapter 5) and in relation to some of the (in)visible work of the CSI (Chapter 6 and Chapter 7). Throughout these chapters, the variety of ways in which work can be completed have been discussed in comparison to the more uniform ways in which practices are recorded through crime scene documentation and the production of forensic artefacts. When completed correctly, some actions help to disguise the (potential) messiness of crime scene and, by extension, investigative work. Hunch too, serves both to clean up and simplify the investigative process, but also play down the work that has taken place out of (official) view. Even if it is the case that 'following a hunch' is an acceptable explanation of practices for colleagues, the emphasis on auditable, accountable decision-making means that hunches and gut feelings need to be translated (and translatable) into institutionally acceptable rationales for action. This is one of the key points I took away from the Forensic Centre training - it is not only the CSIs ability to develop the skills to successfully make sense of a crime scene (or have a hunch) but also the ability to articulate decision-making in

an acceptable manner which facilitates the meaningful use of forensic practices in investigative police work.

Although 'investigative mindset' helps to emphasis professional practices and 'hunch' can be a useful shorthand articulation of investigative thinking, the characteristics of investigative thinking still remain undefined and unexplained. It is still unclear what it means to think investigatively, have a hunch or utilise an investigative mindset in practice. More details are required to better understanding the process of investigative reasoning.

8.4 Investigative reasoning

The Foundation Crime Scene Investigator Learning Programme does not explicitly cover how CSIs should or can make inferences or the different types of reasoning utilised in investigative practice. The absence of such tuition suggests that the CSI's investigative mindset is limited to engraining accountability practices in their routine (investigative) work and 'experience', as a justification and explanation, serves only as another barrier to unpacking this particularly inaccessible concept.

Innes (2003) provides the most comprehensive account of the reasoning involved in investigative work. He provides a typology of four reasoning styles that can be used individually or collectively in drawing rational and effective inferences. The first style, 'common-sense reasoning' is a "form of 'practical consciousness' that is shared with the majority of other members of a society, and provides a set of normative expectations about how people act in different situations and the motives that will underpin various kinds of social action" (Innes 2003, p.187). Innes suggests that this type of reasoning is significant because it is the most commonly used in everyday life. Furthermore, as investigative reasoning needs to be communicated to the (lay) jury in the courtroom, "common-sense standards" can be the most compelling and persuasive (ibid.). Common-sense reasoning appears the least technical. It is developed through life experience as a lay member of the public as opposed to occupational experience. The second is 'indexical reasoning'. This style "is based upon the interpretation of information accounting for the 'local' context in which it is situated. This meaning is ascribed on the basis of the relationships that can be identified between a selected item and that which is situationally connected to it" (Innes

2003, p.188). Indexical reasoning is based in part on experience which comes into play most prominently in the next type of reasoning identified by Innes, 'analogical reasoning'. 'Analogical reasoning' "is based upon associating a present problem or situation with the qualities of past problems or situations, and using the knowledge about these past cases to develop a solution to the current one" (Innes 2003, pp.188–189). Analogical reasoning is most prominent in my participants' accounts that stress the centrality of past experience. The fourth style, 'legal reasoning' takes into account the legal requirements and evidential standards and understands that these have a role to play in how and what decisions are made. This type of reasoning is reflected in how crime scenes are recorded, forensic artefacts are produced and crime scene paperwork is completed.

Although written in relation to a murder investigation, these reasoning styles are sufficiently abstract to encompass other police contexts, acknowledging the importance of experience and context (but not using these terms as justifications or explanations in and of themselves). By teasing out the aspects that contribute to decision-making, Innes' sociological account of constructing inferences helps to unpack the concept of the investigative mindset, exploring the many options and factors that affect decision-making. Whereas the investigative mindset is said to be a "state of mind" (ACPO 2005, p.60), with five principles which help to avoid flaws in decision-making and render practice accountable, Innes' discussion of the investigative methodology highlights some of the thought processes utilised when deciding which investigative avenue(s) to pursue.

These reasoning styles are evident in the fictitious theft from motor vehicle crime scene report, discussed and documented in Section 8.2.1 (see page 243). Common sense and analogical reasoning styles are present in both considering the exterior of the car and how the exterior of the car is examined and documented, including all dints, chips and scratches. Checking the ashtray also emphasise these two reasoning styles but also indexical reasoning (a cigarette butt outside of car would have little evidential value, but inside in the car ashtray is likely to have some value). Whereas earlier it was noted that mentioning the empty ashtray served to demonstrate a thorough examination had taken place, here this example illustrates how multiple different reasoning styles can overlap and intersect in crime scene work. It is just the legal reasoning that appears, as

highlighted in previous chapters, to frame the recording practices of producing the crime scene report and wider forensic artefacts. Thus, Innes' typology pinpoints the many different ways of thinking utilised to produce a somewhat coherent narrative of the action that occurs in the crime scene examination process.

This articulation of specific reasoning styles, unpacking opaque notions of the hunch and investigative mindset, also helps us gain a better view the professional role of the 'investigator' than that available in official documents (such as that the Criminal Procedures and Investigations Act 1996 quoted above) or within Forensic Centre tuition. Innes (2003, p.193) provides a useful description of investigators, stating that they "can be conceived as being concerned with the identification, interpretation, and ordering of a range of signifiers which are used to construct an evidence narrative of the case". These narratives can often, at least initially, be used and developed on via the individuals' experience. Police personnel do not attend scenes as blank slates with no preconceptions (see for example, Hoyle 1998; Innes 2003; 2007). For the police officer, experience of numerous different situations can be useful in keeping them away from danger (see for example, Bayley & Bittner 1984). Innes (2007) refers to these preconceptions or working definitions as master narratives (discussed in Chapter 6).

Innes' reasoning styles provide a clear conceptual vocabulary in which to articulate investigative thinking. My example above shows it is easy to utilise these terms to make sense of the crime scene report discussed in section 8.2.1. However, the investigative mindset is holistic and proactive. Innes' reasoning styles are more targeted and appear useful in unpacking decisions as an external analyst but not in terms of articulating decision-making and practices as they occur. The investigative mindset, although vague and with the potential to be used as a justification in itself, provides a structure of accountability and reflexivity. It is still amorphous and ambiguous, as my analysis has demonstrated. Nonetheless, the investigative mindset as a way of foregrounding the need for consideration, transparency and, in participants' narratives, experience in investigative decision-making, it serves a purpose in articulating skills necessary in the competent completion of CSI work.

