



Cúirt Uachtarach na hÉireann
Supreme Court of Ireland

Expert Evidence: The Challenges of Complexity
Delivered by Mr. Justice Maurice Collins at the 22nd Annual Grange
Conference on 26th September 2023

Introductory

1. It is a great pleasure to be here to speak at the 22nd Grange Conference.
2. No single paper can hope to address all of the many issues that arise in relation to expert evidence and I am in any event very conscious of the collective expertise and experience of my audience this morning. I claim no special expertise in this area and, unlike my colleague Peter Charleton who addressed you last year, I have never served as a trial judge. Even so, in my previous practice as a barrister (over a period of some 30 years) and as an appellate judge, first in the Court of Appeal and now in the Supreme Court in Dublin, I have often come up against the difficulties that arise around the admission and assessment of such evidence. A personal perspective on some of those difficulties, with particular emphasis on the challenges for judges in assessing complex scientific evidence – the “*challenges of complexity*” of the title to this lecture – may, I hope, have some value, if only as a stimulus to further discussion and debate.
3. It is important to acknowledge immediately that expert evidence (which includes, but is not limited to, *opinion* evidence) plays a crucial role in the administration of justice. There are very many areas of litigation where the just adjudication of disputes by courts of law would be impossible without the assistance of expert evidence. That is not limited to, but most certainly includes, expert medical evidence. References to scientific evidence in this paper should be understood to include such evidence.

4. The preservation of the capacity of courts to carry out their adjudicative functions effectively, even in cases involving the most complex scientific, or technical issues, is – so it appears to me at least – a critically important objective. Any compromising of that capacity would undermine the rule of law. While there will always be scope for the *private* adjudication of civil legal disputes – whether by way of arbitration or otherwise – it is essential that citizens should continue to enjoy access to *public* justice and be able to confidently submit their disputes, however complex and difficult, to effective *public* judicial determination. It is equally essential that citizens should have access to effective judicial review of decisions and determinations made by specialist non-court adjudicative bodies and/or regulatory bodies. These are deeply entrenched values in the Irish Constitution (Article 34) as well as in the European Convention on Human Rights (Article 6) and the Charter of Fundamental Rights of the European Union (Article 47). They are also fundamental common law constitutional principles in this jurisdiction. Furthermore – and importantly – the administration of criminal justice is the exclusive preserve of the courts, here as in Ireland (again, constitutionally entrenched in Article 38).

5. It is, therefore, difficult to quarrel with the following view expressed by Learned Hand in an influential article published in the *Harvard Law Review* in 1901: ¹

"No one will deny that the law should in some way effectively use expert knowledge whenever it will aid in settling disputes. The only question is as to how it can do so best."

¹ Learned Hand "Historical and Practical Considerations Regarding Expert Testimony (1901) 15 *Harvard Law Review* 40 (reprinted from the *Albany Medical Annals*, November 1900)

Diagnosis

6. That question – how expert evidence can most effectively be used – is as pressing today as it was in 1901. It presents many challenges. Some are essentially practical (though no less important for that) and others are more substantive. As many commentators have observed, expert evidence presents an essential paradox, succinctly expressed by one American writer as follows:

"We call expert evidence to testify about matters that are beyond the ordinary understanding of lay people (that is both the major practical justification and a formal legal requirement for expert testimony), and then we ask lay judges and jurors to judge their testimony."²

7. That is not by any means a new insight. The same point was made by Hand in the article to which I have referred. He expressed horror at the notion that a jury might be asked to choose between conflicting statements made by doctors in evidence: it was, he noted, "*just because they [the jury] were incompetent for such a task that the expert is necessary at all*". The jury, or any other layman, had no hope of making a rational decision between two such conflicting statements – "*if you would get at the truth in such cases, it must be through some one competent to decide.*"³
8. This paradox is central to many of the most significant issues that arise in relation to expert evidence. There are (as it was put by King CJ in an influential 1984 decision from South Australia) very many aspects of human life which "*a person without instruction or experience in the area of knowledge or human experience*" would or might be unable "*to form a sound judgment on ... without the assistance of witnesses possessing*

² Gross, "Expert Evidence" 1991 *Wisconsin Law Review* 1113, at 1188 (hereafter "Gross"). Hodgkinson & James, *Expert Evidence: Law and Practice* (5th ed; 2020) characterise this as "*the contradiction within expert evidence*".²

³ Gross, page 55.

*special knowledge or experience in the area.*⁴ It is precisely *because* the judge – or, as the case may be, the jury – lacks the special knowledge and/or expertise “*to form a sound judgment*” that expert evidence is necessary and admissible but that same lack of special knowledge and/or expertise leaves courts vulnerable to placing reliance on partisan experts, makes it difficult for courts to assess the reliability of proffered expert testimony and – perhaps above all – presents significant challenges in evaluating expert evidence and forming “*a sound judgment*” when confronted with conflicting evidence directed to complex scientific or technical issues.

9. These difficulties do not necessarily present in a uniform way across the range of subjects where expert evidence may be received. As the well-known US Federal judge (and prolific legal author) Richard Posner has noted, judges have always had to deal with cases involving technology. But, as he observes in *Reflections on Judging*,⁵ much of that technology – the technology of the automobile and the airplane, simple chemistry and biology and “*old-fashioned commercial banking*”, which he characterises as “*yesterday’s technology*” - is intuitive and/or easily explained.

