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THE PERILS OF LAW OFFICE SCIENCE: A PARTIAL RESPONSE TO PROFESSOR GARY EDMOND

ABSTRACT

Professor Gary Edmond's article, 'What Lawyers Should Know About the Forensic "Sciences"' calls attention to some important failings in the judicial treatment of scientific evidence. But the issues he describes are not limited to the forensic sphere, and are endemic in civil litigation generally.

In this paper, we continue Professor Edmond's discussion and explore examples from the US, Canada, Australia, England and New Zealand in the fields of product liability, intellectual property and other types of commercial disputes. We explore the unsettling unwillingness on the part of the bar, the bench and the government to actively engage with the 'scientific verities' of a case, and to go against prior rulings when current scientific developments have overtaken the legal reasoning in earlier cases. Finally, we look at the impact this judicial unwillingness has on the legal system.

It is clear that legal rulings must be, and must seem to be, well-grounded both as a matter of law and science. With the growth of alternate dispute resolution, the continued functioning of the civil litigation system depends on it.

I INTRODUCTION

It seems possible, on reading Professor Gary Edmond's article, 'What Lawyers Should Know About the Forensic "Sciences"', that his analysis suffers from (to borrow a term from his own article) 'epistemological humility'.¹ We agree with him that

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¹ Gary Edmond, 'What Lawyers Should Know About the Forensic "Sciences"' (2015) 36 *Adelaide Law Review* 33, 65.

[i]n relation to forensic science and medicine, there is a conspicuous need to develop better-informed processes and systems that help lawyers, judges and experts respond to the range of issues affecting their ability to understand and regulate expert evidence.²

The question is why he limits this criticism ‘to *forensic science and medicine*’,³ when the problems that concern Professor Edmond are largely generic to the ability of the courts to deal with scientific evidence generally. His analysis is deserving of wider application. There exists a growing controversy over the legitimacy of judicial decision-making in matters of science and sophisticated technology, whether encountered in the area of product liability, intellectual property or many different types of commercial disputes.

In this paper, we expand upon Professor Edmond’s thesis and examine the ways in which the scientific realities are often obscured, avoided or even ignored in both commercial and forensic contexts. Litigants reasonably expect a decision that is both scientifically and legally accurate. The legitimacy of court decisions in civil litigation, given the proliferating mechanisms for alternate dispute resolution, depends on it.

II ‘BUMBLING ALONG’

In the first part of his article, Professor Edmond refers approvingly to two reports from the United States calling attention to problems with forensic experts.⁴ But the systemic difficulties are equally on display in purely commercial contexts, such as in the recent breast cancer gene litigation in the United States and Australia. The issue in *Association for Molecular Pathology v Myriad Genetics Inc*⁵ was whether DNA is to be considered a ‘composition of matter’, as the patentees argued, or simply a set of unpatentable genetic instructions, as Dr James Watson, co-discoverer of DNA’s double helix and Nobel Laureate, contended. This legal debate, in turn, brought into question the courts’ understanding of the nature and function of DNA itself.

At this point of intersection of *non*-forensic science and law, in litigation that is said to be of crucial importance to the financial health of the biotech industry, the United States Supreme Court and the Full Federal Court of Australia have (so far) reached diametrically opposite conclusions based, at least in part, on differing conceptions

² Ibid 98.

³ Ibid (emphasis added).

⁴ Committee on Identifying the Needs of the Forensic Science Community, National Research Council, *Strengthening Forensic Science in the United States: A Path Forward* (National Academies Press, 2009) (*‘NRC Report’*); Expert Working Group on Human Factors in Latent Print Analysis, *Latent Print Examination and Human Factors: Improving the Practice through a Systems Approach* (US Department of Commerce, National Institute of Standards and Technology, 2012) (*‘NIST Report’*).

⁵ 133 S Ct 2107 (2013) (*‘Myriad Genetics’*).

of the relevant science and public policy. The Federal Court of Australia upheld the validity of Myriad's patent on the 'isolated and purified' genes.⁶ The US Supreme Court invalidated key elements of it.⁷ In both jurisdictions, the judges obviously felt somewhat out of their depth in coming to terms with the underlying science.

Product liability litigation has also experienced its share of what Professor Edmond refers to as 'bumbling along'.⁸ An English judge was widely portrayed as a scientific 'bumbler' when he dismissed the claim of a woman who had attributed her stroke to taking a third generation oral contraceptive.⁹ The judge had in evidence before him six studies on the alleged relationship or 'association' between strokes and 'the pill'. Three of these studies, all published in peer reviewed medical journals, said that there was an approximate doubling of the risk of stroke to a woman who was taking the third generation of the pill. On the other side, there were three industry-sponsored reports that said that there was no discernible increase in the risk. The unfortunate trial judge accepted as persuasive the industry-sponsored reports, dismissed the action, and was then roundly chastised by the medical establishment.¹⁰ An editorial in *The Lancet* decried, 'trying science in a court of law is doomed to failure.'¹¹ And an article in the *British Medical Journal* stated, '[d]espite millions of pounds spent and numerous intelligent minds locked in combat, the judge failed to get to the heart of the matter.'¹² Yikes!

In an earlier product liability case, a US trial judge was pilloried for allowing a woman's claim that serious birth defects had been caused by a spermicide used to prevent conception.¹³ There was a general consensus in the scientific community that because of its chemical properties, the spermicide was simply incapable of producing the effects claimed. Nevertheless, this same causal relationship was established to the satisfaction of the trial judge, sitting without a jury, who awarded the woman \$5.1 million in damages. The figure was reduced on appeal to \$4.7 million.

⁶ *D'Arcy v Myriad Genetics Inc* (2014) 224 FCR 479 ('*Myriad Australia*').

⁷ *Myriad Genetics*, 133 S Ct 2107 (2013).

⁸ Edmond, above n 1, 35.

⁹ *X v Schering Health Care Ltd* [2002] EWHC 1420 QB (29 July 2002), discussed in Justice Ian Binnie, 'Science in the Courtroom: The Mouse that Roared' (2007) 56 *University of New Brunswick Law Journal* 307 ('*The Mouse that Roared*').

¹⁰ See Binnie, 'The Mouse that Roared', above n 9, 312.

¹¹ Editorial, 'Epidemiology on Trial' (2002) 360 *The Lancet* 421. See also News, 'Third Generation Pill Not More Risky' (2002) 269 *The Pharmaceutical Journal* 149; Haroon Ashraf, 'UK High Court Dismisses Risk of VTE in "Pill" Test Case' (2002) 360 *The Lancet* 391.

¹² David C G Skegg, 'Oral Contraceptives, Venous Thromboembolism, and the Courts' (2002) 325 *British Medical Journal* 504.

¹³ *Wells v Ortho Pharmaceutical Corp*, 788 F 2d 741 (11th Cir, 1986), discussed in Justice Ian Binnie, 'Wrongful Convictions and the Magical Aura of Science in the Courtroom' (2011) 10 *Judicial Review* 141 ('*Wrongful Convictions*').

