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THE UK FORENSIC SCIENCE REGULATOR: A MODEL FOR FORENSIC SCIENCE REGULATION?

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Abstract

The utilization of an array of scientific techniques and technologies is now considered customary within criminal justice, with technological developments and scientific advancements regularly added to the crime investigator's arsenal. However, the scientific basis, reliability, and fallibility of the application of such "forensic science" (and the resulting scientific evidence) continues to come under intense scrutiny. In response to apparently irremediable problems with the quality of scientific evidence in the UK, the government created the role of "Forensic Science Regulator" in 2007. The introduction of a Regulator was intended to establish quality standards for all forensic science providers in the UK, create a level playing field in the forensic services market, and grant assurances that all providers were producing reliable and robust scientific evidence. A decade on, there remain questions over the effectiveness of this model of forensic regulation. While there has been significant progress with initial aims and objectives and broad stakeholder engagement, the Regulator still lacks meaningful powers, and significant gaps in regulation remain. Accreditation is not only inconsistent but may be superficial. The Regulator faces serious resource restrictions with debilitating limitations on the Regulator's capacities, while wider austerity measures throughout the criminal justice system hamper efforts to raise standards in forensic science. This Article will detail the first ten years of the Forensic Science Regulator, outlining successes and ongoing challenges. It will demonstrate that the UK model of forensic regulation has proven only partially effective at minimizing the risks associated with forensic science, while ensuring that the criminal justice system can continue to secure high quality forensic scientific evidence that is robust, reliable, and sustainable.

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INTRODUCTION

While the forensic potential of scientific knowledge, experimentation, and testing has long been recognized, the reliability of forensic scientific evidence¹ has come under intense scrutiny in recent years. Considered a “state of the union” report with broad acceptance and international pertinence, the 2009 United States National Academy of Sciences (NAS) report criticized *inter alia*: the paucity of underlying research; lack of standards and accreditation of laboratories; dramatic inconsistencies in levels of training of forensic personnel; inattention to risks posed by cognitive contamination (so-called contextual bias); unprincipled variation in terminology and forms of expression of scientific opinions; widespread failures to disclose limitations and uncertainties in reports and testimony; insufficient detail and explanation in reports; and a general lack of funding and leadership across the forensic sciences.² In late 2016, the President’s Council of Advisors on Science and Technology (PCAST) released a further damning report on forensic science, focusing on the lack of validity of many forensic science techniques.³ Such concerns are mirrored around the globe. In a comparative study of forensic practice in the United States, Switzerland, and Australia, Edmond and Vuille suggest that critical failings in forensic science are ubiquitous.⁴ Yet, even domestic attempts to regulate forensic science remain in their infancy, with any international oversight scarcer still and of limited impact.

Perhaps uniquely,⁵ the UK⁶ has dedicated efforts to answering critics of forensic science by attempting to ensure uniform provision of high quality forensic scientific evidence, primarily through

¹ We use the term “forensic scientific evidence” to encompass all evidence utilized within the criminal justice process that has been undertaken by “forensic practitioners” or generated using recognized “forensic” techniques or applications. There is a lot of “scientific evidence” that would not fit under this banner, such as medical evidence, or evidence of engineers, etc. However, the term “forensic evidence” is often cast far wider, and includes evidence that most people would not recognize as being generated by “forensic science” techniques. We hope that “forensic scientific evidence” is thus broad enough to include all forensic disciplines and techniques but not so broad as to encompass all potential evidence.

² See generally, COMM. ON IDENTIFYING THE NEEDS OF THE FORENSIC SCIS. CMTY., NAT’L RESEARCH COUNCIL, STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES: A PATH FORWARD (2009) [hereinafter A PATH FORWARD]

³ See generally, PRESIDENT’S COUNCIL OF ADVISORS ON SCI. AND TECH. (PCAST), EXEC. OFFICE OF THE PRESIDENT, REPORT TO THE PRESIDENT, FORENSIC SCIENCE IN CRIMINAL COURTS: ENSURING SCIENTIFIC VALIDITY OF FEATURE-COMPARISON METHODS (2016).

⁴ Gary Edmond & Joelle Vuille, *Comparing the Use of Forensic Science Evidence in Australia, Switzerland & the United States: Transcending the Adversarial/Non-Adversarial Dichotomy* 54 JURIMETRICS J. 221, 251 (2014).

⁵ Although we cannot say definitively, we are currently unaware of any international counterparts or equivalent efforts that have taken the same approach to forensic science regulation in other countries.

⁶ The Forensic Science Regulator has jurisdiction over England and Wales, but both Scotland and Northern Ireland voluntarily agreed to work in partnership with the Regulator and continue to work within the same guidelines. *About Us*, FORENSIC SCI. REGULATOR, <https://www.gov.uk/government/organisations/forensic-science-regulator/about>, [https://perma.cc/Y95J-FMC7] (last visited Mar. 18, 2018).

the creation of the Forensic Science Regulator (FSR). Established in 2007, the Forensic Science Regulator (FSR or the Regulator) was tasked with establishing and monitoring quality standards and ensuring the accreditation of suppliers of forensic services as well as dealing with complaints and providing advice to the government.⁷ However, there remain questions over whether the regulatory model adopted is effective. On the one hand, the FSR was meant to create generic standards for all forensic science providers in the UK and provide “a light touch” in steering forensic service providers towards adopting effective quality assurance systems and gaining appropriate accreditation.⁸ But has this “light touch” rendered the Regulator a paper tiger, leaving gaps in regulation and providing superficial accreditation? Along with the rest of the public sector in the UK, the Regulator also faces serious resource restrictions and operates within a broader criminal justice system simultaneously being starved of government funding.

This Article details the work of the first ten years of the FSR, summarizing successes and ongoing challenges. It questions whether the Regulator has achieved the aim of ensuring high quality forensic science provision via examination of annual reports and business plans as well as related documents, and it considers issues pertaining to forensic science provision in the UK to draw conclusions regarding the success of the regulation model employed.

I. CREATING THE FORENSIC SCIENCE REGULATOR

During the massive expansion of forensic science provision in England and Wales in the late twentieth and early twenty-first centuries, there were a series of highly critical reports commenting upon the quality of forensic science provision and the risks associated with poor quality forensic scientific evidence. The 1993 *Report of the Royal Commission on Criminal Justice* (the Runciman Report), established in light of a series of infamous “Irish terrorism” miscarriages of justice, made thirteen recommendations specific to forensic science.⁹ Of these, the establishment of an oversight body was deemed a priority. The Runciman Report recommended the creation of a Forensic Science Advisory Council (FSAC) to serve as a regulatory body for the forensic science community and an independent source of advice.¹⁰ Just three years later, the 1996 *Assessment and Implications of Centrifuge Contamination in the Trace Explosive Section of the Forensic Explosives Laboratory at Fort Halstead* (the Caddy Report) evaluated the serious contamination at a military forensic explosives laboratory and advocated registration of individual forensic practitioners, while also recommending the creation of an Inspectorate of Forensic Sciences.¹¹

It was not until 1999, however, that any reforms were initiated, with the establishment of the Council for the Registration of Forensic Practitioners (CRFP). This register was intended to provide courts with a single point of reference through publication of a list of “competent” forensic practitioners; ensure that registered practitioners maintained competence; and discipline registered practitioners who did not meet the required standards of “safe, competent practice.”¹² The CRFP

⁷ ANDREW RENNISON, THE FORENSIC SCIENCE REGULATOR BUSINESS PLAN 2008/09-2010/11 at 1, 2 (2008),

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/118922/Forensic_Science_Regulator_3.pdf [<https://perma.cc/N2P7-NCMR>] [hereinafter BUSINESS PLAN 2008].

⁸ *Id.* at 3.

⁹ THE ROYAL COMM’N ON CRIM. JUST., REPORT, 1991, CM 2263, at 211 (UK).

¹⁰ *Id.*

¹¹ BRIAN CADDY, ASSESSMENT AND IMPLICATIONS OF CENTRIFUGE CONTAMINATION IN THE TRACE EXPLOSIVE SECTION OF THE FORENSIC EXPLOSIVES LABORATORY AT FORT HALSTEAD 6–7, 23, 42 (1996).

¹² ANDREW RENNISON, FORENSIC SCI. REGULATOR, A REVIEW OF THE OPTIONS FOR THE ACCREDITATION OF FORENSIC PRACTITIONERS 17 (2009), <http://library.college.police.uk/docs/homeoffice/Review-of-Forensic-Practiti1.pdf> [<https://perma.cc/7DGZ-9DJQ>].

would thus assure courts that those presenting themselves at trial as expert witnesses were competent to fulfill that role and was welcomed as an important step in that regard. However, as a voluntary and self-selective system of individual accreditation, the CRFP stopped far short of bringing comprehensive and rigorous scrutiny to bear upon forensic science and expert witnesses, many of whom were still able to testify in court regardless of their registration status.¹³ The register was therefore impotent, and continuing efforts to register practitioners were proving futile. And so, the CRFP, ostensibly due to financial difficulties, closed in 2009.¹⁴

Meanwhile in November 2004, in response to rapid developments in the forensic marketplace prompted by the partial privatization of the previously publicly funded national Forensic Science Service¹⁵ and the criticisms of the continued lack of regulation in light of high-profile miscarriages of justice involving “experts,” the UK Forensic Science Society changed its status to one of a professional body.¹⁶ The Forensic Science Society partially took up the role played by the CRFP by launching a Continuing Professional Development scheme for members, a requirement of Chartered Forensic Practitioner status.¹⁷ Although bodies, such as the Chartered Society, aim to promote and develop forensic science quality standards and practice, they represent a wider body of interests, including forensic education and management, and do not provide specific certification or assurance of practitioner competence.

