Is reliability sufficient? The Law Commission and expert evidence in international and interdisciplinary perspective (Part 1)

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Abstract This article offers a critical appraisal of the Law Commission’s Report, Expert Evidence in Criminal Proceedings in England and Wales (2011), and related proposals for reform. Drawing upon interdisciplinary research and empirical studies from other common law jurisdictions it suggests that the introduction of a reliability-based admissibility standard for expert opinion evidence, even in conjunction with provision for recourse to court-appointed experts, is unlikely to generate the kinds of changes required to improve the quality of incriminating forensic science and medicine evidence or align criminal justice practice with espoused goals and principles.

Keywords Law and science; Forensic science; Expertise; Admissibility; Daubert; Reform; Trial safeguards; Proof; Opinion; Judging

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There are serious problems with expert evidence in England and Wales.¹ For a system that purports to be rational and just, in response to many types of expert opinion, English common law jurisprudence and practice has become something of an embarrassment. The Law Commission’s Consultation Paper and more recent report on Expert Evidence in Criminal Proceedings in England and Wales are therefore very timely interventions.² While the Law Commission does not necessarily portray English law and the problems with expert evidence, particularly forensic science and medicine, in such unflattering terms, it concedes that too much unreliable expert opinion evidence is currently being admitted in criminal proceedings and occasionally questions the value of elements of the adversarial trial. In consequence it recommends a range of reforms, with a renewed emphasis on reliability and increased use of a new statutory power to appoint an expert as the centrepieces.

The Law Commission’s Report represents an important response to continuing problems with expert evidence. Notwithstanding this contribution, this article attempts to engage critically and constructively with the Report and its recommendations. This article is divided into two parts. Part 1 explores some of the limitations with the recommendations and endeavours to place them in a more conceptually robust, and principled, adversarial framework. Part 2, to be published separately, considers mechanisms for improving the quality of expert opinion evidence within the bounds of the accusatorial trial and the aims of common law criminal justice systems.³

1. The Law Commission Report and its recommendations

Our proposed reforms would introduce a framework for effectively challenging the admissibility of expert opinion evidence in any appropriate case and a basis for being able properly to investigate and determine evidentiary reliability. (5.83;² italics added)

⁴ Unless otherwise stated, references are to paragraphs in the Report.
The recommendations in the Report purport to codify the English common law and combine it with an explicit reliability standard in order to regulate the admission of all expert opinion evidence in criminal proceedings. The aim is to produce ‘a new, critical approach to expert evidence (supported by appropriate training for legal practitioners and the judiciary)’ (8.2). This new approach is intended to provide a framework that enables lawyers to ‘effectively challenge’ expert opinion evidence in order to ‘properly’ evaluate ‘evidentiary reliability’ before it is placed before a jury (1.27).

The main reason (provided) for the proposed reforms, particularly the renewed focus on reliability, is the overly inclusive approach to admissibility associated with current practice:

... a number of recent criminal cases suggest that expert opinion evidence of doubtful reliability is being proffered for admission, and placed before the jury, too readily. This follows from the current laissez-faire approach to admissibility. It has even been suggested that there may be a ‘culture of acceptance’ on the part of some trial judges, particularly in relation to evidence of a scientific nature. (1.17, 1.27, 3.3)

According to the Report, expert opinion evidence has been ‘admitted in criminal proceedings too readily and with insufficient scrutiny’ (1.2). We are told that there had ‘until recently been very little authority for the view that a trial judge should enquire into evidentiary reliability as a matter bearing on admissibility’ (6.10). There is, accordingly, a need for ‘a more critical approach on the part of some judges to the evidence placed before them’ (1.42).

Renewed focus on reliability at the admissibility stage is presented as the primary response to continuing problems with expert opinion evidence in criminal proceedings.

(a) Reliability
Given the tenor of the ensuing discussion, it is useful to note—as the Report does—that the idea of ‘reliability’ is not entirely absent from common law admissibility jurisprudence. The Court of Appeal (Criminal Division) has, for example:

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5 I am not addressing the issue of expert evidence of fact. On the distinction, see Report, 2.19–2.23.
(1) held that the field of expertise must at least be ‘sufficiently well-established to pass the ordinary tests of relevance and reliability’;  
(2) cited the admissibility test for expert opinion evidence in *Bonython* which has a reliability component, albeit one which has never been properly analysed in England and Wales; and  
(3) suggested a particular type of reliability test. (2.12)

In practice, references to reliability in common law admissibility jurisprudence generally remain undeveloped and are rarely applied to incriminating opinion evidence. Indeed, in several cases judges have expressly disavowed a reliability requirement. These judges preferred to look to qualifications and experience, the existence of a ‘field’, previous admissibility practice and whether the opinion appears probative.  

Nevertheless, in recent years, in response to the emergence of empirically predicated and standardised approaches to DNA evidence, a series of controversial convictions associated with infant deaths, and developments in other jurisdictions (more below), ‘reliability’ has begun to appear—if not really feature—in the occasional decision of the Court of Appeal (Criminal Division). The Report summarises these cameo appearances in the following terms: ‘So, although there is at present a rudimentary common law reliability test for such evidence, *its practical effect is largely illusory*’ (3.3; italics added). The renewed emphasis on ‘reliability’ in the Criminal Evidence (Experts) Bill (hereafter ‘the Bill’) is, therefore, presented as a departure from the rudimentary and inconsistent impositions of the common law.

In its place, the Law Commission proposes making reliability a threshold issue for admissibility. The following rules, constituting the proposed statutory framework for the new reliability regime, are designed to enable lawyers and judges ‘to properly investigate and determine reliability’ as part of an improved admissibility practice (5.83).

1 Basic rules

...
(2) ... expert opinion evidence is admissible in criminal proceedings only if it is sufficiently reliable to be admitted (see section 4). The meaning of 'reliability' is elaborated in clause 4 and Part 1 of the Schedule.

4 Reliability: meaning

(1) Expert opinion evidence is sufficiently reliable to be admitted if—
(a) the opinion is soundly based, and
(b) the strength of the opinion is warranted having regard to the grounds on which it is based.

(2) Any of the following, in particular, could provide a reason for determining that expert opinion evidence is not sufficiently reliable—
(a) the opinion is based on a hypothesis which has not been subjected to sufficient scrutiny (including, where appropriate, experimental or other testing), or which has failed to stand up to scrutiny;
(b) the opinion is based on an unjustifiable assumption;
(c) the opinion is based on flawed data;
(d) the opinion relies on an examination, technique, method or process which was not properly carried out or applied, or was not appropriate for use in the particular case;
(e) the opinion relies on an inference or conclusion which has not been properly reached.

(3) When assessing the reliability of expert opinion evidence, the court must have regard to—
(a) such of the generic factors set out in Part 1 of the Schedule as appear to the court to be relevant ...

As part of the new reliability standard, a schedule to the Bill provides a list of 'generic factors' (3.62) for scientific, technical and other types of expertise.

GENERIC FACTORS

1 The factors referred to in section 4(3)(a) are as follows:
(a) The extent and quality of the data on which the opinion is based, and the validity of the methods by which they were obtained.
(b) If the opinion relies on an inference from any findings, whether the opinion properly explains how safe or unsafe the inference is (whether by reference to statistical significance or in other appropriate terms).
(c) If the opinion relies on the results of the use of any method (for instance, a test, measurement or survey), whether the opinion takes proper account of matters, such as the degree of precision or margin of uncertainty, affecting the accuracy or reliability of those results.

(d) The extent to which any material upon which the opinion is based has been reviewed by others with relevant expertise (for instance, in peer-reviewed publications), and the views of those others on that material.

(e) The extent to which the opinion is based on material falling outside the expert’s own field of expertise.

(f) The completeness of the information which was available to the expert, and whether the expert took account of all relevant information in arriving at the opinion (including information as to the context of any facts to which the opinion relates).

(g) Whether there is a range of expert opinion on the matter in question; and, if there is, where in the range the opinion lies and whether the expert’s preference for the opinion proffered has been properly explained.

(h) Whether the expert’s methods followed established practice in the field; and, if they did not, whether the reason for the divergence has been properly explained.

2 These factors are not arranged in any hierarchical order.

(Schedule, Part 1)

This ‘genuinely universal test’ is intended to enable lawyers to determine whether an expert’s opinion can be ‘objectively justified’ (5.13, 5.5).

