

Introduction

Forensic Science and Justice: From Crime Scene to Court and Beyond

Forensic science is becoming an integral component of the criminal justice system. Many commentators have noted this and yet the role of forensic science in the criminal justice system is only now beginning to emerge as an area of research interest among criminologists. It is possible to identify a growth in criminological research in forensic science in the United Kingdom (UK) (Bradbury and Feist 2005), Europe (Ribaux et al 2010a, 2010b), Canada (McDonald 2001) and the United States (Peterson et al 2010; Baskin and Sommers 2010; Wilson, McClure and Weisburd 2010). However, research in Australia has been limited predominantly to exploring the use of forensic evidence in the courts (Briody and Prenzler 2005; Briody 2002, 2004; Edmond 2010; Wheate 2010) and the degree to which juries do or do not understand DNA evidence (Goodman-Delahunty and Hewson 2010). Yet, forensic science is much broader than DNA and is involved in various stages of the criminal justice process: from collection and analysis of 'evidence' to criminal investigation to prosecution to the courts. And perhaps, more importantly, both criminology and forensic science share crime as the object of their study.

The focus of this special issue is twofold. The first aim is to demonstrate the significance of forensic science in various stages of the criminal justice process; that is, from the crime scene to the courts. The forensic process includes:

- the detection and collection of traces at the crime scene, traces being remnants of activity and people (such as paint flecks, hair, fibres from clothing, weapon marks);
- the analysis of these traces at the laboratory;
- the extent to which the mere existence (or non-existence) of traces and forensic results influence police investigations (are they used to exonerate suspects early or more typically do they simply add weight to the prosecution's case?);
- how forensic science information is used by lawyers (is it as valuable to the defence as it is to the prosecution?);
- how forensic evidence is presented in court (what is considered admissible? who presents it? what criteria are applied to determine the scientific value of the evidence presented?);
- how juries understand forensic evidence and in what ways does this influence their deliberations;
- whether there is an over-reliance on forensic evidence in the courts and, most importantly, whether the reliance on forensic evidence improves the likelihood of justice for the accused.

The tragic case of Farah Jama in Victoria in 2009 clearly demonstrates the impact of forensic science at each stage of the criminal justice process and how miscarriages of justice can occur if this is not well understood. Farah Jama was a Victorian male wrongfully

convicted and imprisoned for a serious sexual assault (rape) that he did not commit. The jury convicted him solely on the basis of DNA evidence, without any other corroborating evidence. Two years later it was discovered that the DNA sample in question had been contaminated and that the rape itself had never occurred. The 2010 judicial report noted that aside from the contamination of the sample, another factor that may have led to the wrongful conviction was the limited communication between the lawyers, the police, the forensic scientists and medical practitioners throughout the entirety of the case, from the initial report of the 'crime' to the trial and beyond (Vincent 2010).

This special issue also raises the prospect of forensic science being increasingly involved beyond criminal investigations; for example, the untapped potential value of forensic intelligence for crime prevention, counterterrorism and national security, and the value of an emerging 'forensic studies' paradigm to the investigation of environmental crime.

The second aim of this special issue is to demonstrate the value of social science research (and, in particular, criminological research) to the field of forensic science. To date, the majority of the research in forensic science has been on the science itself. This has led to a narrow focus on technologies and laboratories, with solutions to problems being found in improving scientific methods in various disciplines, enhancing the research culture in the forensic sciences and improving laboratory management (for example, through increasing research and development budgets and improving quality assurance processes: see Houck et al 2009; Kelty and Julian 2011). The forensic process, however, is first and foremost a *social* process that involves the application of forensic techniques to support investigations and provide intelligence (Ribaux et al 2010b). Critical analysis of this forensic process from a criminological perspective is important at a time when there is greater reliance placed on forensic evidence in police investigations and in the courts. At the same time, the potential value of forensic science in the areas of security, intelligence and crime prevention can only be realised through a stronger engagement between criminology and forensic science.

In short, the articles and comments in this special issue demonstrate that the interface of forensic science and criminal justice is an issue of current significance to contemporary criminology. The contributions presented here were selected for their ability to raise issues that warrant further debate; they do not offer solutions per se. This special issue presents a case for more research to be conducted by criminologists in this area, and locates the Australian context within the broader debates taking place about forensic science and justice in the international context (see, for example, the article by Lawless (2010) on the tensions that exist between a science-led forensic science and a police-led forensic science in the context of a 'marketised' forensic science in the UK).

The articles in this special issue are drawn from leading forensic scientists (academics and practitioners) in Australia and Europe, Australian criminologists (from law and social science) who are establishing a field of inquiry in this area, and early career researchers (Postdoctoral Fellow and PhD candidates) who will build this area of research into the future. The articles present and discuss some of the critical issues involved in the integration of 'science' into the criminal justice system within a framework that follows the forensic process from the crime scene to the court. At the same time, two of the articles argue that a reconceptualising of the relationship between forensic science and criminology creates new opportunities that go beyond the traditional focus on forensic science providing support to criminal investigations that proceed to court. Roux et al (this volume) argue that a return to the roots of the discipline enables forensic science to expand its focus to the provision of

forensic intelligence, whilst White (this volume) outlines an emerging methodology for research in the field of environmental crime (see also White 2008).

