Expert evidence and the Law Commission: implementation without legislation?

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The Law Commission published its report on *Expert Evidence in Criminal Proceedings in March 2011*.[1] Two years on, the government is still "considering its response"[2] and there seems little immediate prospect that the Commission's recommendations will be implemented, apparently because of anxiety over their possible cost.[3]

For the foreseeable future, then, the courts may be left to develop the common law without legislative intervention. Judicial responses to the Consultation Paper indicated broad acceptance of the Law Commission's view that the current "laissez faire" approach was unsatisfactory.[4] Fortunately, or so I shall argue, the common law already provides the basis for a more rigorous approach: were the judges so minded, they could use their existing powers to achieve very similar results to those envisaged by the Law Commission. I use the subjunctive here because it is far from clear that the judges *are* so minded. However, while some recent Court of Appeal decisions have disappointed those hoping for a more rigorous approach to expert evidence,[5] others have shown a refreshing willingness to scrutinise expert evidence critically, albeit with a view to controlling the terms in which it will be given, or in which it summed up to the jury, rather than excluding it altogether.[6] Since, as we shall see, the likely effect of the Law Commission proposals would be largely seen in the editing rather than the complete exclusion of evidence, the Commission's approach and that of the judiciary appear to be convergent.*Crim. L.R. 562

Some critics of the Law Commission might say that this merely confirms that its recommendations would not give the common law the radical overhaul it needs. I shall argue, on the contrary, that the basic principles of the common law—a broad test of prima facie admissibility coupled with a power to exclude evidence whose potential prejudicial effect outweighs its probative value—are sound, however inadequately they have been applied in some cases.

The Law Commission's proposals

The Law Commission's proposed "core test" is that expert opinion evidence should not be admissible unless:

(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.[7]

What is not immediately apparent from the wording of the Draft Bill, but emerges clearly from the Commission's discussion, is that the "strength" of the opinion would be relevant to both limbs of the proposed test. A "weak" opinion, that is, may be "soundly based" on a scientific foundation that is too speculative or insufficiently tested to support a "strong" opinion. The Commission accepts, for example, that

"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." [8]

In their critique of the Commission's proposals, Edmond and Roberts rightly highlight the importance of this passage, which in their view reveals a serious weakness in the Commission's proposals.[9] The Commission's "strength" test can, however, be seen as an ingenious attempt to avoid the drawback of the kind of rigid admissibility test favoured by Edmond and Roberts. The standard of "demonstrable reliability" that they propose for prosecution (but not defence) expert evidence is more demanding than that applied to any other kind of evidence,[10] and would exclude relevant evidence that might form one strand of a case that was compelling as a whole.

By relegating forensic techniques of uncertain reliability to a supporting role, the Law Commission's test would mark a significant departure from some recent decisions of the Court of Appeal, particularly those that have upheld convictions based solely, or almost solely, on "facial mapping" evidence.[11] The Commission's*Crim. L.R. 563 critics are right, however, to point out that few forensic techniques would be likely to be excluded altogether under its recommendations.[12]

Clause 4(2) of the Commission's Draft Bill gives examples of when an expert opinion would *not* be soundly based. Although it is not clear from the wording of the Bill, the implication of the Commission's analysis is that at least some of the tests set out in this clause would have to be considered in relation to how strongly the expert's conclusions were expressed. For example, evidence would not be admissible if it was based on a hypothesis that had not "been subjected to sufficient scrutiny"[13]; but how much scrutiny is "sufficient" may depend on how much reliance the expert places on the hypothesis. A hypothesis that has been subjected only to limited scrutiny may justify a tentative opinion but not one that firmly excludes contrary hypotheses. Similarly, an opinion that relied on an "unjustifiable assumption", such as expressions of certainty based on unwarranted assertions of the discernible uniqueness of fingerprints,[14] would often need to be rephrased in less dogmatic terms rather than excluded altogether.

Turning to the "lower-order" factors[15] listed in a schedule to the Draft Bill, a number of them amplify the requirement already present in the Criminal Procedure Rules for experts properly to qualify their opinions. The court should consider "whether the opinion properly explains how safe or unsafe" is any inference it draws; "whether the opinion takes proper account of matters, such as the degree of precision or margin of uncertainty, affecting the accuracy or reliability" of any results or measurements on which it relies; whether the report takes account of all relevant information; and whether the expert properly explains her stance in relation to any differences of opinion within the field or any departure from accepted practice. Other factors depend on "the extent to which" the material relied upon by the expert

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has been peer-reviewed or fall outside the expert's field.[16] These are matters of degree and must, presumably, be considered in the context of the strength of the proposed opinion.

The Common Law

Currently, the admissibility of expert evidence is governed by the same general principles that apply to any other kind of evidence. These are, firstly, that evidence is prima facie admissible if it is relevant to a matter in issue[17] and of more than minimal probative value, so that it could affect a reasonable jury's decision[18]; and secondly, that prosecution evidence[19] that is prima facie admissible may be excluded if its potential prejudicial effect outweighs its probative value[20] (this is often subsumed under the statutory discretion to exclude prosecution evidence on the*Crim. L.R. 564 grounds of unfairness).[21] In addition, there is at least one common law rule that is specific to expert evidence, the "*Turner* rule".[22] The exact nature of this rule is a matter of some debate[23] but it sets a standard of helpfulness that expert evidence must meet in order to be exempted from the general rule against opinion evidence.[24] The *Turner* rule allows the courts to exclude evidence, including defence evidence, which although relevant and of more than minimal probative value, is insufficiently "helpful" to the jury to offset the general objection to opinion evidence: namely the risk that the jury will be unduly influenced by the witness's opinion about a matter on which they ought to form their own independent judgment.

The Law Commission gave much more attention to the first and last of these principles than to the second. In particular, it attempted to elucidate the ill-defined "plus-value"[25] beyond bare logical relevance which was summarised above in the phrase that evidence must be of more than minimal probative value. The Commission rightly concluded that this rule was of very limited assistance in excluding unreliable expert evidence, and proceeded to formulate its own more rigorous test of when evidence is "sufficiently reliable to be admitted".[26] The discretion to exclude prosecution evidence on the ground of prejudicial effect or unfairness receives no more than passing mention in the report. Arguably this is a fair reflection of the limited practical importance of the exclusionary discretion—so far as I am aware, there is *no* English appellate decision[27] holding that expert evidence ought to be excluded on these grounds, although there are of course a number of decisions excluding defence evidence under the *Turner* rule.[28] The *potential* importance of the exclusionary discretion, however, is considerable.