The judge should focus on the processes and the reasoning underpinning the particular expert opinion evidence which has been proffered for admission. (5.27, 5.36)

Ordinarily there will only be an inquiry into whether an expert opinion is ‘sufficiently reliable’ where there is a challenge (i.e. an objection) to admissibility (5.43, 5.51), although the judge will have a discretion to require evidence where he or she maintains doubts (clause 6(3); 5.44). It is envisaged that the question of whether the evidence is sufficiently reliable will ordinarily be decided pre-trial and in the absence of the jury (clause 6(4); 5.56). The party challenging the proffer of expert evidence will carry an evidentiary burden: a ‘burden of reasoned objection’ (5.44). However, this should not be onerous and, once satisfied, the party
adducing the expert opinion would have to provide ‘a reasoned explanation as to why [the] opinion is sound’ (5.36, 5.43). The proposed standard is not intended to exclude novel techniques and methods (5.35, n. 35).

(b) Codification of the common law
In conjunction with the introduction of a statutory reliability threshold, the Law Commission recommends the codification of the common law currently regulating the admission of expert evidence in criminal proceedings. ‘In addition’ to the renewed emphasis on ‘reliability’, to be admissible expert opinion evidence would need to satisfy three other ‘rules’:

**Admissibility**

1 **Basic rules**

1 (1) Expert evidence is admissible in criminal proceedings only if—

(a) the court is satisfied that it would provide information which is likely to be outside a judge or jury’s experience and knowledge, and which would give them help they need in arriving at their conclusions,

(b) the person who gives it is qualified to do so (see section 2), and

(c) the evidence is not made inadmissible as a result of section 3 (impartiality).

The Report recommends no change to the rule from *R v Turner* but advocates the inclusion of ‘an explicit standard of proof (the balance of probabilities) in relation to the need to demonstrate expertise’, and streamlining existing rules and authority to secure ‘objective, impartial evidence’ (4.2, 4.6).

The rule from *Turner* requires expert evidence to ‘assist the jury’ (4.2). That is:

... provide the court with information which is likely to be outside a judge or jury’s knowledge and experience, but it must also be evidence which gives the court the help it needs in forming its conclusions. (2.4)

This is largely an adjunct to logical relevance: providing the trial judge with some discretion to exclude expert opinion evidence if deemed redundant or unnecessary given the normatively constructed experiences and capabilities of the jurors. The court merely needs to be satisfied that the expert evidence ‘is likely’ to be outside a judge or jury’s experience and knowledge and the evidence ‘would
provide help’ (4.13–4.14). Use of the term ‘likely’ is said to be capable of accommodating ‘incremental’ development.

On qualifications, an individual should ‘not be able to provide expert evidence in criminal proceedings unless and until it is established that he or she is in fact an expert’ (clause 1(b); 4.6). A person who offers expert evidence in criminal proceedings must be qualified, on the balance of probabilities, to do so ‘by virtue of study, training, experience or any other appropriate means’ (clause 2). In the Report, proof of expertise (i.e. ‘qualified to do so’) overlaps with reliability. Albeit exceptionally, a prospective expert may be required to provide empirical or experimentally derived evidence of ability:

The individual concerned would need to be prepared to prove in a more direct way that he or she has the skill. In other words, the individual, or the party calling the individual, might need to provide the court with the results of a relevant test or demonstration undertaken in controlled conditions which show that he or she is skilled and therefore qualified to provide evidence as an expert witness. (4.20, 4.17–4.24)

Hinting that there may be ‘cost implications’ flowing from such a requirement, this, according to the Commission, ‘would not be an onerous burden for the individuals concerned given the very basic nature of the testing required’ (4.24).

On ‘the impartiality test’ the draft Bill draws upon the overriding duty to give the court objective and unbiased expert evidence set out in the Criminal Procedure Rules:10

3 Impartiality

(1) An expert has a duty to the court to give objective and unbiased expert evidence for the purpose of criminal proceedings.

(2) That duty overrides any obligation to the person from whom the expert receives instructions or by whom the expert is paid.

(3) If it appears to the court that there is a significant risk that the expert will not comply (or has not complied) with that duty in connection with the proceedings, the expert evidence is not

10 Criminal Procedure Rules 2011 (SI 2011 No. 1709), r. 33.2. With effect from 5 October 2011, the Criminal Procedure Rules 2011 revoked and replaced the Criminal Procedure Rules 2010 (SI 2010 No. 60), as amended. References in the Report are to the 2010 Rules.
admissible unless the court is satisfied that it is in the interests of justice that it should be admitted.

(4) The fact that the expert has an association (for example, an employment relationship) which could make a reasonable observer think that the expert might not comply with that duty does not in itself demonstrate a significant risk.

(5) Criminal Procedure Rules may make further provision in connection with that duty.

Experts will continue to have a duty to give objective and unbiased evidence, although the proposed rules contemplate exceptions: allowing apparently partial expert opinions where admission is in the ‘interests of justice’ or created by an ‘association’—even where that relationship might lead a reasonable observer to wonder about compliance with the duty. These rules and the new reliability standard are intended to operate in combination. Where there is a plausible challenge, the party adducing the opinion must persuade the trial judge that it is ‘sufficiently reliable’, will help the tribunal of fact, and is offered by a qualified expert who is sufficiently impartial.

In addition to these statutory admissibility criteria, the Report recommends the use of court-appointed experts to assist with reliability determinations, a fresh approach to appellate review of admissibility decisions, and training for lawyers and judges.

(c) Court-appointed experts

Although English judges may already have the ability to call an expert witness, the Law Commission recommends that Crown Court judges should be given a formal power to appoint an ‘independent expert’—‘in exceptional cases’ (6.1)—where this might assist the court with the issue of reliability (6.14). To facilitate appointment, the Commission advocates the formation of ‘an independent, non-governmental panel of experienced legal professionals (barristers and solicitors), ‘chaired by an experienced Circuit Judge’ and liaising with relevant professional bodies, to provide the trial judge with a shortlist of prospective experts ‘in the field, screened for their impartiality, special knowledge, experience and good character’ (6.44–6.45, 6.80). This rather cumbersome and labour-intensive process, just for the appointment of a single witness, is designed to remove problems with selection, though by no means all of the impediments traditionally associated with the judicial reticence to call witnesses or for some eminent experts to participate (6.34). Whether judges would use this power, and precisely how the appointment of a super-expert articulates with the traditional party-led adversarial trial, is not entirely clear (6.38). According to the Report, court-appointed
witnesses would be used ‘nearly always pre-trial’ to resolve reliability issues, although it is hard to imagine that parties could resist re-calling them, at trial, when their authoritative opinions support a particular approach or interpretation. Nevertheless, the Commission seems persuaded that even the power to appoint an expert ‘would act as a deterrent against casual science’ (6.28).

(d) Appellate review
One of the more innovative recommendations in the Report relates to the way decisions about the admissibility of expert opinion evidence should be reviewed on appeal. A ruling ‘under the reliability test should be approached by the appellate court as the exercise of a legal judgment rather than the exercise of a judicial discretion’ (5.94). The upshot is that appellate judges would no longer defer to the trial judge (and any ‘advantages’ available from direct observation), but instead should undertake an independent assessment of the reliability of expert opinion evidence. While not explained in the Report, this would seem to follow from the fact that demeanour and any advantages available to the trial judge are not particularly salient when it comes to assessing evidence relevant to the reliability of expert opinion. Following the advice of senior members of the judiciary, the Commission elected not to recommend scope for interlocutory appeals from decisions on the admissibility of expert opinion evidence (5.97–5.98).