8.5 The role of CSI and the detective

In this chapter I have so far explored the investigative mindset as a concept both within and beyond CSI training and investigative practice. The inclusion of Innes' account of the investigative reasoning has helped to add texture to the enactment of specific investigative practices, particularly when rooted in examples, as per above. However, it is important to acknowledge that CSIs are not members of the Criminal Investigation Department (CID) and investigative practices can be performed in a number of different ways. This department, where all officers have detective prefixed to their rank, for example Detective Constable or Detective Inspector, is responsible for the police investigation of serious and major crimes. Although the fully trained CSI is likely to work with member of CID on serious and major crime scenes, she is not a detective. Nonetheless, Innes' account of the investigative methodology and the construction of inferences clearly resonate with the working practices of CSIs. With these differences, it is important now to explore what distinguishes the investigative practices of the CSI and the detective. This will help capture the specific profile of the CSI and her investigative work. It would be naïve to suggest that the two areas discussed below are the only ways in which the CSI and the detective differ in their respective occupational environments. However in the sections that follow, I will briefly consider two ways the CSI and the detective can be distinguished - the parameters of the actor's investigative practice and the actor's status and professional place within the contemporary police service.

8.5.1 Differentiating the parameters of CSI and detective investigative practice

CSI investigative practice, as presented in the previous sections, has a very clear focus on 'forensic potential', the conceivable utility of objects at the scene, following forensic analysis, to help in the investigation of crime. Chapter 6 and Chapter 7 documented and analysed the ways that expertise through investigative decision-making is instilled in the recording and forensic artefact production processes. This ability to differentiate the plausibly meaningful from the meaningless was central in CSIs' understandings of their unique expertise (as discussed in Chapter 7). However, outside of the CSI community, this site of unique expertise, central in demonstrating competence in CSI work, can help facilitate and reinforce the perceived inherent investigative nature of forensic science in general and CSI work in particular. This conflation of investigative and forensic within and outside of the police environment has the potential to

undermine the central role of investigative reasoning in deciding what should and what should not be analysed using forensic processes. CSI work is dependent, in part, on competent investigative practice through the selection of meaningful objects at the scene. Yet the paperwork records of such decision-making discussed above do not explicitly address these thought processes. Instead they are just inferred. This focus on objects and geographical spaces, however, does help to differentiate the investigative work of the CSI from that of the detective. The CSI is concerned with objects located in specific geographical spaces at a defined moment in time, namely the crime scene or on/in the body (of a suspect or victim). These objects provide a site in which individuation or at least individuating practices can take place. As highlighted earlier in this thesis, the origin of criminalistics, the discipline particularly in the USA under which Crime Scene Investigation sits, is the emphasis on individuation of material left by perpetrators in a crime scene from that already there (Kirk 1963). The criminal, arguably the focus of the detective, is beyond the scope of CSI work. The CSI is, instead, concerned with what the criminal may have left behind. Bearing this in mind, the focus of a CSI's investigative work is on that which may provide useful information about the perpetrator and the crime following scientific analysis and be relevant in placing a perpetrator unquestioningly within the crime scene, such as in Peter's example above. The CSI freezes geographical locations at a specific moment in time and creates forensic artefacts which are later analysed by scientifically verified methods.[71] However, particularly at volume crime scenes, the CSI also provides one of the first, if not the first, police narrative of the crime. This narrative, coupled with an engagement with the physical space, is where the CSI completes her investigative work and utilises her investigative mindset. She explores the location(s) of a crime in order to identify potentially meaningful traces and document the crime scene. The CSI may interact with victims and witnesses about the crime in order to obtain forensically (and investigatively) relevant information. Yet this wider focus, this consideration of oral accounts, motives and potential perpetrators is the domain of the detective.

[71] The scientific and legal communities have debated such methods. Although routine DNA profiling is accepted and commonplace now, there are still forensic processes that remain controversial and subject to debate, such as LCN DNA/LTN DNA analysis. For a detailed appraisal LCN DNA/LTN DNA, see Lawless (2013) and the correspondence between McCartney and Gill in *Nature Reviews Genetics* about the validity of this method of DNA analysis (i.e. McCartney 2008a; Gill 2008; McCartney 2008b).

The CSI is focused on the physiognomy of the space. The detective is responsible for identifying the perpetrator and explaining the crime. The detective deals with the "politics of the lies" (Peter. Module 1, first interview)[72] and the psychology of the criminal. Taking an outside-oriented view of the case, the detective directs and draws together the investigative efforts of other police personnel.

Drawing the dividing line in this way highlights how the investigative mindsets of the CSI and the detective differ both in term of the scope and the locations in which the investigative mindset is utilised. Although the section above stresses the importance of the investigative mindset in meeting the standards of a professional police force as well as in instilling the need to interrogate and reflect on decision-making, the detective works both within and beyond these parameters. This focus on the mind of the criminal is beyond the scope of the CSI. When the CSI 'thinks like a criminal', her thinking is focused on the materials resulting from the criminal's movements and presence in a space.

8.5.2 Hierarchies within investigative practice: status in police work

The differing investigative foci of the CSI and the detective are also relevant when one thinks of the status attached to different actors within the investigative process both from within the police and by the lay population. In previous chapters, I have highlighted the way that relationships need to be forged and developed between the CSI and police officers. CSIs need to prove that they are competent at their job through the production or meaningful forensic artefacts and demonstrating an understanding of the rules of the game. The differing investigative foci of these actors also provide an insight into the status ascribed to each.

In his account of the assignment of status to professional occupations, Abbott (1981) describes what he interprets as a paradox between intra-profession status assignment (i.e. status assigned to member of the profession by other members of the profession) and extra-profession status assignment (i.e. status assigned to members of a profession by actors outside of that profession). According to Abbott, variables such as income, power and the status of clients do not sufficiently account for the differential way status is ascribed to individuals within

[72] Quoted at length in section 8.2.2 on page 250.

the same professional area. Instead, intra-profession status is dependent on the 'professional purity' of the work completed by the actor. This 'professional purity', "the ability to exclude nonprofessional issues or irrelevant professional issues from practice" (Abbott 1981, p.823), means that:

> "[w]ithin a given profession, the highest status professionals are those who deal with issues pre-digested and predefined by a number of colleagues. These colleagues have removed the human complexity and difficulty to leave a problem at least professionally defined although possibly still very difficult to solve" (Abbott 1981, pp.823–824).