Rose L.J.'s endorsement in *Luttrell* of Cross and Tapper's view that expert evidence should be subject only to the "ordinary tests of relevance and reliability"[29] was combined with a reminder to judges that they must also use their discretion at common law and under PACE s.78 in deciding whether to admit expert prosecution evidence.[30] In the edition of Cross and Tapper cited in *Luttrell*, the only authority cited in support of this view is the Canadian case of Mohan, where the Supreme Court held that the common-law tests of admissibility incorporate a "reliability versus effect factor", which can be regarded either as an aspect of relevance or as a distinct exclusionary rule, and which has "special significance in assessing the admissibility of expert evidence".[31] In *Reed*, the court quotes the corresponding passage in the 11th edition of Cross and Tapper, which cites*Crim. L.R. 565 additional Canadian authorities including J.-L.J., where the Supreme Court interprets Mohan as "moving in parallel" with the US Daubert test.[32] The *Reed* judgement goes on to cite the Law Commission's "valuable discussion" of Daubert in its Consultation Paper, in a way that could

be taken to imply that courts should take this discussion into account in considering whether expert evidence has "a sufficiently reliable scientific basis … to be admitted".[33] Though it is doubtful whether the Court of Appeal appreciated the Canadian context of Cross and Tapper's remarks, there is nothing in its endorsement of them to preclude the development of a more rigorous approach to the reliability of expert evidence than the court has displayed so far.

In Buckley,[34] a leading case on fingerprint evidence, Rose L.J. clearly distinguished between the test of relevance and the exclusionary discretion:

"Fingerprint evidence, like any other evidence, is admissible as a matter of law if it tends to prove the guilt of the accused. It may so tend, even if there are only a few similar ridge characteristics but it may, in such a case, have little weight. It may be excluded in the exercise of judicial discretion, if its prejudicial effect outweighs its probative value."

Rose L.J. proceeded to lay down guidelines as to the circumstances in which fingerprint evidence should be excluded in the exercise of discretion. These included an indication that evidence was unlikely to be admissible where there were fewer than eight similar ridge characteristics, and a list of factors to be taken into account when there are eight similar characteristics or more. The eight-point threshold was arguably ill-conceived, given that the judgement otherwise dispensed with arbitrary numerical standards, and it may well be honoured largely in the breach[35]; but its importance in this context is that it is a clear precedent for the Court of Appeal laying down guidelines on how the common-law discretion[36] should be exercised. If the judges were so minded, there is no reason why they should not in some future case lay down guidelines modelled on those proposed by the Law Commission.

It is the central argument of this article that the exclusionary discretion could and should be used to exclude any prosecution evidence which would fail the Law Commission's core test: that is, evidence that is not soundly based or is expressed in terms stronger than is warranted by whatever sound basis it has. If the evidence has no sound basis at all, it is irrelevant. If it is expressed in unduly strong terms, it has no probative value beyond what it would have if expressed in appropriately modest terms, and its unduly strong expression has a prejudicial effect: a jury that accepts it will be led to exclude or undervalue the possibility that the evidence is erroneous or can be explained in a way consistent with the accused's innocence. Thus, prosecution expert evidence that is stronger than its basis warrants is *always*Crim. L.R. 566* evidence whose prejudicial effect exceeds its probative value, or at least the probative value of its excessively strong element.

The effect of applying the exclusionary discretion in this way would be similar to that of the Law Commission's core test: very little of the evidence typically relied upon by the prosecution would be wholly inadmissible, but the courts would have to edit the evidence to ensure that it was not expressed in an unduly strong manner. Little evidence would be wholly inadmissible because even the weakest forms of forensic "science" evidence (what Saks calls the "non-science forensic sciences")[37] have a sufficiently "sound" basis to qualify as relevant and of more than minimal probative value. The assumption underlying most evidence of this kind is that if two samples or images show many similarities and few if any differences, they are more likely to come from the same source than they would be if they showed fewer

similarities and more differences. As a broad generalisation, that is surely true. The trouble with the weaker forms of forensic science evidence is that no-one can say with any precision *how much* more likely the similarities are if the source is the same, or in other words how likely two samples or images from *different* sources are to show the relevant degree of similarity.[38] The controversial question, to be taken up later in this article, is whether such uncertainty is a ground for excluding the evidence altogether, or simply (as I shall argue) for doing everything possible to make the uncertainty clear to the jury.

The role of the judge in preventing evidence from being given in unduly strong terms was recognised by the Court of Appeal in *Reed and Reed*, when discussing the evidence of an expert as to how the minute traces of DNA that had been found might have been deposited:

"care must be taken to guard against the dangers of that evaluation being tainted with the verisimilitude of scientific certainty … It is … essential … that the court exercise a firm degree of control over the admissibility of this type of evidence … The evidence on the possibilities and the evaluation *must be clearly set out in full in the terms in which it is to be given*. Where there is a challenge to its admissibility, the court must rule on the issue of admissibility in advance, or at the outset of the trial …".[39]

This clearly indicates that the judge can and should "edit" the evidence at the pre-trial or voir dire stage, and insist that it is not presented in terms that lend it an unwarranted "verisimilitude of scientific certainty".[40] *Reed* also stresses the importance of adherence to what are now the Criminal Procedure Rules 2012. In another case on DNA evidence, *C*, Thomas L.J. said that:

"If the rules and guidance are properly observed, there are likely to be few cases where a voir dire will be necessary to determine whether the Crown's expert evidence in relation to DNA should be excluded under s.78 of PACE.*Crim. L.R. 567 " [41]

The implication is that where the Rules are not observed, exclusion under s.78 (or the common law discretion [as preserved by s.82(3)]) may need to be considered. Of particular relevance are two paragraphs of r.33.3(1), which state that an expert's report must:

"(f) where there is a range of opinion on the matters dealt with in the report —

(i) summarise the range of opinion; and

(ii) give reasons for his own opinion;

(g) if the expert is not able to give his opinion without qualification, state the qualification."

In para.(g), "not able" must mean "not able consistently with the expert's duty to the court", which under r.33.2(1) is to give an "objective, unbiased opinion". Any unduly strong opinion could be said to show a bias towards certainty, or to be more certain than can be objectively justified. Rule 33 thus provides an additional basis for the exclusion of unduly strong evidence under s.78.

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It appears, then, that the main effect of the Law Commission's "core test", that of excluding evidence expressed in excessively strong terms, could be achieved by applying existing common-law and statutory powers. I now want to argue that this interpretation of the law rests on sound moral and epistemic principles.