(e) Training (for lawyers and judges)
Introduction of a statutory reliability requirement would require lawyers, trial judges and appellate courts to approach the admissibility of expert opinion evidence more critically. This, as the Report emphasises, will involve (re-)training and invests considerable faith in lawyers and judges.11 Training, according to the Report, will enable judges to appreciate the need to reform their practice and provide a means to do so. The motivation behind any training is not insignificant, as we shall see when we consider practice in jurisdictions that have already enacted reliability standards. In tandem with the provision of generic guidelines training is intended to ‘help the judiciary apply our proposed reliability test’ (3.43). The Report places confidence in the ability of quite limited training to substantially address longstanding problems with expertise (8.7, 5.115). Without providing much detail about the precise curriculum, the training seems to be focused on ‘scientific methodology and statistics’ and how to ‘determine reliability’ (1.43, n. 45). In the appendices, there is some suggestion that training might be annual.12 Given the complexity and variety of expertise and the range of

11 Report, 1.43, 8.8, 8.4.
12 Curiously, Appendix C states: ‘We should stress, however, that no guarantees relating to judicial training on evidentiary reliability can be provided. Any final decision must depend on competing priorities and available resources’ (at p. 182).
issues that have arisen in relation to admission and the expression of results in recent years, not to mention the broad range of competing issues confronting the modern judiciary, the expectations from necessarily limited training would seem to be optimistic.

2. Issues arising from the Report

(a) An appalling vista: Why is reform needed? And what about legal principle?

One of the limitations with the Report is its failure to make a persuasive case for reform. For those of us who believe that reform is essential, if long overdue, the Law Commission’s recommendations are generally welcome. However, in order for the reforms to achieve the desired ends, there needs to be a change in culture and levels of technical sophistication among practising lawyers and judges. Lawyers and judges must understand why traditional practice is inadequate and be able and willing to change.\(^\text{13}\)

The Report makes assertions about the admission of insufficiently reliable expert opinion evidence, but provides little indication of the extent of problems and almost no references to a crisis in the foundations of many forensic sciences.\(^\text{14}\) If these concerns appear exaggerated, the reader should pause to reflect upon the current approach to admissibility in England and Wales (and Australia).\(^\text{15}\) Reliability is, for the most part, of marginal interest or explicitly disavowed. That is, senior judges have not required incriminating expert opinion evidence to be reliable in order for it to be included in the case against a person accused of a criminal act. We only have to consider past English practice in a series of appalling decisions.\(^\text{16}\) In general, judges in England and Wales, Australia, the United States and Canada have not asked those adducing and proffering incriminating opinions to show with evidence that they can do what they claim.

\(^\text{13}\) Similar arguments have been made in relation to the forensic sciences, see J. L. Mnookin et al., ‘The Need for a Research Culture in the Forensic Sciences’ (2011) 58 UCLA L Rev 725.


In order to reform practice we need an account of why this is unacceptable—within current adversarial arrangements—and a clearer explanation of why so few judges have been attentive to reliability. We also need to address conceptual limitations that have focused attention on impartiality rather than evidence of validity and reliability (i.e. ability and accuracy), institutional independence, and the elimination of biasing practices (4.30). Part of an answer might be gleaned from international and interdisciplinary perspectives. The need for reform, along with the scale of evidentiary problems, emerges most clearly in recent criticism of the forensic sciences by the National Academy of Sciences (United States). It is also illuminated by experiences with wrongful convictions along with a range of relevant, and occasionally disconcerting, empirical and experimental studies (more below). Instead, the reader is simply told that in the past English courts have been too accepting of expert opinion evidence and that this is a problem because trial safeguards might not always be efficacious. Experts, lawyers, judges and legislators must take responsibility for inconsistent and generally weak responses to incriminating expert opinion evidence.

It is disappointing, in a report recommending a number of potentially substantial changes to practice, to find very limited engagement with legal principle. There are relatively few direct references to any overarching criminal justice or evidentiary principles, besides the interests of ‘justice’ from the Criminal Procedure Rules\(^\text{17}\) and some discussion of the standard of admissibility to be applied to expert opinion adduced by the accused. Part of the motivation for ushering in a new admissibility standard based around reliability should have been a clear explanation of how unreliable expertise makes it more likely that an innocent person will be convicted and, relatedly, the difficulty of effectively contesting incriminating expert opinions during the trial or disaggregating their impact on appeal. Overarching criminal justice values and their embodiment in practice, with sensitivity to what is ‘practicable and cost-effective’, should have been used to motivate and nuance the recommendations.

Lawyers and judges should be interested in practices that have departed from espoused principles, or strained such principles to the point of incredulity. In a system that purports to be rational, or part of a rational tradition, it is inappropriate for the state to place unreliable expert opinion or expert opinion of unknown

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\(^{17}\) The overriding objective of this new code is that criminal cases be dealt with justly (Criminal Procedure Rules 2011, r. 1.1(1)).

\(^{18}\) W. Twining, ‘The Rationalist Tradition of Evidence Scholarship’ in Rethinking Evidence: Exploratory Essays (Blackwell: Oxford, 1990). Many types of forensic science and medical evidence, unlike other forms of evidence (e.g. hearsay), are readily susceptible to empirical evaluation, such as proficiency testing.
reliability before lay jurors.18 (Whether it is reasonable to expect lay magistrates and judges to evaluate reliability is also a serious issue, although not formally addressed in the Report: see Part II.) The accused is not in a position, and should not be placed in a position, to bear the risk of persuading lay jurors (or judges) that expert opinion is unreliable or of little probative value.

(b) English exceptionalism? Daubert, Trochym, the NAS Report and hard lessons from North America

Without wanting to trivialise its legal peculiarities, England will not be the first adversarial jurisdiction to impose a reliability standard. Yet, for a report that advocates a new reliability-based framework, there is limited discussion of developments in the United States and Canada.19 Following the influential Daubert v Merrell Dow Pharmaceuticals Inc. decision US federal, and many state, courts have had extensive experience with reliability standards. Canada has also embraced a Daubert-style approach to reliability in recent years. Omission of this North American experience is unfortunate because English law reformers and practitioners have been deprived of relevant insights. Even if read with the caveats appropriate to a comparative undertaking, actual experience in US federal and state courts is likely to be more illuminating of, and probably even more apposite to, future practice in England and Wales than retrospective hypotheticals and the impressions of a few legal veterans of undoubted experience (see 5.67 and Part 8; note 3.21).20 Developments in the US and Canada offer several hard lessons for English law reformers and courts that they ignore at their peril. They suggest that sanguine views about judicial abilities and positive effects from bare reliability—that is, a reliability-based admissibility standard, even if supplemented with training—are probably misconceived.

The recent review of forensic science conducted by the US National Academy of Sciences (NAS)22 documents the lack of research underlying many areas of forensic science. The multi-disciplinary committee summarised:

19 There was more discussion in the Consultation Paper, above n. 2, but even that did not engage with much empirical and theoretical literature, the findings of innocence projects or recent inquiries and reviews.
20 Daubert v Merrell Dow Pharmaceuticals Inc., 113 S Ct 2786 (1993).
21 Part 8 presents a highly artificial and unpersuasive ‘assessment’.
23 Ibid. at S-5.
With the exception of nuclear DNA analysis, however, no forensic method has been rigorously shown to have the capacity to consistently, and with a high degree of certainty, demonstrate a connection between evidence and a specific individual or source.\(^{23}\)

And:

The law’s greatest dilemma in its heavy reliance on forensic evidence, however, concerns the question of whether—and to what extent—there is science in any given forensic science discipline.\(^{24}\)

Many forensic sciences concerned with identification, particularly those involving comparisons and pattern matching (for example, latent fingerprints, toolmarks, handwriting, hair and fibres, foot and shoe prints, voice and image comparisons and bite marks) had their scientific underpinnings and general reliability authoritatively questioned. The Committee also expressed dismay at the widespread lack of interest among investigators and forensic scientists in understanding and eliminating a range of biases notorious among biomedical research.\(^{25}\) Perhaps even more unsettling was the NAS Committee’s assessment of the performance of judges (and lawyers) and legal institutions in response to decades of questionable incriminating expert opinion evidence. They found that the existing legal regime was ‘inadequate to the task of curing the documented ills of the forensic science disciplines’.\(^{26}\) Here we should note that, unlike the Law Commission, the NAS Committee was focused exclusively on institutionalised forensic science and medicine. That is, the focus was upon expert evidence *adduced by the state*.

