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We Need to Talk About Dialogue: Accomplishing Collaborative Sensemaking in Homicide Investigations

Abstract

In this paper, we explore the importance of dialogue for collaborative sensemaking during homicide investigation, focusing upon interactions between detectives, forensic scientists and other experts involved in managing and undertaking forensic work. Drawing on data from a four-year ethnographic study of British homicide investigations, we provide insights from criminal justice actors about both the value of, and barriers to, inter-professional and cross-disciplinary dialogue. We explore how and why organisational arrangements may limit opportunities for forensic scientists and other experts to engage collaboratively with detectives and prosecutors. We conclude by considering ways to enhance collaborative sensemaking during the investigation of homicide.

Key words: homicide investigation, sensemaking, dialogue, collaboration, forensic scientists, experts.

1. Introduction

Homicide investigation provides a particularly useful lens through which to examine critically the workings of inter-professional dialogue and cross-disciplinary collaboration for the achievement of organisational goals. Unlike many other kinds of criminal investigation, homicide inquiries, due in large part to the gravity of the offence, tend to attract considerable resources and involve the input of multiple criminal justice actors from a diverse range of disciplines and organisations (Association of Chief Police Officers, 2006). These actors are drawn together (literally and figuratively) at different moments of the investigation in what is essentially a sensemaking endeavour (Innes, 2003). Brown et al. (2015: 266) note that there is “an emergent consensus that sensemaking refers generally to those processes by which people seek plausibly to understand ambiguous, equivocal or confusing issues or events”.

Such events invariably characterise homicide investigations as criminal justice actors try to make sense of who did what to whom, when, where, why and how. The extent to which this collaborative sensemaking process works well, depends upon whether and how relevant actors' voices are heard at key moments of the investigation (or, in fact, at all). Dialogue affords the exchange of information, knowledge, ideas and opinion through, for example, face-to-face exchanges, documents and email, enabling criminal justice actors to work together to resolve ambiguity and uncertainty. Nevertheless, there are some tensions around how such exchanges work. Some commentators caution that sharing too much irrelevant case information can lead to cognitive bias (Almazrouei et al., 2019; Dror, 2017). Equally, failure to communicate effectively can compromise the effective resolution of the case (Kelty et al., 2013).

Drawing on data from a four-year ethnographic study of homicide investigation, this paper seeks to supplement existing work on cognitive issues in the practice of forensic science by examining how criminal justice actors collaborate in order to manage and implement forensic strategies in homicide investigation. In particular, we consider instances of (and barriers to) effective dialogue between detectives, forensic scientists and other experts, for example, fingerprint examiners and those from in-house digital forensic units.¹ We focus upon the formal and informal spaces where dialogue takes place during the pre-trial, case building stages of homicide investigation, including crime scenes, major incident rooms, briefings, forensic strategy meetings and prosecutors' case conferences.² We document the concerns expressed by detectives, forensic scientists and other experts regarding opportunities for meaningful dialogue, which, we suggest, is a critical pre-requisite for effective collaboration and collective sensemaking during homicide investigation. We consider how and why

¹ On occasions, senior investigating officers (SIOs) had consulted the National Crime Agency for specialist support and advice, and to gain access to niche specialists. However, the focus of this paper is upon the nature of dialogue between SIOs/detectives and forensic scientists and other experts, with whom they work closely and routinely on each case.

² We use the term prosecutor to overcome differences in terminology between England and Wales, and Scotland. It refers to those who have responsibility for prosecuting crimes, including beginning legal proceedings and conducting the case against a defendant at court.

opportunities for dialogue appear to be diminishing at different stages of the criminal justice process. Lastly, we reflect upon practices and arrangements that foster inter-professional dialogue and help to accomplish cross-disciplinary collaboration. We begin by briefly setting out the risks of cognitive bias and the importance of dialogue and collaboration during homicide investigation, we then outline the nature of our research and data, before presenting our findings and conclusions.