How the jury knows

An important principle underpinning the case law on expert evidence is that it is for the jury to determine what weight to give to expert evidence.[42] The weight of expert evidence, in other words, is the persuasive force that it has from the standpoint of a jury of ordinary citizens. The jury must be able to say "in the first-person-plural voice of representatives of the … polity"[43] whether the expert and other evidence together has made them sure of guilt. This democratic principle[44] has important epistemological implications. In brief, it implies that verdicts must be justified on grounds that are cognitively accessible to jurors (and to citizens at large).[45]

In light of the literature on both the epistemology of testimony and the psychology of fact-finding, it seems clear that these cognitively accessible grounds must largely depend on a form of "inference to the best explanation", modified to comply with the relevant standard of proof.[46] A jury is likely to accept—and to be justified in accepting—the theory (or "story")[47] that provides the most coherent*Crim. L.R. 568 and plausible explanation of the evidence.[48] To be accepted as proof of guilt in a criminal trial a theory must not only be more probable than its rivals; it must be the *only* coherent and plausible explanation of the evidence.[49] The assessment of any particular piece of testimony—in a courtroom as in innumerable everyday situations where we believe or doubt what others tell us—can also be understood as a form of inference to the best explanation. The most obvious explanation of someone's telling us something will usually be that she is saying what she honestly believes, and believes for good reasons; but sometimes other explanations will be available, such as the speaker's having a motive to deceive, or her judgment being distorted by bias or by over-confidence in her cognitive abilities. Which of these explanations we accept may depend largely on how well the testimony coheres with other evidence and with our background knowledge and beliefs.[50]

Expert evidence differs from other testimony by virtue of the scope that expert witnesses are given to draw inferences from their observations or from the evidence of other witnesses. Often these inferences will themselves be of an explanatory nature—e.g., that the similarities between two prints can only plausibly be explained by their coming from the same source, or the deaths of two young children of the same mother are most likely due to murder. To some extent, fact finders may be able to make their own assessment of the plausibility of these inferences. Jurors can, for example, see photographs or enlargements of fingerprints[51] for themselves, although their interpretation of them will be guided by the expert. As with any other kind of testimony, jurors must assess whether the witness says what she does because she believes it for good reasons, or whether there are less creditable explanations for her saying it, such as bias, incompetence or dishonesty. But while this may the same *kind* of judgment as a jury has to make about any witness, it is likely to be a much more difficult one. Alternative inferences that might be drawn from the evidence available to the expert are unlikely to be readily apparent to the jury unless the expert herself, or another expert, points them out; and the ways in which error or bias can affect expert evidence are unlikely to be apparent unless they are themselves the subject of expert evidence (as the errors made by

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expert lip-readers were in *Luttrell*,[52] for example). Expert evidence can distort fact-finding—producing a prejudicial effect—where it unjustifiably discounts alternative explanations, which are consequently ignored by the jury.

This danger is clearly illustrated in the examples that the Law Commission itself gives of expert evidence leading to miscarriages of justice. In *Dallagher*,[53] a purported expert on ear-prints*Crim. L.R. 569

"opined that he was 'absolutely convinced' that D had left the print found at the scene, and a second prosecution expert was willing to countenance only a 'remote possibility' that the print had been left by someone else." [54]

In *Clark (Sally) (No 2)* [55] C's convictions for the murder of her two infant sons were quashed primarily because of the failure on the part of a prosecution expert to disclose test results for one of the deceased children which would have revealed the possibility of a natural cause; and another

"expert had simply (and quite wrongly) assumed that there were no genetic or environmental factors affecting the likelihood of cot deaths, and testified that in his opinion there was only a one in 73 million chance of having two cot deaths in the same family." [56]

In Cannings the same expert expressed what the Court of Appeal later deplored as a dogmatic view that two or more infant deaths in the same family pointed to murder; subsequent evidence indicated a possible genetic cause.[57] Similarly in *Harris* [58] the Court of Appeal criticised the over-confident assumption that the "triad" of injuries found in the deceased babies could *only* be explained by shaking.

In all these cases, the problem was not so much the admission of the expert evidence as the exclusion by the experts of facts or possibilities that ought to have been left for the jury's consideration. By either failing to mention, or effectively ruling out, possibilities favourable to the defence, the evidence had a prejudicial effect which, had the courts detected it, might reasonably have been held to outweigh its probative value. This reinforces the point made in *Reed*,[59] about the need for judges to scrutinise carefully the way in which experts propose to give their evidence before it is placed before the jury. It also shows how vital it is that expert witnesses adhere to high ethical standards of candour and transparency,[60] and are held to account (as were both the delinquent experts in the *Clark (Sally) (No 2)* case)[61] when they fall short of those standards. But the fact that an expert's findings are susceptible to more than one explanation looks like a reason for the expert to give more information to the jury, rather than a reason to exclude her evidence altogether. Provided the expert fairly places all possibilities of doubt before the jury, the jury can consider them in the context of the evidence as a whole. To quote *Reed* again:

"… most expert witnesses in criminal cases [express their] opinion in relation to one specific aspect of the evidence. It is always for the jury to decide the facts in the light of the evidence as a whole. Whilst they must of course pay*Crim. L.R. 570 due regard to the expertise of an expert witness, they are neither obliged to agree with him, nor obliged to share doubts or reservations expressed by him." [62]

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In the *Reed* case, the audio consultant who analysed a voicemail left by the deceased had properly accepted that he could not be certain that what could be heard was a human being moaning and groaning, but the jury, taking into account other evidence about the time and circumstances of the call, could reasonably have been sure that these were the groans of a dying man.

In the controversial case of *Atkins*,[63] it was important to make the jury aware of the limitations of "facial mapping" evidence which placed one of the accused at the scene of the crime—and it is debatable whether those limitations were made as "crystal clear"[64] as they could have been. On the other hand, the jury were entitled to consider the expert evidence in the context of the strong circumstantial evidence implicating the accused, including his close association with someone who was undoubtedly involved but had died before the trial. If the expert evidence had been excluded on the ground that it was not "demonstrably reliable",[65] the jury would have been deprived of relevant evidence which could have made the difference between their having a reasonable doubt and their being sure. And as Hughes L.J. pointed out, a ruling that the expert could not comment on the strength of the evidence but merely point out similarities to the jury would equally preclude the expert's expressing a properly cautious view of the evidence, for example that it lent only "limited support" to an identification, where that was appropriate.[66]

Possible drawbacks

In suggesting that the Law Commission's proposals do not differ greatly from the effect of a common law approach which takes seriously the potentially prejudicial effect of expert evidence, I am not (unlike Adam Wilson)[67] suggesting that the existing law, strictly applied, would be preferable to implementation of the Law Commission recommendations. The advantages of the Law Commission's proposals lie in their clarity, in the occasion that new legislation would afford for judicial training (though the cost of this exercise may well put the government off implementing them), and perhaps most importantly, in the provision for independent experts to advise judges on admissibility decisions.[68] These are significant points, and in the absence of training, independent experts, or legislation much will depend on the ability and willingness of the Court of Appeal to formulate suitable guidance; but the disadvantages of the existing exclusionary discretion by comparison with*Crim. L.R. 571 the legislative solution favoured by the Commission are less substantial than the Commission supposed.

In its Consultation Paper, the Law Commission firmly rejected the option of a judicial discretion without guidance, or without more guidance than the "equivocal, and inconsistent, pronouncements of the Court of Appeal".[69] The court is, however, perfectly capable of giving clear guidance as to specific forms of evidence, as it has done in Buckley,[70] *Henderson* [71] (on the "triad" of injuries in "shaken baby" cases), *Luttrell* [72] (on lip-reading), *Atkins* [73] (on forensic facial identification) *Smith* [74] (revisiting fingerprints) and *Reed and Reed* [75]; and there is nothing to stop it from giving general guidance on the use of the discretionary powers. It could do much worse than to model such guidance on that proposed by the Law Commission.