Many types of forensic science and medicine used routinely in the investigation and prosecution of crime, in the decades after *Daubert*, are not demonstrably reliable. The Committee concluded that courts struggle to evaluate forensic science evidence and are incapable of improving the quality of the expert evidence prepared by the state.\(^{27}\) It is important to recognise that many, and perhaps most, of the forensic science techniques, processes and opinions disparaged by the NAS as effectively non-scientific, without empirical support and vulnerable to a range of biases (other than partisanship), are used in investigations and routinely

\(^{23}\) Ibid. at 3-2.
\(^{24}\) Ibid. at 3-18, Recommendation 5. The Report (5.35, n. 33), in contrast, notes the existence of contextual bias, though implies that this is primarily an issue for the Forensic Science Regulator rather than judges (interested in reliability). See also Consultation Paper, above n. 2 at Appendix D.
\(^{25}\) Above n. 23 at 3-1.
\(^{26}\) See Judge H. Edwards, ‘Solving the Problems that Plague the Forensic Science Community’ (2010) 50 Jurimetrics 5. The Committee was co-chaired by Judge Harry Edwards.
admitted in criminal proceedings in England and Wales. The NAS critique of forensic science and medicine has genuinely international ramifications; for, if there is no research supporting a technique in the United States, it is highly likely that there is no research in England or elsewhere (and vice versa).

On admissibility, the ‘revolution’ popularly associated with *Daubert* was largely a response to impressions of the civil justice system. Under the Seventh Amendment the United States retains the use of civil juries. In consequence, the leading admissibility jurisprudence is perhaps best understood as a reaction to tort and product liability litigation in a decade marked by intense public debate over the performance of the civil justice system and attempts to reform it. Against espoused principle, US judges collectively raised the standards regulating the admission of expert opinion evidence adduced by plaintiffs in civil cases. Revealingly, and also against principle, they did not impose this more onerous approach to admissibility gatekeeping on incriminating expert opinion (i.e. forensic science and medicine) evidence prepared and adduced by the state. Rather than apply reliability criteria from *Daubert* (discussed below, but resembling those in clause 4 and Part 1 of the Schedule), US judges responded to the state’s forensic science and medicine evidence with credulity. Legal rather than scientific acceptance provided many types of forensic science and medicine with authority and access to the courts.

32 This is presumably an artefact of prosecutorial practice and the superior resources available to the state. See e.g. Judge D. Sheldon, ‘Forensic Science Evidence and Judicial Bias in Criminal Cases’ (2010) 49 *Judges Journal* 18.
Somewhat perversely, US judges seem to be more willing to exclude expert opinion evidence adduced by criminal defendants.32 These judges have applied their universal admissibility standards—applicable to criminal and civil proceedings—inconsistently.33 Expert opinion evidence adduced by plaintiffs, along with rebuttal or defence expert evidence adduced by the accused, is routinely treated as suspicious and held to higher standards and frequently exposed to closer scrutiny than the state’s incriminating forensic science and medicine.34

Researchers who reviewed written decisions from US federal and state courts concluded that judges do not apply the criteria listed in Daubert—for example, testing and information about error rates when making admissibility determinations—but rather, continue to rely upon traditional formulations and heuristics such as formal qualifications, the existence of a ‘field’ and impressions of ‘acceptance’. One study, of 693 federal and state decisions handed down in criminal appeals between 1988 and 1998, ‘perplexed’ the investigators.

Daubert seemed to suggest that an expert’s methods, not only his or her credentials, should be evaluated. However, the most important rating on sources of expertise were the experience and education of the proffered expert. Sources of knowledge which indicate methodological reliability were rated as less important … judges may be unable to determine what factors are important in assessing scientific reliability, particularly when research is the basis for an expert opinion.35

The review concluded that satisfying the Daubert reliability standard was not an accurate predictor of admissibility.

Other empirical studies from the US, comparing jurisdictions with reliability standards with those using alternative admissibility schemes, and even the same jurisdictions before and after reliability standards were enacted, found that formal reliability thresholds made little difference to admissibility practice.36

37 Frye v United States (DC Cir 1923) 293 Fed 1013; People v Kelly (1976) 17 Cal 3d 24.
Neither Daubert jurisdictions nor jurisdictions utilising alternative standards—such as whether a technique is ‘generally accepted’—appeared to be particularly attentive to the reliability of incriminating expert opinion evidence or to have diverged significantly in their respective admissibility practice. These studies are disconcerting because they suggest that judges in US state and federal courts seem to be responding to a range of considerations in their admissibility decision-making that are not indexed to statute or common law. Instead, institutionally and ideologically inflected impressions of the social world—shaped by concerns about unmeritorious civil litigation, charlatan experts, excessive damage awards, confidence in police and state-employed forensic scientists, and a need for punitiveness—seem to be influencing admissibility decision-making in civil and criminal justice systems.38

The United States also offers the most developed collection of innocence project studies. While the relevance of many of these wrongful convictions to English criminal justice might be quite limited, they do provide several useful insights.39 First, they confirm that trial safeguards do not always work to protect even an innocent accused.40 Secondly, many of the types of incriminating expert opinion evidence that featured in wrongful convictions (and did not help to expose investigative and prosecutorial mistakes) are routinely admitted in English courts.41 Thirdly, they help to illustrate the synergistic relationships between different strands of evidence—how unreliable expert opinions and expert opinions of unknown reliability may be supported by, and appear to corroborate, other incriminating evidence (even if not independent).42 Fourthly, innocence project cases reinforce the resource asymmetries between the state and ordinary, let alone impecunious, defendants. Finally, appellate courts were frequently very confident about the safety of wrongful convictions in circumstances where the individuals involved were not only not guilty but actually innocent.

40 This is consistent with my own studies of incriminating expert opinion evidence in the courts of NSW. Australia does not have a reliability standard and struggles with the regulation of unreliable expert opinion. See G. Edmond, ‘Actual Innocents? Legal Limitations and their Implications for Forensic Science and Medicine’ (2011) 43 Australian Journal of Forensic Sciences 177.
42 This was a feature of the IRA convictions in the 1980s.
Canada also provides an interesting case study in the adoption of reliability standards. After a long and quite liberal approach to admissibility, embodied in *R v Mohan*, 43 a series of notorious wrongful convictions led the Supreme Court to read reliability into Canadian admissibility jurisprudence for expert evidence and express caution about the adversarial trial safeguards. In *R v J-LJ*, Justice Binnie insisted that the ‘admissibility of expert evidence should be scrutinised at the time it is proffered, and not allowed too easy an entry on the basis that all of the frailties could go at the end of the day to weight rather than admissibility’. 44 By 2007, in *R v Trochym*, Justice Deschamps explained that reliability had become ‘an essential component of admissibility’. 45 Meanwhile, several public inquiries and appeals involving questionable convictions produced critical responses to the investigation and prosecution of crimes—especially reliance on expert opinion and the expression of conclusions that could not be sustained empirically. 46 The Goudge Inquiry into Pediatric Forensic Pathology—a type of evidence creating continuing difficulties for English courts—recommended the imposition of ‘threshold reliability’ along with many other reforms to procedure and practice. 47

In response to the new emphasis on reliability and judicial gatekeeping, Canadian trial and appellate courts have also encountered real difficulties with incriminating expert evidence; especially opinion evidence that is novel or not readily assessed against criteria conventionally associated with the sciences. 48 We can anticipate similar problems in English courts, because of past practices and the range of qualifications and exceptions to reliability available to judges under the proposed reforms (see Section 2(d) below).

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47 I was an adviser to the Goudge Inquiry (2007–2008). The only references to the Goudge Inquiry in the Report (4.39, 4.41) concern the need to prevent experts testifying beyond their expertise.
48 See e.g. *R v Abbey* [2009] ONCA 624, discussed in Edmond and Roach, above n. 44 at 391.
49 There was more discussion in the Consultation Paper, but not a great deal of engagement with empirical studies. The NAS Report (above n. 23) was published just months before the Consultation Paper was released. See Report at 5.35, n. 33; 5.91, n. 88; 5.110, and compare NAS Report, above n. 22 at 3.33–3.34.
There are few substantial references to Daubert, the NAS review or developments in Canada in the Law Commission’s Report.\(^n\)\(^{49}\) Readers and reformers are likely to be misled about the likely efficacy of the proposed statutory changes.\(^n\)\(^{50}\) The Report suggests:

Our recommendations are *positively different* in a number of ways from the approach used in jurisdictions which apply the ‘Daubert’ test implied into rule 702 of the US Federal Rules of Evidence. First, our draft Bill sets out the fundamental criteria for determining the reliability of expert opinion evidence ... Secondly, the Judicial Studies Board will provide trial and appeal judges with practical training in how to assess the reliability of expert opinion evidence in practice ... Thirdly, the Court of Appeal will properly police the application of the test ... Fourthly, it will be seen in Part 6 that we are recommending a facility which would allow the trial judge to call upon additional expertise to assist him or her in the determination of evidentiary reliability in exceptionally complex cases. (5.110–5.115, italics added; see also 5.91–5.92)

