

Te Wharenga - The New Zealand Criminal Law Review

ISSN 2463-5804

[2017] NZCLR 314-365

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Editorial assistance has been provided by: David Keogh

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ISSN 2463-5804

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Articles should be 5000-8000 words (though longer articles will be considered).

Notes summarising and commenting on case law and legislative developments should be around 2000 words (though may be longer if the case or legislation merits this). Articles and Notes will be subject to a blind double-peer review process.

Articles and Notes should comply with the current version of the New Zealand Law Style Guide and use headings as set out in this edition of the NZCLR. They should be submitted as Word documents.

Letters to the editor that contribute to debate will be welcomed. In addition, book reviews will feature.

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“MANAGING CRIMINAL JUSTICE”

Sian Elias*

In a dissenting judgment in 1983, Sir Duncan McMullin said of the criminal law that “[i]t is not important that [it] should be innovative; it is important that it be certain and seen as fair in its application by citizens whose lives it affects”.¹ Well, that was a simpler time perhaps. In the past decade there has been a great deal of innovation in criminal justice. Some of it has been judge-nudged. Most has been enacted by Parliament. In my remarks today I want to raise questions about whether the changes have assisted with the certainty and fairness of criminal justice. I do not attempt answers.

My focus is practice and procedure in the proof of guilt. Until comparatively recently this procedure was largely the work of judges in the exercise of what Lord Devlin in the House of Lords in 1964 described as “their power to see that what was fair and just was done between prosecutors and accused”.² When Lord Devlin wrote, he was able to say that this process of judicial development “is still continuing”.³ At about the same time, and with similar confidence in judicial control of procedure, Sir Thaddeus McCarthy in the New Zealand Court of Appeal felt able to say that criminal practice and procedure “ought always to be under the hands of the Judges” so that they can clear away rules that are “no longer helpful but [have become] obstructive”.⁴ Today that responsibility is increasingly undertaken by Parliament and the executive. That is so not only in New Zealand but in jurisdictions we tend to track, such as the United Kingdom and the Australian jurisdictions. The retiring Lord Chief Justice of England and Wales reports that, as a result in the United Kingdom, there has been a “sea change” in the law.⁵

There are benefits in terms of accessibility and democratic legitimacy in enacted rules, but there are other consequences too. First, the method of common law development is a brake on abrupt changes of direction. It requires change to be incremental and to accord with the skeleton of principle that underpins law. Without similar methodological restraint, legislation is free to innovate, sometimes transform and according to wider terms of reference than purely legal policy. That leads on to the second point. In a climate of public anxiety about crime and the costs of delivering criminal justice and the transformation of the way in which government is delivered, a shift to politically enacted rules of procedure was bound to enlarge the focus beyond simply ensuring that “what is fair and just is done between prosecutors and accused”. Enacted rules are concerned not only with these matters

* The Right Honourable Dame Sian Elias, Chief Justice of New Zealand. This was an address to the Criminal Bar Association Conference, Auckland, 5 August 2017.

¹ *Civil Aviation Department v MacKenzie* [1983] NZLR 78 (CA) at 97.

² *Connelly v Director of Public Prosecutions* [1964] AC 1254 (HL) at 1347.

³ At 1348.

⁴ McCarthy J in *Smith v Police* [1969] NZLR 856 (SC) at 860; and *Jorgensen v News Media (Auckland) Ltd* [1969] NZLR 961 (CA) at 994.

⁵ *R v Chorley Justices* [2006] EWHC 1795 (Admin) at [24] per Thomas LJ, referring to the impact of the Criminal Procedure Rules 2005 (UK).

but with more instrumental ends such as efficiency, cost-effectiveness, proportionality, and are tested against wider government objectives such as inter-agency co-ordination and information-sharing and relentless attention to reducing cost. We should not expect criminal justice to be immune and it has not been. But there is room for some unease about the baby in the throwing out of the old bathwater. Finally, the move to reduce criminal justice to enacted rules has had the effect that the principles and values of criminal justice turn increasingly on how texts are interpreted. That has implications for judicial method. A good illustration I think is in the recent Supreme Court case of *R v Wichman*,⁶ although you will have other examples. The importance of text also affects cross-jurisdictional comparisons and borrowings, since care must be taken with variations in legislative text and policies.⁷

The solutions adopted in a number of jurisdictions to the problems of cost and delay and the empowerment of victims in the criminal justice process include greater prosecutorial discretion in charging and diversion, wider use of summary trial, measures to incentivise early guilty pleas, relaxation of unanimity in jury trials, reverse onuses of proof, restriction of the right to elect trial by jury, adoption of preventive orders and “civil” penalties, application to criminal proceedings of modern civil case management measures, and measures to bring the victim into the criminal justice system, in a “triangulation” of the parties to whom fairness in procedure is owed. The effect has been a repositioning of criminal justice and the roles of judges and counsel. I cannot deal with all of these developments but touch on some.

A point I want to emphasise is that the shift to enacted rules governing criminal procedure is part only of the picture. It has been accompanied by institutional and administrative restructuring which has transformed the methods of delivery of criminal justice. I am speaking here about the changes to criminal legal aid, the delivery of prosecution and defence services, and changes to court administration. Much of this change has been in subordinate law and in departmental exercise of administrative levers which have put incentives on all other actors in the system to modify their behaviour. As a result, some significant developments have been brought about with very little public participation in the design (including through parliamentary scrutiny) and as a result of self-interested behaviour. Much of what is happening suits insiders in the system. I do not absolve the judges or members of the profession in this self-interest. I query whether developments have always have been sufficiently tested against fundamental values in the legal order.

THE WORKING PARTS OF CRIMINAL JUSTICE AND ITS ENDS

I have mentioned the actors within the system. Although the system we inherited was comparatively new when New Zealand was established in 1840,⁸ the elements of its working parts have remained relatively constant ever since. They are judge, Crown prosecutor, and defence counsel. Public participation in criminal justice

⁶ *R v Wichman* [2015] NZSC 198, [2016] 1 NZLR 753. I discuss this case in the second of the Hamlyn lectures I gave last year.

⁷ A matter illustrated by the covert policing cases I discuss in my second Hamlyn lecture.

⁸ As I have described in the first Hamlyn lecture I gave in 2016.

through a lay jury is of course also a signal feature (and one I think we should be keen to see preserved), but for present purposes I concentrate on the other professional elements: judge, Crown as prosecutor, and defence counsel.

The institutional elements of independent prosecutor acting for the state rather than for any individual, defence counsel acting for the defendant, and the judge as umpire or impartial decision-maker in formal public hearing set up the conditions for the accusatory system of trial we have observed since 1840. The division of responsibilities allowed development of the rules of evidence and proof and the process values observed in criminal justice. Such method of proof was never cheap. It was considered a price society was willing to pay for safe proof of guilt and its public demonstration.

Glanville Williams was describing our system as well as that of the United Kingdom when he said that the central feature of British justice was the detachment of the judge.⁹ I want to come on in my remarks to question whether the institutional support for the judge today and the present method of administration of the courts is risking the detachment so central to our system of criminal justice and community confidence in it.

Crown assumption of the obligation to prosecute serious crime was central to setting up the disinterestedness of the criminal justice process. "Crime is crime", as CK Allen once remarked, "because it is wrongdoing which directly and in serious degree threatens the security or well-being of society".¹⁰ Allen's view was that it was not safe to leave crime to private redress. He thought crime must be controlled by a public authority "more powerful and less erratic than the private plaintiff". In 1842 New Zealand held its breath to see whether Maori would accept British criminal justice in the trial of *Maketu Wharetotara*.¹¹ What carried the day was the solemnity and care in the public demonstration of proof and the demonstration of conspicuous equality of treatment (it helped that in the same session of the court there was the trial of a European man for an assault on a Maori). It was understood that this system freed kin groups from responsibility. It depended on prosecutorial independence to act on behalf of society as a whole in obtaining right according to law and equality of treatment. Today, are we sufficiently protective of the public interest in bringing charges and obtaining right outcomes?

The third element of our system is the right to counsel. It was not fully secured in the United Kingdom until the 19th century. Its impact cannot be overstated. It transformed the dynamics of the criminal trial. The defendant no longer had to conduct his own defence and be drawn into giving his own account. The judge no longer had to pretend an obligation to look out for the interests of the defendant. The conditions were set up for development of the presumption of innocence and the responsibility of the prosecution to prove guilt. Criminal trial became an accusatorial

⁹ Glanville Williams *The Proof of Guilt* (2nd ed, Stevens & Sons, London, 1958) at 24–36.

¹⁰ CK Allen "The Nature of a Crime" (1931) *J Comp Legis & Intl Law* (3rd series) 1 at 11.

¹¹ *Maketu's case* was the first time a Maori defendant stood trial under the British system of criminal procedure in New Zealand. He was tried before Martin CJ in the Supreme Court at Auckland.

proceeding focussed on the sufficiency of proof brought by the Crown.

It must be acknowledged immediately that there is a range of legitimate views about the extent to which lawyers should be provided at public expense to those who cannot obtain them. No one who has seen an unrepresented defendant in a serious criminal case can, however, be under any illusion about the disadvantage. It is why courts from time to time stay cases until legal representation is provided for those without the means to pay,¹² or overturn on judicial review as unreasonable decisions of legal aid authorities declining legal aid,¹³ or set aside convictions where lack of legal representation has meant that the trial has been unfair.¹⁴ It is why the right to have legal assistance provided if the defendant does not have the means to pay for it is in many jurisdictions recognised as a human right.¹⁵ Quite apart from the availability of counsel, administrative and financial incentives may affect the discharge of the responsibilities of counsel and impact on the ability of the criminal justice system to ensure that what is just and fair is done in criminal procedure.

THE ENDS OF CRIMINAL JUSTICE

What then are the ends of criminal justice? Formerly it was thought that they were concerned with safe convictions and fair process which ensured the integrity of the system. Lord Rodger and Sir Andrew Leggatt explained why that is so in a privy council appeal from New Zealand.¹⁶ when trials are conducted according to the common law and statutory rules for fair trial, "people respect the verdicts because they have been reached in conditions which the law regards as fair". In those circumstances "observance of the rules ... serves the wider public interests as well as the interests of the accused".

Minimum standards of criminal procedure include the right to be presumed innocent until proved guilty according to law,¹⁷ "the right to a fair and public hearing by an independent and impartial court",¹⁸ "the right to examine the witnesses for the prosecution,"¹⁹ and the right "to the observance of the principles of natural justice", which is part of a wider "right to justice".²⁰ These rights are referred to in the New Zealand Bill of Rights Act, but indeed they were principles recognised as

¹² *Dietrich v R* (1992) 177 CLR 293; *Powell v Alabama* 287 US 45 (1932) at 68–69; and *Gideon v Wainwright* 372 US 335 (1963) at 343–345.

¹³ *Marteley v The Legal Services Commissioner* [2015] NZSC 127, [2016] 1 NZLR 633.

¹⁴ *R v Condon* [2006] NZSC 62, [2007] 1 NZLR 300; *McInnis v The Queen* (1979) 143 CLR 575 at 579–580; *R v Kirk* (1982) 76 Cr App R 194 (CA); *R v Harris* [1985] Crim LR 244 (CA); see also *R v Taito* [2001] UKPC 50, [2001] UKPC 59, [2003] 3 NZLR 577.

¹⁵ International Covenant on Civil and Political Rights, art 14(3)(d); European Convention on Human Rights, art 6(3)(c); New Zealand Bill of Rights Act 1990, s 24(f); Human Rights Act 2004 (ACT), s 22(2)(f); Charter of Human Rights and Responsibilities Act 2006 (Vic), s 25(2)(f).

¹⁶ *R v Howse* [2005] UKPC 30, [2006] 1 NZLR 433 at [44].

¹⁷ New Zealand Bill of Rights Act 1990, s 25(c). The presumption of innocence exists, as Sachs J described it in *S v Coetzee* (1997) 3 SA 527 (CC) at [220] not only to protect the particular individual on trial, "but to maintain public confidence in the enduring integrity and security of the legal system".

¹⁸ Section 25(a).

¹⁹ Section 25(f).

²⁰ Section 27.

fundamental to the common law before they were put into such charters. They are part of the common law of jurisdictions which do not have enacted rights, such as most of the States of Australia.²¹

The values and principles applied in criminal justice therefore serve two general purposes. They minimise error in proof of guilt and they demonstrate observance of the rule of law. It is a mistake to take the view that the rules of procedure in criminal justice are rules about sufficiency of proof only. They are also minimum standards of fairness and decency required by the legal order.

This is an interconnected system. It is a bit like a cat's cradle. You cannot pull on one thread without causing movement in the whole structure. We have to keep our eye on the system as a whole and not to be blinded by immediate pressures and self-interest. Many levers are now in the hands of those who are managing for outcomes other than correctness of decision-making and fairness in process. That may be a correction that is warranted – as long as it can be reconciled with fundamental values. The Supreme Court of the United Kingdom has recently found it necessary to point out that “[t]he importance of the rule of law is not always understood”.²² Indications of such lack of understanding include:

... the assumption [including those to be seen in government reports about court fees there in issue] that the administration of justice is merely a public service like any other, that courts and tribunals are providers of services to the “users” who appear before them, and that the provision of those services is of value only to the users themselves and to those who are remunerated for their participation in the proceedings.

It would be wrong to think that similar attitudes are unknown in New Zealand.

MODERN ENACTED RULES OF CRIMINAL JUSTICE

In New Zealand, as in a number of other jurisdictions, enacted rules seek to secure the “just and timely determination of proceedings”.²³ In Victoria, the reference is to “the fair and efficient conduct of proceedings”.²⁴

In the United Kingdom, what is “just” is now defined in the Criminal Procedure Rules to include “acquitting the innocent and convicting the guilty” and the efficient and expeditious conduct of cases in a manner that “takes into account the gravity of the offence alleged, the complexity of what is in issue, the severity of the consequences

²¹ Only Victoria and the Australian Capital Territory have legislative statements of rights: the Charter of Human Rights and Responsibilities Act 2006 (Vic) and the Human Rights Act 2004 (ACT). The Constitution does not contain a statement of rights although the right to fair trial has been recognised to be implicit in it: see the discussion in *Ebner v Official Trustee in Bankruptcy* [2000] HCA 63, (2000) 205 CLR 337 at [80].

²² *R (on the application of Unison) v Lord Chancellor* [2017] UKSC 51 at [66].

²³ Criminal Procedure Rules 2012, r 1.3(b). Section 55(1) of the Criminal Procedure Act 2011 similarly stresses the need for case management discussions between prosecution and defence to “make any arrangements necessary for its fair and expeditious resolution”.

²⁴ Criminal Procedure Act 2009 (Vic), s 181

for the defendant and others affected, and the needs of other cases".²⁵ These objectives are imposed on all participants in the system, including the judge.

The idea of proportionality in the treatment accorded criminal cases according to whether they are "grave" or "complex" and "the needs of other cases" is a shift. The traditional view has been that any criminal conviction is always grave, both for the individual and for society. The reference to "convicting the guilty" and "acquitting the innocent" is also something of a change in focus from the view that the purpose of criminal justice is the sufficiency of proof of guilt. The traditional understanding was expressed by Baroness Hale:²⁶

Innocence as such is not a concept known to our criminal justice system. We distinguish between the guilty and the not guilty. A person is only guilty if the state can prove his guilt beyond reasonable doubt. This is, as Viscount Sankey LC so famously put it in *Woolmington v Director of Public Prosecutions* [1935] AC 462, 481, the "golden thread" which is always to be seen "throughout the web of the English criminal law". Only then is the state entitled to punish him. Otherwise he is not guilty, irrespective of whether he is in fact innocent.

GOVERNMENT ADMINISTRATION

The criminal justice system today has also been affected by changes to government administration. The new public management model treats the wider criminal justice sector as an integrated system. Reducing cost, and in particular the cost of prisons and prisoner movements, is a substantial focus of this joined-up model of government. So too is sharing information. In New Zealand, the sector is referred to openly by the Ministry of Justice as a "pipeline".²⁷

Modern technology is seen as providing opportunities to reduce costs and achieve better timeliness and better co-operation between public agencies. So, for example, the information generated in court proceedings is now removed into a Justice Sector "warehouse" where it is being mined for better prediction of future risk of offending. In a joint publication by Police, Ministry of Justice and the Department of Corrections concerning "segments" of the New Zealand population, there are indications of how the information is expected to assist in an "Investment Approach to Justice" to enable targeted intervention and deployment of resources. This statistical information is also likely to provide predictions of reoffending which may well be used in criminal processes and may affect the distribution of court resources. But in addition to the use of court information for statistical purposes in this way, there are more immediate impacts on court operations.