With neither the Runciman Report’s nor the Caddy Report’s recommendations leading to a regulatory body beyond the deficient CRFP and with criticism of forensic science unabated, the House of Commons Science and Technology Select Committee (Select Committee) revisited the issue in its 2005 report *Forensic Science on Trial*, making sixty recommendations on the regulation of forensic science, the training of scientists, and related issues.¹⁸ The Select Committee again recommended that the government establish a FSAC to oversee forensic science and provide independent and impartial advice.¹⁹ The FSAC would also be ideally placed to review, or to commission inspections of, the use of forensic science across the whole of the criminal justice system and to propose improvements where necessary. After consultation subsequent to the report, the government decided that a named individual would be appointed Regulator, emulating other regulatory structures, with responsibility for overseeing the quality of forensic science in England and Wales.²⁰ The new role was announced in July 2007, explaining that the officeholder would advise the government and criminal justice system on standards; identify and create new or improved quality standards; provide advice and guidance to providers on how to demonstrate compliance; and

¹³ SCIENCE AND TECHNOLOGY COMMITTEE, *FORENSIC SCIENCE ON TRIAL*, 2004–05, HC 96-I, at 62–63 (UK).

¹⁴ Jamie Doward, *Forensic Science Skills Threatened by Funding Withdrawal*, *GUARDIAN* (Apr. 4, 2009, 7:01 PM), <https://www.theguardian.com/science/2009/apr/05/forensic-science-government-funding> [<https://perma.cc/ED5D-9JHE>].

¹⁵ SCIENCE AND TECHNOLOGY COMMITTEE, *FORENSIC SCIENCE ON TRIAL*, 2004–05, HC 96-II, at Ev 26 (UK). The Forensic Science Service became a “Government Owned Company,” a for-profit company, wholly owned by the UK Government, with the intention being to sell to a private interest in the coming years. *Id.* at Ev 3.

¹⁶ *About Us*, CHARTERED SOC’Y OF FORENSIC SCIS., <http://www.csofs.org/About-us> [<https://perma.cc/8DGL-47BN>] (last visited Mar. 18, 2018).

¹⁷ *Certificate of Professional Competence (CPC)*, CHARTERED SOC’Y OF FORENSIC SCIS., <http://www.csofs.org/Certificate-of-Professional-Competence-CPC> [<https://perma.cc/FB8A-FZ6R>] (last visited Mar. 18, 2018).

¹⁸ SCIENCE AND TECHNOLOGY COMMITTEE, *supra* note 13, at 82–89.

¹⁹ *Id.* at 3.

²⁰ *Id.* at 5.

ensure the monitoring of such standards.²¹ The Regulator was to be supported by a FSAC with members from stakeholder bodies.²²

A. *The Role and Objectives of the Forensic Science Regulator*

The first business plan of the new FSR in March 2008 outlined the role of the Regulator and a set of objectives as well as a plan for the first two years of operation.²³ The FSR began by identifying what the criminal justice system requires of forensic science providers:

- i). The delivery of forensic science services, using the appropriate available scientific techniques, according to the highest professional standards;
- ii). With efficiency, integrity, impartiality and accuracy at every stage throughout the process;
- iii). At a cost which represents best value for money, within timescales which meet operational needs;
- iv). Reflecting an understanding of the needs of the specific customer and the requirements of the [criminal justice system] as a whole; thereby
- v). Maintaining and enhancing public confidence in the quality and reliability of forensic science in the [criminal justice system].²⁴

To ensure that the forensic science market could deliver on each of these requirements, the FSR outlined a remit that would encompass:

- i). Scientific quality standards relating to **organi[z]ations** providing forensic science services to the [criminal justice system];
- ii). **Processes** carried out within those organi[z]ations which affect the quality of the forensic science services provided to the [criminal justice system];
- iii). New **scientific techniques** introduced in, or adopted by, such organi[z]ations, before those techniques are introduced; [and]
- iv). The competence of **individual forensic scientists**.²⁵

It was not expected that the FSR deliver all activities directly, but that if organizations or mechanisms already existed to create and monitor standards etc., that these would be utilized.

In the first *Forensic Science Regulator Annual Report*, published in December 2009, the FSR set out a vision “[t]hat forensic science delivered to the criminal justice system in the UK will consistently meet the high quality standards and integrity expected by the courts and the general public.”²⁶ To achieve this, the FSR was to:

- “Provide direction and unity of approach to achieving forensic science quality standards across the UK;
- Place quality at the cent[er] of all forensic science activities; and

²¹ 12 Jul. 2007, Parl Deb HC (2007) col. 67WS (UK), <https://publications.parliament.uk/pa/cm200607/cmhansrd/cm070712/wmstext/70712m0002.htm> [<https://perma.cc/WQ9R-QPJT>].

²² *Id.*

²³ BUSINESS PLAN 2008, *supra* note 7, at 1, 2, 18.

²⁴ *Id.* at 1.

²⁵ *Id.* at 20.

²⁶ ANDREW RENNISON, FORENSIC SCIENCE REGULATOR ANNUAL REPORT: DECEMBER 2009 at 1 (2009), https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/118900/FSR-annual-report.pdf [<https://perma.cc/B42X-4H9V>].

- Create a quality standards framework around the full range of forensic processes.”²⁷

The FSR’s mission was:

- To influence the strategic management of UK forensic science to place quality standards at the heart of strategic planning;
- To develop a set of ‘industry specific’ quality standards for all forensic processes across the dimensions of provider, practitioner and method;
- To establish, through the United Kingdom Accreditation Service (UKAS), effective compliance assessment procedures;
- To use the Forensic Science Advisory Council as a source of independent and authoritative advice;
- To maintain the use of specialist groups of domain experts as the vehicle to deliver valid quality standards; and
- To engage with the full range of stakeholders in order to consult widely.²⁸

In February 2013, the second *Forensic Science Regulator Business Plan: 2012 to 2017*²⁹ was swiftly followed by the third *Forensic Science Regulator Business Plan: 2013 to 2014*,³⁰ when a change of personnel took place and the new Regulator set out their priorities.³¹ Each document outlined aims accompanied by plans to achieve these aims. Both individuals who have acted in the role of Regulator³² have stressed the importance of engagement with stakeholders, and they regularly meet with “specialist working groups”: forensic science practitioners, specialists, experts, and other stakeholders who can undertake their own studies and advise the Regulator on quality standards for specific forensic disciplines within the wider forensic services to ensure industry-specific quality standards. The current groups, each with their own terms of reference, are:

- (1) The FSAC,
- (2) The Contamination Specialist Group,

²⁷ *Id.*

²⁸ *Id.*

²⁹ FORENSIC SCI. REGULATOR, *FORENSIC SCIENCE REGULATOR BUSINESS PLAN: 2012 TO 2017*, (2013), https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/143740/business-plan-2012-2017.pdf [<https://perma.cc/FV5Y-G5AB>].

³⁰ FORENSIC SCI. REGULATOR, *FORENSIC SCIENCE REGULATOR BUSINESS PLAN: 2013 TO 2014*, (2013), https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/229450/fsr-business-plan-1314.pdf [<https://perma.cc/MY6B-ZMBF>].

³¹ These ‘Business Plans’ also appeared to fulfill the role of ‘Annual Reports,’ where accounts and progress would be reported as well as upcoming plans and there were no Annual Reports published between 2010 and 2015.

³² There was an ‘interim’ Regulator to set-up the FSR. *Forensic Science Regulator Newsletter*, 3 FORENSIC SCI. REG. UNIT, Sept. 12, 2007, at 1, 2, <http://netk.net.au/Forensic/UKFSAC.pdf> [<https://perma.cc/YYX5-NZCC>]. The first Regulator was Mr. Andrew Rennison. 521 Parl Deb HC (2011) col. 23WS (UK), <https://hansard.parliament.uk/Commons/2011-01-13/debates/11011364000012/ForensicScienceRegulator> [<https://perma.cc/5JN3-RS8S>]. Rennison was followed by Dr. Gillian Tully, who took up the role in 2013, and has recently been confirmed as Regulator until 2020. Forensic Sci. Regulator, *Dr. Gillian Tully Reappointed in Key Role for Setting Standards in Forensic Science*, GOV.UK (Nov. 14, 2017), <https://www.gov.uk/government/news/dr-gillian-tully-reappointed-in-key-role-for-setting-standards-for-forensic-science> [<https://perma.cc/2L8T-QSLD>].

