EXPERT EVIDENCE

Judge D Yehia SC

May 2015

Contents

INTRODUCTION

On the night of 17 August 1980 Azaria Chamberlain disappeared from her cot in what was then referred to as Ayers Rock. When the case was re-investigated in 1981, the world renowned forensic pathologist Professor James Cameron examined the bloodied jumpsuit. He used spectrophotometry to discern what he opined was the bloodied handprint of a young adult on the jumpsuit. But it was not blood. It was dust – therefore the suggestion that Lindy Chamberlain held the jumpsuit in her bloodied hand was unjustifiable.

The forensic biologist, Joy Kuhl, concluded that matter taken from the Chamberlains' car and possessions, was blood and that the blood contained haemoglobin. There was no blood. She had mistaken a positive response to tests for the presumptive presence of blood to mean there was blood.

Professor Malcolm Chaikin, a renowned textiles expert, examined the baby's jumpsuit to determine whether abrasions on it had been caused by scissors or another bladed instrument, an important question because of the allegation that someone had deliberately cut the jumpsuit to fabricate a dingo attack. He said the presence of tufts in the jumpsuit was certain evidence that a bladed instrument had been used. Amateur scientists conducted tests that demonstrated that canine dentition could produce tufts.

On 12 June 2012 Coroner Elizabeth Morris delivered her finding that Azaria was taken by a dingo.

In 2011 and 2012 the Court of Criminal Appeal delivered judgments in ***Morgan v R*** [2011] NSWCCA 257, ***Wood v R*** [2012] NSWCCA 21, and ***Gilham v R*** [2012] NSWCCA 131, all cases in which expert evidence has come under scrutiny. In 2014 the High Court in ***Honeysett v The Queen*** [2014] HCA 19, had occasion to consider specialised knowledge within the terms of s 79 of the ***Evidence Act.***

This paper examines the current New South Wales position with respect to the admissibility of expert evidence under the **Evidence Act** (NSW) with particular focus on the relevant case law. Importantly, the paper advocates four primary propositions:

(i) Crown prosecutors must conduct more rigorous testing (in conference) of opinions proffered by expert witnesses.

(ii) Defence lawyers must conduct more rigorous testing of the opinions proffered by Crown experts.

(iii) We must develop more demanding standards for the admissibility of incriminating expert evidence.

(iv) In the absence of evidence of reliability, judges should be willing to exclude expert evidence adduced by the prosecution.[1]

SECTION 79 EVIDENCE ACT

Section 79 provides:

> *(1) If a person has specialised knowledge based on the persons training, study or experience, the opinion rule does not apply to evidence of an opinion of that person that is wholly or substantially based on that knowledge.*
>
> *(2) To avoid doubt, and without limiting subsection (1);*
>
> *(a) a reference in that subsection to specialised knowledge includes a reference to specialised knowledge of child development and child behaviour (including specialised knowledge of the impact of sexual abuse on children and their development and behaviour during and following the abuse), and*
>
> *(b) a reference in that subsection to an opinion of a person includes, if the person has specialised knowledge of the kind referred to in paragraph (a), a reference to an opinion relating to either or both of the following:*
>
> *(i) the development and behaviour of children generally,*

[1] See Dr Gary Edmond, 'Pathological Science? Demonstrate Reliability and Expert Forensic Pathology Evidence,' Paediatric forensic pathology and the justice system (Toronto Queens Printer for Ontario) 2008 at p 46.

(ii) the development and behaviour of children who have been victims of sexual offences, or offences similar to sexual offences.

There are two parts to section 79:

(i) Specialised knowledge based on training, study or experience (i.e. need establish that the expert has the specialised knowledge purporting to rely upon).

(ii) Opinion based wholly or substantially on that specialised knowledge.

