**Professor Fiona Brookman and Dr Helen Jones, Centre of Criminology, University of South Wales – Written evidence (FRS0106)**

**Introduction**

Since January 2015, Professor Fiona Brookman and Dr Helen Jones have worked on the ‘Homicide Investigation and Forensic Science (HIFS) Project’. The Project was awarded over £200,000 from The Leverhulme Trust and involved the collaboration of academics from two other universities: Professor Jim Fraser (University of Strathclyde) and Professor Robin Williams (Northumbria University). The broad aim of the research was to provide an in-depth understanding of what and how forensic sciences and technologies contribute to the police investigation of homicide in Britain. We use the phrase ‘forensic sciences and technologies’ (FSTs) to capture a broad range of disciplines and their forensic applications, such as DNA profiling, fingerprint examination, blood pattern analysis, ballistics interpretation, trace evidence analysis, and digital evidence from mobile phones, computers and CCTV.

The research was original in design, in terms of its comparative and ethnographic approaches, and has relevance to both academic and practitioner audiences. The research took place in Britain and involved the active participation of criminal justice actors across four police services and the three major private forensic service providers. We analysed case papers relating to 44 homicide cases and conducted in-depth interviews with over 140 practitioners, including senior investigating officers, detectives, CCTV and digital experts, and forensic scientists (from both private and public forensic service providers). In addition, we observed 11 ‘live’ homicide investigations.

In the following sections, we provide responses to specific questions, presenting relevant findings from the HIFS Project.

**Question 1. Is forensic science contributing to the delivery of justice in the UK?**

With regards to homicide investigation, forensic science is contributing to the delivery of justice in the UK. Investigators use results obtained from the application of a range of FSTs at pivotal moments in the trajectory of a homicide investigation to determine that a homicide has occurred and to identify, arrest, eliminate, charge or prosecute suspects. However, there are complexities and challenges associated with determining how and what forensic science contributes to the course and outcome of any investigation. Our research illustrates how findings from FSTs are rarely used on their own. Instead, they are used most often in combination with other kinds of intelligence and evidence that enter the criminal investigation, such as eyewitness accounts. Furthermore, the characteristics of some homicides (in terms of victim-offender relationship or the methods/weapons used, for example) benefit from particular kinds of FSTs. Nevertheless, some FSTs are adopted almost as a matter of routine (e.g. DNA, fingerprints, mobile phone data and CCTV), whilst others, that might be beneficial, are more rarely utilised (e.g. fibre or pollen analysis).
Our research reveals the complexities of assessing forensic ‘contribution’. Although there is a history of research seeking to measure the ‘effectiveness’ or ‘value’ of FSTs (largely through studies that have focussed upon a limited range of forensic technologies), such categorisations are rarely useful. We are beginning to explore the varying ways in which criminal justice practitioners perceive and express the value of specific investigatory instances of forensic science and technology uses. Our data illustrate the complex nature of value, showing how it is context dependent, how it is ascribed (and sometimes contested) by practitioners, and negotiated amongst them through dialogue and efforts at credible sense-making. Moreover, our research illustrates how there are differences between practitioners’ (detectives, forensic scientists, prosecutors) understandings of findings (including their value) from FSTs and how such understandings are bounded and curated by occupational cultural norms.

**Question 2. What are the current strengths and weaknesses of forensic science in support of justice?**

Investigators of major crimes, such as homicide, now have at their disposal a broad range of FSTs to help them identify, charge and prosecute offenders. Nevertheless, we have identified a number of limitations of forensic science provision through our research:

- A lack of an integrated approach to forensic science. Scientists at private forensic service providers are becoming increasingly removed from major crime investigations. They attend fewer crime scenes, strategy meetings and case conferences, and are less involved in decisions about which exhibits are to be examined (see our response to question 4)

- Some organisational arrangements may be fracturing and constraining the possibility of effective dialogue between different practitioners (see our response to question 4)

- Some scientists reported to us that they feel they are losing their scientific autonomy, creativity and value because police services want source level evaluations rather than activity level. For example, arrangements with some police services mean that scientists at private forensic service providers are only being tasked to analyse DNA profiles rather than add interpretation

- The potential for contamination of exhibits. In some instances, police services are using in-house specialists to screen exhibits before they are sent to private forensic service providers. Some in-house units are staffed by examiners who used to work for the Forensic Science Service, others are staffed by crime scene investigators. Scientists are not always aware of how or where exhibits have been opened and some raised concerns that exhibits might be contaminated through this process

- The potential for loss of evidence. There are concerns that because exhibit bags are opened as part of the screening process, evidence, particularly trace evidence like gunshot residue, may be lost. Furthermore, in-house screening has led on occasions to scientists from private forensic service providers being asked to undertake targeted searches or examinations i.e. to only look at a specific area of an exhibit rather than the whole item.
There are concerns that because of current arrangements, evidence may be lost or opportunities to consider a full range of potential forensic recovery and analysis are being limited