10. I will, if I may, offer an illustration – one which I am sure Judge Posner would have deployed had he but thought of it. I don’t know whether any of you are familiar with the movie *My Cousin Vinny*. To those of you who are unfamiliar with it, I recommend it without reservation. In any event, the eponymous Vinny (Vincent Gambini), a newly qualified New York attorney who has never previously tried a case of any kind, finds himself defending a murder case in rural Alabama. He is accompanied by his fiancée, Mona Lisa Vito (Marisa Tomei, in an Oscar-winning turn) who is a hairdresser by profession but also a serious car enthusiast, born into generations of car mechanics on both sides of her family. The main evidence against the two accused (one of whom is a young cousin of Vinny’s) is eye-witness

⁴ *R v Bonython* (1984) 38 SASR 45. Though addressed to expert opinion evidence, the analysis here is of more general application in the area of expert evidence.

⁵ Posner, *Reflections on Judging* (2013) (hereafter “*Posner*”).

testimony that the killers left the scene of the crime – the *Sac-o-Suds* gas station and convenience store - in a metallic mint green 1964 Buick Skylark convertible, the very make and model driven by the accused. In what appears to be a mortal blow to the defence, the prosecution is allowed to ambush Vinny and his clients by calling an FBI forensic scientist expert without prior disclosure to testify that the tyre marks and rubber residue left outside at the *Sac-o-Suds* matched the accused's car. Vinny calls his fiancée as an expert witness in rebuttal. After a very impressive performance in *voir dire*, she is accepted as an expert in general automotive knowledge. She then produces a photo she had taken earlier of the tire tracks left by the killers' car. Her examination then proceeds as follows:

G: Miss Vito, did you take this picture?

M: You know I did.

G: And what is this picture of?

M: You know what it's of.

G: Miss Vito, it has been argued by me, the defense, that two sets of guys met up at the Sack O' Suds at the same time, driving identical metallic mint green 1964 Buick Skylark convertibles. Now, can you tell us, by looking at the picture, if the Defense's case holds water? (pause) Miss Vito, please answer the question. Does the Defense's case hold water?

M: No, the Defense is wrong!

G: Are you sure?

M: I'm positive.

G: How could you be so sure?

M: Because there is no way that these tire marks were made by a 1964 Buick Skylark. These marks were made by a 1963 Pontiac Tempest.

P: Objection your honor, can we clarify to the court whether the witness is stating fact or opinion?

Judge: This is your opinion?

M: It's a fact.

G: I find it hard to believe that this kind of information could be ascertained simply by looking at a picture.

M: Would you like me to explain?

G: I would love to hear this.

J: So would I.

M: The car that made these two equal length tire marks had positraction, can't make those marks without positraction, which is not available on the 1964 Buick Skylark

G: And why not? What is positraction?

M: It's a limited slip differential which distributes power equally to both the right and left tires. The '64 Skylark had a regular deferential, which anyone who's been stuck in the mud in Alabama knows, you step on the gas, one tire spins, the other tire does nothing.

J: That's right.

G: Is that it?

M: No, there's more, you see, when the left tire mark goes up on the curb, and the right tire mark stays flat and even, well, the '64 Skylark had a solid rear axle, so when the left tire would go up on the curb, the right tire would tilt out and ride along its edge, but that didn't happen here, the tire marks stayed flat and even. This car had an independent rear suspension. Now in the 60's there were only two other cars made in America that had positraction and independent rear suspension and enough power to make these marks. One was the Corvette, which could never be confused with the Buick Skylark. The other had the same body length, height, width, weight, wheelbase, and wheel-track as the 64 Skylark, and that was the 1963 Pontiac Tempest.

G: And because both cars were made by GM, were both cars available in metallic mint green paint?

M: They were."

11. And that was that. The prosecution had no questions, the FBI expert could only express his admiration for Ms Vito's testimony – and for Ms Vito herself – and it duly emerged that a metallic mint green 1963 Pontiac Tempest had in fact been stopped by police and that a gun had been found in it. Its occupants were, of course, the actual killers. A few short minutes of expert testimony and Vinny had won his first case. If any of you have enjoyed a similar forensic triumph, congratulations! You will find lively (and learned) discussion on the internet as to whether Ms Vito ought to have been permitted to give evidence but the scene neatly illustrates the point made by Posner. While a lay person could not have undertaken the analysis that Ms Vito did or reached the conclusion that she reached without expert assistance, that analysis and conclusion could readily be understood by all the actors in the trial (excusing the pun) once it was explained.

12. But, Posner goes on, judges now have to contend with many advanced and advancing technologies, including mathematical models of competition that require knowledge of calculus, statistical analysis including multiple regression, medical diagnosis and treatment, computing and information technology and neuroscience. Old-fashioned commercial banking has been supplanted by the trading of complex financial instruments developed by financial “*engineers*” with PhDs in physics.⁶ None of these technologies, he observes, intuitive or easily explained. Having had to grapple while in practice with complex econometric evidence involving heavy-duty statistical analysis and multiple regression (in a competition case) and with similar statistical evidence in a referendum petition, I can readily confirm Posner’s insight.
13. If *Reflections on Judging* was written today, Posner would undoubtedly also emphasise Artificial Intelligence (AI) in this context.
14. How then do courts deal with issues of such complexity ?
15. The answer offered by *Posner* is not calculated to give comfort. According to him, when judges do not understand the activity from which a case before them has arisen “[t]hey duck, bluff, weave, change the subject.” The “*principal evasive techniques*” are, he says, deference to lower-level decision-makers: appellate judges defer to trial judges and “*the trial judges in turn hand the ball to the jurors, whose ability to understand technical issues is on average even feebler than that of judges.*”⁷ Other “*evasive techniques*” identified by *Posner* include winging it by “*substituting a guess for data*”. Thinking, he observes, is costly to the thinker in the sense of being “*difficult, time-consuming and frustrating*” and:

⁶ Posner, *Reflections on Judging* (2013) at pages 71-72. (hereafter “*Posner*”)

⁷ *Posner*, page 86.

