Judicial Attitudes Toward Scientific Evidence: The Antipodean Experience

*Ian Freckelton**

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* Barrister-at-Law, Victoria, New South Wales, Queensland, South Australia, Tasmania, and the A.C.T. Adjunct Professor of Law and Legal Studies, La Trobe University; Honorary Associate Professor of Forensic Medicine, Monash University. Correspondence to: Ian Freckelton, c/o Barristers' Clerk Howells, Owen Dixon Chambers, 205 William Street, Melbourne, Victoria, Australia, 3000; E-mail: Ian.Freckelton@law.monash.edu.au.

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INTRODUCTION

Judicial attitudes toward scientific evidence can be gauged in a number of ways. These include judges' actual determinations on evidentiary admissibility, their evaluations of the weight to be given scientific testimony, as well as the way in which they fashion and speak of the criteria for exclusion of scientific material. There are also occasional extra-curial judicial pronouncements on courtroom science. Finally, there are views expressed by judges in answer to questionnaires such as surveys. Each of these is considered in the course of this Article in an attempt to assess the current level of anxiety on the part of antipodean judges toward scientific evidence, as well as in an attempt to isolate the solutions that judges have identified to the problems posed by the complexities of such evidence.

Judicial attitudes toward scientific evidence are not easy to categorize in most countries. Even to attempt to formulate a simple analysis of Australian and New Zealand judges' attitudes would be naive. The decided cases make it apparent that there is considerable diversity and difference of opinion among judges, and varying approaches between jurisdictions. What can most readily be discerned is an ongoing tension between the judicial perception of the need to protect jurors from what judges regard as problematic scientific opinions and, at the same time, an increasing inclination to trust jurors' decision-making capacity in face of all but the most troublesome expert evidence. Empirically assembled data have played little role in the resolution of the tension.

This Article argues that while a tendency can be identified over the past two decades among Australian and New Zealand judges to admit more expert evidence, there exists a greater judicial awareness of the dangers posed by certain kinds of evidence that jurors are not likely to evaluate effectively. The search for means of distinguishing scientific evidence fit to go before a jury from scientific evidence not fit to go before a jury has been a troubled one in Australasia. The quest for principle has not only seen the tightening of the requirement of expertise for expert witnesses and the demand for the proof of bases of expert opinions, but also the gradual dismantling of the ultimate issue rule. However, an important latter-day focus in Australia, as in the United States, has been upon formulating criteria for

determining whether evidence in the form of new, fringe, or iconoclastic approaches among scientists should be permitted to go before juries. The difficulty encountered has been with the criteria for distinguishing between "safe" and "unsafe" scientific areas. In Australia, and also to a lesser degree in New Zealand, the approach of the courts has not been finally resolved, and this Article discusses the conclusions that can be drawn from the way in which the controversies have evolved in the shadow of the *Frye/Daubert*[1] controversy in the United States.

A number of influences contribute to judicial attitudes. One of the less recognized is the impact of notorious debacles within the legal system, and the lessons learned from them. Australian and New Zealand judges could not but be conscious of the notorious British cases in which poor scientific and prosecution practice led to the need for appellate reversal of longstanding jury decisions in circumstances that were embarrassing to the criminal justice system.[2] As well, there have been two prominent Royal Commissions focusing on Australian miscarriages of criminal justice where scientific evidence played a central role. These, too, have had a deep impact on the psyche of the Australian legal profession.

This Article chronicles the changing attitudes toward scientific evidence in Australia and New Zealand during the course of the late nineteenth and the twentieth centuries. Part I summarizes some differences between American and Australian legal cultures and discusses English attitudes toward scientific evidence. Part II highlights the role played in the evolving judicial approaches toward scientific evidence, as exemplified by judicial decisions on fingerprinting, DNA profiling, odontology, bushfire

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[1] Daubert v. Merrell Dow Pharms., Inc., 509 U.S. 579 (1993); Frye v. United States, 293 F. 1013 (1923).

[2] *See, e.g.*, R v. Ward, [1993] 2 All E.R. 577, 642-43 (1992) (reversing conviction because prosecution failed to disclose irregularities in scientific evidence); R v. Maguire, [1992] 1 Q.B. 936, 958 (1991) (same); Preece v. H.M. Advocate, 1981 Crim. L. Rev. 783, 783-84 (reversing murder conviction because blood tests were improperly performed); *see also* IAN R. FRECKELTON, THE TRIAL OF THE EXPERT 124 n.3 (1987) (noting financial pressures that might affect experts' opinions); Mick Hamer, *How a Forensic Scientist Fell Foul of the Law*, 91 NEW SCIENTIST 575, 575-76 (1981) (stating that some experts have impeded justice by providing inaccurate opinions); J.K. Mason, *Expert Evidence in the Adversarial System of Criminal Justice*, 26 MED. SCI. & L. 8, 9-10 (1986) (stating that expert's opinion that lacks accuracy and scientific objectivity may be grounds for appeal).

causation, and syndrome evidence. Part III draws attention to key Royal Commission findings in the context of miscarriages of the criminal law, including the infamous *Splatt* and *Chamberlain* cases, and discusses the Bomber Barnes controversy. Part IV discusses common law rules of expert evidence, and sets out the changes recently made in federal and New South Wales law as a result of the 1985 and 1987 reports of the Australian Law Reform Commission.[3] Part V suggests that a quest for scientific rigour may be emerging, and presents courts' rejection of syndrome evidence as an example. However, Part V also argues that the evolution of the courts in Australia and New Zealand toward a sophisticated understanding of the limitations of scientific knowledge is thus far halting and characterized by lapses in the face of the beguiling temptation posed by simplistically positivist assumptions of what "scientific evidence" can offer to the courts. Part VI analyzes pilot results of a survey of Australian judges in relation to their attitudes toward expert evidence. In conclusion, the Article argues that if trial lawyers do not become more effective in making forensic science and its practitioners more accountable, it is inevitable that the confidence invested — by judges and the general community alike — in the abilities of jurors to grapple with complex, conflicting expert evidence will dissipate. In due course, fundamentally different approaches to the admissibility of evidence and the resolution of conflicts in scientific evidence may be implemented, and the role of the jury in Australia and New Zealand may contract considerably.

I. THE LEGAL FRAMEWORK

A. Australian and New Zealand Legal Cultures

A number of fundamental cultural norms in the legal fabric have shaped the conduct of litigation in Australasia, and the context in which expert witnesses give evidence. In turn, these norms have modulated judicial attitudes toward expert evidence, and impacted upon the judicially-generated common law exclusionary rules of expert evidence.

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[3] LAW REFORM COMMISSION, EVIDENCE (Report No. 26 Interim, 1985) [hereinafter Report No. 26]; LAW REFORM COMMISSION, EVIDENCE (Report No. 38, 1987) [hereinafter Report No. 38].

Both Australia and New Zealand follow the English civil rule that costs generally follow the event, unless the successful party has in some way behaved improperly in the course of the litigation.[4] With the inevitable uncertainties of litigation exigencies, this 'loser pays' rule acts as a substantial disincentive toward instituting speculative suits. While potential litigants may be willing to initiate legal process, they are not necessarily prepared to proceed to trial unless they have considerable financial resources, and their legal advisers believe that they have good prospects of success. Moreover, in both Australia and New Zealand, there is no real history of contingency fees; meaning that few lawyers are prepared to "punt" on the success of their clients' cases in court. If legal costs and disbursements are not paid in advance, it is comparatively rare, save in personal injury cases with high prospects of success, for lawyers to take on clients wishing to engage in civil litigation. Further, the award of damages by both judges and juries tends toward much more modest dimensions than the awards frequently made in United States courts.

These differences in legal culture from the position obtaining in the United States have resulted in fewer "speculative" or "innovative" cases being brought before the courts. Therefore, fewer civil cases tend to depend upon "fringe" areas of expertise. As in England, these factors have resulted in a much more conservative legal system, especially in New Zealand. The legal culture created by the costs rule, the modest award of damages, and the virtual absence of contingency fees has had a substantially inhibitive impact upon the practices of lawyers and forensic experts. There is much less entrepreneurialism by lawyers and professional witnesses, although in both countries there are a few notable exceptions.[5]

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[4] *See* Ritter v. Godfrey, [1920] 2 K.B. 47, 52 (1919) (holding that defendant's conduct was insufficient grounds to deny awarding costs); Donald Campbell & Co. v. Pollak, 1927 App. Cas. 732, 809, 811 (holding that lower court erred by ruling for defendant without awarding costs); Davies (Joseph Owen) v. Eli Lilly & Co., [1987] 3 All E.R. 94, 98-99; Byrns v. Davie [1991] 2 V.R. 568, 569-70 (ruling that court has discretion in awarding costs when defendant only partially prevails); *see also* Verna Trading Pty. v. New India Assurance Co. [1991] 1 V.R. 129, 155 (holding that court may deny awarding costs to successful defendant in exceptional circumstances); Jamal v. Secretary, Dep't of Health [1988] 14 N.S.W.L.R. 252, 271 (setting forth exceptions to costs rule).

[5] *See* P. McGauran, *Community Perceptions of Forensic Science: Resisting the Backlash*, 24 J.

Another factor that impacts upon the extent and nature of expert evidence proffered to the courts is the almost complete unavailability of legal aid for civil litigation, and the seriously diminishing amounts of state funding for indigent defendants in criminal proceedings. The result is that the prosecution (in criminal cases) and multinational companies, well-resourced professionals, and government instrumentalities (in civil proceedings) enjoy a considerable strategic advantage in terms of access to expert witnesses.

A further factor in both Australia and New Zealand is that although Sydney, Melbourne, Newcastle, Brisbane, Adelaide, Perth, and Auckland are cities of more than one million people, and Sydney and Melbourne exceed three million in population, the pool of expert witnesses in most scientific arenas is very small. Comparatively few private companies or individuals offer independent forensic services; there is simply not a large enough market. This is so even in the DNA, handwriting, fingerprinting, pathology, and ballistics areas.[6] When seeking a second opinion, the defense in criminal trials often opts for practitioners from a state-run forensic laboratory from another city, rather than use the small number of independent practitioners within the jurisdiction.[7] The options for obtaining a non-mainstream scientific opinion are limited.

For the most part in Australia and New Zealand, the courts have shaped expert evidence law through criminal cases. In contrast to jurisdictions that have generated a greater volume of civil cases, it has been where the stakes for the defendants have been their liberty[8] — and the state, through the legal aid system, has made some money available for expert reports for the defendant as well as the prosecution — that most of the case law relating to expert evidence has been generated. The most significant development in Australian expert evidence law has occurred in the context of a series of criminal cases concerning

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FORENSIC SCI. 82 (1992).

[6] However, a number of companies are starting to offer DNA profiling for paternity cases in family law proceedings.

[7] This also occurs in major cases in both the criminal and civil areas between New Zealand and various states in Australia.

[8] The death penalty has not existed for about three decades in Australia or New Zealand.

the admissibility of expert evidence about the reactions of child victims of sexual abuse.[9]

Traditionally, expert evidence relating to scientific matters has been liberally admitted in both countries, provided that three major criteria have been met. Courts have held that the proponent must demonstrate expertise on the part of a witness (a criterion historically not rigorously employed); the subject of the scientific evidence must be beyond the ordinary ken of the trier of fact (not generally an issue other than in relation to mental health evidence); and the evidence must not usurp the role of the trier of fact by touching upon an ultimate issue in the case.[10] During the 1980s and 1990s, an exclusionary rule has also emerged, requiring the proponent to prove the bases of expert opinion testimony by admissible evidence.

B. English Attitudes Toward Scientific Evidence

During the nineteenth century, scientific myths of epistemology came to hold increasing sway. Science became regarded as a means of finding fact without the impediments of value and subjectivity. It would expose that the Luddites lacked the skills required for the new frontiers of knowledge.[11] As Kargon has put it, "Science no longer was merely the discovery of God's laws; it had become a *method* of transforming society. It was a tool to remake the world. The flag of the new middle class was Science: that segment of society possessed expertise, and they made it their claim to power and status."[12] Science was allegedly possessed of checks and balances that assured

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[9] *See infra* notes 258-70 and accompanying text (explaining that courts have developed stringent guidelines for admitting expert testimony concerning child abuse).

[10] *See, e.g.*, R v. B, [1987] 1 N.Z.L.R. 362, 367 (indicating when courts may properly admit expert witness testimony); *cf.* R v. Palmer [1981] 1 N.S.W.L.R. 209, 213.

[11] C.A.J. COADY, TESTIMONY 280 (1992). As Coady points out:

> [T]he scientist was thoroughly Promethean: he had outwitted the gods and stolen the divine secrets which he had put to work for human benefit. He did not yet know everything, but what he knew was quite secure and certain and he would come to know more and more. He had not yet made life perfect by his applied knowledge (his "technology"), but he was working on it.

Id.

[12] Robert Kargon, *Expert Testimony in Historical Perspective*, 10 L. & HUM. BEHAV. 15, 22 (1986) (emphasis added).

reliability, conducted by impartial investigators in a manner dictated by logic and empiricism. Further, the results were said to be open to public scrutiny and criticism, which ensured objectivity and reliability.[13] Since then, though, the myths have been subjected to continuing onslaught by proponents of the relativist, provisionalist, contextualist, Marxist, feminist, and sociologist schools of thought, among others.[14] In the forensic domain, the binary distinctions of legal positivism at first sat comfortably with the potential contribution of certainty science provided for the fact-finding process.[15] The exposure of law to science, though, was soon too often limited to the appearance of the "homo scientificus" who adapted either ill or too well to the legal world. Although the English legal environment in the mid-nineteenth century and thereafter was characterized by significant cultural differences from those prevailing in the United States,[16] English judges came to espouse many of the same concerns entertained by their American cousins.[17] In substantial part, the mistrust and cynicism soon and abidingly confronting the scientific witness was born of judicial awareness of the gulf between the presentation in the courtroom by the lay witness as against that by the scientific witness, and also of the often unrealistic expectations held by the general public of scientists and science. The concern, therefore, related to the danger of the influence the scientific witness might wield, by virtue of the witness's exposition in court and by the

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[13] PETER J. RIGGS, WHYS AND WAYS OF SCIENCE: INTRODUCING PHILOSOPHICAL AND SOCIOLOGICAL THEORIES OF SCIENCE 10 (1992).

[14] For a useful summary of some of the different schools of thought, see HELEN LONGINO, SCIENCE AS SOCIAL KNOWLEDGE (1990). *See also* COADY, *supra* note 11, at 283 n.8 (discussing epistemological problems concerning reliance on testimony); HARRY M. COLLINS & TREVOR J. PINCH, THE GOLEM: WHAT EVERYONE SHOULD KNOW ABOUT SCIENCE 106 (1996); IAN HACKING, REPRESENTING AND INTERVENING 112 (1983) (explaining different scientific methodologies); TOBY HUFF, THE RISE OF EARLY MODERN SCIENCE 202 & n.1 (1993) (discussing relationship of culture to science); Sheila Jasanoff, *Beyond Epistemology: Relativism and Engagement in the Politics of Science*, 26 SOC. STUD. SCI. 393 (1996); W.E. Wagner, *Trans-Science in Torts*, 96 YALE L.J. 428 (1986).

[15] *See* SHEILA JASANOFF, SCIENCE AT THE BAR: LAW, SCIENCE AND TECHNOLOGY IN AMERICA 9-11 (1995) (comparing fact-finding process in law and science).

[16] *See id.* at 24-25 (discussing nineteenth century legal environment in United States); *see also* PETER HUBER, GALILEO'S REVENGE (1991) (discussing notion of law as generator of bogus and distorted science).

[17] *See* CAROL A.G. JONES, EXPERT WITNESSES 52-53 (1994).

misconceptions regarded as prevalent within the community about the panaceas offered by "scientific insight."[18] In short, the substance of the expert's evidence may not be commensurate with her performance in the jury's eyes.

The nineteenth century English concern about the role of scientific and medical witnesses became entrenched and, ultimately, highly influential in the evolution of Australian and New Zealand jurisprudence on the issue. This anxiety incorporated concerns about:

- The bias or partiality of expert witnesses;
- The selection process, whereby experts unrepresentative of their discipline could appear to be representative;
- The poor quality of expert evidence, whose poverty may not be sufficiently exposed in the courtroom; and
- The capacity of the trier of fact, particularly the jury, to understand and adequately evaluate complex, conflicting expert evidence.[19]

For example, Best noted in 1849 that:

> There can be no doubt that testimony is daily received in our courts as 'scientific evidence' to which it is almost profanation to apply the term; as being revolting to common sense, and inconsistent with the commonest honesty on the part of those by whom it is given.[20]

Even in 1873, Sir George Jessel, the Master of the Rolls, expressed a view that has since been frequently cited by judges facing a conflict of expert evidence:

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[18] Judge Foster reported with approval the remark of Professor Hines, in 135 J. FRANK. INST. 436, that "[t]he public should be impressed with the fact that the testimony of scientific experts is an important factor in the trial of cases, becoming more and more important with the advancement of science in new and as yet unexplored regions." William L. Foster, *Expert Testimony — Prevalent, Complaints and Proposed Remedies*, 11 HARV. L. REV. 169, 176-77 (1897).

[19] *See* Learned Hand, *Historical and Practical Considerations Regarding Expert Testimony*, 15 HARV. L. REV. 40, 54 (1901) (noting concerns raised at start of twentieth century, including those related to bias and ability of the jury to distinguish between opposing opinions).

> The whole object of the expert is to tell the jury, not facts, . . . but general truths derived from his specialized experience. But how can the jury judge between two statements each founded upon an experience confessedly foreign in kind to their own? It is just because they are incompetent for such a task that the expert is necessary at all.

Id.

[20] W.M. BEST, A TREATISE ON THE PRINCIPLES OF EVIDENCE (1849).

> [I]n matters of opinion I very much distrust expert evidence, for several reasons. In the first place, although the evidence is given upon oath, in point of fact the person knows he cannot be indicted for perjury, because it is only evidence as to a matter of opinion. . . . But that is not all. Expert evidence of this kind is evidence of persons who sometimes live by their business, but in all cases are remunerated for their evidence. An expert is not like an ordinary witness, who hopes to get his expenses, but he is employed and paid in the sense of gain, being employed by the person who calls him. Now it is natural that his mind, however honest he may be, should be biassed in favour of the person employing him, and accordingly we do find such bias. . . . Undoubtedly there is a natural bias to do something serviceable for those who employ you and adequately remunerate you.[21]

Part of the problem was seen as the potential for a litigant to search far and wide for an expert prepared to express an opinion consonant with the case contended for by the client's lawyers. This too was the subject of trenchant criticism even in the nineteenth century:

> A man may go, and does sometimes, to half-a-dozen experts. I have known it in cases of valuation within my own experience at the Bar. He takes their honest opinions, he finds three in his favour and three against him; he says to the three in his favour, Will you be kind enough to give evidence? and he pays the three against him their fees and leaves them alone; the other side does the same. It may not be three out of six, it may be three out of fifty. I was told in one case, where a person wanted a certain thing done, that they went to sixty-eight people before they found one.[22]

Bias has also been a concern expressly articulated in relation to the evidence given by expert witnesses. The English Court of Appeal in *R v. Ward*[23] unequivocally recognized the processes that may impact upon the disinterested independence of view brought to bear by experts:

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[21] Lord Abinger v. Ashton, 17 L.R.-Eq. 358, 373-74 (M.R. 1873); *see also* Plimpton v. Siller, 6 Ch. D. 412, 416 (Ch. 1877) (commenting on unreliability of expert testimony); *accord* More v. R [1963] S.C.R. 522, 537-38 (Can.).

[22] *Plimpton*, 6 Ch. D. at 416 n.2; *see* FRECKELTON, *supra* note 2, at 124 n.3 (noting that financial pressures may affect expert opinions).

[23] [1993] 2 All E.R. 577 (1992).

> Forensic scientists may become partisan. The very fact that the police seek their assistance may create a relationship between the police and the forensic scientists. And the adversarial character of proceedings tend to promote this process. Forensic scientists employed by the government may become [sic] to see their function as helping the police. They may lose their objectivity.[24]

However, Australia is very much a part of the international scientific evidence community. "Evidence entrepreneurs" — the lawyers and scientists who translate scientific ideas into evidence in a particular case — and "product champions" — those who lobby for the use of scientific claims as evidence — have also been at work in Australia, and to a lesser degree in New Zealand.[25] As is often the case with such diffusion, however, it has proved a somewhat haphazard process, dependent upon individual insights and chance contacts leading to attempts to adapt North American developments. Its dangers, including the risk of adoption of overseas procedures on the basis of "word association," indiscriminate utilization of overseas cases and literature, and inadequate local appreciation of extraterritorial legal systems, have been highlighted in a number of instances of such diffusion. The diffusion led to selective, and not entirely informed, use of United States cases at the judicial level in one prominent case,[26] and injudicious and potentially deceptive uses of North American articles in another case.[27] However, the globalization of scientific evidence and its diffusion through an increasingly informed and interactive world legal community will undoubtedly lead to more frequent attempts to introduce overseas (particularly North American) scientific developments in Australian and New Zealand courts.

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[24] *Id.* at 627.

[25] *See* Sophia I. Gatowski et al., *The Globalization of Behavioral Science Evidence About Battered Women: A Theory of Production and Diffusion*, 15 BEHAV. SCI. & L. 285 (1997).

[26] *See* R v. Gilmore [1977] 2 N.S.W.L.R. 935.

[27] *See* J v. R (1994) 75 A. Crim. R. 522 (Ct. Crim. App. Vict.). Even in *Chamberlain v. R (No. 2)*, (1984) 153 C.L.R. 521; Justice T.R. Morling, ROYAL COMMISSION OF INQUIRY INTO CHAMBERLAIN CONVICTIONS REPORT (1987), it is apparent that one of the major forensic science blunders was the undiscriminating use of a German product by a naive Northern Territory scientist.

II. CURIAL VIEWS IN AUSTRALIA AND NEW ZEALAND

A. Complex Interplays

In Australia and New Zealand, judges have expressed these same concerns in both civil and criminal cases in relation to scientific, mental health, and accounting evidence. However, one of the distinguishing features of modern Australian decisions relating to scientific evidence has been the juxtaposition of two phenomena. While courts recognize jurors' fragility when confronted by the complexities of contemporary science, judges have also displayed a pronounced determination to trust jurors to cope, save where evidence has been presented to them in a form which they are not in a position to evaluate. The tension between these potentially conflicting drives is manifest in the changing exclusionary mechanisms relating to expert evidence. Evidentiary rules have evolved over the latter part of the twentieth century in Australia and New Zealand in a way that minimizes the extent of withdrawal of scientific and other expert evidence from juries. Courts, however, are applying more stringently those rules that preclude jurors from grappling with information which they are not in an adequate position to assess. This has resulted in some amount of relaxation of traditional common law rules that were primarily concerned with the avoidance of the "usurping of the role of the jury" by expert witnesses.[28]

A number of decisions have exhibited a particular consciousness of the difficulty experienced from time to time by the lay trier of fact in the face of complicated disputed technical evidence from scientists. The concerns most often expressed in Australia have not been so much about the bias or partisanship of expert witnesses, as about the capacity of jurors to understand scientific evidence and to evaluate different opinions expressed upon the same issue.[29]

Another characteristic of Australian decisions relating to scientific evidence has been a consciousness of the propensity for

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[28] In particular, the common knowledge rule and the ultimate issue rule. *See infra* notes 151-95 and accompanying text (discussing courts' relaxation of these rules).