In ***R v Tang*** [2006] NSWCCA 167, Spigelman CJ said at [134]:

> *"Section 79 has two limbs. Under the first limb, it is necessary to identify 'specialised knowledge, derived from one of the three matters identified, i.e. 'training, study or experience'. Under the second limb, it is necessary that the opinion be 'wholly or substantially based on that knowledge'. Accordingly, it is a requirement of admissibility that the opinion be demonstrated to be based on the specialist knowledge."*

The expert witness has to identify the expertise he or she can bring to bear and his or her opinions have to be related to his expertise. In ***Makita (Australia) Pty Ltd v Sprowles*** (2001) 52 NSWLR 705 Heydon JA set out the requirements of admissibility that should be demonstrated by a witness purporting to express an expert opinion:

> *[85] '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 the field in which the witness demonstrates that by reason of special 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 of 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.'*

In ***R v Tang*** at [153], the Chief Justice referred to a series of questions posed by Heydon JA in ***Makita (Australia) Pty Ltd*** as questions relevant to the issue under consideration:

> *[87] 'Did [the report] furnish the trial judge with the necessary scientific criteria for testing the accuracy of its conclusions? Did it enable him to form his own independent judgment by applying the criteria furnished to the facts proved? Was it intelligible, convincing and tested? Did it go beyond a bare ipse dixit?'*

WHAT CONSTITUTES SPECIALISED KNOWLEDGE?

In ***R v Tang*** at [138] Spigelman CJ (Simpson and Adams JJ agreeing) cited with approval the definition of 'knowledge' identified in the reasons of the majority judgment in ***Daubert v Merrell Dow Pharmaceuticals Inc*** 509 US 579 (1993) at 590:

> *'The word 'knowledge' connotes more than subjective belief or unsupported speculation. The term applies to any body of known facts or to any body of ideas inferred from such facts or accepted as truths on good grounds'.*

In ***Velevski v R*** (2002) 187 ALR 233, Gaudron J at [82] stated:

> *"The concept of 'specialised knowledge' imports knowledge of matters which are outside the knowledge or experience of ordinary persons and which 'is sufficiently organised or recognised to be accepted as a reliable body of knowledge or experience.'"*

R v Quesada [2001] NSWCCA 216 involved an allegation of the importation of drugs. Expert evidence was adduced from a psychologist as to why the appellant lied when interviewed by police after arrest. On appeal it was held that the evidence was inadmissible: per Smart AJ at [45] –]49]

> *"[45] So much is obvious and a matter of common sense*
>
> *…*
>
> *[46] This is not an area where it could be said that a psychologist has specialised knowledge based on that person's training, study or experience. Any opinion she expressed in the area in question could not be said to be based on such specialised knowledge*
>
> *...*

> *[49] The evidence of the psychologist was not admissible. Further, even if it had been admitted it would have made no difference, the jury was able to assess the explanations offered by the appellant based on compelling primary factual materials. I would not accept that a psychologist (or for that matter a judge) has some special knowledge or skill which enables that person, over and above the rest of the community, to say why an accused person told admitted lies. It is a conclusion that has to be reached after considering the facts and circumstances of the particular case."*

In ***Regina v* Davis** [2004] NSWCCA 298, a case involving an allegation of sexual assault, the appellant claimed intercourse was consensual. A doctor gave evidence that it was highly probable that a sexual assault had taken place despite observing no injuries to the vagina or anus or the complainant. The Court held that the evidence should not have been admitted and, if admitted, should have been objected to at that stage. With respect to the doctor's opinion of sexual assault when no injuries observed, Bell J stated at [38]:

> "*Given that Dr Ellacott did not detect injury to the anus or vagina her opinion – that it was highly probable that RC had been sexually assaulted anally and vaginally – appears to have been substantially dependent on the history that she was given and not upon any specialised knowledge. I consider that Dr Ellacott's opinion in this respect was not admissible as an exception to the opinion rule under s.79"*

In ***Regina v Jung*** [2006] NSWSC 658, the appellant was convicted of murder. Evidence as to identification of the appellant based on a comparison of CCTV footage/stills and photographs of him using facial mapping and body mapping, and the opinion of Dr Sutisno, had been admitted at trial. Hall J found that the witness did have 'specialised knowledge' based on study and experience in relation to facial characteristics in the context of issues concerned with establishing identification both of 'deceased persons and otherwise' [at 55]. His Honour stated at [54]:

