DIFFICULTIES IN USING EXPERT EVIDENCE

R V KARGER - A CASE STUDY

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OVERVIEW

This paper addresses some of the difficulties that may arise when calling expert witnesses in a criminal trial.

To illustrate some of these, reference will be made to expert evidence of DNA profiling because whilst this is still fairly new, it is now, probably, the most frequently relied upon field of expert evidence in criminal trials.

In so doing the case of *R v Karger*[1] will be discussed, which involved an allegation of murder, where the issue at trial was the identity of the murderer. The Crown case was circumstantial. One of the items of circumstantial evidence relied upon by the prosecution was DNA testing of samples taken from the crime scene and those taken from the accused. This case brought together and illustrated many of the difficulties that prosecutors, defence counsel and courts face when expert evidence is relied upon. In particular, this case highlighted two perennial problems; first, an allegation of lack of qualification and objectivity of the expert witness and secondly, how to make complex evidence intelligible to a judge and/or jury.

INTRODUCTION

In 1553 Saunders J observed[2]:

> *"…if matters arise in our law which concern other sciences or faculties, we commonly apply for the aid of that science or faculty which it concerns which is an honourable and commendable thing in our law. For thereby it appears that we do*

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[1] (2002) 83 SASR 135; Ruling at first instance (2002) 83 SASR 1.
[2] Buckley v Thomas (1554) 1 Plowden 118; 75 ER 182.

> *not despise all other sciences but our own, but we approve of them and encourage them as things worthy of commendation*[3]*"*.

The area of expertise called upon was "grammar"[4].

Whilst the Court at that time could not have envisaged the nature of expert evidence which is now relied upon, those observations reflect that expert evidence has long been recognised for the important role that it plays in the criminal justice system.

With developments in science has come the increased reliance on the opinions of experts. However with this reliance comes a responsibility on prosecutors.

When expert evidence is to be relied upon a number of issues must always be addressed to ensure that the evidence is admissible. In South Australia two questions must be considered[5]:

(a) Whether the subject matter of the opinion falls within the class of subject of which expert evidence is admissible.

  (1) Whether the subject matter of the opinion is such that a person without instruction or experience in the area of knowledge or human experience would be able to form a sound judgement without the assistance of witnesses possessing specialised knowledge and experience in the area, and

  (2) Whether the subject matter of the opinion forms part of a body of knowledge or experience which is sufficiently organised or recognised to be accepted as a reliable body of knowledge or experience a special acquaintance with which by the witness would render his opinion of assistance to the court.

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[3] (1554) 75 ER 182 at 193.

[4] Saunders J referred to previous cases where expertise had been relied upon by the court which included, in the case of "mayhem" (injury), surgeons and in a case of ex-communication, a person "well versed" in cannon law.

[5] R v Bonython (1984) 38 SASR 45 at 46-47; and see Makita (Australia) Pty Ltd v Sprowles (2001) 52 NSWLR 705.

(b) Whether the witness has acquired by study or experience sufficient knowledge of the subject to render his opinions of value in resolving the issues before the court.

As Heydon JA observed in *Makita (Australia) Pty Ltd v Sprowles*:[6]

> *"In short, if evidence tendered as expert opinion evidence is to be admissible, it must be agreed or demonstrated that there is a field of "specialised knowledge"; there must be an identified aspect of that field in which the witness demonstrates that by reason of specified training, study or experience, the witness has become an expert; the opinion proffered must be "wholly or substantially based on the witness's expert knowledge"; so far as the opinion is based on facts "observed" by the expert, they must be identified and admissibly proved by the expert, and so far as the opinion is based on "assumed" or "accepted" facts, they must be identified and proved in some other way; it must be established that the facts on which the opinion is based form a proper foundation for it; and the opinion of an expert requires demonstration or examination of the scientific or other intellectual basis of the conclusions reached: that is, the expert's evidence must explain how the field of "specialised knowledge" in which the witness is expert by reason of "training, study or experience", and on which the opinion is "wholly or substantially based", applies to the facts assumed or observed so as to produce the opinion propounded. If all these matters are not made explicit, it is not possible to be sure whether the opinion is based wholly or substantially on the expert's specialised knowledge. If the court cannot be sure of that, the evidence is strictly speaking not admissible, and, so far as it is admissible, of diminished weight. And an attempt to make the basis of the opinion explicit may reveal that it is not based on specialised expert knowledge, but, to use Gleeson CJ's characterisation of the evidence in* HG v The Queen *(at 428 [41]), on "a combination of speculation, inference, personal and second-hand views as to the credibility of the complainant, and a process of reasoning which went well beyond the field of expertise".*

The tests for admissibility might vary between jurisdictions but the issues raised, are in essence, the same.

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[6] (2001) 52 NSWLR 705 at 743-744.

These issues might sound obvious, but the answers to them are not necessarily so. You should not simply assume because an "expert" provides a report that the pre-conditions for admissibility have been met.

