

Remarks of the Hon. Marilyn Warren AC
Chief Justice of Victoria
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In the last few decades, rapid advancements have been made in the fields of forensic science and forensic pathology. New techniques to collect DNA evidence, facial recognition technologies and barefoot morphology, to name a few, have become an invaluable resource to the criminal justice system in identifying and prosecuting alleged offenders. The increasing reliance by legal practitioners and investigative officers upon forensics has posed particular challenges for Australia's adversarial system of justice. The legal system cannot assume that traditional modes of evidence management (including the adversarial process, cross-examination, rules for admission of evidence, judicial warnings, and jury deliberation) corrects biases or errors involved in reasoning in the context of evidence proffered by medical experts.

Cases of miscarriage of justice where the jury has misunderstood or over-relied on forensic evidence have called for a rethink of the role of judges, counsel and juries in criminal trials involving expert evidence. Increasingly judges are required to take on a more interventionist stance in deciding on the value of expert evidence and directing the presentation and explanation of expert evidence. This marks a departure from the approach of the 1980s and 1990s where we saw a reduced judicial willingness to exclude expert evidence from a jury. In *R v Glennon* (1992) 173 CLR 592 Mason CJ said "in the past too little weight may have been given to the capacity of jurors to assess critically what they see and hear and their ability to reach their decisions by reference to the evidence before them". Dawson J also affirmed this view in *Murphy v The Queen* (1989) 167 CLR 94 that "the modern attitude towards expert evidence is, perhaps, less exclusionary than in the past".

In this paper, I will discuss a number of Victorian cases involving forensic expert evidence. The story is not all bad. In a number of cases, Victorian judges have assumed a "gate-keeping role" and ensured both that scientific theories are reliable before trial begins and also that juries adequately understand the limits of the scientific evidence put before them. However, in two of the cases I will discuss, the expert evidence was not properly managed by the judge and/or counsel. The unfair convictions that occurred in those cases points to the need for judges to approach expert evidence in new ways.

I will then discuss a number of innovative Victorian court reforms to the management of expert evidence in both the civil and criminal context. These reforms respond to the problems raised by cases of unfair convictions and adapt the

adversarial system so that forensic evidence can continue to make an effective and appropriate contribution to criminal justice.

Expert Evidence Cases in Victoria

R v Berry [2007] VSCA 2002

I will start with the 2007 Victorian Court of Appeal case, *R v Berry*. In this case, B and W were convicted for the stabbing murder of a fellow prisoner. They appealed their conviction on the basis that the trial judge erred in admitting into evidence analysis of the DNA found upon a sock in the prison laundry and the expert evidence of likelihood ratio calculations. The applicants also argued that the judges directions in relation to DNA evidence were inadequate.

The case against the applicants was based on circumstantial evidence. Immediately after the murder, B was found having a shower and W was found washing his clothes. Within the blood on the floor of the deceased's cell there were shoe impressions of three sets of shoes. Two of the impressions matched the size and make of B and W's shoes. Blood staining using Luminol showed that the impression trail from those two sets of shoes went to B and W's cell. A white sock was found in the laundry which contained a blood stain. The DNA results from the blood stain on the sock, which was a mixed profile, showed that the deceased and the applicants could not be excluded as contributors. On the unstained portion of the sock, there was also DNA material that matched a DNA profile of a fourth person, named Ali, who had been at the prison two months earlier. The presence of Ali's DNA, in addition to that of the B, W and the deceased, raised issues of contamination.

The Court of Appeal dealt first with the issue of the relative frequency of DNA expressed as a likelihood ratio. The CA noted that the expert gave the same evidence as that presented at trial in an extensive pre-trial *voir dire* with the trial judge, counsel and other experts. The *voir dire* was conducted over three days in which the trial judge received detailed evidence from each of the experts who demonstrated by reference to the facts how they reached their conclusions and why their method of statistical analysis was to be preferred. The difference between random occurrence ratios and likelihood ratios, particularly when dealing with mixed DNA sources, was fully explained. Both sides also acknowledged the ability of a likelihood ratio to assist juries in weighing the prosecution and defence version of events. The Crown relied upon evidence of an expert, who by calculation of Likelihood Ratios, found that the mixture of DNA profiles from the sock would be at least 180 times more likely to occur if it did contain DNA from Ali, the deceased, and the applicants than if it contained DNA from Ali and three unknown individuals. The defence expert applied the random occurrence method and concluded that if all alleles were present from all assumed contributors then one in 25 of the population was not excluded from the DNA profile.