"People economize on the cost of thinking by using shortcuts, deferring to expert opinion (even if that requires an arbitrary choice between competing experts), or changing the subject – in the case of judges, substituting a legalistic approach that they understand for a technologically informed approach that they would find difficult, time-consuming, and frustrating to understand and apply."

Noting that one commentator had applied the term "*cognitive misers*" to judges of the Federal Circuit (the court with responsibility for hearing patent cases), *Posner* suggests that it "*can be applied to other judges too when they confront cases that involve technological, social scientific, cultural, or historical issues that baffle them.*"⁸

16. *Posner* has a penchant for provocative expression. But his is not by any means a lone voice. In a stimulating article with the compelling title "Economic Expert Evidence: The Understandable and the 'Huh?'"⁹, John Lopatka – a distinguished Professor of Antitrust law in the University of Pennsylvania - observes "*the world is growing more complicated, posing a daunting challenge for a legal system called upon to resolve disputes arising in it*".¹⁰ The law had long assumed that lay juries and generalist judges lacked the training to resolve technologically sophisticated issues without the assistance of expert evidence but "*as technology advances, the gulf between the background knowledge possessed by a typical juror or judge and the knowledge possessed by an expert in the field had widened*" and "*though jurors and judges have become more technologically literate, they have fallen further behind the leading edge.*"¹¹ Even in the case of "*simple*" expert evidence, *Lopatka* identifies as a challenge for decision-makers the recognition of the limits of expert evidence and the avoidance of giving it undue weight "*even when they understood it*".¹² As for the use of "*complex*"

⁸ *Posner*, 90.

⁹ (2016) 61 Antitrust Bull 434 (hereafter "*Lopatka*").

¹⁰ *Lopatka*, 436.

¹¹ *Ibid.*

¹² *Lopatka*, 438.

expert evidence, *"the more serious problem confronting antitrust is expert testimony that lay decision makers do not understand."*¹³ Judges – at least non-specialist judges – are clearly *"lay decision makers"* in this context. Expert evidence had always posed a paradox for the law but, Lopatka suggests, the problem had *"become more acute in antitrust and other areas heavily dependent upon scientific advances"* because *"a body of law has become increasingly dependent on expertise that has become decreasingly accessible to non-experts"*.¹⁴ Again, my own experience in practice tends to corroborate Lopatka's point.

17. So, according to Lopatka, how do *"lay judges"* cope with such complexity? Again, the answer is discomfiting. Citing Daniel Kahneman's seminal work, *Thinking, Fast and Slow*, as well as *Posner*, Lopatka suggests that judges will be tempted to rely on *"cues or heuristics, or cognitive shortcuts"* (the language of Kahneman) or (in the language of *Posner* that we have seen) *"they duck, bluff, weave, change the subject."* These comments must be understood in the context in which they were made – where the ultimate factfinder is the jury, rather than the judge – but nevertheless do not provide any comfort for judicial decision-makers. *Lopatka* goes on to suggest that judges process information in much the same way as jurors and are subject to similar cognitive biases, including – depressingly – *"egocentric biases"*, that is to say *"overestimating one's own abilities"*.¹⁵ Even if responsibility for evaluating expert evidence could be shifted from jurors to judges, Lopatka suggests that *"it would improve decision making only to the extent judges assimilate the evidence better than jurors and though they likely do, their marginal advantage should not be overstated... In technical fields after all, judges as well as jurors are non-experts."*¹⁶

¹³ *Lopatka*, 443.

¹⁴ *Ibid.*

¹⁵ *Lopatka* 452, referring to Guthrie et al, "Inside the Judicial Mind: Heuristics and Biases" 86 *Cornell L Rev* (2001).

¹⁶ *Lopatka* 452,

18. Thomas Cromwell – not the hero of Hilary Mantel’s brilliant trilogy but a former member of the Supreme Court of Canada – has also raised the question of how well the law is meeting the challenges posed by scientific evidence, with particular focus on the use of such evidence in criminal prosecutions and the spectacular miscarriages of justice that have sometimes resulted from it.¹⁷ His lecture refers to a number of such miscarriages but the list is, unfortunately, far from being closed. Unreliable expert evidence regarding the robustness of the Post Office’s Horizon computer system appears to have played a significant role in the recent sub-postmaster prosecution scandal here, the consequences of which are still playing out. Returning to Cromwell, he notes that attempts to bring scientific learning and expertise to bear on legal disputes give rise to many sorts of problems and *“there was disquiet about the capacity of judges and juries, who likely have little scientific training, to sort out disputes between qualified experts”*. In his view, the different objectives and vocabularies of a trial and a scientific investigation pose many challenges to constructive collaboration between juries and scientists and it was not surprising that when law and science met in the courtroom, the encounter was often not a happy one for either discipline, for the judiciary, the jury or the parties.¹⁸
19. But you may ask, what is new about this? Scientific evidence has always presented a challenge to courts and, no doubt, it will continue to do so. The important insights into human decision-making – including judicial decision-making – developed by Kahneman and others may be new, but the behaviours identified by them are not. Courts have, historically, often struggled to distinguish between reliable and unreliable scientific evidence and have not always resolved issues of scientific controversy satisfactorily. That, no doubt, is all true. However, the gap between the expertise of generalist judges – and jurors – and the level of expertise required to understand many areas of current and emerging scientific knowledge and inquiry is widening significantly and that process is only going to accelerate. There are already areas of litigation – patent litigation and competition