The consequence of failing to satisfy those pre-conditions is that the evidence is inadmissible. On the other hand, if, despite that, evidence is led, it may result in a miscarriage of justice. We are all familiar with cases where juries have convicted when expert evidence was relied upon by the prosecution, where those convictions were later overturned on the basis that the evidence was unreliable[7],[8].

Times change. Fingerprint identification is a classic example. What is now considered common place evidence was once new and unfamiliar.

In 1912 in *R v Parker*[9] Madden CJ said[10]:

> *"My difficulty arises from the fact that the subject of finger-prints has not been sufficiently studied to enable these propositions to be laid down as scientific facts. Finger-prints have been studied by Monsignor Bertillon in France from an anthropometrical point of view, and by Sir Francis Galton and a few others, doubtless highly intelligent persons, from the stand point of mere observers. But the matter has not been investigated by scientists generally so that we can say that the propositions relied on by the Crown are accepted scientific facts … .*

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[7] In Australia the most notable is the case of Lindy Chamberlain who was convicted of the murder of her daughter Azaria. This led to the establishment of a Royal Commission to inquire into the convictions. The Commissioner criticised the forensic evidence led by the prosecution and the failures by the defence to challenge it effectively. The conviction was overturned. R v Chamberlain (2) (1983) 153 CLR 521; Royal Commission of Inquiry into Chamberlain convictions, Report of the Commissioner the Honourable Mr Justice TR Morling (Darwin 1987); Re Conviction of Chamberlain (1988) 93 FLR 239.

[8] In the UK in 2004, convictions were quashed in the cases of Canning and Clark on the basis that the expert evidence led by the prosecution was unreliable. Each accused was charged with causing the death of one of their children and the cases depended on evidence, in relation to cause of death, of a paediatrician: R v Cannings [2004] EWCA Crim 1; R v Clark [2003] EWCA Crim 1020

[9] (1912) VLR 152.

[10] R v Parker (supra) at 153-155.

> *The jury are told that the markings on a man's fingers never alter, and are different in every man. The jurymen knew nothing in the world about that matter; they strike nothing like it in their daily lives. This is that kind of evidence that is particularly dangerous, for it carries with it the savour of mystery, as in this case the detective swears that no two men's markings are alike, and is assumed that not only that is true, but that there is some mysterious brand implanted on man's hand for some definite purpose of characterising him physically".*

The majority concluded that the evidence was admissible.

The High Court refused an application for special leave to appeal[11]. In so doing the court commented:

> *"…a fingerprint is therefore in reality an unforgettable signature. That is now recognised in a large part of the world and in some parts, has I think, been recognised for many centuries. It is certainly now generally recognised in England and other parts of the British Dominions. If that is so, there is in this case evidence that the prisoner's signature was found in the place which was broken into, and was found under such circumstances that it could only have been impressed at the time when the crime was committed. It is impossible under those circumstances to say that there is no evidence to go to the jury."*

Such evidence is now led without question. All science at some stage was new. The difficulty is, establishing that the area of expertise does form part of a body of knowledge which is recognised and accepted as reliable. Prosecutors seeking to rely on expert witnesses giving evidence of DNA profiling experienced those difficulties with a number of challenges being mounted to the admissibility of the evidence[12].

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[11] Parker v The King (1912) 14 CLR 681 at 682-683.

[12] R v Jarrett (1994) 62 SASR 443; R v Karger (2002) 83 SASR 135; R v Tran (1990) 50 A Crim R 233; R v Lucas (1992) 2 VR 109; R v Rees [2000] Unreported NSW Supreme Court delivered 16.6.00; R v Gallagher (2001) NSWSC 462; R v McIntyre (2001) NSWSC 311. Similar challenges were mounted in the United States - for example Utah v Butterfield (DC, 26.4.99, No 981909353); California v Hackney (Superior Court, 6.7.99, No 97F02466); Arizona v Lynch (Superior Court, 20.8.99, No 98-11390); California v Bertsch and Hronis (Superior Court, 20.1.99, No 94F07295); Commonwealth of Massachusetts v Gaynor (Superior Court, 31.04.00, No 98-0965-0966); Michigan v Cavin (Circuit Court, 18.10.00, No 00-4395-FY); California v Elizarraras (Superior Court, 31.10.00, No 50651); NY v Owens (Superior Court, 06.04.01, No 547/99); New Hampshire v Whittey (Superior Court, 22.05.01, No 00-S-0273); People v Shreck (SC Colorado, 23.04.01, No 00SA105); People v Hill

DNA profiling might be considered the greatest advance in forensic science since fingerprint identification. Interestingly, the concerns expressed in 1912 by Madden CJ about fingerprints are similar to those, at times, being expressed about DNA technology. But unlike fingerprint identification, DNA technology is complex by nature and is continually evolving.