The competing expert opinions were presented clearly in power point form with the help of oral and visual aids. Counsel during trial and the judge during the jury charge repeatedly emphasised that the DNA was mixed and made clear the limited

nature of the conclusions that could be drawn from DNA evidence. It was also frequently stated during evidence and the charge that DNA evidence *could not* establish whether DNA belonged to a particular person but *could* establish whether the person was excluded as a contributor. The basis and method upon which the different statistical conclusions were reached and the weight which each witness could accord their conclusion was fully explained in simple, plain English terms. For example, the jury was reminded by all parties and the judge of the low, unconvincing likelihood ratio which could only provide moderate support for the Crown's hypothesis.

At the *voir dire* and at trial, the Crown also gave extensive evidence of the procedure followed from the collection of evidence to the forensic lab and highlighted possible points where contamination could occur. It was noted that some items belonging to Ali were tested at the same lab as that of the sock.

The Court of Appeal held that the trial judge was correct in admitting the DNA analysis of the sock on the basis of likelihood ratios. Given the *voir dire*, the evidence presented at trial, and the jury charge, all of which repeated the same information in clear terms, the CA held that it was unlikely that the jury failed to understand the probative value of the DNA evidence. Furthermore, the different calculations gave the evidence its probative value. The different weights attached by each expert to the DNA evidence could assist the jury in determining the weight they might choose to attach to the DNA evidence. On the issue of contamination, having regard to the nature of the calculation involved in the likelihood ratio, which was explained to and fully understood by judge and jury, it was unlikely that the possibility of contamination robbed the evidence of any probative value.

This case illustrates the effective contribution that expert evidence, when carefully handled by an experienced judge, counsel and experts, can make to the criminal justice system. The DNA evidence was properly used and interpreted as just one part of the Crown's case against the accused. Important aspects of the management of complex forensic evidence included the pre-trial conference involving the judge, all parties and experts, and the presentation and explanation of the weight to afforded to competing statistical evidence in simple terms. Attention was also paid to the procedures by which the DNA evidence was collected and analysed. A knowledgeable counsel and the willingness of the trial judge to engage with the expert evidence at an early stage adequately addressed the danger that the jury might attribute unjustified weight to the DNA evidence.

Jama

I want to compare the conduct of the trial judge, counsel and the experts in *R v Berry* with that of the well-known, if not infamous Victorian county court case of *R v Jama*. In this case, Jama was accused of raping M in a Doncaster nightclub. On the night the alleged rape occurred, M was found unconscious in one of the toilet cubicles of the nightclub and taken to hospital. As M could not recall how this had occurred, she was concerned about the possibility that she had been drugged and then sexually assaulted. M had consumed several alcoholic drinks and was taking

medication, but she believed these factors could not account for her memory lapse. A VFIM doctor conducted a physical examination of M and prepared slides that were conveyed for analysis at the Victorian Police Forensic Services Department. The VFIM doctor had, in the same location and only 28 hours earlier, coincidentally, taken forensic samples from another woman, B, who had in fact engaged in sexual activity with Jama.

There were no witnesses as to what happened to M in the nightclub. The circumstances under which she came to be in the cubicle were simply unknown and it certainly did not follow that something untoward must have happened. There was also no evidence, apart from that provided by the DNA analysis, that Mr Jama had ever attended the nightclub.

At trial, the likelihood ratio of a match was expressed as one in 89 billion for a Somali population database with a range of 4.7 billion and 1.6 trillion. In other words, it would be difficult to find another match anywhere else in the world. As police records raised the possibility of contamination of the DNA sample with samples taken from B, the jury requested statistics as to the possibility of contamination. The prosecutor, wanting to dispel doubts about the reliability of the DNA evidence asked the expert witness about the possibility of contamination, to which the scientist replied "no there was no evidence of contamination in this case". The defence did not challenge any of the prosecutor's assertions regarding contamination and the trial judge was not alerted to any risk of contamination.

Mr Jama was convicted and spent 14 months in custody.

The trial judge, when sentencing Mr Jama, said:

"Counsel rightly argued that there was no evidence of planning of this crime on your part. That is true, but it is more than outweighed by the fact that you took advantage of the situation presented to you by the unwell state of the complainant...the jury cannot have viewed the facts in any other way".