According to a study of the case by Professor Samuel Gross,¹⁴ the outcome was entirely at odds with a broad scientific consensus. An editorial in the *New York Times* described the judge's reasons as 'an intellectual embarrassment'.¹⁵

Professor Edmond notes the possibility of 'Australian exceptionalism' to the judicial bumbling on display elsewhere.¹⁶ Canadian courts do not claim any such exceptionalism, and on occasion seem to relish in declaring their own bafflement. A notorious example occurred in patent litigation involving Procter & Gamble's dryer added fabric conditioner BOUNCE.¹⁷ Although Unilever ultimately managed to persuade the trial judge that its patent was both valid and infringed, the scientific evidence elicited the following outburst from the bench:

A judge unschooled in the arcane subject is at difficulty to know which of the disparate, solemnly mouthed and hotly contended 'scientific verities' is, or are, plausible. Is the eminent scientific expert with the shifty eyes and poor demeanour the one whose 'scientific verities' are not credible? Cross-examination is said to be the great engine for getting at the truth, but when the unschooled judge cannot perceive the truth, if he or she ever hears it, among all the chemical or other scientific baffle-gab, is it not a solemn exercise in silliness?¹⁸

In *Myriad Genetics*, the breast cancer gene case, Scalia J of the US Supreme Court was uncharacteristically modest about his grip on the 'scientific verities'. He concurred with the majority's opinion, except with respect to its appreciation of the underlying science. His opinion was brief and to the point:

I join the judgment of the Court, and all of its opinion except Part I–A and some portions of the rest of the opinion going into fine details of molecular biology. I am unable to affirm those details on my own knowledge *or even my own belief*.¹⁹

In short, it is not only in the realm of criminal law that the courts need, in Professor Edmond's words, '[to] respond to the range of issues affecting their ability to understand and regulate expert evidence.'²⁰ In the *BOUNCE* case, the claim was valued at the equivalent (at the time) of over \$100 million. In the breast cancer gene litigation, a good chunk of the global biotech industry was said (controversially) to hang in the balance. Litigants in such disputes have an understandable anxiety for some assurance that the judges who are to decide their respective destinies understand the issues of scientific controversy as well as the relevant law.

¹⁴ Samuel R Gross, 'Expert Evidence' (1991) *Wisconsin Law Review* 1113, 1121.

¹⁵ Editorial, 'Federal Judges vs Science', *The New York Times* (New York), 27 December 1986, A22. See Binnie, 'Wrongful Convictions', above n 13, 145–6.

¹⁶ Edmond, above n 1, 81.

¹⁷ *Unilever PLC v Procter & Gamble Inc* (1993) 47 CPR (3d) 479 ('*BOUNCE*').

¹⁸ *Ibid* 488–9.

¹⁹ *Myriad Genetics*, 133 S Ct 2107, 2120 (2013) (emphasis added).

²⁰ Edmond, above n 1, 98.

III WHAT SCIENTISTS UNDERSTAND ABOUT LAWYERS AND JUDGES

The title of Professor Edmond's article could, as in the above heading, be switched around. He commences his article with a quotation from an American judge bemoaning the common lack of scientific familiarity among judges and lawyers. But many scientists are equally baffled by the ways of the law. Some scientists who have experienced the adversarial trial system have been brave enough to complain about it. The following is a representative sample:

the expert witness is almost entirely at the mercy of counsel on both sides. The [expert] must depend on counsel to present his or her views fairly and forcefully ... [experts] do not get an opportunity to defend themselves against misquotation or selective quotation by opposing counsel.

...

There is no opportunity to explain evidence or interpretation oneself, no assurance that counsel will explain it clearly or in a sophisticated fashion, and no opportunity to correct errors or crudities which creep in.

There is no guarantee . . . that counsel will even understand the arguments the [expert] has made, and consequently no guarantee that questions which may be posed by the judges will be correctly or clearly answered.²¹

Legal academics, too, sometimes offer observations surprising enough to make scientists rub their eyes.²² Professors Stéphane Beaulac and Pierre-André Côté of the Université de Montréal apparently took their instruction from a Montreal management consultant in their display of a rather shaky grip of the law of gravity: 'Consider a flight from Montreal to London. The pilot must plan such a flight based on a conception of the earth that is round, otherwise the aircraft would end up in outer space.'²³

Product liability cases, intellectual property disputes and other science-related matters lack some of the glamour of the forensic sciences. Still, the outcomes are important in the eyes of the public, especially the business community, as a test of the ability of the courts to get to a satisfactory result.

²¹ G M Dickason and R D Gidney, 'History and Advocacy: Some Reflections on the Historian's Role in Litigation' (1987) 68 *Canadian Historical Review* 576, 579. See generally Binnie, 'The Mouse that Roared', above n 9; J Morgan Kousser, 'Are Expert Witnesses Whores? Reflections on Objectivity in Scholarship and Expert Witnessing' (1984) 6 *The Public Historian* 5.

²² See also Binnie, 'The Mouse that Roared', above n 9.

²³ Stéphane Beaulac and Pierre-André Côté, 'Driedger's "Modern Principle" at the Supreme Court of Canada: Interpretation, Justification, Legitimization' (2006) 40 *Revue Juridique Themis* 131, 168.

IV THE BREAST CANCER GENE AND THE COURTS

In the 1980s, it had been discovered that some women inherited a predisposition to breast and ovarian cancers.²⁴ A researcher by the name of Mary-Claire King led a team that identified the BRCA1 gene on chromosome 17 as a major source of concern. In 1995, a second culprit, the BRCA2 gene, was identified on chromosome 13. The presence of certain genetic mutations at these sites increases a woman's risk of developing breast cancer from 12 to 13 per cent in the average population to up to 80 per cent. (Some measure of this scientific achievement is the fact the researchers were able to isolate as relevant two genes amongst the roughly 24 000 genes spread over 23 chromosomes in the human genome.)

The Myriad Genetics laboratory in Utah had the advantage of access to the colossal genealogical database created by the Mormon Church. The results of its research into the health outcomes of generations of Mormon women persuaded the US Patent and Trademark Office to issue extensive patent rights to the 'isolated and purified' BRCA1 and BRCA2 gene sequences. Myriad went on to develop diagnostic tests that identify mutations in the BRCA1 and BRCA2 genes, and help women to determine whether to undertake preventative options, including prophylactic surgery, and to otherwise structure an appropriate course of treatment. A famous beneficiary of the diagnostic tool is the actress Angelina Jolie.

In addition to the BRCA gene sequences, Myriad's patent also covered laboratory modifications of the genes, such as the cDNA Myriad 'created' in the lab by excising the introns (DNA segments not involved in protein generation) from the native gene. The US Court of Appeals for the Federal Circuit unanimously upheld Myriad's claims to cDNA, but divided on whether the 'isolated and purified' BRCA genes themselves were patentable inventions.²⁵ The plaintiffs said the 'inventors' had made no 'invention', but mere unpatentable 'discoveries'.