2. Research context

There is an extensive body of empirical research which demonstrates that across different forensic disciplines, “experts conducting forensic examination that involve subjectivity, interpretation or opinion are susceptible to cognitive bias” (Sunde and Dror, 2019: 103). Dror (2017) suggests that there are seven potential sources of bias that may influence experts’ observations and forensic conclusions, for example, basic human nature (at the bottom of Dror’s taxonomy), factors that are person-specific (e.g. training, culture) and case-specific factors (e.g. irrelevant case information and case evidence) at the top of his taxonomy. A number of scholars have considered how these risks might be mitigated (for example, Nakhaeizadeh et al., 2015). In particular, Almazrouei et al. (2019) propose a forensic disclosure model, establishing what information should be disclosed to (and by) experts in order to reduce the possibility that contextual information influences their decision-making and to improve the transparency of the forensic science process. They suggest that task-irrelevant information should not be shared with experts. Moreover, Dror et al. (2017) propose that different actors be involved at different stages of the forensic investigation, thus helping to control and restrict the flow of information. Nevertheless, whilst there are risks associated with sharing contextual information, ineffective communication with forensic scientists and experts may also pose risks to criminal justice.

Homicide investigations require actors from disparate professional practice to make sense of information, data and artefacts. As such, dialogue is an essential component of investigative sensemaking, enabling detectives, forensic scientists and other experts to interpret and negotiate the meaning of findings from forensic sciences and technologies (FSTs³) (Howes and Kemp, 2017). Few scholars have examined dialogue and communication between criminal justice actors, instead focusing on experts' written reports (e.g. Bali et al., 2019). As an exception, some studies have been conducted in Australia, to which we now turn.

Based on interviews with 65 practitioners, including police and case-reporting scientists, Howes (2017) identifies the importance of two-way communication, illustrating how it enables police investigators to enhance their knowledge of forensic science, particularly in serious cases or cases involving complex science, and how it assists forensic scientists to better understand the needs of police investigators. Focusing on the investigation and criminal proceedings of homicide and sexual assault, Kelty et al. (2013) interviewed 103 practitioners from forensic medicine, forensic science, law enforcement and law.

Practitioners considered inter-agency meetings as beneficial, enabling "them to understand the bigger picture... to see where their analyses either fitted or conflicted with the direction the investigation was taking... to narrow down the type of analyses" (Kelty et al., 2013: 13). However, whether or not, actors are invited into spaces of dialogue and the frequency of such communication is contingent on the seriousness of the offence and the complexity of the case or forensic science concerned (Howes, 2017; Kelty et al., 2013).

Within the UK, a recent paper by Donnelly (2019), grounded in professional practice, highlights the benefits of collaboration between experts from different disciplines and between experts and the police. Specifically, a two-way flow of information enables forensic

³ We adopt a broad and inclusive view of the range of FSTs that can be utilised in homicide investigations, such as DNA profiling, fingerprint examination, blood pattern analysis, ballistics interpretation, trace evidence analysis and digital evidence from mobile phones, computers and CCTV.

scientists to prioritise forensic examinations to prevent potential evidence from being destroyed and allows the police to set strategies that are targeted, providing for alternative forensic examinations at a later date. However, Donnelly (2019) suggests that there currently exists a “conveyor belt approach of one person providing limited information to the next” (p. 679) and that “[a]lthough crimes may often include both traditional and digital evidence opportunities, collaboration between experts from different fields is now almost non-existent” (p. 678). These practices may pose risks to the effectiveness of criminal investigations. For example, Kelty et al. (2013: 8) refer to the “justice silo effect”, explaining that it occurs “[w]hen there is an absence of meaningful and regular communication between the forensic sciences, forensic medicine, law and police”. They suggest that poor communication can prevent information or knowledge being shared fully and some forensic experts being underutilised. McCartney (2015) also asserts that if forensic scientists are isolated from investigations they are unable to interpret or assess their findings within the context of the case. At its worst, “flawed communication” can lead to wrongful convictions (Smit et al., 2018: 129). Nevertheless, Kelty et al. (2013) warn that if justice agencies work too closely together, “decision making errors [can occur], such as groupthink, social conformity, tunnel vision and context bias”.

In summary, there are two broadly distinct views of whether and how information sharing poses risk to the integrity of the work undertaken by criminal justice actors – ‘cognitive bias risk’ versus the ‘justice silo risk’. Clearly these risks must be balanced within criminal investigations. Whilst we acknowledge the significance of risks of cognitive bias, our paper will demonstrate the necessity for inter-professional and cross-disciplinary dialogue during homicide investigations. We explore how and why organisational arrangements are limiting the opportunity for effective dialogue amongst detectives, forensic scientists and other experts and consider ways to enhance collaborative sensemaking during the investigation of homicide.