¹⁷ “The Challenges of Scientific Evidence” (McFadyen Lecture 2011)

¹⁸ Page 1

litigation come immediately to mind— where the capacity of judicial adjudication is already being pushed to the very limits. That stress is only going to increase. The operation of social media platforms, digital markets, advanced electronics, nanotechnology, genomics, blockchain/cryptocurrency, quantum computing, robotics, and – perhaps most significantly – the emerging phenomenon of generative AI are, quite simply, much beyond the knowledge and experience of most members of society, including most of us here today.

20. The challenge for the courts is how to engage with expert evidence in such areas, without surrendering their adjudicative responsibilities to the experts giving such evidence or being driven to adjudication on the basis of factors other than a critical and intelligent engagement with that evidence. In other words, how can courts benefit from such evidence without being overwhelmed by it?
21. I return to the point made earlier as to the importance of courts being able meet this challenge. Contemporary developments in science and technology (in the broadest sense of that expression) affect citizens profoundly and potentially in adverse ways. The right of recourse to courts is crucial for the vindication of their rights and interests. That is as true of civil disputes as it is of criminal prosecutions. If courts cannot effectively adjudicate on complex disputes, the fundamental principle of the administration of justice by courts of law will be called into question.

Treatment – No Silver Bullet

22. So the stakes are high. What is to be done?
23. I will resist the temptation to suggest that replacing judges with AI bots is the answer. There is a vast (and ever expanding) literature on the potential uses of AI within the justice system and, no doubt, that will be the subject

of future presentations here.¹⁹ But, however Luddite it may appear to be to say so, my focus here is on improving *human* adjudication. AI may well be a useful tool in that context but its use presents significant challenges in its own right.

24. Cromwell identifies three main approaches to strengthening the judicial system's capacity to deal with scientific evidence. The first is to emphasise and enforce experts' duties of independence and to assist the court. The second involves steps to enhance quality control of experts, such as through a system of expert accreditation but also including more modest – and more readily implementable – measures such as requiring experts to provide details of their qualifications and experience, to explain their opinion and to qualify it as appropriate and to disclose the range of expert opinion on the issue being addressed. Requiring experts to meet and prepare a joint statement identifying areas of agreement and disagreement is another such measure. The third area discussed by Cromwell involves judicial training. Though, as he correctly acknowledges, "*judges cannot through judicial training be turned into scientists*", their scientific literacy can be improved and appropriate training can better equip them to understand how to assess scientific evidence.

25. Another possible solution is discussed by *Posner*, namely the increased use of specialised courts. He is characteristically trenchant in his views: far from being the answer, he says, "*[t]hey would make it worse, because of the inveterate tendency of specialists to speak and write in a jargon intelligible only to initiates.*" In any event, he goes on, "*[s]pecialized judges are unlikely to be deeply knowledgeable about the technical issues that the*

¹⁹ *An Introduction to Artificial Intelligence for Federal Judges* (Federal Judicial Center, 2023) is a useful primer. The American Association for the Advancement of Sciences has also published extensive materials on AI for judges and courts. Richard Susskind has also published extensively in this area, including *Online Courts and the Future of Justice* (2019). Sourdin, *Judges, Technology and Artificial Intelligence; The Artificial Judge* (2021) is a comprehensive exploration of the potential benefits and drawbacks of "Judge AI".

cases within their speciality present, thought they may think they are. Their speciality will be a body of law, rather than of technical knowledge."

26. Lopatka is sceptical of the value of judicial training, at least in economically complex cases.²⁰ He discusses at some length the proposal that that courts should appoint expert witnesses more frequently. Again, his focus is on antitrust (competition) litigation. The problems with court-appointed experts in antitrust cases are, he suggests, problems that judges themselves have identified as reasons for refraining from appointing experts generally, namely those of bias and undue influence. There is, he says, no such thing as a neutral antitrust economics expert because antitrust economics, like antitrust law, is "*intensely ideological*".²¹ But, even if a neutral expert could be found, Lopatka questions how the expert would aid in the decision-making process – "*[t]he reason that partisan expert testimony is not sufficient to yield informed decisions is that non-experts lack the ability to understand it. A neutral expert who is no more comprehensible than the partisan experts does not clarify the evidence.*" Rather, the contribution of the neutral expert is his or her (perceived) neutrality, which imparts a credibility to it even when it is not understood.
27. Lopatka concludes in gloomy terms:

"Sometimes jurors and judges will be able to understand even complex evidence with the assistance of ordinary litigation techniques. Sometimes the flaws inherent in court appointment of experts will be overcome, and the use of a court-appointed expert will lead to a reasoned and correct decision. But many times the ordinary and extraordinary procedural devices will fail to enlighten jurors and judges, and these instances are likely to happen even more frequently as complexity grows.

²⁰ Lopatka, 453.

²¹ Lopatka , 456

Can anything else be done when jurors and trial judges lack the ability to understand technical antitrust economic testimony? Not much."