At this point, inevitably, lawyers and judges reach for the familiar toolbox of analogies and metaphors instead of 'drilling down' (to use another overworked metaphor) into the science itself. The Australian Full Federal Court denounced this judicial proclivity at the start of its judgment:

it is worth stating that care should be taken in resort to metaphor in analysis in this field. Metaphor can assist thought, in particular, by the evocation of structure and form by imagination; but it can also blind the eye of the mind by

²⁴ For further discussion of this case, see Ian Binnie and Vanessa Park-Thompson, "Keep Your Greedy Hands Off My Genes!" The US Supreme Court's Invalidation of Gene Patents is a Victory for Basic Principles of Patent Law, but Public Policy Concerns Remain Unresolved' (2014) 26 *Intellectual Property Journal* 249.

²⁵ *Association for Molecular Pathology v US Patent and Trademark Office*, 689 F 3d 1303, 1329 (Lourie J), 1340–1 (Moore J), 1355–6 (Bryson J) (Fed Cir, 2012) ('*Myriad CAFC*'). Justice Lourie wrote the majority decision, with Moore J in the minority and Bryson J dissenting.

oversimplification. It may risk blinding real illumination that is achieved through analysis of the facts, including the scientific principles involved, by the utilisation of a striking evocation of a simplified structure of analysis that is derived from the metaphor chosen, rather than from the facts as existing.²⁶

This may indeed be an assertion of ‘Australian exceptionalism’. In other jurisdictions, the lawyers are typically focused on soft peddling the science to the judges. In the companion US case, the government conjured up images of Superman’s famous x-ray vision to dispute the validity of key claims of Myriad’s patents. It advanced a simplistic ‘magic microscopic’ test: if an instrument could be built to penetrate the human body at the molecular level, would a researcher be able to ‘see’ the claimed gene fragment? If so, the genetic material, isolated and purified or not, was *not* patentable subject matter.

The majority of the US Court of Appeals rejected the ‘magic microscope’ analogy:

The government’s microscope could focus in on a claimed portion of any complex molecule, rendering that claimed portion patent ineligible, even though that portion never exists as a separate molecule in the body or anywhere else in nature, and may have an entirely different utility. That would discourage innovation.²⁷

This same analogy crashed and burned in the Australian litigation, the Full Federal Court generally approving of the American appellate court’s analysis.²⁸

On the hunt for a better analogy, both the US minority and the dissent went on to compare isolated DNA to a baseball bat, with differing conclusions about whether a baseball bat could be considered patent-eligible subject matter (a rather different argument, it would seem, than one about isolated and purified gene sequences). As to baseball bats, the minority refined the analogy as follows: ‘man has defined the parts [of the tree] that are to be retained and the parts that are to be discarded, and he has molded [sic] the retained portion into a product that bears little resemblance to that which occurs naturally.’²⁹

However, the dissenter fixed on the analogy (not the science). He floated the idea that if isolation and purification is sufficient, what about a kidney surgically removed from a patient’s body? Why would not the ‘isolated’ and cleaned up kidney be as patentable as an ‘isolated and purified’ gene? Pursuing yet another analogy, Bryson J went on to suggest that ‘extracting a gene is akin to snapping a leaf from a tree’:

Like a gene, a leaf has a natural starting and stopping point. It buds during spring from the same place that it breaks off and falls during autumn. Yet prematurely

²⁶ *Myriad Australia* (2014) 224 FCR 479, 482 [4].

²⁷ *Myriad CAFC*, 689 F 3d 1303, 1331 (Fed Cir, 2012).

²⁸ *Myriad Australia* (2014) 224 FCR 479, 482 [5]–[7], 517 [212].

²⁹ *Myriad CAFC*, 689 F 3d 1303, 1342 (Fed Cir, 2012).

plucking the leaf would not turn it into a human-made invention. That would remain true if there were minor differences between the plucked leaf and the fallen autumn leaf, unless those differences imparted ‘markedly different characteristics’ to the plucked leaf.³⁰

No, no, no replied the majority, ‘[s]napping a leaf from a tree is a physical separation, easily done by anyone. Creating a new chemical entity is the work of human transformation, requiring skill, knowledge, and effort.’³¹

Even the Australian Full Federal Court, though purporting to eschew metaphors as an ‘oversimplified analysis’,³² could not help but add its voice to the chorus:

[The tree branch analogy] is inapposite. The branch has not changed — it is simply divorced from the tree, whereas the chemical and physical makeup of the isolated nucleic acid renders it not only artificial but also different from its natural counterpart.³³

Justice Moore, the concurring judge in the US Court of Appeals decision, concluded that the genetic subject matter was probably *not* patentable as a matter of patent law.³⁴ However, given that the US Patent and Trademark Office ‘has allowed patents on isolated DNA sequences for decades ... we must be particularly wary of expanding the judicial exception to patentable subject matter where both settled expectations and extensive property rights are involved.’³⁵ In effect, in her Honour’s view, the biotech industry had more or less earned squatters’ rights to its intellectual property.

A similarly pragmatic argument, based on patent office experience, had earlier been endorsed by the Australian Law Reform Commission (‘ALRC’) in its 2004 report on gene patenting:

6.51 there are attractive arguments for the view that such materials should not have been treated as patentable subject matter.

6.52 *However, the time for taking this approach to the patenting of products and materials has long since passed.* For decades, naturally occurring chemicals have been regarded by patent offices in many jurisdictions as patentable subject matter, when they are isolated and purified. This principle has been applied by analogy to biological materials, including genetic sequences, on the basis that they are ‘merely’ complex organic compounds. This development was certainly

³⁰ Ibid 1352 (Bryson J) (citations omitted).

³¹ Ibid 1332.

³² *Myriad Australia* (2014) 224 FCR 479, 482 [7].

³³ Ibid 517 [211].

³⁴ *Myriad CAFC*, 689 F 3d 1303, 1343 (Fed Cir, 2012).

³⁵ Ibid.

not foreseen when the modern patent system was established, and a different approach might have been available when the issue first arose for consideration.

6.53 Nonetheless, the ALRC considers that a new approach to the patentability of genetic materials is not warranted at this stage in the development of the patent system, for the following reasons ...³⁶

But when the *Myriad Genetics* case reached the US Supreme Court (which eventually invalidated the patent claims to the ‘isolated and purified’ gene sequences), Roberts CJ was drawn moth-like back to the baseball bat analogy. His Honour suggested the bat could be seen as a true invention, because ‘[y]ou don’t look at a tree and say, well, I’ve cut the branch here and cut it here and all of a sudden I’ve got a baseball bat.’³⁷ Human innovation was required. Conversely, the BRCA genes did *not* require invention, because ‘[you] snip off the top and you snip off the bottom and there you’ve got it.’³⁸

Justice Sotomayor preferred a sweeter metaphor: if the chromosome were a chocolate chip cookie, were not the claimed BRCA1 and BRCA2 genes no more patentable than the salt, flour, eggs and butter used to make that cookie?³⁹

Then the Court made a hypothetical trip to Amazonia, comparing the BRCA1 and BRCA2 genes in a human chromosome to a plant in the Amazon forest: if ‘Captain Ferno’ ventures into the jungle, uproots an indigenous plant and carries it back to the United States, does he or she have something patentable, or just a discovery?⁴⁰

In the end, the chocolate chip cookie school of thought prevailed and the US Supreme Court reversed the Court of Appeals’ decision, striking down Myriad’s claims to the isolated and purified gene sequences.