Roux, Crispino and Ribaux (this volume) open the dialogue between criminologists and forensic scientists with a challenge to the conventional view of the forensic sciences. They present a critical analysis of the current focus and concern of 'forensics' that (as the plural version of the term suggests) has led to a fragmentation of the discipline of 'forensic science' into multiple specialisations and a corresponding 'silo' effect. They argue that this has been driven, in part, by a narrow focus on the probative value of forensic evidence and a corresponding concern with improving the scientific basis of each sub-discipline (DNA, toxicology, fingerprint etc), rather than taking a more holistic approach to the value of forensic science for the purposes of investigation and intelligence; that is, in understanding the nature of the crime (what occurred rather than just 'who did it') and in making links between forensic case data and the investigation. This reconceptualisation, they argue, requires a return to the origins of the discipline of forensic science with its fundamental focus on the crime and its traces rather than focussing solely on the science.

Following the theme of re-thinking forensic science, Julian, Kelty and Robertson (this volume) address another often-overlooked area of forensic science: namely, crime scene examination. To date, the conventional focus on 'the science' and 'the courts' has meant that the forensic process has been conceptualised as beginning in the forensic laboratory and ending in the courts. Julian, Kelty and Robertson argue that 'good forensic science begins at the crime scene' (at 25). These authors demonstrate the significance of the crime scene through an analysis of two case studies that highlight the impact of deficiencies in crime scene examination and crime scene management. This analysis raises practical issues for policing organisations in relation to resource management, training of front-line officers and inter-agency cooperation at complex crime scenes but, importantly, it presents a strong case for more research and critical analysis of crime scenes and crime scene work.

The articles by Porter (this volume) and Edmond and San Roque (this volume) provide a critical analysis of the admissibility and use of forensic evidence and expert evidence in the courts. Porter's article employs a case study to raise questions about the ways in which photographic evidence is used in judicial hearings. Given a growing acceptance of the use of photographic evidence in courts (Porter 2011), Porter's critique of the commonsense view that photographic evidence is 'objective' is timely and significant. Porter's analysis demonstrates the inherent interpretation involved in 'reading' photographic evidence and the way in which this interpretation can be influenced by the narrative within which it is presented. Such factors are clearly of great significance in the quest for 'truth' in the courts. However, at this point in time, it appears that the objectivity of photographic evidence continues to go unquestioned in the courts.

Edmond and San Roque (this volume) broaden the focus to question 'the capacity of the criminal trial to effectively manage incriminating expert evidence in a manner that genuinely reflects commitments to a fair trial' (at 51). Through a review of current concerns they suggest that 'courts need to be willing to adopt a more exclusionary orientation towards incriminating forensic science and medicine evidence and develop new mechanisms, responsive to empirical research, to manage such evidence during criminal proceedings' (at 51). The need for research and for the courts to make better use of this research is a theme that runs throughout the issue and is strongly presented in this article.

Cashman and Henning (this volume) also address concerns about the use of forensic evidence in the courts with their article that focuses on lawyers' understandings of DNA evidence. Building on previous research that shows that many lawyers lack understanding of the weaknesses in DNA evidence as well as how to uncover and address these effectively, their article provides preliminary results from research into how lawyers in two Australian jurisdictions deal with DNA evidence in criminal cases. Their article suggests that 'lacunae in practitioner knowledge ... may be attributable, in part at least, to systemic barriers' (at 69). The article identifies issues that require further research in relation to lawyers' understandings of DNA evidence.

The article by Goodman-Delahunty and Wakabayashi (this volume) further explores the use of forensic evidence in the courts through an empirical study that examined the ways in which juries resolve differences of opinion between competing forensic science experts. The participants were 144 Australian jury-eligible men and women from the general population who were exposed to a mock, but live, homicide trial in a courtroom presided over by a real judge. The participants were exposed to various conditions, such as the use of visual aids during the trial and to three judicial warnings about the weight of the expert evidence. The researchers found support for three legal procedural safeguards that appeared to be able to lessen jury errors when forensic scientific evidence is used: the use of a rebuttal expert, a judicial direction about the non-binding nature of expert evidence, and group deliberation.

In the final article in the issue, White (this volume) moves beyond the framework of 'crime scene to courts' to explore 'how social science methodologies can be mobilised as part of environmental forensic investigations'. His analysis of toxic towns leads him to raise 'questions regarding the criteria used to assess the quality and robustness of evidence in relation to toxicity' (at 106) through a critical examination of the conflicts and controversies that surround such towns. His article begins to explore the possibilities for an emerging field of 'forensic studies'.

To conclude, this special issue on forensic science and justice is rounded off with commentaries from two eminent forensic scientists in Australia. The Director of the National Institute of Forensic Science, Alastair Ross, provides an assessment of where Australia sits in relation to current developments in forensic science internationally. He identifies some of the strengths and weaknesses in forensic science policy and practice in Australia, but concludes that 'given the close working relationships in the forensic science community in Australia and New Zealand ... we are well positioned to assist and indeed, in some instances, take a lead in their resolve' (at 128). One of these areas is in the alliances created between forensic science researchers and researchers in the social sciences. The second commentary is by James Robertson, the Director of the National Centre for Forensic Studies, who addresses the thorny question of the relationship between forensic science laboratories and policing organisations. Issues of ethics, subjectivity and bias in the forensic sciences are often couched in terms of the level of independence (or otherwise) between forensic science and police. Robertson provides a sound argument for not getting caught up in this debate, but to focus on the quality of forensic services informed by sound research and undertaken by professionals. He concludes that 'both policing and forensic science need to move to adopt the characteristics of a profession in order to establish an improved basis for professional interaction based on shared core values' (at 131).

We hope that the articles in this special issue on *Forensic Science and Justice: From Crime Scene to Court and Beyond* make a contribution to criminology by addressing an emerging area of interest for research and critical analysis. We look forward to the debates

that it will raise among criminologists, and the interdisciplinary dialogue that it may open up between forensic scientists and criminologists.

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