[29] *Cf. infra* text accompanying notes 53-66 (noting that despite concern with using expert testimony, courts have remained confident in juries' ability to weigh facts).

scientific witnesses to be impressive and to command a verisimilitude and credibility rarely shared by lay witnesses.[30] This perception, and the concern arising in response to it, has clearly impacted the evolution of the common law rules of expert evidence exclusion.

A significant case, in which judges reflected on the risks they regarded as attendant with evidence given by scientific witnesses, was a voice analysis decision of the New South Wales Court of Criminal Appeal.[31] Chief Justice Street took the view that *United States v. Baller*[32] had formulated the correct approach, and noted that not every technique that could plausibly call itself "scientific" should be the subject of expert testimony. Because testimony labelled as "scientific" was supposedly objective, the jury, he said, may give it undue weight.[33] Further, he reasoned that expert evidence is difficult to rebut by cross-examination because of the specialized knowledge involved, and often required the testimony of another expert to counter it effectively.[34]

Chief Justice Street therefore highlighted both the danger of a misimpression being given by the impressiveness of the

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[30] In the United States, one court described a mathematics expert as a "veritable sorcerer" who "cast[s] a spell" over jurors. *See* People v. Collins, 438 P.2d 33, 33 (Cal. 1968). Another court, in a spectrography case, spoke in terms of the "mystic infallibility" expected by jurors of scientific evidence. *See* United States v. Addison, 498 F.2d 741, 744 (D.C. Cir. 1974); *see also* United States v. Armal, 488 F.2d 1148, 1152 (9th Cir. 1973) (stating that expert testimony creates substantial danger of confusing or misleading jury).

[31] R v. Gilmore [1977] 2 N.S.W.L.R. 935, 939.

[32] 519 F.2d 463, 466-67 (4th Cir. 1975). In *Baller*, five guidelines were expressed:

> [(1)] [T]here must be a demonstrable, objective procedure for reaching the opinion;
> [(2)] [There must exist] qualified persons who can either duplicate the result or criticize the means by which it was reached, drawing their own conclusions from the underlying facts;
> [(3)] Deciding whether these conditions have been met is usually within the discretion of the trial judge;
> [(4)] Absolute certainty of result or unanimity of scientific opinion is not required for admissibility;
> [(5)] Unless an exaggerated popular opinion of the accuracy of a particular technique makes its use prejudicial or likely to mislead the jury, it is better to admit relevant scientific evidence in the same manner as other expert testimony and allow its weight to be attacked by cross-examination and refutation.

Gilmore, [1977] 2 N.S.W.L.R. at 939 (quoting *Baller*, 519 F.2d at 466-67).

[33] *Id.*

[34] *Id.*

scientist and the practical difficulty for litigants to secure effective contrary scientific evidence. The decision initiated what United States commentator David Bernstein has called an "inadvertent" adoption of the "general acceptance test" of *Frye v. United States*.[35]

In another influential decision on scientific evidence, *Duke v. R*,[36] the result turned in part on the admissibility of scientific opinions concerning the matching of fibers. The South Australian Court of Criminal Appeal emphasized that, normally, expert evidence ought to be allowed to go to the jury, thereby making a clear statement about the court's confidence in the capacity of jurors to deal adequately with such material.[37] However, it made an important concession that "[t]here may be unusual cases in which the judge has reason to fear that the jury will be over-awed by the scientific garb in which the evidence is presented and will attach greater weight to it than it is capable of bearing."[38] Again, the stress is on the risk that a jury may be swayed by the aura of the scientific witness and the impressiveness of the witness's qualifications, demeanor, and presentation in the witness box.

Australia's highest court, in the notorious case of *R v. Chamberlain (No 2)*,[39] explicitly endorsed a similar concern expressed at an earlier appellate level in the same case:

> Each of [the witnesses] was giving his opinion on matters of science within disciplines of which each was a master, and at a level of difficulty and sophistication above that at which a juror, or a judge, might by reasoning from general scientific knowledge subject the opinions to wholly effective critical evaluation.[40]

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[35] David Bernstein, *Junk Science in the United States and the Commonwealth*, 21 YALE J. INT'L L. 123, 150 (1996).

[36] (1979) 1 A. Crim. R. 39 (Ct. Crim. App. S. Austl.).

[37] *See, e.g.*, Foster, *supra* note 18, at 184 (quoting Sir James Fitzjames Stephen, 2 JURIDICAL SOCIETY PAPERS 238) (providing examples of comparable, if much earlier, confidence). Foster commented that, "given uprightness, patience, and such intelligence as most educated members of society possess, a jury constituted as our juries are forms the very best tribunal which could be devised for the trial of complicated questions of fact, *even if those questions involve delicate scientific considerations.*" *Id.* (emphasis added).

[38] *Duke*, [1979] 1 A. Crim. R. at 41.

[39] (1984) 153 C.L.R. 521, 558 (per Gibbs, C.J. & Mason, J.).

[40] *Id.* (quoting Chamberlain v. R (1983) 72 F.L.R. 1, 82 (per Jenkinson, J.)).

The passage has since been often repeated in decisions determining the admissibility of scientific evidence. For instance, Justice Maurice of the Northern Territory Supreme Court, in the bitemark case of *Lewis v. R*,[41] echoed the High Court's perception, noting that

> [scientific] evidence — especially if it goes to a vital issue implicating an accused person in the commission of an offence — may often have a prejudicial effect on the minds of a jury, being people without scientific training, may often be impressed by an expert's qualifications, appointments and experience, and the confident manner in which he expresses his opinions.[42]

The court held that it ought not be left to such matters alone to provide a foundation for the jury to assess the probative value of scientific evidence, "particularly where there are conflicts in expert testimony, or where it is acknowledged that other experts of more or less equal distinction are unlikely to agree."[43]

In 1992, Justice Hampel of the Victorian Supreme Court, in the DNA profiling case of *R v. Lucas*,[44] explicitly endorsed the comments in *Lewis*. He also noted the views articulated by the Royal Commissioner in the *Splatt* case about the dangers of scientific evidence, which were expressed in terms of "consistency."[45] Justice Hampel held that DNA profiling evidence was inadmissible, even though the technique was "widely regarded as extremely reliable and discriminating,"[46] because its limitations

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[41] (1987) 29 A. Crim. R. 267, 271 (Ct. Crim. App. N. Terr.).

[42] *Id.*

> There is a tendency among academics, professionals, and others who develop skills in a particular area to mystify their field, often by the use of what seems to the outsider to be arcane language. It is the role of a prosecutor to strip forensic evidence of its mystery so far as is possible; trial by expert must never be allowed to take the place of trial by jury. The inability to articulate the principal tenets that need to be understood, to describe in ordinary language the methods used, and the reasons that point to a particular conclusion, these are the hallmarks of unreliable science and the not-so-qualified expert.

Id.; *see also* Tran v. R (1990) 50 A. Crim. R. 233, 242 (Ct. Crim. App. N.S.W.) (quoting and agreeing with *Lewis*).

[43] *Lewis*, 29 A. Crim R. at 271.

[44] [1992] 2 V.R. 109, 116-17.

[45] *Id.* at 117 (citing CARL SHANNON, ROYAL COMMISSION REPORT CONCERNING THE CONVICTION OF EDWARD CHARLES SPLATT 38-39 (1984)).

[46] *Lucas*, [1992] 2 V.R. at 118.

were not generally appreciated. In *Lucas,* widely discrepant scientific views had been expressed about the potential for false positive matching. As a result, the jury was not in an adequate position, after the prosecution and defense evidence, to weigh the evidence properly.[47] The key for this purpose is that the decision to exclude the evidence explicitly took into account the judge's evaluation of popular assumptions about the particular kind of evidence, as well as the difficulties faced by the lay jury in understanding and weighing the evidence that they had heard in court.[48]

From time to time, however, Australian and New Zealand judges have expressed their concerns about other aspects of scientific evidence. For instance, judges in a number of decisions have indicated their aggrievement about experts' partiality. In *Permanent Trustee Australia Ltd. v. Boulton,*[49] for example, Justice Young of the New South Wales Supreme Court commented, apparently with relief, that an expert "showed a refreshing attitude for an expert witness in that he refused to put his evidence any higher than a careful expert should."[50] By contrast, Justice Pincus of the Federal Court was explicit in his frustration in a 1987 case: "Experience suggests that too often expert witnesses display a degree of partiality, whereas the court-appointed expert may be expected to be indifferent as to the result of the case."[51] In *J v. R,*[52] the Victorian Court of Criminal Appeal surgically dismembered the key prosecution evidence given by arguably Australia's most prominent forensic psychiatrist in a battered woman syndrome case. The court noted pointedly that the expert had not taken the trouble to acquaint himself with evidence other than that which was favorable to the prosecution.

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[47] *Id.*

[48] In *Runjanjic & Kontinnen v. R* (1991) 53 A. Crim. R. 362, Chief Justice King acknowledged concerns about permitting expert evidence in trials of persons not suffering a recognized psychiatric illness, because of the "risk that by degrees, trials, especially criminal trials, will become battle grounds for experts and that the capacity of juries and courts to discharge their fact-finding functions will be thereby impaired." *Id.* at 369; *cf.* R v. Dechalamsakun [1993] 1 N.Z.L.R. 141, 144 (per Cooke, P.J.).

[49] [1994] 33 N.S.W.L.R. 735, 739.

[50] *Id.*

[51] Neward Pty. v. Civil & Civic Pty. (1987) 75 A.L.R. 350, 351.

[52] (1994) 75 A. Crim. R. 522, 532 (Ct. Crim. App. Vict.).

B. Confidence in the Jury

In their judgments, Australian judges have expressed a particular sensitivity to the dangers they have regarded as posed by scientific evidence. Judges have expressed special concern about the esotericism and complexity of the information on one hand, and the impressiveness and professionalism of the witnesses on the other. However, this concern has not been matched in the recent era by a corresponding determination to protect "vulnerable jurors" from scientific evidence and witnesses, except where the evidence is proved to be unreliable or invalid.

In England, the Roskill Committee's 1986 Fraud Trials Committee Report marks the most prominent expression of concern about the ability of jurors to discern adequately the bases and nature of experts' disagreement in the courtroom.[53] However, this evaluation of jurors' susceptibility to error and confusion has not been endorsed by the Australian High Court, which has articulated a view that juries are essentially robust and responsive to judicial instructions.[54] To a degree, this is referable to an aspect of the Australian national character remarked upon by sociologists and historians alike — Australians have a propensity to defy authority rather than to defer to it. An anti-intellectual and anti-establishment streak runs deep in the Australian identity, finding expression in the so-called "tall poppy syndrome," by which the successful are often cut down "to size" by the less successful.[55] Expert witnesses are unlikely to command the same level of respect in the "larrikin country" — where a bushranger such as Ned Kelly is a national hero — as they might in some others, where academic status or eminence of position are more highly socially prized.[56]

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[53] *See generally* J. Monahan & L. Walker, *Social Science Research in Law: A New Paradigm*, 43 AM. PSYCHOLOGIST 465 (1988); Norman G. Poythress, *Procedural Preferences, Perceptions of Fairness and Compliance with Outcomes: A Study of Alternatives to the Standard Adversary Procedure*, 18 L. & HUM. BEHAV. 361 (1994); J. Thibaut & J. Walker, *A Theory of Procedure*, 66 CAL. L. REV. 541, 566 (1978) (asserting that, in scientific disputes, neutral third party should maintain control of decisions and procedures).

[54] *See infra* notes 57-64 and accompanying text (discussing Australian courts' confidence in juries' ability to evaluate difficult evidentiary data).

[55] *See, e.g.*, SUSAN MITCHELL, TALL POPPIES (1990).

[56] *See, e.g.*, BRIAN J. FORD, THE CULT OF THE EXPERT (1982).

The high point of recent international expression of confidence in the intellect of juries came in the leading United States Supreme Court decision, *Daubert v. Merrell Dow Pharmaceuticals, Inc.*[57] The majority decision dismissed the concern that abandonment of the "general acceptance" criterion for the admissibility of expert evidence would result in a "free-for-all" in which befuddled juries would be confounded by expert evidence:

> In this regard respondent seems to us to be overly pessimistic about the capabilities of the jury, and of the adversary system generally. Vigorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence.[58]

In the Australian context, a comparable approach was articulated by former Chief Justice Mason and by Justice Toohey of the High Court. In *R v. Glennon*, they commented:

> The possibility that a juror might acquire irrelevant and prejudicial information is inherent in a criminal trial. The law acknowledges the existence of that possibility but proceeds on the footing that the jury, acting in conformity with the instructions given to them by the trial judge, will render a true verdict in accordance with the evidence. . . . *[I]n the past too little weight may have been given to the capacity of jurors to assess critically what they see and hear and their ability to reach their decisions by reference to the evidence before them.*[59]

The significance of this stance lies in its contrast with previous utterances of judges of the High Court and of Supreme Courts that have treated juries as fragile and in need of protection from influences that might sway their considerations.[60] Notably, the High Court, in signalling this new orientation, did not base its attitude in the work of psychologists or other empiricists, but simply appears to have substituted one assertion that is not

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[57] 509 U.S. 579 (1993); *see also* Ian Freckelton, *Science and the Legal Culture, in* 2 EXPERT EVIDENCE 107 (Ian Freckelton & Hugh Selby eds., 1993).

[58] *Daubert*, 509 U.S. at 596.

[59] (1992) 173 C.L.R. 592, 603 (Austl.) (emphasis added).

[60] It can immediately be contrasted with the statement of Justice Dawson in *Murphy v. R*, (1989) 167 C.L.R. 94 (Austl.), that "even though most juries are not prone to pay undue deference to expert opinion, there is at least a danger that the manner of its presentation may, if it is wrongly admitted, give to it an authority which is not warranted." *Id.* at 131 (per Dawson, J.).

based in evidence for another. Further indications of the reasserted confidence in the abilities of the ordinary person to grapple with the challenges of the modern trial system were evident in the 1994 Victorian Full Court decision in *Higgins v. R.*[61] The court specifically referred to the dearth of data justifying assertions of juror incapacity. In so doing, the court reasserted confidence in the ability of jurors to evaluate huge amounts of difficult data, but acknowledged the relevance, in principle, of such information:

> At times it has been asserted that a criminal jury is unable properly to perform its function, or its function in trials for offences of a particular kind, if the trial exceeds a certain stated duration. We have not been referred to any empirical material on which such assertions are based, nor do we think the argument is advanced by reference to the fragility of human recollection in situations which do not bear comparison with the jury box.[62]

The Full Court referred to the sentiments about the capacities of jurors expressed by the High Court in *R v. Glennon*,[63] and found that juries could function effectively despite lengthy trials and large amounts of evidence to consider.[64]

In an important 1994 decision, Justice Mullighan of the South Australian Supreme Court declined to exercise his discretion to exclude PCR DNA profiling evidence.[65] In the course of a complex judgment, he affirmed the propriety of allowing juries to resolve even difficult and highly technical conflicts of scientific evidence. He declined to remove expert evidence from the jury

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[61] (Mar. 2, 1994) Sup. Ct. of Vict. (unreported) (per Brooking, Byrne, & Eames, JJ.).

[62] *Id.* For analyses of the circumstances in which jurors are most likely to take irrelevant considerations such as demeanour and articulateness into account when assessing the probative value of scientific evidence, see FRECKELTON, *supra* note 2, at 232-35; Joel Cooper et al., *Complex Scientific Testimony: How Do Jurors Make Decisions?*, 20 L. & HUM. BEHAV. 379 (1996); Larry Heuer & Steven Penrod, *Trial Complexity: A Field Investigation of Its Meaning and Its Effects*, 18 L. & HUM. BEHAV. 29 (1994).

[63] (1992) 173 C.L.R. 592, 603 (Austl.).

[64] *Higgins*, Sup. Ct. of Vict. (unreported). The court based these assertions on comments made by other courts. *See, e.g.*, United States v. Dardi, 330 F.2d 316, 329 (2d Cir. 1964); People v. Clemente, 167 N.E.2d 327, 330 (Mass. 1960); R v. Annakin (1988) 37 A. Crim. R. 131, 132 (Ct. Crim. App. N.S.W.); R v. McNamara (No. 1) [1981] C.C.C. 193, 197 (Can.). The court also remarked specifically upon the view formed by the trial judge that the jury in the *Higgins* trial was "most impressive, intelligent, conscientious, enthusiastic, and attentive." *Higgins*, Sup. Ct. of Vict. (unreported).

[65] R v. Jarrett (1994) 73 A. Crim. R. 160, 175.

because of its complexity, and the fact that it was contested on the basis that such an approach "denigrates the intelligence and capacity of juries and is contrary to principle."[66] Thus, the emerging judicial rhetoric has affirmed that juries have the capacity to deal with complex and new scientific evidence, provided that proper and sufficient judicial guidance is given.

III. THE SHAPING OF JUDICIAL ATTITUDES

An influence upon judicial attitudes that is often not adequately appreciated is the impact exerted by notorious forensic debacles or miscarriages of justice. Judges are not oblivious to controversies within the justice system; nor should they be. In Australia, two cases have provoked Royal Commissions[67] that had very high profiles and resulted in the posing of fundamental questions about the reliability of forensic science. In 1996, a further controversy began to receive nationwide publicity in relation to a former senior forensic scientist from the Victorian State Forensic Science Centre, whose opinions were repudiated in high profile cases.[68] Commentators Brown and Wilson have argued that low points of forensic science in Australia, such as the *Splatt* and *Chamberlain* cases, have resulted in "cynicism towards forensic science and forensic scientists."[69]

The insights into the frailty of both procedures and scientists yielded by the inquiries in each of these instances have already affected the way in which the judicial arm of the legal profession responds to scientific evidence, and will continue to affect

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[66] *Id.*; *see also* R v. Bartlett [1996] 2 V.R. 687 (holding that evidence about fallibility of repression of memories should have been allowed to go to jury).

[67] Royal Commissions are constituted from time to time in Australia and New Zealand, along the English model, to inquire into matters of significant public concern, such as suspected miscarriages of criminal justice. They are usually headed by a prominent judge, or sometimes a Queen's Counsel, and are assisted by a senior barrister who leads evidence from pertinent witnesses and allows parties the right to cross-examine them. *See* L.A. HALLETT, ROYAL COMMISSIONS AND BOARDS OF INQUIRY (1982).

[68] These, of course, are not the only forensic science controversies in Australia. *See generally* M. BROWN & PAUL WILSON, JUSTICE AND NIGHTMARES: SUCCESSES AND FAILURES OF FORENSIC SCIENCE IN AUSTRALIA AND NEW ZEALAND (1992); Judy Bourke, *Misapplied Science: Unreliability in Scientific Test Evidence*, 10 AUSTL. B. REV. 123, 134 (1993).

[69] BROWN & WILSON, *supra* note 68, at 19. Whether or not they are correct, the saturation publicity surrounding each of the controversies could not but have been imprinted on the judicial psyche.

judicial and other attitudes in Australia for some years to come. Structurally, these insights have resulted in the reformation of institutions responsible for forensic scientific work. However, their impact has gone deeper. Apart from particular issues raised by each of the controversies, all have highlighted the dangers posed by human error in the laboratory or on the witness stand — rather than misconceived science — in the generation of legal errors.[70] These controversies have also emphasized the prevalence of the lawyers' inflated expectations of forensic science and forensic scientists. The appreciation of the fragility of scientific certainty may end up being the most significant legacy of these cases for the legal system.

A. The Splatt *Royal Commission*

In December 1977, Rosa Simper was brutally murdered in her home in South Australia. There were no witnesses to the crime and the evidence against the prime suspect, Edward Splatt, was entirely circumstantial. The prosecution relied upon forensic science to secure a conviction. Splatt was convicted and sentenced to life imprisonment, losing an appeal in 1979. In 1983, after public pressure, the South Australian Government appointed a Royal Commission to review the evidence that had led to Splatt's conviction. After nearly ten months of hearings, the Royal Commissioner found that there was a reasonable doubt about Splatt's guilt. Splatt was released and awarded some $A270,000 compensation.[71]

The key scientific evidence in the *Splatt* case related to trace materials found in the home of the murdered woman. Diagonally opposite her home, about sixty metres away, was a small factory where metal work and spray-painting operations were carried out. Splatt was the factory's spray-painter. Among the material found at the death scene were particles of paint and metal. Disagreement about whether the material could have arrived at the crime scene by some manner other than the accused was the subject of profound controversy at the trial and before the

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[70] *See, e.g.*, Fahey & Fahey (Aug. 3, 1994) Fam. Ct. of Austl. (unreported) (highlighting problem of human error); Ian Freckelton, *DNA Profiling Evidence: Legal Issues, in* 1 EXPERT EVIDENCE, *supra* note 57, ¶ 14.250.

[71] *See* FRECKELTON, *supra* note 2, at 152-53

Royal Commissioner, Carl Shannon QC. The Commissioner described the conflicting testimony by the experts as a "gladiatorial contest between diametrically opposed viewpoints. And in the best tradition of gladiators, many of the words were grievously wounding: 'serious scientific inaccuracies,' 'hypocritical,' 'the derivation was absurd,' 'a nonsensical statement,' 'schoolboy howlers,' 'meaningless.'"[72] The "contest" centred around the potential for dispersal of atmospheric particles, and thus the likelihood of the trace materials having made their way to the deceased's house unassisted by the accused. The conflict extended to the significance under any interpretation of the particles' presence at the crime scene.

One of the difficulties in the case arose from the latitude permitted an important witness, Sergeant Cocks, at trial. Sergeant Cocks worked within the scientific section of the South Australian Police Department. He gave detailed and lengthy evidence at the trial, including his observations of particulate matter under a microscope. As a witness for the prosecution, he enunciated certain forensic theories of particle transference on clothing. In colourful and memorable testimony, Sergeant Cocks eliminated any possibility that the paint and metal particles had arrived at the scene of the crime by means of atmospheric pollution from the factory. At one stage in his testimony, Sergeant Cocks pronounced that "you would need something like Typhoon Tracy to carry particles of that size from the factory."[73] Typhoon Tracy was the cyclone that had devastated Darwin some years before, so his evidence, although undoubtedly hyperbolic, must have conjured vivid images in the minds of all hearing it.

The *Splatt* Royal Commission exposed a number of problems with the practice of forensic science in Australia. One was that Sergeant Cocks functioned both as a police investigator and as an expert, intermixing and confusing his role. After the Commission, an independent, non-police forensic science centre was established in Adelaide to preclude the possibility that such a phenomenon would repeat itself.

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[72] SHANNON, *supra* note 45, at 330 (describing disagreement among prosecution and defense experts concerning evidence at murder scene).

[73] Trial Transcript, at 616, *reprinted in* SHANNON, *supra* note 45, at 31.