> *"In determining whether Dr Sutisno holds the requisite specialised knowledge, an expert witness should not be allowed to stray outside the witness' area of expertise. It is for this reason that the opinion expressed by the witness must be based wholly or substantially on the witness' specialised knowledge, the specialised knowledge in turn being based on training, study or experience."*

His Honour referred to the judgment of McHugh J in ***Festa v The Queen*** (2001) 208 CLR 593 (at 609) in reiterating that

> *'[E]xpert opinion that is based upon factual material is deficient or unreliable is not, per se, inadmissible. The weakness of relevant material is not a ground for its exclusion'*

In ***Regina v Howard*** [2005] NSWCCA 25 the Court was concerned with expert evidence relating to the age of cannabis found at the appellant's house. Cannabis was found on the premises of the accused who had been overseas for several months. The Crown called evidence from an officer of the Department of Agriculture as to various ages of drying cannabis. On appeal the evidence was held to be inadmissible as the Crown had failed to establish the relevant expertise. The witness was not expert for the purposes of gauging cannabis age when he was only trained to identify cannabis:

> *[26] "The evidence fell far short of demonstrating that Mr Wassell (whose bona fides, we should mention, were not in question) could, simply by looking at cannabis, and in the absence of any information about appearance at the time of harvest, conditions between harvest and storage, the time at which the material was placed into storage, if storage may have affected its appearance and whether conditions varied during storage, establish when harvest had taken place. It is true; of course, that there was issue about his being able to identify cannabis, but what he lacked by way of experience was assessing the 'timetable' within which observable deterioration in plants took place."*
>
> *…*
>
> *[33] "The concession by Mr Wassell demonstrates that he is unable from experience to qualify himself to give the opinions which were led from him in evidence."*

MUST REVEAL PROCESS OF REASONING

With respect to the second limb of section 79, it must be established that the opinion is wholly or substantially based on specialised knowledge. This requirement means that the reasoning process underpinning the witness's conclusions must be made transparent so as to demonstrate that the opinion is so based.

In ***Makita (Australia) Pty Ltd v Sprowles*** (2001) 52 NSWLR 705 the Court said, at [85]:

> *"In short, if evidence is to be 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' 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 produced. 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, 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."*

And at [59]:

> *"If Professor Morton's report were to be useful, it was necessary for it to comply with a prime duty of experts in giving opinion evidence: to furnish the trier of fact with criteria enabling evaluation of the validity of the expert's conclusions."*

In ***Jung*** per Hall J at [53]:

> *"In the area of expert evidence, the test is whether the court is satisfied on the balance of probabilities that the opinion is based wholly or substantially on such knowledge: s142 of the Evidence Act."*

In ***Risk v Northern Territory of Australia*** [2006] FCA 404 per Mansfield J at [469]:

> *"The important thing in any expert's report, in my view, is that the intellectual processes of the expert can be readily exposed. That involves identifying in a transparent way what are the primary facts assumed or understood. It also involves making the process of reasoning transparent, and where there are premises upon which the reasoning depends, identifying them."*

The importance of the transparency of the process of reasoning was emphasised in ***Hannes v Director of Public Prosecutions* (Cth) (No 2)** [2006] NSWCCA 373 per Barr and Hall JJ at [290]:

> *"Even though the spurious nature of the authority may be apprehended, and allowance made, there is a potentially more insidious risk that the exercise required of the Court or jury will be subverted through adoption of a shortcut, by acceptance of the opinion of another, without careful evaluation of the steps by which that opinion was reached."*

In ***Keller v R*** [2006] NSWCCA 204, the admissibility of evidence given by an Australian Federal Police officer with specialist experience in drug matters was considered by the Court. The witness gave evidence that the subject matter of recorded conversations concerned drug supply. The Court held that the evidence was inadmissible, per Studdert J at [29]:

> *"It seems to me that in a situation such as occurred in the present case where a witness is expressing evidence that the speaker was talking about drugs, it is necessary that there be a manifest foundation for the evidence, namely:*
>
> *(i) That it should be made apparent that the opinion expressed 'is wholly or substantially based' upon the expert training, study or experience of the witness: s79;*
>
> *(ii) That the reasoning process of the witness should be sufficiently exposed to enable an evaluation as to how the witness used his expertise in reaching his opinion."*