The degree of ‘positive difference’ is overstated. First, Daubert includes several criteria to help trial judges assess the reliability of scientific evidence. These include: testing (or validation); publication and peer review; error rates; the extent of acceptance; and even the application of appropriate standards. Subsequently, in Kumho, the Supreme Court explained that the Daubert criteria ‘may’ be applied, with the necessary qualifications, to non-scientific proffers of expert opinion evidence. In 2000, the Federal Rules of Evidence (FRE), regulating the admission of expert opinion evidence in federal courts, were duly amended.\(^n\)\(^{51}\)

Secondly, lawyers and judges in the United States already participate in professional training and judicial education.\(^n\)\(^{52}\) Thirdly, while the English proposal for appellate review is preferable to the ‘abuse of discretion’ standard imposed in General Electric Co. v Joiner\(^n\)\(^{53}\) we cannot be confident that English appellate judges...
will exclude incriminating expert opinion evidence and require a retrial, especially when the review takes place after conviction—where the overall strength of the case might be considered compelling irrespective of the disputed evidence. Here, the failure to quarantine admissibility decisions (from other evidence and the overall safety of convictions) may undermine the value of the proposed framework. Fourthly, although most US courts have a statutory ability to appoint an expert witness, this power is hardly ever exercised.  

The major problem with expert evidence in criminal proceedings in the United States, Canada, Australia and England is the quality of incriminating opinion adduced by the prosecution. Many other problems, such as how to express opinions and how the defence should respond to speculative incriminating opinions or disaggregate the prosecution case, flow from the primary quality issue. While the condition of forensic science and medicine in England and Wales may have been, and may continue to be, better than in most parts of the United States, in many areas of practice, techniques and expressions are similar to those criticised by the NAS. To the extent that practice is better in England and Wales, that appears to have little, if anything, to do with English lawyers and judges. Rather, English judges preside over a system that readily facilitates admission and lends the imprimatur of the courts to opinions that are of unknown probative value. They allow highly qualified experts to speculate and investigators with no relevant training, study or experience to express ipse dixit as ad hoc experts.  

(c) Ineffective safeguards (and the limits of the traditional adversarial trial)  

Cross-examination, the adduction of contrary expert evidence and judicial guidance at the end of the trial are currently assumed to provide sufficient safeguards in relation to expert evidence, by revealing to the jury factors adversely affecting reliability and weight. However, ... it is doubtful whether these are valid assumptions. A more credible assumption, at least in relation to complex scientific or technical fields, is that juries will often defer to the expert providing the opinion. (1.20)  


(i) Cross-examination and rebuttal experts
For centuries the English criminal trial has been celebrated, with some features such as cross-examination valorised.\(^56\) Systematic experimental studies and reviews of cases, in contrast, have tended to conclude that cross-examination is far less effective against expert opinion evidence than most commentators and judges assume. Interestingly, as part of its limited justification for the need for reform, the Law Commission implicitly endorses this emerging critique.\(^57\) The Report suggests that cross-examination is an insufficient safeguard against unreliable expert opinion evidence adduced under a laissez-faire approach to admissibility (1.21, 3.4). In a similar way, the Report casts some doubt on the ability of rebuttal experts to overcome, or effectively identify and balance, defects in (incriminating) expert opinion evidence.

There are several reasons why cross-examination and ‘defence’ witnesses do not seem to overcome the impact of incriminating expert opinion evidence of unknown probative value.\(^58\) First, the ‘prosecution’ expert’s opinions are often tightly woven into a comprehensive narrative or story.\(^59\) Expert opinion, however (un)reliable, may be considered persuasive and even compelling where other evidence appears to support it. Secondly, prosecution witnesses are often represented as disinterested (i.e. impartial or neutral) forensic scientists or consultants, whereas defence witnesses—almost never state employees—are more likely to be portrayed as interested and forensically inexperienced. Thirdly, on many occasions witnesses appearing for the defence will offer mere methodological (or theoretical) critique.\(^60\) This may be from methodologically sophisticated individuals who are highly sceptical of the approach and conclusions, but will generally not have undertaken their own studies or analysis of the ‘evidence’. Fourthly, on many occasions there will be relatively limited evidence called by the defence, and a much more constrained defence narrative. In many trials, in response to the more elaborate and integrated prosecution narrative, the defendant may only adduce rebuttal expert evidence. The defence thereby relies


\(^{58}\) See Edmond, above n. 15.


\(^{60}\) See e.g. *R v Weller* [2010] EWCA Crim 1085.
on the tribunal of fact and its ability to appreciate often subtle and complicated methodological and statistical conceits. Finally, a large part of the cross-examination of experts tends to be superficial: restricted to credibility and the chain of custody rather than more fundamental methodological and statistical issues. This probably reflects the abilities of lawyers, the limited resources available to the parties (particularly to the defence), and strategic decisions based on impressions of the capabilities and prejudices of juries and judges.

(ii) Jury directions

Jury directions and ‘cautionary warnings’ are repeatedly presented as a means of correcting or overcoming problems with expert opinion evidence, including inadmissible evidence that is mistakenly presented to the jury (compare 1.20). The case of R v Henderson is a recent and authoritative example (5.68, n. 70). This response is remarkable given the volume of empirical research that questions the value of most directions and warnings. Judicial confidence in directions seems misplaced and inattentive to the likelihood that in the manner they are typically expressed directions and cautionary warnings are difficult and perhaps impossible to apply. There is little evidence that they help to make trials substantially fair or have any salutary or empirically discernible effect in mitigating misleading expert opinion evidence or unfairness to the accused. In many cases where directions or cautionary warnings about expert evidence are provided, including where they are ‘tailored to the facts of the case’, the warnings rarely provide sufficient information to enable a useful assessment of the expert opinion evidence (9.22). Instead, they tend to describe abstract dangers or address methodological limitations in very general terms. The Report nevertheless reiterates the legally orthodox discretionary approach to directions insofar as they should be used for some types of particularly risky expert opinion evidence—such as comparisons of images and voices and lip reading—and where the opinion is central to the prosecution case.

It may be that trial safeguards are better suited to sufficiently reliable expert opinion evidence. That contention, however, has yet to be demonstrated.

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(iii) Appealing the judicial decision

*De novo* appellate review is a welcome reform. Unfortunately, disallowing interlocutory appeals means that assessment of reliability will form part of a more expansive review following conviction. In consequence, reviews of admissibility decisions will be obliged to consider the significance of admissibility in the context of the entire case against the accused.

While this may make sense in terms of institutional logistics (i.e. cost concerns), there are real risks in trivialising the synergistic interactions of all the evidence. It is likely that in some proportion of cases in which judges find the case against the accused persuasive and the verdict safe, if the (insufficiently reliable) incriminating expert opinion evidence had not been admitted, jurors would have acquitted. Here it is not insignificant that studies suggest that on average judges have difficulty discounting (or ignoring) inadmissible evidence and legally irrelevant factors when exposed to such information in decision-making contexts. Where jurors are exposed to inadmissible incriminating expert opinions they are more likely to convict than when such evidence is not adduced. In addition, empirical studies suggest that when making decisions in complex situations jurors (and presumably judges) are likely to defer to the opinion of an expert (for the prosecution) even when the expert is mistaken. Given ‘the key issue on appeal will always be whether the expert opinion evidence in question was sufficiently reliable to be placed before a jury’, interlocutory appeals would be preferable and much more likely to avoid the errors and unfairness created by the admission of insufficiently reliable expert opinion (5.93; italics in original).

The admissibility of expert opinion evidence, at trial and on appeal, should be considered separately from other (expert and non-expert) evidence and the overall case against the accused (see Section 2(d)(ii)). Moreover, there are benefits separating the review of admissibility decisions from appeals at the end of trials. It will, in some trials, actually reduce time and expense to have an admissibility

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64 A. Wistrich, C. Guthrie and J. Rachlinski, ‘Can Judges Ignore Inadmissible Information? The Difficulty of Deliberately Disregarding’ (2005) 153 *University of Pennsylvania Law Review* 1251. See also Report at 5.87: ‘The judge’s pre-trial ruling that expert evidence is admissible may therefore be reversed during the trial and the evidence ruled inadmissible with a direction to the jury to disregard it.’