Another problem highlighted by the Royal Commission hearings was that the trial jury had faced extremely complex, technical differences of opinion between scientists — for instance, in relation to the science of microspectrophotometry.[74] If the evidence was going to be comprehensible, and if the witnesses giving the evidence were going to be made accountable, the performance of both witnesses and counsel needed to be of a very high quality. Ultimately, Commissioner Shannon summed up the situation as follows:

> The Trial, as it was conducted, represented an encounter of the closest possible nature between two systems or disciplines: the discipline of Law and the discipline of Science. It is my opinion that, from this close encounter, neither discipline escaped unscathed; they both bear the scars of that encounter.[75]

Another problem during the trial, upon which the Commissioner focussed, was the language that several of the scientists employed. The defense did not adequately cross-examine the scientists as to the precise meaning of the words they used. For example, a number of the prosecution's scientific witnesses stated that items "are not inconsistent with having come from the same source as the control sample."[76] The Commissioner noted that to scientists an expression of "consistency" has a clear scientific connotation, but stressed that, in the forensic context, the concentration was not on views passing among, and confined to, scientists. He pointedly commented that the views given were not advanced in the halls of academia or at the benches of laboratories — but "were opinions expressed to a lay jury, which had been clearly told that . . . the scientific evidence was of prime importance."[77] Even more significantly, from the Commissioner's point of view, the jury had been told that the critical question to be determined by the jury was whether the relevant trace materials had come *from the same source.* That being the core of the problem so far as the jurors were con-

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[74] Microspectrophometry utilizes "a spectrophotometer adapted to the examination of light transmitted by very small specimens." WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY 1429 (1993).

[75] SHANNON, *supra* note 45, at 29.

[76] Trial Transcript, at 744, *reprinted in* SHANNON, *supra* note 45.

[77] SHANNON, *supra* note 45, at 38.

cerned, the Commissioner expressed the view that the use by scientific witnesses of certain expressions ("consistent with having a common origin" or "consistent with them coming from the same source") was an "extremely dangerous exercise."[78]

Significantly, the Commissioner then expressed an important evaluative assessment of the limitations of juries' ability to grapple with such evidence. He maintained that it could "hardly be expected" that the jury would be attuned to the scientific nuances of the word "consistent" or "consistency." Rather, he found that, to the jury's collective mind, a phrase such as "consistent with coming from the same source" might well be translated, in the particular circumstances of the case, to "bearing the insignia of coming from the same source," and from there to "in my scientific opinion, in fact came from the same source."[79] This answered the very issue before the jury.

Ultimately, the Royal Commissioner in effect determined that the scientific witnesses ought not to have been allowed to have given such evidence. He found that the conclusions as to similarity "were . . . not only in excess of what their scientific testing could establish but were highly dangerous as apparently providing the bridge over which the jury could step in passing from the path of similarities to the separate rock of commonality of source or origin."[80] Had the Commissioner been the trial judge, he would have excluded such evidence as being more prejudicial than probative.

The Commissioner identified another important aspect of the evidence given in the *Splatt* case as the fact that important scientific witnesses were permitted to go beyond the parameters of their expertise. Once again, the danger identified by inference was that the jury would have been confused, misled, or swayed by the testimony of such witnesses. Inherent is an assumption, unproved empirically, at least in the Australian context, about how juries function. For this purpose, though, what is more important is the fact that the defects in the evidence made their way through to the wicket-keeper, to use a cricketing analogy. Neither the judge nor the trial lawyers intervened effectively to

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[78] *Id.*

[79] *Id.* at 38-39.

[80] *Id.* at 39.

clarify what exactly it was that the scientists were saying, the meaning of the language that they were employing, or the parameters within which they used the carefully chosen terminology that they adopted. Without traversing issues of culpability, the responsibility for the ambiguity of language and the extent of the potential for the triers of fact to be confused lay not only with the readily identifiable scapegoats — the scientists — but also with the trial lawyers and the judges. The lessons to be learned were for the criminal justice system, as well as for forensic science. The most unpalatable of those lessons was that the check and balance of the crucible of cross-examination had not achieved its objective[81] and the scientists had not been made accountable for their unclear enunciation of views. The scientists had been allowed to go further than they should have in expressing opinions that lay beyond the scope of their expertise. There were lessons aplenty — for lawyers, in respect of their effectiveness as advocates; for judges, as ringkeepers in face of ineffectiveness from advocates; and for scientists, in adapting to the court's frame of reference.

B. The Chamberlain *Royal Commission*

One of the more notorious examples of scientific malpractice in the criminal law context has been the *Chamberlain* case in Australia.[82] Lindy and Michael Chamberlain's baby, Azaria, disappeared during a family camping trip in the central Australian desert, near Ayers Rock, in 1980. Mrs. Chamberlain claimed to

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[81] *See* Ian Freckelton, *Wizards in the Crucible: Making the Boffins Accountable, in* PROCEEDINGS OF THE FIRST WORLD CONFERENCE ON NEW TRENDS IN CRIMINAL INVESTIGATION AND EVIDENCE 95 Johannes Nijboer & Johannes Reijntjes eds., 1997). Brown and Wilson commented that the *Splatt* case demonstrated how

> apparently solid and persuasive scientific evidence could be transformed. Dealt with in the hurley-burley of a trial, where there was such pressure to get on with things and everything had to be tailored to suit a jury, this same evidence, painstakingly examined by a royal commissioner unrestrained by time or the pressures of the adversary system, took on quite a different aspect.

BROWN & WILSON, *supra* note 68, at 98.

[82] *See* Chamberlain v. R (No. 2) (1984) 153 C.L.R. 521, 574-75 (Austl.) (discussing scientific evidence in murder trial); JUSTICE T.R. MORLING, ROYAL COMMISSION OF INQUIRY INTO CHAMBERLAIN CONVICTIONS (1987); JOHN BRYSON, EVIL ANGELS (1987) (describing murder prosecution of Chamberlains).

have seen a dingo leaving the child's tent. All that was found at the scene was blood splattered around the child's bassinet. Years later, what was alleged to be the child's baby suit was found. The first legal proceeding, a coronial inquest (the findings of which were televised live throughout Australia, such was the public interest in the case) exonerated the Chamberlains. Then some of the baby's clothing was sent to England for examination and doubts began to accumulate about the cause of the baby's death. Analysis was done of marks under the dashboard area in the Chamberlains' car, which had travelled through temperatures of over 50 degrees Celsius[83] in the desert sun, and forensic scientists found that tiny amounts of fetal blood were present within the car.

Ultimately, the Chamberlains were tried for homicide and convicted. Mrs. Chamberlain was sentenced to life imprisonment, and her husband was sentenced to eight years in jail. After some three years of lobbying, and unparalleled levels of publicity throughout Australia, a Royal Commission reexamined the evidence. In particular, the Royal Commission reviewed the expert evidence presented at trial concerning the behavior of dingoes, the tearing of garments, the memory of children, and most importantly, the analysis of fetal blood. The Chamberlains were released, and many years later given a formal pardon. However, the controversies over the case continued as late as 1995 with the Chamberlains threatening to appeal the findings of the third inquest into the death of baby Azaria. The coroner failed to exonerate the Chamberlains from involvement in their child's death.

At the Chamberlains' trial, the prosecutor, on the basis of the evidence that had been given by the expert witnesses, was colourful in his assertions about the significance of the substance found under the dashboard of the Chamberlain's car: "It's not paint or gum arabic or anything else, it's blood . . . . I don't know that you are asked to find that all Toranas are sprayed under the dash with the blood of an infant as some sort of benediction or ceremonial rite when cars are sold. We know

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[83] The equivalent of 50 degrees Celsius is 122 degrees Fahrenheit.

that on the real plate there's blood."[84] Embarrassingly, evidence given before the Royal Commission established that the substance of the prosecutor's address could not have been more in error. Commissioner Morling found that the key scientist's conclusion that there had been blood under the dashboard was wrong.[85] It was more likely, according to a scientist appearing before the Commission, to have been Coca-Cola or blackcurrant juice. In traditional Australian understatement, the Commissioner determined that the fact that the key scientist involved came to so wrong a conclusion "casts doubt upon the efficacy of her testing generally and upon the accuracy of her other results."[86] Such a finding was also more than sufficient to require that the jury's decision be overturned.

In looking at the systemic problems revealed by the Chamberlain miscarriage, the Commissioner acknowledged that the evidence adduced before him was significantly different from that presented by either the prosecution or the defense at trial.[87] He commented that, "with the benefit of hindsight," it could be seen that some experts who gave evidence at the trial were overconfident of their ability to form reliable opinions on matters which lay on the outer margins of their fields of expertise.[88] Moreover, he noted that other experts who had testified at the

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[84] MORLING, *supra* note 82, at 62.

[85] *Id.* at 106.

[86] *Id.*

[87] *See id.* at 341. Judge Foster in this regard made reference to the English trial of Palmer for the murder of Cook by poisoning, where more than a dozen experts had testified in opposition to one another and where Lord Chief Justice Campbell, in charging the jury, had remarked,

> With regard to the medical witnesses, I must observe that, although there were among them gentlemen of high honor, consummate integrity, and profound scientific knowledge, who came here with a sincere wish to speak the truth, there were also gentlemen whose object was to procure an acquittal of the prisoner. It is, in my opinion, indispensable to the administration of justice that a witness should not be turned into an advocate, nor an advocate into a witness.

Foster, *supra* note 18, at 170.

[88] MORLING, *supra* note 82, at 340.

trial did not possess the experience, facilities, or resources necessary to enable them to express reliable opinions on "some of the novel and complex issues which arose for consideration."[89]

Minimal criticism was made of the forensic failures of the lawyers involved in the case. Once again, the concentration was on the imperfections of the expert testimony and on the scientific methodologies.[90] However, under the brighter than usual spotlight of the Royal Commission hearings, the following elementary flaws in scientific work, which had gone unexposed or inadequately exposed at the trial, were revealed:

- Some of the experts had been prepared in their reports and in their trial evidence to speculate rather than be confined to drawing their inferences from the available data;[91]
- Some scientists had abandoned impartiality;[92]
- Some scientists were prepared to give evidence that extended beyond their areas of expertise;[93]
- A number of the scientists had not been prepared to consult one another;[94]
- Inadequate records were kept by key scientists;[95]
- Discrepancies existed between the scientists' worknotes and their laboratory books;[96]
- Testing was excessively hasty;[97]
- Some of the scientists who carried out the tests were not sufficiently experienced or adequately supervised;[98]
- Tests were used by the scientists without confirmatory work to verify the results;[99]

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[89] *Id.* at 341.

[90] *See, e.g.*, John Winneke, The Expert Witness, Address at the Naval Reserve Seminar (Dec. 3, 1988) (stating that *Chamberlain* illustrated urgency of reviewing errors of forensic science). Compare the findings of the April 1997 Report of Inspector General Michael Bromwich into the FBI laboratory, which similarly highlights poor methodology, inadequate record-keeping, changing of entries, deficient supervision, and the need for better controls and peer review.

[91] MORLING, *supra* note 82, at 218.

[92] *Id.* at 222.

[93] *Id.* at 192, 200.

[94] *Id.* at 277, 314-15.

[95] *Id.* at 78.

[96] *Id.* at 103.

[97] *Id.* at 19, 378.

[98] *Id.* at 138, 313.

[99] *Id.* at 82.

- Test material was destroyed without the results even being recorded photographically;[100]
- Adequate controls were not used, particularly in the key area of testing the Chamberlains' car for the presence of fetal blood;[101]
- Inadequate systems were in place for the cross-checking of some of the results and procedures;[102]
- Results were obtained from testing that should have been identified as contradicted and inherently dangerous;[103]
- The compound for testing for fetal blood may not have been tested prior to use;[104]
- A product produced for the purpose of research was used in spite of warnings from the manufacturer that its diagnostic significance was limited;[105] and
- Adequate account was not taken of the effects of denaturing from the heat in the motor vehicle, as well as the passage of time between the possible appearance of the blood and the time of testing.[106]

The jury hearing the case against the Chamberlains, although assisted by eminent and experienced senior counsel for the Crown and the defense, was never put in a position to make an informed judgment about the strengths and weaknesses of the Crown's case. The scientists were not effectively made accountable for their procedures, their ethics, their methodologies, their protocols, or even their actual work product. Not only this, but the trial judge abandoned the task of summing up on key aspects of the scientific evidence, including the serological evidence. It was a complete failure of the adversary crucible and the role of cross-examination within it.

Not surprisingly, the *Chamberlain* experience provoked considerable consternation within Australian forensic scientific circles. The responses within the scientific community were characterized by protestations from those associated with and those running the major forensic science laboratories. The scientists stated that they had identified the deficiencies during the time be-

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[100] *Id.* at 92, 312.
[101] *Id.* at 84, 86, 103, 125, 129.
[102] *Id.* at 137.
[103] *Id.* at 129-30.
[104] *Id.* at 78.
[105] *Id.* at 76.
[106] *Id.* at 66.

tween the trial and the Royal Commission, and had taken steps to ensure that there would be no repetition of them. Responses from lawyers about their role in the sorry exercise were distinguished by their muted and almost inaudible tones. An example is Crispin, in *The Crown Versus Chamberlain*,[107] whose analysis of the scientific evidence concentrated upon a call for the establishment of a National Institute of Forensic Science, for the "depolicing" of forensic science laboratories, and for the anonymising of samples submitted to forensic laboratories. He identified "strong grounds for suggesting some changes to the law governing the admissibility of scientific evidence in jury trials," but did no more than advance the dubious proposition that "if it is not open to the jury to rely upon the evidence clearly, it should not be admitted in the first place."[108]

Gerber argued in favour of the *Frye* test being applied in Australian law, maintaining that if it had been applied in the *Chamberlain* case, "it is doubtful whether most — if any — of the blood tests that were undertaken by the NSW Health Commission on behalf of the Crown . . . would have passed muster; indeed, with hindsight, the bulk of the Crown's forensic evidence should have been thrown out at the preliminary stage."[109] He too supported the call for the establishment of a National Institute of Forensic Science.

It is Alan Dershowitz from Harvard University, in his introduction to an account of the *Chamberlain* trial, who makes the vital point:

> All participants in the legal process must take a far more skeptical view of forensic testing and testimony, which is not the . . . wizardry it is often believed to be . . . . All that is needed is a diligent defense lawyer willing and able to look behind the curtain.[110]

Without informed scepticism, the notion of cross-examination as the fourth estate of the forensic world, keeping the boffins

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[107] KEN CRISPIN, THE CROWN VERSUS CHAMBERLAIN (1987).

[108] *Id.* at 363.

[109] Paul Gerber, *Playing Dice with Expert Evidence: The Lessons to Emerge from* R v. Chamberlain, 147 MED. J. AUSTL. 243, 245 (1987); *see also* BROWN & WILSON, *supra* note 68, at 119-41; Paul Gerber, *Some Aspects of the Appeals in* R v. Chamberlain, 144 MED. J. AUSTL. 351 (1984).

[110] Alan M. Dershowitz, *Introduction* to BRYSON, *supra* note 82, at ii.

honest, was shown to have little meaning. Many lessons needed to be learned from the *Chamberlain* case, and some have been. The best students of the case appear to have been the forensic scientists, who, for the most part, have improved review processes and supervision protocols. A National Institute of Forensic Science has been established to promote uniformity of approach and to facilitate better credentialling and peer review processes. Laboratories in most parts of Australia and New Zealand have pursued forms of accreditation and quality assurance.[111] Universities, such as the University of Auckland, have entered joint venture arrangements with forensic science laboratories to improve training of forensic scientists and technicians and to promote applied research. However, the "Barnes controversy"[112] still shows the potential for individuals to engage in substandard and unacceptable practices as forensic scientists.

The lawyers, however, have been slower to learn the lessons of *Chamberlain.* New postgraduate courses have been developed in a number of jurisdictions on psychiatry, psychology, and law, but courses in forensic science for lawyers are almost unknown.[113] Few training courses for barristers or solicitors stress the importance of high quality cross-examination of expert witnesses, although the Australian Institute of Trial Advocacy is beginning to address the issue. Practice in this regard still leaves a good deal to be desired, and the potential remains for repeating the lawyers' failure to make the experts in *Chamberlain* properly accountable for the opinions they expressed. While little by way of practical response has occurred within the legal domain, the ghost of *Chamberlain* lurks in the institutional memory of the legal system with an abiding concern that the errors of *Chamberlain* will be repeated. For judges, anecdotal reports suggest a fear that they will not intervene effectively to prevent excesses of expert evidence, such as those that characterized the *Chamberlain* trial. For lawyers, anecdotal reports suggest a fear that their command of technical areas will prove similarly inadequate to

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[111] *See* W.J. Tilstone, *Quality Assurance in the Forensic Sciences, in* 1 EXPERT EVIDENCE, *supra* note 57, ¶ 26.160.

[112] *See infra* notes 114-32 and accompanying text (discussing Barnes controversy and its origins in *Fyffe* trial).

[113] The courses available at the University of Auckland in New Zealand from 1996 are a significant exception.

unmask a poor quality or overly ambitious expert opinion. Sadly, the fears have yet to be translated into significant remedial action.

C. The Bomber Barnes Controversy

The strange phenomenon of "Bomber Barnes" and his work as a forensic scientist began to make disturbing headlines in Australia during 1986. Barnes was a senior forensic scientist, and a major in the Australian Army Reserve. In his forensic capacity, he specialized in analysis of gunshot particles and explosive residue. For many years he was employed at the Victorian State Forensic Science Centre, Australasia's largest forensic science institution. He rose to the position of Acting Director of that Centre when the longterm Director was on leave. Unusually for the present day, the extent of Barnes's tertiary qualifications was a Bachelor's degree in metallurgy from a Melbourne technology institute. Yet he testified in a variety of Australia and New Zealand's most notorious trials.[114]

The unravelling of Barnes's status as a problematic scientific witness commenced in 1988 when he gave evidence for the prosecution in the trial of Brian Fyffe, who was charged with plotting to blow up a finance corporation to which he was heavily indebted.[115] At Fyffe's trial, Barnes testified that he had conducted a spectrometer examination that allowed a high magnification comparison of the striations found on pieces of wire, one of which was found in a letter bomb. For comparison, Barnes created experimental striations using wire and wire cutters found at the accused's house. Barnes also testified that cuts that had been found on the wire at the end of the detonator used for the bomb, and that the wire found attached to one of the clocks belonging to the accused, had "the same characteristics."

The Victorian Court of Criminal Appeal was forthright in its evaluation of Barnes's key evidence. It noted that Barnes in fact conceded that "it was possible" for the cuts on the end of the detonator wires to have been produced by a knife or even by

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[114] The convictions of the accused in this case and the defendant accused of murdering a Deputy Commissioner of the Australian Federal Police are currently under appeal, with Barnes's evidence being one of the appeal points.

[115] Ben Hills, *Trial and Error*, SYDNEY MORNING HERALD, June 15, 1996, at 5.

another pair of cutters.[116] This was a dramatic qualification on what had otherwise been very powerful prosecution evidence. The Court reflected that evidence had been called from "well qualified experts" who had testified to their belief that there were no reliable signs to be found by appropriate examination of the striations on the cut of the detonating wire and on the cut of the wire attached to the clocks capable of establishing that they had been caused by the same implement. The Court reached the conclusion that as Barnes's evidence was "of such unreliability," and as it was essentially the only evidence that connected Fyffe, through the examination of the pieces of wire, to the letter bomb, it was unsafe to allow the accused's conviction to stand. Interestingly, therefore, the ground for overturning the accused's conviction was the unsatisfactoriness, expressed in terms of unreliability, of Barnes's forensic science evidence.

The *Fyffe* decision by the Victorian Court of Criminal Appeal had been a most unusual adverse finding by an Australian court in respect of a very senior forensic scientist. However, matters regarding Barnes's professionalism came to a head with a police raid on Barnes's rural property and an internal police investigation into him some years later.

In May 1996, the Victorian State Coroner[117] gave his findings in another case in which Barnes had been integrally involved. Those findings consolidated the concerns previously raised in relation to evidence given by Barnes. The Coroner had investigated the death of a notorious criminal, Archie Butterly. Butterly had escaped from prison with the help of a female prison warder, Heather Parker, who had formed a romantic relationship with another man, Peter Gibb, who escaped at the same time. In the course of a later confrontation with police, Butterly was shot dead with a gun that he had previously stolen from a police officer. Either Gibb, Parker, or Butterly himself

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[116] R v. Fyffe (June 7, 1989) Vict. Ct. of Crim. App. (unreported) (per Crockett, Marks, & Southwell, JJ.).

[117] For an account of coronial law in Australia, see Ian Freckelton, *Inquest Law, in* 20 HEALTH AND GUARDIANSHIP, THE LAWS OF AUSTRALIA (S. Linden ed., 1997); Ian Freckelton, *Coronial Law, in* THE INQUEST HANDBOOK (Hugh Selby ed., 1997); K.M. WALLER, CORONIAL LAW AND PRACTICE IN NEW SOUTH WALES 1-3 (3d ed. 1994); *see also* Ian Freckelton, *Expert Proof in the Coroner's Jurisdiction, in* THE AFTERMATH OF DEATH 37, 37 (Hugh Selby ed., 1992) (discussing role of coroner in Australia and New Zealand).

was responsible for Butterly's death. At the inquest, the focus was upon determining the cause of Butterly's death and whether anyone had contributed to it.[118] The primary forensic science evidence on gunshot residue was sourced from a statement by Barnes, who also testified at the inquest. Barnes was cross-examined at length in terms of earlier cases in which he had given evidence and in terms of his neutrality, his probity, and the quality of his scientific opinions. The Coroner took the unusual step of requesting another scientist to further investigate Barnes's tests, and of Barnes's conclusions and opinions. The review report by the other scientist from the Victorian Forensic Science Centre identified a number of important flaws in Barnes's work.

However, it transpired that some important impediments lay in the way of the reanalysis process. None of Barnes's notes were available to review the sampling of certain clothing of Parker. Moreover, the sampling regimes for the clothing of Gibb, Parker, and the deceased, Butterly, were "somewhat different" and there were "no explanatory notes with regards to the different approaches."[119] Barnes's documentation was regarded by the reviewing scientist as defective in a series of respects, this making the review, and thus the accountability, of Barnes's work more difficult. For instance, the reviewer concluded that the search for gunshot residue was probably carried out using the Camscvam Particle Identification System, which produces a printout of all particles analyzed in the automated search. However, many particles are not relevant to gunshot residues and, according to the reviewer, "it is necessary to check all potential particles manually (usually those 'identified' as containing lead, antinomy, and/or barium)."[120] These charts were not included in Barnes's case record.

Barnes's case record did contain X-ray spectral charts and scanning electron photomicrographs "which appear to relate to the examination of wound sections from Archie Butterly."[121]

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[118] Coroners Act, 1985, § 19(1)(c), (e) (Vict.).

[119] Peter Ross, *Gunshot Residue Evidence Pertaining to the Death of Archie Butterly*, Inquest Exhibit No. 24, at 2-3.

[120] *Id.* at 3.

[121] *Id.*

However, the examinations were not dealt with in Barnes's report or testimony. While they appeared to the reviewer to be "primarily bullet related," it was not possible to say whether or not the particles were of significance, particularly as aluminum was present. Barnes said nothing of the matter.

