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Swedish crime scene technicians: facilitations, epistemic frictions and professionalization from the outside

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ABSTRACT

This article investigates the role of crime scene technicians in the Swedish criminal justice system, and particularly how Swedish crime scene technicians not only examine crime scenes but also facilitate the criminal justice system’s joint production of forensic evidence. It proposes thinking about the criminal justice system as a conglomeration of epistemic cultures, that is, of communities with different ways of producing and understanding forensic evidence. Such a perspective makes it possible to understand interprofessional frictions as epistemic frictions as well as to draw attention to the facilitations, mediations and translations that crime scene technicians perform. This perspective also makes it possible to illuminate how the crime scene technicians’ professionalization – a professionalization from the outside – affects both their future crime scene work and their facilitations.

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The interactions between different actors in a criminal justice system are of great criminological interest: It is through these interactions that criminal justice is achieved in practice. This article aims to contribute to criminology through shedding light on the criminal justice system’s collaborations and interactions concerning forensic evidence in order to promote thought on and discussion of the practices of criminal justice.

Specifically, I examine the role of crime scene technicians in the Swedish criminal justice system. Through the lens of their formal training, I focus on how crime scene technicians as a profession facilitate the criminal justice system’s joint production of forensic evidence. I show that the notion of epistemic cultures (Knorr Cetina, 1999) – cultures with specific and disparate ways of producing and understanding knowledge – can provide a key to understanding both the technicians’ facilitations and their professional training. Seeing the criminal justice system as a conglomeration of such epistemic cultures, with different understandings of and perspectives on the production of forensic evidence, allows a different view on both crime scene technicians’ work, their professionalization from the outside (cf Evetts, 2013; Wilson-Kovacs, 2014), and the criminal justice system and its production of forensic evidence as a whole.

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**Swedish crime scene technicians**

Swedish crime scene technicians start their careers by attending the police academy and subsequently working as uniformed officers before transferring to other positions within the police. Many work in several such positions before coming to a crime scene division. There, they will work alongside their more senior colleagues for about a year, before going to the National Forensic Centre (NFC; the Swedish state-run forensic laboratory) for formal training. This training consists of a half-year’s coursework spread out over a year, alternated with their regular work.2

The formal training has its curriculum set by the National Police Board, and the course is planned and taught by a team of teachers: forensic scientists, a forensic statistician and guest teachers – a lawyer, a prosecutor and a number of senior crime scene technicians from different crime scene divisions. At the time of my fieldwork, the NFC – then called the Swedish National Laboratory of Forensic Science – was formally part of the Swedish Police Authority, but was organizationally set apart from the then 21 regional police authorities.3

**Earlier research**

There is a plethora of research on forensics, especially forensic science (e.g. Caudill & LaRue, 2006; Cole, 2001; Hindmarsh & Prainsack, 2010; Lawless, 2016; Lynch, Cole, McNally, & Jordan, 2008), but comparatively little has been published on crime scene technicians.

Some of the scholarships that does exist focuses on crime scene investigators themselves. Kelty, Julian and Robertson (2011) for example, list professionalism, communication and outlook on life among key attributes, and Kelty (2011) proposes guidelines for using these attributes in recruitment. Wilson-Kovacs (2014) discusses how the British crime scene examiners’ position in the criminal justice system and their professionalization from the outside affect their self-image.

Another area of scholarship deals with how crime scene investigators’ work fits into a larger context. Williams and Weetman (2013), in a collaboration between scholar and practitioner, point out the need to examine how forensics, including crime scene work, does and can contribute to in particular homicide investigations. Ludwig, Fraser and Williams (2012) examine how other professionals in the Scottish police perceive the crime scene examiners’ work, and Millen (2000) and Harrison (2006) discuss whether crime scene work can be seen as science – a discussion that can be set in relation to Cole’s (2010, 2012) discussion of how forensic science can adopt a ‘scientific culture’.

Other scholarship focuses closely on crime scene practices. Wyatt (2014a) for example, shows how crime scene investigators transform crime scenes into traces and evidence that are useful for the investigation. He has also studied how crime scene examiners acquire their skills (Wyatt, 2014b). I have discussed crime scene technicians’ everyday practices (Kruse, 2016: chapter 5), and Williams (2007) argues that paying attention to crime scene examiners’ practices provides more insight into crime scene work than a focus on its ‘scientificness’. Gassaway (2007) describes crime scene investigators’ coping strategies with the repugnant aspects of the job. Finally, Williams (2003) uses crime scene practice to think about identity as a sociological concept.
However, as I have observed, at least Swedish crime scene technicians do not only examine crime scenes but also act in several ways as go-betweens between the forensic laboratory and the investigation, thus playing an important role in facilitating cooperation. They commissioned analyses from the laboratory on the orders of the investigation leader, they balanced the laboratory’s resources against the investigation’s needs, they explained forensic science to police investigators and prosecutors, and they provided context to the forensic scientists (Kruse, 2016: 105ff).