The most obvious is the use of AVL technology. Since amendment to the Courts (Remote Participation) Act 2010 earlier this year, the default position is that appearances of defendants except in cases where evidence is called will be by AVL

²⁵ Criminal Procedure Rules 2005 (UK), r 1.1(2).

²⁶ *R (Adams) v Secretary of State for Justice* [2011] UKSC 18, [2012] 1 AC 48 at [116].

²⁷ Ministry of Justice "About the Justice Sector" (Updated 1 November 2016), available at <www.justice.govt.nz>.

unless a judicial officer determines that it is contrary to the interests of justice.²⁸ The extent of the use envisaged by Justice, Corrections and Police is indicated by advice that in Christchurch those held in the cells in the Christchurch Precinct will participate by video link to the courts in the same precinct. Similar use of video links is I understand being made in the police hubs of Hamilton and Rotorua (with defendants from around the region being processed in these hubs and appearing in the courts by video link, saving prisoner movements). I do not know to what extent these changes, which affect the character of court proceedings and the nature of public justice, have been the subject of wide public consideration. My impression is that they have been largely administratively managed although supported by judges and practitioners. Down the track are quite ambitious suggestions that where judges and counsel are located is immaterial. Cases may be queued to be dealt with by the first available judicial officer anywhere in the country, with counsel and accused attending by video link wherever they happen to be.

There may be very good administrative sense in much of this and it may suit busy practitioners and judges and prisoners. But what it shows is that the courts in the middle of the pipeline are not seen as standing apart from the whole of government effort. They are not seen as a separate institution of government. There is risk of the blurring of the distinct role of courts.

A recent example of which I am aware is a Corrections approach to Ministry of Justice officials which led to priority being given in scheduling of cases because of a problem Corrections had in providing female remand beds. The inappropriateness of this sort of private adjustment seems not to have been understood. There is a risk of breakdown in understanding of proper boundaries.

Although it is impossible to know what really transpired, the *Red Devils case* recently considered by the Supreme Court may also indicate the dangers of informality and over-familiarity, with the police apparently thinking it appropriate to obtain judicial approval of a matter of policing operation.²⁹

Further straws in the wind are the submergence of courts within the wide range of operations run by the Ministry. So in the Christchurch Precinct, it has been a battle to get signage acknowledging the presence of the High Court and District Court. It was originally proposed that police and court staff would share cafeteria facilities and have access to each other in the building in order to promote co-operation in their work. In recent discussions with the Ministry of Justice it is clear that their property strategy, part only of the wider government property strategy, is to diminish the reliance on courthouses and to make property occupied by the Ministry for all its operations multi-purpose. Again, there may be good sense in much of this and ways in which these proposals can be properly implemented. But the risk is in further Ministry management of court registries to suit other agencies and operations and a

²⁸ Courts (Remote Participation) Act 2010, s 8(1) (as amended by the Courts (Remote Participation) Amendment Act 2016).

²⁹ *Wilson v R* [2015] NZSC 189, [2016] 1 NZLR 705.

further diminishment of the visibility of courts in the community.

The responsibilities of the Ministry of Justice include not only the administration of courts and tribunals but the administration of legal aid³⁰ and the Public Defence Service (intended to provide legal representation in approximately 50 per cent of criminal legal aid cases).³¹ It is easy to see that with such broad responsibilities the narrower values of the criminal justice system applied in the courts are not the focus and can be overlooked. Registrars and sometimes judges are reported to put pressure on counsel to advance or resolve cases within time frames set by the Ministry that may not be appropriate to meet the evidential and other issues thrown up by the particular case, because of general Ministry goals such as that “all serious harm cases [will be] disposed of within 12 months”.³² There are pressures for better communication between court registries and Crown Law and other Ministry agencies. There is little agreement about where judicial administration takes over and Ministry administration leaves off. These matters of separation were flagged as problems from the time the Ministry of Justice took over the Department for Courts. They have become acute because of the erosion of the culture of courts within the Ministry.

In addition to policies designed to achieve ends that may be difficult to reconcile with the values to date accepted in criminal justice, it is necessary to acknowledge the impact on the system by the running down of resources available for criminal justice. If simply part of a cross-government belt tightening, it may be that such pressures arise out of a failure to appreciate the rule of law concerns recently raised by the United Kingdom Supreme Court in the treatment of the administration of justice as merely a public service like any other.³³ There are many straws in the wind that suggest a hostility in official circles to the view that courts do not provide a public service like any other. There may be little public buy-in to the contrary view. That puts particular responsibility on the profession to demonstrate why this attitude is dangerous to the rule of law.

It is a problem that all of us within the system – judges, prosecutors and defence counsel – are ourselves affected by the running down of resources. It is not surprising that the Ministry reports that prisoners who may lose their cells when appearing in courts, and counsel who may not be paid to travel across town or to wait for cases, and judges who may not be able to access courtrooms and who feel the pressure of the backlog, should be supporting electronic delivery to speed things

³⁰ The former independent Legal Service Agency having been brought into the Ministry: see Hon Simon Power “Changes at Legal Services Agency” (press release, 30 November 2009), available at <www.beehive.govt.nz>.

³¹ Hon Simon Power “Minister Welcomes Opening of Hamilton Public Defence Service” (press release, 1 June 2011), available at <www.beehive.govt.nz>.

³² Ministry of Justice Annual Report (1 July 2015–30 June 2016) at 10, available at <www.justice.govt.nz>. An informal goal in the High Court of nine months from first appearance to trial has been abandoned after demonstration that the time was insufficient for the briefing of police witnesses and the obtaining of reports.

³³ See *R (on the application of Unison) v Lord Chancellor* [2017] UKSC 51 at [66], quoted above at p 5.

up and make life easier. But who is questioning where this is going and how it affects the impartial, equal and public delivery of criminal justice?

ENCOURAGEMENT TO PLEAD

Only a tiny proportion of cases go to trial. And in all systems it is recognised that there are considerable savings in time and cost if guilty pleas are entered at an early stage. It is understandable then that early pleas of guilty are encouraged. But care is needed because a guilty plea waives the fair trial rights against self-incrimination and to determination of guilt.

Considerable inducements exist to plead guilty through the substantial discounting of sentences for guilty pleas now available through legislation and court decisions. The availability and ultimate effect of discounts is subject to discretionary judgments as to variables such as the time from which maximum discounts begin to diminish and whether or not to impose minimum non-parole periods. The common law has traditionally regarded admissions of guilt with suspicion when made under inducements. Just as is the case with confessions made to the police, guilty pleas may be false.

They may be entered into because of a calculation of risk or simply to put an end to uncertainty, rather than because a guilty plea is right.³⁴ There is a growing literature and case-law on the risks of inaccuracy in guilty pleas. Pressures for lawyers to cut corners in prosecuting and in defending by reaching deals on pleas raise the risk of such errors.

Such pressures arise in part from institutional design, such as in fee structure, but they also arise because of the relentless press of cases and remorseless scheduling in the courts in a system that is under-resourced and is transferring costs to prosecutors and defence counsel. Saved costs are one of the justifications for the sliding scale of discounts, according to when a plea is entered. Judges are brought into the process. Obtaining pleas through sentence indications is now however widely seen as an important end of case management. The discretions judges have to excuse delay in pleading and to give sentence indications mean that they operate some of the more important levers in obtaining disposal of cases through guilty pleas.

It is difficult to get a handle on whether judges are consciously or unconsciously attempting to obtain pleas by offering discounts that provide incentives. I have been surprised to hear senior judges speak of their “success” in obtaining pleas on

³⁴ A study of the Crown Court carried out as part of the Runciman Commission on Criminal Justice found that 11 per cent of surveyed defendants who had pleaded guilty maintained their innocence: *The Royal Commission on Criminal Justice Crown Court Study* (Research Study No 19, HM Stationery Office, 1993) at 83. See also Penny Darbyshire “The mischief of plea bargaining and sentencing rewards” [2000] Crim LR 895 at 902–904; Joan Brockman “An Offer You Can’t Refuse: Pleading Guilty When Innocent” (2010) CLQ 116 at 119–122; and Christopher Sherrin “Guilty Pleas from the Innocent” (2011) 30 Windsor Rev Legal & Soc Issues 1 at 3–7.

sentence indications. It is troubling to hear senior practitioners say that at pre-trial review hearings it is not unknown for judges to interrogate defendants directly, even defendants who are represented, about the defence or the conduct of the case. Some judges are said to give sentence indications without invitation in apparent effort to move a case to resolution. It is also worrying to hear reports that counsel both for the defence and for the Crown sometimes feel under pressure from the judge when seeking necessary adjournments or when seeking further disclosure on the basis that there is little point because the defendant knows what he has done. It is difficult to know whether these reports give an accurate picture of what is happening. They are, however, commonly heard. If they indicate a shift in culture in which judges assume responsibility for managing cases to achieve prompt guilty pleas, they represent a move away from the idea of the detached judge. This is the background in which some in other jurisdictions see the modern criminal justice system as characterised by “mass production of guilty pleas” and a culture that measures the rate and timeliness of disposals as the principal marker of success.³⁵

It must be acknowledged that the detachment of the judge has not always been observed in practice. But that has not been the ideal or what has been professed and achievement of disposals through sentence indications takes matters to a new level. Has there been removal of some judicial inhibitions in criminal justice? Does it pose risks for some of the values we have treated as fundamental to criminal justice? The public interest in proper conviction as well as the interest of the individual suggests that we should not be casual about allowing time for legal advisers to understand the facts of the case and be in a position to give proper advice which the defendant has time to consider. Rush to plea is not a goal we should be pursuing. And it should not be something that is exacerbated by case-management and understandable anxiety to move cases along and not be wasteful of resources.

PUBLIC JUSTICE?

The risk to public justice is not simply in administration of cases before the courts. It is also affected by alternative processes by which cases are managed. According to a report in 2015, 40 per cent of police apprehensions now are dealt with by alternative processes which do not lead to prosecution.³⁶ They include diversion³⁷ and formal police warnings.³⁸ Neither are statutory processes (although there is some

³⁵ See Andrew Sanders, Richard Young and Mandy Burton *Criminal Justice* (4th ed, Oxford University Press, Oxford, 2010) at ch 8.

³⁶ See Ministry of Justice “Trends in Conviction and Sentencing in New Zealand” (2015), available at <www.justice.govt.nz>.

³⁷ Diversion was originally available only for first offenders, but that requirement was relaxed in 2013.

³⁸ The system was introduced in New Zealand in 2009 for offences carrying a maximum penalty of six months imprisonment. An original target that nine per cent of arrests would be dealt with by pre-charge warnings has been exceeded: see New Zealand Police “Policing Excellence Update” (7 September 2012), available at <www.police.govt.nz>; as cited in Mark O’Regan “Criminal Justice Institutions in Times of Change” (13th International Criminal Law Congress, Queenstown, New Zealand, 12–16 September 2012) at 6.

recognition of diversion in legislation).³⁹ As a result, much offending has moved out of the supervision of the courts altogether.⁴⁰

I have written elsewhere about these alternative methods of dealing with criminal cases.⁴¹ They have also been the subject of a paper by Sir Ronald Young.⁴² A recent report by the Independent Police Conduct Authority in New Zealand has found inconsistency in use of pre-charge warnings and disparity in the treatment of Maori and non-Maori.⁴³ The Authority found varying practices and lack of integration with the other methods of dealing with offending.⁴⁴ Similar problems have been identified in the comparable out of court police warning system in England and Wales.

Police warnings and police diversion are not the only way in which cases are being resolved outside the courts. A pilot in Christchurch is trialling removal of cases by the police to community or neighbourhood panels. This method is used where warnings are thought not to be a sufficient response.⁴⁵ The cases are said to be at “the upper-level of offences that can be resolved without charge and prosecution”.⁴⁶ The review of the pilot indicates that some relatively serious offending has been referred. There are plans for expansion of this pilot in particular areas.⁴⁷ Sir Ronald Young has

³⁹ The only legislative acknowledgement of the process of diversion is the power to dismiss the charge on proof that a programme of diversion has been completed: see Criminal Procedure Act 2011, s 148.

⁴⁰ Diversion has now been extended to cover offending carrying a maximum penalty of more than six months imprisonment. A number of police officers explained to the Independent Police Conduct Authority that “the introduction of pre-charge warnings means that diversion is generally now used for offences with a maximum penalty of more than six months’ imprisonment”. The Review considered that, if that is the intent, it should be made clear in policy documents: Independent Police Conduct Authority *Review of Pre-charge Warnings* (14 September 2016, Wellington) at [124]. For a defendant to receive diversion, he or she must enter into a written acknowledgement of responsibility and conditions, including any reparation or counselling or agreement to undertake a restorative justice programme. Once the conditions are fulfilled, the police prosecutor advises the court and the defendant is not required to attend the court again. Withdrawal of the charges is made by a registrar or the court on the prosecutor’s application. See New Zealand Police “About the Adult Diversion Scheme”, available at <www.police.govt.nz>.

⁴¹ In my third Hamlyn lecture in 2016.

⁴² Ronald Young “Has New Zealand’s criminal justice system been compromised?” (Harkness Henry Lecture, Waikato University, Hamilton, 7 September 2016).

⁴³ Although the Authority declined to draw the conclusion that the differential treatment was based on ethnicity it was troubled by the disparity and suggested more guidance. See Independent Police Conduct Authority *Review of Pre-charge Warnings* (14 September 2016, Wellington) at [76]–[84].

⁴⁴ Independent Police Conduct Authority *Review of Pre-charge Warnings* (14 September 2016, Wellington) at [120]–[121] and [127]–[130].

⁴⁵ Lord Judge expressed misgivings about use of such panels in his 2011 speech, in case they set up a third distinctive and separate method for the administration of summary justice: see Lord Judge “Summary Justice In and Out of Court” (John Harris Memorial Lecture, Drapers Hall, London, 7 July 2011) at 17–18, available at <www.judiciary.gov.uk>.

⁴⁶ New Zealand Police *Community Justice Panel in Christchurch: An Evaluation* (Alternative Resolutions Workstream, November 2012) at 2.

⁴⁷ See Shaun Akroyd and others *Iwi Panels: An evaluation of their implementation and operation at Hutt Valley, Gisbourne and Manukau from 2014 to 2015* (prepared for the Ministry of Justice, 17 June 2016) at 28; and Ministry of Justice *Justice Matters* (Issue 3, June 2016) at 9, where the Ministry recoded that it is working with police “to enhance the panels through police and strengthen iwi panel processes through a range of operational improvements”.

described the panels as an alternative justice system without the protections and without the trained participants.⁴⁸ Indeed, one of the project's developers said "[w]e don't see ourselves as a legal process. We may have lawyers involved, but in their capacity as community members. We want to avoid the comparison with the courts and wider legal system."⁴⁹

Other pilots are being undertaken for therapeutic courts and for cases of sexual violence, if the victim agrees. Further removals from the criminal justice system may be on the cards.⁵⁰ These suggestions are put forward to meet the undoubted challenges in dealing with crimes of sexual violence without re-victimising complainants and the massive under-reporting of such crimes and, in the case of therapeutic courts, to deal with some of the causes of crime. I do not underestimate the extent of the problems and the need to adopt better ways of dealing with them, but there are risks in such systems to the principle of public justice and a risk that the door is opened to unequal application of the criminal law in cases of serious offending, according to the attitude of the victim.

Pre-charge warnings, and the resolution of cases through community justice panels, have consequences for those who are dealt with under them. Offending must be admitted. Although the actual offence cannot be prosecuted once there is resolution, the admission forms part of the police record and is maintained as part of the person's "criminal history". The person receiving a pre-charge warning is required to sign a statement acknowledging that "a record of this warning will be held by Police and may be used to determine your eligibility for any subsequent warnings, and may also be presented to the court during any future court proceedings".⁵¹ The information obtained through these processes, including the acknowledgement of guilt, is also information which may be shared by the police with other agencies and can be used in the police vetting increasingly resorted to by public and private bodies.⁵² The acknowledgement of guilt is also evidence that may be led as propensity evidence in respect of subsequent offending. These are therefore significant public law powers which potentially provide opportunities for intrusive social control of the individuals affected. There is a risk of over-criminalisation if people are incentivised into acquiescing in alternative resolution because it seems

⁴⁸ He expressed concern about vetting and training, the pressure on defendants to accept the process and the lack of distinction between investigative, prosecutorial, defence and judicial functions. See Ronald Young "Has New Zealand's criminal justice system been compromised?" (Harkness Henry Lecture, Waikato University, Hamilton, 7 September 2016).

