

# The National DNA Database: A Base for Data or Simply Base Data?

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Australia's Prime Minister, John Howard, officially launched a national DNA database system for criminal investigation on 20 June 2001. It is a cardinal element of the Commonwealth government's CrimTrac initiative,<sup>1</sup> a \$50 million law enforcement agency that also spawns a national automated fingerprint identification system that can digitally scan approximately 2.5 million fingerprints and 5 million palmprints into a searchable database. Together with the DNA database, it is heralded as an innovative tool that will 'combat modern crime and make our community safer'.<sup>2</sup> However, beyond the immediate government policy statements on law and order, it remains equivocal whether the scheme, as currently formulated, is actually necessary, economically justified, or adequately regulated to defend fundamental moral, ethical and legal rights of privacy, procedural fairness or the presumption of innocence. In particular, statutory differences between the States could compromise the efficacy of the system as a whole. These reservations shall constitute the thesis of this paper.

## Jurisdictional Issues

Under the *Crimes Act 1914* (Cth),<sup>3</sup> the DNA database comprises two separate databases. Firstly, there is a database containing actual DNA samples. This harbours two types of DNA samples, which are kept strictly separate: DNA obtained from crime scenes and DNA obtained from identified individuals. The second database contains the link between the individual who provided the DNA sample and a computer code of their DNA profile. This is subdivided into a number of indexes, under Division 8A of Part 1D of the *Crimes Act 1914* (Cth).

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<sup>1</sup> P Jackson, 'Nowhere to run to... CrimTrac Spotlights Criminals Australia-Wide' (2001) 13(10) *Police Services Weekly* 10.

<sup>2</sup> Christopher Ellison, 'CrimTrac's New Fighting Systems Switched On' (Press Release, 20 June 2001).

<sup>3</sup> As amended by the *Crimes Amendment (Forensic Procedures) Act 2000* (Cth).

Profiles on the 'unlimited purposes index' may be matched against other profiles on the database. Individuals placed on this index include deceased persons of known identity whose DNA may be found at any crime scene, and volunteers who consent to this unrestricted use, either to exclude them from repeated police inquiries, or to expand the size of the database. A 'limited purposes index' includes codes relating to suspects or volunteers who provided DNA samples only for a particular investigation. However, even their DNA profiles may be matched against other profiles on the 'serious offenders index' if there are sufficient grounds.<sup>4</sup>

The 'serious offenders index' contains profiles from suspects convicted of serious offences and can be referenced to any index to ascertain if the suspect is involved in other criminal activity. If this person is acquitted or pardoned, their code is promptly removed from this index. The 'missing and unknown deceased persons index' may be used to determine whether someone who is missing is in fact dead, and therefore the victim of a crime. Finally, the codes on the 'statistical index' are never matched to a database, and are used to assess probabilistic DNA matching generally. Interestingly, the Victoria Police voiced strong dissent to limiting permissible matching for the various types of samples,<sup>5</sup> perceiving these limitations as overly restrictive and fettering the effective application of the legislation. This is in salient contrast to the civil libertarians, who fear more egregious use of the information stored on the database.<sup>6</sup>

According to Strutt,<sup>7</sup> DNA submitted to the New South Wales 'missing persons' index from relatives has been checked against DNA from 'suspected offenders' from unsolved crimes. Although the results cannot be used in court, they nevertheless satisfy a 'reasonable suspicion' test that then allows police to take a compulsory second forensic sample that can be used in proceedings against them. This bestows an obvious disincentive on families of missing persons to voluntarily provide samples to locate a loved one, by coercing them to submit to an additional forensic sample.

<sup>4</sup> *Crimes Act 1914* (Cth) s 23YDAF.

<sup>5</sup> Model Criminal Code Officers Committee, *Model Forensic Procedures Bill and the Proposed National DNA Database* (1999).

<sup>6</sup> J Gans, 'Something to Hide: DNA Databases, Surveillance and Self-Incrimination' (Paper presented at the Sydney Institute of Criminology Seminar – Use of DNA in the Criminal Justice System, 11 April 2001).

<sup>7</sup> Submission to Victorian Parliament Law Reform Committee, Parliament of Victoria, *Inquiry into Forensic Sampling and DNA Databases* (2002) (M Strutt).