For example, in large cases with a lot of forensic material, it is a common practice to assemble all the professions involved in the investigation. There, crime scene technicians set out different possibilities for the investigation leader to act on. A bloody fingerprint can, for instance, be sent for DNA or fingerprint analysis, but not both, as each analysis disables the other; the technicians can explain this and what each analysis could contribute to the case, thus aligning forensic possibilities with investigative concerns (see also Kruse, 2016: 106f).

Although the organization and division of labour can vary significantly between jurisdictions, such a role – albeit often overshadowed by crime scene work – does not seem unique to the Swedish criminal justice system. Millen mentions British crime scene investigators being ‘the glue between two surfaces’ (Millen, 2000: 126) of forensic science and the police investigation, and Wilson-Kovacs touches upon how crime scene examiners synchronize and coordinate different actors within an investigation (Wilson-Kovacs, 2014: 771). Wyatt identifies as a core competence the ‘making sense of trace and its potential utility in a police investigation’ (Wyatt, 2014a: 449) and being able to explain that utility to investigators, Fraser (2000) points out a similar role, and Ludwig et al. (2012) describe utility assessing and advisory roles as – often overlooked or underestimated – parts of their work. Howes (2017) focuses on the communication between police investigators and forensic scientists, but she points out the need for this kind of communication.

Apart from work on crime scene technicians and forensics, this article also draws on the results of other work. One area of research is sociological work about professions and professionalism. A classic sociological text on professions and professionalism is Abbott (1988); Brante (2011) and Evetts (2002), Evetts (2013) provide more current perspectives. Although there seems to be disagreement whether crime scene technicians constitute a profession (e.g. Robertson, White, Kelty, & Julian, 2014), I find the concept of the profession and professionalization helpful to think about crime scene technician training.

Finally, I will use a notion from Science and Technology Studies: Knorr Cetina’s (1999) concept of epistemic cultures, that is, cultures of knowledge. It will help think about differences and frictions in the criminal justice system and how the crime scene technicians facilitate the criminal justice system’s cooperation.

**Methods and material**

My argument in this article is based on ethnographic fieldwork (e.g. Agar, 1980; Spradley, 1980). I followed a group of 20 crime scene technicians – ten women and ten men from crime scene divisions all over the country – taking the course at the NFC in 2013. During this year, I – with few exceptions – observed all lectures, exercises and
simulated crime scene examinations. I also listened to and participated in conversations in and out of the classroom and conducted informal interviews before and after classes and during breaks. In sum, this periodic fieldwork corresponded to ten weeks at full time, producing as its main material just above 750 pages of field notes (I also have several hundred pages of course-related documents such as handouts).

I have assembled and analysed this material against the background of an earlier study of forensic evidence in the Swedish criminal justice system: Between 2008 and 2012, I conducted ethnographic observations and interviews at a crime scene division, three forensic laboratory units, a public prosecution’s office and a criminal investigation division, typically spending a week at every place. I also observed a number of trials in district court. Subsequently, I interviewed forensic scientists, prosecutors, district court judges, defence lawyers and a crime scene technician as well as a ‘regular’ police officer (Kruse, 2016). This fieldwork, documented in extensive field notes and interview recordings and transcriptions, added up to about two months’ full-time work, followed by further engagements (and a still ongoing study) with different actors in the criminal justice system.

My analysis has taken inspiration from Grounded Theory (Glaser & Strauss, 1967), looking for patterns as well as contradictions. The main analytical focus has been on epistemic differences, an issue to which the earlier research had alerted me. I have paid attention to how epistemic differences manifested and how they were noticed and negotiated (or not) as well as how the crime scene technicians’ training related to epistemic differences in the criminal justice system as a whole. This has made it possible to reflect on the crime scene technicians’ role and position in the criminal justice system.

**Crime scene technicians’ facilitations**

In a lecture (20 May 2013), the NFC’s management stressed the importance of the technicians’ constituting ‘one channel’ to and from the laboratory to avoid the confusion of one person not knowing what the other is doing. Instead, the technicians should be the hub holding together the different professions in the criminal justice system, as they regularly meet forensic scientists, medical examiners, police investigators and prosecutors in their work. Technicians are also expected by the NFC to ‘explain’ forensics (and in particular the forensic scientists’ work) to the police and prosecution and to disseminate information about new or changed forensic analyses.