3. Methods

In this paper, we draw upon data from an ethnographic study of the use of FSTs in British homicide investigations. Broadly, the aims of the research were to provide an in-depth understanding of how FSTs contribute to the police investigation of homicide. The data include case papers, interview transcripts, and ethnographic fieldnotes relating to 44 homicide investigations across four British police services.⁴

3.1. Access and ethical considerations

Gaining access to the closed world of homicide investigation can be difficult given the sensitive nature of the work of homicide detectives. The experience and credibility of the research team, plus established relationships with key stakeholders and gatekeepers, were central to negotiating access to research sites and ensuring that the research progressed effectively. Subsequently, the (trusting) relationships that the researchers formed with participants were crucial when renegotiating day-to-day access to people, places, and information (Brookman 2015, p. 243). The research was conducted in accordance with the British Society of Criminology code of ethics (2015) with particular attention to the issues of informed consent, anonymity, confidentiality, and stringent data management protocols.

3.2. Research sites

Four police services took part in the research. They were chosen due to their distinctively different models of forensic science provision, ranging from comprehensive services provided by a public forensic laboratory through to those with smaller in-house capabilities, such as blood screening, who rely on private forensic science providers (FSPs) for the vast

⁴ All research sites and data related to research participants and homicide cases have been given pseudonyms or disguised to maintain anonymity of the data.

majority of their work.⁵ In addition, we visited three major private FSPs and two public laboratories in order to gather data on how they operate and, principally, to interview forensic scientists. We also toured one police service's in-house capabilities.

3.3. The homicide cases and data

All offences, except for two, took place between 2011 and 2017, with most cases ($n=32$) occurring between 2014 and 2017.⁶ Thirty-three of the investigations were completed (or virtually completed) at the time of data gathering (i.e. a guilty verdict of murder or manslaughter was reached at court or agreed through pleas). The researchers selected these cases from summary lists provided by each police service to reflect a range of modus-operandi, victim-offender relationship, and forensic contributions. The remaining 11 cases were live homicide investigations that we observed as they unfolded. The selection of live investigations was less structured in that we took cases that arose at each police service. Nevertheless, they represent the kind of diversity reflected in the completed investigations.

For each homicide investigation we retrieved case papers and/or made extensive notes from documents. The documentary material included police closing reports, policy files from senior investigating officers (SIOs) and crime scene managers, minutes from forensic strategy meetings, briefing notes, statements and reports from forensic scientists and other experts, and prosecution documents. We spent 650 hours (81 working days) retrieving these data.

In-depth semi-structured interviews were undertaken with 134 criminal justice practitioners who were directly involved in homicide investigation (see Table 1). Participants were recruited to reflect a range of roles and experiences, and our choices of who to interview

⁵ The term public in this context refers to forensic science provision that is funded by the police service or the police authority.

⁶ Two homicide investigations related to cold cases, one from 2005 and another from 1984.

grew throughout the research process as we learnt about new roles and came to realise the value that these additional voices could bring to the research. We gathered participants' views, perceptions, and reflections upon a host of organisational processes and changes as well as details of their work on particular homicide investigations, tailoring our questions to each participant, according to their role and their work on a case. We also refined our interview schedules as we gained new insights from participants and through our observations. This iterative process allowed us to explore new areas of interest and probe further existing themes, until we felt we had reached saturation point. With the exception of one, all interviews were, with the permission of interviewees, digitally recorded and transcribed verbatim. The average length of interviews was 83 minutes. In addition, we conducted 10 informal interviews with forensic practitioners during tours of forensic science facilities (see also Table 1).

Table 1: Summary of interview data

Interviewee Role	Number of in-depth semi-structured interviews		Number of informal interviews conducted during tours of forensic science facilities	Total
	Case specific	Overview of service provision		
Forensic scientist	35	3	3	41
SIO or deputy SIO	39	-	-	39
Other detectives or police staff	19	1	-	20
Crime scene manager or coordinator	14	2	-	16
Digital forensics or CCTV expert	7	4	4	15
Fingerprint expert	2	1	1	4
Forensics – managerial or submissions	-	4	1	5
Forensic technician	2	-	1	3
Prosecutor	-	1	-	1
Total	118	16	10	144