The reviewer noted that Barnes examined the spent bullet taken from the body of the deceased, and the piece of bullet jacket from a separate wound to the deceased. However, the examination appeared to have been limited to comparing the elemental compositions of the jacketing on the bullet with the brass jacket fragment. The reviewer concluded that Scanning Electron Microscopy/Energy Dispersive X-ray analysis was useful for screening metal samples to establish comparability of compositions. However, as the compositions were similar, the reviewer should have used a more sensitive technique to differentiate the samples.[122] The reviewer expressed the view that the results were inconclusive, but Barnes did not report this work at all, apparently deeming it unnecessary to reveal details of work that did not provide a clear result.[123]

Barnes had found a single particle of gunshot residue on Parker's right hand. The reviewer concluded on the basis of testing that the particle found on Parker's hand was consistent with Winchester .223 caliber ammunition (the ammunition fired by the police's Special Operation Group at the shootout), as well as with Winchester .38 caliber cartridge residue. There could have been a number of explanations for the presence of a single particle on Parker's hand, including simple Locardian transference as a result of later contact with police. Further testing also shed doubt on Barnes's assertion that the presence of aluminum, with or without silicon, enables the differentiation of Winchester .38 Special caliber ammunition (no aluminum) from other Stirling and PS .223 caliber ammunitions.

Barnes stated that the particle found on Parker's hand was "indistinguishable from firearms discharge residue produced on

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[122] *Id.*

[123] This raises the difficult issue of the extent to which forensic scientists should reveal the results of tests that are inconclusive or inconsistent with their primary results. A number of laboratories in Australia have adopted, in respect of the former, a minimalist approach, only disclosing the results of such tests if asked directly about them or if subpoenaed.

discharge of Winchester .38 Special ammunition" and then asserted that primer-related residues present in four .223 caliber spent cartridge cases were found to differ from the particle on Parker's hand. However, further testing by the reviewer found that particles having the same composition were found on discharge of Winchester .223 caliber ammunition. His conclusion was that the particle on Parker's hand could have got there by transfer from the police, rather than by her having fired the Winchester .38 herself.

The Coroner adopted the reviewer's conclusions, thereby rejecting those of Barnes. He found that the presence of the particle on Parker's hand was not indicative of whether or not she had fired a revolver. He noted that the particle was consistent with any other Winchester-type primer having been fired from Winchester ammunition of the type used by police in many of their weapons, and reflected that "this was not explained in Barnes's statements presented as part of the [sic] his initial investigation."[124] He found that it was not possible to exclude contamination as being the source of the single particle (or the ".223 caliber" particles on her clothing) and accepted that it would be dangerous to draw any conclusions on the evidence of a single particle.

The Coroner noted that the potential for contamination had not been "thoroughly investigated." He accepted the most unusual submission from counsel assisting him that the gunshot residue evidence from Barnes was of "no evidentiary value." In trial terms, this would have resulted in Barnes's evidence being excluded because of its low probative value. This meant, in the Coroner's estimation, that the gunshot residue testimony of Barnes was "clearly capable of being misunderstood" and so had potential to be misleading. The bottom line was that "the principal evidence on gunshot residue cannot be relied upon to establish whether Parker fired the revolver."[125] Again, therefore, it was unreliability that resulted in the rejection of Barnes's evidence.

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[124] VICTORIAN STATE CORONER, FINDINGS INTO INQUESTS INTO THE DEATH OF ARCHIE BUTTERLY AND A FIRE AT THE GAFFNEY'S CREEK HOTEL IN MARCH 1993 AND MAY 22, 1996.

[125] *Id.* at 13.

The Coroner did not go further in his assessment of the specifics of Barnes's evidence. However, journalist Hills raised other concerns from the case, including that Barnes

> was unable to convincingly explain why identification codes had been cut off the microphotograph of the residue which one barrister had suggested [raised] the "real possibility of false evidence." Barnes denied the suggestion and the coroner made no finding either way. . . . [T]he barrister who represented Parker submitted a lengthy demolition of Barnes's evidence which included this statement: "When Barnes's evidence is viewed overall . . . it is apparent that he has set out to prove Ms. Parker fired the shots, and lied and misled to achieve that aim and protect himself from criticism for having done so.[126]

Ultimately, the Coroner found that he could not determine who caused the deceased's death and pointedly commented that the scientific evidence in the case had "the potential to be of concern for the administration of justice in this state."[127] In particular, he drew attention to the need for "evidence to be presented so as to give the reader an explanation of the scientific limits [and risks] to the opinion. This case is but an example of where the court was not made aware of potential problems with the gunshot residue evidence."[128]

By February 1996, the Director of the Victorian Forensic Science Centre had acknowledged the problems with the evidence given by Barnes:

> Although substantial systems were in place it was still possible to "get around" the system designed to provide a uniformally [sic] high standard of reporting and also a framework within which responsible caseworkers could operate with confidence and security. . . . The actions of Mr. Barnes has [sic] necessitated that these procedures be urgently reviewed and upgraded to prevent, as far as humanly possible, a repeat of the totally unacceptable operational behaviour of Mr. Barnes as a senior and trusted scientist.[129]

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[126] *Id.*

[127] *Id.* at 19.

[128] *Id.* at 20.

[129] Memorandum from Director, VICTORIA FORENSIC SCIENCE CENTRE, to Thatcher (Feb. 5, 1996).

The reviewer's report, however, had identified a number of charts that were not present, as in the *Chamberlain* case, making proper review of Barnes's evidence impossible.[130] Barnes's work shares key elements with that of discredited forensic serologist Fred Zain, whose files have also been reassessed. The results have included "missing and inadequate documentation, conclusions based on unreported results, and claims that Zain conducted tests that actually were performed by somebody else."[131]

The ongoing Barnes controversy in Australia has revived memories of the poor scientific work conducted in the *Chamberlain* case and of the Dr. Clift scandal in England,[132] where a key state-employed forensic scientist was shown to have had a disturbing history of giving biased, pro-prosecution evidence. It has alerted the Australian and New Zealand legal professions once again, as has the Zain controversy in the United States, to the dangers posed by evidence that is inadequately documented, or given by a witness whose opinions are not readily reviewable or are subtly skewed in favour of the side calling him. It has also highlighted the institutional challenge for forensic science facilities to ensure that even managerial and highly regarded scientists adhere to proper protocols — including those relating to retention of records of their work — and not abandon their objectivity. What makes the Barnes controversy of particular moment for Australia is the seniority of the scientist involved, his unpreparedness to submit to standard forms of peer review, and his alleged inclination to give evidence that was both overstated and ambiguous, but favouring the prosecution. The reality that it has brought home to the legal profession generally is the unpalatable truth that counsel for the defense will not always be a sufficient check and balance against miscarriages of forensic

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[130] *See, e.g.*, Ross, *supra* note 119, at 9.

[131] M. Hansen, *Lab Evidence Questioned*, 80 A.B.A. J. 16 (July 1994). Note also the issues of poor supervision, exaggeration of findings, and questionable methodology highlighted by the April 1997 Bromwich Report into the FBI laboratory.

[132] *See* FRECKELTON, *supra* note 2, at 125-26 (suggesting that Dr. Clift's loyalty to his employer partially caused his failure to volunteer exculpatory evidence at trial); JOHN PHILLIPS & JIM BOWEN, FORENSIC SCIENCE AND THE EXPERT WITNESS 3 (1989); John Phillips, *A Winter's Tale — 'The Slings and Arrows of Expert Evidence'*, 57 L. INST. J. 710, 710-13 (1983) (discussing Dr. Clift's loss of credibility as expert witness); Hamer, *supra* note 2, at 575-76 (discussing Dr. Clift's testimony); Mason, *supra* note 2, at 9-10 (examining ethical obligations of expert witnesses in adversarial criminal justice system).

science and that the exclusionary rules of expert evidence must be fashioned with such difficulties in mind.

The next section of this Article argues that changes to the interpretation of the exclusionary rules of expert evidence over the past two decades in Australia and New Zealand, and the new federal and New South Wales rules of evidence, are mostly consistent with an emerging preparedness to trust in jurors' abilities to evaluate expert evidence effectively. However, coexisting with this preparedness is a consciousness that some categories of expert evidence are not readily susceptible of informed analysis by the intelligent layperson, and therefore must be excluded by specialized rules of evidence.

IV. THE EXCLUSIONARY RULES

A. Australian Common Law Rules of Expert Evidence

In Australia, expert evidence law until 1995 was entirely judicially developed. New Zealand's law on the subject to this day remains largely non-legislative.[133] In 1995, the federal and New South Wales jurisdictions implemented the Australian Law Reform Commission's recommendations[134] and passed new evidence legislation, intended to be model legislation comparable to the United States 1975 Federal Rules of Evidence. The New Zealand Law Commission is also engaged in formulating proposals for a comprehensive legislative restatement of evidence law.[135]

However, for now, throughout most of Australia and New Zealand the common law dictates the admissibility of scientific evidence. In general terms, expert opinion evidence is admissible, so long as it is relevant, and provided that it does not breach

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[133] Compare the English common law. *See* TRISTRAM HODGKINSON, EXPERT EVIDENCE: LAW AND PRACTICE (1990).

[134] *See* Report No. 26, *supra* note 3, at 9-82; Report No. 38, *supra* note 3, at 139-268.

[135] NEW ZEALAND LAW COMM'N, EVIDENCE LAW: EXPERT EVIDENCE AND OPINION EVIDENCE, Prelim. Paper No. 18 (1991).

- The expertise rule;
- The common knowledge rule;
- The basis rule; and the
- The ultimate issue rule.[156]

It is unclear as yet whether an "area of expertise" exclusionary rule exists that is comparable to either the *Frye* test[137] or the *Daubert* test.[138] In terms of the evolution of the common law exclusionary rules, during the 1980s and 1990s there has been a marked relaxing of the common knowledge and ultimate issue rules, contrasted with a tightening of the expertise rule and the emergence of a basis rule. Increasingly, however, judicial discretion to exclude evidence that is highly prejudicial and has little probative value in the criminal law is functioning to exclude scientific and mental health expert evidence when judges form the view that juries have not been placed in a position to effectively evaluate the expert testimony that they have heard.

1. The Expertise Rule

Under the common law of Australia and New Zealand, an expert must be an expert; that is, possessed of specialized knowledge by reason of skill, training, or experience. Two recent trends are discernible that reflect contemporary judicial attitudes toward scientific evidence. The first has been a relaxation in the formality of the means by which expertise has been procured.[139] This, for instance, has permitted aboriginal trackers

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[156] *See* 1 EXPERT EVIDENCE, *supra* note 57, ¶¶ 7.10 to 11.720.

[137] Frye v. United States, 293 F. 1013, 1014 (D.C. Cir. 1923).

[138] Daubert v. Merrell Dow Pharms., Inc., 509 U.S. 579, 592-95 (1993).

[139] *Cf.* Price v. R, 1981 T. St. R. 306, 318 (finding witness's testimony inadmissible because it failed to qualify as expert testimony); Grace v. Southern, 1978 V.R. 75, 81 (holding that court had discretion to exclude witness who had relevant academic credentials and had performed research studies in alcohol levels); Weal v. Bottom (1966) 40 A.L.J.R. 436, 438-39 (stating that court can admit expert testimony from witnesses with long experience in driving and observing particular vehicles); Clark v. Ryan (1960) 103 C.L.R. 486, 491 (Austl.) (stating that opinion of witness with particular skill is admissible if inexperienced persons are unlikely to form correct judgment without witness's assistance); McAllister v. Richmond Brewing Co. (1942) 42 N.S.W. St. R. 187, 193-95 (affirming trial court's admission of witness's testimony concerning hotel's condition even though witness did not have hotel management experience); Nickisson v. R, 1963 W.A.R. 114, 116 (finding that witness with 12 years of experience in investigating traffic accidents was not qualified expert); R v. Silverlock, [1894] 2 Q.B. 766, 769 (stating that person is qualified expert if he studies or

to give expert evidence in the *Chamberlain* case,[140] a dog breeder who had not engaged in formal study to give evidence about cattle dogs,[141] and addicts to give evidence about white powders, based on their "street experience."[142] Thus, courts focus on the substance of the evidence rather than the means by which the knowledge and skill are acquired.

However, the other trend in recent decisions has been to more rigorously apply the requirement that experts actually be experts. This is resulting in the exclusion of expert evidence that lies beyond the parameters of experts' proven expertise. It addresses the perceived need to guard jurors in particular against the provision of information which may not be what it appears — it may seem plausible and emanate from an expert with authoritative qualifications, but cross-examination may not adequately expose the testimony as over-reaching the witness's knowledge. Thus, courts have held eminent DNA scientists to be insufficiently qualified to give interpretative evidence involving statistics;[143] biologists have been held not to be experts on blood spatter patterns;[144] the Australian High Court queried a psychologist's qualifications to give evidence on psycholinguistics;[145] a leading forensic psychiatrist's capacity to give evidence on the responses of victims to sexual abuse has been doubted;[146] a psychologist has been held not to be possessed of pertinent qualifications and experience to give psycho-

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practices as professional in field); Folkes v. Chadd, 99 Eng. Rep. 589, 590 (1782) (illustrating court's use of expert testimony to prove different causes for harbor's decay).

[140] R v. Chamberlain (No. 2) (1984) 153 C.L.R. 521, 542-43 (Austl.).

[141] R v. Pfennig (1992) 57 S.A. St. R. 507, 512-13.

[142] *Price*, 1981 T. St. R. at 323-24.

[143] *See* R v. Lucas [1992] 2 V.R. 109, 114-17; *see also* Bugg v. Day (1949) 79 C.L.R. 442, 462 (Austl.) (per Dixon, J.) (holding that motor vehicle repairman should not have given evidence about causation of accidents).

[144] *See* R v. Broughton (Sept. 22, 1988) Queensl. Ct. of Crim. App. (unreported).

[145] *See* Murphy v. R (1989) 167 C.L.R. 94, 108-12 (Austl.); *see also* R v. Peisley (1990) 54 A. Crim. R. 42, 52 (noting importance of clinical psychologist's testimony remaining within boundaries of his expertise); Klimoski v. Water Auth. (1989) 5 W.A.R. 148, 150 (holding clinical psychologist's testimony inadmissible because testimony went beyond his expertise).

[146] *See* J v. R (1994) 75 A. Crim. R. 522, 532-34 (Ct. Crim. App. Vict.); *see also* Ian Freckelton, *The Expertise of Forensic Psychologists*, PSYCHIATRY, PSYCHOL. & L. 73 (1997) [hereinafter Freckelton, *Expertise of Forensic Psychologists*]; Ian Freckelton, *Judicial Pedagogy and Expert Evidence on Victims' Reactions to Trauma*, 4 PSYCHIATRY, PSYCHOL. & L. 79 (1997) [hereinafter Freckelton, *Judicial Pedagogy*].

pharmacology evidence on the effects of the ingestion of drugs on an accused person's capacity to form a criminal intent;[147] an experienced police officer has been held not to be qualified to offer expert opinions about the causes of a traffic accident;[148] a handyman has been confined to evidence about maintenance of chairs, rather than engineering or related matters;[149] and a pediatrician has been held not to be sufficiently qualified to give evidence about the emotional reactions of children to sexual assault by adults.[150] The focus of the courts — to ensure that expert evidence emanate from witnesses genuinely possessing germane expertise — functions to filter opinions from the triers of fact. To this extent, it can be seen as a vote of no confidence in trial lawyers' ability to expose pseudo-expertise. However, it can more usefully be viewed as a constructive gate-keeping function, keeping away from jurors evidence of minimal probative value and potentially prejudicial impact.

2. The Common Knowledge Rule

Traditionally, experts in Australia and New Zealand have been precluded from giving evidence on matters determined to be within the trier of fact's common knowledge. The rule functioned as a means of restricting expert opinion evidence to provide information actually necessary to the trier of fact's decisionmaking process. The rule's enforcement precluded admission of substantial amounts of mental health expert evidence on the behaviour of "ordinary persons," confined issues in dispute in criminal trials, and saved court time and expense.

During the 1980s and 1990s in Australia and New Zealand, however, the judiciary and legal profession generally began to have a greater appreciation of the insights that psychiatrists and psychologists could offer. The appreciation was tempered by the awareness of the potential for such evidence to be of questionable probative value. Additionally, the evidence could be difficult to evaluate where mental health professionals exceeded the

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[147] *See* R v. Darrington & McGauley, 1980 V.R. 353, 380-82.

[148] *See* Mattioli v. Parker (No. 2), 1973 Q.R. 499, 506.

[149] *See* Jones v. Multiple Sclerosis Soc'y [1996] 1 V.R. 499, 504-05.

[150] *See* F v. R (1995) 83 A. Crim. R. 502, 509 (Ct. Crim. App. N.S.W.).

bounds of their expertise in areas such as consistency of diagnoses, prediction of dangerousness, capacity to form criminal intent, impact of addictive substances upon mental state, fitness to stand trial, the capacity to say that complainants were or were not victims on the basis of their behaviour and mental state subsequent to the alleged assault, and the likelihood of recidivism.[151] Australian and New Zealand law in relation to expert evidence has seen a relaxation of the rule that, as ordinary people know about ordinary things, mental health professionals could only give expert evidence about a person's state of mind when the patient was either suffering a recognized psychiatric illness or was intellectually disabled. The broader evidence has been pertinent to automatism claims, assertions of diminished responsibility, and claims of self-defense, provocation, and duress; counterintuitive evidence concerning the victims of domestic violence and childhood sexual assault; as well as defenses of inability or failure to form the requisite intent to commit a criminal act.[152]

However, judicial division of opinion remains prominent in the contemporary formulation of the common knowledge rule. The distinction is between whether the preclusion ought to be over matters "which may competently be approached by the tribunal of fact"[153] and whether expert evidence should only be excluded where the expert's testimony would not assist the

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[151] *See* ALLEN A. BARTHOLOMEW, PSYCHIATRY, THE CRIMINAL LAW AND CORRECTIONS 90-172 (1986) (discussing forensic psychiatrists' work in relation to criminal courts); FRECKELTON, *supra* note 2, at 55-67 (discussing field of expertise rule).

[152] *See* Ian Freckelton, *The Common Knowledge Rule*, *in* 1 EXPERT EVIDENCE, *supra* note 57, ¶ 8.10.

[153] R v. Smith, 1987 V.R. 907, 912; *see also* Ritz Hotel Ltd. v. Charles of the Ritz Ltd. (1988) 15 N.S.W.L.R. 158, 177 (per McLelland, J.) (holding that statistical expert testimony is unnecessary because survey evidence is inadmissible in trademark proceedings in Australia); R v. Perry (1990) 49 A. Crim. R. 243, 249 (Ct. Crim. App. N.S.W.) (per Gleeson, C.J.) (citing Clark v. Ryan (1960) 103 C.L.R. 486) (stating that courts allow expert testimony when inexperienced person is unlikely to form correct judgment without expert assistance); R v. B [1987] 1 N.Z.L.R. 362, 367 (stating that experts cannot testify on common knowledge issues because such testimony would defeat purpose of having jury); R v. Murdock (Dec. 14, 1987) N.S.W. Ct. of Crim. App. 76 (unreported).

trier of fact.[154] The difference between the two approaches is subtle, but extremely important in practice.

The key modern decision in relation to the common knowledge rule in Australia is that of the High Court in the 1989 case of *Murphy v. R.*[155] The trial court excluded a psychologist's testimony about a low-functioning accused's capacity to make admissions in a tape-recorded interview, as alleged by the police. Chief Justice Mason and Justice Toohey pointed out that the drawing of a dichotomy between "normal" and "abnormal" postulates that such terms have a clearly understood meaning and that such a distinction is meaningful. They commented that it wrongly assumes that the expertise of psychiatrists or psychologists extends only to subjects who are 'abnormal.'[156] The seven member court, though, was divided. Justice Dawson found utility in the dichotomy, saying it may furnish "useful guidance," but held that the "true principle" that determines the exclusion of expert evidence

> does not rest upon the drawing of a line which must often be difficult, if not impossible. The principle is simply that evidence which is put forward to tell the jury something that is within their own knowledge or experience is not helpful and not admissible for that reason . . . . But the distinction between helpful and unhelpful evidence cannot of its nature be very precise.[157]

Justice Deane was the most critical of the arbitrariness of the rule and rejected the proposition that psychological evidence should not be admitted in situations where there is no evidence of "abnormality." He held that expert psychological evidence of

> identified and significant difficulty in intellectual functioning or in comprehension and expression could well be admissible on the question of the reliability of a confessional statement

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[154] *See* R v. Bonython (1984) 15 A. Crim. R. 364, 365 (Ct. Crim. App. S. Austl.) (stating that judge must be satisfied that witness possesses necessary qualifications); Burger King Corp. v. Registrar of Trade Marks (1973) 47 A.L.J.R. 237, 238 (stating that expert opinion is unnecessary when subject matter is comprehensible for inexperienced person); Epperson v. Dampney (1976) 10 A.L.R. 227, 233-34.

[155] (1989) 167 C.L.R. 94.

[156] *Id.* at 111.

[157] *Id.* at 130.

> notwithstanding that the identified difficulty did not take the case out of the lower range of what would be classified as normal.[158]

The impact of these judgments has yet to be fully felt by the criminal trial system in Australia. The High Court's decision in *Murphy v. R*[159] leaves many important questions unanswered as to the scope of evidence that psychologists and psychiatrists may provide about accused persons who are neither intellectually disabled in the strict sense nor suffering a psychiatric illness, but perhaps impaired by a psychiatric disorder within the terms of DSM-IV.[160] However, the majority in the High Court clearly focussed not upon whether jurors would know something of the matters about which expert evidence was sought, but whether they would "receive assistance" from the expert evidence.[161] This is a vital and liberalizing shift in emphasis, potentially removing much of the substance from the common knowledge rule.[162]

The more flexible approach was also adopted by the New Zealand Court of Appeal in the important decision of *R v. Decha-Iamsakun.*[163] The court held that an expert's opinion may be admitted, even if it relates to matters within the province of the jury, where the opinion can be of real assistance, such as by causing the jury to review its assumptions or qualify its judgments. The defense proposed to elicit testimony from a linguistics expert that the accused did not have sufficient ability in the English language to have said the words attributed to him by a prosecution witness. President Cooke stated:

> Matters which to a considerable extent are within the experience of a Judge trying the facts or a jury can arise, yet expert evidence may help materially in coming to a conclusion. The ordinary experience test need not be interpreted so as to exclude such evidence. The information provided may well be

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[158] *Id.* at 127.

[159] *Id.* at 131.

[160] AMERICAN PSYCHIATRIC ASS'N, DIAGNOSTIC AND STATISTICAL MANUAL OF MENTAL DISORDERS (4th ed. 1994).

[161] *Murphy* 167 C.L.R. at 110-11 (per Mason, C.J. & Toohey, J.); *id.* at 126 (per Deane, J.); *id.* at 130 (per Dawson, J.).

[162] *See* Hoogwerf v. R (1992) 63 A. Crim. R. 302, 314 (Ct. Crim. App. W. Austl.) (per Walsh, J.) (concluding that expert testimony was relevant for mentally disabled witness).

[163] [1993] 1 N.Z.L.R. 141.