- (3) The Fingerprint Quality Specialist Group,
- (4) The Digital Forensics Specialist Group,
- (5) The DNA Analysis Specialist Group,
- (6) The End User Specialist Group,
- (7) The Forensic Pathology Specialist Group,
- (8) The Medical Forensics Specialist Group,
- (9) The Quality Standards Specialist Group, and
- (10) The Evidence Assessment Specialist Group.³³

Despite slight variations in visions and differing aims over the ten years since inception, the FSR role has not altered in any material way. The Regulator continues to be a public appointee and operates independently (i.e., not influenced by political pressure) working at arm’s length of the Home Office.³⁴ However, the FSR is funded by the Home Office, and the Regulator reports to the Home Secretary and is supported by three civil servants, (suggesting quite a short “arm”).³⁵ The Regulator also acts as an advisor to the government and represents the UK in international fora.³⁶ The FSR’s responsibilities as currently articulated on the FSR website include the following:

- “[I]dentifying the requirement for new or improved quality standards[;]
- [L]eading on the development of new standards[; and]
- [W]here necessary, providing advice and guidance so that providers of forensic science services can demonstrate compliance with common standards[.]”³⁷

with attendant priorities to see that:

- [F]orensic science services are delivered to appropriate standards (usually an international standard) tailored to meet the needs of the criminal justice system and subject to independent and effective assessments of quality[;]
- [H]igh quality advice and guidance is provided to forensic science providers, ministers and others on the forensic science requirements of the criminal justice system[;]
- [T]here are effective means to investigate quality failures and to address any issues[;]
- [T]here is effective collaboration with the authorities in Scotland and Northern Ireland to achieve UK-wide quality standards[; and]
- [T]he UK is a strong voice on projects to develop European or international standards for forensic science.³⁸

In the discharge of these duties, the FSR continues to be advised and supported by the FSAC, and quality standards are established via the support of the nine specialist working groups.³⁹

The principal and immediate task of the FSR was to develop quality standards encompassing forensic science providers, practitioners, and forensic methods. The FSR was charged with producing a “Manual of Regulation,” defined as “a consolidated set of guidance which describes, in some detail,

³³ *Membership*, FORENSIC SCI. REGULATOR, <https://www.gov.uk/government/organisations/forensic-science-regulator/about/membership> [https://perma.cc/A54D-SQB4] (last visited Mar. 18, 2018).

³⁴ *Id.*

³⁵ *About Us*, *supra* note 6.

³⁶ *Id.*

³⁷ *Id.*

³⁸ *Id.*

³⁹ *Membership*, *supra* note 33.

why (covering strategic aims and objectives) [and] how (including statement of principles to be adopted) the Regulator, advised by the FSAC and supported by Specialist Groups, will manage the whole regulatory process.”⁴⁰ In 2011, Version 1 of the FSR *Codes of Practice and Conduct for Forensic Science Providers and Practitioners in the Criminal Justice System* (the Codes) were published, setting out accreditation requirements for laboratories; a “Code of Conduct” for practitioners, and a similar “Code of Practice” for providers.⁴¹

The Codes are built on the international standards ISO 17025:2005 (which outlines the general requirements for the competence of testing and calibration laboratories), as interpreted by ILAC G19:08/2014 in the context of forensic science processes⁴² and ISO 17020 for organizations carrying out inspection.⁴³ The Regulator oversees accreditation (via the UKAS) using the international laboratory testing ISO17025 standard for all laboratories that supply forensic services.⁴⁴ Because ISO17025 constitutes a generic framework not specific to forensic laboratories, UKAS has issued supplementary standards and has made tailored modifications for forensic science. Both forensic anthropology⁴⁵ and forensic pathology⁴⁶ have their own specific Codes of Practice, while there are also appendices to the Codes for some disciplines, including:

- (1) Bloodstain pattern analysis,
- (2) DNA analysis,
- (3) Digital forensic services,
- (4) Video analysis,
- (5) Speech and audio forensic services,
- (6) Cell site analysis,
- (7) Fingerprint comparison, and
- (8) Fingerprint visualization and imaging.⁴⁷

Accreditation of providers involves on-site assessment by technically competent assessors across a range of forensic disciplines, assessing the training and ongoing competence of practitioners within the organization, the validation of methods and tests undertaken by the organization, and evidence of impartiality in the organization’s activities.⁴⁸ Assessment is managed on a four-year cycle with at least annual on-site visits by UKAS.⁴⁹ Quality-related issues resulting from this

⁴⁰ BUSINESS PLAN 2008, *supra* note 7.

⁴¹ FORENSIC SCI. REGULATOR, CODES OF PRACTICE AND CONDUCT 6 (2011), https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/118949/codes-practice-conduct.pdf [<https://perma.cc/348J-TAP7>] [hereinafter CODES OF PRACTICE AND CONDUCT].

⁴² FORENSIC SCI. REGULATOR, CODES OF PRACTICE AND CONDUCT 2 (2016), https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/499850/2016_2_11_-_The_Codes_of_Practice_and_Conduct_-_Issue_3.pdf [<https://perma.cc/F9XA-BTXZ>].

⁴³ *Id.* at 12.

⁴⁴ *Id.*

⁴⁵ *Code of Practice for Forensic Anthropology*, GOV.UK, (Oct. 3, 2017) <https://www.gov.uk/government/consultations/code-of-practice-for-forensic-anthropology> [<https://perma.cc/S7LD-3A7N>].

⁴⁶ *Forensic Pathology: Code of Practice*, GOV.UK, (Nov. 20, 2012), <https://www.gov.uk/government/publications/standards-for-forensic-pathology-in-england-wales-and-northern-ireland> [<https://perma.cc/EN34-J3EE>].

⁴⁷ *Forensic Science Provider: Codes of Practice and Conduct*, GOV.UK, (Oct. 13, 2017), <https://www.gov.uk/government/collections/forensic-science-providers-codes-of-practice-and-conduct#appendices> [<https://perma.cc/W9LU-LGW5>].

⁴⁸ *Codes of Practice and Conduct*, *supra* note 42.

⁴⁹ ANDREW RENNISON, FORENSIC SCI. REGULATOR, FSR-R-618, REPORT INTO THE CIRCUMSTANCES OF A COMPLAINT RECEIVED FROM THE GREATER MANCHESTER POLICE ON 7 MARCH

independent accreditation assessment are reported to the FSR.⁵⁰ Accreditation is thus intended to provide an authoritative assurance of competence in staff, the impartiality of activities, and the reliability of evidence generated by the laboratory.⁵¹ The Codes relating to practitioners are values and ideals that should define the profession of a forensic practitioner. In total, these standards are the minimum requirements expected in order to provide a forensic science service to the criminal justice system. Originally published in 2011, the Codes are updated when needed to incorporate relevant developments in the forensic field. Some of these changes have resulted in updates in 2016 (Version 3) and 2017 (Version 4), to reflect the new Criminal Procedure Rules, the Criminal Practice Directions, and amendments.⁵²

In addition to the Codes and appendices, the FSR publishes detailed, stand-alone standards and guidance and currently has published in the following areas:

- (1) Forensic toxicology standards;
- (2) Sexual assault referral centres and custodial facilities: DNA anticontamination guidance;
- (3) Method validation in digital forensics;
- (4) Crime scene DNA: anticontamination guidance;
- (5) Laboratory DNA: anticontamination guidance;
- (6) Cognitive bias effects relevant to forensic science examinations;
- (7) Forensic service providers: validation guidance;
- (8) Public comment guidance;
- (9) Allele frequency databases and reporting guidance for the DNA-17 profiling;
- (10) Fingerprint examination: terminology, definitions, and acronyms;
- (11) Alcohol back calculation for road traffic investigations;
- (12) Provision of human tissue to the defense;
- (13) Time of death estimations;
- (14) (Draft as of January 2018) DNA mixture interpretation software validation;
- (15) (Draft as of January 2018) DNA mixture interpretation.⁵³

2012 REGARDING DNA EVIDENCE PROVIDED BY LGC FORENSICS 5 (2012),

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/118941/dna-contam-report.pdf [https://.cc/A2WN-PQVT] [hereinafter REPORT INTO THE CIRCUMSTANCES].

⁵⁰ GILLIAN TULLY, FORENSIC SCI. REGULATOR, ANNUAL REPORT: NOVEMBER 2016–NOVEMBER 2017 at 9 (2018),

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/674761/FSRAnnual_Report_2017_v1_01.pdf [https://perma.cc/4BVQ-KBNS].

⁵¹ *Written Evidence Submitted by the UKAS (FST 0008)*, HOUSES OF PARLIAMENT (Mar. 2016), <http://data.parliament.uk/WrittenEvidence/CommitteeEvidence.svc/EvidenceDocument/Science%20and%20Technology/Forensic%20Science%20Strategy/written/31189.html> [https://perma.cc/FW8V-CSVP].

⁵² *See Rules and Practice Directions*, JUSTICE, www.justice.gov.uk/courts/procedure-rules/criminal/rulesmenu-2015 [https://perma.cc/3W6S-WEDU] (last updated April 11, 2017) (providing access to the current version of the Criminal Procedure Rules and Criminal Practice Directions).

⁵³ *Publications*, GOV.UK, https://www.gov.uk/government/publications?departments%5B%5D=forensic-science-regulator&from_date=&keywords=&official_document_status=all&page=1&publication_filter_option=all&to_date=&topics%5B%5D=all&world_locations%5B%5D=all [https://perma.cc/33JS-NTK4] (last visited Mar. 19, 2018) (browse list or use the filters on the left-hand column to find specific publications).