The Commission's main objection to a discretionary exclusionary power *with* guidance was that it would be reviewable by the Court of Appeal only on *Wednesbury* [76] grounds. The

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Commission saw this as an inappropriate standard because the Court of Appeal was "*better* suited than trial judges to resolve questions relating to the evidentiary reliability of expert evidence".[77]

The Commission is correct to point out that there is authority[78] for the proposition that the judge's exercise of the s.78 discretion is reviewable only on *Wednesbury* grounds. On the other hand Lord Steyn, speaking for a unanimous House of Lords, has said that although s.78

"is formally cast in the form of a discretion ('the court may') the objective criterion whether 'the evidence would have such an adverse effect on the fairness of the proceedings' in truth imports a judgment whether in the light of the statutory criterion of fairness the court ought to admit the evidence." [79]

Whether expert evidence is expressed more strongly than its foundations warrant is a matter of judgment, rather than discretion, and once it is established that the proposed evidence is too strong it must follow that the non-existent probative value of the excessively strong element of the evidence is outweighed by its inevitable prejudicial effect. Even on a *Wednesbury* basis, it should be possible to argue either that the judge has failed to take account of the lack of foundation for the way the opinion is stated, or if the judge did take it into account, that no reasonable judge could then fail to exclude the evidence.

A further disadvantage of the existing discretion, rightly noted by the Law Commission, is that it does not place the burden of persuasion on the proponent*Crim. L.R. 572 of expert evidence, as the Draft Bill would do.[80] Although the Court of Appeal has indicated that the burden of proving the admissibility of expert evidence lies on the proponent of the evidence,[81] these dicta are not concerned with the discretionary power of exclusion, but with the need for the proponent of the evidence to show that it falls within the expert evidence exception to the rule excluding opinion evidence. The burden on the proponent is to show that the evidence has more than minimal probative value and is "helpful" to the jury, but not to show that its probative value exceeds its prejudicial effect.

According to the Court of Appeal in *R. (on the application of Saifi) v Governor of Brixton Prison*, "the concept of a burden of proof has no part to play" where evidence is challenged under s.78; rather, each side seeks to persuade the court of its view of the impact of the evidence on the fairness of the proceedings.[82] Presumably the same applies to the common-law discretion: the proponent of the evidence bears the burden of proving its probative value, the opponent that of proving its prejudicial effect, and it is for the court to determine the balance between the two. Pattenden has criticized the reasoning in *Saifi* but her arguments concern allegations of police misconduct rather than the questions of probative value and prejudicial effect.[83] A stricter insistence on the proponent's burden to show the probative value of the evidence would go some way towards removing what appears to be a tactical, if not a legal, burden on the opponent of the evidence to show its unreliability.[84]

From the Commission's standpoint, a major drawback of both s.78 and the common law discretion[85] is that they apply only to prosecution evidence. The Commission's view is that the same test should apply to both prosecution and defence evidence, although the burden of standard of proof should be taken into account in determining what is a "sufficient" standard of reliability.[86] As noted above, while the *Sang* [87] discretion does not apply to defence

evidence, a related "relevance versus effect"[88] test does—namely *Turner* [89] "helpfulness". Roberts and Zuckerman, indeed, see *Turner* as no more than a localized version "PV > PE", their shorthand for the *Sang* discretion.[90] *Turner*, however, is concerned with evidence on matters where the jury could form an opinion for themselves. It does not appear apposite to cases such as the supposed "temporary brittle bone disease"[91] where the expert evidence is outside the scientific mainstream but is not on a matter of "common knowledge". The Court of Appeal has indicated, though without deciding the point, that evidence of "temporary brittle bone disease" may well be insufficiently reliable to be admitted.[92] If this is taken to mean that such evidence*Crim. L.R. 573 is of so little probative value that no reasonable jury could attach significant weight to it,[93] then this does appear the appropriate test to apply.

In principle, any evidence, however speculative or controversial, to which a reasonable jury could attach more than negligible weight should be admissible on the basis that it could cause the jury to have a reasonable doubt. Experts called by the defence should not, however, have carte blanche to give evidence in unjustifiably strong terms. The argument that such overstated evidence adds nothing to the probative value that the evidence would have if stated more cautiously applies equally to defence and prosecution evidence.

In its discussion of the Criminal Procedure Rules, the Court in *Reed* [94] drew particular attention to r.33.6, which gives the judge power to direct experts called by the prosecution and defence to confer and to "prepare a statement for the court of the matters on which they agree and disagree, giving their reasons".[95] The judge can then rule on the admissibility of the experts' evidence on the matters on which they disagree. If a defence expert were to state an opinion that went beyond anything for which scientifically cogent reasons could be given (e.g. by attempting to portray "temporary brittle bone disease" as an established fact) the judge would surely be entitled—indeed bound—to rule that an opinion expressed in those terms fell outside the Folkes v Chadd exception to the rule against opinion evidence, which applies to "the reasonings of men of science" on matters within their science.[96] The same would apply to a defence expert like the one in the Canadian case of J (J-L),[97] who simply refused to discussed the reasoning on which his conclusion was purportedly based.

The argument for the inadmissibility of purportedly expert opinion which lacks any reasoned basis also applies, of course, to prosecution evidence, and confirms that the exclusion of such evidence in clear cases is not purely a matter of discretion. This is not to say that the test would be fully symmetrical. A defence report could not be excluded, for example, because it failed to consider a hypothesis favouring the prosecution, although the equivalent failing in a prosecution report could be considered unfairly prejudicial.

Was the Commission too timid?

The argument that the common law is capable of being developed in such a way as to deliver most of what the Law Commission recommends may seem to play into the hands of those critics of the Law Commission who argue that its proposals are flawed precisely because they make no radical change to the existing law. For these critics, the Law Commission's willingness to countenance the admission of quite dubious forms of forensic "science" such as ear-printing and facial mapping, provided their conclusions are expressed in suitably modest terms, is a serious weakness. From a purely epistemic point of view, however, the admissibility of such evidence seems justified. Prima facie, any evidence which there is a

good reason to believe has more than a chance relationship to the existence of a material*Crim. L.R. 574 fact is relevant evidence which a fact-finder should take into account—provided the fact-finder also takes into account the possibility of error or coincidence. Edmond and Roberts see "no epistemic advantages, but rather only potential disadvantages, in admitting incriminating opinions that are not demonstrably reliable".[98] Yet the techniques they regard as "not demonstrably reliable", such as "facial mapping", are almost certainly relevant—the world would have to be a very strange place for the similarities and differences discerned by forensic identification techniques to have no bearing on the question whether the items examined came from a common source. As Michael Pardo argues, there is always an epistemic advantage in taking account of relevant evidence[99]; the more complete one's evidence, the better founded will be any inferences inductively drawn from it[100] (including inferences to the best explanation). On the other hand, admission of relevant evidence may have countervailing disadvantages if lay fact-finders have an inherent tendency to over-value it (as is arguably the case with unreliable confessions and some character evidence). Exclusion may also be justified as an incentive for the parties—or the state—to ensure the production of better evidence, i.e. scientific evidence that can be clearly demonstrated to be reliable.[101]

Both these grounds for exclusion can be invoked in the case of expert evidence that is not "demonstrably reliable". Juries might accord such evidence more deference than it deserves. While this is undeniably a risk, the available research (though much of it concerns US juries in civil trials) gives little support to the stereotype of jurors as blindly deferential to expert evidence.[102] Juries can certainly be led astray by expert evidence presented in misleading terms,[103] but that is precisely what controls on excessively strong expert evidence seek to avoid.