- The sustainability and viability of the current forensic science market (see our response to question 7)
- A focus on reducing costs associated with private forensic service providers. This appears to have arisen because of the austerity facing many police services and a drive to reduce expenditure. Some police services have utilised in-house capabilities, such as screening units, to reduce the number of examinations completed by scientists at private forensic service providers, in an attempt to reduce their forensic spend. These measures stem from a belief that in-house capabilities, like screening units and fingerprints, are ‘free’. Moreover, some police services within our sample captured the external forensic spend on each homicide investigation but did not, and could not, capture internal forensic spend. In these instances, costs associated with resources, equipment and accreditation are not being fully recognised or considered, and this might have implications for the wider forensic market
- Current arrangements are an administratively-heavy process for police services who have to manage submissions units, invoices, contracts and tenders, and, in some instances, the necessary requirements of UKAS

Question 4. How can the Criminal Justice System be equipped with robust, accurate and transparent forensic science? What channels of communication are needed between scientists, lawyers and the judiciary?

We submit that more effective channels of communication are required between scientists and prosecutors (including lawyers and barristers) to ensure that a robust and transparent process of forensic science can be delivered. Furthermore, there is scope to improve channels of communication between police and scientists.

Scientists reported to us that they are having less direct involvement with police i.e. they are attending fewer homicide scenes, contributing less to forensic ‘strategies’, and are involved in fewer forensic strategy meetings and case conferences. Furthermore, the bureaucratic nature of the forensic submission process appears, in some cases, to be constraining the possibility of effective dialogue. Specifically, scientists felt ‘managed’ by central submissions units and in some instances were prevented from having direct dialogue with detectives or crime scene managers. We also heard from a number of scientists working at private forensic service providers who were actively discouraged by submissions units from including recommendations for further work in their written reports (instead being advised to include them in an email). Moreover, there appears to have been an erosion of trust and relationships between police and scientists. Some scientists from private forensic service providers reported that they no longer felt part of the ‘team’, that they felt their contributions were de-valued and that they were becoming de-skilled. Current organisational arrangements therefore appear to be fracturing and constraining the possibility of open and
effective dialogue between police and scientists, and impacting trust and relationships.

Some scientists, particularly from private forensic service providers, reported that they are rarely invited to attend case conferences by prosecutors. Instead, these conferences tend to include the senior investigating officer and experts associated with CCTV or digital evidence. Opportunities to discuss findings from FSTs amongst scientists and prosecutors appear to be diminishing and, most importantly, scientists and prosecutors have a poor shared understanding of each other’s practices. For example, scientists at private forensic service providers cited instances where prosecutors requested further tests that scientists viewed as unnecessary or unhelpful to the case. In Scotland, the procurator fiscal has a more proactive role than their equivalent in England and Wales. For example, they may attend forensic strategy meetings where they provide instructions and directions to the police in connection with their investigations. Often these meetings are held within the initial hours of a suspicious death being reported. Consequently, in Scotland, procurator fiscals appear to be more engaged with major crime investigations, and there appears to be more effective and open channels of communication.

The communication issues that we have discussed raise questions about ‘who knows best’, whose contributions are valued or marginalised, and who is given the power to interpret and validate knowledge, or resolve disagreements. We suggest that better communication across the Criminal Justice System would improve transparency and decision-making, enabling all relevant practitioners to consider fully opportunities presented by forensic sciences and technologies.

Question 7. Is the current market for forensic services in England and Wales sustainable? Are changes needed to ensure forensic science provision is maintained at the level required? What are the risks of a market approach, for example what happens if a provider goes out of business? And what is the impact on quality?

Scientists at private forensic service providers raised concerns about having to manage increasingly reduced/tight turnaround times (although in recent months these have been relaxed due to the problems experienced by Key Forensic Services). Scientists indicated that these contractual time limits were leading to elevated levels of stress amongst scientists. Moreover, scientists felt that police sometimes made unnecessary urgent submissions. For example, scientists provided examples of occasions when they had been chased-up by police for ‘outstanding’ results from urgent submissions that had already been returned during the initial days of an investigation. Our emerging findings suggest that the current focus on short turnaround times might be hampering scientists and preventing them from providing a tailored service that meets the particular and specific needs of the investigation.

Scientists at private forensic service providers felt that because police services focus on quick and cheap products, such as DNA, they are engaging in less variety in their work, particularly if those techniques involve laborious processes. Scientists were anxious about the loss of expertise in some disciplines, and noted that unusual and lesser-used techniques, such as fibre analysis, will
become obsolete. Similarly, detectives raised concerns about the availability of, and access to, these kinds of expertise in the future.

Concerns were also expressed by scientists that some procurement models do not assist forensic science i.e. some tenders are heavily focused on, and structured around, price and turnaround times rather than on quality of work or innovation. There was a worry that in the long-term, private forensic service providers might not be able to sustain these low costs. Moreover, there are a limited number of consortiums within this tender process, some of which comprise a large number of police services. It was felt that the management of particular consortiums can have a considerable impact on the market, especially if they are focused on cost. Scientists at private forensic service providers feel particularly vulnerable in this regard and are anxious that should a forensic service provider lose a contract with a large consortium, they will lose a significant proportion of their work and could face redundancies.