Clearly, the Commonwealth *Crimes Act 1914* and the preceding Model Bill<sup>8</sup> enunciate the intended structure and rubric of the DNA database. However, its successful nationwide operation is contingent on the substance and parity of complementary laws enacted by States and Territories, since concomitant to a national database is the need to share information between jurisdictions. Concerns have been aired<sup>9</sup> about the significant variation between the State and Commonwealth laws governing the collection of forensic material, in particular, the permitted minimum age of offenders and the types of offences that warrant taking a DNA sample. By way of illustration,<sup>10</sup> the Model Bill<sup>11</sup> classifies a ‘buccal swab’ as an intimate forensic procedure, as do the Commonwealth,<sup>12</sup> South Australian<sup>13</sup> and Victorian<sup>14</sup> laws. On the other hand, legislation in Tasmania,<sup>15</sup> the Australian Capital Territory<sup>16</sup> and Western Australia<sup>17</sup> classifies it as non-intimate. The New South Wales legislation defines buccal swabs separately, without classifying it as intimate or otherwise,<sup>18</sup> while Queensland does not distinguish between intimate and non-intimate procedures.<sup>19</sup> Moreover, the Queensland legislation differs from other States in that it enables police to perform forensic procedures on suspects refusing consent, without requiring police to obtain first a magistrate’s order authorising the taking of a sample.<sup>20</sup>

Such discrepancies in the collection, destruction and cross-matching of DNA samples reduce the stringency of data protection nationally to the level of the jurisdiction applying the least restrictive laws. For example, police in New South Wales could transfer to the Northern Territory DNA that is legally required to be ‘de-identified’ on the New South Wales database. No such requirement exists in the Northern Territory.<sup>21</sup> Similarly,

<sup>8</sup> Model Criminal Code Officers Committee, above n 5.

<sup>9</sup> F Brenchley, ‘The XY Files’, *The Bulletin*, 20 June 2000, 28.

<sup>10</sup> See Australian Law Reform Commission, *Protection of Human Genetic Information*, Discussion Paper No 66 (2002).

<sup>11</sup> Model Criminal Code Officers Committee, above n 5.

<sup>12</sup> *Crimes Act 1914* (Cth) s 23WA(1).

<sup>13</sup> *Criminal Law (Forensic Procedures) Act 1998* (SA) s 3(1).

<sup>14</sup> *Crimes Act 1958* (Vic) s 464(2).

<sup>15</sup> *Forensic Procedures Act 2000* (Tas) s 3(1).

<sup>16</sup> *Crimes (Forensic Procedures) Act 2000* (ACT) ss 6-7.

<sup>17</sup> *Criminal Investigation (Identifying People) Act 2002* (WA) s 8(1).

<sup>18</sup> *Crimes (Forensic Procedures) Act 2000* (NSW) s 19.

<sup>19</sup> *Police Powers and Responsibilities and Other Acts Amendments Act 2000* (Qld) pt 4.

<sup>20</sup> *Police Powers and Responsibilities and Other Acts Amendments Act 2000* (Qld) pt 4.

<sup>21</sup> Submission to Victorian Parliament Law Reform Committee, Parliament of Victoria, *Inquiry into Forensic Sampling and DNA Databases* (2002) (M Strutt).

the accuracy of DNA data on the New South Wales database could be compromised by profiles received from the Northern Territory's laboratory, which is not accredited by the National Association of Testing Authorities, a government-endorsed organisation that regulates standards for laboratory testing, including forensic DNA profiling and analysis.<sup>22</sup> This could mean that potentially inaccurate profiles have been introduced into New South Wales, despite strict regulation of this State's laboratories. Consequently, there were lengthy delays in getting the CrimTrac National Criminal Investigation DNA Database online.<sup>23</sup> The Australian Law Reform Commission ('ALRC') has recommended that the interjurisdictional sharing of forensic material, via a national DNA database, should only be permitted after the Commonwealth, States and Territories have achieved greater harmonisation of forensic procedures legislation.<sup>24</sup>

### Necessity Issues

The scientific fraternity has largely demonstrated the reliability and validity of DNA testing,<sup>25</sup> and proponents of its forensic applications promulgate it as the next great breakthrough since fingerprinting.<sup>26</sup> In the United Kingdom, of the 1.5 million DNA samples taken from crime scenes between April 1995 and 2000, over 164 000 matches have been recorded off the database,<sup>27</sup> and 90 per cent of all samples entered into the database matched to an unsolved crime.<sup>28</sup> Similarly, of the 16 000 samples on the New Zealand DNA database, 31 per cent correlated with an unsolved crime.<sup>29</sup> There is anecdotal evidence of cases where DNA databases have been apocryphally credited with solving otherwise unsolvable crimes. Nevertheless, there is more to solving crime than simply matching DNA profiles: criminal investigations and successful prosecutions are complex. DNA profiles must be created, analysed and stored, and then suspects

<sup>22</sup> Ibid.

<sup>23</sup> Ibid.