In comparison, crime scene technicians, both students on the course and others, have described themselves to me as being ‘the filter’ (e.g. interview 28 February 2012; conversations 23 January and 5 March 2013) between the police and prosecutor on the one hand and the NFC on the other, straining out excess and thus preventing the laboratory from being swamped with unnecessary analyses (interview with senior crime scene technician 28 February 2012; see also Kruse, 2016: 107). They sometimes spoke about being caught between the two: according to them, the NFC was ‘a completely different world’ than that of the crime scene or police investigation and placed very different demands on the technicians (interview with senior crime scene technician 28 February 2012).

The two descriptions are certainly not mutually exclusive. Both place the responsibility for facilitating cooperation firmly with the technicians. But they also give different
perspectives: the NFC describes a vision of how the criminal justice system’s cooperation around forensic evidence should be coordinated, whereas the technicians describe the practicalities of such coordinating, for example, being trapped between different worlds and their different demands – which they must bring into alignment, at least temporarily. I see in this need for alignment echoes of Howes’s (2017) emphasis on the need for interprofessional communication and learning for the functioning of the (Australian) criminal justice system’s use of forensic evidence.

**Epistemic cultures**

I suggest understanding the different ‘worlds’ in the criminal justice system as different epistemic cultures, ‘cultures that create and warrant knowledge’ (Knorr Cetina, 1999: 1), here in the form of forensic evidence. Epistemic cultures are

 amalgams of arrangements and mechanisms – bonded through affinity, necessity, and historical coincidence – which, in a given field, make up how we know what we know.

(Knorr Cetina, 1999: 1; italics in original)

This ‘how’ can vary considerably. My previous research has shown that while police investigators meet and are concerned about the people affected by an investigation as well as the public (they do not want, for example, someone strongly suspected for a crime ‘out there’ endangering others, and they do not want plaintiffs and suspects to have to live with protracted investigations), forensic scientists are much more concerned with the correctness of their results than with speed. And while forensic scientists ground their expertise in the natural sciences and statistics, police investigators ground theirs in experience and personal (professional) relationships with the people involved in their investigations. Adding to the variation and complexity are the prosecutors and judges, who approach and assess forensic evidence from a legal point of view, focusing on how the evidence as a whole relates to legal requirements (Kruse, 2016).

I regard these epistemic cultures and their different perspectives on forensic evidence as crucial for the production of forensic evidence in the criminal justice system through their different but equally important contributions. Crime scene technicians find and recover traces, forensic scientists analyse them and evaluate the results, police investigators supply context to the forensic laboratory results through interrogation and other evidence, prosecutors assemble the case into a legally meaningful whole, and the court provides closure through the verdict (Kruse, 2016).

But, as my fieldwork also has shown, these differences may lead to friction, primarily expressed in terms of others not understanding what is evident to the speaker. Crime scene technicians could sometimes say that forensic scientists do not have experience of crime scenes and, in consequence, do not understand why technicians cannot always deliver traces in exactly the way they demand. Forensic scientists could talk about how probabilistic evidence was difficult for prosecutors and judges to understand and thus needed to be explained to them; it was not that they were not smart, the forensic scientists would say (e.g. in an interview for an ongoing study on 15 March 2017), but they were not good at maths – if they were, they would be scientists – and thus they disliked numbers and needed help to understand them. That is, it appears that members
of the criminal justice system conceptualized friction as arising from a lack of knowledge (and perhaps inclination) and saw disseminating knowledge as the solution.

However, upon closer examination, it would appear that this occasional friction is a matter of epistemic frictions, that is, frictions caused by epistemic differences. This problematizes dissemination as a useful solution because disseminating information about forensic science or criminal law cannot change that the different professions – by necessity – have very different epistemic foundations and perspectives, and thus very different understandings.

Alignment and translations

I argue that the crime scene technicians do (and have to do) more than just provide a channel through which traces and information – apparently understood as well-defined and comparatively easily moved units – move more or less unhindered and on their own accord. Rather, I will show, they actively reconcile different demands and understandings to align different professions into cooperation – something that could be glimpsed also during their training.

One set of alignments has to do with crime scene examinations being part of larger investigations. This means that in their crime scene work, technicians take into account the questions pertinent to the larger investigation and explain how their crime scene examination and the laboratory analysis possibilities it creates are relevant to the investigation.

The training I observed prepared the students for these facilitations through role-play: During the crime scene exercises, students were asked to report to the investigation leader (impersonated by one of the crime scene technician teachers) about the progress of their crime scene examination while also receiving information about the progress of the (simulated) investigation going on in parallel (20 February 2013 March, 18 April, 4 September, and 2–3 October 2013). After the crime scene examinations, they attended a ‘meeting’ (in front of the class) with the ‘investigation leader’, where they explained the crime scenes and laboratory results as well as what their findings meant for the investigation as a whole (1 and 22 March and 23 April 2013).