It is those who deal with the complex, non-routine 'pure' work of the profession who are attributed the highest status. Therefore, if we return to the medical example above, the general practitioner is the first point of contact for the sick. Many are treated at this stage. The general practitioner only refers on specific cases to the consultant, a "process of […] successive, iterative purification" (Abbott 1981, p.827) and demonstrating the reason why two actors, both medical doctors, differ in status.

The paradox, however, is visible when one considers the attribution of status from outside professions. Outside of the profession, "[i]t is the contact with the disorderly that is the basis of professional status in society" (Abbott 1981, p.829). Contact with the lay population in routine, impure work is central. In the example above, the general practitioner, as the first point of contact for the sick, meets these criteria. Thus, whereas intra-professional status is granted to those who complete the complex, non-routine, 'pure' work of the profession, extra-professional status is attributed to those who complete the visible, routine, impure work of the profession. This does not mean the consultant has a lower extra-professional status than the general practitioner, just that the extra-professional status of the general practitioner is potentially higher than her intra-professional status.

Considering the relative importance of contact with the general public in intra and extra profession status hierarchies, Abbott's account provides one way of viewing and explaining the differences in status within the police force. With detectives and police officers completing the pure role of the police in terms of catching criminals and maintaining order (Manning 2006), it is understandable that within the police, the CSI is given a lesser status. However, in public understandings and public interactions, participants' accounts present the

heightened status of the CSI. As Chapter 5 states, some participants also found that members of the public assumed that they were police officers (as well as CSIs).[73] This suggests that the difference between the statuses of the CSI and the detective/sworn police officer is less pronounced in lay accounts.

My participants all reported the expectations of the general public on the CSI and that fictional accounts of CSI work shape the public perception of the actual work that takes place. This was discussed in Chapter 5. It is important here that these public perceptions and expectations are one of the sites that conflate investigative and forensic work. They appear to be understood as the same object/activity. Not only does this confuse the roles of the CSI and the detective but also the status of the work completed. How we understand the nature of the police work and the division of labour within the police force affects the status that we attribute to certain processes within police work. Distinguishing the CSI and the detective does not imply I want to suggest that CSI work involves substantially less expertise than detective work. It does, however, demonstrate that investigative practice is not a homogenous entity. How it is understood and the parameters of what counts as the focus of investigative practice is occupation specific.

Abbott's account does have a number of flaws. It does not consider the wider hierarchical issues of, for example, consultants with different specialities and how differential status is attributed. Working for the police is has an equally diverse number of roles and, although all contribute to the overall function of the police, it is unclear whether the CSI and the detective can be classed as with the same profession. Nonetheless, Abbott does help us to understand the importance of the visibility of the actor during the course of her work in status attribution. Lay (mis)understandings of the role and parameters of CSI work and the power of the CSI's visible work in the investigation of crimes may contribute to the status lay publics attribute to the CSI. This is interesting to consider when placed in the context of the paperwork records of CSI work removing the investigative expertise and skill utilised in the scene examination process.

[73] For some participants, this was negatively experienced because of the difference pay between the civilian CSI and sworn police officer (as well as sworn police officer CSI). One of the justifications for civilianising the CSI role, mentioned in the Review of Scientific Support for the Police (Touche Ross 1987) was because civilian CSIs would be cheaper than sworn officers.

8.6 Discussion: Investigative practice in Crime Scene Investigation

In this chapter I have contributed to our understanding of investigative practice and its enactment in crime scene investigation. My analysis explores the investigative mindset and the place of this occupational habitus in the routine work and training of the CSI. The notion of the mindset is very much linked with pushes to professionalise the police in general and render decisions transparent. Although it appears fit for purpose as a means of instilling the need for accountability and reflexivity in investigative decision-making, my analysis has shown that it is unclear how useful this term is as a method of conceptualising the intricate ways in which crime scene decision-making takes place. The investigative mindset does not acknowledge how competence in thinking investigatively, answering questions and recording work in the right way, are developed over time. Nor does such a term provide a standardised framework within which decision-making can take place. This is particularly apparent from the trainees' understandings and enactments of the investigative mindset in interview accounts versus how it is presented in Forensic Centre tuition. Whereas 'investigative mindset' is embedded in official documentation, other vague notions, such as 'thinking like a burglar' or 'thinking like an offender', are present in participants' accounts. Therefore, rather than investigative practice as the official literature suggests, thinking like a burglar may be a better way to conceptualise what CSIs actually do. Nonetheless, there is clearly boundary work to be completed here. Phrases such as 'think like a burglar', deskill, particularly when they are also used outside of the police in community safety campaigns, undermining the expertise of the CSI by situating 'thinking like an burglar' within common sense thinking alone. Although lay and CSI actors may differently operationalise 'thinking like an offender', the use of such a notion as a method of engaging the public in crime preventative practices moves this term outside of the police. Furthermore, with differences in status already present between police officers/detectives and police staff, utilising police officer language (such as investigative practice) also serves to align crime scene investigation with an occupation that has a longer history and arguably greater status, at least within the police service itself.

Investigative practice links to all aspect of CSI crime scene work, discussed in Chapter 6 and Chapter 7. Although certain parts of CSI work are processual

and strictly controlled, investigative thinking helps the CSI to differentiate the forensic (and investigative) potential from the meaningless in forensic artefact production. Yet, the terminology used in official documents and expressions such as 'thinking like a burglar' do not explain what investigative thinking entails. Innes' typology of reasoning styles provides a useful framework in which to retrospectively explain and account for investigative decision-making, but it is not useful in directing action at the scene. Practice theory, particularly through an emphasis on knowing *in* doing, allows us to at least acknowledge the knowledge production that takes place within practice itself and provides one way of making sense of action as it happens. The CSI, however, needs to learn the skills to acceptably and articulately explain practice post facto both to colleagues orally and in their paperwork. Here, Innes' typology is useful not because it represents the 'truth' but because it represents an institutionally acceptable framework of acceptable vocabularies of motive.