Excluding evidence that was not "demonstrably reliable" would undeniably give a strong incentive to state agencies to commission research demonstrating reliability.[104] But so too could a firm insistence that experts' duties to the court required them to qualify their evidence by drawing the jury's attention to the lack of testing of the underlying techniques and assumptions. This seems an easier approach to justify than the outright exclusion of relevant evidence in the absence of any impropriety on the part of the individual expert or the party tendering the evidence, except to the extent that the Crown can notionally be held responsible for failing to commission more extensive research.

Edmond and Roberts argue that "*Admissibility decision-making* should be independent of other evidence and considerations. … For *admissibility* expert*Crim. L.R. 575 opinions must stand or fall *on their own*."[105] Strictly speaking, the Law Commission appears to have conflated the admissibility and the sufficiency of evidence. How strong an opinion the expert can properly express is indeed a matter that can be determined without regard to the other evidence in the case. If there is little or no other evidence, however, a decision that a strongly-worded opinion is inadmissible will be fatal to the prosecution's chance of making out a prima facie case, and so in effect will result in the complete exclusion of the evidence. Where there is sufficient evidence to amount to a case to answer even though the expert opinion is cautiously worded, the effect of the ruling will be to edit the evidence rather than exclude it altogether. In considering the sufficiency of evidence it is important to bear in mind the distinction drawn by Lord Mustill in *Daley* between cases where the weight to be given to the evidence depends on the jury's assessment of the truthfulness of the witness, and

cases where the basis of the evidence is too weak to satisfy the standard of proof, however sincerely confident the witness might be.[106]

When exercising the *Sang* discretion, however, it is not so clear as Edmond and Roberts take it to be that admissibility decisions cannot properly take account of other evidence that provides the context for the particular piece of evidence in question. In a model that takes inference to the best explanation to be central to the evaluation of evidence, the probative value of a piece of evidence depends on what can be inferred from it in conjunction with other pieces of evidence that fit a given explanatory theory.[107] Edmond and Roberts' position appears more consistent with a Bayesian approach which equates the probative value of evidence with its likelihood ratio: i.e. how much more (or less) likely the relevant evidence is to exist if the prosecution hypothesis is true than it is if the defence hypothesis is true.[108] Yet within a Bayesian framework, it is debatable whether the probative value of a piece of evidence should be equated simply with its likelihood ratio, or should take account of the prior probability of the hypothesis in question.[109] For example, if the likelihood ratio of the evidence is 100:1, does it have the same probative value whether it increases the probability of guilt from 0.0001 to 0.01, or from 0.5 to approximately 0.99? Even if we accept the equivalence of probative value and likelihood ratio, we certainly need to take account of the prior probability of guilt when assessing the potential prejudicial effect of the evidence, because one of the gravest kinds of prejudicial effect is that the jury may commit the "prosecutor's fallacy" by ignoring the prior odds against guilt. For example, if as in *Hookway* [110] the expert on whose evidence the entire prosecution case rests concedes that there might be one other person in Manchester who resembles a photograph as closely as the accused, the jury might forget that it has no reason to consider the accused more likely than the hypothetical Mancunian (or a hypothetical Liverpudlian for that matter) to have committed the crime. If, as*Crim. L.R. 576 Redmayne has suggested,[111] the jury discounted the prior probability of innocence because they assumed the police had some reason to single out the defendant from the population of Manchester, that is just another form of prejudicial effect; no-one should be convicted on the basis of speculation about police suspicions.

When a weak form of forensic evidence such as "facial mapping" is the sole evidence against a defendant, so that the prior probability of guilt is tiny (the accused is just one among millions of potential culprits), the prejudicial effect of overlooking the prior odds will be extremely serious. The situation is different in a case like *Atkins*,[112] where it was common ground that two robberies and a murder were committed by one Carty, who had since died, and two associates. Since the Atkins brothers were closely associated with Carty, they were among a relatively small pool of possible suspects and the prior odds against their guilt cannot have been very great, even before taking account of the other circumstantial evidence linking them to the crime. This context surely makes a big difference to the balance between probative value and prejudicial effect.

Alongside their proposal for a test for admissibility based on "demonstrable reliability" Edmond and Roberts argue for a "Multidisciplinary Advisory Panel" (MAP) to advise the courts on which forms of evidence are or are not "demonstrably reliable".[113] The MAP could play a valuable role in conjunction with a more flexible test of admissibility, by informing the courts about the range of opinion in different areas of forensic science, the potential for error and evidence of (un)reliability of various techniques, and other matters of which judges should ensure that experts inform juries in their evidence-in-chief.

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Conclusion

The Law Commission report does not envisage a draconian clampdown on the many forensic techniques whose reliability is less than certain; rather it aims to prevent juries from being deceived about how certain the results of those techniques really are. But that is a result that the courts should have been able to achieve—and still could achieve, if the report remains on the shelf—by a strict interpretation to the existing law. The key is to recognise that, to the extent that expert evidence too categorically favours a hypothesis favourable to the prosecution, or unjustifiably rules out or ignores alternative explanations, it is evidence whose prejudicial effect exceeds its probative value. That is consistent with the common-law view that it is ultimately for the jury to assess the weight of expert evidence in the context of the case as a whole—provided that there is some rational basis on which a jury could conclude that the evidence as a whole is sufficient to prove guilt to the criminal standard. It remains to be seen whether, in the absence of legislation to implement the Law Commission report, the Court of Appeal will show any inclination to move in this direction—and it must be admitted that its record to date does not inspire unqualified confidence. But the path to a rigorous application of the common law tests is open, and it should be taken.