Once the connection between the samples taken from B and M was realised, the miscarriage of justice was immediately recognised. *The Vincent Inquiry* was launched into how the judge and jury came to convict Jama solely on the basis of DNA evidence.

Leaving aside the problems with VFIM and police DNA collection and analysis procedures, the legal system in this case, in contrast with *R v Berry*, deferred uncritically to the seeming expertise of scientific witnesses. The trial judge made no effort to engage with experts and counsel pre-trial. The judge did not familiarise themselves with statistical methods of DNA analysis and their limitations or the procedures by which the DNA was collected and analysed. Defence counsel lacked the knowledge and experience to adequately question the reliability of the expert evidence. If care had been taken in a *voir dire* then it is likely that the high risk of contamination would have been identified and Jama would never have been prosecuted given the weakness of case against him. The failure of the judge to play

an adequate gate-keeping role pre-trial and to ensure that the limitations of complex scientific evidence was explained in clear terms produced what as been termed the "CSI effect", where a jury convict on the mere presence of a DNA match despite the mountain of unexplained evidence that should have blocked a conviction.

*Aytugrul v R*¹

A more interventionist approach to expert evidence management in DNA cases was supported by the recent High Court decision in *Aytugrul v R*. In an appeal against conviction for stabbing murder of his former girlfriend, the appellant argued that certain mitochondrial DNA evidence expressed as an exclusion percentage led at his murder trial was unfairly prejudicial to him and ought to have been excluded. The prosecution case at trial was circumstantial. It led evidence showing that the appellant had stalked and harassed the deceased for some months before her death. Mitochondrial DNA analysis of a hair found on the deceased's thumbnail also showed firstly that the appellant could have been the donor of the hair and secondly just how common the DNA profile was in the community.

The statistical relevance of the DNA match was expressed by the expert witness in two ways. First, as a "frequency ratio" to the effect that one in 1600 people would be expected to share that DNA profile. The second was as an "exclusion percentage", namely that 99.9% of people would not be expected to have a matching DNA profile. The appellant argued that a miscarriage of justice had occurred because of the allegedly prejudicial and misleading character of the exclusion percentage evidence.

The prosecution called two witnesses and the defence called its own witness. Evidence and a report was produced on the *voir dire*. Defence counsel did not raise objection to the extrapolation of the frequency ratio to an exclusion percentage of 99.9%. At trial the prosecution witness carefully explained how the two sets of statistics were calculated and that they were different ways of expressing the same data. The defence expert expressed the opinion that the DNA profile might be found in one in 1000 people in the non-Turkish population and between one in 50 and one in 100 in the Turkish population.

In his directions to the jury, the trial judge gave appropriate warnings about the limitations of DNA evidence, the different statistical analyses presented and the weight that could be afforded to the statistical conclusions.

The High Court found that the expert evidence was clear and in no sense unfairly prejudicial. The exclusion percentage was high and therefore adverse to the appellant. However, both the frequency ratio and the manner in which the exclusion percentage had been derived from the frequency ratio were explained in evidence to the jury. Any risk that the jury might give the exclusion percentage undue weight

¹ [2012] HCA 15

was eliminated by emphasising that they were two statistical expressions of the same data.

The High Court held that the assessment of unfair prejudice had to be made with regards to the whole of the evidence and could not focus on the exclusion percentage alone. Given the context of the frequency ratio evidence, there was no danger that the evidence of the exclusion percentage would be misleading. The appeal was dismissed. The High Court stressed, however, that the assumptions and methods behind the quantitative expression of DNA evidence must always be made clear. The jury must be able to properly understand the opinion expressed. If explanations are inadequate, it could lead to exclusion under the *Evidence Act*.

Here, the High Court has confirmed the value of DNA analysis as evidence in criminal trials, with the caveat that it is appropriately handled by judges, counsel and experts. The High Court clearly puts the onus on judges to manage the way DNA evidence is presented and to ensure it is understandable to juries, in order to avoid an unsafe conviction ruling.

R v Matthey (2007) 17 VR 222

I will now move away from DNA cases and discuss cases involving another complex area of forensics- infant deaths. In *R v Matthey*, the mother, Matthey, was accused of suffocating her four infant children over a period of four years. The first death occurred in December 1998. The seven month old male child had been found in his cot unconscious by his mother. Paramedics were unable to revive him and he died at the scene. The post-mortem, conducted the day after the child's death, concluded the cause as Sudden Infant Death Syndrome (SIDS).