That "*not much*" involves a proposal for more intensive appellate review which, Lopatka accepts, would at best work a marginal improvement but that was, he said, "*all I have.*"

28. I share Cromwell's view that the starting point must be the rigorous enforcement of the basic rules of the game, namely that experts are there to *assist the court*. That is, of course, Expert Evidence 101. But it is not always understood and/or respected in practice, a fact of which I have been reminded of on more than one occasion in the Court of Appeal. Let me give an especially striking example, an appeal from a decision of the High Court holding for plaintiffs suing in respect of serious respiratory injury suffered by them as a result of alleged exposure to isocyanates during the installation of spray polyurethane foam (SPF) insulation in their house.²² On the basis of two very limited industry-commissioned papers, prepared by a certified industrial hygienist, which had never been subjected to any form of peer-review, the defendant's expert purported to conclude that the risk of inhaling airborne isocyanates disappeared after 30 minutes. That conclusion – which did not appear to be supported by a fair reading of the two papers on which he relied – flew in the face of the manufacturer's own safety advice, EPA recommendations and statements which had previously been made by the witness himself but nevertheless the witness maintained that it was *impossible* for isocyanate exposure to have caused the plaintiffs' injuries. That in turn led him to impugn the honesty of the plaintiffs and the competence of their experts and to make the most categorical assertions of fact in relation to events of which he had no independent knowledge whatever. Notably, the witness' written report – which contained numerous "*red flags*" indicating that he was unable and/or unwilling to comply with his duties as expert – solemnly recited that he understood that his primary duty was to the court and that he was required to maintain "*professional*

²² *Duffy v McGee* [2022] IECA 254.

objectivity and impartiality at all times". The High Court had disregarded the evidence and it was argued on appeal that it had been wrong to do so and that the flaws in the evidence went only to weight. In his judgment, my colleague Mr Justice Noonan described the evidence as involving "a *wholesale abdication*" by the expert of his duties as such. Both of us were of the view that the problems with the expert's evidence went far beyond what could properly be addressed as a matter of *weight* and, rather, warranted the *exclusion* of the evidence.

29. In taking that approach, we agreed with the approach taken by the UK Supreme Court in *Kennedy v Cordia (Services) LLP* where the court characterised the requirement of independence and impartiality as one going to admissibility and not merely to weight²³ and by the Supreme Court of Canada in *WBLI v Abbott and Haliburton*²⁴ where, in the context of a preliminary objection to the admission of certain expert evidence, the court made it clear that where a proposed expert witness was unable or unwilling to comply with their duty to the court to provide fair, objective and non-partisan assistance, they ought not be permitted to give evidence.²⁵

30. Expert evidence which is truly the product of independent and objective assessment – in the words of Cresswell J in *The Ikarian Reefer*, "uninfluenced by the exigencies of litigation"²⁶ – and which is truly directed to *assisting the court* should be seen as an essential, even if not sufficient, condition for the effective exercise by courts of their adjudicative functions. Experts can significantly assist courts by clearly identifying their instructions and factual assumptions, adequately explaining their methodology and conclusions, identifying (and providing access to) the

²³ [2016] UKSC 6, [2016] 1 WLR 597, para 51.

²⁴ 2015 SCC 23, [2015] 2 SCR 182.

²⁵ [2015 SCC 23, [2015] 2 SCR 182, para 2.

²⁶ *The Ikarian Reefer*, at 81.

material on which their analysis depends and, more generally, regarding their evidence as an opportunity to *inform* the court.²⁷

31. This is, I think, a key point. Justice is a shared endeavour. Lawyers have important responsibilities in this area, a point I emphasised in my judgment in *Duffy v McGee*. Experts also have important responsibilities, one of which is to organise and present their evidence in a manner which, as far as practicable, makes it accessible to the court. That necessarily involves some understanding of how courts and lawyers think – of the language of the law, so to speak. Correspondingly, judges also need to learn something of the language of science.

32. Cromwell surely is also right to emphasise issues of quality control and the utility of expert engagement in narrowing areas of dispute, thus reducing the mental load on courts. Excluding unnecessary expert evidence is also important. But judicial control of expert evidence is resource intensive. In Ireland, the Rules of the Superior Courts have, since 2016, provided the High Court with significant powers to control expert evidence and delimit the issues to which it may be directed and also permit the Court to direct the manner in which such evidence may be given (including by directing what the Rules refer to as the “*debate amongst experts*”, more commonly referred to as “*hot-tubbing*”).²⁸ However, in practice those powers have been significantly under-utilised (if indeed they have been utilised at all) because of a lack of judicial resources. Resourcing the judiciary sufficiently

²⁷ One of the *Ikarian Reefer* duties is that the expert should state the facts or assumptions on which his or her opinion is based. The CPR requires that an expert’s report must state the substance of all material instructions on the basis of which the report was written. Documents mentioned in an expert’s report are subject to inspection. However, there are no equivalent provisions in the Irish Rules. In its *Report on Consolidation and Reform of Aspects of the Law of Evidence* (LRC 117 – 2016) the Irish Law Reform Commission recommended that experts should be subject to a statutory duty to state the facts and assumptions (and, where relevant, any underlying scientific methodology) on which their evidence is based but that recommendation remains unimplemented.

²⁸ Order 39, Rules 58-61 RSC (inserted by the Rules of the Superior Courts (Conduct of Trials) 2016).

is an obvious and important element of meeting the challenges of complexity.