With the use of expert evidence comes a responsibility placed on all prosecutors. As Maurice J observed in *R v Lewis*[13]:

> *"… whenever the Crown wishes to rely upon forensic evidence the prosecutor has a clear duty, not just to his client, the Crown, but to the trial judge and the jury to acquaint them, in ordinary language, through the evidence he leads, with those aspects of the experts discipline and methods necessary to put them in a position to make some sort of evaluation of the opinion he expresses…*
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> *There is a tendency amongst academics, professionals and others who develop skills in a particular area to mystify their field, often by use of what seems to the outsider to be arcane language. It is the role of the prosecutor to strip forensic evidence of its mystery so far as possible; trial by expert must never be allowed to take the place of trial by jury. The inability to articulate the principal tenants that need to be understood, to describe in ordinary language the methods used and the reasons that point to a particular conclusion, these are the hallmarks of unreliable science and the not so qualified expert.*[14]*"*

Those comments were made in relation to evidence of bite marks but are equally applicable to all other areas of expert evidence.

The potential complexity of expert evidence has long been seen as one of the difficulties in relying upon it.

(Court of Appeal, State of California, 16.05.01, 2d Crim No B142534); Utah v Butterfield (SC 2001 UT59, 10.07.01); cf California v Bokin (Superior Court, 06.05.99, No 168461).

[13] R v Lewis (1987) 29 A Crim R 267 at 271.

[14] See R v Jarrett (1994) 62 SASR 443 at 455.

The role of prosecutors in presenting expert evidence has been brought sharply into focus with the advent of DNA technology. Evidence of DNA testing may be complex and its conclusions significant. The technology is continually evolving and developing. It involves two areas of expertise, namely, obtaining the DNA profile and then providing a statistical analysis to assist the trier of fact with what weight might be attached to the evidence. Profiles are obtained from amounts of material which are not visible to the naked eye. Computers and machinery are involved in conducting the tests and analysing the results.

That places a significant onus on prosecutors who invariably have the responsibility of presenting the evidence to ensure that the evidence is led in a manner that the trier of fact whether it be a judge or jury, has sufficient information to enable it to understand the evidence adequately, to evaluate it and to decide whether they are prepared to accept the evidence and if so, what weight they are prepared to attach to it.

If the evidence is not properly presented, the judge/jury may not rely upon it, or worse, they may misuse it. On the other hand, in relation to DNA evidence as Justice Mulligan observed[15]:

> "*If the science and technology are applied correctly by a suitably trained scientist and are appropriately explained to the Courts and understood by those working in the judicial system, the possibility of injustice in many cases is eliminated or substantially reduced"*.

The importance in the trial process of presenting expert evidence was highlighted in a 1997 study undertaken through the Australian Institute of Judicial Administration[16]. The study surveyed all 478 Australian Judges of whom 244 or 51.05% responded. The results of the

[15] Paper presented by the Honourable Justice E Mulligan – "Presenting DNA Evidence" at the conference "Prosecuting under the Microscope" International Conference, Adelaide, September 2001.
[16] This study was conducted by Dr Freckleton, Dr Reddy and Mr Selby.

study were released in 1999 in the publication entitled “Australian Judicial Perspectives on Expert Evidence: an Empirical Study”.

The survey involved posing a number of different questions to the judges, some of which revolved around the complexity of the expert evidence and performance of the advocate in examining and cross-examining the expert witness.

In particular the judges were asked whether they, as opposed to jurors, had encountered evidence which they had not been able to evaluate adequately because of its complexity. In response 53.19% said that they had not had such an experience, whilst 45.11% said they had “occasionally” met such a problem. 1.7% said they encountered the problem often.

Interestingly, when asked about the most serious problems encountered with expert evidence the response was bias (34.84%); failure to prove the basis of the experts opinion (13.93%); poor examination in chief by the advocate (13.93%); a failure of the advocate to cross-examine so as to make the expert accountable (10.66%); the use of oral or written language by the expert which was difficult to understand (9.84%); exceeding the parameters of expertise (5.74%); responsiveness by the experts to the questions (4.92%).

In response to a question about what, from their perspective, were the most persuasive factors in a jury accepting expert evidence they listed (in descending order) clarity of expression; impartiality; prior experience in the field and familiarity with the facts.

The difficulties in presenting expert evidence are not confined to lawyers but include the preparation and presentation by the expert witness. The presentation of evidence can only

succeed when the two professions interact. Drs Evett and Weir comment in their book "Interpreting DNA Evidence: Statistical Genetics for Forensic Scientists[17]":

> *"If the case is taken to court, then the scientist meets the next challenge of his profession - that of interacting with members of the legal profession who are generally not familiar with the principles and interpretation. This could be an excruciatingly difficult time for the scientist, particularly if the time available for consultation with the lawyer who is to lead the questioning is scant, or worse, if a scientist is faced with a lawyer who is not prepared to gain any sort of understanding of the principles. DNA profiling presents new challenges to courts because it is the first type of transfer evidence for which the weight of evidence is encapsulated in a number".*

The complexity of expert evidence provides practical difficulties for a prosecutor who must lead the evidence. To do so, they must gain sufficient knowledge. This is not easy given the nature of the material and often, limited preparation time.