Throughout this chapter there has been an emphasis on the utility of investigative thinking within CSI work. In the last part of this chapter, I distinguish between the detective and the CSI. This divide, based on status and the focus of the actor's investigative work, is relevant when one considers the integration of actors into wider police processes and the centrality of notions of investigative thinking in lay and academic conceptions of detective work. I suggest the focus of CSI investigative work, however, differs. Unlike the detective's investigation, the CSI focuses not on the criminal or the full context of the crime but on the geographies of the space where the crime took place and the potential forensic artefacts that could be produced from there to inform detective work. Learning to articulate and partially record (or at least infer) investigative decision-making in scene documentation is developed in a less overt manner than other crime scene practices. Nonetheless, acknowledging the role of the investigative mindset and investigative practice in structuring the material practices of CSI work draws together the numerous aspects of examining crime scenes within a cohesive process. CSI investigative practice is not the same as detective or police investigative practice. It does, however, have the potential to positively impact the investigative outcomes of criminal investigations and requires investigative experience and thinking of a special kind. It might be more accurate to utilise the CSI's own language of 'thinking like a burglar' to better encapsulate their investigative thinking. However, within a role pushing to professionalise and be

seen as an integral part of the police investigative process, this would undermine the substantial agency, skill and knowledge necessary to do this thinking. They might be 'thinking like a burglar', but this practice is imbued with expertise, experiences and knowledge that are not held by the lay population. Thinking like a burglar is expert labour when practiced by the CSI and referring to it as investigative practice here, I too am doing some boundary work on the CSI's behalf, helping to maintain the parameters of knowledge, skill and their investigative utility that they have so carefully constructed over time.

Forensic technologies were limited at the time Wilkie Collins was writing *The woman in white*, quoted at the beginning of this chapter. Nonetheless, Count Fosco's appraisal of police effectiveness still rings true. Forensic technologies are not, on their own, a silver bullet solving all crimes whether committed by the mastermind or foolish criminal. What this chapter has foregrounded is the significant role of investigative thinking and decision-making in the practices from examining a crime scene onwards and using forensic expertise to inform actions. Investigative work is not solely the domain of the detective, even if, as mentioned above, there are variation in the purpose and scope of such work depending on the role of the actor. It is true that "the resolute, educated and highly intelligent man" (Collins 1860, p.242) might still be able to evade the police even with the formalisation of investigative practice and developments in the use of forensic techniques in police work. Nonetheless, acknowledging the intricate ways technologies and investigative thinking, CSIs and detective, and criminals and crime scene converge and diverge is important in understanding the integration of different actors with diverse expertise in the investigation of crime.

Chapter 9 Conclusion

The last thirty years have signalled a step change in the way we utilise science in the investigation of crime and the specialisation of actors within this process. Starting from the introduction of scientific methods to index and catalogue suspect bodies, in this thesis I have documented some of the ways science has been used in the investigation of crime. In a project that initially planned to examine the integration of scientific technologies into police investigations, the resulting research, presented in the past chapters, provides rich, textured data and analysis on the training and working practices of one, specific actor, the Crime Scene Investigator (CSI). This actor, charged with enacting science in a variety of environments that are tied together through their claimed relevance to specific crimes, is presented as both a representative of science in the police and an investigative agent. I highlight the need for a consideration of the role and practices of the CSI in isolation and in wider discussions of the use of science in the police and criminal justice system. In media representations and wider discourses, science in general, and DNA in particular, has been associated with notions of truth, factuality and an ability to speak for itself. The significance of scientific practices, both at and beyond the crime scene, depend on the work completed by the CSI in selecting, recording and packaging meaningful forensic artefacts and documenting the crime scene. Through describing and analysing facets of CSI training, practices and perceptions, I demonstrate that CSIs are far more than "forensic dustmen" (Wayment 1982). In this final chapter I reflect on some of the key findings from my analysis, teasing out connections and the wider relevance of this study. I explore how this research stresses the importance of examining everyday work in accounts of forensic practices, the divide between visible and invisible work in objectivity practices and how boundaries are imposed, negotiated and deconstructed in the course of CSI work. In each section, I consider some of the areas where this research could be extended and developed.

9.1 Forensic practice in everyday work

Many of the existing accounts of forensic science within Science and Technology Studies (STS) focus on specific cases, specific occasions where forensics is used, generally the courtroom, and/or specific technologies or scientific practices, such as fingerprinting or DNA profiling and databasing. While

the examination of extraordinary cases and courtroom interactions can prove fruitful in exploring the negotiation of scientific knowledge and expertise surrounding forensic technologies, serious and major crimes comprise only a small percentage of all investigations and even fewer court appearances (as highlighted by Duster (2012) in relation to plea bargains). Questions, therefore, remain about the processes at more frequently occurring volume crime scenes and the practices of (scientific) actors in the everyday deployment of forensic science in policing. Studying this routine action, the preceding chapters provide a qualitative, grounded account of the use of forensic technologies in everyday police work. This push to explore the mundane builds on early laboratory studies, such as Latour and Woolgar's (1986) *Laboratory Life*, which describe and examine the everyday practices of doing 'science'. The microanalysis provided in this thesis contributes to scholarship and understandings of the humanly mediated ways in which both the materials for scientific scrutiny and the information for investigative decision-making are produced and made sense of at the crime scene by the CSI. From this point of view, the role of CSI becomes visible as facilitating the successful investigation of crime and prosecution of criminals. As such, my study of the training and routine work of the CSI adds texture to STS accounts of forensic practice by grounding our understanding in the everyday activities of completing CSI work.

By observing, interviewing and interacting with participants at the Forensic Centre and at crime scenes, I uncover a number of ways in which the CSI is involved in the process of investigating crime beyond simple evidence collection. Throughout this thesis, practice is foregrounded. CSI need to develop an 'investigative mindset', 'think like a burglar' and/or learn to reflect-in-action. These are substantial part of CSI work, however, that are beyond the scope of classroom tuition. They are things that are learned and realised *in* action or *in* doing. This is best encapsulated by Matthew who, as mentioned in Chapter 5, likened the Forensic Centre training to learning to drive. You learn one way to pass the test and then the real learning starts when you are out on the road. Although framed by Matthew as experience, experience has been viewed in this thesis as just part of the knowledge gained *in* practice. Practice itself is the site of knowledge production.

In Chapter 5 I argue that the Forensic Centre actually actively facilitates a way of learning that presents practice as something that is neither straightforward nor linear (not adhering to technical rationality or a simple received view as discussed in Chapter 2), the wider criminal justice system, does not appear to mimic this understanding. In fact, rather than practice, it is notions of expertise and those deemed to have high levels of expertise, such as the detective or scientist, where discretion (as the police would refer to it or practice as I would) can be exercises without a routine requirement for an acceptable explanation for such action.