There are also regular updates providing legal guidance on the legal obligations of expert witnesses and those involved in forensic pathology investigations⁵⁴ as well as guidance on other related issues, such as: *Drug Driving: The Use of Legal Limits*;⁵⁵ *Expert Report Content*;⁵⁶ *Non-Technical Expert Statements*;⁵⁷ and *Completing the 'History' Section of a Forensic Pathologist's Report*.⁵⁸ The FSR has also produced the following guidance: *Protocol: Using Casework Material for Validation Purposes*,⁵⁹ *Protocol on Forensic Science Service Archive Complaints*,⁶⁰ and *The Use of Photographs for Non-CJS Purposes: Draft Guidance*.⁶¹ The FSR commissions regular audits of the work of forensic pathologists; having published a protocol for these audits, the FSR has published the results of five audits.⁶² Most of these documents have been published after extensive engagement with both practitioners and stakeholders as well as the public—with eighteen public consultations to date.⁶³

Another important role of the FSR is to investigate complaints and undertake reviews of performance when requested by Parliament. These reports are also publicly available on the website, including a performance review of the Scottish Police Services Authority (which provides all forensic science services to the Scottish police).⁶⁴ There have been investigations into the biggest forensic providers in the UK, including Cellmark Forensic Services, Key Forensic Services, and LGC

⁵⁴ *Legal Issues in Forensic Pathology and Tissue Retention: Issue 3 Guidance*, GOV.UK (Dec. 10, 2012), <https://www.gov.uk/government/publications/legal-issues-in-forensic-pathology-and-tissue-retention-issue-2-guidance> [<https://perma.cc/9DQ2-NY8N>].

⁵⁵ *Drug Driving: Use of Legal Limits, Issue 2*, GOV.UK (Feb. 1, 2017), <https://www.gov.uk/government/publications/drug-driving-use-of-legal-limits-issue-2> [<https://perma.cc/9ZVD-NM2J>].

⁵⁶ *Expert Report Content*, GOV.UK (Oct. 16, 2017), <https://www.gov.uk/government/publications/expert-report-content> [<https://perma.cc/5FU5-ZRM4>].

⁵⁷ *Non-Expert Technical Statements*, GOV.UK (Oct. 16, 2017), <https://www.gov.uk/government/publications/non-expert-technical-statements> [<https://perma.cc/76NM-MX4T>].

⁵⁸ *Completing the 'History' Section of a Forensic Pathologist's Report*, GOV.UK (Sept. 26, 2014), <https://www.gov.uk/government/publications/completing-the-history-section-of-a-forensic-pathologists-report> [<https://perma.cc/JN3B-L82V>].

⁵⁹ *Protocol: Using Casework Material for Validation Purposes*, GOV.UK (Mar. 31, 2016), <https://www.gov.uk/government/publications/protocol-using-casework-material-for-validation-purposes> [<https://perma.cc/XT46-3QGS>].

⁶⁰ *Protocol on Forensic Science Service Archive Complaints*, GOV.UK (Nov. 21, 2013), <https://www.gov.uk/government/publications/protocol-on-forensic-science-service-archive-complaints> [<https://perma.cc/D4AZ-AGWQ>].

⁶¹ *Use of Photographs for Non-CJS Purposes: Draft Guidance*, GOV.UK (Dec. 18, 2013), <https://www.gov.uk/government/consultations/use-of-photographs-for-non-cjs-purposes-draft-guidance> [<https://perma.cc/RA77-7UUN>].

⁶² *Forensic Pathology Audit*, GOV.UK (Dec. 15, 2015), <https://www.gov.uk/government/collections/forensic-pathology-audit> [<https://perma.cc/KK8A-7YY3>].

⁶³ See *id.*

⁶⁴ *A Performance Review of the Scottish Police Services Authority*, GOV.UK (Jan. 27, 2016), <https://www.gov.uk/government/publications/a-performance-review-of-the-scottish-police-services-authority> [<https://perma.cc/HN97-6WMB>].

Forensics.⁶⁵ In 2013, upon request by Parliament, the FSR also published a preliminary report on the use of sodium rhodizonate as a test to identify firearm discharge residue in the early 1970s, concluding, however, that a full review was not warranted.⁶⁶

II. THE FORENSIC SCIENCE REGULATOR: TEN YEARS OF PROGRESS?

There has been clear evidence of engagement by the FSR with a broad variety of stakeholders beyond those sitting within specialist groups and on the FSAC. In addition to an annual quality conference hosted by the FSR, annual reports give details of a busy schedule of external meetings and papers delivered at a wide variety of events. The latest report stresses that there is a “continued priority” to speak to as many “forensic experts, practitioners[,] and relevant managers as possible.”⁶⁷ The level of engagement has been impressive and is going a long way to achieving “Requirement 3” of the *Forensic Science Regulator Annual Report: November 2014 – November 2015*, which requires a “shared understanding of quality and standards by all stakeholders, including commissioners of forensic science, expert practitioners, researchers and all end users, including the police, the prosecuting authorities, [defense,] and courts.”⁶⁸ The transparency of the FSR is such that all minutes of meetings are promptly published as well as regular newsletters, in addition to all the other publications and public consultations. It is to be applauded that the FSR is so transparent and engaged with the broader criminal justice community. In the *Forensic Science Regulator Annual Report: November 2016 – November 2017*, the Regulator states, “[T]here should be no doubt that progress is being made. The number of organi[z]ations now able to demonstrate objectively the scientific validity of their methods and the competence of their staff has increased vastly. Many organi[z]ations are well on their way to achieving the required quality standards”⁶⁹ However, the Regulator concedes that this is an “ongoing process,” and her report goes on to detail the challenges still facing the FSR, some of which we detail below.⁷⁰

A. Continuing Challenges to Forensic Regulation

The Regulator was intended as an oversight body for *all* forensic science providers in the UK, setting national quality standards and ensuring compliance with these standards and the codes of practice. However, there are ongoing challenges to ensure that all providers—most importantly the police, but also small businesses and experts called upon by the defense—seek and achieve accreditation. The persistent lack of compliance from some providers continues to be a problem, particularly in light of the government’s refusal to legislate both to provide the Regulator with real powers in the face of noncompliance and to put an enhanced admissibility test of scientific evidence in the courts on a statutory basis. Without these legislative reforms, the Regulator continues to be

⁶⁵ LGC were sold to Eurofins, a European forensic service provider, in 2017. *Eurofins to Reinforce its Forensic Services Portfolio and Footprint with the Acquisition of LGC Forensics*, EUROFINs (Oct. 12, 2017), <https://www.eurofins.com/media-centre/press-releases-2017/2017-10-12/> [<https://perma.cc/5R9L-PL66>].

⁶⁶ *Report on Sodium Rhodizonate*, GOV.UK (Jan. 31, 2013), <https://www.gov.uk/government/publications/fsr-report-on-sodium-rhodizonate-testing-in-the-1970s> [<https://perma.cc/VXW7-RAVY>].

⁶⁷ TULLY, *supra* note 50, at 33.

⁶⁸ GILLIAN TULLY, FORENSIC SCI. REGULATOR, ANNUAL REPORT: NOVEMBER 2014–NOVEMBER 2015, at 4 (2015), http://www.forensic-access.co.uk/wp-content/uploads/2015/12/24517-2015_FSR_Annual_Report_v1_0_final_153002.pdf [<https://perma.cc/J65H-PQMP>].

⁶⁹ TULLY, *supra* note 50, at 3.

⁷⁰ *Id.*

stymied in her efforts. There have also been significant challenges to the FSR in maintaining a steady hand in a turbulent marketplace, with financial pressures on both police and private providers seeing significant turmoil. These challenges, and the consequences of failure in these areas, will be considered before turning to look at whether the introduction of the FSR has raised standards across forensic science and the complexities of regulation that are revealed by consideration of the UK model.

B. *Incomplete Accreditation and Lack of Compliance*

When published, the Codes were accompanied by a timetable for achieving compliance. In her first annual report in 2015, Dr. Tully claimed that “much progress” had been made towards compliance.⁷¹ However, in the third (current) business plan, the aims include the primary goal of full compliance by the end of March 2017.⁷² Given that the adoption of the Regulator’s quality framework was the primary aim of the FSR at the outset a decade ago,⁷³ it is a concern that the Regulator is now reporting in 2018 that there are still significant gaps in compliance.⁷⁴ In particular, the message is not positive for small or “micro-businesses” who “have chosen, for financial reasons, not to move towards gaining accreditation.”⁷⁵ In April 2016—as part of collaborative efforts by the Chartered Society of Forensic Science, the FSR, and UKAS to create a suitable accreditation scheme for sole- and smaller-scale forensic providers—a survey of over 70 forensic scientists found approximately 35% of providers were either accredited or working towards accreditation while 65% held no accreditation.⁷⁶ Although the survey did not capture whether a forensic provider was represented by single or multiple participants, it provided a worrying insight into the current landscape of accreditation in England and Wales when including small and micro-providers.

The Regulator has often highlighted the difficulties in securing accreditation, and the Select Committee, in 2016, echoed particular concerns about police noncompliance, stating that the government “must be clear that while some police forces may face particularly challenges in securing accreditation, there must be no failure to meet the Regulator’s deadlines.”⁷⁷ For police in-house activities, there is a significant lag between increasing forensic activities undertaken and the adoption of relevant quality management systems (QMS). Previous QMS (via accreditation to ISO 9001) targeted limited activities, such as DNA recovery and fingerprint enhancement,⁷⁸ but they do not cover all activities now undertaken by police. For example, there is no uniform protocol for the classification of firearms across forces involved in the provision of firearms evidence.

⁷¹ TULLY, *supra* note 68, at 4.