<sup>24</sup> Australian Law Reform Commission, above n 10.

<sup>25</sup> H Roberts, 'Interpretation of DNA Evidence in Courts: A Survey of the Issues' (1998) 30 *Australian Journal of Forensic Science* 29.

<sup>26</sup> New South Wales, *Parliamentary Debates*, Legislative Assembly, 31 May 2000 (Paul Whelan, Minister for Police) (Second Reading Speech, Crimes (Forensic Procedures) Bill 2000).

<sup>27</sup> R Napper, 'A National DNA Database: The United Kingdom Experience' (2000) 32 *Australian Journal of Forensic Science* 65.

<sup>28</sup> Submission to Victorian Parliament Law Reform Committee, Parliament of Victoria, *Inquiry into Forensic Sampling and DNA Databases* (2002) (M Strutt).

<sup>29</sup> S A Harbison, J F Hamilton and S J Walsh, 'The New Zealand DNA Databank: Its Development and Significance as a Crime Solving Tool' (1999) 41 *Science and Justice* 33.

must be tried, following extensive police investigation to expose additional evidence. After all, quoting a match between a DNA profile and an unsolved crime may mean little more than matching to a known non-offender, or to an offender who was charged but acquitted. Importantly, as Saul points out, even a genuine match only provides evidence of a criminal act and does not indicate intention.<sup>30</sup> Many unsolved crimes do not even involve DNA evidence.<sup>31</sup>

When the distribution and nature of crime is then examined, the utility of DNA databases in controlling and curtailing crime seems overstated. Of the 15.7 per cent of all arrests for violent crimes in the United States, only 4.7 per cent are serious.<sup>32</sup> The vast majority is property crime, which is less amenable to DNA testing. For instance, whereas blood evidence is found in 60 per cent of murders, assaults and batteries, forensic samples were found in only 10 per cent of robberies and 6 per cent of residential burglaries.<sup>33</sup> Similarly, 90 per cent of all DNA trace evidence in Britain matches to burglaries, robberies and car thefts,<sup>34</sup> because such minor (volume) crime is so common. Even though up to 50 per cent of rapists, murderers and other violent offenders have been linked to prior non-violent offences,<sup>35</sup> there is little evidence that non-violent offenders become violent. It would therefore be uneconomical and unfounded for the police to treat every crime scene as though it were a homicide or rape, particularly since current law enforcement already clears at least 50 per cent of serious violent crime.<sup>36</sup> Meagher even argues that DNA databases will have no real impact on serious crime rates because, sexual assault cases aside, identification is rarely in issue in criminal cases.<sup>37</sup> Expanding DNA profiling beyond the most serious offences would not improve the administration of criminal justice.

<sup>30</sup> B Saul, 'Genetic Policing: Forensic DNA Testing in New South Wales and the DNA Database' (2001) 13 *Current Issues in Criminal Justice* 92.

<sup>31</sup> Submission to Victorian Parliament Law Reform Committee, Parliament of Victoria, *Inquiry into Forensic Sampling and DNA Databases* (2002) (M Strutt).

<sup>32</sup> P E Tracy and V Morgan, 'Big Brother and his Science Kit: DNA Databases for 21<sup>st</sup> Century Crime Control?' (2000) 90 *Journal of Criminal Law and Criminology* 635.

<sup>33</sup> V W Weedon and J W Hicks, *The Unrealized Potential of DNA Testing*, National Institute of Justice Research in Action, United States Department of Justice (1998) 7.

<sup>34</sup> D Concar, 'The DNA Police', *New Scientist*, 5 May 2001, 10.

<sup>35</sup> D H Kaye, 'Two Fallacies About DNA Data Banks for Law Enforcement' (2001) 67 *Brooklyn Law Review* 179.

<sup>36</sup> Tracy and Morgan, above n 32.

<sup>37</sup> D Meagher, 'The Quiet Revolution: A Brief History and Analysis of the Growth of Forensic Police Powers in Victoria' (2000) 24 *Cambridge Law Journal* 76.

It is important that DNA testing is not given disproportionate resources where it would be better spent on other aspects of law enforcement. In the United States, it costs US\$50 to construct a DNA profile from a sample,<sup>38</sup> and there are currently 1.3 million DNA samples awaiting analysis, with an estimated backlog of six years.<sup>39</sup> Obviously, it would not be viable in Australia to extract a DNA sample from 'anyone who is arrested for anything'<sup>40</sup> unless the capacity and funding for forensic laboratories is increased to meet the demands of high volume DNA testing, which is a slow process. DNA from victims of a rape or murder may sit in storage for years before the offender's DNA can finally be tested. Additionally, the recent industrial action taken by Victorian forensic scientists in 2002 is testament to inadequate funding and increased workloads.<sup>41</sup> Thus, DNA evidence will only save investigative time, expedite court cases, reduce the costs of traditional police investigations, and render the criminal justice process more cost-effective,<sup>42</sup> if restricted to the most serious offences. Given time, the costs of DNA testing will decrease as the technology develops and processes are refined.<sup>43</sup> Only then if the system proves lucrative in crime prevention could it be realistically expanded.