Even focusing on the material work of CSI practice however has provided fruitful analysis. Chapter 6 explores the way narratives surrounding the crime are constructed through crime scene recording practices. This process of visualising the crime scene and producing the official record of the physical space, places the CSI at the centre of framing decisions in a record that is used by the wider police as the official memory of the site of the crime. Chapter 7 demonstrates the significance of specific practices in the CSI's understandings of her unique expertise. Such understandings centre on the CSI's ability to produce meaningful forensic artefacts. Both these chapters also document the CSI's reflexivity in everyday work practices and engagement with the varying requirements placed on her by actors in different occupational environments, such as police officers and court personnel. Through reflecting-in-action CSIs actively engage with the parameters and expectations of their role on a case by case basis.

In this empirical research, I unpack and untangle the complex interlacing of different processes in the investigation of crime. Some of the variations in understandings and practices are not unexpected, such as the variable adherence to best practice as presented to trainees at the Forensic Centre in everyday work.[74] However, by focusing on one actor in the process and considering both the training and routine work, my thesis explicates the requirements of the role, the expertise involved in such work, its significance within the wider investigative process and the lived experiences of working as a CSI. In particular, the tensions CSIs' experience between performing their role within the training environment and at crime scenes has been shown. The time pressures, the limited equipment and the emphasis on learning through (and in)

[74] This is particularly apparent in literature on police officer training, such as Chan and colleagues (2003).

experience how to complete scene examinations expediently cause understandable anxiety. This tension was only observable by listening to the voices of trainees and experienced CSIs and demonstrates the value of my focus on routine work, training and the mundane in understanding forensic practices. This is a significant methodological point raised by this research but it could be taken further by focusing more on practice as conceptualised in the practice literature (and discussed in Chapter 2). I have concentrated on the physical processes involved in crime scene investigation rather than, necessarily the embodiment of practice into routine thought and action. This is in part, linked to the substantial portion of my fieldwork that took place in an environment where these material practices were the focus, the Forensic Centre. Although within the confines the access I was granted this is understandable, it is area where further work is much needed. This research has, however, signposted the significance of considering the practices of CSI in detail and understanding the mundane realities of routine CSI work from the CSIs themselves as opposed to other actors. Furthermore, in discussing their work in detail and signposting what this work actually can involve, I hope to have altered the discursive practice of talking about the CSI so that we can at least start to acknowledge the skill, agency and expertise involved in crime scene investigation. In broader terms the research also stresses the importance of examining, in detail, *all* actors involved in or affected by the routine use of science in policing. Machado and Prainsack (2012) do this with prisoners, but other key stakeholders such as police actors have so far not been studied. My detailed account of the CSI could be viewed as a call to action in sociology to consider police and other actors in general, beyond prominent court cases, focusing specifically on practice in its many guises.

Recent changes including the closure of the Forensic Science Service, a government owned company used by many police forces to complete forensic analysis, together with decreases in police budgets and the restructuring of a number of police services, including the closure of the National Policing Improvement Agency (NPIA), contextualise current practices as in flux. Financial constraints and limited budgets are the infrastructural background to decisions on investments and spending on technology, staffing and the forensic analysis of crime scene samples. Some police forces have opted to reduce costs by merging scientific support resources with other forces (for example, Sussex and Surrey Police). Others have looked to open in-house laboratories so that samples can

be analysed within the police rather than by external bodies (for example, the Metropolitan Police Service). Projects such as Advanced DNA Profiling Technology (ADAPT), run by the NPIA who tendered to industry a requirement for a technology that could be taken to crime scenes to provide a DNA profile as quickly as possible, have been put on hold. However, other developments such as LCG Forensics' (2013) "ParaDNA" device, which allows one to check whether DNA is present in a sample, has been developed in the hope that it reduces the number of samples sent for DNA profiling that do not contain DNA.[75] These all suggest that the landscape of forensic science in general and practices of how forensic science is used in policing are changing, and invite comparative research with English and Welsh crime scene investigation teams, looking at the everyday enactment of crime scene work when technological developments and new institutional structures are introduced. How is practice evolving? How does this affect the way crime scene investigation work can and does take place? There is also room for international comparison. Beyond such possible comparisons of institutional change, however, I have shown some structural implications that arise from the use of science and the division of labour in police investigative teams and how the domain of the CSI is defined in everyday work.

9.2 (In)visibility, objectivity and expertise in CSI work

'Invisible work' is often used to refer to work that is hidden, tacit or occurs behind closed doors, backstage (Goffman 1959). Although training happens in such a backstage position, a substantial proportion of crime scene investigation takes place frontstage. Crime scene investigation is performed in front of police officers, victims and witnesses. CSI expertise is instilled in the artefacts they produce, articulated and presented in the courtroom and inferred through the laboratory analysis of crime scene samples. The presence of the lay public is particularly marked in volume crime examinations[76] but even with this work taking place frontstage, some of the crucial aspects of performing crime scene investigation are hidden from view.

In their discussion of visible and invisible work, Star and Strauss (1999) assert that visibility in work can lead to an increased level of legitimacy. By examining

[75] This process, does not, however differentiate human from non-human DNA.
[76] This is emphasised in the ways in which serious and major crime scenes are often shielded from view either fully (where possible) or partially through the use of tents.

the material practices of the CSI, I have attempted to contextualise the legitimacy of the CSI role. Acknowledging the complexity of some of the everyday aspects of CSI work and promoting greater understanding of the role and scope of the CSI is important. The ethnographic accounts presented and analysed in the previous chapters provide a finer-grained understanding of crime scene work and the involvement of the CSI in complex decision-making, with Chapter 6 focusing on documenting the crime scene and Chapter 7 examining the production of forensic artefacts. The successful completion of CSI work renders a substantial amount of CSI agency and investigative thinking invisible. In Chapter 6 this is demonstrated through the use and CSI's engagement with presenting their work as mechanically objective. Mechanical objectivity (Daston & Galison 1992; 2007), a process of acting and documenting without wilful intervention in the end result, is not simply a way of avoiding interference and recording the lack of human mediation. In crime scene photography and crime scene reports, mechanical objectivity is consciously performed with the courtroom and wider police audiences in mind. The CSI reflexively engages with the process of avoiding any appearance of altering the scene or imbuing reports with her own inferences and assumptions. Chapter 7 presents objectivity in CSI forensic artefact production in relation to the courtroom environment. Administrative objectivity is used by Lynch and colleagues (2008) to articulate how administrative records can mask more complex processes and assemblages of actors. Careful completion of paperwork is required for a forensic artefact (and CSI) to withstand legal challenges in the courtroom. Chapters 6 and 7 document and analyse how the CSI actively engages in meeting the requirements of these different forms of objectivity. Within the context of the material products of CSI work, these objectivities are practical accomplishments.