However there are a number of reasons why as much knowledge as possible must be gained:

- Only by having sufficient knowledge can a prosecutor determine how the expert evidence properly fits within the Crown case.
- It is necessary for the prosecutor to have sufficient understanding to assist in explaining the evidence to the court. It is important to ensure that the evidence is presented accurately and the significance of it is not inadvertently misrepresented.
- It is necessary to have sufficient knowledge to decide how the evidence is to be led.
- A prosecutor needs not only the knowledge to be able to lead the evidence in a manner to ensure that the judge/jury is able to evaluate it but be in a position to re-examine the witness if issues are raised in cross-examination. This may include

[17] Published 1998 at 226.

undoing any confusion that arose in cross-examination and putting the issues raised properly in context.

- A prosecutor is required to have sufficient knowledge of the expert evidence to enable them, if a situation arises, to cross-examine an expert called by the defence.

It is not an easy process to gain the knowledge required. Many of the articles and books written on the topic of advocacy in relation to expert evidence suggest that the advocate must become as much of an expert as the expert themselves. That is impossible. They are the experts in the field, we are the advocates. That does not however prevent the advocate from keeping an open mind and striving to gain as much knowledge as is necessary in the circumstances.

Failure to address these issues has, in relation to some trials where DNA evidence was sought to be led, had significant consequences. For example:

1. In the early 1990's in Australia challenges were mounted to the admissibility of DNA evidence on the basis that it was too complex for the jury to understand. Whilst such arguments no longer succeed there have been instances where courts have excluded the evidence on that basis[18].

2. Convictions have been overturned[19] when DNA evidence was relied upon because prosecutors (and trial judges) misrepresented the significance of the statistical evidence

[18] R v Tran (1990) A Crim R 233; R v Lucas (1992) 2 VR 109; cf R v Jarrett (1994) 62 SASR 443; R v Lisoff (1999) NSWCCA 364; R v Duke (1979) 22 SASR 46; R v Karger (2002) 83 SASR 1. Such arguments are no longer succeeding. Challenges were also made to the admissibility of the evidence on the basis that the technology was not sufficiently reliable - eg. R v Jarrett (1994) 62 SASR 433; R v Karger (2002) 83 SASR 1; R v Tran (1990) A Crim R 233; R v Rees (2000) unreported NSWSC delivered 16/06/2000; R v Gallagher (2001) NSWSC 462; R v McIntyre (2001) NSWSC 311. There is also a series of cases in America where similar challenges were mounted.

[19] R v Keir [2002] NSWCCA 30. See R v Doheny v Adams [1997] 1 Cr App R 369; R v GK (2001) 53 NSWLR 317; R v Galli (2001) NSWCCA 504; Balding and Donnelly "The Prosecutors Fallacy and DNA Evidence" (1994) Crim L.R. 717.

which provides the weight that might be attached to the DNA evidence. The concepts of "the prosecutor's fallacy" and "defence counsel fallacy" are well recognised[20].

The nature of the evidence has also given rise to the argument that because the evidence is complex, juries might attach too much weight to the opinions expressed by the experts, in particular the statistical analysis and as a result juries need to be warned about the seductive nature of the evidence[21].

A CASE STUDY – R V KARGER

In 2000-2001 in the trial of *R v Karger* many of the issues and difficulties that arise when using expert evidence were highlighted. This trial was conducted in the Supreme Court of South Australia.

The accused was charged with murder. The issue was one of identity. One item of circumstantial evidence relied on was DNA testing of samples from the crime scene and samples from the accused. The accused challenged the admissibility of the DNA evidence on a number of grounds[22] including:

- the science was not reliable - that the systems used to conduct the analysis were not recognised and accepted by the forensic science community;
- the work conducted was not reliable;
- the witnesses were not qualified;
- the witnesses gave evidence outside their realms of expertise;
- that the DNA testing was too complex in nature to be lead;

[20] These terms were so dubbed by Thompson and Schummann "Interpretation of Statistical Evidence in Criminal Trials: The Prosecutor's Fallacy and Defence Attorney's Fallacy" (1987) Law & Human Behaviour 167 and see Balding and Donnelly "The Prosecutor's Fallacy and DNA Evidence" (1994) Crim L.R. 717; Evett and Weir - "Interpreting DNA Evidence: Statistical Genetics for Forensic Scientists" at 30-33.
[21] R v Karger (2002) 83 SASR 135; R v GK (2001) 53 NSWLR 315; R v Galli (2001) NSWCCA 504.
[22] R v Karger (2002) 83 SASR 1 at [35]-[40].

- that the statistical weight given to the DNA evidence was not reliable.

A voir dire hearing into the admissibility of the evidence was conducted prior to the trial. The Crown called two witnesses[23] and the defence called three witnesses[24] to support their argument. The Crown argued that two of the defence witnesses were not qualified to give the opinions they were expressing[25].

The voir dire hearing lasted three and a half months. The trial judge ruled the evidence admissible. The evidence was then led before the jury. The trial lasted three months. The defence challenged the DNA evidence before the jury on the same grounds as they had on the voir dire. The jury convicted the accused. The accused appealed to the Court of Criminal Appeal, was dismissed. The accused was refused special leave to appeal by the High Court.

A number of issues related to the leading of expert evidence arose. I will highlight two.

1. The importance of an expert witness undertaking the work conscientiously and independently.
2. The presentation of complex evidence.