Two years later, in November 2000, the second child, a ten-week old female, was found in her cot unresponsive and limp. Resuscitation failed and the child died at the scene. A full post-mortem was conducted. With the pathologist stating that although it would be a chance occurrence, it was not an unreasonable conclusion that SIDS could be the cause of death. It was highlighted however, that incidents such as these lead to a question of a possible genetic or inherited condition. The cause of death was listed on the death certificate as SIDS.

The third child died 18 months later in July 2002 aged three months and 11 days. The death occurred in the car park of a shopping centre while the child was in his pram. Again the child was limp and unresponsive. The cause of death was noted at the time of autopsy to correspond with *Klebsiella septicaemia*.

The fourth child died nine months later in 2003. The cause of death in this instance was unascertained.

At trial, the Crown's argument was based on the inference to be drawn from the cumulation of the four deaths. The prosecution challenged the accounts of the independent pathologists, who were either present at the time of death or who conducted the post-mortem, by leading with evidence of other medical pathologists

from interstate or overseas. These other practitioners examined the written reports and medical history of each of the infants and concluded that the causes of death of three of the four children could not be reasoned as being SIDS because of the rarity of four unexpected and unexplained deaths in one family.

Professor Cordner AM of the Victorian Institute of Forensic Medicine (VFIM) was called by the Director of Public Prosecutions (DPP) to report on the evidence presented at trial on the four deaths. He drew the court's attention to the danger which can occur when external evidence or inferences are used to determine a cause of death. Professor Cordner stated in his report: "It is not for a pathologist to conclude that a number of infant or childhood deaths, with no significant pathological findings at all, are homicides on the basis of controversial circumstantial grounds".

Professor Cordner's pertinent remarks clearly emphasise the boundaries of diagnostic pathology in interpreting results within criminal prosecutions. In this case, each death was tragic but was ultimately unremarkable with respect to the individual cause. Therefore each of the instances had to be treated as individual cases without regard to the cumulative nature on which the Crown medical practitioners relied. The trial judge, Coldrey J, in delivering his judgment on the admissibility of the other pathology evidence, was particularly mindful of the prosecution leading with what he reasoned as being non-specific prejudicial evidence. HH emphasised the dangers of relying too heavily on expert medical opinion, which "was inherently uncertain and fallible" in the area of SIDS as autopsies cannot distinguish between SIDS and inflicted suffocation as a cause of death. Ultimately Coldrey J ruled such evidence inadmissible and directed the DPP to reassess the viability of its prosecution.

This case again demonstrates how the Victorian courts have altered the traditional adversarial mode of evidence management and assumed a stronger role in excluding evidence in response to recent leaps in scientific knowledge and the proliferation of "junk science" within the legal system. Judges need to be wary of the way in which the inconclusive nature of scientific results can play into the hands of opposing counsel searching for scientific support for their version of events. Coldrey J's judgment refers extensively to literature on the use of "coincidence evidence", which led him to conclude that it was not a reliable scientific method or "specialised field of knowledge".

Klamo

In an appeal case, *R v Klamo*, a forensic pathologist from VFIM, Professor Cordner was called to give evidence concerning the death of IK, a four-week old infant who died of a subdural haemorrhage. The child's father, TK, was charged and convicted of manslaughter by an unlawful and dangerous act. The Crown led evidence that TK had shaken his son two weeks earlier, which he had previously admitted, and further had shaken IK hours before death. The prosecution led that the shaking of the baby had caused the haemorrhage. The burden was on the prosecution to

establish that a shaking episode, such as the one admitted by the defendant, can cause such a haemorrhage to occur.

The evidence from the post-mortem, conducted by Professor Cordner, was adduced in order to clarify the possible causes of the subdural haemorrhage. Professor Cordner considered the possibility of whether there was forensic evidence to support a conviction based on a 'shaken child' scenario immediately before death, whether it could be concluded that the haemorrhage was due to a spontaneous re-bleed of the haemorrhage from the previous shaking incident or whether there was an indication of blunt force being applied before death. Professor Cordner's evidence did not confirm any of the three possibilities. In fact, he cast doubt on all three scenarios but also said they he could not rule any of them out. His only affirmative conclusion was that the cause of death was a subdural haemorrhage.