The lack of any real scientific analysis was baffling to the scientific community. The amicus brief submitted by Dr James Watson was scornful of the US Court of Appeals’ judgment upholding the validity of the patent claims:

what the Court misses, I fear, is the fundamentally unique nature of the human gene. Simply put, no other molecule can store the information necessary to create and propagate life the way DNA does. It is a chemical entity, but DNA’s

³⁶ ALRC, *Genes and Ingenuity: Gene Patenting and Human Health*, Report No 99 (2004) 130 (emphasis added), referred to in *Myriad Australia* (2014) 224 FCR 479, 508–9 [158].

³⁷ Transcript of Proceedings, *Myriad Genetics* (United States Supreme Court, Roberts CJ, Kennedy, Ginsburg, Scalia, Alito, Kennedy, Sotomayor, Kagan and Breyer JJ, 15 April 2013) 41.

³⁸ Ibid.

³⁹ Ibid 35–6.

⁴⁰ Ibid 7–8, 30, 32–3, 43–5, 64–5.

importance flows from its ability to encode and transmit the instructions for creating humans.⁴¹

In other words, DNA fragments are important not as compositions of matter, but because of the information they carry.⁴² The attempt to patent ‘the messenger’ as just another ‘composition of matter’ is like (if we may dare to impose yet another metaphor on Dr Watson) conceptualising the importance of Mozart in terms of his body parts. It creates, in Dr Watson’s view, an unacceptable ‘ownership’ of our common genetic inheritance.⁴³ Importantly, moving subject matter from ‘the commons’ into the realm of private property may complicate rather than facilitate future scientific discovery. In this way, Dr Watson’s objection combined both scientific and public policy concerns.

The Australian Full Federal Court in effect concluded that the US Supreme Court, Dr James Watson and other scientists who argue that DNA sequences are (from a scientific perspective) essentially carriers of information, may know science but simply do not understand patent law.⁴⁴ According to the Full Federal Court,

[t]here is a distinction between a claim to an isolated nucleic acid comprised in part of a sequence of nucleotide bases and a claim to a written sequence of nucleotides which may be identical to the corresponding sequence in the natural cell. The claim is to be construed according to the normal principles of claim construction. To identify the invention as lying in the concept of information said to be embodied in a sequence of nucleotides ignores the language of the claim.⁴⁵

In its view, Myriad’s patent claimed a tangible compound — a nucleic acid — with valuable economic utility.⁴⁶ Focusing on the ‘unnatural’ properties of isolated and purified genetic sequences, the Federal Court of Australia concluded:

What is being claimed is not the nucleic acid as it exists in the human body, but the nucleic acid as isolated from the cell. The claimed product is not the same as the naturally occurring product. There are structural differences but, more importantly, there are functional differences because of isolation. As Lourie J [of the US Court of Appeals] explains, ‘*the ability to visualise a DNA molecule through a microscope, or by any other means, when it is bonded to other genetic material [and in a particular regulatory environment] is worlds apart from processing an isolated DNA molecule that is in hand and useable*’.⁴⁷

⁴¹ ‘Brief for James D Watson, PhD as Amicus Curiae in Support of Neither Party’, Submission in *Myriad Genetics*, 133 S Ct 2107 (2013), 2 (‘Watson Brief’).

⁴² See Binnie and Park-Thompson, above n 24, 251.

⁴³ ‘Watson Brief’, Submission in *Myriad Genetics*, 133 S Ct 2107 (2013), 2.

⁴⁴ *Myriad Australia* (2014) 224 FCR 479, 518 [216].

⁴⁵ Ibid 514 [194].

⁴⁶ Ibid 516–7 [210].

⁴⁷ Ibid 517–8 [212], [216]–[217] (emphasis added).

Of course, if the genius of the ‘inventors’ lay in the methods of extraction and purification, why were they not limited to method claims on their extractive processes?

The case is currently under appeal to the High Court of Australia.

V OTHER HORROR STORIES FROM CANADA

Professor Edmond rightly calls to attention two excellent reports on wrongful convictions in Canada. The first in time was a meticulous judicial inquiry into the wrongful conviction of Guy Paul Morin for the murder of a child who lived next door. The Commissioner, a retired judge of the Quebec Court of Appeal, Fred Kaufman, concluded that the research used by the Crown expert for purposes of identification of the accused as the killer had been ‘seriously misused’ and would ‘likely mislead the jury’.⁴⁸ The testimony ‘proved nothing’, Commissioner Kaufman wrote: ‘There is no doubt that the hair and fibre evidence was crucial to the decision to arrest Guy Paul Morin; its presentation to the jury at the second trial undoubtedly contributed to Mr Morin’s wrongful conviction.’⁴⁹

The second, more broadly based judicial inquiry, extensively described by Professor Edmond in his article, concerned a crusading Ontario forensic pathologist by the name of Dr Charles Smith.⁵⁰ Problems with Dr Smith’s testimony in a variety of cases eventually became so notorious that a Commission of the Inquiry (the ‘Goudge Inquiry’) was established.⁵¹ Justice Stephen Goudge, an Ontario Court of Appeal judge, found that Dr Smith was poorly trained, chronically disorganised, arrogant and incompetent.⁵² In the result, he recommended that 142 of the cases in which Dr Smith testified should be reviewed to investigate potential errors and miscarriages of justice. One agonising issue raised by the Goudge Inquiry was why the prosecution continued to recommend Dr Smith’s opinions to judges and juries, long after serious doubts and alarms had been raised about his competence. In many of these cases of wrongful conviction, based on a misuse of forensic science, the prosecution’s ethics are very much in question.

VI PUBLIC POLICY TRUMPS SCIENCE IN THE COURTROOM

Much of Professor Edmond’s commentary suggests a judicial preference for pragmatic results over scientific doubts and quibbles about reliability. We agree with him that

⁴⁸ Fred Kaufman, *Report of the Kaufman Commission on Proceedings Involving Guy Paul Morin* (Queen’s Printer, 1998) 119.

⁴⁹ *Ibid.* 83.

⁵⁰ See also Binnie, ‘Wrongful Convictions’, above n 13.

⁵¹ Stephen T Goudge, *Inquiry into Pediatric Forensic Pathology in Ontario* (Queen’s Printer, 2008).