### Privacy Issues

One of the most contentious a priori legal, political and moral issues relating to the establishment of DNA databases is that of privacy, with general trepidation that the information stored on the database could form the foundation for future genetic discrimination.<sup>44</sup> Nonetheless, the government emphasises that the Privacy Commissioner, with access to the DNA database, will investigate complaints and audit the use of the database. Moreover, many people maintain that the codified DNA profiles, at least, cannot form the basis of discrimination.<sup>45</sup>

38 P Reilley, 'Legal and Public Policy Issues in DNA Forensics' (2001) 2(4) *Nature Review Genetics* 313.

39 C H Asplen, 'Integrating DNA Technology into the Criminal Justice System' (1999) 83(3) *Judicature* 144.

40 S Stevenson, 'Ideas for Widespread "DNA Fingerprinting" Stir Debate', *Dallas Morning News*, 7 February 1999, A15.

41 Submission to Victorian Parliament Law Reform Committee, Parliament of Victoria, *Inquiry into Forensic Sampling and DNA Databases* (2002) (M Strutt).

42 A Brown, 'DNA as an Investigative Technique' (1998) 38 *Science and Justice* 263.

43 T Dickerson, 'DNA Profiling: The Criminal Detection Tool of the Future' (1998) 80 *AFP News* 1.

44 M Crompton, 'Preserving Privacy in a Rapidly Changing Environment' (Paper presented at the Australian Institute of Criminology Conference, 22 June 2001).

45 Submission to Australian Law Reform Commission, *Protection of Human Genetic Information*, Discussion Paper No 66 (2002) (Victoria Police).

Functionally important regions of the DNA within each human cell, known as genes, determine our physical structure. However, only a minority of disease is due to a single gene. More commonly, diseases and fundamental human characteristics such as weight, height, hair colour or ancestry are determined by a litany of interacting genes, influenced by our environment. This compares to a DNA profile, which analyses loci that contain a variable number of short tandem repeats. These short tandem repeats are regions of the human genome in which short sequences of DNA are repeated. They undergo genetic mutation more frequently than the coding regions of DNA, and thus show greater variation between individuals than genes.<sup>46</sup> Therefore, Redmayne champions the widely held contention that storing such a DNA code is acceptable, because it is derived from a non-coding region of DNA that provides a basis for identification, rather than description of an individual, and it cannot disclose any unsolicited information about a suspect.<sup>47</sup> However, the situation is far less simplistic, since some have suggested that short tandem repeats may actually cause disease.<sup>48</sup> By way of illustration, there is a hypothesised nexus between one short tandem repeat used in DNA profiling in Britain and bipolar disorder.<sup>49</sup> Moreover, all databases, including back-up databases and stand-alone police databases where identifying information is encrypted, are susceptible to unauthorised access or alteration by computer hackers, most of whom are usually corrupt employees.<sup>50</sup> At length, if there is potentially descriptive information stored on a potentially insecure database, the concerns of commentators like Redmayne,<sup>51</sup> who fear violation of our genetic privacy, would seem understandable.

More importantly, though, the DNA database might not merely comprise DNA profiles, but also the original DNA samples from whence the profile derived. These could be kept as a master copy for the profiles stored on the database, in case future technologies provide a better means of DNA profiling.<sup>52</sup> In particular, s 23WA(5) of the *Crimes Act 1914* (Cth)

46 V D Plueckhahn and S M Cordner, *Ethics, Legal Medicine and Forensic Pathology* (2<sup>nd</sup> ed, 1991).

47 M Redmayne, 'The DNA Database: Civil Liberty and Evidentiary Issues' (1998) 14 *Criminal Law Review* 437.

48 R I Richards and G R Sutherland, 'Dynamic Mutations: A New Class of Mutations Causing Human Disease' (1992) 70 *Cell* 709.

49 E D'Aloja, 'Ethical and Legal Issues of DNA Typing in Forensic Medicine: A Brief Survey of the Italian Situation' (1997) 88 *Forensic Science International* 117.