Our data reveal the fragility of in-house service provision. For example, one police service within our sample had felt compelled to close their DNA laboratories and were revising their decision to open their own drugs laboratory. Neither of these options were considered financially viable because private service providers had reduced their costs significantly, undercutting police costs, plus the police service had to manage costs associated with running the labs, staffing and accreditation. One negative result of the DNA laboratories closing was that the police service lost their capability to screen exhibits for DNA, leading sometimes to delays in the recovery of mobile phone data. To illustrate, if a mobile phone is to be examined for DNA and has not been swabbed at the scene, police must now send it to a private forensic provider for examination before it is returned for a data download.

**Question 10. What lessons can be learned from the use of forensic science in Scotland and Northern Ireland? What can be learned from the use of forensic science overseas?**

In Scotland there is a comprehensive forensic science laboratory, encompassing evidence capture and analysis, which is funded, managed and delivered by the Scottish Police Authority. Compared with England and Wales, there are a number of differences – of note, the structure, timing and inclusiveness of forensic strategy meetings. To elaborate, when a murder (or suspicious death) is reported in Scotland, the crime scene is secured and scene examiners attend to capture the scene using photographs and 360-degree video. At this stage, the scene is temporarily closed. A forensic strategy meeting is subsequently held where, depending on the particular circumstances of the case, the senior investigating officer, crime scene manager, procurator fiscal, biologists, chemists, ballistics experts, pathologists and any other relevant experts will attend to set the forensic strategy, and discuss and agree submissions. The purpose is to meet with all relevant experts as early as possible within the investigation to ensure that every forensic opportunity is maximised. In contrast, as we outlined in response to question 4, in some police services in England and Wales, scientists from private forensic service providers are not invited to forensic strategy meetings and instead meetings are restricted to the senior
investigating officer, crime scene manager and exhibits officer. There are benefits of including a variety of scientists and experts in these early forensic strategy meetings, not least because it provides early opportunities for collaboration and enables all practitioners to effectively consider and prioritise multiple exhibits and a diverse range of potential forensic recovery and analysis options.

**Question 13. Where are the gaps in research and understanding of forensic science? How and by whom should the research questions be articulated to fill these gaps?**

There is a lack of research, and in particular qualitative research, which explores the social aspects of forensic science, particularly how detectives, scientists and other experts, prosecutors and the judiciary negotiate the meaning and value of findings from FSTs. The HIFS Project has begun to explore these issues but further research could be undertaken within the prosecution and trial phases, and with defence lawyers, to encompass the whole criminal justice system. Furthermore, there would be value in undertaking a comparative study with other jurisdictions such as the USA or European countries.

In terms of how and by whom research questions should be articulated, we advocate bringing together academics (including those from outside the UK), practitioners and other experts in order to discuss and debate gaps in knowledge and priority research areas. We are hosting such an event (the HIFS Symposium) in Cardiff later this year.

Nevertheless, there is generally a lack of opportunity to bring together academics from different disciplines and criminal justice practitioners through which to share research findings, and generate dialogue and debate. These would provide academics and practitioners with the opportunity to reflect on current issues, offer important insights into future research and potential collaborators, and could maximise the impact of forensic science research.

**Question 17. Is enough being done to prepare for the increasing role that digital forensics will have in the future? Does the Criminal Justice System have the capacity to deal with the increased evidence load that digital forensics generates?**

The Criminal Justice System has limited capacity to deal with the increased evidence load that digital forensics generates. Modern day investigators are faced with various digital data challenges, some of which relate to the sheer volume of digital data and the number of devices that have to be interrogated, others of which relate to the timely recovery of digital data. In some instances, it is necessary for devices to be sent abroad to be interrogated. Our research illustrates how the recovery of data within homicide investigations is sometimes delayed and evidence lost. Furthermore, there are complexities surrounding how data and images are shared in a timely and efficient manner, and how they are viewed and logged for disclosure purposes.
Our research suggests that the structures and processes for digital forensics do not appear to be as embedded as they are for forensic science. For example, particular experts, such as those in Cyber Crime or Internet Investigation Units, are rarely invited to attend forensic strategy meetings or team briefings and are rarely embedded within the MIR (major incident room). In short, digital experts are often excluded from participating fully in dialogue and collaborative sense-making, and opportunities are sometimes being missed to utilise their expertise. One police service included in our research has responded to this issue by introducing digital strategy advisors to assist and advise homicide investigators. Unfortunately, due to insufficient numbers of advisors, this role has not developed fully. There is scope to introduce these roles in other police services to prepare for the increasing role that digital forensics will play in future investigations and to more fully utilise digital expertise at the front line of investigative work.

1 February 2019