This mirrors everyday work. In my earlier research, I have, for example, observed a crime scene technician telephoning the investigation leader after having examined the site of a suspected break-in, reporting that all he had found was a possibly salient fingerprint and a probably unrelated shoe mark, but no discernible point of entry. After a quick discussion of the other information in the case – mainly interviews with the plaintiffs and the neighbours who had seen a door stand open – the technician proposed discarding the shoe mark and sending the fingerprint for analysis. It might shed some light on who had been in the house, they agreed, especially as there was a – loose – suspicion based on local knowledge (field notes 13 August 2008). In other words, the technicians do not passively channel information but actively fit forensic findings into a specific context.

Similarly, when technicians help the investigation leader decide which traces should be sent for analysis, they do not unidirectionally conserve the NFC’s resources. They often balance the laboratory’s resources against the investigation’s needs. This balancing became particularly explicit in a lesson on screening latent fingerprints for viability. As
a fingerprint examiner explained, how large an area is needed to be able to make an identification varies depending on the quality and the appearance of the latent fingerprint. A fingerprint with few details might be identifiable, if the details are very unusual; a somewhat smudgy print might be large enough to contain a number of perceptible details; or a small partial print might be so clear that even that small area yields enough usable details (18 January and 19 February 2013).

My fieldwork on the course also showed that these judgements are situated within specific cases. As another teacher – an experienced crime scene technician – pointed out in a discussion of a particular fingerprint recovered during a crime scene exercise, ‘you change the bar all the time’ (4 September 2013). That is, a bad latent print that otherwise would be put aside might still be sent for analysis, if it is all there is. Sending in fingerprints of lower quality uses more resources and is, perhaps, to no avail, but it might lead to evidence. Thus, the assessment the technicians are expected to be able to make is one that balances size, clarity and detailedness with resources against the circumstances of each particular case – in other words, they actively align and reconcile the investigation and the laboratory.

Nor do I conclude the recovery of traces at the crime scene to be as straightforward as it may seem at first glance. A story one of the students told from her everyday work may illustrate. The semen dog brought to the site of a suspected outdoors rape had not only indicated a possible stain on the foliage of a bush but had, in its enthusiasm, also lapped up the potential evidence-to-be. ‘So,’ the student said, ‘we swabbed the dog,’ mimicking pulling out the dog’s tongue with one hand and applying a forensic swab to it with the other (5 March 2013).

Such a mishap is not business as usual – if nothing else, the listeners’ amusement made that clear – but even at routine crime scenes, traces may overlap or intermingle, conditions might be less than favourable, or other circumstances might make it necessary to adapt the forensic scientists’ recommendations that the crime scene technicians were taught during their training.

Both the storyteller and her listeners knew how they were supposed to recover bodily fluids; their discussion revolved around how it was sometimes very difficult to know what to do in a surprising or unfavourable situation when standard methods cannot be applied straight-off.

In none of those situations – examining crime scenes, screening fingerprints, recovering traces – can the crime scene technicians’ work be described as simply conveying or applying general information. Their facilitation of the different professions’ cooperation (including preventing and dealing with friction) is not primarily a matter of providing or possessing information but of mediation or – to use language as a metaphor – translation between different epistemic cultures in order to bring them into at least temporary alignment.

These translations, I emphasize, rely on the technicians’ familiarity with several of the criminal justice system’s epistemic cultures. Through their police background, they are familiar with investigative work; often, they have worked as investigators. Through their training at the NFC, they also gain insight into the forensic scientists’ epistemic culture(s) – both through the lectures and exercises in which the students experienced the forensic scientists’ work for themselves when ‘changing roles’ and performing analyses – e.g. tool mark comparisons – that otherwise are performed by forensic scientists (e.g. 22 February 2013).
I do not mean to say that the training at the NFC turned the technicians into forensic scientists – such training takes years. They did, however, gain an understanding of forensic laboratory work that will be useful for both their future crime scene work and their facilitating role. Very concretely, experiencing for oneself how the lighting glares off white castings under the microscope makes it easier to remember to use brown casting paste for the forensic scientists’ sakes. A close understanding of the forensic scientists’ work can also help the technicians balance different demands from different parts of the criminal justice system. For example, understanding forensic analyses and why they take time makes it easier to give the police and prosecution realistic expectations.

This double familiarity, I maintain, puts them in a position where they can, for example, match the questions of importance for the prosecutor with the analyses the NFC offers; they can ‘translate’ the NFC’s expert statements to the circumstances of the investigation; they can balance an investigation leader’s desire for extensive analyses with the laboratory’s limited resources; and they can write reports that document the crime scene and convey their findings in a way that is useful to the investigation and understandable to the police and prosecution who are not forensic experts.