⁷² *Id.* at 16.

⁷³ *Id.* at 4.

⁷⁴ TULLY, *supra* note 50, at 3.

⁷⁵ *Id.*

⁷⁶ *Engagement Workshop*, 86 INTERFACES 4, 4–6 (2016). Sole traders were 32% of respondents; 14% represented SME-small providers (50–249 staff), 34% for SME-micro (2–9 staff), 8% for SME-medium providers, and 12% for large providers (250 or more staff). *Id.*

⁷⁷ SCIENCE AND TECHNOLOGY COMMITTEE, FORENSIC SCIENCE STRATEGY, 2016–17, HC, ¶ 55 (UK), <https://publications.parliament.uk/pa/cm201617/cmselect/cmsctech/501/50102.htm> [<https://perma.cc/PQ2W-DSZV>].

⁷⁸ See HOME OFFICE, FORENSIC SCIENCE STRATEGY: A NATIONAL APPROACH TO FORENSIC SCIENCE DELIVERY IN THE CRIMINAL JUSTICE SYSTEM, 2016, Cm. 9217, at 9 (UK) https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/506683/54493_Cm_9217_Forensic_Science_Strategy_Print_ready.pdf [<https://perma.cc/BC3R-G8L8>]. Current reports show that the number of police forces with accredited QMS for DNA recovery and fingerprint enhancement are thirty-four and thirty-six respectively, with sixteen units accredited to other areas. *Id.* at 11–14.

Even with UKAS appending supplementary standards onto ISO17025 to make it forensic specific, no standard can truly regulate every aspect of a practitioner's work, even in a highly regulated laboratory environment. Even more difficult, if not impossible, is effective oversight of crime scene examination and evidence retrieval, particularly where police personnel work without external supervision. Scenes of crime examinations pose significant challenges and while included within the Regulator's accreditation schedule (under the ISO17020 standard), few police scientific support services are currently accredited.⁷⁹ Yet, effective oversight of evidence management is essential if evidence generated from crime scenes is to be relied upon.

The latest annual report notes that there has been a particular failure to secure accreditation in relation to digital forensics, and the deadline of October 2018 for fingerprint comparison is fast approaching without confidence of full compliance by that date (having been moved back substantially on several occasions).⁸⁰ The provision of digital forensic evidence is of particular concern at a time when there is a reported decrease in the demand for traditional forensic techniques, such as DNA and fingerprints, while the demand for digital forensics is increasing.⁸¹ Although there has been significant progress in terms of method validation and staff competence, driven by the October 2017 deadline for achieving accreditation, as of January 2018, up to thirty commercial organizations are providing digital forensics yet just four have gained ISO17025 accreditation.⁸² The Regulator has particular concerns about micro-businesses and sole traders in digital forensics postponing the effort and cost of accreditation until the Regulator has powers to force their hand, especially when, “[a]rguably, the risks are higher for sole traders, some of whom may not be in regular scientific debate with colleagues and may over time become outdated or even marginalized in their opinions.”⁸³

C. *The Regulator's Powers*

Achieving full compliance then remains challenging, and yet the Regulator must strive towards this goal with no significant powers. The FSR was created under the Royal Prerogative, with no statutory basis and no powers to enforce standards. The FSR is prevented from using any “direct economic measures,” such as fines or other monetary incentives, disincentives, or penalties.⁸⁴ The FSR instead relies upon indirect measures to secure compliance, including “harnessing active support from key stakeholders” and using “informal sanctions,” such as

[d]eveloping a climate within which suppliers who are unable to evidence compliance with quality standards will find it difficult to secure contracts to supply forensic science services to police forces and others; [and] [e]ncouraging courts and counsel to expect testimony given by expert witnesses to be underpinned by evidence that the science complies with the requisite quality standards.⁸⁵

In the 2017 annual report, the FSR asserts that those providers “not moving towards compliance should be in no doubt that their services will gradually receive fewer commissions and

⁷⁹ *ISO-17025 Mandatory for Digital Forensics in the Criminal Justice System*, INTAFORENSICS (Sept. 19, 2017), <https://www.intaforensics.com/2017/09/19/iso-17025-mandatory-for-digital-forensics-in-the-criminal-justice-system/> [<https://perma.cc/X3SF-665J>].

⁸⁰ TULLY, *supra* note 50, at 2.

⁸¹ John Flatley, *Crime in England and Wales; Year Ending June 2017*, OFF. FOR NAT'L STATS., <https://www.ons.gov.uk/peoplepopulationandcommunity/crimeandjustice/bulletins/crimeinenglandanddwales/june2017> [<https://perma.cc/VS5S-HSBU>].

⁸² TULLY, *supra* note 50, at 11.

⁸³ *Id.*

⁸⁴ RENNISON, *supra* note 26, at 1.

⁸⁵ *Id.* at 4.

their practitioners will face more challenges in court.”⁸⁶ Frustration with the lack of government action is now apparent, evidenced by the Regulator setting out a chronology of unfulfilled government pronouncements dating back to 2005 that promised the Regulator powers. In 2011, the Select Committee recommended again that statutory powers be granted, a proposal that the government agreed to keep “under review.”⁸⁷ The Select Committee made the same recommendation again in 2013, demanding action by March 2014.⁸⁸ This led to a public consultation, which the government responded to in July 2015, stating that support for statutory powers had been found to be very high, and the issue would be addressed in the forthcoming forensic science strategy.⁸⁹

The following year duly saw publication of the *Forensic Science Strategy*, where the government proclaimed a vision for forensic science that includes “a clearer system of governance to ensure quality standards and proper ethical oversight, and a cost effective service that delivers . . . robust and relevant forensic evidence.”⁹⁰ The document asserts that the “legitimacy and capability of forensic science” will be enhanced with proposals developed “to give the Forensic Science Regulator statutory powers, put the current remit and the associated Codes of Practice on a statutory basis[,] and enable the Forensic Science Regulator to investigate noncompliance where necessary.”⁹¹ The Select Committee was unconvinced and “left with serious doubts about the [g]overnment’s commitment to deliver this.”⁹² Yet, in 2017, the Regulator reported, “[I]t is becoming clear that not all police forces are fully committed to reaching the required standards. . . . Statutory powers for the Regulator are now needed in order that those organi[z]ations that have not committed the resource and effort required to attain the standards can be induced to do so.”⁹³

In Parliament later that year, the Minister of State for Policing and the Fire Service stated, “[W]e committed to place the Forensic Science Regulator on a statutory footing by the end of this Parliament. We are seeking the appropriate parliamentary opportunity to do that.”⁹⁴ As of January 2018, while appearing tantalizingly close, the “clearer statutory role” promised has still not been forthcoming, and proposals for the powers have not yet been publicly revealed. The Regulator says that the situation is “disappointing.”⁹⁵

Studies have shown a strong link between strong and effective regulatory frameworks and sector outcomes,⁹⁶ and critics of the FSR can point to its inability to authoritatively enforce the

⁸⁶ TULLY, *supra* note 50, at 3.

⁸⁷ SCIENCE AND TECHNOLOGY COMMITTEE, THE FORENSIC SCIENCE SERVICE, SEVENTH REPORT, 2010–12, HC 855, at 80 (UK).

⁸⁸ SCIENCE AND TECHNOLOGY COMMITTEE, THE FORENSIC SCIENCE SERVICE, SECOND REPORT, 2013–14, HC 610, at 62 (UK).

⁸⁹ SCIENCE AND TECHNOLOGY COMMITTEE, FORENSIC SCIENCE: RESEARCH COUNCILS UK RESPONSE TO THE COMMITTEE’S SECOND REPORT OF SESSION, SIXTH SPECIAL REPORT, 2013–2014, HC 843, at 9.

⁹⁰ HOME OFFICE, FORENSIC SCIENCE STRATEGY, 2016, Cm. 9217, at 6 (UK).

⁹¹ *Id.* at 7, 15.

⁹² SCIENCE AND TECHNOLOGY COMMITTEE, THE FORENSIC SCIENCE SERVICE, FOURTH REPORT, 2016–17, HC 501, at 24.

⁹³ GILLIAN TULLY, FORENSIC SCI. REGULATOR, ANNUAL REPORT: NOVEMBER 2015–NOVEMBER 2016, at 7, 9 (Jan. 6, 2017), https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/581653/FSR_Annual_Report_v1.0.pdf [<https://perma.cc/3ZDW-MKTL>].

⁹⁴ 27 Nov. 2017, Parl Deb HC (2017) col. 28 (UK)

<https://www.theyworkforyou.com/debates/?id=2017-11-27b.22.10> [<https://perma.cc/4F42-9Q8J>].

⁹⁵ TULLY, *supra* note 50, at 33.