On Appeal, Professor Cordner opined that neither possibility could be argued with any degree of certainty. Therefore, Maxwell P of the Court of Appeal held that without such medical evidence there was no basis for a jury to make any adverse findings. Professor Cordner also expressed real doubt as to the prosecution's argument that the shaking of the child was even a contributing factor to the child's death. This led Maxwell P to find the decision in the trial fundamentally flawed. In His Honour's view there was no evidence that could adequately support a guilty verdict.

Professor Cordner has since said that as he was never actually asked what, in his opinion, caused the death, he never had the opportunity to explicitly rule out the shaking baby scenario. In a speech given to the Victorian Chapter of the Australian Academy of Forensic Medicine, he said procedures requiring a pre-trial conference and also required structured expert witness questioning for counsel could have prevented the miscarriage of justice that occurred in this case.

R v Matthew VSC (29 October 2012)

I will conclude my discussion of the Victorian case law with a trial conducted last month where the expert gave his evidence in a unique narrative style that was easily digested by the jury. In this case, the deceased had been restrained and put in a "choker hold" by security personnel at the Crown Casino. He became unconscious three or four days later and subsequently died. The expert witness, a forensic pathologist, conducted the autopsy on the deceased. At trial, the expert went through the phases of the autopsy in a logical order. The witness told the jury exactly what he did in conducting the autopsy and outlined what he was looking for in each step. He also gave opinions as to the cause of particular injuries.

The following excerpt demonstrates the clear, intelligible way the expert told the story of the autopsy: Counsel: "In relation to the larynx, what were the findings there?" Expert: "Well we looked or I looked very carefully at the larynx which is the voice box, it tends to be made of cartilage so it is pliant and compressible. In older people [the deceased's] age and above, areas of calcification can occur and so we look very carefully to see whether there's any fractures there of the larynx which might indicate vocal pressure on the neck. I couldn't see any fractures. It doesn't

necessarily mean there wasn't pressure on the neck. It just means that I didn't see the fractures and they weren't there. We look for bruising in the delicate muscles that form the protective layer around the larynx, and there was some minor bruising there. I don't think it was related to any events that occurred in the casino, and the nature of that bruising is non-specific. It might relate to, and I think it probably does relate to, efforts at resuscitation and also treatment in hospital".

For the forensic scientists and forensic pathologists in the audience the transcript of the evidence is worth reading as a model way to engage the jury's attention when presenting evidence. The expert also instead of postulating that the deceased, in all likelihood died of one particular cause, talked about each of the deceased's symptoms (numerous conditions related to morbid obesity and from the incident at the Crown casino) as a narrative leading to his death 3 or 4 days after being restrained. As to whether or not this was helpful for the jury, which is the point of providing evidence in the first place, is perhaps reflected in the verdict. The accused was acquitted of all charges.

Forensic Expert Evidence Reforms in Victoria

I now move to a discussion of reforms initiated by the Victorian Supreme Court to address some of the problems identified in my discussion of the case law. The Victorian Supreme Court has convened a working group to improve the effectiveness of forensic evidence in Victoria. The working group is made up of representatives from the Office of Public Prosecutions, Police Prosecutors, the Victorian Institute of Forensic Medicine, the Forensic Services Department of Victoria Police, Victorian Legal Aid, the Criminal Bar Association and Supreme and County Courts. The group is currently focused on a project to develop a question protocol for expert forensic witnesses, as a direct response to the situation in *Klamo*, where the judge and counsel failed to ask pertinent questions of the expert witness. The group is aiming to finalise the protocol questions by mid 2013. The protocol questions will include a short generic list with room for case-specific adaptations. It is envisaged that the questions would be provided to experts before trial and experts would provide answers in both written and oral form. It is important to note that great care will have to be taken in preparing a set of questions. The formulation of questions will involve considerable work and co-operation between the experts, lawyers and judges involved in the Working Group.

The working group also plan to eventually look at producing guidelines for the *voir dire*, the development of standardised clear and intelligible terminology to be used by experts and adaptation of 'hot-tubbing' techniques in Victorian criminal trials.

Expert Evidence Reforms in Victoria- Civil

For many years the Victorian Supreme Court has utilised "hot-tubbing" and concurrent evidence techniques to great effect in civil trials. Most recently a protocol for concurrent evidence was developed from the highly successful concurrent evidence techniques used to manage the unusually large numbers of experts who are required to give evidence in the Victorian bush fires litigation.

The process adopted in the bushfire litigation commences with the judge who will hear the case at trial making orders that the experts participate in a conclave and prepare a joint report. Orders are made that the expert evidence will then be given concurrently by the experts at trial.