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1.
Law Commission, Expert Evidence in Criminal Proceedings, Law Com. No.325, HC 829, available at http://www.official-documents.gov.uk/document/hc1011/hc08/0829/0829.pdf [Accessed April 22, 2013].
2.
Ministry of Justice, Report on the Implementation of Law Commission Proposals (Jan. 2013), p.11.
3.
This pessimism appeared to be generally shared by well-informed participants in the Seminar on Fingerprint Evidence, Northumbria University, June 12, 2012, and the Symposium on Expert Evidence at the University of Leeds, July 23, 2012.
4.
Law Commission, Expert Evidence in Criminal Proceedings, Law Com. No.325, HC 829 available at http://www.official-documents.gov.uk/document/hc1011/hc08/0829/0829.pdf [Accessed April 22, 2013] para.3.14, citing the Council of Circuit Judges and the Rose Committee of Senior Judiciary *Henderson [2010] EWCA Crim 1269* at [206]; *Leveson L.J., "Expert Evidence in Criminal Courts: The Problem" King's College London November 16, 2010*, available at http://www.judiciary.gov.uk/media/speeches/2010/speech-lj-leveson-expert-evidence-16112010 [Accessed April 22, 2013].
5.
E.g. *Otway [2011] EWCA Crim 3*; *Weighman [2011] EWCA Crim 2826;* ; *I [2012] EWCA Crim 1288; [2012] Crim. L.R. 886*.
6.

Reed [2009] EWCA Crim 2698; [2010] 1 Cr. App. R. 23, *Henderson, Butler and Oyediran [2010] EWCA Crim 1269* at [108]–[118], [200]–[221], *T (Footwear Mark Evidence) [2010] EWCA Crim 2439* —see the comments by M. Redmayne, et al, "Forensic Science Evidence in Question" [2011] Crim. L.R. 347, 351.
7.
Law Commission, Expert Evidence in Criminal Proceedings, Law Com. No.325, HC 829, available at http://www.official-documents.gov.uk/document/hc1011/hc08/0829/0829.pdf [Accessed April 22, 2013], cl.4(1).
8.
Law Commission, Expert Evidence in Criminal Proceedings, Law Com. No.325, HC 829, available at http://www.official-documents.gov.uk/document/hc1011/hc08/0829/0829.pdf [Accessed April 22, 2013], para.3.122
9.
G. Edmond and A. Roberts, "The Law Commission's Report on Expert Evidence in Criminal Proceedings" [2011] Crim. L.R. 844, 853.
10.
Cf. the test applicable to hearsay of whether the evidence "is *either* 'demonstrably reliable' *or* is 'capable of proper testing'"—*Riat [2012] EWCA Crim 1509; [2013] 1 All E.R. 349* at [4], quoting *Horncastle [2009] UKSC 14; [2010] 2 A.C. 373* at [57].
11.
H [1999] Crim. L.R. 750; *Mitchell [2005] EWCA Crim 731*; *Weighman [2011] EWCA Crim 2826*. For detailed discussion of the "facial mapping" case law see T. Ward, "Surveillance Cameras, Identification and Expert Evidence" (2012) 9 Digital Evidence & Elec. Signature L. Rev. 42.
12.
Edmond and Roberts, "The Law Commission's Report on Expert Evidence in Criminal Proceedings [2011] Crim. L.R. 844; A. Wilson, "The Law Commission's Recommendation on Expert Opinion Evidence: Sufficient reliability?" [2012] 3 Web JCLI.
13.
Draft Bill cl.4(2)(a).
14.
A. Campbell QC, The Fingerprint Inquiry Report (2011), paras 38.7–38.9; S.A. Cole and A. Roberts, "Certainty, Individualisation and the Subjective Nature of Expert Fingerprint Evidence" [2012] Crim. L.R. 824.
15.
Law Commission, Expert Evidence in Criminal Proceedings, Law Com. No.325, HC 829, available at http://www.official-documents.gov.uk/document/hc1011/hc08/0829/0829.pdf [Accessed April 22, 2013], para.5.10.
16.
Draft Bill Schedule, para.1.
17.
Clark [1995] 2 Cr. App. R. 425 at 429.
18.
Luttrell [2004] 2 Cr. App. R. 41 at [35]; *B (Clive) [2004] EWCA Crim 1254; [2004] 2 Cr. App. R. 34* at [35].
19.
Randall [2003] UKHL 69; [2004] 1 W.L.R. 56.
20.

Christie [1914] A.C. 545; (1914) 10 Cr. App. R. 141; *Sang [1980] A.C. 402*.
21.
Police and Criminal Evidence Act 1984 s.78.
22.
Turner [1975] Q.B. 834; [1975] 2 W.L.R. 56.
23.
R.D. Mackay and A. Colman, "Excluding Expert Evidence: A Tale of Ordinary Folk and Common Experience" [1991] Crim. L.R. 800; *I. Freckelton and H. Selby, Expert Evidence, 3rd edn (Australia: Lawbook, 2005), pp.101–16*; *P. Roberts and A. Zuckerman Criminal Evidence, 2nd edn (Oxford: Oxford University press, 2010), pp.486–90*.
24.
Turner [1975] Q.B. 834 at 841.
25.
A. L.-T. Choo "The Notion of Relevance and Defence Evidence" [1993] Crim. L.R. 114, 115.
26.
Law Commission, Expert Evidence in Criminal Proceedings, Law Com. No.325, HC 829, available at http://www.official-documents.gov.uk/document/hc1011/hc08/0829/0829.pdf [Accessed April 22, 2013], 3.36; Draft Bill cl.1(2).
27.
There are some noteworthy Australian decisions, e.g. Juric (2002) 4 VR 411; see *I. Freckelton and H. Selby, Expert Evidence, 3rd edn (Pyrmont, NSW: Lawbook, 2005), Ch.8*.
28.
Masih [1986] Crim. L.R. 835; *Weightman (1991) 92 Cr. App. R. 291*; *Robinson [1994] 3 All E.R. 346; (1994) 98 Cr. App. R. 370; [1994] Crim. L.R. 356*; *Gilfoyle [2001] 2 Cr. App. R. 5*; *Henry [2006] 1 Cr. App. R. 6*.
29.
Luttrell [2004] EWCA Crim 1344; [2004] 2 Cr. App. R. 31 at [37], citing *C. Tapper Cross and Tapper on Evidence, 9th edn (Oxford: Oxford University Press, 2010), p.523*. See also *Dallagher [2002] EWCA Crim 1903; [2003] 1 Cr. App. R. 12* at [29], quoting the same passage in the course of a confused account of US developments.
30.
Luttrell [2004] EWCA Crim 1344; [2004] 2 Cr. App. R. 31 at [28].
31.
Mohan 114 D.L.R. (4th) 419 at [22]
32.
J.-L.J. 2000 SCC 51; *C. Tapper, Cross & Tapper on Evidence, 11th edn (Oxford: Oxford University Press, 2007), pp.581–582*, cited in *Reed [2009] EWCA Crim 2698; [2010] 1 Cr. App. R. 23* at [111]; Daubert v Merrell Dow Pharmaceuticals, Inc. 509 US 579 (1993).
33.
Reed [2009] EWCA Crim 2698; [2010] 1 Cr. App. R. 23 at [111], citing *Law Commission, The Admissibility of Expert Evidence in Criminal Proceedings in England and Wales (CP 190, 2009), Pts 3 and 4*.
34.
Buckley [1999] All E.R. (D) 1521.
35.
From the discussion at the Fingerprint Symposium (Northumbria University, June 12, 2012), it appears that evidence that does not meet this standard has been admitted in a number of cases.