⁴⁹ James Greenland "Police to make decision about Community Justice Panels" (2 November 2015, New Zealand Law Society), available at <www.lawsociety.org.nz>. At present the scheme has not been expanded beyond the pilot location. A Ministry of Justice spokesperson said "[a]ny future expansion ... will need to be carefully considered by justice sector leadership in terms of their benefits, effectiveness and 'fit' within the wider justice system".

⁵⁰ See Law Commission *The Justice Response to Victims of Sexual Violence* (NZLC R136, 2015).

⁵¹ A copy of the "Pre-Charge Warning and Release Note" used in the Auckland pilot is available in Justine O'Reilly *New Zealand Police Pre-Charge Warnings Alternative Resolutions: Evaluation Report* (Wellington, December 2010) at Appendix 13. A similar written acknowledgement is also required by persons receiving police cautions in England and Wales: see Ministry of Justice Code of Practice for Adult Conditional Cautions (Stationery Office, London, January 2013) at [82].

⁵² See New Zealand Police "Information about vetting", available at <www.police.govt.nz>.

comparatively costless at the time.

It remains to be seen to what extent the courts will be drawn into supervising the use of these public powers. The suggestion that processes such as these are not part of the “wider legal system” and stand apart from it is suspect. These processes impact on the protections of human rights and the procedural protections of fair criminal process. There are issues about access to legal advice before acquiescence in the process and exercise of the choice implicit in the right to silence. It is difficult to escape the feeling that some of these apparently ad hoc developments may not have been thought through in terms of fundamental principles such as the impact on the presumption of innocence, the right to silence, and the right to legal advice. The acknowledgements of responsibility are waivers of the right to silence and the presumption of innocence given in circumstances which may not provide proper opportunity for legal advice and informed choice.

The restorative justice and rehabilitative ends these processes permit also set up conditions of inequality in application of justice because they are not programmes universally available. Even those who are supportive of the goals of restorative justice and rehabilitative courts express concern that those who do not have access to such programmes are disadvantaged by geography or by the attitude of the particular victim. Although in sentencing in New Zealand judges must consider restorative justice outcomes,⁵³ the availability of access to such programmes is in practice limited by financial and practical considerations. The use of “pilot” programmes in particular areas without attempt to set up universal access is inevitably discriminatory.

CONCLUSION

William Stuntz, in his sobering book *The Collapse of American Criminal Justice*, referred to criminal justice in the United States as a “disorderly legal order, and a discriminatory one” where justice is dispensed not according to law but according to official discretion.⁵⁴ He raises concerns about the legitimacy of such a system and points to scholarship that suggests that perceptions of illegitimacy themselves raise crime rates and exacerbate the difficulty of its control. He suggests closer attention to the fundamental value of equality before the law and more public determination of guilt, including through trial by jury. He expresses concerns about “assembly line adjudication” (in which “quick and casual” investigation and inadequate representation leads to “equally quick and casual plea bargain between lawyers”).⁵⁵

I do not suggest that our criminal justice system is in comparable crisis to that in the United States. But it is deeply worrying if the early reports on the new system of police warnings are showing indications of unequal treatment and discrimination. The criminal justice system cannot afford such taint. It shakes confidence in the

⁵³ Sentencing Act 2002, s 8(j) and 10.

⁵⁴ William Stuntz *The Collapse of American Criminal Justice* (Harvard University Press, Cambridge (MA), 2011) at 4.

⁵⁵ At 57–58.

system. The controversies that arise from time to time in any system if it is thought that particular offenders have received special treatment in the courts indicate that people care about equal treatment under law. They are reminders that instrumentalist aims for criminal justice may not meet community expectations and may be destructive of confidence in the system. Those controversies have arisen in cases which have taken place in courts, in public. It is not to be expected that there will be indifference to unequal treatment through the alternative ways in which criminal justice is managed today out of public sight. There is a need to ensure that the management of criminal justice does not neglect procedural safeguards and that innovation does not throw over basic principle such as in open justice and certainty, and the ability of impartial judges to do what is "fair and just".

If it is to be legitimate, the great coercive power of the state in criminal justice must be must applied in a manner that is "uniform, equal, and predictable".⁵⁶ It must also be demonstrated in public. Such process may not be speedy and it is not likely to be cheap. I do not expect criminal justice ever was speedy or cheap. Its careful observance is however best policy for a state that aspires to live under the rule of law. We are all implicated in the move to managerial justice in criminal law. We need to be careful.

⁵⁶ Roscoe Pound *The Development of Constitutional Guarantees of Liberty* (Yale University Press, New Haven, 1957) at 1.

TIME TO TAKE BRAIN-FINGERPRINTING SERIOUSLY? A CONSIDERATION OF INTERNATIONAL DEVELOPMENTS IN FORENSIC BRAINWAVE ANALYSIS (FBA),¹ IN THE CONTEXT OF THE NEED FOR INDEPENDENT VERIFICATION OF FBA'S SCIENTIFIC VALIDITY, AND THE POTENTIAL LEGAL IMPLICATIONS OF ITS USE IN NEW ZEALAND.

ROBIN PALMER*

I. INTRODUCTION

Any investigation into the potential legal application of a new scientific technology to legal contexts is invariably met with diverse perceptions and reactions, covering the range from adamant support, disguised bias, open-minded enquiry, cautious scepticism, outright scepticism, polite dismissal, to vehement rejection.² These reactions are amplified when the relevant technology is related to the human brain, due to well-documented differences among many credible researchers about brain functioning and the reliability of inferences that can be drawn from brain-related experiments.³

In recent years there has been an upsurge of the use of neuroscience and neuroscientific evidence in criminal investigations and criminal trials worldwide.⁴ Criminal courts have utilised various applications of neuroscience in criminal cases, including attempts at the forensic use of established medical technologies for lie detection.⁵ The scientific research of neuroscientific forensic methods has been accompanied by an increasing focus on resulting legal and ethical issues and challenges.⁶ In this regard, the 2015 US Presidential Council on Bioethics Report⁷ made three pertinent recommendations:

- Expand and promote educational tools to aid the understanding and use of neuroscience in the legal system;
- Fund research on the intersection of neuroscience and the legal system; and

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¹ A list of acronyms and abbreviations is provided in Annexure A below.

² John Harris and David R Lawrence "Hot Baths and Cold Minds" (2015) 24(02) Cambridge Quarterly of Healthcare Ethics 123.

³ Feigenson N "Brain imaging and courtroom evidence: on the admissibility and persuasiveness of fMRI" (2006) 2(3) Int. J.L.C. 233 at 239.

⁴ Nita A Farahany "Incriminating Thoughts" (2012) 64(2) Stanford Law Review 351; John Bickle, Peter Mandik and Anthony Landreth "The Philosophy of Neuroscience" (26 August 2017) *The Stanford Encyclopedia of Philosophy* <stanford.library.sydney.edu.au>, O'Hara Erin Ann "How Neuroscience Might Advance the Law" (2004) 359(1451) Philosophical Transactions: Biological Sciences 1677.

⁵ Spencer J Brooks "Scanning The Horizon: The Past, Present, And Future Of Neuroimaging For Lie Detection In Court" (2013) 51 U. Louisville L. Rev. 353; Michael S Pardo "Neuroscience Evidence, Legal Culture, and Criminal Procedure" (2005) 33 American Journal of Criminal Law 301.

⁶ Martyn Pickersgill "Connecting Neuroscience and Law: Anticipatory Discourse and The Role Of Sociotechnical Imaginaries" (2011) 30(1) New Genetics and Society 27.

⁷ Gray Matters: Topics at the Intersection of Neuroscience, Ethics, and Society, 2 Op. PCSBI (2015).

- Establish and fund multidisciplinary efforts to support neuroscience and ethics research and education.

Many law enforcement agencies in the United States of America, and in a number of other countries, have traditionally relied on the polygraph (or so-called 'lie detector')⁸ as an investigatory aid, although very few courts have been willing to admit polygraph test results as evidence in criminal trials.⁹ In addition, in the specific field of applying neuroscience to forensic investigations and lie-detection,¹⁰ there have been efforts to adapt two established medical technologies to develop new neurological methods to assist criminal investigators and courts.¹¹ These are the use of brain-scanning using functional magnetic resonance imaging (fMRI),¹² and the use of brainwave detection using the electroencephalogram (EEG).¹³ The three EEG-based forensic brainwave analysis (FBA) system applications currently in use are the Farwell Protocol, Rosenfeld's Protocol and the Brain Electrical Oscillation System (BEOS).¹⁴

*A. The NZ Law Foundation–funded FBA Project (2016 to 2017)*¹⁵

From March 2016 to March 2017, the New Zealand Law Foundation (NZLF) funded a pilot study on forensic brainwave analysis ('the FBA Project'), which had the primary objective of investigating, at a prima facie level, the reliability of Dr Lawrence Farwell's EEG-based forensic brainwave analysis technology, and the legal implications of the potential application of this technology in New Zealand. In the context of the FBA Project, this article focuses primarily on current operators who use brainwave detection using the EEG for forensic purposes (i.e. forensic brainwave detection, or FBA - sometimes also called 'brain-fingerprinting'). In addition, current projects to verify the alleged accuracy and reliability of FBA are discussed, with reference also to potential legal and ethical concerns relevant to the application of this technology.

⁸ John JB Allen "Not Devoid Of Forensic Potential, But..." (2008) 8(1) *The American Journal of Bioethics* 27.

⁹ Elton J "The polygraph in the English courts: a creeping inevitability or a step too far?" (2017) 81(1) *J. Crim. L.* 66 at 68.

¹⁰ Paul S Appelbaum "Law & Psychiatry: The New Lie Detectors: Neuroscience, Deception, And The Courts" (2007) 58(4) *Psychiatric Services* 460.

¹¹ Soren Frederiksen "Brain Fingerprint or Lie Detector: Does Canada's Polygraph Jurisprudence Apply To Emerging Forensic Neuroscience Technologies?" (2011) 20(2) *Information & Communications Technology Law* 115.

¹² Carl F. Mishler "How Functional Magnetic Resonance Imaging (fMRI) Will Change the Legal Profession" (2009) 9 *Eur JL Reform* 17; Melissa Littlefield "Constructing the Organ of Deceit: The Rhetoric of fMRI and Brain Fingerprinting in Post-9/11 America" (2009) 34(3) *Science, Technology, & Human Values* 365.

¹³ Alexandra Roberts "Everything new is old again: Brain fingerprinting and evidentiary analogy" (2006) 9 *Yale JL & Tech* 234.

¹⁴ Discussed below at II, IV, V and VII.

¹⁵ "Pilot Project: The Brain Does Not Lie: the use of Forensic Brainwave Analysis and Neuroscience in Criminal and Civil Investigations." New Zealand Law Foundation, Grant 2016/43/6. (See IX.B below.)

B. The overall aim, and structure of the article

As law enforcement and related agencies worldwide are increasingly using, or considering the use of, FBA technologies as forensic and investigative tools, an awareness of the reliability, advantages and disadvantages of these new technologies is becoming crucial. The relatively limited aim of this article is therefore to inform stakeholders in the field of law enforcement of the current status, application and potential legal implications of FBA technologies in New Zealand.

The structure of the article is as follows:

- I. Introduction;
- II. Overview of the development of forensic brain-wave analysis (FBA);
- III. The 2001 GAO Report and criticisms of Farwell's FBA methods;
- IV. Rosenfeld's Complex Trial Protocol (CTP) FBA system;
- V. The Brain Electrical Oscillation Signature (BEOS) FBA system;
- VI. The impact of the P-CAST Report (2016);¹⁶
- VII. The current scientific statuses of the Farwell, Rosenfeld and BEOS Forensic Brainwave Analysis (FBA) Systems;
- VIII. Expert evidence in support of novel scientific procedures in New Zealand;
- IX. Current projects on assessing the validity of forensic brainwave analysis;
- X. Overall conclusions.

In the next section, an overview of the development of forensic brain-wave analysis (FBA) is given, combined with an explanation of how FBA is applied in practice.

II. OVERVIEW OF THE DEVELOPMENT OF FORENSIC BRAIN-WAVE ANALYSIS (FBA)

This section commences with an overview of the pioneering FBA work of Dr Lawrence Farwell, followed by an explanation of how the FBA process works using his protocols and a consideration of three significant cases Farwell was involved in. This is followed by the United States General Accounting Office (GAO) Brain-fingerprinting Report of 2001¹⁷, and criticisms of Farwell's methodology by Professor Peter Rosenfeld,¹⁸ and Meijer and others.¹⁹

A. The development of Dr Lawrence Farwell's Brain-fingerprinting technology

The pioneer of Forensic Brainwave Analysis (FBA) was Dr Lawrence Farwell, who developed the original version of FBA with a number of collaborators during the 1980s. The term forensic brainwave analysis (FBA) refers to the general scientific technique of using the EEG to analyse P300 brainwaves for forensic purposes, and 'brain-fingerprinting' (BF) is a term used by Farwell. In this paper, BF refers specifically to Farwell's particular technique of FBA, being the analysis of the P300

¹⁶ "Report to the President on Forensic Science in Criminal Courts: Ensuring Scientific Validity of Feature-Comparison Methods" OP. EOP. (September 2016) ('the P-CAST Report').

¹⁷ "Investigative Techniques: Federal Agency Views on the Potential Application of 'Brain Fingerprinting': GAO-02-22" Op. GAO. GAO-02-22 (31 October 2001). See III below.

¹⁸ Of the Department of Psychology, Northwestern University, Evanston, United States.

¹⁹ See III.B and III.C below.

brainwave, combined with an analysis of the MERMER²⁰ extension of the P300 brainwave, to detect the presence or absence of information in the brain.

Dr Farwell started developing brain-fingerprinting in 1985, and presented his initial research at a scientific conference in 1986. Farwell, with co-author Donchin, authored a number of peer-reviewed papers on brain-computer interfaces,²¹ and in 1991, Farwell and Donchin published the seminal peer-reviewed article on brain-fingerprinting (BF).²²

The seminal 1991 paper introduced three innovations to the Concealed Information Test (CIT), a test used to detect a person's guilty knowledge of a crime using a polygraph (also called the 'Guilty Knowledge Test'). They (1) applied a classification CIT, rather than the conventional comparison CIT; (2) used event-related brain potentials (ERPs)²³ as the dependent measure; and (3) computed a statistical confidence for each individual determination using the technique of bootstrapping.²⁴

Dr Farwell continued to research and carry out field tests of his new brain-fingerprinting technique. In doing so he refined the technique to add what he termed the 'Memory and Encoding Related Multifaceted Electroencephalographic Response' (MERMER)²⁵ to the P300 test. He discovered that after the P300 wave at 300 milliseconds after the stimulus, a little later at between 800 and 1200 milliseconds after the stimulus there was a consistent MERMER- tail produced by the brain. Using similar analyses to that used in interpreting the P300 brainwave, he used the MERMER to validate his P300 results, and increase the statistical confidence of an accurate and reliable result.²⁶

After the inclusion of the MERMER in his brain-fingerprinting analysis, Farwell reported conclusive results in all the BF cases he has tested with a statistical accuracy of 99.9%, and reported that he had never had a false positive or false negative result.²⁷

²⁰ Memory and Encoding Related Multifaceted Electroencephalographic Response.

²¹ Farwell LA and Donchin E "Event-related brain potentials in interrogative polygraphy: analysis using bootstrapping" *Psychophysiology* 25 (1988) 445; Farwell LA and Donchin E "Talking off the top of your head: toward a mental prosthesis utilizing event-related brain potentials" *Electroencephalogr. Clin. Neurophysiol.* 70 (1988) 510- 513.

²² Farwell LA and Donchin E "The truth will out: interrogative polygraphy ('lie detection') with event-related brain potentials" *Psychophysiology* 28 (1991) 531.

²³ An ERP is a measured brain response that is the direct result of a specific sensory, cognitive, or motor event stimulus, and that is measured by means of electroencephalography (EEG).

²⁴ "*Bootstrapping*" refers to the process of loading an initial computer code or programme, that in turn prompts the loading of subsequent computer programmes needed to effectively implement various computer-driven tasks (in this case, the brain-fingerprinting analysis).

²⁵ Patented by Dr Farwell in 1994 - see n 94 below.

²⁶ Farwell LA and Smith SS (2001) "Using brain MERMER testing to detect concealed knowledge despite efforts to conceal" *J. Foren. Sci.* 46 (2001) 135.