Performing objectivity in these two different ways comprises a small percentage of CSI expertise. Yet, paradoxically, doing it well limits and undermines the significance of CSI work in the eyes of others, particularly those parts of the job CSIs view as most important to them. My interview findings highlight some of aspects of work my participants as crucial to their understandings of the CSI's unique expertise. From the methods used to record the crime scene and create meaningful forensic artefacts, to the crucial role of investigative thinking in crime scene decision-making, the agency, expertise and skills involved in such processes are trivialised when mechanical and

administrative objectivity are understood as just 'true to nature' representations of a crime scene. The CSI work is blackboxed and the practical accomplishment made invisible when seen as recording facts. Yet there is also a risk in stressing that CSIs are creative in producing crime scene documentation and forensic artefacts. The officially sanctioned articulations of (investigative) practice presented in crime scene paperwork (see Chapters 6, 7 and 8) do not capture, in detail, the thought processes at the scene or acknowledge the extent to which practice itself can be seen as a knowledge production process in its own right. The agency of the CSI *in* the examination and investigative process needs to be recognised and accounted for in how we understand, audit and examine crime scene work. This is complicated, however, by the CSI's unstable work environment, the crime scene. This space is temporary, defined by the CSI and conserved in her records. Once it has been released back to the owner it transforms back into a normal space and cannot be audited.

The ways in which CSIs enact accountability and the reliance on paperwork as a safeguard is arguably not limited to CSI work. Yet it is important to see the extent to which paperwork plays an important role in assessing the competence and acceptability of CSI practices, and more generally their professional legitimacy. The CSI's paperwork practices in scene documentation and forensic artefact production are powerful and significant in the courtroom, particularly in avoiding any inference of contamination, as discussed in Chapter 7. Yet, these blackboxing processes safeguard the products of CSI work at the cost of acknowledging the CSI's expertise.

Participants are aware of the uncertainty and ambiguity they face at every crime scene they attend. They juggle the need to draw on frames and make sense of crimes and physical spaces before starting their crime scene examination (in decisions about whether they should even attend the crime scene at all), in the examination of the scene (*in* action), and after the examination (in the form of the paperwork practices mentioned in the previous paragraph). In this process, as discussed by Jo in particular, contamination can become a useful tool in safeguarding their occupational space from further complications as discussed in Chapter 7. Jo's example of claiming there is a "DNA area" so the victim of a crime needs to give her a certain amount of space to avoid contamination is a reasonably humour example. However, contamination as tool

in explaining the absence of trace, is particularly interesting practice of safeguarding their expertise and negotiating the inherent ambiguity CSI work and the centrality of forensic artefacts as the sole representation of CSI practice. This point talks to wider issues surrounding our understanding of practice in general within the contemporary criminal justice system. Although all actors would acknowledge that more happens that is ever recorded or demonstrated through forensic artefacts, this linear way of understanding the relationship between knowledge, practice and action deskills but also blackboxes substantial work that takes place in rendering crimes and crime scenes knowable. This received view is embedded in professional training (Cook and Wagenaar 2012). However, as mentioned above, the Forensic Centre Learning Programme represents and draws on a more nuanced understanding of practice. Viewing CSI work as enacting simple processes ignores the agency and autonomy involved in doing simple processes.

Rendering invisible work visible, Star and Strauss (1999) claim, can lead to greater surveillance as a payoff for the increase in legitimacy. This potential for greater surveillance of CSI work (rather than just the resulting objects) through articulating and signposting some of the ways that crime scene work is taught and enacted in practice is an important part in maintaining the legitimacy of the role and strengthening the CSI's claim to expertise. This thesis has not explored the audit culture within crime scene investigation. Internal audit practices were not mentioned during my fieldwork beyond an occasional double-checking of a colleague's paperwork and administrative objectivity as enacted in routine activities and courtroom interactions. Paperwork practices and forensic artefact production are important to the CSI and in the assessment of acceptable CSI work. Meaningful and robust accountability frameworks would take into account the skills and expertise necessary in competent crime scene investigation beyond the objects such actors produce. This type of framework could help develop an achievable best practice or 'good practice', acknowledge the role of practice in knowledge production and learning and aid in cementing a realistic understanding and appreciation of the CSI's role in the police's investigative use of science.

By making certain aspects of CSI work visible my account does not attempt to redefine the relationship between the visible and invisible work of the CSI,

although I acknowledge that this could be an unintended consequence (cf Star & Strauss 1999). It is, nonetheless, worthwhile to raise awareness of how these invisible and visible practices converge, affect and impinge on the other processes that take place at the crime scene, within the police and at other related sites. The ways the CSI distinguishes her role from and integrates her expertise into wider police and scientific processes is important to acknowledge and such boundary work highlights the precarious and complex ways in which the CSI and her work are understood across occupational arenas.

9.3 Boundary practices and integration

My analysis has highlighted several ways in which the CSI performs boundary work in her everyday routines. From boundary work in the very literal sense of delimiting a crime scene, to the boundaries of the CSI's contribution to the investigation of a crime, CSI work presented in the previous chapters is textured, multi-faceted and enacted in many different sites, to a range of audiences and in multiple, context dependent ways.

Gieryn (1983) introduces boundary work as a way collectives construct and support an imposed divide between those who they argue have the a right to claim knowledge of a certain kind and those who do not. Chapter 2 discusses this concept in some detail. Throughout the previous chapters, I have illustrated a variety of kinds of boundary work. These enactments provide a clearer image of the occupational profile of the CSI and the problems she encounters. In addition, it adds texture to our understanding of boundary work in everyday contexts.

The least figurative use of boundary work completed by the CSI occurs in the active and visible processes of delimiting her work site, the crime scene. Using the methods noted in Chapter 6 with vague notions of natural borders and experience that builds up over time, the CSI identifies the limits of a crime scene. She creates the boundary between relevant and irrelevant space and transforms a geographical location at a specific moment in time into a site of scientific and investigative interest. This crime scene is also a crucial location of another form of boundary work through the practices of delimiting her occupational environment and expertise from other police personnel. Rather than the physical limits of the scene, this work relates more closely to Gieryn's original concept as

the focus is on the *right to* expertise and ownership of the crime scene as an occupational and epistemic space. For CSIs, this expertise revolves around their knowledge of forensic artefact production, their qualifications and experience developed over time and *in* practice which allows them to cultivate and utilise investigative thinking in the course of everyday work. CSIs, as representatives of science in the police, also note their role as 'reality checkers', helping investigating police officers to understand the (in)significance of objects from specific crime scenes. This difference between CSI work and police work becomes obscured when investigative practices are considered. I have demonstrated that making many of the decisions involved in the selection, production and documentation of meaningful forensic artefacts include investigative thinking. In Chapter 8 I distinguish between the CSI's and the detective's investigative practices, suggesting that the CSI focuses on the physiognomy of the crime scene and the detective on who committed the crime. However, the investigative thinking in CSI decision-making also serves to veil this very skill of the CSI. Once the most relevant and useful forensic artefacts have been produced following good decision-making and applying technical skill, only those artefacts and records remain and thus many conflate 'forensics' with 'investigative'. The forensic practices appear intrinsically investigative because they depend on the expertise of the CSI in selecting, recording, and preserving artefacts to maintain this facade.