FACTS

In a nutshell the Crown case was as follows:

- The victim was a 41 year old woman who was murdered in the early hours of the morning of the 17th of January 1998 in her home in Adelaide.
- The victim had been out with friends on the night of Friday the 16th of January 1998. She was driving and dropped the last of her friends off at his home at approximately

[23] Mr C Pearman - forensic scientist - manager of the biology unit at the Forensic Science Centre in South Australia; Dr Buckleton - forensic scientist with specialisation in evidence interpretation.
[24] Dr Davis and Dr Atchison both of whom gave evidence of the DNA profiling and the statistical analysis and Dr Mitchell, a population geneticist.
[25] Dr Davis, Dr Atchison.

3.45am on the Saturday morning. Given the proximity of her home to that address, she would have arrived home shortly after 4am.

- It was the Crown case that the victim was murdered shortly thereafter.
- The victim's body was found lying face down on her bed by her daughter shortly after 8pm that Saturday evening.
- She had died as a result of being strangled with her camisole. When her body was found, she was still wearing the clothes that she had worn on the Friday night. The clothes however, were cut and torn at the back (knickers, skirt, bra and blouse).
- The victim had bruising to her arms and legs consistent with grip marks, bruising to her face, (as a result of blows to the face) and grazing on her knees.
- The position of her body together with the state of her clothes and her injuries were suggestive of a sexual attack, with the victim having been dragged into the bedroom where she was strangled.
- Karger had known the victim for some years. He initially met her through her daughter. In more recent times he had visited her when he had come back to Adelaide during his time off from the Army.
- In January 1998, Karger was staying in Adelaide with his parents. Their house was a 3 minute drive or a 10 minute walk from the victim's home.
- There were no signs of forced entry into the victim's home. There was no disturbance in any area of the house other than the bedroom in which she was found. The victim was very security conscious. Therefore it was the Crown case that the victim knew her attacker.
- The victim spoke to her daughter and some friends, in the week or so leading up to the murder, about Karger. Given what was said by the victim on those occasions and the manner in which it was said, it was open to the jury to infer that she was upset with Karger and that whilst he was a friend and therefore she would let him into the house, she did not wish a sexual relationship with him.

- In his interview with the police, Karger admitted that on one prior occasion he had made sexual overtures to the victim. This would have been in the week before her death. These overtures were rebuffed by the victim.
- On the night of the 16th/17th of January 1998, Karger made 9 unanswered telephone calls to the victim on her mobile telephone. These calls were at 11.05pm, 11.57pm, 12.02am, 12.21am, 12.32am, 3.47am, 3.50am and 3.52am. The victim was murdered shortly after the last phone call. Karger never attempted to ring the victim again, although her body was not found for many hours and her murder was not released by the media until late Sunday afternoon (18 January 1998).
- The victim's clothes had been cut and torn. Inside her blouse, near where it had been torn, were 2 small blood like stains. These stains were marked "KO22B" and "KO22C". These stains were tested using DNA technology. "KO22B" was tested in 1998 using the quadruplex system[26]. The DNA profiles obtained from that sample matched the DNA profile of Karger. "KO22C" was tested in 1999 using the profiler plus system[27]. The DNA profile obtained from 'KO22C" matched the DNA profile of Karger. In relation to "KO22C" the chance of another unknown, unrelated person having the same DNA profile was approximately 1 in 90 billion.
- The finger nail scrapings from the victim were also tested by DNA testing. A minor DNA typing was located under the finger nails of the right hand (KO1.0). Karger could not be excluded as the source of that typing. The chance of another unknown, unrelated person having the DNA profile under the finger nails was approximately 1 in 13.
- Two hairs were found on the victim's body at the post mortem examination. A comparison of those hairs with the chest hairs of Karger lead to the conclusion that Karger could not be excluded as the source of those hairs.
- Karger in an interview with the police denied involvement in the murder.

[26] The quadruplex system tests four loci. For a full explanation of the development of the system see R v Karger (2002) 83 SASR1 at 11 ff.
[27] The profiler plus system targets ten loci.

- Karger did not give evidence at his trial.

As can be seen, there was a compelling case against the accused without the DNA evidence. However, there was a danger that the other evidence might be overwhelmed by the length of the trial and the concentration during the trial on the DNA evidence. It was a concern that this might create the impression that the DNA evidence was the totality of the Crown case. The evidence, apart from the DNA evidence, took approximately one to two weeks to lead. The DNA evidence, due to the lengthy cross-examination of the Crown witnesses and the defence calling two expert witnesses, took many weeks.

Before addressing the topics of independence of the expert witness and complexity of the evidence, this trial also raised the very important question of how far must the expert go in conducting tests. This may arise particularly when dealing with fields of expertise that are continually developing.

This issue arose because of the delay between the time of the initial tests and the ultimate date for trial[28].

The initial tests in this case were conducted in 1998 using the quadruplex system. Between that time and the matter being listed for trial, the profiler plus system had been validated and was operational at the Forensic Science Centre. The system was validated in 1999. The profiler plus system, as it examines 10 loci, is more discriminating than the quadruplex (which examines four). In light of that, as there was some sample still available, it was determined that further tests should be conducted using that system. The defence were notified of this proposed course and invited to observe the testing procedures.