However, it is not in every case that such evidence is rendered inadmissible. The Court emphasised the necessity for "close consideration of the circumstances of the particular case": ***Keller*** per Studdert J at [42]

In ***HG*** (1999) 197 CLR 414 per Gleeson CJ at [39]:

> *"An expert whose opinion is sought to be tendered should differentiate between the assumed facts upon which the opinion is based, and the opinion in question... Even so, the provisions of s79 will often have the practical effect of emphasising the need for attention to requirements of form. By directing attention to whether an opinion is wholly or substantially based on specialised knowledge based on training, study or experience, the section requires that the opinion is presented in a form which makes it possible to answer that question."*

There must be an objective and demonstrable procedure for reaching the opinion such that another expert, following the procedure would be able to either reach the same result or to assess the process. In ***Tang*** (per Spigelman CJ) at [154]:

> *"The three opinions of Dr Sutisno in the present case do not, in my view, go beyond a 'bare ipse dixit'. Dr Sutisno did not identify the terms of the 'strict protocol' that she purported to have applied, nor did she set out the basis on which the 'protocol' was developed. Indeed, she said that this information was*

> *confidential, because of what she described as a 'process of patenting my inventions'. Accordingly, she had not published any of these 'innovations'. The critical matter is that she did not identify her 'protocol or explain its basis."*

The threshold for the admission of expert evidence is low. The mere fact that cross-examination successfully highlights inadequacies in the process of reasoning, or the fact that other experts may have conflicting opinions does not render the evidence inadmissible. In ***R v Rose*** [2002] NSWCCA 455, Smart AJ said at [390] that even though the appellant's highly qualified experts were extremely critical of the Crown geologist's expert evidence (especially methods etc), this did not make the evidence inadmissible as it was still based on his specialised knowledge and experience.

In my view a court should investigate the reliability of the opinion under this limb. The Crown must demonstrate that the purported linkage between the witness' specialised knowledge and his/her opinion is valid and reliable. In the absence of a valid and reliable link, the opinion is not based wholly or substantially on specialised knowledge but rather on 'speculation', 'subjective personal views', or 'common sense inferences'.

In ***R v Tang*** Spigelman CJ drew a distinction between an expert on anatomy and 'facial mapping' expressing an opinion regarding similarity between facial characteristics and expressing an opinion about identity. Spigelman CJ noted at [145] the debate that emerged in the United States following ***Daubert***, as to whether fingerprint evidence had the requisite scientific basis to justify the expression of opinion that the accused and the offender are the same person. That debate emphasised the significance of the step from evidence of similarity to a conclusion about identity. While such opinions are expressed in relation to fingerprint evidence, Spigelman CJ stated:

> *[146] 'Facial mapping, let alone body mapping, was not shown, on the evidence in the trial, to constitute 'specialised knowledge' of a character which can support an opinion of identity'.*

Although the Court held that the opinion as to identification was inadmissible, training in anatomy, combined with the fact that the witness had spent time comparing security images with the police reference photographs led the Court to

qualify her as an 'ad hoc' expert allowing her to give evidence about similarities between the persons in the images.

The Court adopted a narrow reading of section 79 saying that

> *[137] '[t]he focus must be on the words 'specialised knowledge', not on the introduction of an extraneous idea such as 'reliability',*

As Gary Edmond points out ***Tang*** is not an isolated case.[2] Edmonds cites a number of cases involving facial mapping or voice identification evidence where evidence was adduced notwithstanding the absence of '..*a credible field, supporting literature, validation studies, and information about error rates*.'[3] It appears that the Courts are unwilling to exclude 'expert' evidence pursuant to section 137 or the **Evidence Act** for fear of trespassing on the role of the jury. Instead, in considering the 137 discretion, the evidence is taken at its '*highest*', assessment of ***reliability*** being left to the jury to decide.