²⁷ Above n 26.

B. How Dr Farwell's forensic brainwave analysis (FBA) system works

Dr Farwell's "brain-fingerprinting" FBA technique initially relied on using an EEG²⁸ to detect the behaviour of the electrical brainwave known as 'P300',²⁹ followed by an interpretation of the detected brainwaves (as explained below). The P300 brainwave response is emitted from the brain as soon as the brain detects information of particular significance (within 300 milliseconds after exposure to a stimulus). This measured brain response, that is the direct result of a specific sensory, cognitive, or motor event (called the "stimulus"), and that is measured by means of electroencephalography (EEG), is called an event-related potential (ERP).³⁰

To illustrate: After being involved in a particular crime incident, there is certain information *only* a person involved in the incident would have knowledge of, and which knowledge would be stored in his or her brain (such as the number and description of items of jewellery stolen, the facial features of a victim, the exact time it happened, the weapon used, etc). The EEG is then used to detect certain P300 brainwaves that are effectively the key indicators of this unique knowledge – things that only the person involved in the incident in question would know (Farwell calls this concealed information "probes"). The essence of the FBA procedure is to detect this concealed information in the brain of the crime suspect. However, the presence of these probes in the brain of the suspect does not necessarily mean that the suspect actually committed the crime: it just means that he or she has information in their brain that only someone involved in the crime would know. For example, the suspect may have been taken to the crime scene by force, and could have been compelled by others to participate in the crime. Of course, if the suspect had, prior to the test, said that he had had no knowledge of the crime, and the FBA test results showed that he in fact *did* have such knowledge, investigators may draw the inference that he is lying about his involvement. The point is, however, that the FBA test is, in essence, a *knowledge* detector, not a *lie*-detector.

The technique relies solely on the detection and interpretation of EEG signals, and no oral or written responses are required from the subject. The responses are therefore outside the subject's control, and cannot easily be manipulated by him or her (although there is some research that suggests that it is possible to conceal guilty knowledge in FBA tests³¹). As explained in II.A above, this initial P300 test was later further developed and refined by Dr Farwell and his associates into the 'Memory and Encoding Related Multifaceted Electroencephalographic Response' (MERMER) test, in which additional features were added to the P300 test, resulting in a very high level

²⁸ Electroencephalogram.

²⁹ The P300 brainwave was discovered by Sutton et al: Sutton S, Braren M, Zubin J, John ER "Evoked potential correlates of stimulus uncertainty." (1965) 150 Science 1187–1188.

³⁰ Koops B and others *Responsible Innovation 2* (Springer International Publishing, Switzerland, 2015) at 245; Farwell LA and others "Optimal Digital Filters for Long Latency Components of the Event-Related Brain Potential" (1993) 30 Psychophysiology 306.

³¹ Zara M Bergström and others "Intentional Retrieval Suppression Can Conceal Guilty Knowledge In ERP Memory Detection Tests" (2013) 94(1) Biological Psychology 1.

of reported accuracy. The MERMER response follows the initial P300 detecting follow-up waves in the 800 to 1200 milliseconds post-stimulus range.

C. The testing methodology using Farwell's FBA protocols

Farwell's FBA testing methodology is to use a specially-designed EEG headset that contains electronic sensors that detect brainwaves. The headset is linked to desk computer or laptop computer loaded with the FBA software.

The subject is fitted with headset and is seated before another computer monitor in the same room. Various stimuli are then shown on the screen, which could include words, phrases, diagrams, pictures, or photographs. Typically a sequence of thirty to fifty stimuli is presented in a single testing, within which three types of stimulus are randomly distributed, using the so-called Oddball Paradigm.³² These three types of stimuli are:

(1) Irrelevant stimuli: called "irrelevants"- these are words, phrases, diagrams, pictures, or photographs that are *not in any way* relevant to the case being investigated, and that the subject has no prior knowledge of.

(2) Target stimuli: called "targets"- these are words, phrases, diagrams, pictures, or photographs that *are* relevant to the case being investigated and are known to the subject, either because of prior knowledge, or because this information has been disclosed to the subject before the FBA test is conducted.

(3) Probe stimuli: called "probes"- these are words, phrases, diagrams, pictures, or photographs that are relevant to the case being investigated, and that *only a person involved in the incident would know*. The probe stimuli are carefully selected items of information known *only* to the investigators and those involved incident. This information would not be known to persons not involved in the incident.

D. A Practical illustration of FBA: The Mobile Phone Theft

A demonstration used by the author in presentation seminars can be used to explain practical application of FBA, following Farwell's FBA protocols. The scenario is the simulated theft of a mobile phone belonging to the presenter of a seminar from a closed drawer in the console at the front of the auditorium. A designated member of the 50 members of the audience "steals" the phone during a ten-minute rest-room break while the presenter is outside the auditorium.

The auditorium has around 300 tiered seats, all covered with light-blue fabric. At the front of the auditorium is a brown, wooden control console, with a built-in computer and two drawers below the computer. There are red exit signs above the two entrances and two drop-down screens. Suspended from the ceiling are two remote-

³² An "oddball paradigm" is an experimental design used in psychology research, where presentations of sequences of repetitive stimuli are infrequently interrupted by a deviant stimulus. In Farwell's FBA test, subjects respond to an infrequent stimulus designated the *targets*, which are randomly embedded in a background of standard stimuli (in this case, the targets include *probes*, and the standard stimuli are the *irrelevants*.)

controlled projectors and on the left-hand wall is a large mural of a ship at sea. Behind the two drop-down screens are two white-boards and on the right-hand wall is another mural depicting a farm scene including a number of farm animals. There is a small brown wooden table with two black two chairs in the centre of the auditorium.

Inside the drawer from which the mobile phone was stolen, is a black stapler; a bunch of car keys with a silver bottle-opener attached to it; one red and one green whiteboard marker pen; a small white calculator; a blue plastic mug and, prior to the "theft," the mobile phone (which was a white iPhone 5). The base of the drawer is covered in green velvet.

In preparation for the FBA testing of the 50 suspects (being the 50 members of the audience, as the scenario assumes that one of the audience members stole the mobile phone), the tester will prepare the words and images as follows to be included in the series of items (known as "stimuli") to be shown to the subjects:

- *Irrelevants*: A number of words and images completely unrelated to the auditorium and seminar, even nonsense, made-up information. The principle here is that the irrelevant stimuli *must not* be known or recognised by the suspect.
- *Targets*: This is information that all the suspects will know, for example the images of the two murals and the console at the front of the auditorium; references to the red exit signs; references to the colour of the seats; a description of the table and two black chairs; and references to the two drop-down screens. In addition, these words, phrases and images are shown to the subject before the testing to confirm their recollection.
- *Probes*: In this case, the obvious probes (information only the perpetrator would know) would be the contents of the drawer in which the mobile phone was placed. These probes would include references to, or images of the green velvet base of the drawer; the black stapler; the bunch of car keys with a silver bottle-opener attached to it; the red and green whiteboard marker pens; the small white calculator; and the blue plastic mug.

A list of words, phrases and images (collectively called 'stimuli') is then drawn up, and the irrelevant, target and probe stimuli are randomly placed within the list. The FBA test is then administered³³ and the graphs of the brainwave responses (ERPs-P300 brainwaves and MERMERS) are subsequently analysed to determine one of three results:

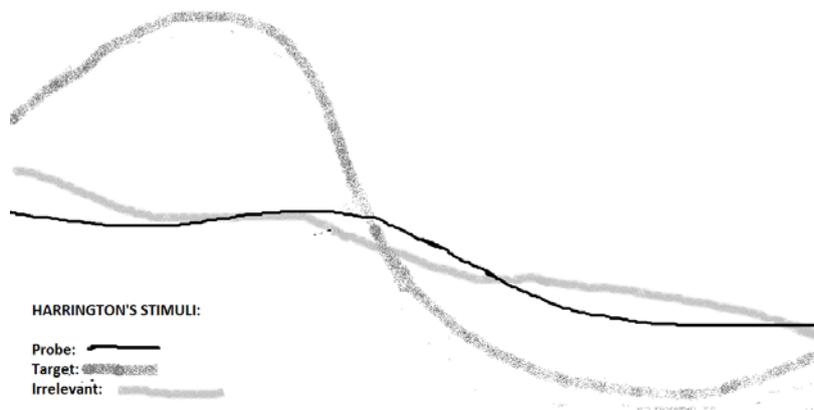
- A finding of *information present*: the FBA test indicates that the subject *does* have knowledge of the probes in his brain, and was therefore *must have* looked in the drawer); or
- A finding of *information absent*: the FBA test indicates that the subject *does not* have knowledge of the probes in his brain, and was therefore *did not* look in the drawer; or

³³ The testing methodology description is obviously a simplification of the testing process, as a single test takes up to three hours to complete, and entails numerous repetitions of the test that are averaged to get a valid result.

- An *indeterminate* result: the statistical confidence in the results is not high enough to make a definite finding.³⁴

Represented graphically, an “information present” result shows as a peak or spike, and an “information absent” result typically has a flatter trajectory. The test results of the 49 subjects who did *not* open the drawer would typically show the *targets* as a spiked P300 brainwave (recognised by the brain as “information present”), and the probes’ brainwave matching the irrelevant’s brainwave (with a generally flatter trajectories due to no brain recognition- “information absent”). The depiction of this result would be similar to the Harrington Case³⁵ brainwave chart extract below, where the *probes*’ brainwave tracks the *irrelevant’s* brainwave, as both these categories of stimuli are not recognised by the brain. The *targets*, which *are* recognised, shows as a P300 peak or spike (Figure 1):

Figure 1- Probes information absent:



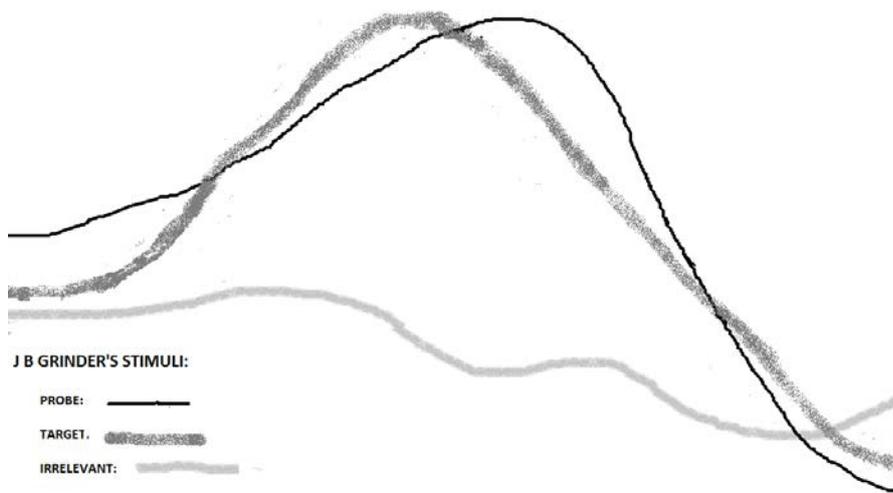
On the other hand, if we assume that the FBA test of one member of the audience (let’s call him John Doe) shows the *probes* brainwave tracking the *targets* brainwave, this indicates that John Doe indeed *does have* knowledge of the probe objects that were inside the drawer. This, of course, does not mean that he stole the mobile phone: it just means that he had opened and looked into the drawer. This information then calls for an explanation from him as to when and why he looked inside the drawer, and may assist with an ultimate conclusion that he is probably the thief. John Doe’s brainwave would look similar to the Grinder Case³⁶ FBA graph extract below (Figure 2):

³⁴ Farwell claims to have not produced any indeterminate testing results since the introduction of the MERMER component to his FBA testing. Further, Farwell claims he has had no false negative or false positive results in any of the studies he has done: see Farwell LA, Richardson DC, Richardson G “Brain fingerprinting field studies comparing P300-MERMER and P300 ERPs in the detection of concealed information” (2011) 48 *Psychophysiology* 95.

³⁵ Discussed at II.E.2 below.

³⁶ Discussed at II.E.1 below.

Figure 2- Probes information present.



Three significant cases in which Dr Farwell's brain-fingerprinting ("BF") FBA testing technology was applied are discussed next, starting with the case of J.B. Grinder in 1999.

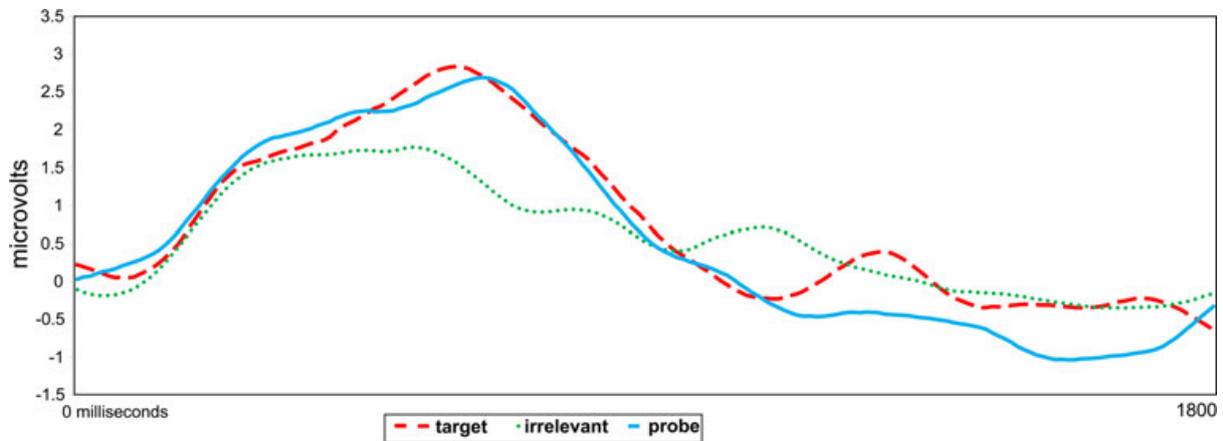
E. Three significant FBA cases: Grinder, Harrington and Slaughter

1. The J B Grinder Case (1999)

In January of 1984, Julie Helton's body was found near the railroad tracks in Macon County, Missouri, in the United States. She had been raped and beaten, and then stabbed to death. For over 15 years (as at 1999), JB Grinder had been the primary suspect in this murder, but had never been charged due to the lack of sufficient evidence to take the case to trial.

Eventually the Macon County Sheriff approached Dr Farwell to use FBA testing to assist in the investigation. On August 5, 1999, Dr Farwell administered a brain fingerprinting (BF) test on JB Grinder. Drew Richardson, then a scientist in the FBI Laboratory, was the criminal investigator who identified and formulated the probe stimuli. The BF test applied indicated that Grinder contained specific details of the crime in his brain with a statistical confidence of 99.9%. Following the brain fingerprinting test results, corroborated by other evidence, Grinder pleaded guilty to the rape and murder of Julie Helton in exchange for a sentence of life in prison without the possibility of parole. He is currently serving his life sentence. In addition, Grinder later confessed to the murders of three other young women, Teresa Williams, Crystal Parton and Cynthia Mabry.

Figure 3: J.B. Grinder's brainwave graph. The *probe* brainwave line (blue solid line) closely matched the target information line (red, bold broken line), showing specific knowledge of the crime is present and guilt can be inferred. The bottom flatter green dotted line indicates the irrelevant.



2. The Terry Harrington Case (2001)

In many respects the Terry Harrington case in the United States is very similar to the Teina Pora case in New Zealand.³⁷ Both Harrington and Pora were wrongly convicted as 17 year-olds: both were charged with murder; both were convicted on the evidence of young witnesses improperly influenced by police investigators, and both spent more than 20 years in prison. The catalyst for Harrington's eventual release was the intervention of Dr Farwell and Harrington's exonerating brain-fingerprinting test, whereas Pora would undoubtedly still be imprisoned had it not been for a tenacious ex-policeman investigator who was convinced of his innocence.³⁸

Terry Harrington was accused of the murder of John Schweer, a retired police captain who was employed as a security guard at a car dealership in Iowa, United States. Schweer was murdered in the early hours of the morning of July 22nd 1977. During the police investigation, Kevin Hughes, a young acquaintance of Harrington's, was arrested, and after giving a number of false statements, Hughes eventually claimed that Terry Harrington, along with another 17 year old named Curtis McGhee, had attempted to steal a car from the premises Schweer was guarding on the night of the murder. Hughes alleged Harrington had shot Schweer when the latter came to out to investigate the attempted theft. This resulted in Harrington being convicted of murder in a jury trial in August 1978. He was sentenced to life imprisonment without parole. Harrington always maintained his innocence, and that he had an alibi for the night of the murder. After spending 24 years in prison, and after numerous failed court applications and appeals over the years, Harrington's lawyer, as a last resort, arranged for Harrington to be FBA tested by Dr Lawrence Farwell.