36.
There is no mention of s.78 in the judgment.
37.
M.J. Saks "Protecting Factfinders from Being Overly Misled, While Still Admitting Weakly Supported Forensic Science into Evidence" (2007) 43 Tulsa L. Rev. 609 and *passim*.
38.
M.J. Pardo, "The Field of Evidence and the Field of Knowledge" (2005) 24 L. & Phil. 321.
39.
Reed [2009] EWCA Crim 2698; [2010] 1 Cr. App. R. 23 at [121]–[122], emphasis added.
40.
See also *T (Footwear Mark Evidence) [2010] EWCA Crim 2439* at [86].
41.
C [2010] EWCA Crim 2578; [2011] 3 All E.R. 509 at [39].
42.
Luttrell [2004] EWCA Crim 1344; [2004] 2 Cr. App. R. 31 at [35]–[36]; *Stubbs [2006] EWCA Crim 2312* at [57]–[59]; *Reed and Reed [2009] EWCA Crim 2698; [2010] 1 Cr. App. R. 23* at [165].
43.
A. Duff, L. Farmer. S. Marshall and V. Tadros, The Trial on Trial, vol. 3: Towards a Normative Theory of the Criminal Trial (Oxford: Hart Publishing, 2007), p.71.
44.
J. Abramson, We the Jury: The Jury System and the Ideal of Democracy (London: Harvard University Press, 1994).
45.
M.J. Pardo, "The Field of Evidence and the Field of Knowledge" (2005) 24 L. & Phil. 321, 341 and 365; T. Ward, "English Law's Epistemology of Expert Testimony" (2006) 33 J. L. & Soc. 572.
46.
G.H. Harman, "The Inference to the Best Explanation" (1965) 74 Philos. Rev, 58; *P. Lipton, Inference to the Best Explanation, 2nd edn (London: Routledge, 2004)* ; P. Thagard, "Causal Inference in Legal Decision-Making: Explanatory Coherence vs. Bayesian Networks" (2004) 18 Applied Artificial Intelligence 231; M.S. Pardo and R.J. Allen, "Juridical Proof and the Best Explanation" (2008) 27 Law & Philosophy 223.
47.
N. Pennington and R. Hastie, "Story Model for Juror Decision Making" in R. Hastie (ed.) Inside the Juror (London: Harvard University Press, 1993).
48.
For an explanation of the link between narrative coherence and probability see *N. MacCormick, Rhetoric and the Rule of Law (Oxford: Oxford University Press, 2005), pp.221–226*.
49.
M.S. Pardo and R.J. Allen, "Juridical Proof and the Best Explanation" (2008) 27 Law & Philosophy 223; *A. Amaya, "Inference to the Best Legal Explanation" in H. Kaptein, Henry Prakken, and Bart Verheij (eds.), Legal Evidence and Proof: Statistics, Stories, Logic (London: Ashgate, 2009)*. L. Laudan, "Strange Bedfellows: Inference to the Best Explanation and the Criminal Standard of Proof" (2007) 11 E. & P. 292 questions whether this is really a form of "IBE" or something different, but his own account of fact-finding is similar.
50.

P. Lipton, "The Epistemology of Testimony" (1998) 29 Stud. Hist. Phil. Sci. 1; P. Thagard, "Testimony, Credibility and Explanatory Coherence" (2005) 63 Erkenntnis 295.
51.
This practice is strongly encouraged by the Court of Appeal in *Smith [2011] EWCA Crim 1296; [2011] 2 Cr. App. R. 16* at [61].
52.
Luttrell [2004] EWCA Crim 1344; [2004] 2 Cr. App. R. 31 at [15]-[16].
53.
Dallagher [2002] EWCA Crim 1903; [2003] 1 Cr. App. R. 12.
54.
Law Commission, The Admissibility of Expert Evidence in Criminal Proceedings in England and Wales (CP 190, 2009), para.2.15.
55.
Clark (Sally) (No 2) [2003] EWCA Crim 1020; [2003] 2 F.C.R. 447.
56.
Law Commission, The Admissibility of Expert Evidence in Criminal Proceedings in England and Wales (CP 190, 2009) , paras 2.16–2.17.
57.
Law Commission, The Admissibility of Expert Evidence in Criminal Proceedings in England and Wales (CP 190, 2009), paras 2.20–2.21.
58.
Harris [2005] EWCA Crim 1980; [2006] 1 Cr. App. R. 5.
59.
Reed [2009] EWCA Crim 2698; [2010] 1 Cr. App. R. 23 at [121]–[122].
60.
J.Hardwig, "Toward an Ethics of Expertise" in D. E. Wueste (ed.) Professional Ethics and Social Responsibility (Lanham, MD Rowman and Littlefield Publishers, 1994); *P.J. Candilis, R.L. Weinstock and R. Martinez, Forensic Ethics and the Expert Witness (New York: Springer Science and Business Media, LLC, 2007*).
61.
Meadow v GMC [2006] EWCA Civ. 1390; [2007] Q.B. 462; *Williams v General Medical Council [2007] EWHC 2603 (Admin).*
62.
Reed [2009] EWCA Crim 2698; [2010] 1 Cr. App. R. 23 at [165].
63.
Atkins [2009] EWCA Crim 1876; [2010] 1 Cr. App. R. 8. For a scathing critique, see G. Edmond, R. Kemp, G. Porter, D. Hamer, M. Burton, K. Biber and M. San Roque, "*Atkins v The Emperor*: the 'Cautious' use of Unreliable 'Expert' Opinion" (2010) 14(2) E. & P. 146.
64.
Atkins [2009] EWCA Crim 1876; [2010] 1 Cr. App. R. 8 at [23].
65.
Edmond and Roberts, "The Law Commission's Report on Expert Evidence in Criminal Proceedings [2011] Crim. L.R. 844, 858.
66.
Atkins [2009] EWCA Crim 1876; [2010] 1 Cr. App. R. 8 at [25].
67.
A. Wilson "The Law Commission's Recommendation on Expert Evidence: Sufficient Reliability?" [2012] 3 Web JCLI.