Thus, understanding the criminal justice system in terms of different epistemic cultures cooperating makes it possible to see the crime scene technicians’ active and continuous reconciliations between the system’s different ‘worlds’. While crime scene technicians may not be unique in taking a facilitating role – in other collaborations, there may well be similar facilitators, and other actors in the criminal justice system at times facilitate cooperation in other ways – the specifics of their facilitations shed light on the epistemic differences in the criminal justice system and the (often-unnoticed) labour that is necessary to ensure the criminal justice system’s functioning.

**Professionalization from the outside**

Understanding the criminal justice system as a conglomeration of different epistemic cultures also makes it possible to see the crime scene technicians’ training at the NFC as a (re-)professionalization from the outside, by another epistemic culture. As I will show in this section, this has consequences for their work.

What constitutes a profession seems contested (see Brante, 2011 or Evetts, 2013 for an overview), and so is whether crime scene examiners are a profession (e.g. Robertson et al., 2014). What there seems to be a consensus about is that the core characteristics of a profession include special expertise, standardized methods and training, a connection to science, restricted admittance, discretion and autonomy (see, e.g. Brante, 2011 or Evetts, 2013; Evetts, 2002, however, sees a decline in autonomy). And regardless of whether Swedish crime scene technicians constitute a full profession, their formal training advances some of these core characteristics, thus at least contributing to professionalizing them. For example, the training contributes to standardizing crime scene work across the country. The crime scene approach based on the laboratory’s own evaluation practices anchors the analysis in statistical methods (i.e. a Bayesian approach), situating it in science rather than experience – even if the ‘scientificism’ of forensic science has been discussed (e.g. Harrison, 2006) and questioned (e.g. Cole, 2010).
Additionally, the training restricts admittance to the occupation – only those who have undergone the course and passed its exams are fully fledged practitioners.

There are clear advantages of this professionalization, both for the technicians and for the criminal justice system. Professionalism is, for example, associated with higher status, both for the individual and the collective (cf Evetts, 2013: 786). An advantage of the professionalization by the NFC specifically is the legitimacy and credibility that it gives the crime scene technicians and, in consequence, their crime scene examinations. From what I have seen in earlier research, the NFC has a strong reputation for impartiality (Kruse, 2016: 123ff), furthered by its association with science – both the natural sciences that forensic science is perceived as part of and the statistics used in the evaluation. Training crime scene technicians there – instead of for instance at the police academy (which was in charge of their training before 1998) – may, by association, advance the technicians’ credibility and legitimacy.

Another advantage is that the NFC, through the forensic scientist teachers, can align the technicians’ practices to those of the laboratory. It is clearly desirable for the entire criminal justice system that the technicians recover, transport and document traces in a way optimized for laboratory analysis and evaluation.

To put it analytically, the technicians’ professionalization from the outside also means increased epistemic homogeneity between the laboratory and the crime scene technicians. Consciously or unconsciously, the training turns the technicians into an adjunct profession to the laboratory.

Nevertheless, a professionalization from the outside also harbours difficulties. On a general level, Evetts points out how, in such a professionalization, control often takes the place of the autonomy and discretion that otherwise are characteristics of professions (2013: 786f). For British crime scene examiners, who also are professionalized by external forces, Wilson-Kovacs accordingly sees both autonomy and self-image being restricted, as ‘illustrated in the explicit subordination of skills captured in participants’ views of themselves as ‘backroom boys’, and facilitators of police work, rather than active collaborators’ (Wilson-Kovacs, 2014: 774). Although the examiners she interviewed saw themselves as central to the investigation, they also were ‘quite happy being sat in the back and let[ting] somebody else take the glory’ (crime scene examiner quoted in Wilson-Kovacs, 2014: 770). This placement does not speak of autonomy and control over one’s work.

Her study also hints at another issue with a professionalization from the outside, namely the relation between training and work. She highlights double discourses of professionalism; on the one hand, the discourse of subordination, but on the other hand a counter discourse that, by distinguishing ‘between formal training and the knowledgeable, expert, evidential use of trace’ (Wilson-Kovacs, 2014: 774) and placing value on this practical expertise, offers an alternative way of constructing professional identity. This counter discourse, I emphasize, not only has salience for practitioners’ identities but also suggests that their training not necessarily prepares them for all aspects of their work in the best possible way.

This difficulty is sometimes overlooked when discussing professionalization from the outside (i.e. by another epistemic culture). It was, however, visible in the crime scene technician training I have studied. For example, when it came to crime scene reports, students seemed to perceive a gap between the teaching situation and their everyday
work. The ideal report – as described by the teachers in class – should bring together the results of the crime scene examination, the forensic laboratory’s analyses, and possibly a medical examination, into a set of overall conclusions about the crime scene.

However, as two students very carefully and politely pointed out when discussing the report they were writing after a crime scene exercise with a teacher (26 February 2013), this was difficult to achieve outside of the classroom. They referred to the NFC’s sometimes long turnaround times, while investigations cannot always wait for the report until the laboratory results come back, especially not if there are several subsequent rounds of analyses to be ordered and processed. Thus, in everyday work, crime scene reports seldom can meet this ideal.