> outside ordinary experience and cause the Judge or jury to review impressions or instinctive judgments based on ordinary experience, and to do so in the direction of either confirmation or doubt of what ordinary experience suggests. Scientific knowledge is constantly advancing. The fear and risk of allowing trials to degenerate into contests of psychiatric or other expert evidence are entirely real, but the law would be reactionary if as a general rule it rejected the help of modern scientific insights into human behaviour and cognition.[164]

In 1993, however, a further sign was given of the continuing controversies in the area. Justice Bollen of the South Australian Supreme Court did not apply the emerging "helpfulness" interpretation of the common knowledge rule.[165] The court held that the criterion for admissibility of podiatry evidence was whether the characteristics or points of comparison between the feet and certain shoes were such that a person, without instruction or experience in podiatry, would not be able to form a "sound judgment" without the assistance of witnesses possessing special knowledge or experience in the area.[166] Thus, Justice Bollen's approach questioned whether the evidence was necessary rather than whether it would be helpful.

However, the later decision of the South Australian Court of Criminal Appeal, in *Runjanjic & Kontinnen v. R*,[167] appears likely to guide future development of the law. The court found that evidence about the cycle of domestic violence suffered by battered women yielded insights that would not be shared by ordinary jurors.[168] Further, the testimony would have the effect of removing prejudices and misimpressions about the psychological effect of battering upon spouses.[169] Chief Justice King emphasized the assistance that the expert evidence could provide in developing an overall understanding of the circumstances of the case, rather than whether the impact of longstanding domestic violence was known to ordinary members of the community.

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[164] *Id.* at 146-47.

[165] Rose v. R (1993) 69 A. Crim. R. 1, 8 (Ct. Crim. App. S. Austl.).

[166] *Id.*

[167] (1991) 53 A. Crim. R. 362 (Ct. Crim. App. S. Austl.); *see* Ian Freckelton, *The Forensic Abuse Syndrome*, 18 CRIM. L.J. 29 (1994).

[168] *See Runjanjic*, 53 A. Crim. R. at 370 (describing reaction of average person when confronted with battered wife syndrome).

[169] *Id.* at 369.

This "counterintuitive" function of expert evidence has been the rationale for admission of evidence in Canada relating to the characteristics of sexually abused children,[170] the reasons why women might delay reporting rape,[171] why a patient may not actively resist the sexual overtures of her doctor,[172] and even to the effect that assailants may be at the same time homosexual and heterosexual in orientation.[173] As the South Australian Supreme Court expressly followed the Supreme Court of Canada[174] in admitting battered woman syndrome evidence to support a defense of duress, it may well be that Australian law will pursue a similar course in order to furnish assistance to jurors in apprising them of phenomena of which they may not otherwise be aware.[175] This will result in requiring juries to assimilate and evaluate considerably more evidence from mental health professionals.

3. The Ultimate Issue Rule

The ultimate issue rule precludes expert opinion evidence on fundamental issues that are to be determined by the trier of fact.[176] As a practical matter, the rule increasingly operates in Australia and New Zealand to do no more than prevent expert witnesses in criminal cases from testifying in terms of a legal standard.[177] Justice Glass (extrajudicially)[178] and Justice Dunn[179] have cited with approval the following passage in the United States case of *Grismore v. Consolidated Products*:[180]

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[170] R v. B(G) [1990] C.C.C. 201, 220 (Can.).

[171] R v. C(R.A.) [1990] C.C.C. 522, 530 (Can.).

[172] R v. Ryan [1993] C.C.C. 514, 520 (Can.).

[173] R v. Aylward [1992] C.C.C. 71, 76 (Can.).

[174] R v. Lavallee [1990] C.C.C. 97, 111-12 (Can.).

[175] For a substantial discussion of policy issues related to the reception of syndrome evidence, see Ian Freckelton, *Novel Psychological Evidence*, *in* 1 EXPERT EVIDENCE, *supra* note 57, ¶ 13.10. *See also* Ian Freckelton, *Counterintuitive Evidence*, 4 J. L. & MED. 303 (1997).

[176] As Learned Hand stated, "[n]ow the trouble with the expert is that he takes the jury's place and contributes the major premise." Hand, *supra* note 19, at 51.

[177] R v. Palmer [1981] 1 N.S.W.L.R. 209, 214; *see also* Grey v. Australian Motorists & Gen. Ins. Co. [1976] 1 N.S.W.L.R. 669, 675-76 (per Glass, J.A.) (holding that expert witness may not testify as to appropriate legal standard).

[178] H.H. Glass, *Expert Evidence*, 3 AUSTL. B. REV. 43, 49 (1987).

[179] R v. Tonkin & Montgomery, 1975 Q.R. 1, 42-43.

[180] 5 N.W.2d 646, 663 (Iowa 1942).

> No witness should be permitted to give his opinion directly that a person is guilty or innocent, or is criminally responsible or irresponsible, or that a person was negligent or not negligent, or that he had the capacity to execute a will, or deed, or like instrument . . . . But the reason is that such matters are not subjects of opinion testimony. They are mixed questions of law and fact. When a standard, or a measure, or a capacity has been fixed by law, no witness whether expert or non-expert, nor however qualified, is permitted to express an opinion as to whether or not the person or the conduct, in question, measures up to that standard. On that question the court must instruct the jury as to the law, and the jury must draw its own conclusions from the evidence.[181]

Justice Blackburn's reasoning in the civil case of *Milirrpum v. Nabalco Pty. Ltd.*[182] has been influential. The case involved indigenous people's land rights, and one party challenged the admissibility of their opponent's expert testimony. The litigants claimed that the testimony was inadmissible because the witness was expressing an opinion as to whether clans of Aborigines had "rights" to certain areas of land. This, they argued, was the very question that the court was trying to decide. Further, the experts tended to "conceptualize" rather than state facts objectively. The court held[183] that it was fallacious to require the expert to avoid the use of words involving key concepts altogether:

> To do so would be to deny his utility as a channel for the communication to the Court of the science he professes. It seems to me to be a function of an expert witness to talk in terms of concepts which are appropriate both to his field of knowledge and to the Court's understanding.[184]

Justice Blackburn held that the problem for the court was to decide, with the expert witnesses' assistance but as a matter of fact, what the Aborigines' rights were in the Aborigines' eyes. He found it acceptable, and in fact preferable, to allow the expert to answer questions in terms of "rights" and "claims," provided that the court remained conscious of its own obligations as the fact-finding body.[185]

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[181] *Id.*

[182] (1971) 17 F.L.R. 141 (Austl.).

[183] *Id.* at 293.

[184] *Id.*

[185] *Compare id.* at 164-65 (allowing experts to decide as matter of law what Aboriginal

Similarly, in a negligence action in the Federal Court, Justice Pincus indicated that, in his view, it would be "absurd" if the effect of the ultimate issue rule was simply to prevent experts from employing terms such as "negligence":

> Whether or not, where negligence is in issue, there is a ban upon use of the word "negligence" itself and its synonyms in the framing and answering of questions of those called to give their opinion on what was done, I cannot accept that there is any longer an established practice preventing a suitably qualified expert from saying that what is complained of was not in accordance with good practice, was excessively risky, poorly conceived, or other such criticisms. That is so, in my view, even if acceptance of evidence of that kind might lead fairly directly to a conclusion that what was done was negligent.[186]

The reality, though, is that experts, particularly psychiatrists and psychologists testifying about the issues of diminished responsibility, insanity, and competency to give evidence, are regularly permitted to testify on the ultimate issues.[187] This practice is not without its critics, who express concern about the impact that such liberties could have on jurors' capacity to rigorously deal with the remainder of experts' evidence. In *R v. Chayna,*[188] for example, Justice Gleeson, Chief Justice of the New South Wales Supreme Court, expressed irritation with psychiatrists who stated opinions about whether the appellant had a case of diminished responsibility within the meaning of the legislation.[189] He indicated concern that such opinions could operate to distract jurors from aspects of their testimony. He held that psychiatrists' giving of evidence upon the ultimate issue to be decided by the trier of fact could create a misleading impression.[190]

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rights are), *with* R v. Hally 1962 Q.R. 214, 229-30 (Gibbs, J.) (proscribing evidence as to accountant's dishonesty), *and* Interlego AG v. Croner Trading Pty. (1992) 111 A.L.R. 577, 619 (Austl.) (per Gummow, J.) (indicating that survey evidence, which explained whether consumers were likely to be deceived, may be inadmissible).

[186] Thannhauser v. Westpac Banking Corp. (1991) 104 A.L.R. 485, 487 (Austl).

[187] *See, e.g.*, Director of Pub. Prosecutions v. A. & B.C. Chewing Gum Ltd., [1968] 1 Q.B. 159, 164 (1967) (Lord Parker, C.J.) (stating that criminal courts admit evidence on ultimate issues even though this evidence is technically inadmissible).

[188] (1993) 66 A. Crim. R. 178 (Austl.).

[189] *See id.*

[190] *See id.* at 188; *see also* R v. Tonkin & Montgomery (1974) 1975 Q.R. 1, 43 (per Dunn,

In *Blackie v. Police,*[191] Justice Turner, in a dissenting judgment, also stressed the dangers of allowing any witness to answer the very question that the court has to decide.[192] However, he postulated an exception to the ultimate issue rule, applicable when it would be extremely difficult to arrive at the truth in any way other than the asking of questions that are likely to prompt answers in terms of ultimate issues. Even in such cases, he held that "it is indispensable that there must be both a high degree of skill and a complete impartiality in the witness called."[193]

It has become apparent, though, that many judges in Australia and New Zealand regard the ultimate issue rule as having outlived most of its usefulness.[194] Further, the rule reflects an artificial and unnecessarily sensitive approach to the abilities of juries to evaluate expert evidence. The notion of scientists and other experts usurping the role of the court commands less and less currency in Australia and New Zealand as the twentieth century draws toward its close.[195] The orientation of expert evidence common law is focussing upon the reliability of scientific evidence, rather than imposing artificial restrictions upon the ways in which expert witnesses are permitted to express their opinions.

J.) (suggesting jury instruction stating that experts' words are expressions, not conclusions, of law); *see also* R v. B [1987] 1 N.Z.L.R. 362 (discussing expert evidence substantially on a complainant's credibility); *accord,* R v. Accused [1989] 1 N.Z.L.R. 714 (Ct. App.).

[191] [1966] N.Z.L.R. 910 (C.A.).

[192] *See id.* at 918-19 (discussing problems associated with asking experts ultimate question).

[193] *Id.* at 920. Justice Turner found an exception to the rule in the case of "necessity" in *Samuels v. Flavel,* 1970 S.A. St. R. 256, 262 (Austl.). In *Samuels,* Chief Justice Bray noted that in the case of evidence of insanity within the M'Naghten Rule, "it is impossible for the opinion of the expert to be conveyed in any other form." *Id.; see also* Attorney-Gen. for S. Austl. v. Brown, 44 Crim. App. 100, 112-113 (Eng. 1960) (implying that medical experts should be given wide latitude in their use of terms).

[194] *See* Steven J. Odgers & James T. Richardson, *Keeping Bad Science out of the Courtroom — Changes in American and Australian Expert Evidence Law,* 18 U.N.S.W. L.J. 108, 128 (1995) (describing evidence of ultimate issue rule). However, in the important New Zealand cases on child sexual abuse accommodation syndrome evidence, the court of appeal relied in part upon the ultimate issue rule to decide that expert opinions were inadmissible. *See, e.g., Accused* 1 N.Z.L.R. at 721 (holding psychologist's evidence inadmissible in part because psychologist evaluates witness's credibility); R v. B [1987] 1 N.Z.L.R. 362, 369 (Ct. App.) (per McMullin, J.) (determining evidence to be inadmissible in part because psychologist judges witness's credibility).

[195] *See* Odgers & Richardson, *supra* note 194, at 111 (describing trend showing greater confidence in juries).

4. The Basis Rule

During the 1980s and 1990s, Australia developed an exclusionary rule under which expert opinion evidence is declared inadmissible if its bases are not proved.[196] This rule had been the law in New Zealand since at least 1978.[197] The rule, rather than the less predictable exercise of the prejudice/probative discretion in criminal trials, prevents expert witnesses from functioning as a covert conduit for others' views or for opinions not susceptible to reasoned evaluation because their bases are undisclosed or not properly proved. The rule's application has become an important part of ensuring that only evidence that has potentially significant probative value goes before the triers of fact. It may be that the rule's emergence is in part a recognition of problems encountered in the *Chamberlain* case, although it is not possible to prove this assertion.[198]

Chief Justice Gleeson of the New South Wales Supreme Court was specific about the contemporary existence of an exclusionary basis rule.[199] He held that because opinion evidence involves the drawing of inferences and conclusions from facts, the admis-

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[196] *See id.* at 125 (describing discretionary exclusion if factors are not met); *see also* R v. Lanigan, 1987 N. Ir. 367, 376 (Ct. App.) (explaining that facts upon which experts base their opinions must be admissible); R v. Abadom, [1983] 1 W.L.R. 126, 131 (Eng. C.A. 1982) (discussing development of rule through series of cases); Ritchie v. Pirie, 1972 J.C. 7 (Scot. H.C.J.) (disallowing expert opinion on blood alcohol content where defendant consumed alcohol after traffic accident but before blood test); Forrester v. H.M. Advocate, 1952 J.C. 28 (Scot. H.C.J.) (per Cooper, L.J. Gen.) (refusing to consider expert medical opinion based on evidence of which relevance and foundation was not established); Russell v. H.M. Advocate, 1945 J.C. 37 (Scot. H.C.J.) (addressing psychiatric evidence).

[197] *See* Bevan Invs. Ltd. v. Blackhall & Struthers (No. 2) [1978] 2 N.Z.L.R. 97, 123 (C.A. 1977) (concluding that "[t]he facts upon which an expert's opinion is based must be proved by admissible evidence").

[198] *See* Odgers & Richardson, *supra* note 194, at 112 (explaining argument that unjust result in *Chamberlain* was due to use of expert evidence).

[199] *See* R v. Perry (1990) 49 A. Crim. R. 243, 249 (Ct. Crim. App. N.S.W.) (per Gleeson, C.J.) (describing conditions for excluding opinion evidence). His Honour cited several recent cases as authority for this proposition. *See id.* (citing R v. Murphy (1989) 167 C.L.R. 94, 120 (Austl.); Ramsay v. Watson (1961) 108 C.L.R. 642, 648-49 (Austl.); Paric v. John Holland (Constrs.) Pty. (1985) 59 A.L.J.R. 844, 846; R v. Turner, [1975] 1 Q.B. 834, 840 (C.A. 1974); Harmony Shipping Co. v. Saudi Europe Line Ltd., 1 W.L.R. 1380, 1385 (Eng. C.A. 1979) (per Lord Denning, M.R.)). He indicated that "[t]here is a detailed discussion of this subject in the judgment of Beaumont, J. in *Trade Practices Commission v. Arnotts Ltd.* (1990) 21 FCR 324." *Perry*, 49 A. Crim. R. at 249 (per Gleeson, C.J.). Whether all of these cases are authority for the proposition asserted is doubtful.

sibility of such evidence depends upon proof or admission of the facts upon which the opinion is based. In an earlier case, a police officer had not been allowed to testify as an expert on the market value of cannabis on the basis that the proposed evidence was based on hearsay.[200] Although the officer undoubtedly knew the market price of cannabis, the knowledge was derived from what others had told him. These underlying facts, the court held, had to be proved by admissible evidence.[201]

The basis rule applies to both civil and criminal cases,[202] and increasingly functions as a means of excluding from triers of fact information for which the expert is acting as the source of others' undisclosed perceptions or opinions, and information of value that triers of fact cannot assess.

5. An Area of Expertise Rule

In 1996, Bernstein correctly pointed out that "Australia has had perhaps the most vociferous debate over scientific evidence outside the United States."[203] A series of inconsistent judg-

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[200] *See* R v. Gardner, 1980 Q.R. 531, 535 (C.A. Austl.) (per Lucas, J.).

[201] *See id.* (declaring that underlying facts must be admissible if opinion is to be given before jury). In *R v. Haidley & Alford*, 1984 V.R. 229 (Austl.) (per Young, C.J.), Chief Justice Young considered the admissibility of a well-known forensic psychologist's evidence. *See id.* at 234. He held that "it would have been necessary to prove by admissible evidence the facts upon which such an expert may base his opinion before the opinion can be received." *Id.* He further stated, "An expert could not, for instance, take a history from an accused person and then give evidence of his opinion upon that history unless the history had first been proved by admissible evidence." *Id.*; *see also* R v. Whitbread (1995) 78 A. Crim. R. 452, 456 (C.C.A. Austl.) (discussing inadmissibility of opinion based on inadmissibility of evidence); Freckelton, *Expertise of Forensic Psychologists*, *supra* note 146, at 73.

[202] *See* Ian Freckelton, *The Basis Rule*, *in* 1 EXPERT EVIDENCE, *supra* note 57, ¶¶ 11.10-11.720 (discussing admissibility rule in criminal and civil cases).

[203] Bernstein, *supra* note 35, at 148; *see generally* FRECKELTON, *supra* note 2, at 82-103 (discussing how admissibility of opinion evidence depends upon admissibility of underlying proof); A.L.C. LIGERTWOOD, AUSTRALIAN EVIDENCE ¶¶ 7.01-7.90 (1988) (focusing on Australian treatment of testimonial evidence); Judy Bourke, *Misapplied Science: Unreliability in Scientific Test Evidence* (pt. 2), 10 AUSTL. B. REV. 183, 186, 192 (1993) (discussing unreliability of scientific evidence, and proposing direct education of legal community and improved scientific standards as solutions); Ian Freckelton, *Expert Evidence and the Role of the Jury*, 12 AUSTL. B. REV. 73, 90-91 (1994) (noting recent recognition of rule that expert can only give opinion when bases of opinion have been proved by admissible evidence); Ian Freckelton, *Novel Scientific Evidence: The Challenge of Tomorrow*, 3 AUSTL. B. REV. 243, 253 (1987) (explaining rule that experts may not tender opinion based on mixed fact and law);

ments[204] has suggested that an exclusionary condition precedent may form part of Australian law[205] in relation to whether expert evidence falls within an area of expertise. However, the issue has not been finally determined by the highest courts in either Australia or New Zealand. The articulation of the principle thus far has been very limited. The concepts have been repeatedly mixed and courts have highlighted the consequences of unreliability of expert evidence, but nowhere have they clearly ruled on the criteria for admissibility. Nor have grounds been adumbrated to explain what constitutes "reliability" of scientific evidence under Australian law. The kind of indicia formulated to define what constitutes "unreliability" under United States federal law in *Daubert*[206] have not been replicated in Australian law.

One of the difficulties apparent on a review of Australian appellate decisions addressing the admissibility of scientific evidence is the loose use of terms such as "science" and "reliability." Both are frequently reified, clearly being invested with great significance but rarely being explicated or deconstructed. New Zealanders Robertson's and Vignaux's response to the imprecision with which, they argue, the law has dealt with the concept

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Ian Freckelton, *The Area of Expertise Rule*, *in* 1 EXPERT EVIDENCE, *supra* note 57, ¶¶ 9.10-9.310 (discussing different approaches to area of expertise rule); Freckelton, *supra* note 202, ¶¶ 11.10-11.720 (explaining shifting views of Australian courts on admissibility of evidence); Gerber, *supra* note 109, at 246-47 (criticizing *Chamberlain* court for admitting expert opinions that lacked proper basis); Paul Giugni, Runjanjic v. R, 14 SYDNEY L. REV. 511, 511, 517 (1992) (discussing case that sparked controversy over use of battered woman syndrome evidence); Oliver P. Holdenson, *The Admission of Expert Evidence of Opinion as to the Potential Unreliability of Evidence of Visual Identification*, 16 MELBOURNE U. L. REV. 521, 536 (1988) (stating rule that facts upon which expert opinion is based must be proven in order to render opinion admissible); Gordon Samuels, *Is This the Best We Can Do?*, 25 AUSTL. J. FORENSIC SCI. 3, 6 (1993) (criticizing courts for admitting results of scientific tests that were not conducted in accordance with accepted professional standards); C.R. Williams, *Evidence and the Expert Witness*, 26 AUSTL. J. FORENSIC SCI. 3, 4-7 (1994) (discussing admissibility of different types of expert opinions).

[204] These judgments have been from time to time determined per incuriam of key decisions.

[205] This rule probably does not apply in Victoria. *See, e.g.*, R v. Bartlett [1996] 2 V.R. 687.

[206] *See* Daubert v. Merrell Dow Pharms., Inc., 509 U.S. 579, 589-95 (1993) (discussing standard for admitting expert opinion scientific testimony in United States).

of "reliability" until and to some extent including *Daubert*, has been scathing. They argue that lawyers lack rigour in their use of the term:

> It is used at different times with at least four different meanings:
>
> - *Sensitivity* — can the technique be relied upon to produce usable results from the quantity and quality of material being examined?;
> - *Quality control* — are the factors which affect the outcomes of the tests understood, and were proper control procedures carried out to prevent outcomes distorted by unwanted elements, such as contamination?;
> - *Discriminatory power* — can this evidence, as used in forensic science, distinguish between individuals or only between relatively large classes of the population?;
> - *Honesty* — sometimes, regrettably, has the scientist told the whole truth about the tests, the observations, and the inferences?[207]

Because of their discomfort with the term "reliability," Robertson and Vignaux eschew it in their work, preferring "sensitivity," "quality control," "discriminatory power," and "honesty" as separate concepts. Their critique highlights the need to deconstruct the term "reliability" and for it to be given clear meaning so that judges, and potentially juries, are furnished with adequate information to determine whether scientific evidence can or cannot be classified as "reliable." This has the potential both to assist judges' rule-based exclusionary determinations in relation to scientific evidence and to inform the criteria for discretionary exclusions.

a. An Early Approach

Eleven years before *Frye v. United States*,[208] a Victorian case traversed the issues of admitting a newly emerging area of scientific expertise in the form of opinion evidence, and reached a similar result.[209] In the early years of the twentieth century, at-

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[207] BERNARD ROBERTSON & G.A. VIGNAUX, INTERPRETING EVIDENCE: EVALUATING FORENSIC SCIENCE IN THE COURTROOM 7-8 (1995).

[208] 293 F. 1013 (D.C. Cir. 1923).

[209] *See* R v. Parker 1912 V.L.R. 152, 152 (establishing fingerprint evidence as sufficient

tempts were made in Australia and New Zealand, as elsewhere, to introduce expert evidence of the then-emerging technique of fingerprinting. This appears to have been the first reported occasion upon which antipodean courts were called to determine the admissibility of evidence from a non-mainstream area of scientific or medical endeavour.

At first, courts in Australia and New Zealand entertained doubts about the uniqueness of a person's fingerprint. The focus was upon the lack of unanimity among "scientific men." The criterion for admission of the evidence employed by Chief Justice Madden in *R v. Parker*[210] is tantalizing in view of the later decision in *Frye v. United States*:

> We are asked to accept the theory that the correspondence between two sets of finger-prints is conclusive evidence of the identity of the person who made those prints as an established scientific fact, standing on the same basis as the propositions of Euclid or other matters vouched for by science and universally accepted as proved. *If this finger-print theory were generally recognized by scientific men as standing on this basis, there would be no more to be said.*[211]

His test for admissibility, therefore, appears to have been whether there was general recognition of the technique's legitimacy within the scientific community. His focus thereafter in the judgment was in pursuit of whether fingerprinting in 1912 could properly be described as having attained that status. However, Chief Justice Madden articulated nothing further as to whether he was seeking to introduce a new common law hurdle to the admissibility of scientific expert evidence. In light of this, it is probable that this was not his intention.