⁹⁶ CARY COGLIANESE, ORGANISATION FOR ECON. COOPERATION AND DEV., EXPERT PAPER NO. 1, MEASURING REGULATORY PERFORMANCE: EVALUATING THE IMPACT OF REGULATION AND

adoption and compliance of the standards.⁹⁷ The Codes are not mandated by law, but their compliance is meant to be “not optional.”⁹⁸ Yet, providers lacking accreditation are still able to undertake work while others “that have met the quality standards have not yet been fully rewarded through the contracting process.”⁹⁹ Like its predecessor the CRFP, the FSR is ultimately hampered by lack of enforcement powers. This has also permitted providers—most obviously the police—the ability to dictate the pace of adoption of quality standards. Accreditation remains an additional but optional “cost,” with some providers—including the police—avoiding the stringent quality measures required for accreditation.¹⁰⁰

D. *Forensic Regulation and the Courts*

Without statutory powers, the Regulator relies upon cooperation and external requirements, such as the Criminal Procedure Rules and Criminal Practice Directions, to effect compliance with the Codes.¹⁰¹ Prosecutors, lawyers, and judges are thereby incorporated into the quality control machinery for forensic science. However, this is frustrated by courts that continue to admit evidence from nonaccredited laboratories or experts (which they are perfectly entitled to do). The courts in England and Wales are required to make decisions about admissibility in line with the Criminal Practice Directions, which gives an indicative list of factors to consider, ultimately hoping this will ensure only “sufficiently reliable” scientific evidence is admitted at trial.¹⁰² But are they competent to make informed choices and decisions? Are the police mindful of such criteria, particularly when the majority of forensic evidence never reaches a courtroom and may simply be used to “steer” a police inquiry or be used as “intelligence”?

The gatekeeping role of trial judges in ensuring the reliability of expert evidence has been extensively discussed in common law jurisdictions with admissibility standards widely debated.¹⁰³ However, attempts at scientific rigor have encountered many challenges in adversarial courtrooms. The admission and examination of scientific evidence in English criminal trials is subject to a complex set of evidentiary rules and procedural practices, which do not smoothly align with accepted scientific principles. While trial counsel can always cross-examine an expert witness on the expert’s qualifications, experience, and expertise, neither lawyers nor judges are generally well qualified to assess scientific practice or standards,¹⁰⁴ with courts still “unable to tell the difference between

REGULATORY POLICY 35 (2012), https://www.oecd.org/gov/Regulatory-policy/1_coglianese%20web.pdf [<https://perma.cc/B6YY-TGU8>].

⁹⁷ *Written Evidence Submitted by the Criminal Cases Review Commission (FST0006)*, HOUSES OF PARLIAMENT (Mar. 2016), <http://data.parliament.uk/WrittenEvidence/CommitteeEvidence.svc/EvidenceDocument/Science%20and%20Technology/Forensic%20Science%20Strategy/written/31154.html%20Accessed%2030%20January%202018> [<https://perma.cc/3P3B-QHA8>].

⁹⁸ 4 GILLIAM TULLY, *FORENSIC SCI. REGULATOR, CODES OF PRACTICE AND CONDUCT 2* (2017).

⁹⁹ TULLY, *supra* note 50, at 3.

¹⁰⁰ TULLY, *supra* note 98, at 2.

¹⁰¹ *See, e.g.*, Criminal PD 2015 [2015] EWCA Crim 1567, [11], <https://www.judiciary.gov.uk/wp-content/uploads/2015/09/crim-pd-2015.pdf> [<https://perma.cc/98NQ-AEAV>].

¹⁰² *Id.*

¹⁰³ Carole McCartney, *Legal Rules, Forensic Science and Wrongful Convictions*, in *ENCYCLOPEDIA OF CRIMINOLOGY AND CRIMINAL JUSTICE 5* (G.J.N Bruinsma & D.L. Weisburd eds., 2014).

¹⁰⁴ *See* Carole McCartney, John Cassella, & Paul Chin, *Lowering the Drawbridges: Forensic and Legal Education for the 21st Century*, *FORENSIC SCI. POL’Y AND MGMT.*, May 2011, at 4.

‘expert opinion’ and ‘scientific evidence,’ too often retreating into the simplistic default assumption that everything said by a bona fide expert is necessarily ‘scientific.’”¹⁰⁵

In lieu of requiring formal registration or professional accreditation as a precondition of admissibility, courts might rationally opt instead to insist upon forensic professionals working within an “accredited” or quality-assured laboratory (or equivalent environment). This transposes quality assurance from the individual to the institutional level. What we have seen, however, is institutional accreditation remains patchy, with many gaps, particularly among police organizations and small businesses (particularly those who undertake defense work). The flaws with this regulatory framework remain in a marketplace where accreditation is expensive yet optional, and police are continuing to take forensic work in-house without seeking accreditation.

E. *Police Provision and the Forensic “Market”*

The FSR was expected to fill the vacuum of regulation and solve the problems identified in a growing number of critical reports. Yet, the existence of a regulator was to prove even more critical when the government announced at the end of 2010 that it was to close the Forensic Science Service, a body previously looked to for national standards and advice, heralding a move by the UK into unchartered waters: a completely private national forensic science market.¹⁰⁶ The FSR had referred to a “fully functioning market with the right services, at the right price, delivered to the appropriate standard” in the first business plan in 2008,¹⁰⁷ stating that it was essential for the integrity of the criminal justice system, that “a level playing field exists for all suppliers and that quality standards are maintained in the face of the growing market and increased competition.”¹⁰⁸ The role and success of the FSR was then crucial to ensuring the sustainability of a wholly profit-driven marketplace and the avoidance of a “race to the bottom”.

Closure of the Forensic Science Service and public sector austerity measures have encouraged police services to take more forensic work in-house. While the lack of accurate or accessible data on spending on forensic science services has been regularly identified as problematic,¹⁰⁹ the Home Office admits to a decline in police spending on external forensic services of about 40% between 2010 and 2015/16,¹¹⁰ with expected further falls of 3% in 2016/17.¹¹¹ Independent research concludes that “the continued fall in spending put more pressure on the [private sector forensic service providers] turnover and profitability and, therefore, poses questions about the sustainability of the market.”¹¹²

While the police increase their forensic workload, the marketplace for forensic service providers then shrinks, leaving providers vulnerable and the market lacking resilience. Indeed, there have been few “success” stories of flourishing businesses with “big” players cross-subsidizing the

¹⁰⁵ PETER GILL, MISLEADING DNA EVIDENCE: REASONS FOR MISCARRIAGES OF JUSTICE 11–12 (2014).

¹⁰⁶ Paul Rincon, *'Higher Cost' of Forensic Science Service Closure*, BBC NEWS (Jan. 30, 2013), <http://www.bbc.com/news/science-environment-21251162> [<https://perma.cc/ZLL7-FKC7>]. Albeit the Forensic Science Service had been operating as a Government Owned Company (GovCo) since 2005, charging for their services. *Id.*

¹⁰⁷ BUSINESS PLAN 2008, *supra* note 7, at 19.

¹⁰⁸ *Id.*

¹⁰⁹ SCIENCE AND TECHNOLOGY COMMITTEE, THE HOME OFFICE’S OVERSIGHT OF FORENSIC SERVS, 2014–15, HC, at 1 (UK).

¹¹⁰ HOME OFFICE, FORENSIC SCIENCE STRATEGY, *supra* note 78, at 11.

¹¹¹ Gary Bandy & Jean Hartley, *Debate: When Spending Less Causes a Problem*, 38 PUB. MONEY & MGMT. 52, 53 (2017).

¹¹² *Id.*

forensic arms of their business. Of the “full service forensics providers,”¹¹³ LGC Forensics recently sold its business to a European company,¹¹⁴ while Key Forensics, the third of the big three providers, went into administration in January 2018, leaving just two providers standing.¹¹⁵ Meanwhile, many small businesses have been unable to continue operating. This has led to a dangerous situation with respect to available expertise in some disciplines, particularly fiber analysis and other less often used techniques. The Regulator reports that there are now only twelve fully qualified toxicology reporting officers in England and Wales.¹¹⁶ Demonstrating the fragility of the market and the risks that this poses, the collapse of digital forensics providers can leave police and defense solicitors trying to retrieve data and raising significant problems over chain of custody authentication. The Metropolitan Police have also been forced into spending millions of pounds to keep Key Forensics afloat for three months, while they finished work on thousands of live criminal cases from thirty police forces.¹¹⁷

Such business failures require expensive contingency plans, and yet the privatization of the market was intended to save government money by introducing competition, which would lead to a reduction in the price of services. By creating a competitive market where prices must be low to win contracts, some forensic providers are unable to continue supplying cost-effective services. This becomes even more problematic by additionally asking struggling providers to meet the significant costs of accreditation. The Regulator has commented that it may not be simply a matter of the commercialization of forensic science, but that “too much money has been and is continuing to be driven out of forensic science provision.”¹¹⁸

At the same time as police forces undertaking more forensics work internally creates risks to the market, “[p]rivate sector companies are concerned that police force laboratories may be able to operate more cheaply by using police premises without charge or by delaying meeting UK accreditation standards.”¹¹⁹ As seen, police in-house forensic services are not yet uniformly subject to the same quality standards that apply to commercial providers, even though it was stated in the original 2008 business plan that “differential standards would operate against the public interest and increase the risk of challenge in the courts.”¹²⁰ It is difficult to see how lower standards for police forensics could be in the public interest, and such different standards increase the risk of flawed results being relied upon or challenged in the courts. Indeed, the police-led initial screening and selection of exhibits for testing is often the most critical point in the forensic process. Poor decision-making at this juncture, contamination of exhibits, or weak chain of custody records, jeopardizes any further testing that may be undertaken under stricter quality regimes. Criminal prosecutions, such as

¹¹³ See e.g., *Forensic Services*, EUROFINs, <https://www.eurofins.co.uk/forensic-services/> [<https://perma.cc/V753-BVYZ>] (last visited Mar. 19, 2018).

