THE HIGH COURT AND THE ADMISSIBILITY OF DNA EVIDENCE: *AYTUGRUL v THE QUEEN* [2012] HCA 15 (18 APRIL 2012)‡

DR GREGOR URBAS*

ABSTRACT

The High Court of Australia has dealt with the admissibility of DNA evidence in criminal trials in only a few cases. In this most recent decision, the focus of analysis was on whether the manner in which an expert witness for the prosecution had presented information about DNA match probabilities was unfairly prejudicial. The appellant had argued that the expert's presentation of statistical information in the form of an 'exclusion percentage'(99.9%) as opposed to a 'frequency ratio' (1 in 1,600) was unfairly prejudicial due to its likelihood of being given too much weight by a jury, or being misleading or confusing. The High Court unanimously rejected this contention and dismissed the appeal.

I BACKGROUND FACTS AND FIRST APPEAL

The appellant had been convicted of murder in the New South Wales Supreme Court. More than two years before her death by stabbing, the victim had been in a relationship with the appellant. This relationship failed and the victim had formed a relationship with another man. The Crown case was that the appellant was motivated by jealousy and had stalked and harassed her for some months before her death. He also published a poem in the *Turkish Weekly News* declaring his love for her (both the appellant and the victim were of Turkish origin):[1]

> Even if you don't want to remember my name,
> Don't want to hear my voice
> Even if you say give up, I cannot give you up
> Even if you say forget, I cannot forget the beautiful
> Days we lived

---

‡This article is a case note and therefore has not been peer-reviewed.

* Senior Lecturer in Law, Australian National University.

[1] As translated from Turkish: see *R v Yusuf Aytugrul* [2009] NSWSC 275 (16 April 2009), [7].

> Even if you cry all your hate, say give up,
> I cannot give up.

After his conviction, there was an appeal to the Court of Criminal Appeal, on the ground that 'a miscarriage of justice occurred because of the prejudicial way in which DNA evidence was expressed to the jury'.[2] The appellant argued that an expert witness called by the prosecution, Ms Gina Pineda, Associate Laboratory Director and Technical Leader of a United States DNA laboratory company, had presented her evidence in an unacceptable way. This evidence concerned the results of mitochondrial DNA testing that had been performed on a hair sample that had been found under the thumbnail of the victim.[3] This testing revealed a DNA profile that was not that of the victim or her maternal relatives, but was consistent with the DNA profile obtained from saliva taken from the appellant.[4]

As is generally the case with DNA profile matching, a *negative* result or 'exclusion' is definitive – the two profiles come from different biological sources – but a *positive* result or 'inclusion' is not definitive – the two matching profiles may have come from the same source, but there is a non-zero probability of a random source other than the first source having the same DNA profile. In presenting this information in court, great care must be taken in correctly stating and explaining the relevant probabilities, how they are calculated, and what they signify.[5] In the

---

[2] *Aytugrul v R* [2010] NSWCCA 272 (3 December 2010); see also Andrew Ligertwood, 'Can DNA Evidence Alone Convict An Accused?' (2011) 33(3) *Sydney Law Review* 487, 502-504. As noted in the High Court, the central complaint made in both the Court of Criminal Appeal and the High Court was as to a decision on the admissibility of evidence, and so better cast as a "wrong decision of any question of law" under s 6(1) of the *Criminal Appeal Act 1912* (NSW): see *Aytugrul v The Queen* [2012] HCA 15 (18 April 2012), [18], (French CJ, Hayne, Crennan and Bell JJ). As to the 'common form' grounds of appeal, see Gregor Urbas, 'DNA Evidence in Criminal Appeals and Post-Conviction Inquiries: Are New Forms of Review Required?' (2002) 2(2) *Macquarie Law Journal* 141.

[3] Mitochondrial DNA (mtDNA) is shared among members of a family to a greater extent than nuclear DNA, and can also be used for forensic matching in some circumstances: see Marc Smith and Gregor Urbas, 'Regulating New Forms of Forensic DNA Profiling under Australian Legislation: Familial Matching and DNA Phenotyping' (2012) 44(1) *Australian Journal of Forensic Sciences* 63; F. Kaestle, et al, 'Database Limitations on the Evidentiary Value of Forensic Mitochondrial DNA Evidence' (2006) 43 *American Criminal Law Review* 53; *DNA Profiling – Recent Developments and Future Directions* (2012) CrimTrac <http://www.crimtrac.gov.au/our_services/DNAProfiling-RecentDevelopmentsandFutureDirections.html>.

[4] The applicable forensic procedures legislation in New South Wales is the *Crimes (Forensic Procedures) Act 2000* (NSW). This governs the taking of biological material from persons including suspects, and the permissible matching of DNA profiles thereby obtained against others including those obtained from crime scene samples.