The Chief Justice noted that proponents of fingerprint evidence claimed that the markings on the fingers of any individual retained their special characteristics from cradle to grave, and that they were unique to the individual. However, he remarked that members of the scientific community disagreed, and expressed concern that the subject had not yet been studied sufficiently.[212]

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for conviction).

[210] *Id.*

[211] *Id.* at 154 (emphasis added).

[212] *See id.* Chief Justice Madden noted:

The Chief Justice was concerned with the evidence's reliability in light of the absence of information as to whether the witness' theories could be or had been tested. His Honour's concerns about the issue were highlighted by his reference to the peculiar character of such scientific evidence, so far removed from the experience of people's ordinary lives:

> This is that kind of evidence that is particularly dangerous, for it carries with it *a savour of mystery*, as in this case the detective swears that no two men's markings are alike, and it is assumed not only that is true, but that there is some mysterious brand implanted on man's hand for some definite purpose of characterizing him physically.[213]

Chief Justice Madden held that fingerprinting evidence from the alleged expert had been wrongly admitted — the print found on a ginger beer bottle "might have been made" by a number of people or "it might conceivably have been handled by the prisoner somewhere before it came to the owner of the house which was broken into."[214]

Justice Cussen agreed that the expert witness's statement, that "there could not be two finger-prints alike," should not have been admitted.[215] He reasoned that the testimony should be excluded "because their knowledge or the knowledge of anyone else on the subject does not profess to be based on any univer-

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> My difficulty arises from the fact that the subject of finger-prints has not been sufficiently studied to enable these propositions to be laid down as scientific facts. Finger-prints have been studied by Monsieur Bertillon in France from an anthropometrical point of view, and by Sir Francis Galton and a few others, doubtless highly intelligent persons, from the standpoint of mere observers. But the matter has not been investigated by scientists generally so that we can say that the propositions relied upon by the Crown are accepted scientific facts. But it is said that Detective Potter has himself examined 29,000 persons and found the finger-prints of no two alike. It must be assumed Detective Potter is a perfectly honest man. But let it be assumed that he was not an honest witness, but desired to injure the prisoner. How could his evidence be tested? He says he has examined 29,000 persons with this result. Who can say he has not, and how can his statement be tested on cross-examination?

Id.

[213] *Id.* at 154-55 (emphasis added); *see also* R v. Castleton, [1910] 3 Crim. App. 74 (Eng. 1909) (stating that fingerprint evidence alone cannot support conviction).

[214] *Parker*, 1912 V.L.R. at 156.

[215] *See id.* at 159 (agreeing to exclude evidence).

sal law, but is merely empirical."[216] In adopting such a stance, Justice Cussen articulated a somewhat curious prejudice in favor of positivist universalism in science and against rules, limited in terms of finite data, and open to contradiction at any time by contrary data.

By 1913, the New Zealand Supreme Court had a similar occasion to determine whether expert interpretations of fingerprint similarites were admissible.[217] However, the Court came to a fundamentally different result, based on reasons similar to those of Chief Justice Madden. It found that "in comparing prints of two individuals you may chance to find a close agreement as to a particular point, but the *whole weight of scientific testimony* shows that even this is rare."[218] Again, the court deferred to the proven preponderance of professional opinion in the scientific marketplace, but did not clearly enunciate a principle of evidentiary admissibility.

b. The Orthodox Position

The sad case of *R v. Camm*[219] represents the early orthodox position of Australian courts on the admissibility of scientific evidence. In general terms, it is still the law in England and arguably in New Zealand. Camm was charged with sexually assaulting a young Aboriginal girl, Rosie, a child under the age of ten. However, nobody was entirely sure of Rosie's age, except that she appeared to be quite young. The Crown called expert evidence on the subject, and two doctors swore that in their opinion, she was under ten. They based their opinion on the condition of her teeth. The defense objected to the admissibility of the expert evidence. The testimony was admitted and the accused was convicted and sentenced to life imprisonment. Camm appealed to the Queensland Supreme Court.

The Supreme Court held that the trial judge had properly admitted the evidence. Further, the trial judge had properly drawn the jury's attention to the nature of the skilled evidence

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[216] *Id.*

[217] *See* R v. Krausch [1913] 15 G.L.R. 664, 664-65 (H.C.) (discussing admissibility of fingerprints).

[218] *Id.* at 664 (emphasis added).

[219] [1883] 1 Q.L.J. & R. 136.

and had indicated its possible dangers.[220] The court held that the jury could weigh the scientific evidence, and it could also inspect the child to decide for itself. The court endorsed the English decision of *Carter v. Boehm,*[221] and accepted skilled expert opinion as admissible whenever its subject matter is such that inexperienced persons are unlikely to have the capacity to form a correct judgment without such assistance. The focus in *Camm* was on the trier of fact's need for the information, that need being a function of its esotericism. However, the evidence must "partake[] of the nature of a science" — a requirement construed in terms of the need for a formal course of study in order to attain the requisite knowledge.[222] It must be an organized body of knowledge, and not be readily accessible to the dilettante. However, there is no criterion that it be accepted generally among scientists skilled in the area or that it command any particular status of reliability. The key issues are the need for the scientific evidence (which could be consistent with a criterion of reliability) and its inaccessibility to the laity.

In the context of accident investigation, the then Chief Justice of the High Court in 1960 recapitulated the *Carter v. Boehm* requirements. The court held that experts could not testify about areas that were not part of a formal sphere of knowledge:

> On the one hand . . . it appears to be admitted that the opinion of witnesses possessing peculiar skill [the expertise criterion] is admissible whenever the subject-matter of inquiry is such that inexperienced persons are unlikely to prove capable of forming a correct judgment on it without such assistance [the common knowledge criterion], in other words, when it so far partakes of the nature of a science as to require a course of previous habit, or study, in order to the attainment of a knowledge of it [the expertise criterion]. . . . While on the other hand, it does not seem to be contended

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[220] *See id.* at 137 (noting trial judge's jury instructions).

[221] 97 Eng. Rep. 1162 (K.B. 1766) (holding that witness's opinion was inadmissible evidence because it lacked foundation other than information available to jury).

[222] *See Camm,* 1 Q.L.J. & R. at 137 (admitting doctors' age estimate as evidence).

> that the opinions of witnesses can be received when the inquiry is into a subject-matter the nature of which is not such as to require any peculiar habits or study in order to qualify a man to understand it.[223]

This formulation did not further advance the accepted criteria.

c. *The Dalliance with* Frye

The shift came in 1977, when the New South Wales Court of Appeal in *R v. Gilmore*[224] went some way toward introducing the *Frye* test into Australia. The court cited the United States case, adopted the "field of expertise" language, and applied the rule in the context of voice identification evidence.[225] Ironically, the *Gilmore* decision relied heavily on the case of *United States v. Baller*,[226] which expressly declined to follow the *Frye* general acceptance test. *Baller* held that every useful development must have its first day in court, and preferred admitting expert evidence and allowing its weight to be determined through cross-examination and inconsistent evidence.

In 1984, the issue was revisited in the influential South Australian decision *Bonython v. R.*[227] The question was the admissibility of police handwriting evidence.[228] Chief Justice King was explicit as to the tests courts must apply before admitting expert evidence:

> [T]he judge must consider and decide two questions. The first is whether the subject matter of the opinion falls within the class of subjects upon which expert testimony is permissible. This first question may be divided into two parts: (a) whether the subject matter of the opinion is such that a

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[223] Clark v. Ryan (1960) 103 C.L.R. 486, 491 (Austl.) (quoting J.W. Smith in his notes to *Carter v. Boehm*); *see also Camm*, 1 Q.L.J. & R. at 137 (adopting rule from *Carter*); R v. Faulkner [1987] 2 Q.R. 263, 265 (C.A.) (concluding that experts' general opinion on car crash would not assist jury); Mattioli v. Parker (No. 2), 1973 Q.R. 499, 506 (holding that experienced police officers investigating accidents are not exercising special skill required to form expert opinions).

[224] [1977] 2 N.S.W.L.R. 935.

[225] *See id.* at 941 (ruling that exclusion of voice identification expert evidence was error). *Gilmore* was followed in 1983 by the same court in *R v. McHardie & Danielson* [1983] 2 N.S.W.L.R. 733, 753-63. In *McHardie*, the court adopted the "field of expertise" language and rule. *See id.*

[226] 519 F.2d 463 (4th Cir. 1975).

[227] (1984) 15 A. Crim. R. 364.

[228] *See id.* at 366 (discussing requirements for admission of expert opinion testimony).

> person would be able to form a sound judgment . . . without the assistance of witnesses possessing special knowledge or experience in the area, and (b) *whether the subject matter of the opinion forms part of a body of knowledge or experience which is sufficiently organized or recognized to be accepted as a reliable body of knowledge or experience,* a special acquaintance with which by the witness would render his opinion of assistance to the court.[229]

Thus, the focus is on the need for a body of knowledge or experience to be accepted (in some way which is not defined) as "reliable." Again, reliability is reified and identified as an ultimate legal objective. In referring to "new or unfamiliar techniques or technology," Chief Justice King held that

> the court may require to be satisfied that such techniques or technology have a sufficient scientific basis to render results arrived at by that means part of *a field of knowledge which is a proper subject of expert evidence.*[230]

Unfortunately, His Honour did not proceed to the next step and articulate the criteria to be applied in reaching such satisfaction.

In 1986, the Queensland Supreme Court also had occasion to consider the criteria for admitting expert evidence, this time on the effects of wearing seat belts.[231] It was held on appeal that the trial judge must find that relevant technical or scientific knowledge exists and that the knowledge would not be within the scope of the trier of fact's usual knowledge. Although it was found that there was some room for difference of opinion as to whether the study of seat belts was a recognized field of knowledge, the trial judge did not err in admitting the testimony:[232]

> *If a subject is demonstrated to be a proper subject for expert evidence,* and it is a subject in which theoretical rather than empirical knowledge is important, or one in which theoretical as well as empirical knowledge is important, it appears to [be] that

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[229] *Id.* (emphasis added).

[230] *Id.* (emphasis added).

[231] *See* Eagles v. Orth, 1976 Q.R. 313, 320 (concluding that expert opinion testimony regarding seat belt use during automobile accidents was admissible).

[232] *See id.*

> an expert may express an opinion on the subject, based solely upon his study and evaluation of well-regarded publications.[233]

Significantly, the question asked is not in terms of the *Bonython* search for reliability, but the focus is upon whether academic (theoretical) or experiential (empirical) knowledge figures prominently.[234]

In a 1988 case concerning bush fire causation,[235] the South Australian Court of Criminal Appeal again referred to the general acceptance criterion enunciated in *Frye v. United States*[236] and applied in *United States v. Addison.*[237] The *Casley-Smith* court held that "there is no organized or recognized body of knowledge which either erects or amounts to any such principles, as scientific principles of universal application, or from which such principles may reasonably be extracted" as those advanced by the witness.[238] However, Justice Olsson held that, in general, the topics on which expert evidence was elicited "derive from or relate to a body or bodies of knowledge or experience which is sufficiently organized or recognized as to be accepted as a reliable body of knowledge or experience."[239] He found the wit-

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[233] *Id.* at 321 (emphasis added).

[234] *See id.* Further support for this approach may be found in an earlier High Court judgment of Chief Justice Dixon and Justices Kitto and Taylor. *See* Transport Publ'g Co. v. Literature Bd. of Review (1956) 99 C.L.R. 111 (Austl.) (holding that before evidence can be given on certain subject, proponent must show that subject requires special study or knowledge). The court held that only the opinions of one qualified by special training or experience are admissible. *See id.* at 119. This same criterion was stressed in *R v. McHardie & Danielson* [1983] 2 N.S.W.L.R. 733. The *McHardie* court held that the witness's evidence relating to tapes of telephone conversations was within a "field of specialist knowledge." *See id.* at 763. Moreover, the court found no good legal reason for rejecting the expert witness's opinions on the subject of voice identification "merely because his method of analysis of the output of the sonograph has not been used in a court before." *See id.* In *R v. Harris*, (1987) 1990 V.R. 310, Justice Ormiston once again employed the expression "field of expertise" in holding that voice recognition was not an area in which only experts could give evidence. *See id.* at 318. In making his decision, he particularly relied on expert evidence from a witness who maintained that there are relatively few means of distinguishing voices: intonation, accentuation, the quality and duration of segmented sounds, speed, expressed or apparent emotions, and dialect and "socialect" (pronunciation). *See id.* at 317-18.

[235] Casley-Smith v. F.S. Evans & Sons Pty. (No. 1) (1988) 49 S.A. St. R. 314.

[236] 293 F. 1013 (D.C. Cir. 1923).

[237] 498 F.2d 741 (D.C. Cir. 1974).

[238] *See Casley-Smith*, 49 S.A. St. R. at 326.

[239] *Id.* at 328.

ness competent to give evidence in some areas because they were areas of organized knowledge, but not competent in relation to others. The focus of Justice Olsson's approach was upon whether the subject matter's body of knowledge was sufficiently organized to be accepted as a reliable body of knowledge or experience. The decision is deferential to the relevant intellectual community, and the question it contemplates Australian courts asking is whether members of that community would consider the area to be "reliable." The test does not state how large a cross-section of the community would need to subscribe to the view that the area had become sufficiently organized. Nor is it clear what role "organization" within the area is to play in assessing reliability.[240] It accomplishes a kind of fusion of the *Frye* and *Daubert* tests.

In 1985, the Queensland Court of Criminal Appeal was asked to rule on the admissibility of odontology evidence about the similarity between bite marks found on the victim's body and the dentition of the accused. The appeal arose because of the pervasive shortcomings in the odontology evidence that had been demonstrated at trial.[241] The court referred to the absence of unanimity within the scientific discipline of odontology in relation to the reliability of comparing bruise marks with dental impressions, as well as multiple discrepancies in the evidence, in overturning the jury's decision as unsafe and unsatisfactory.[242] Justice Kneipp used the *Frye* test's language without specifically acknowledging its pedigree.

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[240] In *R v. Tilley* (1984) 1985 V.R. 505, Justice Beach found that "stylistic analysis of documents is a science." *Id.* at 509. In "appropriate cases," expert opinion based on such analysis could be received in evidence when the authenticity of documents was disputed. *See id.* In particular, the opinion was admissible to determine if words appearing in a certain document were the words of a particular person. *See id.* However, Justice Beach's analysis of the significance of classifying an area as a science or the logical consequences of such a decision was not developed further. *See id.* By 1992, Chief Justice Gleeson complained that it had not been proved in the case before him that stylometrics evidence was a recognized field of scientific expertise. *See* R v. Jamieson (1992) 60 A. Crim. R. 68, 77 (rejecting stylometrics evidence).

[241] *See* Carroll v. R (1985) 19 A. Crim. R. 410, 413-14, 424 (Ct. Crim. App. Vict.) (rejecting reliability of odontological evidence).

[242] *See id.* at 414 (describing weaknesses of odontological evidence).

The Northern Territory Court of Criminal Appeal in *R v. Lewis*,[243] shortly after the Queensland decision, considered similar evidence relating to bite marks on a victim and their similarity to the dentition of the accused. Justice Maurice specifically referred to the previous Queensland odontology case and commented that the principle articulated by the Queensland Court was similar, if not identical to, the rule established in *Frye*.[244] He held that

> It could not be asserted that the *Frye* test has become law in Australia; none the less it provides a useful guideline in determining whether novel forensic evidence should go before a jury, and it cannot be argued that the underlying concerns it was formulated to meet are not as important today as they were in 1923.[245]

Justice Maurice held that the jury should not have been permitted to place any reliance on the dentists' opinions. He determined that it did not really matter whether that conclusion was on the basis that the evidence was strictly inadmissible, or that its prejudicial effect far outweighed any probative value it may have had, or "simply that it would be unsafe to place any reliance on it."[246]

In the same case, Justice Muirhead noted pointedly that there was no universally established view as to the reliability of the technique in identifying, as opposed to excluding, a suspect. Implicitly, therefore, he too was looking at the general view of the viability of the technique, once again focussing upon the state of the informed perspective as a criterion for its admissibility or discretionary exclusion. Again, though, the inquiry was as to the intellectual marketplace's view of the technique's reliability.

In 1991, the clearest indication of the trend came in Australia's leading appellate decision on battered woman syndrome evidence.[247] Chief Justice King of the South Australian

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[243] (1987) 29 A. Crim. R. 267 (Ct. Crim. App. N. Terr.).

[244] *See id.* at 269.

[245] *Id.*

[246] *Id.* at 274.

[247] *See* Runjanjic & Kontinnen v. R (1991) 53 A. Crim. R. 362 (Ct. Crim. App. S. Austl.).

Supreme Court explicitly adopted a United States judgment that unmistakably employed the *Frye* test as the criterion for admitting novel psychological evidence.

Similarly, in a 1996 appellate decision on the admissibility of PCR DNA profiling evidence,[248] Chief Justice Hunt and Justice Hidden endorsed the *Frye* test's application in New South Wales. They noted that DNA testing had been accepted by the courts for some years as an acceptable scientific technique for identifying the source of bodily tissues, in accordance with the approach to scientific evidence generally adopted by the court in *R v. Gilmore.*[249] Their Honours conceded that the line of United States authority stemming from *Frye v. United States,* upon which *Gilmore* was based, had been reversed by *Daubert v. Merrell Dow Pharmaceuticals, Inc.*[250] However, they found that the principle on which *Frye* was based had not been overturned, but that the Federal Rules of Evidence superseded *Frye* in the United States.[251] The court held that New South Wales Courts should continue to adopt the approach accepted in *Gilmore* "until that decision has been further considered by this Court in the High Court."[252] The assumption appears to have been that *Gilmore* applied the *Frye* decision.

By contrast, the Victorian Court of Criminal Appeal expressly rejected *Frye*'s admissibility test in a 1994 decision on the admissibility of syndrome evidence to explain a complainant's behaviour after an alleged sexual assault.[253] The court noted the *Frye* test's acceptance in the South Australian decisions of *R v. Runjanjic & Kontinnen*[254] and *R v. C,*[255] but refused to fol-

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[248] R v. Pantoja (Feb. 6, 1996) N.S.W. Ct. of Crim. App. (unreported).

[249] [1977] 2 N.S.W.L.R. 935.

[250] 509 U.S. 579 (1993).

[251] *See Pantoja,* N.S.W. Ct. of Crim. App. (unreported).

[252] *See id.* The approach of Justice Abadee in the same case was somewhat different, with His Honour continuing the intermixing of the concepts of "reliability" and "general acceptance." *See id.* He did not doubt "that the DNA evidence generally is admissible as reliable, and otherwise meets the tests of admissibility." *See id.*; *see also Gilmore,* [1977] 2 N.S.W.L.R. at 940 (allowing voice analysis evidence); R v. Tillott & Ors (Sept. 1, 1995) N.S.W. Ct. of Crim. App. (unreported).

[253] *See* J v. R (1994) 75 A. Crim. R. 522, 536 (Ct. Crim. App. Vict.) (holding that child sexual abuse is not proper subject for expert opinion); *see also* R v. Bartlett [1996] 2 V.R. 687.

[254] (1991) 56 S.A. St. R. 114, 122 (holding that evidence of battered woman syndrome is admissible, subject to certain limitations).

[255] (1993) 60 S.A. St. R. 467, 473 (stating that battered woman syndrome is proper

low the test.[256] It held that if the trial judge is satisfied that there is a field of expert knowledge to which recourse may be had, it is no objection that the views of an expert within that field do not command general acceptance by other experts in the field.[257]

It is unclear, therefore, how many superior courts in Australia, if pressed, will unequivocally adopt the *Frye* general acceptance criterion for determining whether new scientific or psychological theories and techniques should be admitted as evidence. In a somewhat mixed version of the *Frye* test, a number of key cases have focused upon the views of the scientific community as to the "reliability" of a technique or theory. However, what constitutes "reliability" for forensic purposes has not been enunciated in Australia, save from time to time in terms of the general acceptance test.

In formulating the criteria to determine the substance of the "area of expertise" test, it appears likely that judges will borrow *Frye* language and focus upon the degree of dissension about any new technique within the scientific community. At the same time, it may well be that the inquiry focuses on the scientific community's views of the technique's reliability. The discretion to reject evidence when its prejudicial effect significantly outweighs its probative value affords an effective way to keep material that might be unduly misleading or confusing away from jurors. However, at present in Australia, the discretion lacks conceptual substance that might enable any consistency in its application. It plays a major role in regulating the admission of scientific evidence, but its invocation is erratic and inconsistent. The option of applying criteria derived from *Frye* or *Daubert* to evaluate the probative value of scientific evidence is likely to be availed of expressly by antipodean courts in the near future.

B. Federal and New South Wales Expert Evidence Reforms

In 1995, the federal and New South Wales governments largely implemented the recommendations of the Australian Law Reform Commission's reports on evidence law reform.[258]

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subject for expert evidence subject to certain qualifications).

[256] *See J v. R*, 75 A. Crim. R. at 536.

[257] *See id.* at 535.

[258] *See* AUSTRALIAN LAW REFORM COMM'N, INTERIM REPORT ON EVIDENCE 75-79, 409-18

Under the new statutes, the opinion rule does not apply if the witness has specialized knowledge and bases her testimony on that knowledge.[259] The opinion rule generally excludes evidence of an opinion to prove the fact about which the opinion is expressed.[260]

Under the statutory provisions, evidence of an opinion is not inadmissible because it is about a fact in issue, an ultimate issue, or a matter of common knowledge.[261] The area of expertise rule is not proscribed or expressly overturned. Nor is the basis rule. Thus, the situation is not dissimilar to the 1975 United States Federal Rules of Evidence in the context of the *Frye* rule.

However, it is clear that the Australian Evidence Acts are intended to constitute a code in the matters with which they deal. Reference can properly be made to the Australian Law Reform Commission Reports as a guide to the legislature's intention in passing the Acts in their current form. The reports make it clear that the Commission's intent was not to incorporate an area of expertise rule in the *Frye* form, and that the quality of scientific and other expert evidence was best left to regulation by the prejudice/probative discretion. This discretion applies to evidence in both the civil and criminal domains.[262] Similarly, the Commission plainly intended that expert evidence without proven bases could satisfactorily be dealt with by trial judges under their discretion to exclude. The statutory discretionary exclusion provisions are similar to those in the Federal Rules of Evidence.[263]

(1985) [hereinafter INTERIM REPORT] (discouraging exclusion of expert opinions); AUSTRALIAN LAW REFORM COMM'N, REPORT ON EVIDENCE ¶ 3 (1987) (stating need to reform evidence law).

[259] Section 79 of the Evidence Act states, "If a person has specialized knowledge based on the person's training, study or experience, the opinion rule does not apply to evidence of an opinion that is wholly or substantially based on that knowledge." Evidence Act, Austl. C. Acts No. 2, § 79 (1995).

[260] Section 76 states the "opinion rule": "Evidence of an opinion is not admissible to prove the existence of a fact about the existence of which the opinion was expressed." *Id.* § 79.

[261] *See id.* § 80.