This reluctance by the Courts to assess issues of reliability in determining admissibility of expert evidence is out of step with concerns raised in the scientific community about the role of flawed expert evidence in wrongful convictions. A 2009 report from the American National Academy of Science (NAS) concludes that, with the exception of nuclear DNA evidence, most forensic evidence lacks a scientific basis and adequate regulation and quality control. It proposes a federal program of research together with independent scientific governance and certification.[4]

In many cases expert evidence that suggests 'similarities' between a suspect image and CCTV footage or an exhibit item and a reference item, has little or no probative value and a high degree of unfair prejudice because of what John Stratton refers to as the 'white coat effect'.

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[2] 'Impartiality, efficiency or reliability? A critical response to expert evidence and procedure in Australia', Gary Edmond, Australian Journal of Forensic Sciences, 2010, 1-17 at p4

[3] Ibid at 4; see Regina v Li(2003) 139 A Crim R 281; R v Jung [2006] NSWSC 658; Murdoch v The Queen (2007) 167 A Crim R 329; R v El-Kheir [2004] NSWCCA 461

[4] "A Contextual Approach to the Admissibility of the State's Forensic Science and Medical Evidence', G. Edmond & Kent Roach, (2011) 61 University of Toronto Law Journal at p 344

***Raymond George MORGAN v R* [2011] NSWCCA 257**

The appellant was convicted of 5 offences including 2 counts of robbery in company on hotels in Willoughby and Drummoyne. The Crown case relied on circumstantial evidence. CCTV footage from both hotels was in evidence. The Managers from the hotels gave general descriptions of the offenders but on each occasion the offenders wore balaclavas.

The Crown called Dr Henneberg, a biological anthropologist and anatomist who professed to be an expert in what is loosely referred to as 'body mapping'. He was tasked to undertake an anatomical comparison of the CCTV images and images obtained of the appellant during a forensic procedure.

Dr Henneberg concluded:

> *"Based wholly or substantially on the above knowledge, I am of the opinion that there is a high level of anatomical similarity between the offender and the suspect (Mr Morgan). My opinion is strengthened by the fact that I could not observe on the suspect any anatomical detail different from those I could discern from the CCTV images of the offender'.*

The defence called evidence on the voire dire from Dr Kemp, a senior lecturer in forensic psychology and Glenn Porter, a forensic scientist.

> *[85] He noted that Professor Henneberg relied exclusively on a morphological approach to anatomical examination, and that he did not attempt to take measurements from the photographic images or to draw on any published data regarding the frequency of occurrence of particular anatomical features to estimate the probability that two sets of images showed the same person. His comparisons were made only with the naked eye.*
>
> *…*
>
> *[88] Dr Kemp noted that Professor Henneberg did not attempt to make any statistical claim about the frequency of occurrence of the characteristics he observed in the offender in the CCTV footage and the appellant, so as to calculate the probability that two images of different individuals might show those characteristics. Yet, he said, such a probability assessment was implicit in the professor's conclusion that there was "a high level of anatomical similarity" between the offender and the appellant. Dr Kemp saw the effect of such a statement in this context as a suggestion "that these similarities are noteworthy and unusual." His own view was that they were "not uncommon in the adult population of Australia." He added that there was "no adequate statistical evidence available regarding just how common the possession of such a set of characteristics is, and as a result we have no way of knowing what conclusions we can draw from this observation."*

Dr Kemp's research led him to the conclusion that in the areas of 'body/face mapping' there is no scientific evaluation of their validity, reliability or error rate.

Glenn Porter also challenged Henneberg's determination that the offender in the CCTV footage was an adult male. Porter described that determination as a '***wildly speculative assumption with no forensic science, imaging science or photo-interpretation basis.'***

Dr Sutisno, a forensic anatomist, was called in the defence case. She was also critical of Dr Henneberg's conclusions.

The trial judge admitted the evidence not as evidence of identification but as evidence of similarities.