[5] See Jeremy Gans and Gregor Urbas, 'DNA Evidence in the Criminal Justice System' (2002) 226 *Trends and Issues in Crime and Criminal Justice*. In Australia, the Profiler Plus system is most widely used, and tests at nine loci or

Aytugrul case, the fact that mitochondrial DNA was involved meant that the frequency of the expected occurrence of that particular profile in the community was far greater than would typically be seen in a case involving nuclear DNA matching, where match probabilities of one in millions or even one in billions are routinely calculated. Nonetheless, the experts in this case, including Ms Pineda, were able to present figures of around one in 1 600 persons in the general community having the DNA profile generated from the hair sample, a profile shared by the appellant. Putting this statistic in a different but mathematically equivalent form, 99.9% of the population would not be expected to have this DNA profile.[6]

It is at this point that the appellant's central argument can be clarified. Defence counsel at the trial had objected to the admission of her expert evidence, unsuccessfully, including on the ground that the use of the 99.9% exclusion percentage was unfairly prejudicial '[b]ecause it has a connotation that is very different to the reality'. This was elaborated in the arguments on appeal to be because a jury was liable to subconsciously 'round up' such a probability to one, and mistakenly infer that there was a mathematical certainty (or close to it) of the appellant's guilt.[7] In the Court of Criminal Appeal, only McClellan CJ at CL agreed with this contention, referring to published academic work on 'the differing persuasive power of probabilistic formulations'.[8] By contrast, Simpson and Fullerton JJ, while agreeing that as between equivalent statistical statements, 'some formulations have a greater educative force or persuasive appeal than others; or ... are more colourful, or more easily comprehended, than others', did not regard this as amounting to a basis for exclusion because of a risk of unfair prejudice or the evidence being misleading or confusing.[9] Thus, the Court of Appeal, by a two to one majority, dismissed the appeal.

---

genetic markers, whereas in the United States up to 14 loci are tested, allowing for greater discrimination between potential sources.

[6] *Aytugrul v R* [2010] NSWCCA 272 (3 December 2010), [56] (McClellan CJ at CL).

[7] Ibid,[63] (McClellan CJ at CL).

[8] Ibid,[89]-[95] (McClellan CJ at CL).

[9] Ibid, [164] (McClellan CJ at CL), [198] (McClellan CJ at CL), [238] (Fullerton J).

II THE HIGH COURT'S DECISION

The leading opinion was the joint judgment of French CJ, Hayne, Crennan and Bell JJ. Their Honours stated that '[n]o sufficient foundation was laid, at trial or on appeal (whether to the Court of Criminal Appeal or this Court) for the creation or application of a general rule' to the effect that 'evidence expressing the results of DNA analysis as an exclusion percentage would in every case be inadmissible because its probative value is always outweighed by the danger of unfair prejudice to the defendant'.[10] This was in part because it was an improper exercise of judicial notice to take into account general studies of psychological reactions to statistical information (as had McClellan CJ at CL) without recourse to the requirement that parties be able to make submissions on such material, statutorily embodied in s 144(4) of the *Evidence Act 1995* (NSW).[11] Even if such material were considered, however, it did not establish the risk of unfair prejudice referred to in s 135(a) and s 137 or the danger that the evidence might be misleading or confusing under s 135(b) of that Act:[12]

> No reason is shown for answering either form of those more particular questions in favour of the appellant. The evidence given was clear. It was evidence adverse to the appellant but it was in no sense *unfairly* prejudicial, or misleading or confusing. The exclusion percentage given was high – 99.9 per cent – but relevant content was given to that figure by the frequency ratios that were stated in evidence. As the trial judge pointed out to the jury, the evidence that was given did not, and was not said to, establish that the mitochondrial DNA profile found in the hair definitely came from the appellant. There was no risk of rounding the figure of 99.9 per cent to the certainty of 100 per cent.

In a separate judgment, though dealing at greater length with some of the other evidentiary aspects of the appellant's arguments, Heydon J agreed as to the main issues of unfair prejudice and discretionary exclusion:[13]

> No doubt both the 'frequency estimate' and the 'exclusion percentage' evidence, like many other aspects of the expert evidence, were difficult for the jury to deal with. The field is arcane. But any criminal jury of 12 is likely to contain at least one juror capable of realising, and demonstrating to the

---

[10] *Aytugrul v The Queen* [2012] HCA 15, [20].
[11] Ibid,[21].
[12] Ibid,[24] (emphasis original).
[13] Ibid,[75]. His Honour also dealt with the question whether an appeal based on s 137 can be entertained if the appellant did not object at trial to the admission of evidence as unfairly prejudicial; with the meaning of 'probative value' in s 135 and s 137; with the 'slicing up' of logically equivalent pieces of evidence; and with the taking of judicial notice under s 144 of the Act.

> other jurors, that the frequency estimate was the same as the exclusion percentage. Further, detailed evidence was given about how the 'exclusion percentage' evidence was derived from the concededly admissible 'frequency estimate' evidence, and how their significance was identical.

The appeal was unanimously dismissed.