[28] The original trial date had been adjourned on the request of the defence.

As a consequence, the defence sought an injunction from the Supreme Court to prevent the Forensic Science Centre conducting the tests. The application was unsuccessful[29].

It was argued by the Crown that given the technology now existed and as the profiler plus system was far more discriminating, it was necessary for those samples to be tested in the interests of justice. Obviously the tests might provide further evidence for the prosecution but could also exculpate the accused.

In the Qld case of *R v Button*[30] where the allegation was rape, samples from the crime scene were not analysed using DNA technology until after the trial had been conducted and the accused convicted. The Court of Appeal commented:

> "*What is of major concern to this Court is the fact that the evidence was not available at the trial ... What is disturbing is that the investigating authorities had also taken possession of bedding from the bed on which the offence occurred, and delivered those exhibits to the John Tonge Centre. No testing of that bedding was carried out prior to trial. The explanation given was that it would not be of material assistance in identifying the Appellant as the perpetrator of the crime.*[31]

When the DNA tests were conducted, the results indicated that someone other than Button had committed the offence. Not surprisingly, the police/prosecution authorities/forensic scientists were criticised for not conducting the tests prior to trial[32].

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[29] When the tests were conducted, the defence did not take up the opportunity to have a scientist observe.
[30] [2001] QCA 133.
[31] R v Button *(supra)*
[32] Qld Court of Appeal concluded "it was a black day in the history of the administration of justice in Queensland".

THE IMPORTANCE OF AN EXPERT WITNESS UNDERTAKING THE WORK CONSCIENTIOUSLY AND INDEPENDENTLY

The defence challenged the qualifications of one of the Crown witnesses[33] to give evidence of the DNA profiling and the statistical analysis. The Crown challenged the qualifications of two witnesses[34] called by the defence to express the opinions that they did.

As Mulligan J observed:

> *"…expert witnesses stand in a special place in our trial system. These days science is imported more and more into the justice system to assist in accurate resolution of matters and issues. The courts are entitled, and often obliged, to place their trust in men and women of science and it is essential that scientists respond accordingly so that a miscarriage of justice may be avoided. Courts are entitled to expect that they will undertake their work with appropriate investigation and impartiality[35]."*

If an expert fails to undertake their work appropriately or fails to act impartially the jury might reject their evidence. Significantly, a finding by a trial judge who rejects a witnesses evidence on those grounds, may affect that witnesses' career[36].

The difficulty often faced by prosecutors is the ability to properly test that witnesses' qualifications and opinions expressed by them. One avenue is to look at what evidence and opinions the witness has expressed previously. When a witness gives evidence it is obviously recorded and transcripts can be obtained.

Two witnesses gave evidence for the defence. Dr Davis (USA) and Dr Atchison (Victoria). With the assistance of prosecutors and scientists from America, prosecutors were able to gather transcripts and statements of evidence that Dr Davis had previously given and

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[33] Mr Pearman – Mr Pearman was found to be qualified to express opinions on both topics.
[34] Dr Davis and Dr Atchison.
[35] R v Karger (supra) at [612].
[36] For examples of other authority see "Expert Evidence – Law, Practice, Procedure and Advocacy" – *Freckelton & Selby, Third Edition, published 2005 at 929-933.*

judgments of various courts reflecting upon that evidence. This provided material to cross-examine the witness and test the evidence being given.

Ultimately Mulligan J rejected[37] the evidence of Dr Davis finding that she had not sufficient expertise about the matters on which she was expressing opinions.

> *"In reaching my conclusions about Dr Davis, I have regard to all of her evidence and the other evidence during the voir dire. I carefully considered all of her extensive evidence about her qualifications, training and experience in order to see if she had acquired sufficient expertise about matters in issue and I concluded that she did not. She not only had insufficient training and practical experience to interpret results of DNA analysis of STR loci using fluorescence technology with the 377, Genescan and Gentoyper, but her evidence of interpretation of electropherograms clearly demonstrates that she lacks sufficient understanding of the system and the processes to qualify as an expert to that subject matter. I do not regard her as an expert in the developmental and internal validation of fluorescence technology using multiplex or megaplex systems and again her evidence about those matters showed a lack of understanding of the systems and essential laboratory practice in their use. Furthermore I simply do not accept her as a truthful and reliable witness. I rejected her evidence about matters in issue when it was in conflict with the evidence of Mr Pearman."*

Dr Atchison also gave evidence on similar topics. Mulligan J found[38]:

> *"…It maybe seen that Dr Atchison was prepared to suggest significant error in the DNA testing process without any inquiry of the laboratory. It reflects adversely upon Dr Atchison as a scientist and an expert witness that he was prepared to reach an opinion adverse to the laboratory and the scientists without having made a fundamental and obvious inquiry or considering the most obvious explanation, namely a transcription error…*

And later:

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[37] R v Karger (2002) 83 SASR 1 at 83.
[38] R v Karger (supra) at 94-95