33. Judicial training is also crucial. Allowing, as one must, that "*judges cannot through judicial training be turned into scientists*", judicial training can nonetheless assist judges by providing a basic grounding in scientific method, risk, probabilities and statistical methods. Basic scientific literacy will better equip judges to confront evidential controversies. Significant guidance is available to judges in the United States in the form of the *Reference Manual on Scientific Evidence* published under the auspices of the Federal Judicial Center and the National Academies. Now in its third edition, it includes a chapter on scientific method, as well as chapters addressing individual subject areas, including chapters on medicine and mental health. It provides a useful model. Judicial education can and should also address the biases and frailties of human decision-making with a view to avoiding or at least reducing cognitive shortcuts.
34. There is, in Ireland as elsewhere, an increasing acceptance that issues around the reliability of expert evidence, and in particular scientific and/or technical evidence (especially where that evidence is novel) and the resolution of conflicts of such evidence, may require significant engagement by the court with the substance of the evidence and its methodological foundations. While the credentials of the experts and/or the manner in which they give evidence (the manner in which they present as *witnesses*) are undoubtedly relevant factors,²⁹ they are, of themselves, unlikely to provide a reliable basis for comparative evaluation in every case. That proposition is, I think, one that commands widespread acceptance in 2023.
35. The observations of Finlay CJ in *Best v Wellcome Foundation*³⁰ - where the plaintiff succeeded in establishing that he had suffered catastrophic injury as a result of receiving the pertussis vaccination - to the effect that neither the court of trial nor an appellate court could take upon itself the role of a

²⁹ *Donegal Investment Group plc v Danbywiske* [2017] IESC 1427, [2017] 2 ILRM 1.

³⁰ [1993] 3 IR 421

determining scientific authority “*resolving disputes between distinguished scientists in any particular line of technical expertise*” and should instead “*apply commonsense and a careful understanding of the logic and likelihood of events to conflicting opinions and conflicting theories concerning a matter of this kind*” must, I think, be read with some caution. Of course, courts are concerned with the resolution of legal disputes, not with scientific inquiry – and there are “*important differences between the quest for truth in the courtroom and the quest for truth in the laboratory*”³¹ – but the resolution of legal disputes may nonetheless necessitate the *pro tanto* resolution of particular scientific controversies, albeit within the limited confines and purposes of the specific litigation in which they arise.

36. How courts should go about that task is a large topic that I do not have time to address here. In the United States³² and Canada³³, courts perform a “*gatekeeping*” function in terms of assessing, as a threshold issue, the reliability of scientific evidence and, in that context, courts have identified various factors to be applied in that assessment. Here in England and Wales, valuable guidance as to factors which the court should take into account in determining the reliability of expert evidence, especially scientific evidence, can be found in a Practice Direction relating to criminal proceedings that has its origins in a Law Commission Report.³⁴ In 2008 the Irish Law Reform Commission provisionally recommended the introduction of a *Daubert*-style test for the admissibility of expert evidence, based on empirical validation.³⁵ However, the Commission subsequently drew back from that recommendation, reasoning that it was for the courts to develop any threshold test by which the reliability of expert evidence is measured.³⁶ While, in general, reliability is not regarded as a threshold issue either in

³¹ *Daubert v Merrell Dow Pharmaceuticals* 509 US 579 (1993), 597.

³² *Daubert v Merrell Dow Pharmaceuticals* 509 US 579 (1993)

³³ *R v JIJ* 2000 SCC 51, [2000] 2 SCR 600

³⁴ Now CrimPRC (23)90(b)

³⁵ *Consultation Paper on Expert Evidence* (LRC CP 52-2008) at 2.380-2.400.

³⁶ *Report on Consolidation and Reform of Aspects of the Law of Evidence* (LRC 117 – 2016), 7.140 - 7.151.

this jurisdiction or in Ireland, the decision of the UK Supreme Court in *Kennedy v Cordia (Services) LLP*³⁷ appears to indicate a departure from the laissez-faire approach that characterised the law previously, the Court identifying reliability as one of the considerations governing the admissibility of "skilled evidence" and apparently contemplating some preliminary inquiry, at least where the science or body of knowledge concerned is not widely recognised.³⁸ I expressed my support for that approach in *Duffy v McGee*. But at whatever stage of litigation issues of reliability may arise, these sources provide useful guidance and the factors identified in them can also assist in evaluating and choosing between conflicting scientific evidence. In the lecture to which I have already referred, Cromwell sets out a useful set of questions developed by the National Judicial Institute in Canada directed to the issue of reliability.³⁹ Finally, my colleague Peter Charlton has written extensively in this area, both judicially⁴⁰ and extra-judicially.⁴¹ The essence of his views, as he put it at a recent judicial conference at which we both spoke, is that judges must "get stuck in".

37. There is no doubt, in my opinion, that appropriate training can significantly assist judges in carrying out these tasks.

38. Specialist courts are another possible solution, notwithstanding the rather jaundiced views of Posner. The Patents Court in London, many of whose judges have strong scientific backgrounds, is universally respected. The Technology and Construction Court is another well-established specialist court. However, as significant as these areas of specialism may be, their scope is limited and even in a jurisdiction as relatively large as this is, it does not seem practicable (even if it was considered desirable) to establish

³⁷ [2016] UKSC 6, [2016] 1 WLR 597.

³⁸ At para 55.

³⁹ See also Chapter 18 of the Goudge Report.

⁴⁰ See, eg, *James Elliott Construction Ltd v Irish Asphalt Ltd* [2011] IEHC 269.

⁴¹ See eg "The Safe Use of Expert Evidence" [2023] *Irish Judicial Studies Journal* Vol 7(1) 52, which is based on his lecture at the 2022 Grange Conference.

a network of specialist courts capable of dealing with all cases of scientific complexity. In a jurisdiction such as Ireland, that is clearly not feasible.