In upholding the appeal Hidden J (Beazley and Harrison JJ agreeing) said:

> *[138] We were not referred to any appellant authority in which body mapping was subjected to critical analysis. The lack of research into the validity, reliability and error rate of the process, identified by Dr Kemp, is of concern. Professor Henneberg's use of the product rule in his hypothetical statistical calculation and his virtual identification of Ms Pauline Hanson as the person in the newspaper, which proved to be erroneous, are matters properly to be taken into account in assessing the reliability of his evidence as an expert. His assessment involves an observation of two sets of images and a comparison of anatomical features which he detects in them, without measurements and without the aid of technology such as computerised enhancement of the images and photographic superimposition, the methods adopted by Dr Sutisno in Tang….*
>
> *[144] Whatever might be made of the professor's observations of the offender's body shape through his clothing, his observations about the shape of his head and face were clearly vital to his conclusion that there was a high degree of anatomical similarity between that person and the appellant. It does not appear to me that those observations could be said to be based upon his specialised knowledge of anatomy. Generally, I am persuaded by Mr Stratton's submission that his description of the offender was "simplistic". It may well be that the jury would have required expert evidence explaining the effect of photographic distortion in the CCTV images. Subject to that, I am not persuaded that the comparison of the images of the offender with those of the appellant was a task which the jury would not have been able to undertake for themselves: cf Smith v The Queen [2001] HCA 50, 206 CLR 650.*
>
> *[145] Indeed, with every respect to Professor Henneberg, I am of the view that his evidence raised the very problem about expert evidence in this area described by Dr Kemp at [115] above. It tended to cloak evidence of similarity in a mantle of expertise, described by Mr Stratton as a "white coat effect", which it did not deserve.*

***WOOD v R* [2012] NSWCCA**

Eleven years after Caroline Byrne died; on 3 May 2006 Gordon Wood (the applicant) was charged and subsequently convicted of her murder. The Crown case was a circumstantial case. The allegation was that the applicant had thrown Ms Byrne off a cliff at the Gap in Sydney. The police failed to take photographs of the body in situ. Some years after her death, there was some controversy over the precise location at which Ms Byrne's body was found. The location was crucial to the conclusions reached by A/Prof Rod Cross about whether Ms Byrne had jumped or was thrown over the edge.

> *[461] The applicant challenged the evidence and opinions of A/Prof Cross. It was submitted that his opinion that Ms Byrne had been "spear thrown" from the "northern ledge of the Gap" was based on a number of "assumptions, experiments and assumed facts." It was argued that before his evidence could be considered these assumptions had to be identified and proved by admissible evidence: Ramsay v Watson [1961] HCA 65; (1961) 108 CLR 642 at 649; ss 55, 76, 79 and 137 of the Evidence Act. It was further argued by the applicant that in order for A/Prof Cross' opinions to be probative, the assumptions he made needed to have a reasonable foundation in evidence and, furthermore, he needed to be qualified to express the relevant opinions. The applicant submitted that since these conditions were not met the trial miscarried.*
>
> *[462] The applicant submitted that the flawed assumptions accepted by A/Prof Cross related to:*
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> > *conditions under which A/Prof Cross' experiments were conducted;*
> >
> > *the availability of 4 m of run-up on the northern ledge;*
> >
> > *the northern ledge being the point of departure;*
> >
> > *the 180-degree rotation of Ms Byrne's body;*
> >
> > *the applicant's weight being 80 kg, thus enabling him to bench press 100 kg;*
> >
> > *the athletic ability of Ms Byrne;*
> >
> > *Ms Byrne ending up in hole A; and*
> >
> > *the use of a spear throw to throw Ms Byrne off the cliff top.*
>
> *The challenge to the admissibility of A/Prof Cross' evidence at the trial was confined to his views on the issue of the likelihood of injury being caused to Ms Byrne as she landed on the rocks at the base of the cliff. Although his evidence was not otherwise challenged, significant and important aspects of his evidence were concerned with biomechanics, which required an understanding of the functioning and capacity of the human body. In* HG v The Queen *[1999] HCA 2; (1999) 197 CLR 414 at [44] Gleeson CJ said:*

> *"Experts who venture 'opinions', (sometimes merely their own inference of fact), outside their field of specialised knowledge may invest those opinions with a spurious appearance of authority, and legitimate processes of fact-finding may be subverted."*
>
> *[467] To my mind A/Prof Cross was allowed, without objection, to express opinions outside his field of specialized knowledge.*

McClellan CJ at CL was critical of the experiments conducted by A/Prof Cross at the police academy in Goulburn using the gymnasium and swimming pool. Female police cadets were thrown into the pool by male officers. They were instructed to cooperate with the thrower. They did not resist or struggle. Although the subjects simulated being limp in the arms and legs, they cooperated by diving out of the throw.