The third phase of our research was the most immersive and involved ethnographic observations of 11 live homicide investigations across the four police services. We spent 700 hours (88 working days) observing different moments of homicide investigation, from the initial scene attendance by detectives and forensic scientists, through to trials at court. We were given virtually unfettered access to these investigations and were usually able to attend within a day (depending upon the location). We entered crime scenes and observed discussion and debate amongst crime scene managers, SIOs, forensic scientists, and other experts (e.g. fire investigators). We accompanied detectives on house-to-house and CCTV enquiries, and attended daily briefings, forensic strategy meetings, prosecutors' conferences, and different stages of the trial process. We also spent many hours inside major incident rooms, retrieving documents and engaging with detectives in informal discussion. Adopting a multi-sited ethnographic approach (Marcus, 1995) allowed us to immerse ourselves in the investigations and to chart and unravel interactions, deliberations and decision-making amongst the various actors. This was invaluable to our overall understanding and appreciation of how FSTs contribute to homicide investigations.

3.4. Data analysis

The interview transcripts, fieldnotes, case papers and notes made from case papers and documents were all uploaded into NVivo 12 and analysed thematically (Braun and Clark, 2006). This involved the research team engaging with the data in order to become familiar with it in the first instance and then creating memos containing more general thoughts and reflections, and nodes of relevant conceptual categories, in accordance with grounded theory (Corbin and Strauss, 2008). At regular points, the team met to discuss and debate the emerging findings. With our different backgrounds and expertise, we have developed and agreed more than 450 nodes. In the findings section that follows, we focus on 14 nodes that reflect processes and practices associated with dialogue, communication and collaboration, drawing upon interviews with criminal justice actors as well as our observational data.

4. Dialogue as a means of accomplishing collaborative sensemaking

Our findings elucidate the importance of cross-disciplinary collaboration and the value of bringing together practitioners with different kinds of expertise, experience and sensemaking approaches. As one SIO recounted, “scientists think like scientists, and investigators think like investigators, and the value is getting them both together” (SIO, Operation E06). Across all four police services and private and public forensic laboratories, detectives, forensic scientists and other experts referred frequently to the importance of dialogue in order to work collaboratively and suggested various benefits of effective and timely dialogue, particularly at a time when digital data are becoming more complicated and the interpretation of some forensic results, for example DNA, is becoming more complex.

Among the many benefits cited by detectives, forensic scientists and other experts of effective dialogue were that it (i) supported more effective and appropriate tasking; (ii) allowed exhibits to be fast-tracked; (iii) assisted with managing expectations (such as what might be achieved from an examination); (iv) provided forensic scientists and other experts an opportunity to clarify how their findings had been understood and interpreted by other criminal justice actors; (v) supported collaborative sensemaking and (vi) enabled contextual information about the homicide and the investigation to be shared, which was of particular importance for forensic scientists. In turn, sharing contextual information (a) assisted forensic scientists and other experts to set strategies that were fit-for-purpose and cost effective; (b) encouraged creativity and exploration; (c) focused priorities to allow a staged examination of scenes and exhibits; (d) enabled examinations to be directed/targeted and (e) assisted interpretation of the findings. Often many of these benefits were achieved at one time. However, despite this, many interviewees drew our attention to the ways in which they felt that some current arrangements and practices serve to inhibit effective dialogue and this put at-risk the benefits of collaborative work.

5. Barriers to dialogue

Our data suggest that across the different models of forensic science provision found in the four police services studied, the ways in which FSTs are organised and managed may be constraining effective dialogue between detectives, prosecutors, forensic scientists and other experts, and reducing opportunities for collaborative sensemaking. In this section, we consider how opportunities for dialogue during homicide investigation appear to be diminishing before exploring why these changes might have arisen.

5.1. Diminishing inclusive practices

Numerous forensic scientists from private FSPs were particularly concerned about how they are becoming increasingly detached from homicide investigations. Specifically, these forensic scientists reported that they were attending fewer crime scenes and forensic strategy meetings, and were less involved in dialogue and decisions about which exhibits were to be examined. In some instances, forensic scientists reported being prevented from viewing full exhibit lists and, therefore, being unaware of other examinations being undertaken that might inform their own work or examination strategies, as illustrated by the quote below:

I'd say the biggest impact on my role is that... they tend to do the strategies for the case themselves... when I was starting in the early 90s, there was more of an input from the forensic scientist at the strategy stage. There'd be forensic strategy meetings in force. Often you'd have a scientist involved in that, probably the scientist who went to the scene or who was dealing with the case... I think a lot of the decisions early on are made by the police... you have less involvement in what's being decided to be examined. You may miss out on some information... That could be relevant at some stage when you're examining an item. (Forensic Scientist, Operation E12).