39. Are court-appointed – and thus, supposedly, “*neutral*” – experts the answer? Learned Hand thought so. In his view, the major problems presented by the use of expert evidence –the concern that experts inevitably acted as the “*hired champions*” of their clients and the problem of juries being asked to choose between conflicting expert evidence that they lacked the competence to understand – would be solved by the use of “*a board of experts or a single expert, not called by either side, who shall advise the jury of the general propositions applicable to the case which lie within his province*”.⁴² In other words, “*an advisory tribunal for the jury*”. To give decisive weight to the opinion of such a tribunal would, Hand acknowledged, be constitutionally risky and the safer, if less desirable, option would be to regard the views of the tribunal merely evidence for the jury to consider. Even so, Hand added, such evidence would destroy any practical field of dispute:

“Whatever witnesses might be called by either side and however divergent their testimony inter se, when the tribunal had once spoken, I much suspect the court would find no reasonable doubt but that it was thence came the truth, and that the jury must act accordingly.”⁴³

40. The idea of a neutral expert, or panel of experts, providing authoritative and objective advice to the court on which it can confidently rely is, no doubt, very appealing. However, it is also fundamentally at odds with our system of justice.
41. In Ireland it is only in very limited circumstances that a judge has power to direct that an expert be retained and called as a witness. Such a power

⁴² Ibid, page 56

⁴³ Ibid, page 57.

exists in certain family law proceedings and proceedings involving children where issues of welfare arise.⁴⁴ However, even where the court exercises its power to direct the engagement of an expert, that does not preclude the parties from calling their own experts and the evidence of the court-appointed expert has no special status.⁴⁵ Furthermore, and importantly, even when appointed by the court, the expert is not instructed by or subject to the control of the court, unlike the position of court-appointed experts in civil law systems. Irish law also provides for courts to appoint an expert in personal injuries actions.⁴⁶ It is not entirely clear whether, in the event of such an appointment, the parties would be free to call their own experts. However, so far as I am aware, no order has ever been made for the appointment of an expert under that provision.

42. Court-appointed experts are used much more commonly in civil law jurisdictions, in many instances to the exclusion of experts retained by the parties. That system has its proponents.⁴⁷ However, their use has given rise to a considerable volume of litigation in Strasbourg.⁴⁸ A consistent thread in that jurisprudence is the risk of the court deferring unduly to the views of its appointed expert – who may, of course, be *wrong*, even if neutrally so – particularly in areas of scientific complexity. All other considerations aside, the general use of court-appointed experts would fundamentally alter the role of the courts in litigation and require vastly greater judicial resources than are currently – or ever likely to be – available.

⁴⁴ See, respectively, section 47 of the Family Law Act 1995 and section 32 of the Guardianship of Infants Act 1964 (as amended).

⁴⁵ *McD v L* [2009] IESC 81, [2010] 2 IR 199.

⁴⁶ Section 20 of the Civil Liability and Courts Act 2004

⁴⁷ See eg Langbein, "The German Advantage in Civil Procedure" 52 *University of Chicago Law Review* 823 (1985)

⁴⁸ *Guide on Article 6 of the European Convention on Human Rights - Right to a fair trial (civil limb)* (Council of Europe; updated to 31 August 2022) § 414-420.

43. Irish law also makes provision for the appointment of “*single joint experts*”.⁴⁹ That is also a feature of the law in this jurisdiction and, unlike the position in Ireland, I understand that such power is often exercised here. As I understand the position, however – and I am of course open to correction – the relevant rules here have been interpreted as not precluding the court from allowing a party to their own expert to rebut the evidence of the joint expert, where it would be unjust not to allow that.⁵⁰ In many cases, however, it seems that single joint experts are appointed – principally, it seems, as regards quantum issues – and their reports are effectively accepted by the parties. But where there are significant issues of liability and/or causation, I understand that the single joint expert procedure is not utilised or, where it is, the parties are readily permitted to call their own expert in rebuttal.
44. There is an enormous literature as to the advantages and disadvantages of “*neutral*” experts. A discussion of that literature is beyond the scope of this paper. But any general practice of imposing a single expert on parties – whether a court-appointed expert or a single joint expert appointed by the parties – would have significant implications for our justice systems, which both here and in Ireland are fundamentally adversarial in character. There are other objections also. The very notion of neutrality in this context is something of an illusion. Competition economics is by no means the only science that is, in Lopatka’s phrase, “*intensely ideological*”.⁵¹ There are many fields in which there are conflicting bodies of opinion. As one commentator observes, even if there was a magic wand to banish partisanship, and only highly trained credentialed experts were allowed to testify, we would still find ourselves within “*a battle of the experts*” because even genuine experts often have genuine disagreements. She continues:

“Despite what so many participants in the legal sphere may have hoped, science is not in the business of producing incontestable

⁴⁹ Order 39, Rule 58(2) RSC

⁵⁰ *Daniels v Walker* [2000] 1 WLR 1382.