Another example of a gap the students seemed to see between training and subsequent practice was the recommendations the forensic scientists gave the students to include case information when commissioning an analysis. Seen in connection with the laboratory’s evaluation practices, the recommendations are understandable. After the forensic scientists have established a match (for example, between the DNA profiles recovered from a bloodstain at the crime scene and the buccal swab from a suspect), they assess how ‘strong’ this result is, that is, how strong conclusions the court can draw from it (for a longer discussion, see Kruse, 2013). This evaluation sets two propositions against each other (explained by Nordgaard, Ansell, Drotz, & Jaeger, 2012), for example, that a tool mark was made by the screwdriver it matches as opposed to that it was made by some other implement. These propositions are often dependent on what the investigation has (so far) turned up; hence the demand for case information.

For the students receiving the recommendations, however, the matter clearly was not as straightforward. One of them commented during a coffee break that she had never written ‘such a story’. In most cases, she said, the investigation leader would forbid disclosure of any details to outsiders. While it was one thing to give details to, say, a medical examiner she knew well, it was a different thing entirely to give these details to ‘someone at the [NFC] whom I have never even seen and who I do not know who they’re married to’ (7 October 2013).

I conclude that for her – and presumably the handful of classmates sitting around the table nodding – the forensic scientists’ demand for information clashed with other, important demands of an investigation, such as the need for information control. Other possible concerns that she did not voice but that I have heard from police investigators and crime scene technicians as well as scholars have to do with bias. Cole, for example, strongly recommends withholding information from forensic scientists performing an analysis – for instance through case managers – to avoid their being biased (Cole, 2010, 2012).

This example shows that crime scene technicians and forensic scientists valued different dimensions of producing forensic evidence differently. The technician was concerned about the reliability of the evidence in the case as a whole and thus gave information control precedence, whereas the forensic scientists were concerned about the reliability of the piece of forensic evidence and gave precedence to take into consideration every bit of information that might be relevant. The fact that the students’ professionalization as crime scene technicians occurs after that as police officers (and, for
some of them, investigators) is also significant. For them, the demands of an investigation are ingrained professional concerns.

In the teaching situation, this clash was overcome: the technicians were there as students, and there was no concern about information leaking from a real investigation, so they conformed to the request. In their everyday work, however, the ideal order as proposed by the NFC can be very difficult to accomplish, which may cause tension.

Finally, the students sometimes suggested changes to the training. Some wished for fewer lectures and more classroom time for questions and discussion. They explained to me that they felt their time at the NFC might be better spent if they were given written information on how to recover and package different types of traces – a manual that they could read in preparation for class as well as use for future reference – and could use the classroom time to discuss difficult cases (18 and 23 April 2013).

There were also students who, in informal conversations with both each other and some of the teachers, suggested exercise crime scenes outdoors or in cars. Those posed challenges, they explained, that they would have liked to work through in a teaching environment with no consequences to an actual case. They also wanted the opportunity to discuss such cases with their teachers (6 October 2013).

These comments reveal gaps that the students perceived between their training and their (future) work. They may, of course, also have contained an element of – consciously or unconsciously – defending what Andrew Abbott calls ‘jurisdiction’ (Abbott, 1988: 59ff); a profession’s definition of its specific core activities and competencies that are guarded against others’ intrusions. In this case, the technicians might have wanted to defend control over defining the core of crime scene work and training against the forensic scientists’ intrusions.

Since the NFC’s forensic scientists typically have academic backgrounds whereas Swedish police are traditionally blue-collar, such a defence may also carry a dimension of differences in professional status or class (in the sense of social hierarchy). This reading is supported by occasional references to crime scene technicians not being academics I have heard from both forensic scientists and technicians (e.g. in conversations on 23 April and 20 May 2013 and interviews for another study on 30 May and 1 November 2017).

In addition, there has in recent years been public debate on police efficiency (The Swedish National Council for Crime Prevention, 2014 is a contribution from the criminal justice system), where suggestions sometimes have included drastic changes to the police; suggestions often made by outsiders and that police employees seem to feel have little to do with their work and concerns. Thus, it is conceivable that the students might have perceived the training at the NFC as another instance of (relative) outsiders meddling with police practices, even though the interaction between teachers and students seemed to be characterized by a distinct desire from both sides for the best forensic evidence possible.

**Epistemic mismatches**

However, I suggest seeing the frictions described above also as epistemic frictions. Viewing them as such makes it possible to set them in relationship with a professionalization mainly in the hands of a rather different epistemic culture (the
training did, however, involve senior crime scene technicians into the crime scene exercises). That is, I maintain that the gaps the students seemed to perceive between training and work may be due to – inevitable – epistemic differences between teachers and students.