Furthermore, some forensic scientists (from both private and public laboratories) indicated that they were rarely invited to attend meetings or case conferences with prosecutors. As a result, opportunities for prosecutors to explore, with forensic scientists, how they will use and present forensic evidence, and how this evidence might be understood or contested by the defence, were being lost. Most importantly, we were told about instances of prosecutors requesting further tests that forensic scientists viewed as unnecessary or unhelpful to the case, or requesting results within unrealistic timeframes. In contrast, on those occasions when forensic scientists were invited to case conferences, they were able to negotiate these sorts of issues with prosecutors, as illustrated in the following quotation:

Sometimes you sit there and it's like "I want this, I want that". You go, right, okay I'm going to see if I can get this cut down somehow, I think to myself I can't go back and ask the staff to do all that work when I know myself we don't really need to do it. So normally we come to an agreement... Timescales as well, the prosecutor will say "can I get that by tomorrow" and you've got to say "well no actually the process takes this amount of time". (Forensic Scientist, Operation N07).

Our research revealed that the fracturing of communication was not restricted to police-scientist interactions. Rather, some experts within the police had less direct contact with murder investigation teams than other experts, who tended to be routinely invited into briefings. For example, within one police service, where forensic scientists (from a public laboratory) routinely attended forensic strategy meetings, fingerprint examiners indicated that they were rarely invited to these meetings, despite the perceived value that their inclusion could bring to the investigation:

... often we're not invited to [forensic strategy meetings]... you can then prioritise certain things. You'll know then those marks are in blood, that's on a knife, that's on a particular area that is of more evidential value, and you only know that if you're in the loop, if you're in the conversations with people. (Fingerprint Examiner, Operation N11).

Similarly, within (but not limited to) the same police service, experts in digital forensics, cybercrime and internet investigation explained that they seldom attended forensic strategy meetings. Experts were prevented from directing which digital devices should be seized and from advising SIOs on their digital media strategies, including which devices should be fast-tracked for examination and ensuring that examinations were focused, in order to meet the needs of the investigation:

A big thing that I've tried to encourage is that we need to have a strategy meeting. They have a forensic strategy meeting with DNA, fibres and chemistry but there's not really any general thought about having that initial meeting with digital, with the digital side of things. (Detective Inspector, Cybercrime).

5.2. Submission forms

In all four police services, submission forms were used by detectives to communicate to forensic scientists which examinations were required and why. The level of detail provided on these forms varied between investigators and was sometimes viewed as insufficient by forensic scientists, hindering their ability to set a strategy or interpret findings:

So we tend to get submission paperwork along the lines of... their case references, the contact names of people involved and a summary of what's happened... Sometimes you'll get four pages of dense information and sometimes... you might even just get one line... I would say the majority of the time we're saying "I need to know extra information in order to either determine the strategy" or "[I] examined the items but

what do these results mean, I need more information to interpret this". (Forensic Scientist, Operation E07).

The information contained within these forms is also limited because the forms are unable to capture the information entering an investigation:

Some paperwork is very good but even then you can put everything you know about the case up-to-date... But because investigations are progressive it might have changed, or something else has come to light. (Forensic Scientist, Operation E12).

In order to overcome these difficulties, forensic scientists made efforts to gather more (often contextual) information from the police. In some instances, forensic scientists who worked in public laboratories or in-house screening units accessed information held on police systems. In other instances, forensic scientists spoke with the crime scene manager/coordinator or the officer in the case. For example, in the quotation below, the forensic scientist recounted the importance of gathering further information from the crime scene coordinator in order to examine items for gunshot residue:

Your first job is information gathering, because a police force says "we want gunshot residue work", but... "what are the circumstances", "what firearms have been used", "what's the range", "what are the activities around the shooting"?... So there was all that information to gather... it's about having that dialogue... "this is what information I've got, can you just tell me what actually happened at the scene, who was standing close by?" (Forensic Scientist, Operation E12).

Some SIOs felt that submission forms lacked detail because detectives appeared to consider them an administrative chore rather than an important cognitive process, as illustrated in the quote below:

So an officer will fill out a... forensic submission form. Again it comes down to that detail and that investigative mindset... Even when you're filling in that form, you've still got to think... "right investigation, what am I trying to achieve, what have the witnesses said?"... it's almost perhaps the officers don't always realise, well the scientist isn't going to pore over every minute item, square inch of that [clothing], they're going to target it. If we've got information from a witness that suggests where to target it, then put it in the form. (SIO, Operation C03).