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68.
Law Commission, Expert Evidence in Criminal Proceedings, Law Com. No.325, HC 829, available at http://www.official-documents.gov.uk/document/hc1011/hc08/0829/0829.pdf [Accessed April 22, 2013], Pt 6.
69.
P. Roberts and A. Zuckerman Criminal Evidence, 1st edn (Oxford: Oxford University Press, 2004), p.323, quoted in *Law Commission, The Admissibility of Expert Evidence in Criminal Proceedings in England and Wales (CP 190, 2009)*, para.4.8.
70.
Buckley [1999] All E.R. (D) 1521.
71.
Henderson [2010] EWCA Crim 1269; [2010] 2 Cr. App. R. 24 at [213].
72.
Luttrell [2004] EWCA Crim 1344; [2004] 2 Cr. App. R. 31.
73.
Atkins [2009] EWCA Crim 1876; [2010] 1 Cr. App. R. 8.
74.
Smith [2011] EWCA Crim 1296; [2011] 2 Cr. App. R. 1.
75.
Reed [2009] EWCA Crim 2698; [2010] 1 Cr. App. R. 23.
76.
Associated Provincial Picture Houses v Wednesbury Corp. [1948] 1 K.B. 223.
77.
Law Commission, The Admissibility of Expert Evidence in Criminal Proceedings in England and Wales (CP 190, 2009), para.4.20.
78.
O'Leary (1988) 87 Cr. App. R. 387; *Christou [1992] 3 W.L.R. 228*; *Quinn [1995] 1 Cr. App. R. 480*, cited in *Law Commission, The Admissibility of Expert Evidence in Criminal Proceedings in England and Wales (CP 190, 2009)* , para.4.17.
79.
Hasan [2005] UKHL 22; [2005] 2 A.C. 467 at [53].
80.
Vel v Chief Constable of North Wales (1987) 151 JP 510; [1987] Crim. L.R. 496.
81.
Atkins [2009] EWCA Crim 1876; [2010] 1 Cr. App. R. 8 at [9]; *Reed [2009] EWCA Crim 2698; [2010] 1 Cr. App. R. 23* at [113].
82.
R. (on the application of Saifi) v Governor of Brixton Prison [2001] 1 W.L.R. 1134 at [52].
83.
R. Pattenden, "The Proof Rules of Pre-Verdict Judicial Fact-Finding in Criminal Trials by Jury" [2009] L.Q.R. 79, 90–94.
84.
M. Redmayne, Expert Evidence and Criminal Justice (Oxford: Oxford University Press, 2001), pp.97–98.
85.
Randall [2003] UKHL 69; [2004] 1 Cr. App. R. 26.
86.

Law Commission, Expert Evidence in Criminal Proceedings, Law Com. No.325, HC 829, paras 3.89–3.113.
87.
Sang [1980] A.C. 402.
88.
Mohan 114 D.L.R. (4th) 419 at [22].
89.
Turner [1975] Q.B. 834.
90.
P. Roberts and A. Zuckerman, Criminal Evidence 2nd edn (Oxford: Oxford University Press, 2010), p.486.
91.
Another area where expert evidence has been held to amount to professional misconduct: C. Dwyer, "GMC Strikes Off Proponent of Brittle Bone Disease" (2004) 328 BMJ 604.
92.
Akinrele [2010] EWCA Crim 2972 at [40]–[41].
93.
Robinson [2005] EWCA Crim 1940; [2006] 1 Cr. App. R. 13 at [19].
94.
Reed [2009] EWCA Crim 2698; [2010] 1 Cr. App. R. 23 at [128]–[132].
95.
CPR r.33.6(2)(b).
96.
Folkes v Chadd (1782) 3 Dougl.153 at 159; *Turner* [1975] Q.B. 834 at 841.
97.
J (J-L) [2000] 2 SCR 600.
98.
G. Edmond and A. Roberts, "The Law Commission's Report on Expert Evidence in Criminal Proceedings" [2011] Crim. L.R. 844, 856.
99.
M.S. Pardo, "Evidence Theory and the NAS Report on Forensic Science" [2010] Utah L. Rev. 367, 372.
100.
T. Williamson, Knowledge and Its Limits (Oxford: Oxford University Press, 2000), p.189.
101.
M.S. Pardo, "Evidence Theory and the NAS Report on Forensic Science" [2010] Utah L. Rev. 367, 372.
102.
E.g. S. Kutnjak Ivkovic and V. Hans, "Jurors' Evaluations of Expert Evidence: Judging the Messenger and the Message" (2003) 28 Law & Social Inquiry 441; D.W. Shuman, A. Champagne and E. Whittaker, "Assessing the Believability of Expert Witnesses: Science in the Jurybox" (1996) 37 Jurimetrics J. 23; N. Vidmar et al., "Amicus Brief: Kumho Tire v Carmichael" (2000) 24 Law & Hum. Behav. 387; *W. Young, N. Cameron and Y. Tinsley, Juries in Criminal Trials Part 2 (New Zealand Law Commission Preliminary Working Papers vol.37) (1999), para.3.17*; G. Edmond and A. Roberts, "The Law Commission's Report on Expert Evidence in Criminal Proceedings" [2011] Crim. L.R. 844, 856, cite a single unpublished paper to show the tendency of jurors to defer to unreliable evidence.
103.

D. McQuiston-Surret and M. Saks, "The Testimony of Forensic Identification Science: What Expert Witnesses Say and What Factfinders Hear" (2009) 33 Law Hum. Behav. 436.
104.
M.J. Saks "Protecting Factfinders from Being Overly Misled, While Still Admitting Weakly Supported Forensic Science into Evidence" (2007) 43 Tulsa L. Rev. 609, 621.
105.
Edmond and Roberts, "The Law Commission's Report on Expert Evidence in Criminal Proceedings" [2011] Crim. L.R. 844, 856 (original italics).
106.
Daley v R [1994] 1 A.C. 117 at 129.
107.
M. S. Pardo, "The Field of Evidence and the Field of Knowledge" (2005) 24 L. & Phil. 321, 374–378.
108.
C. Aitken, P. Roberts and G. Jackson, Fundamentals of Probability and Statistical Evidence in Criminal Proceedings (London: Royal Statistical Society, 2012), p.36.
109.
See R. D. Friedman, "A Close Look at Probative Value" (1986) 66 Boston U.L. Rev 633; D. H. Kaye, "Comment: Quantifying Probative Value" (1986) 66 Boston U.L. Rev. 761; R. D. Friedman, "Postscript" (1986) 66 Boston U.L. Rev. 767.
110.
Hookway [1999] Crim. L.R. 750, discussed by M. Redmayne, "Appeals to Reason" (2002) 65 M.L.R. 19.
111.
Hookway [1999] Crim. L.R. 750, discussed by M. Redmayne, "Appeals to Reason" (2002) 65 M.L.R. 19, 28.
112.
Atkins [2009] EWCA Crim 1876; [2010] 1 Cr. App. R. 8.
113.
Edmond and Roberts, "The Law Commission's Report on Expert Evidence in Criminal Proceedings" [2011] Crim. L.R. 844, 858; G. Edmond and A. Roberts, "Procedural Fairness, the Criminal Trial and Forensic Science and Medicine" [2011] 33 Sydney L. Rev. 359.