¹¹⁴ *Eurofins to Reinforce its Forensic Services Portfolio and Footprint with the Acquisition of LGC Forensics*, BUSINESSWIRE (Oct. 12, 2017, 1:30 AM), <https://www.businesswire.com/news/home/20171011006395/en/Eurofins-reinforce-Forensic-services-portfolio-footprint-acquisition> [<https://perma.cc/X39A-WH8C>].

¹¹⁵ KEY FORENSIC, <https://www.keyforensic.co.uk/> [<https://perma.cc/NT94-DS2E>] (last visited Mar. 19, 2018).

¹¹⁶ TULLY, *supra* note 50, at 8.

¹¹⁷ Fiona Hamilton, *Police Foot the Bill After Collapse of Forensics Firm*, TIMES (Jan. 31, 2018, 12:01 AM), <https://www.thetimes.co.uk/article/police-foot-the-bill-after-collapse-of-forensics-firm-key-forensic-services-limited-bg5nbxkxt> [<https://perma.cc/YB2M-FXRB>].

¹¹⁸ Tully, *supra* note 50, at 9.

¹¹⁹ SCIENCE AND TECHNOLOGY COMMITTEE, THE HOME OFFICE’S OVERSIGHT OF FORENSIC SERVS, 2014–15, HC, at 1 (UK).

¹²⁰ BUSINESS PLAN 2008, *supra* note 7, at 4.

the infamous Irish Republican Army bombing in Omagh, were ultimately defeated by poor police practices at the crime scene and an ambiguous chain of custody for exhibits.¹²¹

III. RAISING STANDARDS IN FORENSIC SCIENCE?

Given that the FSR was created in the shadow of miscarriages of justice and concerns about the quality of forensic science provision, with the ultimate aim of regulation being the assurance that all forensic evidence is of a high quality, have standards been raised in the UK? A reliable answer would require an accurate gauge to measure standards pre- and post-creation of the FSR, which does not exist. But if one were to expect that errors, mistakes, or misconduct were now becoming consigned to history, then the FSR role in investigating complaints would be diminishing. Yet, the converse is true: increasing numbers of cases are being reported to the FSR for investigation. While it may be reassuring that at least now we are hearing of errors etc. and that the standards regime ensures that errors are now recognised and addressed, there is still ample room for concern.

By 2013, sixty complaints were received by the first FSR during his five-year tenure.¹²² Between 2015 and 2016, however, quality complaints rose from thirty-six to fifty-seven, rising again to sixty-five in 2016–2017,¹²³ with an increase in the complexity of the reported issues and risks categorized as low, medium, or high according to the severity of the failure and potential consequences. Fourteen complaints were considered “high risk” in 2016–2017.¹²⁴ Some cases have been “near misses,” such as DNA contamination at the LGC forensic laboratory in 2012.¹²⁵ Adam Scott had been charged with rape in October 2011 after a plastic tray containing a sample of his DNA (from the unconnected earlier sample) was re-used in the analysis of a swab from the rape victim, providing a DNA “match” in the rape case.¹²⁶ He denied traveling the 190 miles from his home to the scene of the crime, and his lawyer pressed for further testing, uncovering the error, despite LGC Forensics initially failing to consider contamination when the investigating officer raised concerns about the DNA match.¹²⁷ Charges were eventually dropped, while some 26,000 other samples were re-tested with no further errors identified.¹²⁸ In another contamination case, during a lengthy and perplexing police investigation into the death of an MI6 employee, forensic scientists provided police with a DNA profile from the bag in which the body was found.¹²⁹ The police subsequently spent a year attempting to trace the individual responsible for leaving the DNA, to no avail. It was later

¹²¹ R. v. Sean Hoey [2007] NICC 49 (N. Ir.).

¹²² Andrew Rennison, *Message From the Regulator*, FORENSIC SCI. REGULATOR NEWSL. (Forensic Science Regulator, Birmingham, UK), Dec. 2013, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/268605/FSR_22_1_.pdf [<https://perma.cc/CB4Y-Y72W>].

¹²³ TULLY, *supra* note 50, at 30.

¹²⁴ *Id.*

¹²⁵ RENNISON, *supra* note 49, at 2.

¹²⁶ Vikram Dodd et al., *Forensics Firm Investigated Over DNA Blunder in Rape Case*, GUARDIAN (Mar. 9, 2012, 1:24 PM), <https://www.theguardian.com/law/2012/mar/09/forensics-firm-investigated-dna> [<https://perma.cc/HJZ7-SU85>].

¹²⁷ *Id.*

¹²⁸ *DNA Rape Sample Procedures ‘Not Adequate,’* BBC NEWS (Oct. 1, 2012), <http://www.bbc.com/news/uk-19782917> [<https://perma.cc/BX3A-AQMB>].

¹²⁹ *Scientists Apologise to Family of MI6 Spy Gareth Williams for DNA Error*, GUARDIAN (Mar. 30, 2012, 9:38 AM), <https://www.theguardian.com/uk/2012/mar/30/gareth-williams-death-dna-error> [<https://perma.cc/HVD4-QHHV>].

discovered that an individual manually entering the DNA profile had transposed the numbers “three” and “five.”¹³⁰ This typographical error led to the costly pursuit of a nonexistent individual.¹³¹

The FSR’s post-investigation measures—ranging from advice on steps to avoid recurrence of the issue to modifying standards and guidance—are influenced by the issues raised. Again, without meaningful powers, such “advisory” measures are all that can be expected. Yet, the cost of errors and malpractice are significant, notwithstanding the serious risk of miscarriages of justice and the reputational harm to the criminal justice system. While the Codes seek to reduce the risk of mistakes, no accreditation can prevent a scientist from faltering or employees within accredited organizations from consciously or unwittingly engaging in malpractice. The expansion of private sector provision and police in-house services—with a demand for profitable (for the private sector forensic service providers), cost-effective, and sustainable provision—have increased the complexity of the environment with some routine forensic testing now subcontracted to nonspecialists or undertaken by less qualified police personnel.

And yet there is still heavy reliance upon the professional integrity of individual practitioners. It was not long ago that even forensic scientists themselves conceded that forensic science is not sufficiently well-developed as a profession to have the full characteristics of a profession in place.¹³² Practitioners may face institutional pressures, which are supposedly balanced by their scientific professionalism; however, customers demanding “useful” scientific assistance may choose other providers who are more obliging or refuse to pay for inconclusive test results. And what about the situation where the scientist is aware that a potentially exculpatory test has not been ordered? There is no legal duty to pursue every conceivable avenue of scientific inquiry or every possibility of exculpation, and police will rarely order extensive tests (with their eye on budgets). Private consultants are constrained by costs and keeping their customers happy, hoping to gain a reputation for satisfying consumer expectations, in order to win and retain market share.

High-profile miscarriages of justice in England and Wales fan suspicions that scientists may be too easily influenced by the police when undertaking forensic testing and reporting results. The Codes state that all forensic practitioners should be governed by the principles of “independence, impartiality[,] and integrity.”¹³³ According to the Regulator, organizational structures do not hinder working to these principles,¹³⁴ yet this seems overly optimistic if a scientist is directly employed by, or works directly alongside, the police. While one might wish to believe in the integrity of all law enforcement and forensic science personnel wherever institutionally located, it would be naive to abandon quality assurance mechanisms and frameworks to wishful thinking.

IV. THE CHALLENGE OF FORENSIC REGULATION

The FSR initially articulated a “risk model,” identifying five categories of risk: the generation of evidence which contributes to a miscarriage of justice (false convictions or false acquittals); evidence which misleads or fails to contribute where possible to a criminal investigation; situations where there is a “public interest” (left undefined); and conditions threatening market failure.¹³⁵ Utilizing a risk model requires quantification of the “risk” posed by any particular procedure or practice. Thus, there must be an error rate—corresponding to identifiable errors—or known limitations of any given method. However, a significant flaw in the Regulator’s risk model is that relevant error rates and limitations for common forensic science techniques remain largely undetermined.

¹³⁰ *Id.*

¹³¹ *Id.*

¹³² Sheila Willis, *Forensic Science, Ethics and Criminal Justice*, in HANDBOOK OF FORENSIC SCIENCE 542 (Jim Fraser & Robin Williams eds., 2009).

¹³³ CODES OF PRACTICE AND CONDUCT, *supra* note 41, at 9.

¹³⁴ *Id.* at 12–13.

¹³⁵ *Id.* at 15.

Even assuming the injection of significant further resources to produce robust error rates, it is questionable whether risks can be meaningfully quantified given the inherently contextual nature of forensic science evidence. Without known error rates, can a laboratory profess to be working within acceptable parameters? Who decides what level of error is “acceptable”? For example, how often should an acceptable system of fingerprint analysis be expected to produce false “matches”? What range of false “matches” is compatible with a practitioner or laboratory performing to an acceptable standard? Such questions, of course, are not purely scientific. Acceptability turns, in part, upon the criminal justice system’s values and public tolerance of forensic errors. Significant further research into error rates, forensic techniques, technological limitations, and practitioner bias needs to be undertaken before an effective risk model can be designed and implemented.