[262] *Compare* INTERIM REPORT, *supra* note 258, *with* Polycarpou v. Australian Wire Indus. [1995] 36 N.S.W.L.R. 49, 62 (describing uncertain common law position in relation to civil matters).

[263] *See* FED. R. EVID. 403 (excluding relevant evidence if likelihood of prejudice, confusion, or waste of time substantially outweighs probative value). Thus, much work is

As yet, there are no significant decisions on these provisions. However, it is likely that, aside from the abolition of the common knowledge rule, the provisions will not make significant practical differences in Australian law. Expert opinions which bases are not proved will, for the most part, continue to be excluded, but now under the discretionary provisions. Witnesses whose relevant expertise is not demonstrated will not be allowed to testify. Opinions on ultimate issues will be offered relatively rarely, on the basis that good advocacy often entails not dictating to triers of fact, but engaging them in the reasoning process and encouraging them to make the last logical step. The major issue to be resolved will be the fate of the emerging area of expertise rule.

In my view, the controversy over the area of expertise rule in Australia will shift to putting flesh on the unruly beast of the prejudice/probative value discretion. It could quite plausibly be argued, for instance, that expert opinions lack probative value[264] if their reliability is not established — either under the *Frye* criterion or pursuant to *Daubert* indicia.[265] The groundwork for this has already been laid under Australian common law. Commentators and practitioners alike are awaiting superior court guidance.

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left to be done by the discretionary provisions. Section 135 of the Evidence Act provides that "[t]he court may refuse to admit evidence if its probative value is substantially outweighed by the danger that the evidence might: (a) be unfairly prejudicial to a party; (b) be misleading or confusing; or (c) cause or result in undue waste of time." Under section 137, "in a criminal proceeding, the court must refuse to admit evidence adduced by the prosecutor if its probative value is outweighed by the danger of unfair prejudice to the defendant." The term "probative value" is defined in the Acts' "Legislative Dictionary" as "the extent to which the evidence could rationally affect the assessment of the probability of the existence of a fact in issue." Probability can usefully be defined as "a rational measure of the degree of belief in the truth of an assertion based on information." ROBERTSON & VIGNAUX, *supra* note 207, at 14.

[264] One could even argue that expert opinion lacks relevance if it is unreliable.

[265] Courts have been prepared to make decisions upon statistical evidence, determining on some occasions that evidence which is inculpating, but not to a major degree, should be excluded as being more prejudicial than probative, but on other occasions allowing it to be admitted on the basis of its providing useful, relevant information for the triers of fact to take into account. *See, e.g.*, Police Dep't v. Amoa Amoa (Aug. 11, 1993) Ct. App. of Cook Islands (unreported) (finding that DNA likelihood ratios were as low as 72 and 40 in Cook Islands).

C. New Zealand Reforms

In 1991 the New Zealand Law Commission, under the guidance of Sir Kenneth Keith, proposed comprehensive reforms of evidence law. At the time of this writing, the process is continuing. The Commission recommended defining an expert as "a person who has specialized knowledge or skill based on training, study or experience."[266] The suggested definition of "expert evidence" is "evidence offered by and based on the specialized knowledge or skill of an expert and includes evidence given in the form of an opinion."[267] The Commission proposed that a witness be permitted to give "expert evidence that is opinion evidence in a proceeding if that opinion evidence will help the court or jury to understand other evidence in the proceedings or to ascertain any fact that is of consequence to the determination of the proceeding."[268] It recommended that expert evidence only be admissible upon the giving of notice by the party proposing to call it, including a statement of the substance of the evidence. Like the Australian Law Reform Commission before it, the Commission recommended abolishing the ultimate issue and common knowledge rules.

The New Zealand Commission traversed more territory than its Australian cousin by permitting the appointment of experts in civil cases, either *ex mero motu* or on application of the parties. It noted the existence of such powers in the New Zealand High Court, but observed that the powers are "not, at the moment, often used."[269] In looking at the appropriateness of the exercise of such power in the criminal context, it welcomed submissions, but commented that the concept of court-appointed experts is only feasible in criminal cases if there is an entirely new approach to the investigation of crime. The court would have to control the process and appoint experts who would act on court instructions. However, the accused would still be free to call contrary evidence.[270]

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[266] NEW ZEALAND LAW COMM'N, *supra* note 135, at 51.

[267] *Id.*

[268] *See id.* at 52.

[269] *See id.* at 38.

[270] *See id.* at 39.

V. A NEW SCIENTIFIC RIGOUR? SYNDROME EVIDENCE IN AUSTRALIA AND NEW ZEALAND

In both Australia and New Zealand, a series of cases has focussed judicial minds upon the admissibility of psychiatrists' and psychologists' evidence about child sexual abuse. The stringent approach courts have developed is likely to guide and inspire the development of the law in relation to scientific evidence generally. The cases have rigorously assessed the expertise of the experts called, and closely evaluated the utility of their testimony in terms of its counterintuitive usefulness, in the context of determining the admissibility of the evidence.[271]

In the first of the sequence of cases, the prosecution sought to call myth-dispelling evidence to explain child complainants' failures to disclose or report coherently.[272] The New Zealand Court of Appeal rejected the evidence and pronounced that

> as child psychology *grows as a science* it may be possible for experts in that field to demonstrate as matters of expert observation that persons subjected to sexual abuse demonstrate certain characteristics or act in peculiar ways which are so clear and unmistakable that they can be said to be the concomitants of sexual abuse.[273]

Inherent within the analysis was the requirement that the area have matured as a science in its potential for falsifiability and its capacity, in principle, for being disproved.[274] In 1989, the prosecution[275] asked the Court of Appeal to go further and to hold that "child abuse syndrome evidence" was admissible. In a very strong judgment, the court refused to do so, finding that it had not been properly established that children subject to sexual abuse demonstrate characteristics or act in ways that are so unmistakable that they can be said to be concomitants of sexual abuse. The court found that expert evidence in this field was

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[271] *See* Ian Freckelton, *Child Sexual Abuse Accomodation Evidence: The Travails of Counterintuitive Evidence in Australia and New Zealand*, 15 BEHAV. SCI. & L. 247 (1997).

[272] R v. B [1987] 1 N.Z.L.R. 362 (Ct. App.).

[273] *Id.* at 368 (citations omitted) (emphasis added).

[274] For a discussion of this criteria, see the provocative comments of New Zealanders Bernard Robertson and G.A. Vignaux, *supra* note 207, at 4.

[275] R v. Accused [1989] 1 N.Z.L.R. 714 (Ct. App.).

not yet able to indicate with a sufficient degree of compulsion the features establishing the truthfulness of a complaint's evidence.[276]

Apart from rejecting the evidence as impermissibly intruding upon the jury's role to assess credibility, the court held that the area of knowledge had not developed to a point where, as a matter of logic, the expert's assertions could be given probative value because of the practioner's inability to advance refutable propositions. The South Australian decision of *R v. C*[277] took a similar approach. Chief Justice King assumed, for the purpose of discussing the issue, that there was a scientifically accepted body of knowledge concerning the behaviour of child sexual abuse victims, although this had not been established in the child psychiatrist's evidence in question.[278] He held that the vital question for determining admissibility was whether the subject matter of the proposed evidence "is so special and so outside ordinary experience that the knowledge of experts should be made available to courts and juries."[279] He found that courts "must exercise great caution in expanding the area of expert evidence."[280] Again, therefore, it was the primitive state of the counterintuitive expertise that was held to preclude its admissibility.

The most important decisions on the subject, though, are those of the Victorian Court of Criminal Appeal, in *J v. R*,[281] and of the New South Wales Court of Appeal, in *F v. R*.[282] In *J v. R*, the Victorian Court of Appeal expressly rejected the *Frye* test as part of Victorian law. Additionally, the court systematically evaluated a leading psychiatrist's testimony and concluded that his qualifications had not been adequately established, his evidence was profoundly unclear, key concepts had not been explained, the bases of his opinions were not apparent, and the purpose of his evidence had not been made sufficiently clear to

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[276] *See id.* at 720-21.

[277] (1993) 60 S.A. St. R. 467 (S. Austl.).

[278] *See id.* at 473.

[279] *See id.* at 474.

[280] *See id.*

[281] (1994) 75 A. Crim. R. 522 (Ct. Crim. App. Vict.); *see also* Freckelton, *Expertise of Forensic Psychologists*, *supra* note 146, at 73; Freckelton, *Judicial Pedagogy*, *supra* note 146, at 79.

[282] (1995) 83 A. Crim. R. 502 (Ct. Crim. App. N.S.W.).

the jury. Again, though, whilst the court was prepared to contemplate admitting evidence to explain why children may not complain of or report being sexually violated, it expressed dissatisfaction with the absence of authoritative expert evidence about children's consistent responses to sexual abuse.[283] Implicitly its demand, therefore, was for scientific evidence (incompatible with generalized counterintuitive evidence) that bore probatively upon whether the particular child complainant had behaved in a way consistent with the prosecution's contention that she had been sexually violated. Not only was the court looking for evidence that was more than myth-dispelling, but it was looking for scientific evidence that was rigourously relevant to the facts of the particular case — evidence that the prosecution could not lead and that the expert could not give.[284]

The same approach in this latter regard was taken further in *F v. R.* In this criminal case, the prosecution sought to call a specialist pediatrician, to whom the complainant had been taken for a physical examination after allegations of sexual assault had been made. The pediatrician had taken a history of sexual abuse from the complainant. At trial, the prosecutor was allowed to ask questions of the pediatrician in relation to literature about the effects of sexual abuse, and about whether children delay in making complaints. She gave evidence of what she termed "accommodation syndrome," referring to the writings of Roland Summit.[285] She did not say that, in her opinion, the complainant was affected by the syndrome or that the behaviour of the complainant was consistent with such a syndrome. Here, evidence was confined to being myth-dispelling. The court found that much of what the pediatrician said in her testimony, whilst it might apply to victims of sexual abuse, could also apply to all manner of people in a wide variety of circumstances.

> It is not only abused children who feel helpless or powerless, or who delay in making complaints of conduct which victimizes them, or who disclose information piece by piece for the

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[283] *See J v. R*, 75 A. Crim. R. at 532.

[284] *See* Ian Freckelton, *Counterintuitive Evidence*, 1997 J. L. & MED. 302.

[285] *See generally* R. SUMMIT, CHILD ABUSE AND NEGLECT (1983).

> purpose of testing the water. Many victims of crime delay in reporting it because it occurred in circumstances subjecting them to fear or shame.[286]

The court found that because the pediatrician was not a psychiatrist or a psychologist, she should not have been permitted to testify about these issues. However, more importantly for present purposes, the court also expressed concern about the use to which a jury might put allegedly counterintuitive evidence of the kind given by the witness:

> Presumably the corollary of the proposition that some children delay in complaining of sexual abuse is that other children do not delay. Presumably the corollary of the proposition that some children, for good and sufficient reason, make complaints which are inconsistent, is that other children make complaints which are consistent. From one point of view, the evidence, if taken at face value, might be regarded by a jury as destroying the utility of seeking to test the evidence of a complainant by examining the circumstances and the content of complaints.[287]

The court expressed its dissatisfaction with the semantic content that the pediatrician's counterintuitive information was conveying to the jury. It queried whether the evidence was intended to suggest that inconsistency in a complainant's disclosure can never reflect adversely on the reliability of a complainant, and, if not, in what circumstances would such inconsistency be a useful guide to a complainant's reliability.[288] In this regard, a good argument can be made that the court misunderstood the nature of myth-dispelling evidence. Such evidence is led to enhance the fact-finding process by factoring out a source of error, such as, for example, that children who are sexually assaulted would tell their mother, or report it to their teacher, or provide clear details when they disclose and not diverge from them.[289] However, the significant issue arising out of the approach adopted by the New South Wales Court of Criminal Appeal is its preparedness to analyze the substance of the myth-dispelling material and the use to which, in the particular cir-

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[286] *F v. R*, 83 A. Crim. R. at 507.

[287] *Id.*

[288] *See id.* at 508.

[289] *See* Freckelton, *supra* note 271, at 197.

cumstances of the case, the triers of fact would be able to apply it. This is itself a more sophisticated evaluation of proffered expert evidence than has hitherto been apparent in most Australasian cases.

The court also expressed reservations about the employment of the term "syndrome," noting that it "is one that is not always associated with scientifically rigorous analysis."[290] Accordingly, the court held that the syndrome had not been shown to be a "fit subject for expert opinion."[291] It expressed the view that if the term "syndrome" were to be used, then the label should be accompanied by some explanation of how cases in which delay or inconsistency are to be attributed to the syndrome should be distinguished from those in which delay or inconsistency indicate unreliability on the part of the complainant. Again, therefore, the court's concern was to facilitate the capacity of the triers of fact to evaluate the information provided by the expert witness.

The court found that the problems posed by the evidence were exacerbated by the trial judge's failure to explain to the jury how it could legitimately use the evidence. However, the court noted that this was "hardly surprising" when the pediatrician's evidence appeared to be that "some children conceal abuse when they feel threatened; some children conceal abuse when they feel safe; some children disclose abuse when they feel threatened; some children disclose abuse when they feel safe."[292]

An issue increasingly apparent through the sequence of cases in both countries on the admissibility of child abuse evidence is a requirement that, qualitatively, the evidence be of a kind that would advance the deliberations of a tribunal of fact. The various courts have recoiled from a form of evidence that appears to fall within the category of "unfalsifiable," in that its theories contain ineluctable ambiguities, leading to dangers that jurors will misconstrue the conclusions left open for it to draw from the information. The call, in *F v. R*, for "scientific rigour" is apparently to be interpreted, at least in part, by a requirement that expert evidence be falsifiable in terms of being able to

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[290] *See F v. R*, 83 A. Crim. R. at 508.

[291] *See id.* at 509.

[292] *Id.* at 508.

distinguish the symptoms exhibited by children who are sexually abused from those exhibited by children who are not sexually abused.[293] This may be a misunderstanding of the nature of counterintuitive evidence and of the use to which the originator of the child sexual abuse accommodation syndrome (or pattern) wished it to be put.[294] It is, however, indicative of the courts' determination to ensure that evidence make its way to juries in a form that will enable them to evaluate its scientific utility. Henceforth, it would seem that in Australia and New Zealand, evidence held out to be myth-dispelling will only be allowed if it is shown that there are relevant myths prevalent in the community, that the myths actually are myths, that the expert material will dispel them, that the expert is qualified to express the views, and that the evidence will advance the jury's evaluation of the facts in the case.

VI. A SURVEY OF THE AUSTRALIAN JUDICIARY

Little is known about contemporary judges' views on scientific evidence, other than what they say extrajudicially and what can be discerned from their judgments. In 1996 and 1997, through the Australian Institute of Judicial Administration, an attempt is being made to fill this empirical gap and to ascertain in a practical way how Australian judges are viewing the scientific evidence presented before them. Thus far, a pilot survey of judges on the subject of expert evidence has been conducted.[295] It is a precursor to a survey of all Australian judges that this author will administer by survey instrument during May, 1997. The purpose of the pilot was to evaluate the form of the draft survey instrument and to obtain feedback on the sufficiency and direction of questioning. Surveys of judges are very rare in Australia, but include an abortive attempt tried as part of the Sentencing Reference in 1980 by the Australian Law Reform Commission and a small survey of judges in Victoria, also on the subject of sentencing.[296]

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[293] *See id.* at 509.

[294] *See* SUMMIT, *supra* note 285, at 1992.

[295] It was designed through a process of consultation with judges, trial lawyers, psychologists, researchers, and academic lawyers in Australia, the Netherlands, England, and the United States.

[296] *See* P.F. Brown & C.M. Steger, *The Perception of the Efficacy of Pre-Sentence Reports Submit-*

The major objectives of the survey project are to obtain empirical data on judges' perceptions of aspects of expert evidence that pose a problem for the fact-finding process and to elicit data on solutions the judges have identified. There are significant pressures in Australia to remove criminal trials of particular complexity from juries because of the alleged difficulties that jurors experience in evaluating complex technical evidence. There are also concerns about the quality of the evidence given by expert witnesses, and the effectiveness of lawyers' interaction with scientists, medical practitioners and other experts.[297] These concerns extend to pretrial preparation, as well as examination-in-chief and cross-examination.[298]

Judges have a unique perspective of the travails of jurors in such situations, and thus a valuable contribution to the quality of the performance of experts and lawyers. Judges can also comment on the extent to which any difficulty in comprehensibility is not inherent in the subject matter, but is attributable to inadequate communication skills among the forensic experts and the lawyers calling and cross-examining the expert witnesses.

Fourteen judges responded to the pilot study, with a broad cross-section of judicial backgrounds, including appellate, criminal, family, personal injury, and commercial/equity law. Three had served for between two and five years; six for between six and ten years, four for between eleven and twenty years and one for over twenty years. Eight were male, six were female. Because of the numbers involved in the pilot study, its primary utility is in the design of the final survey instrument. Thus, the extent to

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ted to Victorian Courts, in EVALUATIONS OF PRE-SENTENCING REPORTS IN VICTORIA BY LEGAL PROFESSIONALS (1988).

[297] *See* Anthony Champagne et al., *An Empirical Examination of the Use of Expert Witnesses in American Courts*, 31 JURIMETRICS J. 375, 376 (1991). The authors put the quest well:

> Some claim that expert witnesses are simply well-paid prostitutes who sell their testimony to the highest bidder; that the courtroom battles between these experts leave juries and judges more, rather than less, confused; that experts who testify are frequently unqualified; that juries and judges cannot distinguish good expert testimony from bad; and, that certain kinds of experts, such as mental health professionals, engage in little more than speculation or render personal opinion cloaked in scientific jargon.

Id. (citations omitted).

[298] *See id.* (discussing selection, characteristics, recruitment, and impact of expert witnesses).

which generalizations can be made from the results is limited. However, many of its results are usefully indicative and parallel findings in United States surveys.

Approximately two-thirds of the judges responding said that experts were occasionally called to give expert evidence in cases that they heard; about a third said that they were usually called.[299] Three-quarters said that the same expert witnesses appeared regularly before them for the same side in litigation. This attests both to the comparatively small expert witness pool available in most areas — even in the cities in excess of a million people in Australia — and to the pattern of experts frequently contending for a similar kind of opinion. It need not denote expert witness bias. Thirty-one percent of the judges who responded to the question (n=13) said that they "occasionally" found expert evidence useful, while fifty-four percent said that they "usually" found it useful. The figures neither constitute a ringing endorsement nor a powerful indictment of the quality of expert evidence.

Sixty-one percent of the judges said that they "occasionally" encountered bias in expert evidence, thirty-one percent said that they "usually" did.[300] However, in a question in a separate part of the instrument, every judge responding to the question (n=12) indicated that they had encountered partisanship in expert witnesses. Three-quarters of the judges said that this phenomenon constituted a problem for the quality of fact-finding in their court.

Nearly half said that they occasionally found the oral or written language of the expert difficult to understand; just over half said that this only occurred occasionally. Sixty-one percent said that they occasionally encountered failure by experts to stay within the parameters of their expertise.[301] Just under half of

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[299] *But see* Samuel R. Gross & Kent D. Syverud, *Getting to No: A Study of Settlement Negotiations and the Selection of Cases for Trial*, 90 MICH. L. REV. 319, 337 n.53 (1991) (reporting that of 529 civil trials surveyed, 83% included evidence from at least one expert, with average being two expert witnesses per trial).

[300] *See* Champagne et al., *supra* note 297, at 390 (reporting that 70% of judges described themselves as concerned that expert witnesses could not be depended upon to be impartial).

[301] *See id.* at 390 (stating that 60% of judges expressed concerns that experts tried to testify beyond their expertise).

the respondents (n=13) "occasionally" encountered a failure to prove the bases of an expert's opinion, while just over half "rarely" did so. Nearly half stated that they "rarely" encountered nonresponsiveness by the expert to questions, while the same number, just under half, said that they encountered nonresponsiveness "occasionally." When pressed to identify the single most serious problem encountered with expert evidence, approximately two-thirds of the judges identified bias as the greatest difficulty, while around one-third identified inadequate cross-examination as the major problem.[302]

The results of the Australian pilot study can usefully be contrasted with the Shuman team's[303] 1994 extensive survey of American lawyers, judges, jurors, and experts. Seventy-nine percent of the judges surveyed by the Shuman team "often" considered expert evidence crucial, and that it was "rarely" too technical for them. Curiously, though, thirty-seven percent expressed the view that experts employed unnecessarily technical language. Forty-seven percent of the judges surveyed by the Shuman team thought that expert evidence was "rarely" too technical for jurors. However, seventy percent of the lawyers surveyed believed that jurors understood expert evidence, while eighty-seven percent of the lawyers believed that judges understood it.

Forty-two percent of the United States judges were concerned about experts' lack of integrity; sixty-eight percent about their lack of impartiality; forty-two percent about their propensity to testify in areas beyond their field of expertise; and twenty-one percent about experts having more "show than substance."[304] These latter figures powerfully underline the North American mistrust of expert witnesses.

Shuman and colleagues report that seventy-nine percent of the judges responding did not think that expert witnesses could be depended upon to be impartial; forty-two percent thought that there were problems with experts testifying in areas in

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[302] Two respondents answered in terms of two problems being the "single most serious" one.

[303] *See* Daniel Shuman et al., *An Empirical Examination of the Use of Expert Witnesses in the Courts — Part II: A Three City Study*, 34 JURIMETRICS J. 193 (1994) (examining expert witness survey in Baltimore, Seattle, and Tucson and reporting that differing expectations of legal system are problematic in presentation of expert testimony).

[304] *See id.* at 203-04.

which they were unqualified; sixty-three percent thought that experts were discernibly biased in favour of the side paying them; and sixty-eight percent expressed the view that the worst characteristic of expert witnesses was that they could not be depended upon to be impartial. Fifty-seven percent of the respondents to the Shuman survey said that they thought of experts as hired guns giving biased testimony.

A major problem reported by the judges responding to the Australian pilot study was the performance of advocates in posing questions to experts in direct examination. Eighty-five percent encountered a failure by counsel to appropriately pose questions "occasionally" or "usually." This was matched by a corresponding concern with the quality of cross-examination; thirty-one percent "usually" finding a failure by cross-examiners to make expert witnesses accountable, and fifty-four percent "occasionally" encountering the problem. If expert evidence is playing a significant role in a high percentage of these cases, these perceptions are very important.

Judges tended to have a high opinion of their capacity to understand the expert evidence. Just under half of the Australian judges responding to the pilot questionnaire were of the view that they had "never" encountered evidence that they were not able to evaluate adequately because of its complexity. However, just over half conceded that this had happened "rarely" or "occasionally." Of those indicating such a problem, they reported its incidence roughly equally among science, accounting, engineering, and statistics. When pressed to identify the most difficult field to evaluate adequately, compliance with the question was so low as to preclude worthwhile conclusions, and evenly distributed among accounting, engineering, statistics, and planning evidence.

Respondents were asked to assess the "usefulness of the written reports" tendered before them. Over two-thirds assessed them as "reasonable." Equal numbers found lawyers to have played a part in "settling the content" of reports "rarely" or "never," on the one hand, and "occasionally" or "usually" on the other. Approximately three-quarters were of the view that such a phenomenon hindered the judge's assessment of the weight to be given the expert's evidence.