50 B Waixel, 'New Directions for Data Protection Law and Practice' (1995) *Computers and Law* 30.

51 Redmayne, above n 47.

52 Ibid.

defines 'destruction of forensic material' as destruction of the means of identifying the person from whom forensic material was taken, rather than destruction of the forensic material itself. However, storing original DNA samples is much more problematic than simply storing DNA profiling codes. A DNA sample contains the full complement of DNA from an individual, including their genes. The information that could therefore be elicited is more sensitive, for it amounts to a genetic description of the individual. For this reason, forensic samples should be verified when taken, and not stored for retrospective confirmation. In Germany,<sup>53</sup> the Netherlands<sup>54</sup> and Norway,<sup>55</sup> DNA samples must be destroyed after the DNA profile has been obtained, and it is not possible to retain a blood or saliva sample from offenders.<sup>56</sup> The rationale is solely to protect privacy rights of those on the database.<sup>57</sup>

Many people also fear a 'function creep',<sup>58</sup> where the database may eventually take on new functions and purposes, such as the use of the census record in the United States to round up Japanese-Americans for placement in interment camps during World War II.<sup>59</sup> Genetic markers for aggression, substance addiction, and criminal tendencies could also be studied using the database as a convenient epidemiological tool; and private pharmaceutical corporations could pay the government for the rights to analyse DNA samples. In this respect, the Victorian *Crimes (Amendment) Act 1997* ss 464ZG(8)-(9) seems poorly drafted. Although a forensic sample must be destroyed if no crime is committed within 12 months of taking the sample,<sup>60</sup> the sample could theoretically be used without committing a crime, as long as the material and any relevant and related information is destroyed upon expiration of the 12 months. Hence, many critics, including Meagher,<sup>61</sup> believe that these sanctions do not provide the necessary protection against illegitimate use of the database, particu-

<sup>53</sup> *Code of Criminal Procedure (Strafprozessordnung) (1996)* §§ 81a, 81e, 81f.

<sup>54</sup> *Amendments to Dutch Code of Criminal Procedure (1997)*.

<sup>55</sup> *Criminal Procedure Code (DNA-analyse i straffesaker; Norges offentlige utredninger) (1993)* §160.

<sup>56</sup> P M Schneider and P D Martin, 'Criminal DNA Databases: The European Situation' (2001) 119 *Forensic Science International* 232.

<sup>57</sup> P D Martin, H Schmitter and P M Schneider, 'A Brief History of the Formation of DNA Databases in Forensic Science within Europe' (2001) 119 *Forensic Science International* 225.

<sup>58</sup> A Haesler, 'Is DNA Testing a Panacea for Solving All Crime or a Modern Spanish Inquisition?' (2001) 39(3) *Law Society Journal* 58.

<sup>59</sup> D K Casey, 'Genes, Dreams and Reality: The Promises and Risks of the New Genetics' (1999) 83(3) *Judicature* 105.

<sup>60</sup> *Crimes Act 1914* (Cth) s 23YD.

<sup>61</sup> Meagher, above n 37.

larly since the maximum penalties of either 12 months imprisonment or a \$12 000 fine<sup>62</sup> are not strong enough. Meagher believes that the onus should be on the police to prove the benefits of keeping the DNA records of innocent people.

Indeed, the practical definition of ‘destruction’ of DNA samples is far from adequate under the Commonwealth *Crimes Act 1914*, and varies between States.<sup>63</sup> The Victoria police<sup>64</sup> and the New South Wales Police Minister, Paul Whelan,<sup>65</sup> believe that it is impracticable to destroy all trace of a sample, and that mere destruction of any identifying link between a particular person and their sample is adequate. This is akin to keeping a ‘mugshot’ of an exonerated suspect while erasing his name and claiming to have thereby destroyed the file. A laboratory or agency could indeed use our genetic material once it has been de-identified. Even the New South Wales Privacy Commissioner believes that merely de-identifying samples increases the likelihood that insurance, biotechnology or other companies could misuse them.<sup>66</sup>

## Procedural Issues

In order to facilitate DNA profiling, the power of police to take samples has been extended to suspects in relatively minor offences.<sup>67</sup> One might argue that the Commonwealth and State laws legitimately balance human rights with the need to prevent crime, and that it would be unwise to lose useful investigative material by becoming overly perturbed by a trivial transgression of individual rights. One could then justify this reasoning by analogising that the initial use of fingerprinting was deemed by many courts to be an unacceptable violation of civil liberties,<sup>68</sup> but that today, fingerprinting is considered routine and unproblematic, just as mouth swabbing might be in the future. Fingerprints similarly end up on a na-

<sup>62</sup> *Crimes Act 1958* (Vic) s 464ZG(9), amended by s 22(15) of the *Crimes Amendment Act 1997* (Vic).