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decision pre-trial rather than to await conviction before an appellate court offers its own reassessment of the reliability of the expert opinion evidence. It will, in addition, provide a resource for practice—in and beyond courts—and prevent those accused of criminal acts from being confronted with insufficiently reliable expert opinion and having convictions upheld on the basis of judicial impressions of the weight of the remaining evidence—in the shadow of jury convictions and institutional anxieties about costs and delays.

(d) The reliability test
According to the Report and the Bill, expert opinion evidence should be admissible in criminal proceedings ‘only if it is sufficiently reliable to be admitted’ (clause 2; 1.48). The Report provides some indication of what might constitute ‘sufficiently reliable’ expert opinion evidence. For example, in ‘a case which turns on conflicting expert medical (scientific) evidence, the defence experts would be expected to demonstrate that their opinion evidence is a legitimate, scientifically valid conclusion, based on sound principles and properly conducted research’ (3.105). It also seems that the party adducing the evidence must, if required, demonstrate that the evidence and the way it is expressed is reliable given the particular use at trial: ‘it would be for the experts called by the prosecution to demonstrate that their opinion evidence, including the strength of their conclusions, is fully justified’ (3.92: italics added; see also 5.93). Regrettably, requirements for the parties—though particularly the prosecution—to demonstrate reliability in fairly rigorous terms are qualified by a variety of exceptions and caveats.

(i) Reading reliability down

... criminal courts should have a limited power to disapply the reliability test so that it does not have to be applied routinely and unnecessarily. (3.77, 5.42)

Given past practices and the range of problems with much—though not all—forensic science and medicine evidence, the recommendations in the Report seem to provide considerable, and perhaps excessive, scope for discretion and derogation. In this regard it is curious to observe the Report distinguishing its proposal where it suggests that Daubert had been criticised because ‘it provides the trial judge with a wide discretion in the determination of evidentiary reliability’ (5.91, 5.92).

There are many references in the Report to scope for qualifications, caveats and exceptions. It describes a range of exceptions and types of opinions where
reliability is apparently not necessary or represented as inapposite.66 Some of the more troubling forms of opinion evidence adduced by the state in recent decades appear to be included in this grouping (and classified as non-scientific evidence ostensibly because the individuals proffering the opinions are not scientists). Identification (or similarity) evidence from ad hoc experts, for example, derived from ear prints, image and voice comparisons, may remain admissible even though there is little empirical support for abilities or accuracy and notwithstanding the ability to test the techniques and the proficiency of individuals (5.71–5.72, 5.75; compare 4.17–4.24).

While there is obviously a need for some flexibility in the legal response to the admissibility of the tremendous variety of expert opinion evidence, some indication of reliability should be required of all types of expert opinion evidence.67 Discretion should not confer a basis to avoid testing where validity or proficiency testing is appropriate. In many cases, and especially in relation to demonstrably reliable techniques, it may be inappropriate to repeatedly review admissibility. Nevertheless, all scientific, technical and medical opinion evidence should be empirically grounded and supported with evidence if required. Part 1 of the Schedule expressly disavows any particular order for the generic factors (Part 1, 2). However, the Report does not make sufficiently clear that when it comes to the forensic sciences and medicine, particularly where the techniques are used routinely or likely to be used routinely, validation, accuracy and individual proficiency assume primacy and are essential to any credible attempt to ascertain the reliability of derivative opinions.

Further, even where expert evidence is not formally challenged, and so is presumptively admissible, we should expect the indicia from clause 4 and Part 1 of the Schedule to be fully satisfied in the expert’s report (and any testimony) (7.21).68

66 Such as: ‘there should be a new reliability-based admissibility test for expert opinion evidence which would need to be applied in relation to most expert opinion evidence tendered for admission in criminal proceedings’ (1.32; italics added); ‘the reliability test will be applied only if it appears to the court that the evidence might be insufficiently reliable to be admitted’ (1.39; italics added); ‘the legislation should permit the trial judge to presume evidentiary reliability (as a matter bearing on admissibility) if there is no appearance of unreliability …’ (1.48; italics added); ‘the trial judge should not have to investigate the reliability of the evidentiary foundation of an expert’s opinion evidence unless it is appropriate to do so’ (3.72; italics added).


(ii) Isolating admissibility: admissibility decisions and the strength of the case

One of the problems with the way ‘sufficiently reliable’ is conceptualised involves locating evidence on a spectrum (a kind of ‘sliding scale’) which may mediate the rigour of admissibility standards depending on the perceived centrality of the opinion to the prosecution case. The way this purports to operate is conveyed—somewhat ambiguously—in an example in the Report, drawing upon the case of R v Dallagher,69 a case involving expert evidence on ear prints. Although the Commission considered that this opinion evidence was insufficiently reliable to be admissible because of an insufficient body of research data and a high level of witness subjectivity, nevertheless:

... in another case, a weak opinion based on ear-prints may well be sufficiently reliable to be admitted (under our proposed test), if the prosecution relies on the expert’s opinion merely to provide additional support for other cogent evidence of the accused’s guilt.

(3.116)

The Report goes on to suggest, in a passage that is far from clear, that ‘if there is a sufficient body of data on similarities and differences between individuals’ ear-prints’ the expert might even ‘be able to give an opinion as to the probable number of persons (including the accused) who could have left the latent print’ (3.118–3.124; see also 8.10–8.12 and 7.56). The reliability test appears to be indexed not only to the actual probative value of the expert opinion evidence, but potentially to the way the opinion is expressed and its perceived relation to the entire case against the accused. There are several difficulties with the apparent departure from a strict reliability threshold.

First, Dallagher was a controversial case involving a limited database and an interpretation of an ear print that was not demonstrably reliable, with the opinion being put forward by a person without formal qualifications. The Law Commission’s failure unambiguously to insist that Dallagher was mistaken and that in the absence of further research ear-print evidence should be inadmissible for identification purposes exemplifies the kinds of confusion and derogation we can expect in future trials.

Secondly, if a particular technique and opinion are not adequately grounded, and in most cases empirically tested, then we have no idea about ability or accuracy. In many cases, and particularly where the ‘empirical research underpinnings’ are not ‘extensive’ there will be real questions about the soundness of the technique.

and opinion. In the absence of validation and evidence of accuracy, comparison (or pattern recognition) techniques will rarely be ‘sufficiently reliable’. Yet, according to the Report, ‘a weaker opinion on similarities’ might be appropriate and admissible (8.12). Reading opinion down, or characterising incriminating expert opinion as ‘additional support’, should not overcome the fundamental need for evidence of reliability (3.121, 3.117): that is, ‘a legitimate, scientifically valid conclusion, based on sound principles and properly conducted research’. The Report appears to suggest that the evidence in Dallagher might have been acceptable if more cautiously expressed; the expert witness might have explained merely that there were consistencies and no inconsistencies as between the defendant’s ear print and those from the scene, and given an account of the probability of them coming from the same person. Legally imposed qualifications, especially where expert opinion is read down in order to make it sufficiently reliable, may be ineffective and misleading. For, in the absence of formal evaluation, we do not know how to express results and derivative opinions.

Recent empirical studies suggest that lay persons—including judges and prospective jurors—might not understand a range of evidentiary expressions (and qualifications)—such as ‘match’, ‘reasonable scientific certainty’, ‘probable’ and ‘consistent with’—in the way that experts and professional bodies intend that they be understood. Of considerable interest in this context, preliminary studies of the way mock jurors respond to different levels of confidence indicate that weakening the manner in which an expert expresses an opinion will not necessarily make a significant difference to the way the evidence is understood when combined with other incriminating evidence.