³⁷ *Pora v The Queen* [2015] UKPC 9.

³⁸ Michael Bennett *In Dark Places: The Confessions of Teina Pora and an Ex-cop's fight for Justice* (Paul Little Books, Auckland, 2016).

On April 18 and 25, 2000, Dr Lawrence Farwell administered a brain fingerprinting test to Harrington. The test results demonstrated that Harrington's brain did not contain a record of certain specific salient features of the crime ("probes"). Then Harrington's alibi was tested, and this test showed that he *did* recognize the salient details of his alibi. The result was therefore "information absent" with respect to the crime, and "information present" with respect to the alibi, in both cases with a statistical confidence of 99.9%.³⁹

When Dr Farwell confronted the key trial witness Kevin Hughes with the brain fingerprinting test results, Hughes admitted that he had lied about Harrington and McGhee's involvement in Schweer's murder. He said he had falsely accused Harrington and McGhee under extreme police pressure, and to avoid being prosecuted himself. He was also paid a \$5 000 reward by the police authorities.

In *Harrington v State*⁴⁰ in 2001, in an Iowa district court, Harrington sought to overturn his murder conviction on several grounds, including reliance on "newly discovered evidence" in the form of Farwell's brain fingerprinting results.

Dr Farwell testified as an expert witness in this trial, and after an eight-hour admissibility hearing, the court found the Farwell's BF evidence was admissible by applying the *Daubert* principles. The Court held, in particular, that the P300 brainwave science in general was well-established and widely accepted.⁴¹ However, the High Court nevertheless denied the motion for a retrial, and Harrington appealed to the Iowa Supreme Court in 2003.⁴² The Iowa Supreme Court relied on the violation of Harrington's constitutional rights by the police to overturn his murder conviction, but did not deal with the reliability or accuracy of Farwell's brain fingerprinting evidence. Harrington was released, together with his erstwhile co-accused, Curtis McGee. Harrington was paid \$7.03 million, and McGhee \$4.97 million in compensation.⁴³

Although the Iowa courts in the Harrington cases were not prepared to overtly rely on the FBA technology evidence, the brain-fingerprinting test results played a pivotal role in the sequence of events that led to Harrington's eventual release. In particular, Kevin Hughes, who admitted when confronted by Dr Farwell after Harrington's FBA tests that he had falsely implicated Harrington, filed an affidavit in the 2003 appeal case admitting his false testimony.

³⁹ See Harrington's FBA graph: Figure 1 above.

⁴⁰ *Harrington v State*. Case No. PCCV 073247 (Iowa District Court for Pottawattamie County, 5 March 2001).

⁴¹ *Daubert v Merrell Dow Pharmaceuticals* 54 APP. D.C., at 47, 293 F.

⁴² *Harrington v State*. 659 N.W.2d 509 (Iowa 2003).

⁴³ Denzel S and Possley M "Terry Harrington" (17 August 2017) The National Registry of Exonerates <www.law.umich.edu>, Farwell LA "Farwell Brain fingerprinting Helps to Free an Innocent Man" (17 August 2017) Farwell Brain Fingerprinting <<http://www.larryfarwell.com>>.

3. *The Jimmy Ray Slaughter case (2005)*

In 2004, Dr Farwell administered an FBA test on Jimmy Ray Slaughter, a death-row inmate in Oklahoma, in support of a petition for post-conviction relief. Slaughter had been convicted in 1994 of murdering his ex-girlfriend and her young daughter, but had consistently and vehemently denied his guilt.

The Oklahoma Court of Appeals declined to order an evidentiary hearing on numerous issues raised by Slaughter.⁴⁴ The submitted application included an “information-absent” result for crime-scene *probes* on the brain fingerprinting test administered by Farwell, indicating that Slaughter had no knowledge of the crime – scene *probes*. Despite this, and despite compelling exculpatory DNA evidence, the court dismissed the application, which also included the sworn testimony of the original lead investigator of the case in which he stated that he had come to believe that Slaughter was innocent, and credible evidence that persons involved in the investigation had falsified reports and fabricated evidence against Slaughter. Slaughter was subsequently executed in May 2005.⁴⁵

III. THE 2001 GAO REPORT AND CRITICISMS OF FARWELL’S FBA METHODS

The startling level of reported accuracy of Dr Farwell’s FBA methods has attracted a number of critics, the most prominent being Professor Peter Rosenfeld of Northwestern University, and Ewout Meijer and others. Before considering these criticisms, the 2001 report on brain-fingerprinting by the US General Accounting Office (GAO), which Rosenfeld contributed to, is discussed.

*A. The US Government Accountability Office (GAO) Brain-fingerprinting Report (2001) (“GAO Report”)*⁴⁶

The GAO Report is a brief report, prepared by the United States Government Accountability Office in 2001, outlining the views of the FBI, U.S. Secret Service, and several scientists on the use of brain-fingerprinting (BF) as a potential forensic investigative tool. After outlining what the technique is and how it works, the report considered some of the concerns the FBI had with the use of BF, followed by comments on BF by selected scientists, including Professor Peter Rosenfeld. The main criticism of BF was the lack of independent field research and trials, leading to a lack of confidence in the technique due to insufficient scientific evidence to demonstrate the validity and reliability of BF techniques. Some of the critics recognised that initial BF results were promising, but that the lack of field research was a real concern. This lack of field trials led to a secondary concern that there was no research on the effect of drugs or alcohol on the memory in relation to the use of BF.

⁴⁴ *Slaughter v State* WL 562759 (Okl.Cr.App 2005) (3rd PCR).

⁴⁵ On an ancillary note, it may be interesting research to investigate whether the psychological impact of Slaughter’s unfortunate surname had any unconscious influences on the court’s decision.

⁴⁶ “Investigative Techniques: Federal Agency Views on the Potential Application of ‘Brain Fingerprinting’: US Government Accountability Office 02-22” Op. GAO. GAO-02-22 (31 October 2001).

The FBI's earlier view in 1993, that the BF technique would not be useful as an investigative tool as the benefits gained did not outweigh the costs, was also discussed. Two FBI agents who had conducted research with Dr Farwell disagreed with this conclusion, and claimed that it could be a useful investigative tool for the FBI. They stated, however, that this would require intensive new training to ensure that the collection of information at crime scenes would be specific enough for the technique to be properly employed (to ensure, for example, that reliable and confidential *probes* were identified at an early stage of the investigation).

This report was produced in 2001, and the FBI's 1993 views have since been superseded to some extent by later FBA studies Dr Farwell conducted in 2008. Farwell's work with the FBI (and CIA) in 2008 was restricted from publication for a number of years, and four field studies that were conducted with the FBI and the CIA were finally published in 2013.⁴⁷ Following the publication of these studies, Farwell and others published a further study in 2014 which was funded by the CIA and conducted at the US Navy. Farwell reported that this study produced the same results as the BF studies published in 2013, with 0% error rates and 99.9% statistical confidence levels, with no false negatives, false positives or indeterminate results.⁴⁸

B. Rosenfeld's critique of Farwell's Brain-fingerprinting Procedure

In 2005, Professor Peter Rosenfeld attempted to replicate the studies of Dr Farwell, and published a critique of Farwell's work.⁴⁹ Rosenfeld criticised several aspects of Farwell's work, including citing the GAO Report, to which he contributed.⁵⁰ Rosenfeld reiterated concerns present in the GAO Report about the practical application of the technology as well as raising concerns about the completeness of the research. He called for further field tests and more peer-review of Farwell's research, but conceded that the research showed promise. Rosenfeld also attempted to replicate Farwell's tests in a series of studies, and did not achieve accuracy rates as high as Farwell's. In fact, Rosenfeld achieved accuracy as low as 54% in some studies. This led him to the conclusion that Farwell's brain-fingerprinting protocol was not as accurate as Farwell claimed in his research papers.

Farwell's response to this was that Rosenfeld had mistakenly applied the generalised susceptibility to countermeasures of certain non-brain fingerprinting techniques Rosenfeld had studied, to Farwell's brain-fingerprinting techniques. In particular, Farwell claimed that Rosenfeld did not follow the correct methodology laid out in

⁴⁷ Farwell LA, Richardson DC and Richardson GM "Brain fingerprinting field studies comparing P300-MERMER and P300 brainwave responses in the detection of concealed information" (2013) 7 Cogn. Neurodyn. 263.

⁴⁸ Farwell LA, Richardson DC, Richardson GM and Furedy JJ "Brain fingerprinting classification concealed information test detects US Navy military medical information with P300" (2014) 8 Front. Neurosci. 410.

⁴⁹ Rosenfeld JP "Brain fingerprinting: a critical analysis." (2005) 4 Sci Rev Mental Health Practice 20.

⁵⁰ Above n 46.

Farwell's "Brain Fingerprinting Scientific Standards: Scientific Standards for Brain Fingerprinting Tests," and asserted that had Rosenfeld followed these standards, he would have achieved a much higher accuracy rate, and would have found countermeasures to be ineffective.⁵¹

C. Meijer and others' critique of Farwell's Brain-fingerprinting Procedure

The other major critique of Farwell's work was by Ewout Meijer and others in 2013.⁵² Responding to Farwell's 2012 article,⁵³ the essence of their critique was that Farwell's hypothesis that relevant stimuli (including the *probe* stimuli) will elicit an enhanced P300 response only in participants who have the concealed information present in their brains was misleading and not scientifically valid. They argued that the research indicates that any event that violates the tested subject's expectations would elicit a P300 response. They also criticised Farwell's MERMER test, arguing that the MERMER test does not add any incremental validity beyond the P300 alone. (It should also be mentioned that the authors suggest that Farwell patented his MERMER test in 1994 to overcome the restriction on use of the P300 CIT protocol for FBA knowledge detection, as the latter patent is held by the University of Illinois, and was the protocol used in experiments described in Farwell and Donchin's seminal 1991 paper.) Significantly, Farwell's erstwhile co-author, Donchin, was also one of the co-authors of the Meijer et al critique. This apparent animosity appeared to be confirmed by the title of Farwell and Richardson's reply in 2013 to the Meijer et al critique, in which the scientific criticisms raised were responded to.⁵⁴

Professor Peter Rosenfeld also developed his own forensic brain-wave tests and protocols, named the Complex Trial Protocol (CTP), and described the CTP protocols in a paper published in 2008.

IV. ROSENFELD'S COMPLEX TRIAL PROTOCOL (CTP) FBA SYSTEM

In 2008, Rosenfeld and his co-authors published a description of his Complex Trial Protocol (CTP) FBA system.⁵⁵ In essence, the CTP protocol is a concealed information test (CIT) where a selected probe or frequent irrelevant stimulus appears in the same trial in which a target or non-target later appears. A later second stimulus then appears: target or non-target. The subject presses one button for a target, another for a non-target. A P300 brainwave response to the first stimulus indicates probe recognition. One group was tested for denied recognition of

⁵¹ Farwell LA "Brain fingerprinting: Corrections to Rosenfeld" (2011) 8 *Sci.Rev. Mental Health Pract.*56.

⁵² Ewout H Meijer, Gershon Ben-Shakhar, Bruno Verschuere, Emanuel Donchin "A comment on Farwell (2012): Brain fingerprinting - a comprehensive tutorial review of detection of concealed information with event-related brain potentials" (2013) 7 *Cognitive Neurodynamics* 155–158.

⁵³ Farwell LA "Brain Fingerprinting: a comprehensive tutorial review of detection of concealed information with event-related brain potentials" (2012) 6 *Cong. Neurodyn* 115 at 129.

⁵⁴ Farwell LA and Richardson DC "Brain fingerprinting: let's focus on the science- a reply to Meijer, Ben-Shakhar, Verschuere, and Donchin" (2013) 7 *Cogn Neurodyn* 159- 166.

⁵⁵ Rosenfeld JP and others "The complex trial protocol (CTP): a new countermeasure resistant accurate P300-based method for detection of concealed information." (2008) 45 *Psychophysiology* 906.

familiar information, followed by testing to control for attempted countermeasure (CM) conditions. The results were positive, with a reported statistical confidence result of more than 90% in identifying probe recognition.

Rosenfeld's reasonably impressive recognition results using his CTP protocol appears to have been substantively independently replicated in laboratory conditions by Lukács and others in 2016.⁵⁶

Apart from the Farwell and Rosenfeld FBA protocols, a third variant of FBA testing has been developed in India, called the Brain Electrical Oscillation Signature (BEOS) system. This FBA method has been fairly widely used by investigators in India, and also by certain organisations outside India, like the Ministry of Home Affairs (MHA) in Singapore.

V. THE BRAIN ELECTRICAL OSCILLATION SIGNATURE (BEOS) FBA SYSTEM

The Brain Electrical Oscillation Signature (BEOS) system (also called Brain Electrical Activation Profile (BEAP)) is a variant form of FBA, and was developed by Champadi Raman Mukundan, a former professor of psychology at Bangalore's National Institute of Mental Health and Neuro Sciences ("NIMHANS"). During the years 2000 to 2010, BEOS was used in parts of India in criminal pre-trial investigations, and reportedly in a number of criminal trials as well. The BEOS system was used primarily by police and prosecutors, together with the polygraph and narco-analysis,⁵⁷ as tools of criminal investigation.⁵⁸

The operation of the Brain Electrical Oscillation Signature (BEOS) system, is described by its developers as follows:⁵⁹

BEOS is a non-invasive supporting tool that can aid law enforcement officers to investigate whether a suspect is involved in any unlawful activities. The BEOS system detects the retrieval of memories related to Experiential Knowledge (EK) in the human brain. Individuals acquire EK after carrying out a task/activity or being present at an event. EK contains neural components that are related to emotions, sensory-motor activities and proprioceptive sensations. In contrast, conceptual knowledge is acquired if individuals read about an event in the newspaper or book. The conceptual knowledge lacks the experiential components and represents the "knowing" system of the brain.

The BEOS result is analysed and automatically generated by the proprietary BEOS algorithm. It

⁵⁶ Gáspár Lukács, Béla Weiss, Vera Daniella Dalos, Tünde Kilencz, SzabinaTudja, GáborCsifcsák, "The first independent study on the complex trial protocol version of the P300-based concealed information test: Corroboration of previous findings and highlights of vulnerabilities." (2016) 110 *International Journal of Psychophysiology* 56–65.

⁵⁷ A psychotherapy procedure whereby the subject is put in a sleep-like or semi-conscious state induced by drugs such as Midazolam, Flunitrazepam, Sodium thiopental, and Amobarbital (all colloquially known as 'truth serum'). In this semi-conscious state, the subject gives information, often incriminating him-or-herself.

⁵⁸ Suresh Bada Math "Supreme Court judgment on polygraph, narco-analysis & brain-mapping: A boon or a bane?" (24th August 2017) National Centre for Biotechnology Information <ncbi.nlm.nih.gov>.

⁵⁹ There appears to be no other literature readily available that explains the BEOS FBA system.

is based on complex time frequency and temporal spatial signal changes that takes place in the brain. Hence, it does not require visual inspection of waveforms by the user.

The BEOS technology has no relation to the Brain Fingerprinting - P300 Mermer testing, and is not based on a single potential⁶⁰. The P300 Mermer is only based on the basic P300 signal averaging occurring at 300 milliseconds and used in routine lab ERP tests. However, the BEOS technology tracks neural processes related to memory retrieval through various stages including sensory registration, primary processing, encoding, and finally experiential knowledge.

The retrieval of EK can be triggered by reminding the person of interest about the task/event. The retrieval process is stimulated by presenting a series of customised sequential auditory sentences (probes) that is related to the task/event.

Probes are classified into 3 different categories:

- Neutral Probes – Not associated with any memories and are used as baseline;
- Control Probes – Related to established facts about the person being screened;
- Target probes – Related to the event being tested. Target probes are presented in two parts, being the details of the event hypothesised by the investigating officer, and the account of the event given by the subject.