Even with dedicated resources (including significant research funding), there are still inherent difficulties in reaching agreement on areas of ongoing scientific controversy. Recent debates surrounding Low Template DNA demonstrate that forensic scientists may become entrenched in opposing views.¹³⁶ Yet, the risk model anticipates scientists providing “definite answers to regulatory problems that may be urgent and pressing but that science may not be able to solve categorically.”¹³⁷ If forensic scientists themselves cannot resolve a dispute over whether a technique or practice is reliable, how should a Regulator proceed? The scientific community cannot always provide the unanimous answers required for risk assessment. Indeed, to expect them to do so is to misunderstand the nature of a scientific endeavour, which is always pushing against the boundaries of current orthodoxy. But, such disputes foster widely discrepant forensic practices, with techniques deemed acceptable in some countries, or by some forensic science providers, and rejected by others.

The Regulator has also pointed out the gap left when accreditation becomes the focus of an organization ignoring other vital issues, such as the “loss of exhibits; compromise of exhibit integrity; method failures; poor performance in proficiency tests; and internal inconsistencies in reports not being identified.”¹³⁸ There is also the countervailing difficulty of encouraging innovation and ongoing development within regulatory parameters. This demands some measure of regulatory flexibility and pluralism. As Brown and Willis have argued, “. . . it is a misconception that best practice standard protocols must be set that must then be followed by all. That approach would set forensic science in aspic and be counterproductive.”¹³⁹ A difficult balance must be struck between strict adherence to quality-assured protocols and ensuring that practitioners can still innovate and exercise professional judgment in difficult cases to achieve the optimal outcome.

In the final analysis, a risk-based regulatory system does not ensure quality but is aimed at prioritizing or mitigating crises. The recent scandal at Randox Testing Services (RTS)¹⁴⁰ is the perfect example of post-crisis regulation, with the Regulator called upon to examine and explain the events at one toxicology laboratory. The Regulator explained, “Although RTS held accreditation to the appropriate quality standard, the malpractice was not discovered by the usual quality checks.”¹⁴¹

¹³⁶ See e.g., John M. Butler & Carolyn R. Hill, *Scientific Issues with Analysis of Low Amounts of DNA*, PROMEGA (2010), <http://www.promega.com/resources/profiles-in-dna/2010/scientific-issues-with-analysis-of-low-amounts-of-dna/> [<https://perma.cc/X3B6-LMHH>].

¹³⁷ Karolina Zurek, *When Lab Results are not Sufficient: On the Limitations of Science in Tackling Modern Road Regulatory Concerns*, 5 *SIEPS EUROPEAN POL’Y ANALYSIS*, June 2009, at 3.

¹³⁸ TULLY, *supra* note 50, at 12.

¹³⁹ Stan Brown & Sheila Willis, *Complexity in Forensic Science*, 1 *FORENSIC SCI. POL’Y & MGMT.* 192, 192–93 (2010).

¹⁴⁰ Carole McCartney, *Forensic Testing Scandal in UK Widens*, *WRONGFUL CONVICTIONS BLOG* (Nov. 22, 2017), <https://wrongfulconvictionsblog.org/2017/11/22/forensic-testing-scandal-in-uk-widens/> [<https://perma.cc/L33Z-YREG>].

¹⁴¹ Letter from Dr. Gillian Tully, Forensic Science Regulator, to Norman Lamb MP, Chair, Science & Technology Committee, House of Commons (Nov. 21, 2017), <http://www.parliament.uk/documents/commons-committees/science->

The laboratory was ISO certified and yet quality control data were manipulated, resulting in a major police inquiry (with two individuals facing criminal charges), impacting a reported 10,000 cases that all now need some degree of re-investigation.¹⁴² This is similar to the food regulatory system in the European Union, which might be viewed as “a prime example of regulation in response to major crises rather than in anticipation of everyday problems.”¹⁴³ In practice, political crisis induced by a wrongful conviction or public scandal may be necessary to provoke regulatory intervention,¹⁴⁴ but this reaction may come too late for individuals who cannot be adequately compensated for their loss of liberty, or a public whose trust in science and the administration of justice is irreparably damaged.¹⁴⁵

Regulators need to be omnipotent and very quick on their feet. In reality, because “regulatory agencies have limited staff and financial resources, there will always be competition between various functions for priority.”¹⁴⁶ The field of forensic science constantly faces new challenges, and it may be doubted that any regulatory system could always respond or react quickly enough to new “threats.” In addition, the classic regulatory risk analysis approach relies heavily on *scientific* risk assessment, typically taking little (if any) account of sociological, economic, ethical, or even legal considerations.

CONCLUSION

The introduction of the Regulator in the UK was a significant innovation, intended to create a generic standard for forensic science providers with “a light touch” in steering service providers toward accreditation. While NAS recommended mandatory accreditation for both laboratories and scientists as well as sanctions against transgressors (but not automatic exclusion of substandard evidence),¹⁴⁷ the FSR has had to rely upon “soft” implementation. The adoption of the FSR standards—whether by police forces or commercial providers—remains voluntary, and consequently, partial. The Regulator still lacks meaningful enforcement powers, and despite a promising start, regulation of UK forensic sciences is still too often patchy, superficial, and lacking teeth. Of course, like the rest of the UK public sector, the Regulator must contend with financial stringency. Indeed, the entire criminal justice system, but forensic science services in particular, are being starved of funds, with commentators warning that the entire system is on the brink of collapse.¹⁴⁸

Ultimately, the role of the FSR was envisaged as far more significant than simply setting and monitoring standards, ensuring accreditation, and dealing with complaints. The overarching goal was to answer those critics who decried the contribution that forensic science appeared to make toward miscarriages of justice. The FSR, after all, was born out of recommendations contained in scathing reports often following high-profile wrongful convictions. The FSR responds that reducing the risk of quality failings would impede or prevent “the identification, prosecution[,] and conviction of offenders.”¹⁴⁹ Declaring success in this role would require making some grand claims, which would

technology/Correspondence/171121-Norman-Lamb-to-Forensic-Science-Regulator-Randox.pdf [https://perma.cc/C6GC-Q5ML].

¹⁴² TULLY, *supra* note 50 at 6.

¹⁴³ Zurek, *supra* note 137, at 1.

¹⁴⁴ Carole McCartney & Stephanie Roberts, *Building Institutions to Address Miscarriages of Justice in England and Wales: “Mission Accomplished?”* 80 U. OF CIN. L. REV. 1333, 1334 (2013).

¹⁴⁵ Michael McConville & Lee Bridges, *Keeping Faith with their own Convictions: The Royal Commission on Criminal Justice*, in CRIMINAL JUSTICE IN CRISIS 3, 4 (1994).

¹⁴⁶ OECD, THE GOVERNANCE OF REGULATORS 36 (2014).

¹⁴⁷ A PATH FORWARD, *supra* note 2, at 25–26.

¹⁴⁸ See Owen Bowcott, *Underfunded Justice System ‘Crumbling’, Top Criminal Barrister Says*, GUARDIAN (Jan. 29, 2018, 12:50 PM), <https://www.theguardian.com/law/2018/jan/29/underfunded-justice-system-crumbling-top-criminal-barrister-says> [https://perma.cc/8HUY-ML4F].

¹⁴⁹ BUSINESS PLAN 2008, *supra* note 7, at 19.

be extremely difficult to satisfactorily evidence. There clearly remains an obvious risk of wrongful convictions with reliance upon unsupervised or unregulated scientists, or upon unscientific techniques. This risk is increased when police personnel are working unsupervised and clearly lacking independence and impartiality.

Poor scientific and professional standards destabilize public confidence in forensic science and consequently has an impact upon confidence in the criminal process. Wrongful convictions may flourish in a culture that fails to scrutinize and question forensic evidence; instances of flawed science, charlatans, nondisclosure, and misinterpretation of evidence are easy to locate both domestically and internationally. In a climate where adversarialism is being eroded, where science is granted special credence, and expert witnesses gain credibility as guarantors of “accurate” findings of guilt, there can then be created a dangerous “technological tyranny.”¹⁵⁰

Given that it is essential that all forensic evidence is reliable and valid—whether used at trial, during an investigation, or held as intelligence by law enforcement agencies—there must be systems in place to ensure the quality of forensic evidence from the very outset of the criminal process, until the very end. This requires regulation and oversight of forensic science from the crime scene to the courtroom, quality assurance standards for the education, training, and operation of forensic scientists, and the quality assurance and accreditation of scientists’ working environments and practices. Yet, there is clearly a need for more attention to the delivery of forensic services, practitioner training, standard setting, monitoring, and implementation across the entire sector. Further, research is required to determine error rates and limitations of particular techniques and to develop effective institutional responses to risks of observer bias and human error.¹⁵¹ Many of the safeguards against wrongful convictions must reside within fair and rational legal rules and the professional working cultures. Such safeguards are fostered by appropriate training and management, and assured by accreditation, quality assurance, and validation processes among the police, prosecution, forensic science, judiciary, and advocates. Nevertheless, whatever care is expended, mistakes are inevitable, and so effective processes for remedying error remain essential even after conviction.

¹⁵⁰ Edward T. Blake, *Scientific and Legal Issues Raised by DNA Analysis*, in DNA TECHNOLOGY AND FORENSIC SCIENCE 109, 111 (1989).

¹⁵¹ See, e.g., Itiel E. Dror et al., *Contextual Information Renders Experts Vulnerable to Making Erroneous Identifications*, 156 FORENSIC SCI. INT’L 74, 77 (2006); Itiel E. Dror & David Charlton, *Why Experts Make Errors*, 56 J. FORENSIC IDENTIFICATION 600, 614 (2006).