⁵² *Ibid.*

[c]ourts have been too accommodating in their responses to the state's incriminating expert evidence. They have 'certified' techniques and experts prematurely; thereby allowing untested and therefore speculative forms of evidence into trials, and required the defence to somehow identify, explain and successfully convey limitations at the accused's peril.⁵³

As a case in point, Professor Edmond refers⁵⁴ to his earlier and very timely commentary⁵⁵ on the decision of the English Court of Criminal Appeal in *R v Atkins*.⁵⁶ In light of the vast network of closed-circuit television cameras ('CCTV') currently operating in Britain, it would take an uncommonly sturdy judiciary to rule that evidence of 'facial morphology' is inadmissible for identification purposes on the grounds of the lack of a proper database, subjectivity on the part of the expert, confirmation bias, and so on. As in the case of the ALRC's support of gene patents, there seems to emerge from time to time a critical mass of acceptance of even weak science at which point further critical debate is put aside. (An exception, in Canada, was the Supreme Court of Canada's willingness to review and discredit prevailing views of the value of evidence given under hypnosis.)⁵⁷

In the Myriad Genetics litigation, the American and Australian courts of appeal were clearly of the view that the long-established patent office and parliamentary practice was determinative.⁵⁸ Both the minority of the US Court of Appeals and the unanimous Australian Full Federal Court deferred to the wisdom of the government, who, when faced with the question of whether to exclude purified and isolated gene sequences from patentability, had specifically declined to do so. The Australian Federal Court stated:

The isolation of the nucleic acid also leads to an economically useful result — in this case, the treatment of breast and ovarian cancers. This is surely what was contemplated by a manner of new manufacture in the *Statute of Monopolies*. As Moore J explained in the Federal Circuit, '*it is not the chemical change alone, but that change combined with the different and beneficial utility which leads me to conclude that small isolated DNA fragments are patentable subject matter*'.⁵⁹

Despite Myriad's success in Australia, we are of the opinion that the Supreme Court of Canada, if invited to do so, would likely *strike down* the contested gene claims on unabashed grounds of public policy (and likely without much discussion of the underlying science). There is, in fact, no pending patent litigation in Canada about

⁵³ Edmond, above n 1, 85.

⁵⁴ *Ibid* 79 n 235.

⁵⁵ See Gary Edmond et al, '*Atkins v The Emperor: the "Cautious" Use of Unreliable "Expert" Opinion*' (2010) 14 *The International Journal of Evidence & Proof* 146.

⁵⁶ [2009] EWCA Crim 1876 (2 October 2009), cited in Edmond, above n 1, 79 n 235.

⁵⁷ *R v Trochym* [2007] 1 SCR 239.

⁵⁸ *Myriad Australia* (2014) 224 FCR 479, 482 [3].

⁵⁹ *Ibid* 517 [214] (emphasis added).

the BRCA genes; the public health authorities in the provinces decided simply to appropriate the teaching of the Myriad patents and diagnostic tools, while ignoring Myriad's strident claims for compensation. For reasons unknown, while Myriad kicked up a fuss, it ultimately chose not to sue for patent infringement in Canada. However, had such a suit been initiated, we doubt that the ruling would have been based on whether to conceptualise DNA as a 'composition of matter' or 'genetic instructions'. The Supreme Court of Canada, after all, was in a distinct minority among national courts in denying the validity of Harvard University's 'oncomouse' patent by 'reading into' the *Patent Act*, RSC 1985 c P-4 a prohibition against patenting 'higher life forms'.⁶⁰

In *Harvard Mouse*, the majority in a 5:4 decision concluded that the adult mouse was unpatentable because it developed through the 'natural process of gestation'⁶¹ and Parliament could not have intended the pedestrian phrase 'composition of matter' to include conscious, sentient living creatures such as rodents (as opposed to bacteria and other 'lower life forms') within its scope:

The fact that animal life forms have numerous unique qualities that transcend the particular [genetic material] of which they are composed makes it difficult to conceptualize higher life forms as mere 'composition[s] of matter'. It is a phrase that seems inadequate as a description of a higher life form.

...

*The distinction between lower and higher life forms, though not explicit in the Act, is nonetheless defensible on the basis of common sense differences between the two.*⁶²

Oddly enough, there is some echo here of Dr Watson's argument that the extraordinary nature of DNA 'transcend[s] the particular [genetic material] of which they are composed.'⁶³ In the majority's view, the phrase 'composition of matter' just 'seems inadequate as a description' of nature's messenger molecule.

The four dissenting judges on the Supreme Court of Canada criticised the majority's failure to define what it had in mind as the critical dividing line between lower and higher forms of life.⁶⁴ Apparently, the line falls somewhere along a spectrum between a bacterium and a mouse. For the dissent, what was significant was not the 'natural process of gestation' but the very unnatural product of a mouse whose every cell had been modified by human intervention to achieve a novel and medically

⁶⁰ *Harvard College v Canada (Commissioner of Patents)* [2002] 4 SCR 45 ('*Harvard Mouse*').

⁶¹ *Ibid* 93 [85], 126–7 [162] (Bastarache J for L'Heureux-Dubé, Gonthier, Iacobucci, Bastarache and LeBel JJ).

⁶² *Ibid* 122 [155], 127 [163], 147 [199] (emphasis added).

⁶³ *Ibid* 127 [163].

⁶⁴ *Ibid* 78–82 [46]–[56].

useful purpose.⁶⁵ The minority's view was that '[t]he extraordinary scientific achievement of altering every single cell in the body of an animal which does not in this altered form exist in nature, by human modification of "the genetic material of which it is composed"' deserved patent protection,⁶⁶ unless and until the *Patent Act* was amended to attenuate the scope of patentable subject matter. As in the case of the forensic sciences examined in Professor Edmond's article, the admissibility and weight of scientific evidence seemed to be judicially viewed through the lens (another overworked metaphor!) of public policy, rather than from the perspective of the scientists. The excessively 'accommodating' judicial attitude to dubious science noted by Professor Edmond may indicate more than a simple misunderstanding or lack of interest. Science may become subservient to a different agenda. In the Ontario cases mishandled by Dr Smith, Commissioner Goudge describes a simple desire on the part of the prosecution to obtain a conviction, and its willingness to hold its nose while calling the incompetent pathologist.

VII ARE JURIES LESS PERCEPTIVE THAN JUDGES IN SPOTTING UNRELIABLE SCIENTIFIC EVIDENCE?

Professor Edmond expresses special concern about the ability of jurors to see through unreliable 'science'. We agree with Professor Edmond that, 'juries have not been placed in conditions that are conducive to the rational evaluation of incriminating opinion evidence and proof of guilt more generally.'⁶⁷

However, we suggest that the conclusion Professor Edmond draws is excessively pessimistic. He concludes that: 'When it comes to jury evaluation of expert evidence, and the combination of expert evidence with other forms of evidence, trial and appellate court confidence and deference would seem to be misplaced.'⁶⁸

We think Australians can draw particular comfort from the work of the New South Wales jury in *R v Tang*.⁶⁹ The jurors in that case, on their own initiative, raised many of the concerns that trouble Professor Edmond about the reliability of experts' methodology. They were asked by the prosecutor to convict on the basis of 'expert' identification by 'facial mapping' and 'body movements'. The expert, Dr Sutisno, purported to compare the facial features of the accused with those of the perpetrator of a crime captured on CCTV.⁷⁰ (*Tang* is therefore a companion case in some respects to the English case of *R v Atkins*, mentioned earlier.)