During the presentation of the time locked auditory probes to the subject, the BEOS technology records the brainwave signals across 30 locations on the scalp. The proprietary BEOS algorithm analyses the recorded brainwave data to identify neural signatures related to EK for each auditory probe presented. The algorithm auto generates the BEOS result and flags out those probes that have triggered the retrieval process of Experiential Knowledge (EK).⁶¹

Apart from the BEOS developers' description above, there appears to have been no independent replications of the BEOS system protocols done or published to date.⁶²

The next question that will be considered is the extent to which the Farwell, Rosenfeld and BEOS forensic brainwave analysis (FBA) systems are considered sufficiently reliable and accurate to be used in civil and criminal investigations, or as expert evidence in civil and criminal court proceedings. The recently released P-CAST Report provides useful guidance for an acceptable standard of scientific validity in this regard.

VI. THE IMPACT OF THE P-CAST REPORT (2016)⁶³

The Report to the President on Forensic Science in Criminal Courts: Ensuring Scientific Validity of Feature-Comparison Methods ("the P-CAST Report") was written to critique the current use of established scientific forensic techniques in police

⁶⁰ Event-related Potential (ERP).

⁶¹ Champadi R. Mukundan, Nilesh B. Wagh, Gunjan Khera, Shraddha U. Khandwala, Tara L. Asawa, Namrata M. Khopkar, Dharmistha D. Parekh (2008) "Brain Electrical Oscillations Signature Profile of Experiential Knowledge." Directorate of Forensic Sciences, Gandhinagar, Gujarat, India 1–45.

⁶² Puranik, D.A., Joseph, S.K., Daundkar, B.B., Garad, M.V. (2009) "Brain Signature profiling in India. It's status as an aid in investigation and as corroborative evidence – as seen from judgments." Proceedings of XX All India Forensic Science Conference, November 15 – 17, Jaipur. 815–822.

⁶³ "Report to the President on Forensic Science in Criminal Courts: Ensuring Scientific Validity of Feature-Comparison Methods" OP. EOP. (September 2016) ('the P-CAST Report').

investigations and court proceedings in the United States. Although the report's focus is on the United States, its contents and conclusions are relevant to all countries where similar techniques are used, including the UK and New Zealand.⁶⁴

The report focuses on the accuracy and reliability of a number of established forensic techniques, and criticises many current practices for inadequate accuracy rates. However, forensic brainwave analysis (FBA), and other concealed information tests such as the polygraph and fMRI are not dealt with, and are only mentioned in passing:

We believe this report should encourage the legal community to require that the emerging field of forensic neuroimaging, including fMRI based lie detection, have a proper scientific foundation before being admitted in courts.⁶⁵

The report nevertheless provides valuable guidance and criteria for the further development of FBA and similar neurological forensic processes, such as fMRI.

The report strongly recommends that the courts use a two-stage procedure when assessing forensic evidence:

- First, that the forensic technique which is being employed has *foundational validity*; and
- Second, that the test being assessed in a specific case has *validity as applied*.

"Foundational validity" refers to whether a technique is scientifically sound, replicable, and accurate in a lab environment. "Applied validity" is whether a technique's effectiveness can be used in the real world outside of a scientific setting.

The P-CAST Report's criticism of a lack of foundation validity is based on the lack of empirical evidence of many forensic scientific techniques to support their alleged accuracy and reliability. The report categorises these scientific techniques in two ways. Either the technique is objective or subjective. The objective techniques are those which require no human analysis for drawing a conclusion. The example used in the report is simple DNA testing where there is just one or two people's DNA in the sample that is being tested. This kind of technique only requires computer analysis of the sample and requires no human analysis to draw a conclusion.

Validity as applied refers to the need to establish validity in any given case rather than just the overall validity of the technique. Here the report considers the current approach in America where expert witnesses are not allowed to tell juries exact values of the chance of error. Instead experts are expected to use broader terminology and claim there is a chance they could be wrong rather than represent what the exact chance is.

Overall, this report raises concerns about the lack of both foundational and applied

⁶⁴ See Tony Ward and others "Forensic Science, Scientific Validity and Reliability: Advice from America" (2017) 5 Crim.L.R. 357.

⁶⁵ Above n 63 at 4.8.

validity in the use of most forensic sciences. The report believes that peer review, estimates of accuracy, or rates of accuracy in the “perfect world” is no longer satisfactory. These estimates do not account for human error and the actual real-world accuracy of these techniques. All the proposed recommendations in the report are aimed at improving reliability, as well as more accurately measuring the accuracy of techniques.

The Report also discusses concerns that juries often don’t understand or have the capacity to properly evaluate complex scientific evidence; for example, appreciating the realistic chance of false positives when applying these forensic techniques.

In conclusion, given the trenchant criticisms in the P-CAST Report of many existing forensic science investigation techniques and practices, the future research and development of FBA will have to ensure that both aspects of validity, foundational and applied, are adequately addressed.

VII. THE CURRENT SCIENTIFIC STATUSES OF THE FARWELL, ROSENFELD AND BEOS FORENSIC BRAINWAVE ANALYSIS (FBA) SYSTEMS

Considering the published literature in the field, it seems clear that not one of the three FBA systems currently in use meets even the “Foundational validity”⁶⁶ requirement in the P-CAST Report.

Dr Farwell’s reported FBA testing results have not, to date, been sufficiently independently replicated despite being applied in differing contexts since the 1990s, while Professor Rosenfeld’s Complex Trial Protocol (CTP) FBA system has only been subject to a single attempt at independent replication in 2016 since his CTP FBA protocols were published in 2008.⁶⁷ The Brain Electrical Oscillation Signature (BEOS) FBA system protocols have not been published and subjected to credible peer review in any recognised academic journals at all to date.

In order to reach the P-CAST Report’s standard of foundational validity, extensive independent replication of all three FBA protocols will be required, followed by extensive field testing to establish the second level of scientific validity, namely “validity as applied” (i.e. whether the techniques’ effectiveness can be used in the real world outside of a scientific setting). The importance of meeting both the foundational validity and the applied validity standards has been emphasised in a recent article by Gerben Meynen.⁶⁸

Meynen refers to all forensic applications related to the brain as “brain-based mind reading” (BMR), and suggests a conceptual framework for BMR which distinguishes between three basic types of BMR, based on how they relate to the subject’s knowledge. In addition, he distinguishes three features of BMR techniques: first, whether they require passive cooperation; second, whether

⁶⁶ That is, the technique is scientifically sound, replicable, and accurate in a laboratory environment.

⁶⁷ See above n 56.

⁶⁸ Gerben Meynen “Brain-based mind reading in forensic psychiatry: exploring possibilities and perils.” (2017) 4(2) *Journal of Law and the Biosciences* 311–329.

they require active cooperation; and third, whether they require that the subject is awake. He points out that each of the types of BMR entails specific risks for forensic psychiatry, involving, for example, confidentiality in the doctor–patient relationship, and the possibility of coercive use of BMR techniques. He concludes that apart from legal considerations, such as tests of admissibility of evidence, professional ethics is highly relevant.

In particular, Meynen reiterates the warnings of Pardo and Patterson⁶⁹ who argue that brain based lie-detection research may fail to detect what it aims to study: lies. They point to the difficulty of drawing inferences from subjects' lying in a research setting in which lies are actually "permitted" or even encouraged, because they are required for performing the study. In such a context, they argue, it is impossible to *really* lie. If research on brain-based lie detection would face such a fundamental problem, the application of such a technique in a court of law would lack a solid scientific basis. Apart from this research-related issue, ethical and legal qualms have been raised concerning the possible use of BMR against a person's or defendant's will. Furthermore, there are technical concerns. For instance, even if a BMR technique would work in research settings using willing test subjects, actual defendants could take counter measures to hinder or distort mind-reading procedures - which the technique itself may not be able to register - leading to false outcomes.⁷⁰

Therefore, even after satisfying the laboratory-based *foundational validity* requirement (for example, accurately detecting deceit in simulated settings), extensive real-life field studies would be needed to satisfy the *applied validity* requirement (detecting deceit in real-life situations).

It appears probable that the P-CAST Report's foundational and applied validity criteria will have also to be met to ensure the successful admission of FBA evidence (or other novel scientific procedures) in the New Zealand courts. The current legal position in this regard is discussed next.

VIII. EXPERT EVIDENCE ON NOVEL SCIENTIFIC PROCEDURES IN NEW ZEALAND

A key consideration is how novel scientific evidence, including FBA evidence, could be admitted in New Zealand courts in the medium to long term.⁷¹ The experiences to date in other jurisdictions is not encouraging. In India, the Brain Electrical Oscillation Signature (BEOS) system⁷² has been widely used in criminal pre-trial investigations, and reportedly in a number of criminal trials as well. However, as a result of the 2010 *Selvi & Others vs State of Karnataka & Another* decision of the

⁶⁹ Pardo M., Patterson D. *Minds, Brains, and Law. The Conceptual Foundations of Law and Neuroscience* (Oxford University Press, 2013).

⁷⁰ Above n 68 at 311–314.

⁷¹ Matthew R. Kutcher, Victoria Apold and Jocelyn Downie "Will the Brain Ever Take the Stand? - Canadian Law and the Admissibility of Neurotechnological Lie Detection Evidence Articles and Addresses" (2010) 56 *Criminal Law Quarterly* 135.

⁷² See V above.

Supreme Court of India,⁷³ BEOS has not been a permissible legal investigative tool in India, nor admissible in Indian criminal courts. In the *Selvi* case, the Court held that the application of the BEOS system violated a number of fundamental rights in the Indian Constitution, in particular the right against self-incrimination, and could only be used with the suspect's or defendant's express, informed consent. This decision applies to the use of polygraphs and narco-analysis in the Indian criminal justice system as well. It therefore appears that there are a number of significant scientific and legal hurdles that will have to be overcome for the BEOS system to become an accepted forensic procedure in the Indian legal criminal justice system.⁷⁴

In the USA, relying on the application of the so-called *Daubert* case principles,⁷⁵ the Harrington Iowa district court case⁷⁶ remains the only US case in which Dr Farwell's FBA technology has been admitted formally as evidence and considered.⁷⁷

The current position in New Zealand law on admitting expert evidence is governed by s 25(1) of the Evidence Act 2006, which provides that the court may admit expert evidence if it is satisfied that the evidence concerned has the potential to be "substantially helpful" in deciding key issues before the court.⁷⁸ For example, in the 2011 CA case *Shepherd v R*, facial mapping was ruled admissible because it was more reliable and probative than simple eyewitness identification, and therefore potentially 'substantially helpful.'⁷⁹ In this case, the facial mapping evidence was novel scientific evidence that had not previously been admitted in a New Zealand court, but the court emphasised that a cautious approach was required when assessing the admissibility of such evidence.⁸⁰

More recently, in the 2013 Privy Council case of *Lundy v R*,⁸¹ the Court stated that the *Daubert* principles are a good starting point for assessing the s 25 "substantial helpfulness" test, and therefore the admissibility of the evidence concerned.⁸²

In summary, the *Daubert* Principles are that the expert evidence sought to be admitted must:

- (1) Be generally accepted in the scientific community;
- (2) Have been subjected to peer review and publication;
- (3) Have been tested, or be capable of being tested;
- (4) Have acceptable known or potential rate of error; and

⁷³ *Selvi & Others vs State of Karnataka & Another* (5 May 2010) Appeal 1267 of 2004.

⁷⁴ Lyn M Gaudet "Brain Fingerprinting, Scientific Evidence, and 'Daubert': A Cautionary Lesson From India" (2011) 51(3) *Jurimetrics* 293.

⁷⁵ *Daubert v Merrell Dow Pharmaceuticals* 54 APP. D.C., at 47, 293 F.

⁷⁶ *Harrington v State*. Case No. PCCV 073247 (Iowa District Court for Pottawattamie County, 5 March 2001).

⁷⁷ See II.E.2 above.

⁷⁸ See Mahoney, McDonald, Optican and Tinsley *The Evidence Act 2006: Act and Analysis* ((3rd ed , Brookers Ltd, Wellington, 2014) 25.

⁷⁹ *Shepherd v R* [2011] NZCA 666.

⁸⁰ Mahoney and others n 78 at 109.

⁸¹ *Lundy v R* [2013] UKPC 28; [2014] 2 NZLR 273 at [138].

⁸² See Scott Optican "Evidence" (2015) 3 NZ L Rev 473 at 500–502.

(5) Be based on research that was conducted independently of the particular litigation, and not be dependent on an intention to provide the proposed testimony.⁸³

Although the current status of the *Daubert* principles in New Zealand law is that they serve as helpful criteria to assist the court to assess whether a novel scientific technique would be “substantially helpful,” in a case, and therefore admissible as expert evidence, the assessment of *Daubert’s* applicability in New Zealand must take into account recent developments in the USA where *Daubert* has not been followed.⁸⁴

If the underlying science is validated, FBA technology, like the use of polygraphs, is likely to be used as only as an investigative and knowledge- confirmation tool for some time before a suitable court case is found to test the admissibility of FBA technology as expert evidence in a criminal matter.⁸⁵ In this regard, the years of struggle to get DNA evidence admitted as expert evidence in courts in the United States and world-wide, suggests a similar tortuous route for the admission of FBA evidence.⁸⁶

The P-CAST report and the *Daubert* principles, subject to the caveats discussed above, provide clear criteria to guide future FBA research to meet the required threshold of “substantial helpfulness” to satisfy the admissibility criterion for the admissibility of FBA technology in a New Zealand criminal court.⁸⁷

IX. CURRENT PROJECTS ON FORENSIC BRAINWAVE ANALYSIS

Two projects aimed at advancing the process of independently assessing the foundational and applied validity of Farwell’s and Rosenfeld’s FBA systems are currently in place: a 2016 New Zealand Law Foundation supported and University of Canterbury-led pilot project to make a preliminary assessment of Dr Farwell’s FBA system to establish whether there was a sufficient prima facie basis to proceed to extensive laboratory and field testing,⁸⁸ and a series of experiments, commenced in 2015, as part of a PhD study by Michel Funicelli of Concordia University, Montreal, to test the validity of Professor Rosenfeld’s FBA system. An overview of these two projects is given next.

⁸³ Above n 75.

⁸⁴ See E Murphy “Neuroscience and the Criminal/Civil Daubert divide” (2016) 2 FLR 619.

⁸⁵ Francis X. Shen and Owen D. Jones “Brain Scans as Evidence: Truths, Proofs, Lies, and Lessons” (2010) 62 Mercer L. Rev. 861.

⁸⁶ Above n 114, *People v. Castro* 545 N.Y.S.2d 985 (Sup. Ct. 1989), Lander ES “DNA fingerprinting on trial” (1989) 339 Nature 501.

⁸⁷ Lyn M Gaudet “Brain Fingerprinting, Scientific Evidence, and ‘Daubert’: A Cautionary Lesson From India” (2011) 51(3) Jurimetrics 293.

⁸⁸ “Pilot Project: The Brain Does Not Lie: the use of Forensic Brainwave Analysis and Neuroscience in Criminal and Civil Investigations.” New Zealand Law Foundation, Grant 2016/43/6.

A. Funicelli's PhD programme: Assessing the validity of Rosenfeld's Complex Trial Protocol (CTP) FBA system⁸⁹

In 2015, at the Hypnosis and Memory laboratory at Concordia University's psychology department, lead investigator Michel Funicelli (PhD candidate) began a series of EEG based experiments under the supervision of Dr. Jean-Roch Laurence, an expert in the fields of memory and forensic hypnosis. The objective of these experiments was to attempt to validate and extend the understanding of the memory detection protocol developed by Dr. Peter Rosenfeld in 2008 at Northwestern University, better known as the Complex Trial Protocol (CTP)⁹⁰. Funicelli has tested the CTP's performance using a mock theft scenario. A preliminary data analysis points to improved performance when a probe stimulus is deeply encoded into memory, and to the need to test participants in conditions where their attention is maintained with reinforcement through frequent pop quizzes. Further analyses are required before reaching any confirmatory findings.

Funicelli advises that the next round of experiments (2017- 2018) will revolve around a mock terrorism scenario where various types of visual stimuli, such as faces, crime scenes and detailed objects, as well as a memory inhibiting countermeasures are tested.

Contingent on the outcome of the mock terrorism related research, a final inquiry in early 2018 will probe the performance of verbal stimuli to further the understanding of the CTP, including an investigation whether pictorial stimuli are superior to word stimuli.

Funicelli envisages completing these PhD experiments in early 2018, and submitting the results for publication in mid-2018.

B. The NZLF-funded Forensic Brainwave Analysis Pilot Project (2016- 2017)

1. Background

The New Zealand Law foundation funded Forensic Brainwave Analysis Pilot Project ("FBA Project")⁹¹ had its roots in research done for a book on the Law of Evidence (published in 2013), which contains a section on applying new technologies in procedural law.⁹² In the course of this research, contact was made with Dr Lawrence Farwell, the pioneer of brain-fingerprinting (BF), followed by a number of further interactions with him to discuss his possible cooperation in researching brain-fingerprinting.