A number of variables that may have been present on the night in question were not taken into account in the experiments. The Court noted that if A/Prof Cross' conclusions were to be of significant utility it must be assumed that the conditions under which his experiments were conducted were not materially different to the conditions on the night Ms Byrne died. However, this was not the case: [476]

The appeal in this case was upheld on Ground 1 that the verdict was unreasonable. In upholding the appeal on this ground the Court expressed the view that little weight should be afforded to A/Prof Cross' opinions. In Ground 9 the applicant argued that there had been a miscarriage of justice in the trial on account of fresh evidence and evidence undisclosed at the trial. Relevant to this argument was a book published by A/Prof Cross while the appeal was pending. McClellan CJ at CL concluded that had that book been available at trial it would have significantly diminished the witness's credibility because it exposed the fact that A/Prof Cross had approached his task in a biased way, at [717]

> *[717] My reading of the book and the lecture leads me to the conclusion that if it had been available at the trial, it would have significantly diminished A/Prof Cross' credibility. In the book A/Prof Cross makes plain that he approached his task with the preconception that, based on his behaviour, as reported after Ms Byrne had died, the applicant had killed her. He clearly saw his task as being to marshal the evidence which may assist the prosecution to eliminate the possibility of suicide and leave only the possibility of murder. The book is replete with recitations of his role in solving the problem presented by the lack of physical evidence and records how he was able to gather the evidence which enabled the prosecutor to bring proceedings against the applicant…*

[719] The obligations of an expert witness were discussed by Cresswell J in National Justice Cia Naviera SA v Prudential Assurance Co Ltd (The Ikarian Reefer) [1993] 2 Lloyd's Rep 68 at 81-82. They may be summarised as follows:

> *Expert evidence presented to the court should be, and should be seen to be, the independent product of the expert uninfluenced as to form or content by the exigencies of litigation. See also Whitehouse v Jordan (1981) 1 WLR 246 at 256 (Lord Wilberforce).*
>
> *An expert witness should provide independent assistance to the court by way of objective unbiased opinion in relation to matters within his expertise. An expert witness should never assume the role of an advocate.*
>
> *An expert witness should state the facts or assumptions upon which his opinion is based. He should not omit to consider the material facts which could detract from his concluded opinion.*
>
> *An expert witness should make it clear when a particular question or issue falls outside his expertise.*
>
> *If an expert's opinion is not properly researched because he considers that insufficient data is available, then this must be stated with an indication that the opinion is no more than a provisional one. In cases where an expert who has prepared a report cannot assert that the report contains the truth, the whole truth and nothing but the truth without some qualification, that qualification should be stated in the report.*
>
> *If, after exchange of reports, an expert witness changes his view on a material matter having read the other side's expert reports, or for any other reason, such change of view should be communicated (through legal representatives) to the other side without delay and when appropriate to the court.*
>
> *Where expert evidence refers to photographs, plans, calculations, analyses, measurements, survey reports or other similar documents, these must be provided to the opposite party at the same time as the exchange of reports.*

[720] These principles were approved by Otton LJ in Stanton v Callaghan [2000] QB 75 at 107-8 and are accepted and applied in the UK in both civil and criminal cases. In Meadow v General Medical Council [2007] 2 WLR 286, they were again approved by Auld LJ at [204], by Thorpe LJ at [250] and by Sir Anthony Clarke MR at [21], [70]-[71], and were said to be "of particular importance in a serious criminal matter such as the trial of a defendant for murder" at [71]. In R v Harris [2006] 1 Cr App R 5, the Court of Appeal stated that the guidance of Cresswell J was "very relevant to criminal proceedings and should be kept well in mind by both the prosecution and defence": at [273].