⁵¹ Lopatka , 456

*certainty. Some matters may be taken as provisionally true, even probably true, but much of what is fought about in court will be outside the parameters of consensus. Moreover, when the consensus runs too deep, it may not be science at all, but dogma.*⁵²

45. In such circumstances, reliance on a supposedly “neutral” expert is apt to conceal genuine disagreement and is likely to retard rather than advance the court’s capacity to reach a sound conclusion. That point is well made in the Goudge Report (the report of a commission *Report of the Inquiry into Pediatric Forensic Pathology in Ontario* established to examine miscarriages of justice in Ontario arising from the unreliable evidence of a pediatric pathologist, Dr Charles Smith): “reliance on a joint or court-appointed expert follows a view of science that discounts agreements among scientists on matters of judgment”. It also deprives the court of “one of the benefits of an adversarial system ... its ability, through properly resourced and informed cross-examination and presentation of evidence, to best reveal and illuminate areas of scientific controversy.”⁵³ While the Commission’s observations were specifically directed to forensic pathology evidence in criminal proceedings, they have wider resonance.
46. Even if the neutral expert seeks to engage with areas of scientific agreement and to describe the conflicting points of view, the court will “face the same dilemma: familiar contradictory claims and no legitimate epistemological mechanism for selecting between them”.⁵⁴ Either way, the question arises as to how the use of a single expert might really assist the court in understanding complex scientific evidence.
47. Another possible response involves the appointment of an expert or experts to advise the court on disputed issues. In Ireland, the Rules permit the High Court to appoint an expert – or, as they are commonly referred to, an

⁵² Mnookin, “Idealising Science and Demonizing Experts: An Intellectual History of Expert Evidence” 52 *Villanova Law Review* 763 (2007) (hereafter “Mnookin”) 799

⁵³ *Report of the Inquiry into Pediatric Forensic Pathology in Ontario* Vol 3, page 506

⁵⁴ *Mnookin*, 778.

assessor – in certain categories of cases (including competition cases, IP disputes and the traditional category of admiralty cases). Their function is to assist the court and they do not give evidence. Parties call their expert witnesses in the ordinary way and the assessor can assist the court in evaluating their evidence.

48. In practice, assessors are rarely appointed. One such appointment occurred in the competition proceedings to which I have already referred, with a very distinguished competition economist, Dr Jorge Padilla, being appointed as assessor by the High Court. Unfortunately for my client, who succeeded in the High Court, Dr Padilla's input was not enough to protect the decision from the subsequent wrath of the Court of Justice when the proceedings went there on an Article 267 reference from the Supreme Court.
49. The Irish Law Reform Commission has recommended against any move to encourage the wider use of assessors.⁵⁵ It was concerned by the potential for bias on the part of the assessor and the fact that parties could not challenge the assessor's advice to the court. It considered that general judicial education in technical or scientific matters, rather than the use of specialist advisors in individual cases who are unaccountable to the parties or to the court, was the better way of assisting judges to deal with complex cases. It was also concerned that the use of assessors would increase the costs of proceedings. These are, no doubt, valid concerns. Some of them can be addressed by ensuring that the parties are informed of the advice that the assessor gives and the Irish Rules include provisions to that effect. But such procedural safeguards do not address what appears to me to be the fundamental concern about the use of assessors, namely that their views may carry undue weight with the court. *Lopatka* refers to extensive evidence that indicates that, where jurors hear evidence from a court-appointed expert as well as from (perceived) partisan experts, they tend to discount the evidence of the perceived partisans and privilege the evidence of the "neutral" expert.⁵⁶ Common sense suggests that there is a risk that

⁵⁵ Consultation Paper on Expert Evidence, 5.324 – 5.336.

⁵⁶ *Lopatka*, 458.

judges might similarly privilege the views of their appointed assessor, who may of course be wrong. Even so, it appears to me that assessors may have a useful role to play in complex cases.

Conclusions

50. As will by now be all too obvious, I offer no silver bullet solution to the challenges of complexity. The starting point is the rigorous enforcement of the cardinal principle that the duty of all expert witnesses is to the court and that the purpose of their evidence – and the rationale for its admission – is to assist the court. The procedures available for narrowing the scope of conflict and clarifying what is in dispute and the basis for such dispute should be utilised. Judicial education is another critical component.
51. Case management – and the resources required to carry it effectively – are another necessary element. This enables courts to exercise control over the expert evidence presented, including by filtering out unreliable evidence on a preliminary basis where that is appropriate. It also gives the court an opportunity to at least begin the process of engagement with the evidence before trial, at a point when it can suggest (and if necessary direct) clarifications and explanations and ask for background primers to be jointly prepared by the experts for the benefit of the court. In that way, judges can be educated in the underlying science while avoiding the concerns that the use of assessors gives rise to.
52. Court-appointed experts and/or assessors also have a potential role.
53. This may seem like thin gruel. I thought so too so I asked ChatGPT how to enhance judicial decision-making in the face of complex scientific issues. It readily identified the problem but also promised to present a comprehensive framework for improving judges' capacity to navigate such issues. That suggested framework includes (1) enhanced judicial education through continuing legal education programmes, seminars and workshops conducted by experts; (2) establishing expert advisory panels composed of scientists and researchers to provide impartial and understandable

explanations of scientific evidence; (3) developing clear judicial guidelines for scientific evidence to assist judges in assessing the admissibility and weight of scientific evidence, addressing matter such as peer review, scientific consensus and methodology; (4) use of technology and visualisation tools to help understanding of complex scientific concepts and, finally (5) encouraging interdisciplinary collaboration between the legal and scientific communities. Acknowledging *“that the growing intersection of science and law presents a formidable challenge”*, ChatGPT nonetheless struck a positive note, stating that:

“by recognising the knowledge gap, addressing cognitive biases, and implementing the proposed framework, the legal system can enhance judge’s capacity to make informed and just decisions when faced with complex scientific issues. This not only promotes fairness but also ensures that the legal system effectively incorporates scientific knowledge to serve the interests of justice.”

54. I leave you on that optimistic note.