In the *Matthews* case the judge had two case management conferences with the parties to determine which experts would participate in which conclaves and the other logistics. There was much intervention required to get the parties to agree. The judge had to sort through issues about availability, overseas experts, whether a moderator was required at all and so on. The judge made a number of orders in this regard. Importantly each expert received an agenda 24 hours before the conclave setting out suggested issues for their consideration. This was prepared by the lawyers

The judge was present at the beginning of each conclave and gave an introduction to the process.

Once the introduction was completed the judge encouraged the experts to give some thought on how they wanted the conclave to proceed. The judge stressed this was their conclave and that they would be giving evidence concurrently in due course. The judge also continued to remind the experts that their role was to give their evidence to the Court and to assist the Court to understand the expert evidence. The conclave is not an adversarial process. The judge spent some time explaining how concurrent evidence is given and some experts who had given concurrent evidence before were able to share their experience.

Each conclave proceeded differently - in some conclaves individual experts were happy to act as scribes while in others the Court provided scribes. Some conclaves adopted the agenda provided while others identified the issues they thought the Court needed to understand. In the *Matthews* case there was a total of 14 conclaves, some running 2 hours and others running 2 days over the weekend. Some conclaves had 2 experts and the largest had 9 experts.

The experts found the process challenging and commented that they had never in their professional life prepared a joint report in this way. However, they all found the process useful and rewarding. Based on feedback from the experts, in the future it is likely the experts will actually be involved in the setting of the agenda items.

The judge's role was slightly different in each conclave. Much depended on the individuals. The larger the conclave the more important it was to have a judicial moderator. It is not possible to set down a formula for the moderator, in much the same way that a mediator has to adapt to the situation. The judge found that the most productive conclaves were the ones where they remained in the background but was present to keep the conclave on track. Judges should be available to assist when experts reach an impasse.

There were two overseas experts in the *Matthews* case who were genuinely "blown away" by the process. A Texan expert said that he would be "shot" if he spoke to another expert before the trial in this fashion. They completely embraced the process. Another expert commented that the biggest surprise was the judge - a female, not too old and not too grumpy! At the end of each conclave the response from the experts was positive and took away some of their anticipation about giving evidence. They were able to meet one another in a non-threatening environment and frankly exchange their views, compare information they received upon which they based their reports and explain their findings. In some ways this provided a complete transparent process and an opportunity to develop trust between the experts. The interesting point is that there was agreement on over 90% of the issues. In some conclaves there was no disagreement.

At trial, each group of expert witnesses were assembled in a horizontal line at the front of the court room. A roving microphone was passed between each witness. The judge played an active role in leading discussion and asking questions of the witness on each topic. Where there was agreement, the judge summarises it for the transcript. Where there is disagreement, the judge allowed each expert to explain their position and their perception of the rival opinion. The experts were allowed to ask questions of each other. Counsel then examined their own witnesses and cross-examined rival witnesses. The evidence proceeded as a discussion, in an informal manner, with all those involved able to seek clarification at any time. At the end of this process, the judge summarised the disagreements which remained. The experts and counsel then commented on the Court's summary of each issue. Some summaries were refined as a result of that discussion.

The application of the bushfire protocol in the criminal context has the potential to increase the effectiveness of forensic evidence in criminal trials. The organisation of expert groups and a structure for trial compels the judge to play a more interventionist role in managing and assessing the validity of the expert evidence (helping to avoid the situation in *Jama* and promoting outcomes such as that in *R v Matthey*). The informal question and answer discussion style would also facilitate greater clarity and understanding of complex forensic evidence even in those trials where only one or two experts are called. Informality and pre-trial preparation would also ensure the shyer or less eloquent experts are able to adequately put across their opinions in writing. Overall, concurrent evidence techniques have the potential to reduce the level of deference to scientific evidence.

Conclusion

Tonight I have discussed the ways in which the use of forensic medicine in criminal trials has challenged traditional modes of evidence management or traditional modes of questioning witnesses in the court room. The cases discussed illustrate that the complex nature of forensic evidence means that judges can not rely on the operation of the adversarial system to obtain a clear explanation of expert evidence or correct the biases involved in scientific methods. Forensic medicine does have an important role to play in the criminal justice system. The movement towards more interventionist and informal proceedings foreshadowed in the case law and court

reforms are a step in the right direction towards adapting the adversarial system so that forensic evidence can continue to make an effective and appropriate contribution to criminal justice.