⁶⁵ Ibid 62 [8], 69–71 [27]–[30].

⁶⁶ Ibid 62 [8] (Binnie J for McLachlin CJ, Major, Binnie and Arbour JJ).

⁶⁷ Edmond, above n 1, 91.

⁶⁸ Ibid.

⁶⁹ (2006) 65 NSWLR 681 ('*Tang*'). See also Binnie, 'Wrongful Convictions', above n 13.

⁷⁰ *Tang* (2006) 65 NSWLR 681, 684–5 [9]–[11], 687 [22].

The expert, Dr Sutisno, holds a doctorate in anatomy. Initially she gave a qualified opinion that in the *Tang* case ‘facial mapping’ from a CCTV-type camera could only be of limited assistance to the prosecution.⁷¹ However, upon reflection and extending her analysis to a visual examination of the body movements of the person on the video and comparing them with the known body movements of the accused, she upgraded her opinion considerably. By the time of trial she was prepared to tell the jury that the person shown in the video was indeed the accused.⁷² This evidence was a critical part of the Crown’s case.⁷³

The New South Wales Court of Criminal Appeal overturned Tang’s conviction on the basis that whatever level of (doubtful) confidence could be placed in ‘facial mapping’, there was no scientific foundation at all to qualify ‘body mapping’ as a field of ‘specialised knowledge’ within the meaning of s 79 of the *Uniform Evidence Law* (*UEL*).⁷⁴ The Court concluded that Dr Sutisno’s identification evidence amounted to nothing more than inadmissible subjective opinion.⁷⁵

However, the jury got there first. After Dr Sutisno had explained facial features and body posture to them, and pointed out a number of areas where she said the video image matched the accused, the jury sought a clarification: ‘Accepting Dr Sutisno’s qualifications should we therefore accept her methodology?’⁷⁶ The jurors, it seems, shared Professor Edmond’s concern about the need to establish the reliability of the method quite apart from the credentials of the expert.

Following a luncheon adjournment, the jury came back with a series of additional questions that demonstrated beyond any doubt their insight into the weaknesses of Dr Sutisno’s methodology, as follows:

How accurate is morphology analysis as a technique? What percentage of cases are correct matches of persons versus incorrect matches? Could we please ask Dr Sutisno how many matching morphological features she needs to form the opinion that two photos are the same person, what would be the minimum?⁷⁷

The New South Wales Court of Criminal Appeal was clearly impressed with the jury’s ‘pertinent, indeed perspicacious, questions’,⁷⁸ even though Spigelman CJ noted the fact that nothing in s 79 of the *UEL* refers explicitly to reliability and

⁷¹ Ibid 689 [32]–[33].

⁷² Ibid 689 [33].

⁷³ Ibid 683 [7], 706 [99].

⁷⁴ The *UEL* are *Evidence Act 1995* (Cth); *Evidence Act 2011* (ACT); *Evidence Act 1995* (NSW); *Evidence (National Uniform Legislation) Act 2011* (NT); *Evidence Act 2001* (Tas); *Evidence Act 2008* (Vic).

⁷⁵ *Tang* (2006) 65 NSWLR 681, 715 [154]–[155].

⁷⁶ Ibid 695 [50].

⁷⁷ Ibid 701 [74].

⁷⁸ Ibid.

therefore ‘[t]he focus of attention must be on the words “specialised knowledge”, not on the introduction of an extraneous idea such as “reliability”.’⁷⁹ Having said that, Spigelman CJ gave practical effect to his reliability concerns by holding that Dr Sutisno could only describe to the jury such dissimilarities and similarities as she had observed. She could not go further and testify as to the likelihood that the man in the photo was in fact the accused because there existed no comprehensive database (about which the jury had inquired) to inform an expert such as Dr Sutisno as to how common the particular facial traits or body movements she referred to were, or how frequently in the general population people exist with particular combinations of hooked noses, protruding ears, and so on.⁸⁰

Professor Edmond sets out the heart of his concern as follows:

Expert opinions derived through techniques that have not been evaluated, or were derived through processes where the analyst was unnecessarily exposed to gratuitous information, or are not expressed in terms that have an appropriate foundation in research, have no place in a rational system of justice. They are not susceptible to rational evaluation by laypersons either individually or as part of a case.⁸¹

On this point, the doubters in the *Tang* jury were punching well above their weight.⁸² On occasion, judges seem less perceptive than the *Tang* jury, or perhaps they are just working from a different conception of public policy.

VIII A HEAVY ONUS ON THE ‘GATEKEEPER’

Professor Edmond writes about the bench’s ‘unquestioned faith in the reliability (or infallibility)’ of various scientific measurements that purport to verify the identity of an accused.⁸³ His well-founded concerns about the lack of attention to a reliability analysis in Australia seem to be illustrated in spades by the decision of the South

⁷⁹ Ibid 712 [137].

⁸⁰ Ibid 715 [155], 716 [157].

⁸¹ Edmond, above n 1, 84.

⁸² As stated earlier, the misgivings of the lay persons on the *Tang* jury seem not to have been sufficiently shared by the professional judges on the English Court of Criminal Appeal in *R v Atkins* [2009] EWCA Crim 1876 (2 October 2009) [31], where similar evidence of ‘facial mapping’ (though not ‘body mapping’) had been adduced. Citing *Tang*, but waiving aside many of its caveats, the English Court reasoned that: ‘the expert is not disabled either by authority or principle from expressing his conclusion as to the significance of his findings, and ... he may do so by use of conventional expressions, arranged in a hierarchy’. The English appellate judges, unlike the *Tang* jurors, seem to have fallen into the precise errors Professor Edmond warns against.

⁸³ Edmond, above n 1, 67.

Australian Court of Criminal Appeal in *R v Rose*,⁸⁴ a ‘barefoot morphology’ case with close parallels to the Ontario case of *R v Dimitrov*.⁸⁵

In *Rose*, two Australian podiatrists took a pair of the shoes of the accused and plaster casts of his feet to analyse a possible connection between the footprints of the accused *inside* the shoes and a set of unknown barefoot imprints on shoes that someone, allegedly the perpetrator, had left near the crime scene.⁸⁶ The podiatrists purported to be able to link the known footprints to the incriminating shoes, and thereby establish identification (even though the evidence was officially considered on a different point, it effectively cooked the accused’s goose). The appellate court upheld the trial judge’s decision to admit the evidence, and neither court made any attempt to evaluate the alleged ‘body of knowledge’ on which the testimony was allegedly based. Instead, the courts relied on the credentials of the podiatrists and the fact that podiatry itself is an established field of expertise. This was enough, the Court of Criminal Appeal indicated, without addressing the reliability or even general acceptance of stretching the study of podiatry to the murkiness of ‘barefoot morphology’.