<sup>63</sup> Model Criminal Code Officers Committee, above n 5.

<sup>64</sup> Submission to Australian Law Reform Commission, *Protection of Human Genetic Information*, Discussion Paper No 66 (2002) (Victoria Police).

<sup>65</sup> New South Wales, *Parliamentary Debates*, Legislative Assembly, 31 May 2000 (Paul Whelan, Minister for Police) (Second Reading Speech, Crimes (Forensic Procedures) Bill 2000).

<sup>66</sup> Model Criminal Code Officers Committee, above n 5.

<sup>67</sup> See, for example, *Crimes Act 1914* (Cth) s 23XWE; *Crimes (Forensic Procedures) Act 2000* (NSW) s 11; *Police Powers and Responsibilities Act 2000* (Qld) s 311; *Crimes Act 1958* (Vic) s 464ZF.

<sup>68</sup> C Wilson, *Written in Blood: A History of Forensic Detection* (1<sup>st</sup> ed, 1989).

tional register, whether a person is a suspect or a convicted criminal.<sup>69</sup> Nonetheless, DNA evidence notably differs in that it is more sophisticated and can convey more detailed information.

The increased forensic powers afforded to police have been executed largely without public debate and parliamentary scrutiny. Many commentators<sup>70</sup> see these powers (for instance, under the *Crimes Act 1958* (Vic) s 464ZF) as a convenient means of increasing the size of the DNA database. The larger the DNA database, the greater its statistical power and the more likely that it truly reflects the population. This augments the weight of such evidence in court. If true, this should be seen as traversing the line from providing police with legitimate forensic powers for assisting in criminal investigation, to the state committing serious violations of privacy and liberty.<sup>71</sup> Some commentators even believe that such powers come perilously close to 'random DNA sampling on the streets',<sup>72</sup> particularly given that the crime rate actually decreased in the four years prior to this section being introduced.<sup>73</sup> Other invasive means, such as paid informers or universal telephone interception, could similarly reduce crime,<sup>74</sup> but Australian political and social values reject such draconian surveillance.<sup>75</sup> Perhaps, at the very least, independent DNA collectors, trained in negotiation and conflict resolution, could supervise self-administered buccal swabs.

The *Crimes Act 1958* (Vic) s 464ZF also allows police to perform any forensic procedure to procure DNA. A blood test is the most sensitive test, and a buccal swab is the simplest, cheapest and least invasive. It therefore seems unnecessary that the Act could routinely allow other highly invasive forensic procedures, which may include vaginal swabs. It remains difficult to justify procuring a DNA sample from a suspect in this manner, given that it does not abrogate recidivism. Moreover, it would seem to subvert the rules of natural justice if a person has no statutory right to argue against an application that compels them to undergo an extremely intrusive forensic procedure when they have not been formally charged with a criminal offence. Similarly, when four Queensland prisoners con-

<sup>69</sup> Brenchley, above n 9.

<sup>70</sup> Meagher, above n 37.

<sup>71</sup> *Ibid.*

<sup>72</sup> Brenchley, above n 9.

<sup>73</sup> Meagher, above n 37.

<sup>74</sup> R Clarke, 'While You Were Sleeping ... Surveillance Technologies Arrived' (2001) 73(1) *Australian Quarterly* 10.

<sup>75</sup> M Kirby, 'DNA Evidence: Proceed with Care' (2001) 33 *Australian Journal of Forensic Science* 9.

victed of minor offences challenged the legal right of police to forcibly DNA test them as 'indictable offenders', the Queensland Parliament amended legislation<sup>76</sup> sanctioning such tests, and retrospectively validated those already carried out.<sup>77</sup> Similarly, the Legislative Assembly of Victoria passed the *Crimes (Validation of Orders) Act 2001*.<sup>78</sup> This overturned a decision of the Supreme Court of Victoria,<sup>79</sup> and retrospectively validated interim orders for forensic samples to be taken<sup>80</sup> made by magistrates in camera rather than in full court.<sup>81</sup> This further erodes the defendant's right to procedural fairness, as the proceedings are not subject to the same transparency and scrutiny as those conducted in public.

There is a well-known legal and ethical precept that it is better for 99 offenders to escape imprisonment than it is for one innocent person to be condemned.<sup>82</sup> However, no formal procedures currently exist for convicted criminals to prove their innocence by accessing the DNA database and obtaining independent scientific scrutiny of the profiles. The first use of DNA profiling, by Professor Alec Jeffreys in 1984, established the innocence of a prime suspect in a serial homicide investigation.<sup>83</sup> This is one of the driving justifications for the widespread use of DNA profiling, since it could prove the innocence of someone wrongfully convicted and imprisoned for a crime. The ALRC strongly supports the establishment of a body to consider applications for post-conviction review based on DNA evidence.<sup>84</sup> So far, no such body exists, nor is there a statutory regime to compensate people who have been cleared using DNA technology.<sup>85</sup>

<sup>76</sup> *Police Powers and Responsibilities and Other Acts Amendments Act 2000* (Qld) s 311.