5.3. Central submissions units

With regards to two of the police services studied (plus others from across England and Wales), forensic scientists from private FSPs reported that submissions units actively prevented them from having direct dialogue with detectives or crime scene managers/coordinators. This made communication more disjointed, protracted and led to confusion:

They like us to go through their submissions office, and I don't think that's very successful usually... The more people between the person that actually knows, you just get confused, the information gets wrong, can't quite see what you're asking, and it's also quite difficult to put everything in an email. It's much quicker to talk... it's just easier to go through one person rather than through somebody else who doesn't quite know the scene or the crime. (Forensic Scientist, Operation C03).

Some forensic scientists felt marginalised and excluded from working as part of the team as a result of being prevented from engaging in dialogue with homicide detectives:

The submissions office. They're the budget holders and different police forces say we don't want scientists talking directly with the investigating officers... From our

perspective, we'd much rather speak to the investigating officer so we can work jointly as a team. (Forensic Scientist, Operation E10).

Some forensic scientists at private FSPs also indicated that they were actively discouraged by some of these submissions units from including 'recommendations for further work' in their written reports. Instead, forensic scientists were advised to send recommendations to the submissions unit via email. Forensic scientists felt that SIOs and investigation teams were potentially unaware of forensic scientists' thoughts and considerations around further examinations:

It would be ideal if we could speak directly with the officers in the case more... so say if we think that there could be extra work done in a case, there are a number of forces that won't let us write in our reports, "I would recommend that you do further work on this item", or "test this". We've been told we're not allowed to... in years gone by we'd have written a report saying, "I've done this", "this is what we've found", "I would advise that we go on to do these items next, and that probably this one would be your best bet, so let's do that". (Forensic Scientist, Operation E10).

5.4. Budgetary constraints and mistrust

Forensic scientists from private FSPs suggested that dialogue with investigating officers and crime scene managers/coordinators had decreased because police services had focused on reducing costs associated with external providers, for example, forensic scientists' attendance at crime scenes and forensic strategy meetings, or because some police services now had similar expertise in-house:

Some forces massively value calling us out... They like us, as a provider, to come to the scenes, whereas a lot more [forces] that we work with don't call us as much...

because sometimes it's cost I imagine, it's partly cost. Sometimes they might have the expertise within force to do what they want to do. Or it's just I suppose probably numerous different reasons for why we don't get called... (Forensic Scientist, Operation C05).

Forensic scientists felt that police services had focused on reducing external costs because there was a belief that in-house capabilities, like screening units and fingerprints, are free or hidden, as illustrated by the following quote:

It's a hidden cost in the sense that they don't budget for it. They [the police] don't have to think about the cost... they've got the chemicals, they've got the CSIs there, they're doing it themselves, so there is a cost implication. But... because they're not paying a forensic service provider to do it they think they're getting it cheaper, and I think there's a lot of that goes on. (Forensic Scientist, Operation E02).

The notion that some services are free was a police mindset that we witnessed during our fieldwork. To illustrate, during our observations of a forensic strategy meeting, held following a fatal stabbing, the following conversation took place:

SIO: Should we fingerprint the wood that the witness picked up to ward off the suspects?

Crime scene coordinator: Yes, as it's free to do this and it will help to corroborate the witness's account. (Extract from fieldnotes, Operation C02).

A number of forensic scientists also felt that arrangements for central submissions units were driven by financial concerns:

I think some of it might be that we might suggest what other work possibly could be done to the investigating officer, who then puts pressure on the submission team. The scientists say “but we can do this x, y and z” and the submissions team are saying “we don't have the money to do x, y and z”. So if you don't have that conversation in the first place, they don't get put under pressure to do this extra work. (Forensic Scientist, Operation E10).

Finally, we heard and observed how in-house expertise within some police services, such as blood screening units, had increased in recent years and how police were relying more on these services in some organisational arrangements. Ultimately, forensic scientists from private FSPs felt that they were being managed by central submissions units because they controlled the budget and authorised whether or not the work was undertaken.