Thirdly, perhaps the major problem with this approach is that the reliability of an expert’s opinion is unrelated to the strength of the case or the value of other evidence. Admissibility decision-making should be independent of other evidence and considerations. The fact that an accused has confessed or been convicted of similar offences (for example, burglary in Dallagher) tells us nothing about the value of incriminating opinions (derived from ear prints). In order to be admissible, expert opinions must stand or fall on their own. Reliability must be determined independently of other evidence and should not be adjusted because of the anticipated value of other evidence, the strength of the overall case, or through the classification of some evidence as ‘additional’. There are no epistemic advantages, but rather only potential disadvantages, in admitting incriminating

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70 As required of the ‘defence’ expert opinion evidence: Report, 3.105.
71 McQuiston-Surrett and Saks, above n. 57.
opinions that are not demonstrably reliable or derogate from the proposed expectation of being grounded upon sound scientific techniques and approaches. Unsound opinions and techniques are not validated because someone is convicted of a crime. The legal system should cautiously confer its imprimatur upon new techniques and opinions, especially when they are adduced by the state (compare 5.35, n. 35).

Fourthly, the same technique or opinion may be admissible or inadmissible depending upon a judge’s assessment of the strength of the particular case and the centrality of the incriminating expert opinion to it. The stronger the case without the incriminating expert opinion the more liberal is to be the reception of incriminating expert opinion. If acted upon, this ‘sliding scale’ is likely to produce a range of different standards and undesirable inconsistencies across trials (see also 3.113).

Finally, the Report erroneously implies that a sufficient body of research data might enable positive identification—what is sometimes referred to as individualisation (see also 8.11). With the vast majority of comparison (or pattern) evidence, there is no ability to establish uniqueness and, in consequence, individualisation is something of a misnomer. As things stand there is no possibility that an ear print could support individualisation. Even with the requisite research, as with DNA evidence, a purported ‘match’ could only be expressed in probabilistic terms. The important issue is whether the features are actually similar and how common a feature or features—which may not be independent—are within the relevant population. This is why there has been such concern with interpretations and expression of opinions dependent upon pattern recognition (for example, fingerprints and facial mapping). Disregarding or trivialising these substantial issues because there is other incriminating evidence corrodes admissibility standards (and risks lowering the standard of proof) and is likely to generate mistaken opinions and exaggerated confidence.

(iii) The Trojan horse of precedent

One anticipates that busy trial judges will, perhaps understandably, look to appellate authority and earlier practices rather than expend increasingly precious time and resources on admissibility decisions in areas that have already received


74 There may be rare exceptions.
some judicial consideration. Even the Report’s attempt to qualify the influence of precedent is unlikely to prevent its misuse to facilitate the admission of insufficiently reliable incriminating expert opinion evidence (see 5.30ff). Studies from the United States and elsewhere suggest that initial admissibility decisions ground subsequent decisions—including admissibility decisions in other jurisdictions. Once a type of expert opinion gets admitted and upheld on appeal it tends to remain legally admissible unless some major controversy erupts. Upon admission, techniques and opinions are often expanded regardless of empirical grounding or the initial conditions on admissibility.75 The risk is that an appellate court’s finding that a type of weak expert opinion is sufficiently reliable for some supplementary purpose will be misread to enable a similar technique to form a central component in another case. Also, it is possible that any ‘informal’ allowances granted to the accused—even if asymmetrical (see below), and driven quite properly by principle—will be subsequently conferred upon the state.

(e) A symmetry? The state versus the accused
As indicated, the Law Commission does not refer in much detail to overarching principle. Most of the constraints on practice, notwithstanding a few references to fairness, are attributed to cost and time pressures. These appear to have been provided by judicial officers and legal practitioners. Traditionally judges, law reformers and scholars have appealed to the importance of rectitude, the presumption of innocence, the high standard of proof imposed upon the state, and the need to avoid convicting the innocent, along with the importance attributed to fairness in their practice and public pronouncements. These higher order principles create tensions in any attempt to impose a new, and more onerous, admissibility standard symmetrically to the prosecution and those accused of criminality. Imposing upon the accused the standard applicable to the state’s incriminating expert opinion evidence, if that might limit the ability to adduce potentially exonerating evidence, warrants explanation, at the very least.76

While I accept that the most important single reform in relation to expert evidence in criminal proceedings would be to hold all expert opinion evidence to a rigorous reliability standard,77 there is a need to consider the proposal in the context of the accusatorial criminal trial, where the accused does not have an obligation to prove very much and historically has been allowed some latitude in adducing evidence—including, in theory, expert opinion evidence—consistent

76 Here I agree with concerns expressed to the Law Commission by Paul Roberts: Report, 3.82–3.84.
77 What Mike Redmayne describes as taking reliability ‘seriously’: Report, 3.70, n. 67.
with non-guilt. The Report gives some attention to the question of whether the state and the accused should be subject to the same admissibility standard. Notwithstanding an express commitment to a symmetrical approach to admissibility, the Report manifests tensions and inconsistency around the level of symmetry and even some occasional sympathy for the idea that a degree of asymmetry might be appropriate in practice.

Consider the following extracts arranged more or less according to their symmetrical implications:

**More symmetrical**

... we believe that the presumption of innocence, crucially important though it is, does not give the accused the right to adduce unreliable expert evidence in order to mislead the jury or distract the jury from reliable evidence which points to his or her guilt. (3.86)

Because a defence scientific expert’s opinion should always be founded on sound scientific principles, we are not persuaded by the argument, rooted in the presumption of innocence, for affording the methodological credentials of expert evidence tendered by the accused a somewhat more generous benefit of the doubt. Under our proposals ... the defence experts would be expected to demonstrate that their opinion evidence is a legitimate, scientifically valid conclusion, based on sound principles and properly conducted research. (3.105; see also p. 209)

**Less symmetrical**

... given the obligation on the prosecution to prove the accused’s guilt beyond reasonable doubt, the defence expert would merely need to show that his or her alternative explanation for the child’s death is a reasonable (that is, a realistic, sound) alternative, either on the basis of the empirical research relied on by the prosecution experts or on separate research. (3.99, 3.81, 3.85, 4.32)

Several passages suggest that expert opinions based on sound techniques but without support among the majority of scientists (‘in the field’) would be admissible if *adduced by the defence*. 
The fact that a defence scientific expert’s opinion may be incorrect, or that it is based on a hypothesis supported by only a small minority of scientists in the field, should not render the opinion inadmissible if it is based on the application of sound scientific principles. (3.104, 3.109; italics added. Compare 8.41)

Again, an expert opinion of a scientific nature should be admissible for the accused in criminal proceedings if it was reached by the application of valid scientific methodology and reasoning, even if the opinion is generally thought to be wrong. (3.10; italics added)

... opinion of a scientific expert would be admissible for the defence even if it would place in the jury’s collective mind only a small possibility that D is not guilty, so long as it is a reasonable possibility.78 (3.111)

Given some apparent tolerance of the accused’s ability to adduce weak evidence, the epistemic weakness of a good proportion of the state’s forensic science and medicine, the inconsistent operation of trial safeguards (including the standard of criminal proof), along with the inconsistency apparent in the Report, it seems highly unlikely that a new admissibility standard would be applied in an entirely symmetrical fashion. In consequence, I support an explicitly asymmetrical approach to admissibility that is receptive to plausible expert opinion evidence adduced by the defence, even if that evidence does not fully satisfy the reliability criteria outlined in clause 4 and the Schedule.79 Here, there is nothing to prevent a ‘mirror image’ provision that would allow the state to counter with similar opinion evidence—as rebuttal evidence. In contrast to the position of the state—as a model litigant with markedly different burdens and obligations—the presumption of innocence and the skewing of risks against conviction of the innocent means that there are good reasons for allowing the accused to adduce and rely upon emerging and risky technologies. Indeed, given that there is, at present, no reliability standard imposed on the state, granting the accused the ability to adduce slightly less reliable expert opinion evidence—broadly consistent with current prosecutorial practice—in conjunction with a mirror image rebuttal capacity, might not dramatically undermine the adversarial trial; even if it were to return some of the risk to the state. Unfortunately, the emphasis on symmetry tends to elide the way that a more onerous admissibility standard—if enforced

78 This seems to be a mistake. If relevant and ‘sufficiently reliable’, there is no need for expert opinion evidence, at least on its own, to raise non-guilt as a ‘reasonable possibility’.
symmetrically—may make it harder for a genuinely innocent person to avoid wrongful conviction.