<sup>77</sup> *Qld's DNA Testing Program to Expand* (2001) ABC News Online <<http://www.abc.net.au/news>>.

<sup>78</sup> See discussion in Victoria, *Parliamentary Debates*, Legislative Assembly, 16 August 2001, 50.

<sup>79</sup> *Lednar, O'Brien and Hill v Magistrates Court and the Chief Commissioner of Police* [2000] VSC 549 (22 December 2000, Gillard J).

<sup>80</sup> Pursuant to the *Crimes Act 1914* (Cth) pt 1D, div 5.

<sup>81</sup> In contravention of s 125(1) of the *Magistrates' Court Act 1989* (Vic).

<sup>82</sup> Thomas Sharkie, cited in D DeFoore, 'Post-Conviction DNA Testing: A Cry for Justice from the Wrongly Convicted' (2002) 33 *Texas Tech Law Review* 491.

<sup>83</sup> Roberts, above n 25.

<sup>84</sup> Australian Law Reform Commission, above n 10.

<sup>85</sup> 'DNA Profiling Exposed to Mistakes and Abuse' (2000) 38(4) *Law Society Journal* 24.

## Evidentiary Issues

A national DNA database is a useful investigative tool that should not change existing evidentiary rules.<sup>86</sup> Nevertheless, with the establishment of a DNA database, it is possible that increasing numbers of cases will be tried in court based solely on DNA evidence arising from a database match.<sup>87</sup> Given the current judicial, and even scientific, polemic as to the precise meaning and significance of probabilistic DNA matching,<sup>88</sup> this will create difficulties where the defence leads vindictory evidence. Coupled with this, the power of the statistics used to assess the significance of a DNA match will vary with the size of the DNA database.<sup>89</sup> A small database may result in a lower match probability, and questions may be asked as to whether databases contain a representative sample of the population. Thus, it would be difficult to extrapolate results from a small sample to the general populace, and there may be confusion regarding the finding of a match on the database and proof beyond reasonable doubt. For this reason, Redmayne espouses that it would be better to enter the DNA profiles of the entire population, rather than just a minority, because it facilitates certainty as to the discriminating power, and therefore the evidentiary weight, of DNA profiling.<sup>90</sup>

The uncertainty regarding the meaning of a DNA match is particularly problematic if a match is reported for the profile of an innocent person. Although DNA evidence is now widely accepted as accurate and valid, all tests carried out by humans are prone to error, and given that humans also shed bits of themselves wherever they go, this creates more possibilities for wrongful suspicion.<sup>91</sup> In reality, because the report of a match between a crime scene sample and a suspect's profile does not provide conclusive evidence of identity, individuals represented on the database bear a greater risk of misidentification by chance than do those who are not represented. Many people see this inequality of risk of misidentification as eroding the presumption of innocence. For instance, Raymond Easton of Swindon, in Britain, was placed on the database after a minor domestic incident. He then became the prime suspect in a burglary after

<sup>86</sup> J Thomson, 'Experiences in DNA Databasing in the Private Sector' (1998) 38 *Science and Justice* 265.

<sup>87</sup> Australian Broadcasting Corporation, 'DNA Profiling', *Quantum*, 24 February 2000 <<http://www.abc.net.au/quantum/stories/s101324.htm>>.

<sup>88</sup> I Fregelton and H Selby, *The Law of Expert Evidence* (1<sup>st</sup> ed, 1999).

<sup>89</sup> C Jowett, 'Lies, Damned Lies, and DNA Statistics: DNA Match Testing, Bayes' Theorem and the Criminal Courts' (2001) 41(3) *Medicine, Science and the Law* 194.

<sup>90</sup> Redmayne, above n 47.

<sup>91</sup> Concar, above n 34.

his DNA profile matched a profile from the crime scene. He had Parkinson's disease at the time of the crime, giving him an alibi. There was an estimated 1 in 37 million chance that an innocent person would be identified using the six loci on the British DNA database. After performing a 10 loci test, he was cleared. Now Britain uses the more expensive 10 loci tests. This depicts the danger of assuming that someone convicted of one offence is likely to be guilty of other offences. If the DNA of a previous known offender is found at a crime scene, no adverse assumption should be drawn about the likelihood that they have re-offended, which would otherwise impose a burden on the accused to prove their innocence.