Our data also revealed instances where forensic scientists from private FSPs felt police were mistrusting of them because external providers were perceived to be financially motivated. Some forensic scientists indicated that this mistrust inhibited information sharing and was a barrier to effective dialogue. In the quote below, a forensic scientist discussed how they were involved in a sexual offences case in which they received limited information on the submission form. The forensic scientist felt that had the officer trusted them, information would have been shared fully and the forensic scientist could have targeted their examinations more effectively:

[The police] wasted over £1,000 doing examinations that weren't necessary because they didn't involve us, they didn't give us all the information... if they'd involved us and just trusted us with more information, I think again it is this thing that if we get all of the information we're going to say, “you could do this and you could do this and you could do that”, and then it blows their budget. (Forensic Scientist, Operation E02).

Similarly, some detectives (irrespective of whether their police service used a public or private laboratory) questioned the ethos and integrity of forensic scientists from private FSPs and were hesitant about the advice they provided. This mistrust was generally regarded as stemming from the closure of the Forensic Science Service (FSS) and the emergence of commoditisation:⁷

[Private FSPs have] got to run a business as well, they've got to make profits with the examinations they're doing. So we've got to be careful from my point of view as a budget manager, they will always say, "yes we can do that, yes we can do that, yes we can do that", because that means that they are generating income for their particular company. (Crime Scene Manager, Operation W03).

Our data reveal that a series of arrangements and practices within police services appear to be limiting effective dialogue between detectives, prosecutors, forensic scientists and other experts. Notably, forensic scientists from private FSPs were concerned that they were being excluded from collaborative sensemaking and decision-making processes at crime scenes, forensic strategy meetings and prosecutors' case conferences and, on occasions, prevented from engaging in dialogue with detectives and prosecutors involved in the investigation.

6. Promoting effective dialogue

Whilst some of our interviewees, as well as our own observations, revealed examples of a lack of dialogue and reduced opportunities for collaborative sensemaking, our research also revealed instances of effective dialogue. As such, the extent to which forensic scientists and other experts were drawn into investigations varied between the police services studied but it also varied according to the nature of the homicide investigation itself. For example, a

⁷ Although the FSS was already commercialised at the time that it closed.

number of forensic scientists from private FSPs felt that they were more likely to be involved in discussions and case conferences with detectives when working on cold cases or particularly complex cases.

Our research revealed how practice varied across the four police services that we studied. For example, one police service had reorganised their digital forensics teams, which had previously worked across different floors, into essentially one open-plan space, improving communication and collaborative working:

The fragmentation of teams was really problematic. We had our phone and computer teams in different parts and on different floors... the technology was converging and some of the techniques were converging, but the people and the processes were not because they were physically isolated. So that's made a huge difference just within the digital forensics team. It's far more cohesive, far more joined up, and we're benefiting a lot from that cross pollination of expertise and ideas. (Senior Manager, Digital Forensics).

Within this police service (and one other in our sample), public laboratories were utilised for the majority of forensic examinations. In both police services, detectives appeared to value the proximity, accessibility and familiarity of forensic scientists and considered that it was easier to develop trusting working relationships with these forensic scientists than those who worked for private FSPs. These kinds of relationships appeared to support collaborative working:

Because you're dealing with that many murders, you get a personal relationship build up with the scientists, you get to know them... you build up a working relationship and a kind of trust... So you may bounce an idea off them, and they say, "well I will consider that, we'll do that then". Or they might say, "I don't think this will take us much

further than what you've already got"... a lot of the time you have that dialogue and you come to a decision. (SIO, Operation N07).

In one of these police services, we witnessed what appeared to be a particularly inclusive approach to forensic strategy meetings that was not evident at the other three police services. To elaborate, when a murder (or suspicious death) was reported, the crime scene was secured and captured using photography and 360-degree video. The scene was temporarily closed and importantly, a forensic strategy meeting was held where, depending on the particular circumstances of the case, the SIO, crime scene manager, prosecutor, biologists, chemists, ballistics experts, pathologist and any other relevant experts attended to set the forensic strategy, and discuss and agree priorities and submissions. The prompt timing and structure of these meetings was notably different from forensic strategy meetings that we observed elsewhere which were largely restricted to the SIO, crime scene manager and exhibits officer. This inclusive approach encouraged open discussions and negotiations between the SIO, prosecutor, pathologist and a range of forensic scientists. Nevertheless, digital experts were often overlooked at these meetings. Whilst face-to-face meetings might not be achievable for all police services and/or across all forensic disciplines, opportunities exist to exploit technology, such as video-conferencing.