⁸⁹ Michel Funicelli, M.A. (PhD candidate, experimental psychology), Hypnosis and memory laboratory, Concordia University, Montreal, Quebec, Canada. PhD Progress Report, October 2017.

⁹⁰ See IV above.

⁹¹ "Pilot Project: The Brain Does Not Lie: the use of Forensic Brainwave Analysis and Neuroscience in Criminal and Civil Investigations." New Zealand Law Foundation, Grant 2016/43/6.

⁹² Adrian Bellengere and Robin Palmer (eds) *The Law of Evidence: Basic Principles* (Oxford University Press, Cape Town, 2013), 359-364.

Although Dr Farwell had been using his unique method of forensic brainwave analysis for over 25 years as at 2013, and there is a substantial body of academic literature on the subject,⁹³ very few verification and replication trials and studies had been done in this time. The main reason for this omission appears to be the perceived need for the commercial protection of his intellectual property over the software and equipment of his version of FBA, in terms of patents registered in 1994 and 1995.⁹⁴

After extensive negotiations in 2014 and 2015 with Dr Farwell, who is based in Seattle, USA, agreement was reached for him to participate in a pilot project as a first step towards possible extended laboratory experiments and field studies, using the University of Canterbury, Christchurch, as a base. The New Zealand Law Foundation (NZLF) agreed to fund the pilot study ("the FBA Project"), which ran from March 2016 to March 2017.

2. Objectives of the FBA Project

The FBA Project was a pilot project to determine the feasibility of engaging in a longer project to attempt to replicate the reported accuracy rates of Dr Farwell's brain-fingerprinting technology; to consider selected aspects of the technology for further scientific investigation, and to isolate pertinent legal, ethical, and cultural concerns arising from its potential use in the legal system. In order to achieve these objectives, the following two specific issues were investigated:

- (1) An assessment of the prima facie reliability and accuracy of FBA technology sufficient to justify the extension of the project to include more extensive laboratory-based experiments and field studies; and
- (2) The identification of, and preliminary investigation into relevant legal, ethical, and cultural factors that would be impacted by the application of this technology in the legal system.

3. The FBA Project Team, Contributors, Researchers and Stakeholders

The FBA project was primarily based at the University of Canterbury (UC) School of Law, with the FBA Project Team co-leaders Professor Robin Palmer and Associate Professor Debra Wilson, and team member Professor Jeremy Finn on the staff there. A key member of the team was Neuroscientist and Neuro-engineer Professor Richard Jones of the New Zealand Brain Research Institute (NZBRI),⁹⁵ The remaining two

⁹³ John Danaher "The Comparative Advantages Of Brain-Based Lie Detection" (2015) 19(1) The International Journal of Evidence & Proof 52.

⁹⁴ Farwell LA *Method and Apparatus for Multifaceted Electroencephalographic Response Analysis (MERA)* US Patent #5,363,858 (1994) Washington DC United States Patent and Trademark Office, Farwell LA *Method and Apparatus for Truth Detection* US Patent #5,406,956 (1995) Washington DC United States Patent and Trademark Office, Farwell LA *Method for Electroencephalographic Information Detection* US Patent #5,467,777 (1995) Washington DC United States Patent and Trademark Office.

⁹⁵ Professor Jones also has concurrent appointments as Senior Biomedical Engineer and Researcher at the Canterbury District Health Board; Research Professor in the Department of Medicine, University of

team members were Associate Professor Colin Gavaghan, Director of the New Zealand Law Foundation (NZLF) Centre for Law and Policy in Emerging Technologies at the University of Otago, and Professor Chris Gallavin of Massey University.

The FBA Project team was expanded during the course of the year to include a number of ad hoc contributors, namely Dr Jeanne Snelling (University of Otago), Professor Kris Gledhill (Auckland University of Technology), Mr Simon Dorset (UC School of Law), Dr Ewald Neumann (University of Canterbury, Department of Psychology), and Dr Abby Suszko (Office of Assistant Vice-Chancellor Māori, University of Canterbury). Seven student research assistants from the Schools of Law and Psychology were also recruited to assist with the project.

Finally, whilst it was recognised that all role-players in the New Zealand justice system are obvious potential stakeholders in the FBA research project, for the purposes of the pilot project the stakeholder involvement was limited to the New Zealand Police⁹⁶ and the Department of Corrections⁹⁷. Should the project be extended, other relevant stakeholders, such as the Departments of Health, Social Welfare and Te Puni Kōkiri (Ministry of Māori Development); as well as law societies, bar associations and the judiciary, will also be engaged.

4. The FBA Project Conclusions

After completing the pilot phase, the FBA Project Team was satisfied that the science on which forensic brainwave analysis (FBA) technology is based provided sufficient confidence for further experiments and testing, with necessary independent replications, to attempt to confirm the accuracy and reliability of FBA to reach the P-CAST Report standard for foundational validity. If this standard can be met, further laboratory and field-testing will be done to attempt to achieve the P-CAST standard of validity as applied.

In addition, it was concluded that the baseline research done on police investigation procedures, legal ethics and rights, evidential issues and bi-and multi-cultural impacts provided a solid foundation for further doctrinal and empirical research in these areas.

The specific areas that are being considered for further research are:

- *Independent replications of Farwell's FBA testing protocols*: This would entail independent replication of Dr Farwell's FBA test protocols in laboratory and field-study settings, and comparing the results to those reported by Farwell. In this regard, the New Zealand Police and Corrections Department could be field-study partners, focusing on suspect and

Otago; Professor in the Department of Electrical and Computer Engineering, University of Canterbury; Professor in the Department of Psychology, University of Canterbury, and Director of the Christchurch Neurotechnology Research Programme.

⁹⁶ Represented by Superintendent John Price, District Commander for the New Zealand Police Force of the Canterbury Region, and Detective Superintendent Peter Read, South Island and Wellington.

⁹⁷ Represented by Southern Regional Commissioner, Ben Clark.

informer identification, and the testing of sentenced prisoners who refuse parole opportunities due to the consistent assertions of their innocence.

- *Comparing the results of the Farwell protocol FBA replication testing to similar tests by other researchers using the Rosenfeld protocols:* Contact has been made, and tentative collaboration parameters discussed, with Michel Funicelli, who is currently doing replication studies using Rosenfeld's FBA protocols. A series of collaborative and comparative FBA experiments could be done, using exactly the same test-subject demographic and scenarios in New Zealand using Farwell's protocols, and Canadian researchers using Rosenfeld's protocols. This project could also be extended to comparisons with the BEOS system in the future.⁹⁸
- *Post-validation advanced FBA experiments:* Should the basic reliability and accuracy of FBA be established to at least foundational validity standard, further focused experiments on various identified factors that may affect the basic reliability and accuracy of FBA could be considered. These factors are:
 - Effects on the accuracy of FBA testing due to the influence of neurological and psychiatric disorders on memory formation and recall;
 - Effects on the accuracy of FBA testing due to the influence of recreational drugs or alcohol on memory formation;
 - Effects on the accuracy of FBA testing due to time transpired on primary concealed memories and secondary incidental memories;
 - Effects on the accuracy of FBA testing by 'fuzziness' in probe-stimuli, such as due to poor lighting or very brief exposure;
 - Effects on the accuracy of FBA testing by assessing the effect of false implanted memories (whether negligent or intentional);
 - Effects on the accuracy of FBA testing by the ability to consciously suppress ERP (P300 brainwave) responses to probes; and
 - Strategies and protocols for substantially reducing the time needed for the FBA testing process without sacrificing accuracy and reliability.
 - In the longer term, comparative studies with other concealed information detection systems, such as polygraphs and fMRI, would be appropriate. This is especially important as the main advantage of FBA over polygraphs and fMRI is the fact that unlike these two FBA does not claim to detect deceit- it merely detects the presence or absence of certain crucial knowledge (probes). The inference of deceit may, or may not be justified, depending on the circumstances. The crucial aspects to be compared would accuracy and reliability, and susceptibility to countermeasures.
- *Further legal, ethical and cultural research in the context of FBA:* Building on the foundational research done in these areas for the FBA project, and subject to the foundational validity of the FBA testing process being established, further advanced research on legal, ethical and cultural issues relevant to FBA could be done with emphases on the following:
 - *Legal issues:* The right against self-incrimination; Investigation procedures to identify and prevent the contamination of *probes*; Whether suspects can be compelled to undergo FBA testing; The impact of expert evidence rules; The application of legal defences like insanity; Specific rules for children and vulnerable people; Establishing the evidentiary rules for admitting expert evidence on new technologies in New Zealand law, and the use of search warrants to "search" the contents of the brain.
 - *Ethical and Rights issues:* Assessing scope and ambit of current rights and protections in the context of neurological CIT procedures in general, and FBA in particular; Access to justice issues (in the sense of equitable access to the use of FBA technology); The potential for false confessions; Investigational ethics and safeguards, in particular the potential for memory to be deliberately or inadvertently

⁹⁸ See V above.

- influenced during the investigation; dealing with vulnerable test subjects (mental deficiency; youth, etc); and ensuring the honesty and competence of FBA testers.
- *Cultural issues*: Identifying appropriate FBA implementation practices for Māori, Pasifika and other New Zealand minority cultural groups, including aspects such as researching the effect of the sanctity of the head area in Māori and other cultures (especially whether reliance on this cultural belief could establish a legal right to refuse to be FBA tested); Dealing with the perception of police bias against certain communities; and understanding different facets of bi- and multi-cultural etiquette and practices in the context of FBA testing.

Research into the legal, ethical and cultural impacts of FBA testing is a crucial corollary to the attempted scientific validation of the science underpinning forensic brainwave analysis. This is because legal challenges to the admissibility in court of FBA evidence will not be confined to attacks on FBA's scientific reliability and accuracy: admissibility challenges based on alleged rights violations flowing from the use of FBA technology at both investigation and trial stages are just as likely.⁹⁹

X. OVERALL CONCLUSIONS

Forensic brainwave analysis technology appears to have the potential to make a significant contribution to the administration of justice, in both civil and criminal settings. The primary potential application would be in the area of criminal justice, including anti-terrorism initiatives, but the potential for other applications, such as in civil disputes, employment disputes, and in schools and other non-legal settings is promising as well. However, the foundational and applied validity of FBA technology will first have to be unambiguously established, with all relevant legal rights, ethics and cultural safeguards and protections put in place.

On a cautionary note, however, even if the foundational and applied validity of FBA technology were to be successfully established, the history of the slow and incremental process of entrenching forensic DNA analysis technology as an integral part of legal systems around the world suggests that getting a similar level of acceptance for forensic brainwave analysis technology could still take much time and effort. In this regard, the approach of the courts to the reliability and admissibility of FBA evidence will be pivotal.

Annexure A Acronyms and Abbreviations

- BEAP: Brain Electrical Activation Profile.
- BEOS: Brain electrical oscillation system.
- BF: Brain fingerprinting.
- BMR: Brain-based mindreading.
- CIT: Concealed Information Test.

⁹⁹ See *Selvi & Others vs State of Karnataka & Another* (5 May 2010) Appeal 1267 of 2004, and VIII above.

- CQT: Control Question Test.
- CTP: Complex trial protocol.
- EEG: Electroencephalogram, or the process of using it, electroencephalography.
- EK: Experiential Knowledge (BEOS System).
- ERP: Event-related Potential.
- FBA: Forensic Brainwave Analysis.
- FBA Project: New Zealand Law Foundation, Grant 2016/43/6 - Pilot Project.
- fMRI: Functional magnetic resonance imaging.
- GAO: US Government Accountability Office.
- GAO Report: The US Government Accountability Office Brain-fingerprinting Report (2001).
- GKT: Guilty knowledge test.
- MERMER: Memory and Encoding Related Multifaceted Electroencephalographic Response.
- P-CAST: Report to the US President: Forensic Science in Criminal Courts: Ensuring scientific validity of feature-comparison methods" (September 2016).

CASE NOTE: CONSENT AND 'RELATIONSHIP EXPECTATIONS' – *CHRISTIAN v R* [2017] NZSC 145

ANDREA EWING*

I. INTRODUCTION

In *Christian v R*¹ the Supreme Court was asked to decide the significance of a complainant's silence and inactivity during (allegedly non-consensual) sex.

In the Supreme Court's view, the answer to this question turns in part on whether there is a prior sexual relationship between the parties. Even where the complainant's conduct does not convey that she wants intercourse, a reasonable defendant can conclude from the *circumstances* of the sexual encounter – notably 'relationship expectations' developed over time – that she is consenting.

For those who hoped the judgment might usher in a "communicative" model of consent, the decision is disappointing. The judgment in *Christian* represents one step forward – silence is not a reasonable basis to assume consent – then two steps back: "relationship expectations" can justify proceeding to penetration, even if the complainant has done and said nothing on this occasion to suggest this is what she wants.

II. EVIDENCE ABOUT CONSENT: A FORENSIC PERSPECTIVE

Before turning to the judgment, it is helpful to briefly consider the two elements of sexual violation at issue: consent and reasonable belief in consent. They are often bundled together, and both engage the same definition of what "consent" is.² But the evidence that is logically probative of these two concepts differs, because each turns on a different participant's state of mind.

Consent is a state of mind internal to the complainant: a decision she³ makes to engage in sexual conduct with another person.⁴ Nothing *obliges* her to communicate that decision to her sexual partner; consent is not like conspiracy, requiring a 'meeting of the minds'.⁵ In most cases,⁶ a finding about consent turns on whether

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¹ *Cyrus Christian (aka William John Tassell) v R* [2017] NZSC 145 (*Christian* (SC)).

² *Christian* (SC) at [32]: "The word "consent" must have the same meaning when referring to the existence of consent and to the existence of a reasonable belief in consent."

³ Male and female pronouns are used for defendant and complainant respectively, following the facts in *Christian*. This convention is adopted for clarity, and should not be read as implying that this is always the case where sexual violation is concerned. Obviously either gender can perpetrate, or suffer, sexual violation.

⁴ "What will ... always be essential for there to be a valid consent is that a complainant has understood her situation and was capable of making up her mind when she agreed to sexual acts": *R v Isherwood* CA182/04, 14 March 2005, at [35].

⁵ A sexual partner who proceeds with sexual activity in such circumstances might be taking an ill-advised risk, but if it transpires the complainant had internally agreed to it, there would be no liability.

the jury accepts the complainant's direct evidence about the choice she made. What she did and said may have secondary significance: a defendant can point to her outward behaviour (say, his account of her enthusiastic participation) as adversely impacting the credibility of her evidence that she did not consent.⁷ But it is her decision, not her conduct, that is central.

In contradistinction, reasonable belief in consent is a state of mind internal to the defendant: the jury must assess what *he* thought the complainant's decision was, and why. Inevitably, this element will turn wholly on the complainant's outward behaviour – on the manifestation of her decision, rather than the decision itself.

What, then, is the significance of the fact a complainant does and says nothing during intercourse – that is, expresses neither consent nor dissent?

On the question of consent, the fact a complainant says and does nothing during sexual activity is properly viewed as neutral.⁸ It tells us nothing about what decision the complainant has reached internally: it is a failure to communicate her decision about the sexual activity. Put another way, consent *can* co-exist with silence, but this does not mean that silence is probative of consent. That position would reinstate the requirement for a 'hue and cry'. Thus juries are prohibited from inferring that a complainant consented to sexual activity "just because" she did not resist or protest: section 128A(1) of the Crimes Act 1961.

The same logic might be thought to apply to reasonable belief in consent. If a complainant does and says nothing to indicate either consent or dissent, what could be the basis to think she is consenting? This logic underpins what is sometimes called a "communicative" model of consent.⁹ Simply put, it can only be reasonable for a defendant to think that a complainant has consented to sexual activity if she has done or said something to communicate that decision. This was the position the Court of Appeal adopted in *Christian*, and which the Supreme Court overturned.

See *R v Malone* [1998] All ER (D) 176 (absence of consent does not have to be demonstrated); *cf* Lucinda Vandervort, "Affirmative Sexual Consent in Canadian Law, Jurisprudence and Legal Theory" (2012) 23(2) *Columbia Journal of Gender and the Law* 395, 402 (suggesting that consent should be defined as *communicated* agreement).

⁶ Excluding cases where it is unclear from the complainant's own evidence whether her submission reflected true consent, and cases where her consent may have been vitiated by fraud, etc.