One difference is that the NFC’s forensic scientists, although they do visit crime scenes on occasion, do not have a lot of experience of them, especially not of ‘raw’ ones that have not yet been processed. When forensic scientists enter the process of producing a piece of forensic evidence, the crime scene it came from has typically already been ordered and turned into an understandable forensic artefact by the crime scene technicians. And when they do visit crime scenes, they do so in the company of technicians. Consequently, they are unfamiliar with some aspects of crime scene work that are important to crime scene technicians.

During training, I saw this manifested most tangibly in crime scene work being portrayed in an ‘ideal’ way, i.e. done perfectly under favourable circumstances. For example, the teachers carefully chose the traces they placed at the scenes to enable ample conclusions (e.g. when setting up a crime scene on 15 April 2013). They also explained to me that the facilities for the practice crime scenes were always thoroughly cleaned beforehand (during a simulated crime scene examination on 20 February 2013). Consequently, all of the traces that the students found were related to the case. I only saw one exception when students found a fingerprint where the cleaners had overlooked a spot (20 February 2013); and once, it turned out a student had found shoe marks accidentally left in the course of setting the crime scene (26 February 2013).

Additionally, the cases that the teachers sometimes used to illustrate a lesson were what I would call ordered and made understandable. For example, a fibre specialist showed crime scene photographs from inside a car to explain how clothes fibres can fuse together with plastic from a car’s interior during an impact. In this particular case, she explained, the fibres fused to the car’s interior had provided evidence that, and in which seats, the suspects had been sitting in the car at the time of the crash, both of which were central questions to the investigation (6 March 2013).

Of note, though, is that the photographs only displayed the parts of the car that were relevant to the (now solved) case. Similar to the cleaned sites for the crime scene exercises, everything that – in hindsight – did not pertain to the crime was stripped away. In addition, the traces that otherwise might have been difficult to see were marked out through circles, arrows and inset magnifications.

One can easily see a didactic use in these ordered crime scene representations. During the crime scene exercises, students could focus on particular forensic methods as well as on their conclusions. Similarly, the processed photographs in the lecture enabled the students to focus on what fibre analysis can do and to recognize such fused spots in the future.

However, I want to point out that these ordered representations also omitted some aspects of crime scene work. One such aspect is the ‘imagination’ that senior crime scene technicians describe as vital for finding traces (Kruse, 2016: 101). Typically, crime scenes bear traces not only of the presumptive crime but also other occupancy, and, as I have been shown and told, part of crime scene work is deducing where to look for relevant traces that are connected to the crime (see also Kruse, 2016: 96ff). The clean
exercise crime scenes and photographs did not acknowledge or allow for training this skill.

Another aspect I saw omitted was reconciling the NFC’s recommendations on how to recover different kinds of traces with each site’s (and case’s) circumstances, like in the extreme case with the dog that lapped up the presumptive stain. The students’ suggestion of a manual for the different traces, accompanied by discussing ‘difficult cases’ in class, should, I maintain, be seen in relation to these reconciliations: The students who suggested this approach can be understood as seeking support for an aspect of their work that, due to epistemic differences, was not on the forefront of the teachers’ minds.

Thus, the crime scene technicians’ professionalization from the outside is not only a question of occupational autonomy; it also means that their formal training may not always correspond to the demands of their everyday work. Interestingly, some of these aspects are areas where technicians exercise the discretion that Evetts (2013: 785; 2002) stresses as a characteristic of professions. Following Bowker and Star, these may be areas of discretion precisely because they are not very visible to others. Invisible or unnoticed work, Bowker and Star point out, cannot be regulated and thus remains at discretion (1999: 229ff).

For the parts of their work that the training passed over, I saw the students turn to informal conversations. For example, instead of discussing in class the reconciliations between recommendations on recovery and each case’s circumstances, the students discussed what they called ‘difficult cases’ amongst each other, or asked their teachers – both forensic scientists and senior crime scene technicians – in informal settings during breaks or exercises. I saw the same with other issues, like the time constraints that may make it difficult or impossible to give each crime scene as much attention as the exercise scenes.

In other words, it seems that Swedish crime scene technicians must – individually and collectively – adapt their training to the demands of their work situation. This reminds of the crime scene examiners studied by Wilson-Kovacs, where senior examiners teach junior colleagues how to reconcile ‘the Durham way’, i.e. the way they have been taught to treat crime scenes during their training (which takes place in facilities in Durham), with the need for efficiency (Wilson-Kovacs, 2014: 771). It also means that the NFC does not necessarily learn of the mismatches between the technicians’ training, and their everyday work or the mismatches between the recommendations and templates they develop and how these fit into crime scene practices and circumstances.