In the Australian study, respondent judges were asked a series of questions about the quality of the advocacy (in the context of leading expert witnesses or cross-examining them) and the giving of evidence by experts who were called before them. The object of the questions was to determine if they regarded defective advocacy as a key to comprehension problems and to determine if they believed that further training of advocates and forensic experts would provide a useful remedy.

Nearly two-thirds of the judges responding expressed the view that most advocates appearing before them elicited evidence "poorly" from expert witnesses. While the remainder regarded the performance of advocates as "reasonable" in mastering the technical issues, about half found the difficulty to have resulted, at least in part, from inadequate preparation of the expert by their lawyers. Just over half identified poor eliciting of evidence to be, at least in part, the problem. Thus, judges isolated a range of lawyers' deficient practices, with the result that expert witnesses were not asked the questions that they should have been. Such practices impaired the quality of the information ultimately placed before the triers of fact, and inevitably impacted the quality of decision-making.

Over three-quarters of the judges were of the view that most advocates appearing before them made expert witnesses accountable by cross-examination "poorly" (twenty-nine percent) or only "reasonably" (fifty percent). Eighty-five percent found inadequate preparation by the cross-examiner to be a significant reason; sixty-two percent identified lack of skill on the part of the cross-examiner. About a third specified confusion in the use of terminology as a significant problem, while approximately a quarter identified undue repetition in the evidence. Two-thirds of the respondents expressed the view that the failure to make expert witnesses accountable was a significant problem for the fact-finding process in their court.

Thus, it can be said that the judges answering the survey instrument in its pilot form have clearly indicated dissatisfaction with the quality of direct and cross-examination by Australian trial lawyers, expressing the opinion that the defects in advocacy and preparation are having a deleterious impact upon the task of the triers of fact.

Eighty-five percent of the respondent judges said that they experienced difficulty in evaluating the opinions expressed by one expert as against another "rarely" or "occasionally." When pressed to isolate the most serious of the factors responsible for the difficulty, just under one-half identified poor cross-examination of the witnesses; about a quarter identified the complexity of the evidence; while just over two-thirds classified the fundamental irreconcilability of the experts' views as the factor most responsible.[305]

A number of questions in the pilot survey focussed upon the utility or otherwise of further training experts in terms of their interface with the legal system. All respondents expressed the view that further training of experts in their forensic function was desirable (fifty-four percent), necessary (eight percent) or essential (thirty-eight percent). Sixty-nine percent of the respondents expressed the view that further training would be helpful in relation to the limits of the expert's role; seventy-seven percent in relation to preparation, content, and layout of expert reports; seventy-seven percent in relation to communication skills in the courtroom, such as how to answer questions, referring to additional material, and the use of visual aids; and thirty-eight percent in relation to knowledge of the law that relates to their field of expertise. When pressed to isolate the single most important area upon which further training should concentrate, thirty-eight percent of the judges answered preparation, content, and layout of expert reports, while fifty-four percent answered communication skills in the courtroom.

All judges were of the view that jurors had "occasionally" or "usually" understood the expert evidence before their summing up of evidence and more than two-thirds expressed the view that their summing up was "usually" helpful to assist jurors to understand and evaluate the expert evidence.

Eighty-six percent of the judges responding to the question (n=7) expressed the view that some matters involving complex and conflicting expert evidence should be withdrawn from jurors and be determined by judges alone or by some other means. If

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[305] Again, there was non-compliance with answering the questions seeking identification of "which one of the following factors has been the most responsible."

the major survey elicits a similar expression of opinion, the practice of a significant percentage of judge-alone trials, already in existence in New South Wales, for example, will likely be implemented in other jurisdictions by legislation.

It is standard in Australia for witnesses, including experts, to be excluded from court until they have given their evidence.[306] The practice has evolved to reduce collusion among witnesses and the proliferation of disputes about technical niceties. It also results in reduced expenditure of expenses on witness attendance at court. However, the reasons for the difference in Australian practice from the reverse position in England are not readily apparent.[307] It is significant that all judges responding (n=12) answered that it is helpful to have expert witnesses in court to hear the evidence of other expert witnesses.

Almost equal proportions of judges responded that they had used the voir dire procedure to determine the admissibility of expert evidence "never" (thirty percent), "rarely" (forty percent), and "occasionally" (thirty percent). Three-quarters rejected the suggestion that reliability of expert evidence should be a condition precedent to its admissibility, while about half answered that falsifiability should not be a criterion for determining reliability as a condition precedent to the admissibility of expert evidence. Judges were nearly equally divided in their answers to the question of whether the courtroom is a forum in which the reliability of expert theories and techniques can be adequately evaluated, with fifty-four percent indicating that it was, and forty-

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[306] *Compare* R v. Tait (1962) 1963 V.R. 520, 522-23 (noting that judges customarily exclude witnesses from court in civil and criminal trials, but they ultimately have discretion), R v. Bassett, 1952 V.L.R. 535, 539 (inferring that judges customarily exclude witnesses), *and* R v. Bicanin (1976) 15 S.A. St. R. 20, 26 (inferring that judges customarily exclude witnesses), *with* FED. R. EVID. 615 (stating that courts should exclude witnesses upon request), Geders v. United States, 425 U.S. 80, 88, 91 (1976) (stating that criminal defendant is lone exception to witnesses subject to judge's broad sequestration powers), *and* Miller v. Universal City Studios, 650 F.2d 1365, 1372-74 (5th Cir. 1981) (discussing Federal Rule of Evidence 615 and noting that it is violated by allowing sequestered expert witness to read trial transcript).

[307] *See* Roderick Munday, *Excluding the Expert Witness*, 1981 CRIM. L. REV. 688, 689 (stating that reason for not sequestering expert witnesses in England is to allow expert to give opinion on facts offered by other testifying witnesses); *see also* Ian Freckelton & Hugh Selby, *Examination-in-Chief of the Expert Witness*, *in* EXPERT EVIDENCE, *supra* note 57, ¶¶ 2.10-2.390 (stating that Australian law focuses on whether parties can justify allowing expert to remain in court).

six percent that it was not. The fact that so many judges adhered to the view that such complex issues as technique quality could adequately be assessed by lay decisionmakers is significant.

Patterns of excluding expert evidence on the basis of the admissibility rules were unclear and analysis, for the most part, needs to await the full survey. However, of interest is the fact that while some two-thirds of the respondents had not excluded evidence under any of the exclusionary rules more than five times, about a third had excluded opinion evidence under the newly emerged basis rule, and a similar number under the ultimate issue rule; while about a quarter had under each of the expertise, common knowledge, and basis rules. Over a third of the judges were in favor of abolishing the ultimate issue rule. Otherwise, the overwhelming response was in favor of the maintenance of the expertise rule (one-hundred percent); the area of expertise rule (one-hundred percent); the common knowledge rule (ninety percent); the basis rule (one-hundred percent); and the prejudice/probative discretion (ninety percent).[308] In light of the apparent weakening of the common knowledge rule and the uncertainty surrounding the area of expertise rule, these aspects of the judges' responses are surprising.

Almost all judges responded that they had the power to call an expert witness (ninety-one percent) but eighty percent said that they had never used it, and twenty percent said that they had used it only once. These figures are startlingly similar to the results obtained by Cecil and Willging in their survey of United States federal district court judges,[309] although in that study it was significant that of those eighty-six judges who had availed themselves of the power, some 255 appointments had been made.[310] Nearly two-thirds of those who said that they had not

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[308] Too few judges answered the sections exploring the impact of the liberalizing provisions in the 1995 Federal and New South Wales Evidence Acts to enable any real evaluation of the responses.

[309] *See* JOE S. CECIL & THOMAS E. WILLGING, COURT-APPOINTED EXPERTS: DEFINING THE ROLE OF EXPERTS APPOINTED UNDER FEDERAL RULE OF EVIDENCE 706, at 7 (1993) (finding that 20% of judges responding actually had appointed experts).

[310] By contrast, in the study by Champagne and colleagues of 37 Dallas County District Court judges in Texas, only eight indicated that they had never used court-appointed experts. However, once again only a small number of judges had made a large number of appointments of experts. *See* Anthony Champagne et al., *The Problems with Empirical Exami-*

used their power in the Australian pilot answered that their reason was that it had not been necessary. In the Cecil and Willging study, fifty of the eighty-one judges who replied indicated that they perceived the appointment of court-appointed experts an extraordinary action:

> The importance of reserving appointment of experts for cases involving special needs was especially apparent in the responses of the judges who had made only a single appointment. Thirty-two of the forty-five judges who had appointed an expert on a single occasion indicated that they had not used the procedure more often because the unique circumstances in which they employed the expert had not arisen again. They simply had not found another suitable occasion in which to appoint an expert.[311]

Approximately three-quarters of the respondents to the Australia pilot study said that they thought that more use of court-appointed experts would be helpful to the fact-finding process.[312] Again, this answer is comparable to the answers obtained in the Cecil and Willging study, which found that eighty-seven percent of the judges indicated that court-appointed experts are likely to be helpful in at least some circumstances.[313]

Answers to comparable questions about assessors yielded similar results. About two-thirds of the judges said that they had power to appoint assessors, but three-quarters with the power

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nation of the Use of Court-Appointed Experts: A Report of Non-Findings, 14 BEHAV. SCI. & L. 361 (1996).

[311] CECIL & WILLGING, *supra* note 309, at 18.

[312] *See* FRECKELTON, *supra* note 2, at 205 nn.3-7 (listing sources advocating use of court-appointed experts); E. Donald Elliot, *Toward Incentive-Based Procedure: Three Approaches for Regulating Scientific Evidence*, 69 B.U. L. REV. 487, 501-04 (1989) (discussing benefits of court-appointed experts); M.N. Howard, *The Neutral Expert: A Plausible Threat to Justice*, 1991 CRIM. L. REV. 98, 103-04 (discussing efficiency, procedural, and constitutional problems posed by using neutral court-appointed experts); Tahirih Lee, *Court-Appointed Experts and Judicial Reluctance: A Proposal to Amend Rule 706 of the Federal Rules of Evidence*, 6 YALE L. & POL'Y REV. 480, 481-82 (1988) (advocating more prevalent use of court-appointed experts); J.R. Spencer, *The Neutral Expert: An Implausible Bogey*, 1991 CRIM. L. REV. 106, 107 (criticizing M.N. Howard's attack on neutral court-appointed experts); Peter Huber, Comment, *A Comment on Toward Incentive-Based Procedure: Three Approaches for Regulating Scientific Evidence by E. Donald Elliott*, 69 B.U. L. REV. 513, 514 (1989) (noting the unworkability of Professor Elliott's proposal to use court-appointed experts); Robert L. Schwartz, Comment, *There Is No Archbishop of Science — A Comment on Elliott's Toward Incentive-Based Procedure: Three Approaches for Regulating Scientific Evidence*, 69 B.U. L. REV. 517, 524-525 (1989) (criticizing Professor Elliott's proposal for greater use of court-appointed experts).

[313] *See* CECIL & WILLGING, *supra* note 309, at 12.

conceded that they had never exercised it. As in the case of court-appointed experts, there was considerable "in principle" support for the use of this measure — ninety percent of respondents were in favor of the use of assessors. Fewer judges answered that they had power to appoint referees, but once again, the responses indicated that the judges were rarely availing themselves of the option. In addressing the use of referees, there was a more pronounced division of judicial opinion about their utility, with only half of the respondents expressing the opinion that more use of referees would be helpful to the fact-finding process. This may relate to the fact that the arbitral role of referees represents a more pronounced intrusion upon the role of judges and juries in the traditional adversary system than does the role of court-appointed experts and assessors.

VII. A COMPLEX EVOLUTION OF JUDICIAL ATTITUDES

In Australia and New Zealand, judicial attitudes toward the admission of scientific evidence have been characterized by the liberal admission of reports and testimony. This is made possible by a litigation culture significantly different from the costs-liberated, civil law culture prevailing in the United States since the mid-nineteenth century.[314] While anxieties have been generated throughout the legal profession by miscarriages of scientific evidence in England and Australia — by the *Splatt*, *Chamberlain*, and Barnes controversies — there has remained in Australasia a judicial confidence in the jurors' capacity to sift evidentiary wheat from chaff and to apply the insight and intelligence of the ordinary person to the complexities of expert evidence. Such a confidence has neither been the product of, nor supported by, empirical research conducted in Australia or New Zealand. It is born of the experience of judges both before their judicial careers and since taking up their appointments. As such,

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[314] *See, e.g.*, CAROL JONES, EXPERT WITNESSES 49-51 (1994) (noting differing attitudes toward expert witnesses in American and English legal systems); Ian Freckelton, *The Challenge of Junk Psychiatry, Psychology, and Science: The Evolving Role of the Forensic Expert*, *in* TOMORROW'S LAW 61-64 (Hugh Selby ed., 1995) (comparing Australia's approach to expert witnesses with America's adversarial approach); Stephan Landsman, *Of Witches, Madmen, and Products Liability: An Historical Survey of the Use of Expert Testimony*, 13 BEHAV. SCI. & L. 131 (1995) (tracing historical development of expert testimony in United States courts).

it is largely the product of mainstream, conservative barristers, relatively disinclined to advance views counter to the prevailing legal orthodoxies. However, it remains an expression of view by persons with uniquely informed perspectives — persons who have represented both plaintiffs and defendants, prosecution and defense, and whose role is to make fair-minded decisions and to facilitate the just decisionmaking by jurors on the basis, inter alia, of expert evidence.

In Australia, the confidence in lay jurors' ability to deal adequately with most expert evidence is, in part, the expression of a national belief in the ability of the "little person" not to be intimidated by the technocrat, and to see through assertions that have no substance. The catch-cry of the Democrats, the party that has for many years held the balance of power in the federal Senate, has been: "Keeping the bastards honest." Whether rightly or wrongly, there is a general assumption that the ordinary Australian will defer to scientists in white coats no more readily than Australia now defers to its colonial mother, England. Whether this assumption of the operation of "healthy skepticism" has any validity deserves further research.

The beliefs about the ability of the intelligent layman to grapple with complexities and esoterica have been expressed in the establishment of populist and judicial bulwarks against moves to withdraw complex trials from lay jurors. Such movements reject the notion of the jurors' putative inability to assimilate and digest scientific and other expert evidence. They also militated against the development of inflexible rules of evidentiary exclusion during the 1980s and 1990s, when a greater volume of expert evidence began to make its way into the criminal and civil courts in both Australia and New Zealand.

The confidence in juries' capacity to deal adequately with scientific evidence, however, has been far from absolute. It has been counterbalanced by an articulated judicial consciousness of the danger that scientific witnesses may overwhelm lay jurors with the complexity and esotericism of their evidence and the impressiveness and articulateness of their views. However, the rhetoric of judges' decisions suggests that the Australasian judiciary is discarding the traditional legal positivism inherited from nineteenth century jurisprudence in favor of a more sophisticated relativism. With the lessening legal endorsement of the tradi-

tional dichotomies of right and wrong, proof and disproof, culpability and blamelessness, a realignment of the relationship between law and other disciplines, particularly the sciences, is emerging. This realignment includes a more profound understanding of the limitations of scientists' and other experts' ability to provide definitive answers to questions posed in the forensic context. However, the evolving understanding is as yet halting and far from uniform among judges. The unrealistic demands placed on counterintuitive evidence in, for example, sexual assault prosecutions are testimony to judges' inclinations to be more rigorous in relation to expert evidence, but are also testimony to their failure to come to grips with what other disciplines are and are not offering to the courts. What can be contemplated in the future is a slowly emerging recognition of the limitations of scientific and other disciplines to resolve all of the difficult questions of proof posed by the law and an acknowledgment that what may have validity in the laboratory, the therapist's couch, or the forum of academic disputation may not be so relevant or even helpful to the specific needs of litigation. Such attitudinal shifts, however, are not quick, uniform, or easy to identify conclusively.

What can be isolated in Australia and New Zealand for the moment is a continuing, and troubled, quest for the means of distinguishing "safe" from "unsafe" scientific evidence — of classifying what is "reliable" in scientific evidence. The meaning to be given to the term "reliability" has not been finally determined; nor has the issue of its centrality in determining the kinds of scientific evidence that ought not go before jurors because of the dangers that they pose.

The *Splatt, Chamberlain,* and Barnes controversies in Australia, like the IRA cases in Britain and the Zain and FBI laboratory controversies in the United States, highlight the dangers of unrealistic expectations of forensic science, forensic scientists, and the lawyers charged with the role of keeping them honest. They reaffirm that science has real limits in terms of its capacity to dispositively answer the questions posed by the law about nexus and causation. For as long as the law and lawyers (including judges) invest in science's positivist expectations of its mortgage on epistemological truth, they will not only keep making errors, but they will continue to be disillusioned.

The recognition of science as a socially constructed version of knowledge is vital, as is the discerning use by lawyers and scientists of internationally available scientific information. To classify a theory or technique as "scientific" or "non-scientific," "reliable" or "unreliable" — as has been the tendency of Australian and New Zealand judges — has been expedient in achieving "closure," but it has resonated more of rhetoric and of false assumptions than of intellectual rigour. Classification has been simplistic and has functioned too often as a means of legitimating the unarticulated and unsatisfactory reasoning lying behind the decision to either allow or exclude scientific evidence. Such classifications can best be viewed as part of the antipodean judges' slowly evolving struggle to grapple with the threshold issue of formulating criteria for excluding scientific evidence from jurors. The next phase of the exercise will be a more sophisticated and realistic acknowledgement of a pervasive conceptual dissent and potential for fallibility within the scientific community and the formulation of more considered expectations and requirements of the scientific information allowed before lay triers of fact.

Changes to federal and New South Wales rules of evidence, and mooted changes in New Zealand, support the trend already discernible in the common law of the antipodes. The concentration increasingly is swinging toward more liberal admission of scientific evidence on one hand, but, on the other, a recognition of the need for judges to stringently assess the propriety of allowing witnesses possessed of special expertise to express opinions in court. The trend is for judges to exclude scientific evidence proffered by persons recognized as experts only where circumstances — such as the unreliability of the evidence (however defined), the degree and nature of dissent among the scientific witnesses, or the inability of the lay trier of fact to meaningfully evaluate the evidence (for instance, because of a failure to prove its building blocks) — have rendered the task of the trier of fact unreasonably difficult. In such situations, the prejudice/probative discretion is likely to be called upon to do more and more work in both countries. The courts will very soon have no option but to squarely confront the need to give substance to the chimaera of the "probative value" concept. The need to formulate at least a loose list of relevant indicia of when evidence — especially scientific opinion — lacks sufficient

probative value has become pressing. The opportunity is here to learn the lessons left in the wake of *Daubert*, and the agenda is now crystallizing for Australian and New Zealand law, both for defining the "area of expertise rule," if it exists, and for refining the criteria for exercising the prejudice/probative discretion in the context of scientific evidence. The issues are:

- Should "unreliability" be the critical concept in determining admissibility?;[315]
- If so, is an inclusive list of considerations to be used in determining reliability the best approach?;
- Is Popperian falsifiability a useful concept or the key concept in determining what evidence should be made available to triers of fact?;
- Does Popperian falsifiability unhelpfully discriminate against the value of mental health professional and similar evidence?;
- Should an inclusive list be more exhaustive than that offered by the United States Supreme Court in *Daubert*?;[316]

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[315] This, together with the utility of Bayesian logic after its exclusion in *Adams v. R* [1996] 2 A. Crim. R. 467, are issues explicitly being canvassed with judges in the May 1997 Australian survey.

[316] *Compare* Daubert v. Merrell Dow Pharms., Inc., 509 U.S. 579, 589 (1993) (holding that "general acceptance" is not necessary to admit scientific evidence), *with* R v. Johnston [1992] C.C.C. 395, 415 (Can.) (allowing scientific evidence only if relevant and reliable). In *Johnston*, Justice Langdon formulated criteria for determining whether scientific evidence is probative:

> 1. The potential rate of error;
> 2. The existence and maintenance of standards;
> 3. The care with which the scientific technique has been employed and whether it is susceptible to abuse;
> 4. Whether there are analogous relationships with other types of scientific techniques that are routinely admitted into evidence;
> 5. The presence of failsafe characteristics;
> 6. The expert's qualifications and stature;
> 7. The existence of specialized literature;
> 8. The novelty of the technique and its relationship to more established areas of scientific analysis;
> 9. Whether the technique has been generally accepted by experts in the field. [In the application of this criterion, the *Frye* test becomes a portion of the *Williams-Jakobetz* test, but not in itself determinative. *See* United States v. Williams, 583 F.2d 1194 (2nd Cir. 1978); United States v. Jakobetz, 955 F.2d 786 (2d Cir. 1992)];
> 10. The nature and breadth of the inference adduced;
> 11. The clarity with which the technique may be explained;
> 12. The extent to which basic data may be verified by the court and jury;
> 13. The availability of other experts to evaluate the technique; and

- Are some indicia essential, or more important than others?; and
- How important is the preponderance of opinion in the relevant intellectual marketplace?

The recent pilot study of judges in Australia suggests that the perspective of the judiciary in that country, seeing as it does the success of lawyers in making expert witnesses accountable, is that lawyers need help to better do their job in the courtroom. Better training is necessary and higher standards of performance by forensic experts and trial lawyers are required if poor quality expertise or mala fide evidence is to be unmasked, thereby enabling triers of fact to make informed assessments of the quality of expert evidence.

CONCLUSION

It seems that for the present, antipodean judges, in spite of some misgivings, continue to be armed with politically driven assumptions, unsupported by empirical authority, about the abilities of jurors. Furthermore, it appears that they are prepared to invest confidence in jurors' capacity to digest and evaluate scientific opinions. However, judges and the general com-

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14. The probative significance of the evidence.

Id. at 415. In *R v. Melaragni & Longpre*, [1992] C.C.C. 348, 353 (Can.), Justice Moldaver listed the following criteria for determining the admissibility of expert testimony:

> (1) Is the evidence likely to assist the jury in its fact-finding mission, or is it likely to confuse and confound the jury? (2) Is the jury likely to be overwhelmed by the "mystic infallibility" of the evidence, or will the jury be able to keep an open mind and objectively assess the worth of the evidence? (3) Will the evidence, if accepted, conclusively prove an essential element of the crime which the defence is contesting or is it simply a piece of evidence to be incorporated into a larger puzzle? (4) What degree of reliability has the proposed scientific technique or body of knowledge achieved? (5) Are there a sufficient number of experts available so that the defence can retain its own defence expert if desired? (6) Is the scientific technique or body of knowledge such that it can be independently tested by the defence? (7) Has the scientific technique destroyed the evidence upon which the conclusions have been based, or has the evidence been presented for defence analysis if requested? (8) Are there clear policy or legal grounds which would render the evidence inadmissible despite its probative value? (9) Will the evidence cause undue delay or result in needless presentation of cumulative evidence?

Id. at 353.

munity alike are beginning to perceive that investment as contingent upon the improved performance of advocates in ensuring the accountability of forensic science and its practitioners. Without a proven effectiveness of trial lawyers in calling forensic scientists to account, and in the face of further miscarriages of civil and criminal justice resulting from forensic science going awry, fundamentally altered litigation procedures and approaches will inevitably be canvassed and, in due course, implemented.