⁷ *R v Ewanchuk* [1999] 1 SCR 330, (1999) 131 CCC (3d) 481 (SCC) at [26]–[27]: whether the complainant consented is a "purely subjective" question to be determined by reference to the complainant's state of mind; external factors which may have caused acquiescence and the conduct of the complainant are of merely evidential significance.

⁸ Particularly in light of s 128A(1), which recognises that victims of sexual violence are no longer expected to raise a 'hue and cry' in order to prove that they did not consent.

⁹ See further Sarah Croskery-Hewitt, "Rethinking sexual consent: Voluntary intoxication and affirmative consent to sex" (2015) 26 *NZULR* 614.

III. *CHRISTIAN V R*: THE FACTS

Mr Christian ran a church in a small town. Among his congregation was the complainant's mother. At some stage the teenage complainant moved onto Mr Christian's property, living in a separate house from him.

One day Mr Christian came into the house where the complainant lived, removed her trousers and had sexual intercourse with her. She was then around 13 or 14. She did not say anything to him, because she was too scared and did not know what to say. But she said unequivocally that she did not consent – she did not even know what the word “consent” meant. This incident founded the first rape charge.¹⁰

Over the three years that followed (1996-1999), Mr Christian continued to have sex with the complainant – first while she lived on his property (the basis of the second, representative rape charge);¹¹ and later once she moved into a house bus with him (which resulted in a third, representative rape charge, when she was aged around 14-16).¹²

When the complainant was 16 she reported the matter to Police: her mother had become suspicious about their relationship, and during a beating from her mother the complainant had confessed that she and Mr Christian had regularly had sex. On the complainant's account, Mr Christian instructed her to say “it” was consensual; the complainant signed a statement to this effect. She later swore an affidavit stating the allegations were entirely made up; again, she said this was at Mr Christian's behest.

At trial, it was not suggested Mr Christian had had a consensual relationship with the complainant. Rather, his defence was that the complainant had fabricated the sexual contact.

The Judge explained all three elements of sexual violation, but instructed the jury that consent and reasonable belief in consent were not live issues. If they were sure penetration had occurred, therefore, their verdicts would be guilty. The jury convicted Mr Christian of all three counts of rape.

IV. THE JUDGMENT

The issue before the Supreme Court was whether the Judge ought to have directed the jury on consent, and reasonable belief in consent. Nested within this question was a more conceptual one: is there an evidential basis for a defence of consent, or reasonable belief in consent, where a complainant simply does and says nothing while penetration occurs?¹³

¹⁰ Charge 2.

¹¹ Charge 4.

¹² Charge 5.

¹³ Leave was sought on two grounds: first, was the Court of Appeal right that consent had to be positively expressed? Secondly, had the jury necessarily accepted the complainant's evidence that she

The Court of Appeal had answered this question “no”. The complainant’s unchallenged evidence at trial was that she had not wanted intercourse, and had done and said nothing when it occurred. Relying on *obiter* comments by the Supreme Court in *Ah-Chong v R*,¹⁴ the Court concluded that “consent must be positively expressed”.¹⁵

[T]he law on consent does not impose an obligation on a complainant to say “no”, either by words or conduct. Rather, there must be the suggestion of “yes” in the complainant’s words or conduct in order for a trial Judge to be satisfied that there is a sufficient narrative for the issues of consent and reasonable belief in consent to go to the jury in a case where the act itself is denied.

The Supreme Court took a different view. Three aspects of the Supreme Court’s reasoning *en route* to this conclusion are explored below.

A. *Silence does not show consent*

First, the Supreme Court confirmed that a mere absence of protest by the complainant does not provide reasonable grounds to believe she is consenting.¹⁶

If a failure to protest or resist cannot, of itself, constitute consent, a reasonable belief that a complainant is not protesting or resisting cannot, of itself, found a reasonable belief in consent.

The waters had been muddied on this point by an earlier decision, *R v Tawera*,¹⁷ in which the Court of Appeal considered a complainant’s failure to express *dissent* – even if insufficient to prove she had consented – could nonetheless be relevant to the reasonableness of a defendant’s belief in consent.¹⁸ Post-*Christian*, *Tawera* is no longer good law.

Accordingly, something more than the complainant’s passive silence will be required to found a reasonable belief that she is consenting. But what qualifies as “something more”?

had not consented? The Court ultimately granted leave on a single question, which might be thought unhelpfully broad in its ambit – “whether the Court of Appeal was correct to dismiss the conviction appeal” – expressing the view that the first proposed question could only be examined in its factual context: *Christian v R* [2016] NZSC 170 (*leave*) at [4].

¹⁴ *Ah-Chong v R* [2015] NZSC 83; [2016] 1 NZLR 445 at [54]–[55] (approaching reasonable belief in consent by enquiring whether the complainant had communicated her *dissent* was “arguably at odds with the principle that s 128A(1) appears to be based upon, namely, that consent to sexual activity is something which must be given in a positive way.”)

¹⁵ *Christian v R* [2016] NZCA 450 (“*Christian* (CA)”) at [49]. See also at [60].

¹⁶ *Christian* (SC) at [32].

¹⁷ *R v Tawera* (1996) 14 CRNZ 290 (CA).

¹⁸ *Ibid* at 293.

B. "Something more" than silence

If a failure to say "no" is not enough (s 128A(1)), it might be thought that there must be some aspect of the complainant's behaviour at the time that says "yes". This was the position taken by the Court of Appeal:¹⁹

... A lack of protest or resistance will not, on its own, suffice. There must be some evidence of positive consent, *either by words or conduct*, to provide a narrative capable of supporting the possibility of a reasonable belief in consent.

As noted above, the Supreme Court agreed that "something more" than a lack of protest is required before it will be reasonable to infer consent. But it thought the Court of Appeal had "overstated the position" by saying that consent must be positively expressed – that is, conveyed by the complainant's words or conduct at the time:²⁰

While a failure to protest or offer physical resistance does not, of itself, constitute consent and something more is required, that "something more" may be something other than a positive expression of consent.

In the Supreme Court's view, even if the complainant is not positively expressing consent, the "circumstances" of the encounter may nevertheless provide a basis to infer consent:

[The Court of Appeal] went too far in stating that consent must be expressed in a positive way, *as if that was a requirement regardless of the circumstances*.²¹

...

[T]here must be something more in the words used, conduct *or circumstances* (or a combination of these) for it to be legitimate to infer consent.²²

Defining exactly what "circumstances" fall in this category might seem fairly important. After all, this was the basis for the Supreme Court considering the Court of Appeal was wrong in its approach to the law about when consent arises as a defence. Unfortunately, the Supreme Court's elucidation of this point offers limited guidance – indeed, it occupies a single paragraph:

[46] One such factor could be a positive expression of consent. But there could be others. For example, if the participants in the sexual activity are in a relationship in which expectations have developed over time and the sexual activity is in accordance with those expectations, that may be capable of evidencing consent if there is nothing to indicate that the mutual expectations are no longer accepted.

'Relationship expectations' are said to be an *example* of the "circumstances" that may transform a complainant's silence into a sign of consent. But the Supreme Court

¹⁹ *Christian* (CA) at [60] (emphasis added).

²⁰ *Christian* (SC) at [5](c).

²¹ At [43].

²² At [45].

judgment offers no principled basis on which we could discern what other circumstances might also qualify.

C. Relationship expectations

On the Supreme Court's approach, it is reasonable to infer consent from someone's lack of protest on *this* occasion, coupled with the "circumstance" of their consent to similar sexual activity with the same partner on a previous occasion. This is where the judgment in *Christian* is at its most unfortunate.

First, in the context of a sexual violation trial it is problematic to assume, as the Supreme Court does at [46] above, that a *defendant's* 'relationship expectations' are necessarily mutually held.²³ If the Courts are involved, there will necessarily be evidence that matters went beyond what the complainant was expecting.

The second objection is that, even assuming expectations *were* mutual, the Supreme Court's reasoning places too much weight on the complainant's established 'propensity' to consent.²⁴ It is hopefully uncontentious that a person's decision whether to engage in sexual activity turns not merely on the identity of the partner and the type of act engaged in, but on their wishes at the *particular* time. Putting it bluntly, people in a relationship do not constantly want sex with their partner, nor should their partner assume (absent any encouragement) that they do. And if people do not always reach the same choice about sex with their partner, their past willingness to engage in sex cannot reliably inform whether they are consenting on the present occasion. Where there is no other behaviour indicating sex is wanted, a propensity to consent is not enough.

Relying on a past sexual relationship as indicating consent also undermines the principle that consent and reasonable belief in consent fall to be assessed at the time that penetration occurs.²⁵ By contrast, the Court of Appeal's position – that consent can only be inferred from words or conduct on *this* occasion – respects the notion that consent to penetration is 'bespoke', not given to a particular person for all time.

But, one might ask, does an absence of protest in the context of an ongoing sexual relationship have a significance that it might not have in cases of 'stranger rape', or the abuse of a position of power? Putting it another way, can silence communicate consent if there seems no reason the complainant would not protest?

²³ At [46].

²⁴ In other areas, the law has rejected the wrongheaded submission that a complainant's propensity to consent to intercourse with person A somehow bears on her choice regarding person B: Evidence Act 2006, s 44A(1); *B (SC12/2013) v R* [2013] NZSC 151, [2014] 1 NZLR 261 at [53]; *Bull v R* [2000] HCA 24, (2000) 201 CLR 443 at [53] per McHugh, Gummow and Hayne JJ.

²⁵ "[T]he material time when consent ... is to be considered is the time the act actually took place": *R v Adams* CA70/05, 5 September 2005 at [48].

A prior sexual relationship is certainly *relevant* to consent and reasonable belief in consent. The fact the complainant has previously chosen to engage in sex with the defendant tends to indicate some degree of sexual attraction, which makes it more likely (but certainly not inevitable) that she will decide to engage in sex with the same person. For the same reason, prior intimacy may form *part* of the basis for a reasonable belief in consent, and may enable the defendant to better interpret the complainant's behaviour. But this is quite different from saying that past consensual sex is *of itself* a sufficient basis to assume consent, even absent contemporaneous behaviour that suggests sex is wanted on this particular occasion. As the facts of *Christian* demonstrate, the existence of a prior sexual relationship is no guarantee that it is a healthy one. A complainant may feel unable to voice dissent despite the fact sex (or, as the Supreme Court found in *Christian*, rape) has occurred before.

This leads into the third difficulty with this aspect of the judgment in *Christian*: the total lack of any discernible policy rationale for overriding s 128A(1) where sexual allegations arise in the context of a relationship. When the law is defining what constitutes a 'reasonable' basis to think someone is consenting, policy considerations should be to the forefront. And in policy terms, it is unclear why "relationship expectations" are sufficiently socially important to permit defendants to proceed to penetration absent any encouragement from their partner. By contrast, the Court of Appeal's position incentivises active enquiry about consent: if a defendant's sexual partner is not communicating her decision on *this* occasion, it is only too simple to ask her.²⁶ This hardly sets an exacting standard of 'reasonable' conduct in sexual matters; and there is little on the other side of the ledger that could warrant a lower threshold.

Neither logic nor policy supports treating "relationship expectations" as of themselves grounding a reasonable belief in consent. The Supreme Court's decision on the facts of *Christian* highlights the problematic outcomes that will flow from this approach.

V. CONSENT IN MR CHRISTIAN'S CASE

To recap, a far older man in a position of power had sex with a teenage girl who was effectively in his care. Her unchallenged evidence at trial was that, on the first occasion as on the others, she had done and said nothing to indicate she wanted to have sex with him.²⁷ She described the later acts of intercourse in the house thus: "he jumps on me and has sex with me and then gets off".²⁸ He threatened her not to tell anybody. She continued to comply once they moved to the house-bus:²⁹

²⁶ One of the policy rationales for the objective *mens rea* requirement for sexual violation is the ease with which harm can be avoided by making enquiry: Jennifer Temkin, *Rape and the Legal Process* (2nd ed.) (Oxford University Press, London, 2002), p125; D Omerod and K Laird, *Smith and Hogan's Criminal Law* (14th ed.) (Oxford University Press, Oxford, 2015) p853.

²⁷ The complainant said she did not want to have sex with him, nor did defence counsel suggest that she had – either in cross-examination or in closing: *Christian* (SC) at [50].

²⁸ At [62].

²⁹ At [63].

[B]y the time we were in the bus out there that I felt like I couldn't say anything about it, or do anything about it, so I just said nothing and let him do it. But I never once said to him 'yes I want to have sex'.

The Supreme Court held, on the evidence relating to the first (specific) charge of rape, there was no narrative giving rise to a defence of consent.³⁰ Nor did reasonable belief in consent arise;³¹ Mr Christian had not yet formed "expectations" on which he could draw to justify ignoring his partner's lack of enthusiasm:³²

This was the first sexual encounter between the appellant and the complainant, so there was no background relationship in respect of which some expectations of the kind described above could have arisen nor was there any dialogue between them before the sexual encounter occurred. Accordingly, there was nothing to provide the basis of a finding of anything more than failure to protest or resist on the part of the complainant.

However, as time wore on and the complainant continued to submit to sex without complaint, the Supreme Court considered there was a basis for the jury to find the complainant had consented:³³

Although the complainant said she never said she wanted to have sex, it is possible the jury may have, if properly directed, concluded that they could not rule out the reasonable possibility that the interactions between the complainant and the appellant involved her consenting, albeit as a consequence of his grooming of her. We accept this was not the most likely outcome but it was a decision that needed to be left to the jury to decide.

Mr Christian's convictions for raping the complainant for the remainder of the three-year period were therefore overturned.

Note that Mr Christian's convictions were overturned on the basis of *consent*, not reasonable belief in consent.³⁴ This outcome simply ignores the complainant's unchallenged evidence at trial. She was unequivocal about the decision she had made: she said she did not want to have sex, nor did she offer any sign that she did.³⁵ Worse, to hold that she may have consented "as a consequence of [Mr Christian's] grooming of her" overlooks the fact that submitting to sex in such circumstances often does not reflect true consent.³⁶

³⁰ At [53].

³¹ At [60].

³² At [58].

³³ At [67].

³⁴ In the Court of Appeal, the appellant's argument centred on reasonable belief in consent; no one suggested consent arose as a defence.

³⁵ While the complainant's Police statement said that "it" was consensual, her unchallenged evidence at trial was that that statement was a lie (Mr Christian's assertion was that it was a lie but for a different reason, i.e. there was no "it").

³⁶ See for example *R v C* [1995] 2 NZLR 330 (CA); *R v Allison* CA489/95, 21 February 1996; *Colquhoun v R* CA446/98, 13 September 1999; *R v Ali* [2015] 2 Cr App R 33; cf *R v Annas* [2008] NZCA 534.

VI. CONCLUSION

In summary, three points of significance arise from the Supreme Court judgment in *Christian*:

First, it is unreasonable for a defendant to believe that a complainant is consenting based *solely* on her silence and inactivity. This conclusion is hardly contentious, since it simply reflects s 128A(1); but the Supreme Court has now overturned *Tawera*, which had held to the contrary.

Second, the Court held, it can be reasonable to believe the complainant is consenting based on something other than her behaviour at the time – specifically, based on the “circumstances” of the encounter. This second finding is perplexing: the Court did not see fit to define precisely what kind of circumstances qualify (beyond the example of “relationship expectations”). Nor will it be easy for trial Judges to define this category, given the dearth of reasoning supporting the Supreme Court’s conclusion that the “circumstances” of a sexual encounter can bear on whether the complainant is consenting.

Third, and most problematic, is the Supreme Court’s view that “relationship expectations” based on past encounters can substitute for behaviour by the complainant on *this* occasion suggesting sex is wanted. As a matter of logic, it is hard to see why the complainant’s *repeated* failure to protest on past occasions should be treated as a basis for Mr Christian to infer consent if, on a single occasion, her mere silence would be insufficient. And in policy terms, it is anything but reasonable to proceed to penetration without even the most minimal conduct communicating consent. It is precisely because silence does *not* always indicate agreement that s 128A(1) was enacted. If there is a sound policy rationale for treating complainants in relationships differently in this regard, it appears nowhere in the Supreme Court’s judgment. On the contrary, the Supreme Court’s approach to the facts of *Christian* highlight the potential for “relationship expectations” to create unsatisfactory outcomes, most obviously where (as here) vulnerable complainants are groomed into submitting to sex without protest.

It may be time for legislative reform in this area. For now, the Supreme Court judgment in *Christian* undercuts the effect of s 128A(1) in ‘relationship’ cases, and in a way that encourages assumptions about consent rather than active enquiry.