More professional autonomy for the technicians, for example, in the form of more central involvement in training novice technicians, might make training possible that directly addresses the technicians’ concerns as well as (some of) the epistemic differences within the criminal justice system. The technicians – who, as discussed above and mentioned by Fraser (2000), Ludwig et al. (2012) and Wyatt (2014a), perform mediations between different epistemic cultures – are arguably more aware of these differences.

Thinking in terms of epistemic cultures thus makes it possible to see a new dimension in the crime scene technicians’ professionalization from the outside, one that makes occasions of friction understandable and thus can contribute to resolving them.
Conclusion

I have shown that regarding the criminal justice system as a conglomeration of different epistemic cultures opens a new perspective on crime scene technicians’ work and training.

For one, it makes it possible to illuminate how their translations or mediations (also described by Kruse, 2016: 105ff; Fraser, 2000; Ludwig et al., 2012; Wyatt, 2014a) – work that is receiving much less attention than their crime scene work – is an important factor in the criminal justice system’s cooperation. Without them, epistemic friction and misunderstandings would be much more abundant; in other words, their facilitations are important for legal security.

Acknowledging these facilitations – and the need for them – makes it then possible to discuss how, by whom, and under which conditions they are and should be done. Placing a rather unspecified burden of explaining, disseminating and translating on one profession might not be the only possible way of approaching the cooperation of different epistemic cultures. A different approach could be – to stick with the language metaphor – more widely dispersed multilinguality in the criminal justice system or the development of a shared language.

Secondly, I have shown how acknowledging the criminal justice system’s different epistemic cultures makes it possible to think differently about the technicians’ professionalization from the outside. Wilson-Kovacs’s observations on British crime scene examiners are very relevant: she relates their professionalization from the outside to their auxiliary role in the criminal justice system; both have consequences to their professional identities and autonomy (Wilson-Kovacs, 2014: 770ff). Similarly, Swedish crime scene technicians’ autonomy is affected by their professionalization from the outside, not least by being placed in an adjunct position to the laboratory.

I have also drawn attention to how this professionalization from the outside relates to the everyday work the students will perform. With the majority of teachers rooted in a different epistemic culture, there is a risk for gaps between training and practice. There is a risk that important parts of the work are not addressed in a structured manner, such as the reconciliations between the NFC’s recommendations and each crime scene’s circumstances, reconciliations which are an important part of the technicians’ crime scene work. These difficulties are not necessarily obvious to all actors in the criminal justice system – seeing them requires detailed understanding of the crime scene technicians’ epistemic culture and practices.

Acknowledging and paying attention to epistemic differences – be it through more professional autonomy or by involving crime scene technicians more closely into the overall planning of the training – may help alleviate that risk. This might improve both the technicians’ training and the criminal justice system’s production of forensic evidence – leading to increased legal security.

Paying so much attention to friction in the criminal justice system means that I have given a portrayal that is in many ways, not representative. Nonetheless, this focus is illuminative: epistemic differences are inherent in the cooperation of different occupations and, I maintain, can – if acknowledged – be fruitfully used for improving that cooperation. Epistemic frictions can, of course, still be quite frustrating, but instead of being only frictions, they can also be indicators of differences and thus of the need for translation or facilitation. While they do not preclude the defence of jurisdictions – jurisdictions in the sense of Abbott
(1988: 59ff) – epistemic frictions draw attention to the defence of epistemologies. That is, rather than (or perhaps in addition to) defending a territory, practitioners may be defending their way of thinking about their own work and the larger context of which it is a part.

Notes

1. The Swedish term is kriminaltekniker (literally, forensic technician); I use a translation closer to the original rather than the more common terms crime scene investigators or crime scene examiners.
2. For more, see Kruse (2015).
3. The Swedish Police Authority was reorganized in January 2015, among other things centralizing the police and incorporating the forensic laboratory. The laboratory changed its name in connection with the reorganization. This has not affected the organization of the crime scene technician training; however, there are minor changes to the training from year to year.
4. For a discussion of dealing with bias in crime scene work, see Kruse (forthcoming).
5. Elsewhere, I have explored this metaphor in more detail (Kruse, 2016: chapter 6).
6. Crime scene technicians have, of course, already undergone a professionalization as police officers; the training at the NFC adds to or replaces – depending on perspective – that professionalization.
7. In practice, such involvement may require overcoming some obstacles: the NFC cannot formally make demands on crime scene technicians’ time and thus cannot assign technicians to teaching. In addition, the different epistemic cultures and backgrounds mean that forensic scientists and crime scene technicians would have to find (or develop) a shared language for and shared understandings of both crime scenes and crime scene technician training.
8. This does not mean to say that crime scene technicians are the only ones performing facilitations in the criminal justice system – but some specific facilitations are (made) their responsibility.

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