Another, somewhat more complex, evidentiary issue affecting the weight of DNA evidence is 'negative effect'.<sup>92</sup> This refers to the situation in which a match is more likely if a suspect has been located through a database search rather than through other means. This weakens the DNA evidence because the probability of a match is unfairly weighted against individuals listed on a database. On the contrary, a database search that yields several matches may actually strengthen DNA evidence because it eliminates other people. Hence, this eliminative factor outweighs the negative effect. Moreover, the negative effect paradox reflects a lack of cogent evidence that an individual is a suspect, prior to matching the profiles. In other words, it is the lower 'prior odds'<sup>93</sup> which is adverse to the DNA database match. Another defect with negative effect is that it succumbs to the prosecutor's fallacy.<sup>94</sup> That is, it equates guilt simply to a match on the DNA database, and therefore leaves evidence open to investigative bias and suggestibility.

A number of other evidentiary principles could be transgressed by the introduction of a DNA database. Firstly, as with fingerprint evidence, if the fact-finder is told that a defendant was identified through a database search, this could essentially be akin to hearing evidence of the defendant's previous bad character, and could even damage the general prohibition against the hearing of similar fact evidence.<sup>95</sup> Most of those providing samples for the DNA database will have been convicted of committing another crime. Although it is possible to not disclose to the fact finder how the suspect was identified, this becomes problematic if, for example, the interpretation of a DNA match is challenged. DNA evidence is indeed frequently challenged. Secondly, being compelled to

<sup>92</sup> Redmayne, above n 47.

<sup>93</sup> Jowett, above n 89.

<sup>94</sup> D J Balding and P Donnelly, 'The Prosecutor's Fallacy and DNA Evidence' (1994) *Criminal Law Review* 711.

<sup>95</sup> Redmayne, above n 47; *Pfennig v R* (1995) 182 CLR 461.

submit a DNA sample when there is no other evidence or suspicion in another crime breaches the fundamental prohibition of self-incrimination.<sup>96</sup> Ultimately, the science of DNA profiling has been shown to be accurate, but the storage and collection of samples is not necessarily so. Put simply, samples can be contaminated<sup>97</sup> and 'police-men [sic] can be corrupted'.<sup>98</sup>

## Conclusion

The establishment of a national DNA database will impart substantial benefits in linking offenders to the crimes they commit; quite literally providing the crucial vinculum 'from one cell to another'.<sup>99</sup> However, this should not blind us to the problems that accompany such novel and developing technology. The powers conferred upon the police to create the DNA database represent an ominous threat to public liberty, and the information contained on the database is clearly open to abuse by government agencies, particularly since original samples are being retained. It is ironic that police in both Australia and the United Kingdom are opposed to providing DNA samples for a proposed 'contamination elimination database', suggesting that even those most familiar with the database lack faith in it.<sup>100</sup> There are no easy solutions to these concerns. Nevertheless, the acquisition, examination and preservation of DNA samples must occur in a way that is compatible with the principles of our legal system. DNA samples should not be retained on the database, and State and Commonwealth legislation regarding forensic sampling requirements should be unified. It is highly commendable that the *Crimes Amendment Act 2002* (Cth) was recently passed to allow CrimTrac to identify victims of the terrorist bombings in Bali, thus expanding the use of the DNA database to disaster victim identification. However, given the current political climate following the terrorist attacks in the United States on 11 September 2001, and, most recently, the passage through the Senate of the government's controversial *Australian Security Intelligence Organisation Legislation (Amendment) Act 2002* (Cth),<sup>101</sup> it is likely that ordi-

<sup>96</sup> Gans, above n 6; *Brebner v Perry* [1961] SASR 177.

<sup>97</sup> R J Trent, 'DNA and the Courts' (2000) 12(7) *Judicial Officers' Bulletin* 52.

<sup>98</sup> L Moldofsky, 'Foolproof Fingerprints: On their DNA Marks', *Time*, 24 April 2000, 47.

<sup>99</sup> 'DNA, a Link from One Cell to Another' (1996) Sept/Oct *Police Life* 6.

<sup>100</sup> Submission to Victorian Parliament Law Reform Committee, Parliament of Victoria, *Inquiry into Forensic Sampling and DNA Databases* (2002) (M Strutt).

<sup>101</sup> J Koutsoukis and M McLachlan, 'Labour Agrees to Back ASIO Bill', *Australian Financial Review*, 18 June 2003.

nary citizens risk further incursions into their fundamental rights as part of the Australian government's resolve to fight terrorism.