Boundary work can also be seen through discussions of integration. Williams' (2004; 2008) presents two very different ways of incorporating the work of Scientific Support Unit (SSU) personnel into the investigative process, namely structural and procedural integration. Whereas procedural integration is described by Williams as SSU actors being viewed as expert collaborators, integrated into the investigative practices of the police, structural integration sees SSU staff as technicians, completing a very strictly defined and managed task within the investigative process. In Forensic Centre tuition I document that CSIs are encouraged to view themselves as expert collaborators in police investigations, particularly with the investigative mindset presented as the professional habitus of the CSI role. In everyday interactions, this procedural integration was also present. Yet, like the boundary work relating to the parameters of their occupation, this type of boundary work was also accomplished through on going interactions between different actors rather than

assumed, respected and followed from the outset. CSI work provides an example of how boundary work can be iterative and performative in everyday practices rather than set at the level of organisational decision-making or in times of specific contestation, such as the examples presented in Chapter 2. In Gieryn's (1983) original conception and later accounts, boundary work appears to relate to wider scale changes. In CSI work, boundaries need to be constructed again and again. In short, boundary work is a routine part of CSI mundane practice. CSIs report the need to constantly prove themselves to wider police actors through the completion of their role and the results of their work, particularly in the form of DNA hits and fingerprint matches, after expert analysis. Williams' concepts of structural and procedural integration are useful in considering the variable ways the CSI can be utilised and viewed within official work of different police forces. However, when considered next to boundary work, the performative ways in which CSIs can actively negotiate their working relationships with other police personnel, the limits of their expertise and their potential contribution to the police investigative process are illuminated. They are, at least in part, reflective practitioners (Schön 1983; Williams 2004).

Boundary work, however, is not an actively negotiated, performative and flexible process when the CSI moves outside of the police environment. As Chapter 7 demonstrates, in the courtroom CSI work is presented as a process of evidence recovery and paperwork practices. In terms of the types of integration discussed above, CSIs are treated as mere technicians. It is striking that the understanding and the boundaries of CSI work differ so starkly between the occupational spaces in which CSI work is used. Although Williams presents these notions of integration as two poles of a spectrum rather than mutually exclusive categories, my research has demonstrated that integration is actively achieved within routine interactions in the police investigative process but different understandings of this integration are used different occupational environments such as the courtroom.

The enactment of boundary work and understandings of integration in the different arenas relevant to CSI work, namely the police, the laboratory, the courtroom and the crime scene (and associated victims and witnesses) indicates that we can also talk about these actions as boundary practices, actively negotiated in everyday interactions. They are performative and need to be

iteratively reinforced *in* each interaction. This discussion of boundaries also indicates ways of extending this study. By focusing on understandings of the CSI's role and work in these different environments, the analysis would substantiate, develop and enhance extant discussions of resource utilisation and forensic expertise. In this thesis I provide a detailed understanding of what crime scene investigation actually entails from participants' accounts, and found indications that non-CSI actors do not hold a realistic understanding of CSI work or practice expertise. Further research on views of the CSI's role and practices would widen our knowledge and might enable reflection on the effects of these different perceptions and expectations of CSI work on case outcomes.

Chapter 2 presents the boundary object as key in the practices of the CSI. Although boundary object is a difficult concept to operationalise meaningfully, analysis presented in the preceding chapters helps to articulate some of the ways CSIs allow different parts of the process of using scientific methods in the investigation of crime to communicate, particularly through the forensic artefacts they create. These artefacts or boundary objects are investigative and technical achievements.

The CSI's work practices meet strict requirements that allow the objects they produce to maintain a level of consistent meaning across different sites. Following these objects (Appadurai 1986), the CSI becomes both a producer of institutionally sanctioned artefacts and one of the many passage points they go through in the use of forensic science in volume crime investigations. The CSI creates forensic artefacts from items she perceives to be potentially relevant to an investigation. Once the object arrives in the laboratory, the scientist's perspective is different. She is focused on what is in the sample and the scientific outcomes of the analysis, such as a DNA profile. As mentioned in Chapter 8, the detective and by extension wider police officers are focused on the criminal and what specific pieces of information can tell them about the person who committed the crime. In the courtroom questions focus on what particular items of evidence are present, the robustness of such evidence and whether there is sufficient evidence to demonstrate that it is likely that the accused committed the crime. These are, however, all different ways of appropriating CSI labour (and the work of others) without consensus but with a coordination that becomes visible when we follow the product of a CSI's work as it moves through these different sites.

This study could be developed further by focusing on the next stage after the crime scene and following these objects into the different sites above. By considering more widely the understandings and interactions of different actors with these objects, the interpretive flexibility could be studied in detail. Furthermore, stopping at each of the passage points would allow a detailed consideration of how the meaning of such objects and their epistemic value shift across these locales.

CSIs constantly work with boundaries, bridging, constructing and deconstructing them in everyday practice. The CSI is central in the construction of objects that communicate across disciplinary divides in different but not wholly inconsistent ways. She actively negotiates and delimits her expertise, occupational space and integration in her police work, documented above, even if the extent of these negotiations and understandings of the CSI role differ across occupational arenas.

With specific reference to the current study, I have started the above process by articulating some of the invisible and visible practices of the CSI, giving future research on this actor and investigative processes a sociological grounding on which to build a better understanding of this relevant but obscured police actor and her routine use of science. Further analysis could examine in more widely the intricacies of crime scene work. My current research was limited in a number of ways, from the short periods of time spent observing in the Forensic Centre and police force environments to the lack of detailed data on the differing ways CSI work is enacted in the various police forces of England and Wales. The current research, particularly in terms of crime scene practices and forensic artefact production does, however, hold information that is not limited in its explanatory value to this local context of England and Wales. These material practices are central in the routine use of forensic science in investigations and, although the parameters of the work and the name of the individual completing such a role may differ, it is likely that many similarities are present.