III COMMENT

The High Court's analysis stands in conformity with the few other cases in which it has significantly considered the admissibility of DNA evidence in criminal proceedings. In *Hillier v The Queen*, the High Court unanimously ruled that the Australian Capital Territory (ACT) Court of Appeal had been in error in its treatment of DNA evidence in a successful appeal from a murder conviction.[14] The majority on the Court of Appeal, notably comprising the Chief Justice of the ACT and the President of the Court of Appeal, had erred in assessing the DNA evidence, as well as other elements of the Crown's circumstantial case, in isolation rather than in the light of the totality of admissible evidence.[15]

In the special leave application of *Forbes v The Queen*, also arising in the ACT, but this time involving a sexual assault, DNA evidence provided the central evidentiary link between the applicant and the crime. The appeal against conviction, and the special leave application, relied on the proposition that no conviction should ever be based on 'DNA alone'. Noting that this was not such a case, there being other evidence including the applicant's own alibi testimony (which the jury had evidently not believed), the application for special leave was refused. Along the way, Heydon J observed:[16]

---

[14] *Hillier v R* [2005] ACTCA 48 (15 December 2005) (Higgins CJ and Crispin P, with Spender J in dissent). The ACT Director of Public Prosecutions appealed to the High Court against this decision: *R v Hillier* [2007] HCA 13.
[15] *R v Hillier* [2007] HCA 13, [1] (Gleeson CJ), agreeing with the joint judgment of Gummow, Hayne and Crennan JJ, who pointedly ordered the rehearing of the appeal by a 'differently constituted Court of Appeal' ([55]). Calinnan J agreed, though would have ordered a retrial. The second appeal (before Madgwick, Weinberg and Dowsett JJ) resulted in orders for a retrial: *Hillier v R* [2008] ACTCA 3 (6 March 2008). At the new trial, held this time before a judge alone rather than a jury, Hillier was acquitted.
[16] *pForbes v The Queen* [2010] HCATrans 45 (12 March 2010); *Forbes v The Queen* [2010] HCATrans 120 (18 May 2010).

> It is a very rare proposition, probably non-existent in our law outside statute that evidence is admissible if corroborated but not if it is not. Why does the existence of some other evidence, for example, if your client had been seen nearby 10 minutes earlier apparently innocently engaged, why does that suddenly make all this other evidence fit to go to a jury and be the basis of a conclusion of guilt?

However, the Court dismissed the application without specifically ruling on whether there was a legal principle such as the one contended for by the applicant, to the effect that 'there is a particular class of evidence, DNA evidence, which regardless of its particular content, should be held legally insufficient to support a conclusion that a disputed proposition of fact is established beyond reasonable doubt'.[17]

The general principle to be extracted from the *Hillier*, *Forbes* and *Aytugrul* cases, as enunciated by the High Court, appears to be that DNA evidence attracts no special rules of evidence that would differentiate it from other elements of a circumstantial criminal case. In particular:

- DNA evidence is to be assessed in the context of all the admissible evidence in the proceeding, and not in isolation (*Hillier*);[18]
- There is no legal rule to the effect that a person cannot be convicted using a DNA match as the central element connecting him or her to the crime scene (*Forbes*);[19] and
- Logically equivalent presentations of the statistical aspects of DNA match evidence, properly explained, cannot be differentially treated as unfairly prejudicial or as

---

[17] This characterisation of the applicant's contention was framed by Hayne J, with counsel for the applicant agreeing with its terms. The application for special leave was decided on the basis that the defence at trial had acquiesced in the presentation of the DNA match probability in qualitative terms ('strong' or 'extremely strong') rather than quantitative terms ('greater than 1 in 10 billion'), and that this had not resulted in a miscarriage of justice: *Forbes v The Queen* [2010] HCATrans 120 (18 May 2010). See also Ligertwood, above n 2, 530, which states that the '1 in 10 billion' figure was not advanced at trial or the first appeal, and made its first appearance in the High Court proceeding.

[18] It is worth noting in this regard that the Australian Law Reform Commission (ALRC) considered, in its 2005 Review of the Uniform Evidence Law, whether DNA match evidence was a form of 'identification evidence', to which special rules including warning provisions do attach under Part 3.9 of the *Evidence Act 1995* (Cth, NSW). The ALRC concluded that DNA match evidence was not identification evidence as defined in the Act: Australian Law Reform Commission, *Uniform Evidence Law*, ALRC Report No. 102, [13.17]-[13.34]).

[19] The shorthand suggestion of a 'DNA alone' prosecution case is in reality somewhat fanciful, given that no prosecutor would seriously consider trying a case with literally no evidence besides a DNA inclusion. Rather, what is denoted is that class of cases where the DNA evidence provides the only positive link between the accused and the crime scene. Given the High Court's comments, it is doubtful that even *Forbes* falls within this special class.

> misleading or confusing merely because of a perceived difference in their persuasive force (*Aytugrul*).[20]

With these considerations established, the Australian justice system can have somewhat greater confidence in the admissibility of DNA evidence in criminal proceedings.

[20] Important to note is that all members of the NSW Court of Criminal Appeal and the High Court in *Aytugrul* appeared to accept that the 'exclusion percentage' (99.9%) and the 'frequency ratio' (1 in 1 600) had equal (non-zero) probative value. Where there was some disagreement was on the question whether, this being so, the two variants could carry different risks of unfair prejudice. The better view is arguably that such a proposition impermissibly involves 'slicing up' what is in reality a single piece of evidence into two illusory halves: *Aytugrul v The Queen* [2012] HCA 15, [64] (Heydon J).