> *" He was prepared to express opinions about serious matters adverse to fellow scientists and, inferentially, their competency without making any inquiry…I regard the evidence about those matters as revealing that Dr Atchison had not adopted ordinary and obvious scientific method with the consequence that I did not regard him as a reliable witness who could assist the court in many of the matters which were the subject of his evidence. Furthermore, these matters indicate a lack of balance on his part in that he was prepared to assume contamination when another possibility was open."*

Whilst Mulligan J ruled that Dr Atchison was an expert on some topics he did not regard him as being qualified to express opinions about the interpretation of electropherograms produced by genescan and gentoyper software. Mulligan J concluded[39]:

> *" While I accepted that Dr Atchison is highly qualified with considerable experience regarding DNA analysis, I do not think he was balanced and impartial in critical features of his evidence as I have mentioned."*

Dr Atchison later gave evidence in a trial in NSW[40] on the same topics, and apparently in the similar manner as was criticised in *R v Karger*. Again, adverse findings were made by the trial judge and in so doing the trial judge observed that previous similar findings had been made in *R v Karger* [41].

Whilst the findings in *Karger* were adverse to the two defence witnesses, there are a number of cases where findings have been made against witnesses called by the Crown[42]. What this case highlights, is that whoever calls the expert witness, it is important that the witness is appropriately qualified, undertakes their work conscientiously and appropriately and acts impartially.

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[39] R v Karger (supra) at 96
[40] R v Gallagher [2001] NSW SC 462
[41] R v Gallagher (supra) at [193]ff
[42] For example – Royal Commission of Inquiry into Chamberlain convictions – Report of Commissioner, the Honourable Mr Justice T.R. Morling, Darwin [1987]; R v Cannings [2004] EWCA Crim 1; R v Clark [2003] EWCA Crim 1020; R v Ward [1993] 96 Cr App R 1.

Criticism is often made of witnesses (as it was here) who work for government forensic science services[43] that they are, in some way, aligned to the prosecution. Whether that is so or not, a problem can exist with perception.

It is incumbent on prosecutors calling expert witnesses to ensure that the witnesses are appropriately qualified. It is important that these qualifications are led appropriately and in sufficient detail to enable the judge and/or jury to fully appreciate the background and experience of the witness. It is not simply formal qualifications but practical experience which carries significant weight. It is important to highlight features of that witnesses' evidence that reflect independence of approach by the witness. This may include the charter of the organisation in which the witness works; whether the organisation is accredited and what that involves; whether the work conducted is at the request of both the prosecution and defence; whether they expose their views to the forensic science community for scrutiny; whether the testing procedures are such as to eliminate impartiality[44] and whether the information about the organisation is accessible. Also, it is important to find out if possible, details about the expert including what views he has expressed previously.

PRESENTING COMPLEX EVIDENCE

A concern expressed about DNA evidence is not only the complexity of the testing but that the figures attached to the DNA profile can "dazzle jurors that they will not be able to evaluate the evidence fairly and critically"[45].

In this case, the evidence first had to be led before the trial judge on the voir dire and later before the jury. The particular challenge in this case was, knowing that the evidence would

[43] R v Ward [1993] 96 Cr App R 1 at 51.
[44] For example - if the laboratory protocol is such that the testing results are interpreted without the scientist knowing what case the sample relates to.
[45] ALRC Reports 96 – "Essentially Yours: The Protection of the Human Genetic Information" at para 44.26.

be challenged, presenting it in a manner to enable it to be understood by the judge and/or jury. Further the Crown needed to be in a position to cross-examine witnesses called by the defence.

As Justice Mulligan observed in *R v Jarrett*[46]:

> *"…I think it is a mistake to assume that evidence will be presented in precisely the same way before a jury has been presented on a voir dire enquiry. Counsel are aware of the need to ensure that evidence is presented in a manner capable of being understood by juries but may assume, perhaps wrongly, that presentation to a judge, at the voir dire stage, does not require the same degree of simplicity."*

In this case, in many respects, similar material was placed before the trial judge[47] and the jury. However presenting the evidence before a trial judge has the advantage that he/she can ask the witness questions and during submissions counsel may be alerted to potential difficulties. As a result there is more latitude in the manner of approach. On the other hand presenting the evidence before a jury gives rise to different issues.

It is necessary to enlist your experts help in:

- Assisting you to understand the evidence.
- To determine the clearest and most interesting way to communicate the information to the jury. This should include a consideration of charts, diagrams, PowerPoint presentations etc.

[46] (1994) 62 SASR 443 at [43].
[47] An additional feature of presentation of the evidence to the trial judge was that the trial judge at the request of the Crown went on a view to the Forensic Science Centre to observe the laboratory set up, the steps involved in the procedures and the machinery used in conducting the tests.

Professor Young[48] in conducting research into juries observed that a number of jurors reported that they found visual aids were helpful in the presentation of expert evidence although they were often poorly presented.