We are currently in a time of flux in England and Wales with the closure of the NPIA, the Forensic Science Service and cuts to police budgets. CSIs might now be utilised differently and more effectively when resources are tightened. Nonetheless, in illuminating the CSI as a crucial actor in the everyday use of forensic science and documenting some of the visible and invisible ways in which

the CSI's work affects the wider investigative process, the current analysis has helped the reader gain a rich understanding of the work, practice and responsibilities of the CSI and how the role is perceived by those who occupy it. Further in-depth analysis of the professional trajectories and changing role in police work would add to these understandings. Some areas for future study are identified in this chapter relating to discussions of specific research findings. Whether this is through focusing on how CSI work is understood, an account of mundane reasoning specifically *in* crime scene work or exploring how boundaries are constructed, negotiated and bridged in crime scene investigation, crime scene investigation in general and everyday forensic practices in particular offer rich research opportunities. This study has only cracked the surface of the complex contribution crime scene investigation makes to the routine use of science in law enforcement and the institutional and epistemic position of those who do this work.

Appendices

Appendix A University of Exeter Ethics Committee Approvals

UNIVERSITY OF EXETER

SCHOOL OF HUMANITIES
AND SOCIAL SCIENCES
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CERTIFICATE OF ETHICAL APPROVAL

School/Academic Unit:
Egenis, School of Humanities and Social Sciences, University of Exeter

Title of Project:
HOW DNA MATTERS: AN ETHNOGRAPHIC INVESTIGATION OF POLICE PRACTICES

Name(s)/Title of Project Research Team Member(s):
David Wyatt

Project Contact Point:
Email: dmw206@exeter.ac.uk

Brief Description of Project:
This research will investigate the role of DNA evidence in the social interactions and practices that envelop its use. In particular, it will explore the taught and tacit knowledge utilised by law enforcement professionals through the way they understand, use and enact this evidence.

This project has been approved for the period
From: July 2010
To: May 2014

School Ethics Committee approval reference: 14.07.10/iv

Signature H. Farrimond Date 19th July '10
(Hannah Farrimond – Chair HuSS School Ethics Committee)

UNIVERSITY OF EXETER

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CERTIFICATE OF ETHICAL APPROVAL

College/Academic Unit:
Egenis, College of Social Sciences and International Studies, University of Exeter

Title of Project:
How DNA matters: An ethnographic investigation of police practices

Name(s)/Title of Project Research Team Member(s):
David Wyatt

Project Contact Point:
Email: dmw206@exeter.ac.uk

This project has been approved for the period
From: July 2010
To: May 2014

College Ethics Committee amendment approved 17.05.11 reference: 14.07.10/iv

Signature H. Farrimond Date 26th May '11
(Hannah Farrimond – Chair SSIS Ethics Committee)

Appendix B Interview Consent Form and Participant Information Sheet

HOW DNA MATTERS: AN ETHNOGRAPHIC INVESTIGATION OF POLICE PRACTICES

Interview Consent Form

Please tick the boxes, fill in the lines below and sign the form. Thank you for your help!

- ☐ I confirm that I have read and understood the information sheet for the above study and have had the opportunity to ask questions about participating in interviews.
- ☐ I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.
- ☐ I agree to take part in interviews and to the use of my data for the purposes of the above study.
- ☐ I agree to interviews being recorded and understand that the data will be kept securely and will remain confidential except in the case of legal subpoena.
- ☐ Should any quotes be used, I will not be identified in any subsequent transcription or publication.

Name of Interviewee: _____

Position: _____ _____

Contact Email: _____

Date: _____

Signature: _____

Project Contact Details: David Wyatt, Post-Graduate Researcher, ESRC Centre for Genomics in Society (Egenis), Byrne House, St German's Road, Exeter, EX4 4PJ, UK
Email: dmw206@exeter.ac.uk Tel: 01392 269140
Project Supervisor: Dr Christine Hauskeller, Senior Research Fellow, ESRC Centre for Genomics in Society (Egenis), Byrne House, St German's Road, Exeter, EX4 4PJ, UK
Email: C.Hauskeller@exeter.ac.uk Tel: 01392 269129

HOW DNA MATTERS: AN ETHNOGRAPHIC INVESTIGATION OF POLICE PRACTICES

Participant Information Sheet

This sheet provides information on the aims and methods of my research project and tells you about the data I will collect and how it will be handled. This research is funded by an Economics and Social Research Council (ESRC) PhD studentship and takes place at the ESRC Centre for Genomics in Society (Egenis) which is part of the College of Social Sciences and International Studies at the University of Exeter. Before you agree to participate in this study, please read the information sheet carefully. If there is anything that you do not understand or if you would like any further information, please contact:

Researcher: David Wyatt, ESRC Centre for Genomics in Society (Egenis), University of Exeter, Byrne House, St. German's Road, Exeter, EX4 4PJ, Email: dmw206@exeter.ac.uk, Phone: 01392 269140

Supervisor: Dr. Christine Hauskeller, Senior Research Fellow and Deputy Director, ESRC Centre for Genomics in Society (Egenis), University of Exeter, Byrne House, St. German's Road, Exeter, EX4 4PJ, Email: C.Hauskeller@exeter.ac.uk, Telephone: 01392 269129

What is the purpose of the study?

This research examines the role of the perceptions, the training and the practices of Crime Scene Investigators in their use of DNA and forensic science in day-to-day police work. It considers the types of knowledge used in the practices surrounding the use of forensics, demarcating and defining the crime scene and managing the relationships between the different stakeholders involved in criminal investigations. It aims to contribute to discussions on intelligence-led policing and the development of future policing strategy

What methods do I use?

I will use a combination of observation as well as face-to-face and telephone interviews, which will be concerned with how forensic science and DNA evidence is perceived and used in everyday practice. The interviews will last up to one hour and will be audio-taped.

Confidentiality

All data will be treated as strictly confidential unless disclosure is required by a court order. Tapes, electronic files, transcripts and notes will be stored securely at the University of Exeter. They will not be used other than for the purpose of this study and will only be accessible to me and my supervisors. Quotes from the interviews will be used in my PhD thesis, presentations and publications, but they will be anonymised, in order to protect the identity of each participant.

Participation in the study

The participation in this study is voluntary.

What will happen with the results of this study?

The results of this study will form the basis of my PhD thesis, publications in the field of social science and presentations to various stakeholders.

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