Similarly unreliable evidence of ‘barefoot morphology’ was held admissible by an Ontario trial judge in *Dimitrov*.⁸⁷ But the Ontario Court of Appeal ordered a new trial, on the basis that this sort of quack evidence should have been stopped at the gateway and ruled inadmissible.⁸⁸ The prosecution’s evidence of ‘barefoot morphology’ failed to meet any of the established criteria for admissibility. There was no serious test of the methodology, and as such, there was no opportunity for peer review and no error rate had ever been established. The Court of Appeal asked itself the right questions and it came up with the right answer. The deficiencies in the so-called ‘science’ went beyond questions of weight. It was simply inadmissible.

Of course, sometimes these bizarre technologies come to the aid of the defence. In the US case of *Harrington v State*,⁸⁹ the trial judge admitted novel scientific evidence of alleged brain fingerprinting submitted by the defence to overturn a 25-year-old conviction. According to the *Toronto Globe and Mail*:

For two decades, Terry Harrington protested his innocence from his Iowa prison cell, insisting that he had not shot and killed a retired police officer when he was 17 years old.

⁸⁴ (1993) 69 A Crim R 1 (*‘Rose’*).

⁸⁵ (2003) 68 OR (3d) 641 (Ontario Court of Appeal) (*‘Dimitrov’*).

⁸⁶ See also Binnie, ‘Wrongful Convictions’, above n 13.

⁸⁷ (2003) 68 OR (3d) 641 (Ontario Court of Appeal).

⁸⁸ *Ibid* 654–8 [37]–[56].

⁸⁹ 659 NW 2d 509 (Iowa, 2003), discussed in Binnie, ‘The Mouse that Roared’, above n 9, 319.

Then he decided to try brain fingerprinting. It's a computerized mind-reading technique developed by Jerry Farwell, an American researcher and entrepreneur who says he can tell if the details of a crime scene are stored in a suspect's brain. If Mr Harrington were innocent, the test would show that his brain did not recognize details about the murder, details the killer would know.

'The brain never lies,' Dr Farwell says.

...

The judge accepted the results of the brain-fingerprinting test, the new testimony from Mr Hughes and the suppressed police reports ... [I]n February, 2003, the Iowa Supreme Court overturned his conviction, and ordered a new trial.

By then, he had been in prison for 25 years ... In October, 2003, the charges were officially dropped.

Mr Harrington ... is suing the police ...⁹⁰

The idea of brain fingerprinting may have superficial attraction as a technique to signal an involuntary response, much as a lie detector is supposed to do. But there is considerable doubt as to whether, at this stage of its development, the technique achieves what it is claimed to do, and whether its results are reproducible, or whether it meets any of the other requirements of the scientific method.⁹¹

However, dubious science seems more often to be enlisted by the prosecution. As mentioned, in Ontario, the Goudge Inquiry found that the prosecutorial authorities clung disgracefully to the flawed 'expertise' of Dr Charles Smith long after it was evident that his evidence was, more often than not, wholly unreliable.

In the Lindy Chamberlain case,⁹² for so long considered a poster child for prosecutorial wilful blindness, the Australian authorities eventually faced up to the reality of

⁹⁰ Anne McIlroy, 'Not Guilty: "The Brain Never Lies"', *The Globe and Mail* (Toronto), 5 November 2005, F6.

⁹¹ See Binnie, 'The Mouse that Roared', above n 9, 320.

⁹² As is known around the world, Lindy Chamberlain's daughter, as Lindy said from the outset, had been abducted from their camping tent by a wild dingo. The experts, however, thought otherwise and she was eventually convicted in part on the basis of expert testimony as to the alleged presence of baby blood in her car. A Commission of Inquiry later concluded that in reality much of the substance found could not be conclusively identified as blood at all (it was likely paint) let alone her baby's blood. In upholding the Commissioner's findings and quashing the convictions, the appeal court found that some experts had overstepped the proper boundaries of their expertise and overstated the reliability of their opinions. *Reference under 433A of the Criminal Code by the Attorney-General for the Northern Territory of Australia of convictions of Alice Lynne Chamberlain and Michael Leigh Chamberlain* [1988] NTSC 64 (15 September 1988). See also *Re Ross* (2007) 19 VR 272.

a wrongful conviction for murder based in large part, as the defence had contended, on flawed expert testimony.

But in the *Bain* case, even after two decades, the New Zealand government continues to simply ignore the flaws in the forensic evidence that led to a conviction eventually overturned by the Judicial Committee of the Privy Council in 2007.⁹³

The *Bain* case involved domestic violence on a grand scale. In 1994, 19-year-old David Bain, was convicted in Dunedin of murdering his parents and siblings in the family home with his .22 calibre hunting rifle.⁹⁴ It was common ground that the killer was either David Bain or his father, Robin (in which case it was a murder-suicide). There was some evidence of the father's mental instability. Contested evidence was led at the retrial of an alleged incestuous relationship between Robin and his youngest daughter, and that prior to the weekend of the killings, she had voiced to a friend her intention to go home to expose the incest and her part-time work as a prostitute to the rest of the family. No plausible motive was ever suggested for David Bain (although the Crown pointed out, as if it were significant, that on occasion David Bain had experienced episodes of déjà vu!).

Eventually, after several unsuccessful attempts to obtain relief from the New Zealand courts,⁹⁵ David Bain's lawyers were able to get his case to the Privy Council, which quashed the convictions. One of the controversial points of evidence concerned the nature and origin of stains on the murder weapon, which the prosecution maintained were made in the blood of one of the victims. The Privy Council held:

The trial proceeded on the assumption that David's fingerprints on the forearm of the rifle were in human blood. It is now known that although blood from other parts of the rifle had been tested before trial and found to be human blood, the fingerprint material had not been tested. When it was tested after the trial it gave no positive reading for human DNA. Thus the blood analysis evidence was consistent with the blood being mammalian in origin, the possible result of possum or rabbit shooting some months before. If Dr Geursen's evidence is accepted, the blood was positively identified as mammalian in origin.⁹⁶

By the time of the Privy Council decision, David Bain had spent 13 years in prison. In 2009, following a 12-week retrial, he was promptly acquitted by a jury after a half day of deliberation.

⁹³ See generally Ian Binnie, *Report for the Minister of Justice on Compensation Claim by David Cullen Bain* (30 August 2012) ('*Report for the Minister of Justice*').

⁹⁴ *Bain v The Queen* (2007) 23 CRNZ 71.

⁹⁵ With the distinguished exception of the judgment of Sir Kenneth Keith, then of the New Zealand Court of Appeal, now of the International Court of Justice, who recommended further appellate consideration of the Bain convictions. On reassessment the Court, differently constituted, dismissed the Bain application, and it was this dismissal that opened the door to seek leave from the Privy Council.

⁹⁶ *Bain v The Queen* (2007) 23 CRNZ 71, 100–1 [112].