Otherwise, the Report proposes a very positive, albeit non-statutory, response to the reception of (defence) rebuttal experts who seek only to draw attention to weaknesses in expert opinion evidence (adduced by the state):

... if a defence expert has simply been called to draw attention to possible problems with the prosecution expert witness’s methodology, data, inferences, assumptions, reasoning and so on, and if the defence expert is not putting forward an alternative proposition (other than the claim that the prosecution expert is wrong), so he or she is not relying on any hypothesis or empirical research (and so forth) of his or her own, then the reliability test would be inapplicable to that expert’s evidence. The defence will always be able to call impartial expert witnesses to reveal flaws in the methodology and reasoning of prosecution expert evidence.80 (3.93, though compare 3.101)

There are few reasons to exclude the concerns of critics, if plausible, even if the critics are not from ‘the field’ (for example, 3.104).81 Significantly, a large part of the motivation for the NAS review of forensic science and medicine emerged from the interventions and mobilisation of academic critics—including some acting as rebuttal experts.82 The defence should be given considerable scope to call rebuttal expertise (see 3.104). However, policing the boundary between methodological critique and considering or developing alternative hypotheses, databases or interpretive models, which are implicitly inadmissible unless reliable, might prove to be very difficult (3.96, 3.98).83
A ‘bogeyman’? The accused’s propensity to adduce ‘junk science’
Notwithstanding some implicit sympathy for asymmetry, the Report embodies wider criminal justice scepticism toward ‘defence’ experts (and implicitly lawyers). The Law Commission’s concern with ‘defence’ experts seems overblown and even a little mean-spirited. While defendants and their lawyers undoubtedly seek and find ‘experts’ proffering unreliable or questionable opinions (some of which should be excluded), the operation of the criminal justice system, including activities beyond the courts—such as plea negotiations and investigations—is more directly, regularly and detrimentally affected by the incriminating opinions of a range of highly qualified or experienced individuals called by the prosecution (and routinely admitted by trial judges).

3. Conclusion: though not the final word

... these recommendations are unlikely to provide a panacea. (1.42)

Interactions with expertise are complex. In closing I would like to make and reiterate several points. The first and most important point is that the Law Commission’s recommendations are generally in the right direction. There is indeed a need for reliable expert opinion evidence and for lawyers and judges to pay much closer attention to the probative value of expert opinion evidence associated with criminal proceedings. While ensuring that reliability has not been seen as particularly important, at least historically, emerging insights about the questionable foundations of forensic science and medical knowledge and the limitations of the adversarial trial (and appeals) mean that principle and pragmatism demand a more considered and coordinated response. That said, a new reliability-based admissibility standard, and even a reliability standard operating in conjunction with some training, is unlikely to stimulate the kind of cultural change required.

The frailty of the trial and ongoing problems with expertise seem to require heightened scrutiny at the admissibility stage, but they also raise broader

84 Report, 3.107, 3.86 and Consultation Paper, Appendix A. See e.g. R v Gilfoyle (No. 2) [2001] 2 Cr App R 5.
85 This resonates with the manner in which tort critics, such as Peter Huber and Kenneth Foster, characterised plaintiffs and their experts and lawyers and the general tort system in the United States in the 1980s and 1990s. See P. W. Huber, Galileo's Revenge: Junk Science in the Courtroom (Basic Books: New York, 1991); K. Foster and P. Huber, Judging Science: Scientific Knowledge and the Federal Courts (MIT Press: Cambridge MA, 1997).
questions about the criminal justice system and its participants. The reader should wonder why judges have not recognised and responded to the limitations of the trial and the apparent need for reliable expert opinion. If criminal proceedings are really oriented toward rectitude and justice, then imposing the risks associated with unreliability and uncertainty on the accused, especially given the complex and synergistic interactions between expert and other evidence, as well as the inconsistent operation of trial safeguards, appears difficult to reconcile with dominant and longstanding criminal justice principles.

Previously, I have advocated *demonstrable reliability* as an admissibility standard, along with the need for a more reflexive jurisprudence that attends to prevailing legal principle and the limitations of current adversarial practice.  

I prefer ‘demonstrable reliability’ because it requires the proponent to provide evidence to support the asserted capability and, where appropriate, the level of accuracy. ‘Sufficiently reliable’, in contrast, introduces scope for qualification and derogation, even if imposed in conjunction with a list of reliability-related criteria. There is, however, little point in quibbling over the precise terminology for, as international experience suggests, the terminology may be far less important than a range of other professional, ideological and institutional influences shaping the way decision-makers respond to expertise. Preliminary investigations reveal that regardless of prevailing admissibility standards and evidence of reliability the same types of forensic science and medicine evidence are routinely admitted in England and Wales, the United States (*Daubert* and non-*Daubert* jurisdictions), Canada, Australia and New Zealand.  

Changing the law and introducing new procedures might be less important than persuading legal participants (especially judges and prosecutors) of the need for change. It is far from obvious that training, even training based around conventional legal values, will facilitate the kinds of changes that appear to be required (in England and elsewhere). One of the difficulties, here, is how varying degrees of technical and methodological sophistication (and illiteracy) limit the ability to comprehend and adapt. Without necessarily wanting to remove lay judges and jurors from fact-finding in our criminal justice processes, we cannot continue to ignore their limitations, especially if a reliability standard or improved processes do not transform criminal justice practice. These issues are considered in more detail in the second part of this article.

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87 Edmond and Roach, above n. 44; Edmond and Roberts, above n. 15.
The Report insists that changing admissibility criteria will not produce a ‘sea change’. Although, focusing attention on reliability will, it suggests, ‘put experts on notice’ and change the way some experts express their opinions. According to the Report and the Consultation Paper ‘much expert evidence which is currently admitted would continue to be admitted’ (5.99). This, however, seems misleading. The kinds of reliability criteria described in Daubert, the revised FRE r. 702, and the proposed Bill, if taken seriously, should lead to the exclusion of a good deal of currently admissible, though insufficiently reliable, forensic science and medicine evidence (see 5.99–5.100). Moreover, attempts to reduce the impact of exclusion, on the basis of changing expressions and the use of ‘conservative’ estimates or allowing ‘established’ techniques to circumvent reliability review, will, once again, be inconsistent with the express terms and spirit of the draft Bill. In most cases, if the necessary testing has not been undertaken and standards are not in place, then the value of the opinion will be unknown and any qualifications will be mere supposition. In the vast majority of cases, moderating the level of confidence or the strength of an opinion, where the expression is not empirically predicated, should not ground admissibility. Such opinions and expressions are not demonstrably reliable and may be logically irrelevant.

A related issue, not considered in the Report or by other reliability-oriented jurisdictions, is whether the imposition of a genuine reliability standard will substantially change the rate of prosecutions and acquittals. For, if a reliability standard were strictly enforced, a significant proportion of currently admissible techniques and expert opinions—that have presumably assisted in procuring convictions—would be inadmissible. It is also likely that some techniques that might eventually prove to be reliable will face delay before criminal courts accept them. It may be that a raised admissibility standard, more consistent with prevailing legal values and principle, particularly if the trial safeguards are relatively weak, will leave more serious offenders in our communities. The appropriate response would seem to be a shift in research priorities in order to evaluate and improve forensic science and medical techniques.

One of my concerns in recent years has been with how courts, particularly trial and appellate judges, access and engage with exogenous (i.e. non-legal) knowledge.

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89 Consultation Paper, above n. 2 at 6.12–6.16.
91 There is, in addition, no consideration of the implications of past convictions obtained through the use of questionable forensic science techniques and overstated opinions.
92 It may also reduce the number of wrongful convictions.
and expertise. Common law legal systems have evolved in ways that discourage judges (and jurors) from undertaking their own inquiries and investigations. This may be desirable, but there seems to be a need to develop new channels of communication. Judges and lawyers need to foster sustained ‘dialogues’ beyond the individual case and beyond the legal profession. While recourse to court-appointed experts may provide some assistance, those responsible for legal institutions ought to be thinking about procedures and arrangements that offer sustained assistance across the criminal justice sector. Here preventative interventions, like those flowing from a multi-disciplinary advisory panel (considered in Part 2), might be more useful than the case-based contributions provided by the occasional court-appointed expert.

Exogenous support could help legal institutions to improve their performances in terms of efficiency and principle. Legal institutions, and particularly judges, disregard exogenous knowledge, advice and authority as well as information about the effectiveness of legal procedures at considerable risk, not only to the innocent, but to their own social legitimacy.

95 Initiatives with the Royal Statistical Society, for example, represent a positive step.
96 Like preventative medicine, prevention-oriented law reform is likely to be a cost-effective endeavour.