The use of visual aids in presenting evidence is now readily accepted by the courts. Indeed this has been encouraged by the High Court. In *Butera v DPP*[49] Mason CJ, Brennan and Deane JJ stated:

> *"The use of such charts and other time saving devices in complicated trials of this kind is a usual and desirable procedure and is encouraged by the courts*[50]*"*

Further, Gaudron J observed:

> *"The laws of evidence allow that evidence may sometimes be given other than in oral form. Thus photographs, charts, maps, diagrams and the like are admissible as a documentary representation of the relevant knowledge of a witness as to the physical characteristics of an object or person. ... Documents of similar description (but not including photographs) have been also held admissible in explanation of or as aid to comprehension of that which has properly proved*[51]*"*.

There are significant advantages in using visual aids to explain expert evidence not the least of which it breaks up the oral testimony and makes the evidence more interesting, understandable and memorable.

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[48] New Zealand Law Reform Commission Report: Juries in Criminal Trials, Volume II, November 1999 – Warren Young. In a survey conducted of jurors in a number of trials in New Zealand the issue of visual aid was specifically addressed. They had been used in 11 of the trials subject of the study. Whilst the jurors considered the use of the items positively, it was commented that they were not always used to their best affect. Further in 13 of the trials experts did give evidence and in the majority of those the jurors reported that they had no problems with the evidence. However, in a number of trials *"A number of experts presented their evidence in a dry technical language, without adequate explanation of jargon or the use of two diagrams or other visual aids. Thus jurors struggled to concentrate upon and take in the evidence, and sometimes failed to follow the explanations that were provided"* (pages 25-26). Also see – Findlay "Juror Comprehension and Complexity – Strategies to Enhance Understanding" [2001] 41 Brit. J. Criminol. 56.

[49] (1987) 164 CLR 180.

[50] (supra) at 190 and see Smith v R (1971) 121 CLR 572.

[51] Butera v DPP (supra) at 208.

In this trial, evidence was presented with the use of jury books that contained relevant charts and diagrams ranging from a glossary of terms frequently referred to in the evidence through to a table of results[52]. If documents are used by a witness to explain the evidence, they must be displayed in some way to enable the judge and/or jury to follow the witnesses' evidence. Juries appear naturally curious but they must have their own copy of the documents to follow what is happening. With the advent of the high technology courtroom and the concept of the paperless court, there is a tendency to assume that displaying charts and diagrams on screen is sufficient. That would be a mistake. Juries need to be involved in the process.

If technology is available to be used, it should be considered in presentation of the evidence. The use of a PowerPoint demonstration by a witness can be effective, particularly when used in conjunction with jury books.

The task of presenting expert evidence is more difficult when the prosecution relies on a number of witnesses giving expert evidence with different fields of expertise. In *R v Bunting and Wagner*[53] the accused were charged with 12 and 11 counts of murder respectively.[54]. Expert evidence was called by the Crown from witnesses in the fields of forensic pathology, forensic odontology, crime scene analysis, fingerprint analysis, handwriting analysis, DNA analysis and psychiatry. With the exception of psychiatry[55] the evidence was presented with the assistance of jury books for each field of expertise in a similar manner to that in *Karger*.

[52] This book included a glossary of scientific terms which would be referred to during the course of the evidence; a list of weights; a diagram of the steps involved in the DNA analytical program; a picture of a DNA helix; a picture of a DNA structure; a diagram of the PCR process; a diagram explaining the concept of short tandem repeats; a floor plan of the laboratory; photographs of the equipment involved (this range from bio hazard hoods through to the 377 machine); relevant electropherograms (these had been generated during the course of the testing process); table of the DNA testing conducted (that is, on what date various stages of the process occurred in relation to what sample); table of the DNA typing results of each of the samples; the document setting out the database used to conduct the statistical calculation; a table of the statistical calculations.

[53] R v Bunting and Wagner [2005] SASC 45; R v Bunting and Wagner (No 2) [2005] SASC 185.

[54] Bunting was charged with twelve counts of murder. Bunting was convicted of eleven counts of murder. One count was hung. Wagner was charged with eleven counts of murder and one count of assisting an offender. Wagner pleaded guilty to three counts of murder and was found guilty of seven more counts of murder. One count of murder resulted in a hung jury.

[55] This issue related to the mental state of one of the victims.

The task of presenting the expert evidence was exacerbated by the large number of exhibits which had been subjected to expert testing in this case. In some instances the witness was required to give evidence of the results of tests on hundreds of samples. As this trial was conducted in a high technology courtroom, a PowerPoint demonstration (in relation to handwriting) was also used in conjunction with the jury book in the presentation of the evidence.

CONCLUSION

Expert evidence has a vital role to play in the criminal justice system. Fields of expertise are expanding and developing. Prosecutors should approach the evidence with open minds but must be vigilant to ensure that witnesses are properly qualified, that the field of expertise is recognised as reliable and that the tests conducted or the opinions expressed are based on the proper factual foundations. Ultimately it is for the judge and/or jury to assess the evidence. It does not matter how well qualified the expert witness may be, if the evidence is not presented appropriately, the expert opinion will not be properly understood and the judge and/or jury thereby not accorded its due weight.