Of interest for present purposes, is the dismissive attitude exhibited in the earlier decision of the New Zealand Court of Appeal (in upholding the conviction) towards the DNA and other scientific evidence later relied upon by the Privy Council:

In these circumstances we are of the view that nothing of moment has been raised to cast doubt on our earlier discussion of this topic which demonstrated, for the reasons there set out, *that from a practical rather than a scientific point of view*, David's fingerprints were almost certainly deposited on the fore-end of the rifle contemporaneously with the murders.⁹⁷

Similarly, the New Zealand authorities put forward (and for the most part still rely upon to deny David Bain's claim for compensation) some curious 'forensic science' including:⁹⁸

- a) The testimony of an expert who examined some bloodied sock prints in the area of the family home where the killings occurred. He pronounced the prints to be David Bain's and not those of his father, based in part on the relative size of socks belonging to Robin and David, a position he admitted at the 2009 retrial was of no 'scientific benefit'⁹⁹ and was 'not useful for comparative purposes'.¹⁰⁰ Most people recognise that socks stretch and can accommodate a range of foot sizes;
- b) Experts who were eventually retained by the defence could not do their own analysis of the bloodied prints as, contrary to the New Zealand *Police Manual*, the critical evidence of the carpet stained with bloody footprints had not been preserved. The family home, including the vital areas of carpet, was deliberately burned down three weeks after the murders, with police permission;
- c) Robin Bain was killed by a bullet from the same .22 rifle that killed the other family members. There was an issue at both trials about whether Robin *could* have extended his reach to pull the trigger given the length of his arm. The Police armourer testified that the rifle was 20 cm longer than it was. The error favoured the prosecution. If the police witness had been correct, the trigger would likely have been beyond Robin's reach. The error was caught by the defence in cross-examination;
- d) The prosecution witness called to identify fingerprints on the murder weapon testified that David Bain's fingerprints on the forestock were 'positive prints', by which he meant that blood was already on the fingers when pressure was applied to create the print (rather than a 'negative' print which would result if the fingers were applied to blood already smeared on the gun). The expert testified

⁹⁷ Ibid 96 [95] (emphasis added).

⁹⁸ See generally *Report for the Minister of Justice*, above n 93, 74, 84, 88, 91, 94.

⁹⁹ Ibid 74.

¹⁰⁰ Ibid.

that the fingerprints ‘appeared to be’ blood¹⁰¹ when ‘visually enhanced’ under the polilight (a type of laser). He explained to the 1995 jury that when blood is illuminated under a polilight it luminesced. At the 2009 retrial, the expert admitted that this was wrong. Blood does not luminesce under a polilight; blood absorbs light and shows up as dark. It is the background that luminesces. When the defence pointed this out, the witness said his misstatement to the 1995 jury had been deliberate. He said he intended to convey the picture ‘in layman terms to the jury so that they would understand’.¹⁰² He could not explain why he thought ‘luminesced’ was an easier concept for the jury to grasp than ‘dark’; and

- e) Eventually, the prosecution provided a defence expert with an alleged blood sample. His analysis concluded that, ‘the only reasonable explanation is that the DNA extracted from the fingerprint by the prosecution on the rifle is *not* of human origin.’¹⁰³ The Crown responded that the defence expert was inadvertently provided with contaminated material and therefore his tests were not valid. How exactly the prosecution came to supply the defence expert with a contaminated sample that rendered the defence work useless was not explained.

Unlike many of the other jurisdictions referred to in Professor Edmond’s article, the New Zealand government has not accepted any responsibility to David Bain for what the Privy Council condemned as a true miscarriage of justice. Nor had the Minister of Justice, an Auckland tax lawyer, indicated any interest in persuading the police to learn from the mistakes that were made, or to come to terms with the demonstrated deficiencies of some of the Crown’s forensic scientists. As Jonathan Swift wrote in 1738, ‘there is none so blind as they that won’t see.’¹⁰⁴

IX CONCLUSION

Professor Edmond has for some years been turning over the fertile ground of the deficiencies in the state of the forensic sciences. He has rightly called attention to the indulgent attitude of many judges and prosecutors towards these deficiencies, and the failure of some governments to exercise leadership in setting things right.

There is much to be said for ratcheting up the standards of scientific experts, improving the education of judges and lawyers, and reinforcing the focus on reliability rather than on credentials. Better outcomes also likely require a change in judicial attitudes towards science. Professor Edmond has amply illustrated an unsettling unwillingness on the part of both the bar and the bench to actively engage with the ‘scientific verities’ of a case, to ask probing questions and have the gumption to go

¹⁰¹ Ibid 88.

¹⁰² Ibid 91.

¹⁰³ Ibid 94.

¹⁰⁴ G Saintsbury, *Polite Conversation in Three Dialogues by Jonathan Swift with Introduction and Notes by George Saintsbury* (Chiswick Press, 1892) Dialogue III.

against historical rulings of admissibility when the rulings have been overtaken by current scientific developments.

Even in litigation of crucial importance to patients, scientific researchers and multi-billion dollar biotech businesses, the Australian Full Federal Court copied and pasted the entire scientific explanation of the case (over 10 pages) from the lower court's decision.¹⁰⁵ Justice Scalia was at least candid in simply throwing his hands up in despair.

In many ways, courts are already empowered to re-orient themselves. For example, in response to concerns with the way the adversarial system handles expert evidence, the Federal Court of Canada recently implemented amendments to the rules of court procedure,¹⁰⁶ with the stated goal of giving courts the proper tools to effectively manage such evidence.¹⁰⁷ Pre-trial 'seminars' on the uncontested aspects of the evidence have been introduced. Judges can require the parties' experts to confer together pre-trial to narrow the issues in dispute, or 'hot-tub' at trial. Judges can order an expert to testify (as opposed to reading his or her report into evidence) where the Court deems this procedure to be more helpful in facilitating serious engagement with the experts. Similar provisions are finding their way into the rules of courts elsewhere.¹⁰⁸

Unless the courts can do a better job of persuading litigants of the judicial capacity and willingness to tackle scientific issues in a credible way, dissatisfaction will continue to grow. Unlike parties to criminal proceedings, civil litigants usually have alternate dispute mechanisms available to them. Those who can afford to do so are already voting with their feet to go more readily to arbitration. The absence of an appellate hierarchy within the arbitral community, and the confidentiality of arbitral decisions, is already leading to an impoverishment of the jurisprudence.

Whether the case involves an accused's liberty or a biotech firm's multibillion dollar enterprise, the affected parties expect better. And they deserve better.

¹⁰⁵ *Myriad Australia* (2014) 224 FCR 479, 483–90 [16]–[63].

¹⁰⁶ See, eg, *Rules Amending the Federal Courts Rules (Expert Witnesses)*, SOR/98-106, rr 52.1–52.6.

¹⁰⁷ 'Regulatory Impact Analysis Statement' in Canada, Canada Gazette, No 17, 21 May 2010, 1552.

¹⁰⁸ See, eg, *Federal Court Rules 2011* (Cth) r 23.15; *Uniform Civil Procedure Rules 2005* (NSW) r 31.35; *Civil Procedure Rules 1998* (UK) pt 35.