7. Discussion and conclusion

Our research findings illustrate the value of improved inter-professional and cross-disciplinary collaboration during the investigation of homicide. Drawing upon our detailed interviews and observations of homicide investigations across Great Britain, we have highlighted the benefits of effective dialogue between detectives, forensic scientists and other experts at points in the trajectories of these investigations. We have also reflected upon examples of growing barriers to effective collaboration and considered how to improve dialogue and collaborative sensemaking.

The overarching benefits of including a broad range of criminal justice actors, such as detectives, prosecutors, forensic scientists and other experts in dialogue are that it allows actors to devise more focused and cost effective investigative and forensic strategies. For example, it enables contextual information to be shared, exhibits to be prioritised and for actors to consider a diverse range of potential forensic recovery and analysis options. These findings expand and support those of Kelty et al. (2013) and Howes (2017), providing important insights from a different jurisdiction and from observations of live homicide investigations. Our findings also strengthen Donnelly's (2019) insights from his own professional practice by drawing on detailed interviews with forensic scientists from three major private FSPs. Ultimately, dialogue provides opportunities for considered and iterative forensic evidence anticipation, interpretation and decision-making throughout the course of investigations.

Many criminal justice actors involved in our research felt that particular practices and arrangements provided good opportunities for effective dialogue and sensemaking, a few of which were evident within some of the police services studied. These included: more opportunities for forensic scientists to attend crime scenes; inclusive strategy meetings and prosecutors' case conferences; increased opportunities for face-to-face dialogue between detectives, forensic scientists and other experts; the co-location of diverse experts within police services (e.g. digital forensics) and, finally, exploiting technology (e.g. video-conferencing) to enable communication where face-to-face meetings are not possible. Importantly, these collaborative opportunities provide for effective dialogue between actors, enabling discussion, debate and disagreement (Morgan, 2017: 465), minimising "siloe thinking" (Raymond and Julian, 2015: 380).

Most criminal justice actors involved in our research (from all four police services and both private and public forensic laboratories) identified some barriers to effective dialogue and

collaboration during homicide investigation. These include diminishing inclusive practices, the role of submissions forms and centralised submissions units, and budgetary constraints. These institutional arrangements influence how individuals and organisations interact with one another and whether, and how, they share knowledge (see also Morgan, 2017). In this instance, they appear to be hampering effective dialogue and communication. Our research findings also elucidate a culture of mistrust between police and forensic scientists from private FSPs, echoing concerns raised previously by the Forensic Science Regulator (Tully, 2018). We have highlighted how mistrust can inhibit information sharing and the development of effective working relationships between individuals (see also Wheatcroft et al., 2012). Ultimately, some forensic scientists from private FSPs reported that because of these organisational arrangements, they felt de-valued and no longer part of the investigative team.

The gravest risk to homicide investigation of insufficient or inadequate inter-professional dialogue is that the case is not properly investigated and resolved, resulting in miscarriages of justice (see also Smit et al., 2018). Our previous research explored how this can happen (Brookman et al., 2020). Drawing upon two case studies, we identified examples where potential evidence (of a homicide) was lost or overlooked because of ineffective dialogue, for example, not sharing information fully or prioritising the opinions of some actors during dialogue, whilst side-lining other voices. The case studies illuminated how a suspected homicide failed to progress to criminal trial, whereas a genuine homicide was, for some time, mistakenly categorised as a suicide (p. 20). We also observed disagreements and tensions amongst different socio-legal experts when trying to make sense of ambiguous findings. As such, sensemaking is, we contend, most effective when it is shared.

To conclude, homicide investigation is necessarily a collaborative sensemaking activity. For the SIO, who has formal responsibility for managing and directing the homicide investigation, we suggest that collaborative sensemaking is both an indicator of good leadership and can

facilitate effective decision-making. However, evidence from our research indicates that opportunities for effective collaboration, between SIOs, detectives and forensic scientists in particular, have been eroded in recent years. Some, but not all of this erosion, may result from the introduction of the new models of forensic science provision that have arisen as a consequence of the privatisation of forensic science in England and Wales. Whatever its source, it comes at a time of increased investigative complexity when investigations are relying on new and emerging FSTs in combination with traditional lines of enquiry. Ensuring that detectives, forensic scientists and other experts are brought together to anticipate, commission, discuss and deploy the many and varied forms of intelligence and evidence is more important now than ever before.

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