[721] In Australia, the Ikarian Reefer principles were discussed by Heydon JA in Makita (Australia) Pty Ltd v Sprowles [2001] NSWCA 305; (2001) 52 NSWLR 705 at [79], by Debelle J in James v Keogh [2008] SASC 156; (2008) 101 SASR 42 at [67]-[72], and by Austin J in ASIC v Rich [2005] NSWSC 152; (2005) 190 FLR 242 at 320-1 [333].

[722] The applicant challenged the admissibility of the evidence of A/Prof Cross in this Court. There is a live issue as to whether a failure to comply with the relevant obligations renders the expert's evidence inadmissible.

[723] It was accepted by Austin J in ASIC v Rich at [256] that in this State, the law is not fully settled in relation to principles of admissibility of expert opinion

evidence. Cresswell J's propositions were said by Austin J to have been "strongly influential upon the drafters of the Expert Code of Conduct, to which Pt 36, r 13C of the Supreme Court Rules refers." Austin J was of the opinion that neither the propositions of Cresswell J nor the Code of Conduct were to be construed as rules of admissibility of expert evidence: at [333]. He noted however, that the structure and content of the present law for responding to the problem of bias in expert evidence is "controversial and arguably unsatisfactory": at [335].

[724] In Sydney South West Area Health Service v Stamoulis [2009] NSWCA 153 at [203], Ipp JA (Beazley and Giles JJA agreeing) said that the content of the duty of expert witnesses and the powers of the court to enforce that duty are yet to be finally determined.

[725] The Code of Conduct is found in Schedule 7 to the Uniform Civil Procedure Rules 2005. It applies to expert evidence in criminal proceedings by virtue of Part 75 Rule 3(j) of the Supreme Court Rules 1970 and applies to A/Prof Cross' reports and oral evidence. Clause 2 of the Code imposes on an expert witness "an overriding duty to assist the court impartially on matters relevant to the witness's area of expertise." Furthermore, there is a duty on the expert to state, "if applicable, that a particular issue falls outside the expert's field of expertise" and "If an expert witness who prepares an expert's report believes that it may be incomplete or inaccurate without some qualification, the qualification must be stated in the report." There is also an obligation to disclose whether an opinion is "not a concluded opinion because of insufficient data or research or for any other reason." An expert report is not to be admitted into evidence unless an expert has agreed to be bound by the Code (unless the Court otherwise orders) nor is oral evidence to be received from that witness: r 75.3J (3)(ii), (c)(i).

[726] In Dasreef Pty Ltd v Hawchar [2011] HCA 21; (2011) 243 CLR 588, the High Court unanimously held that where an expert purports to give evidence not based on his specialised knowledge, the evidence is inadmissible. The majority confirmed the relevance of the analysis of Gleeson CJ in HG v The Queen [1999] HCA 2; (1999) 197 CLR 414 at [41] and of Heydon JA in Makita at [85] when determining whether the opinion of a witness is "based on specialised knowledge or belief": Dasreef at [37]-[43] (French CJ, Gummow, Hayne, Crennan, Kiefel and Bell JJ).

…

[729] This is not to say that the Expert Witness Code of Conduct is merely aspirational. Where an expert commits a sufficiently grave breach of the Code, a court may be justified in exercising its discretion to exclude the evidence under ss 135 or 137 of the Evidence Act. Campbell J adverted to this possibility in Lopmand when his Honour stated at [15]: "The policy which underlies the existence of Part 36 rule 13C is one which I should take into account in deciding whether [the expert evidence] should be rejected under section 135." I respectfully agree with that approach. While there is no rule that precludes the admissibility of expert evidence that fails to comply with the Code, the Code is relevant when considering the exclusionary rules in ss 135-137 of the Evidence Act. The expert's "failure to understand his [or her] responsibilities as an expert" (Lopmand at [19]) may result in the probative value of the evidence being substantially outweighed by the danger that it might mislead or confuse or be unfairly prejudicial to a party.

[730] I do not believe it is necessary to resolve this issue in these proceedings. However, as I have said, to my mind the book which A/Prof Cross published has the consequence that his opinion on any controversial matter has minimal if any weight: see Pan Pharmaceuticals Ltd (in liq) v Selim [2008] FCA 416 at [157] (Emmett J).

…

> *[758] A/Prof Cross took upon himself the role of investigator and became an active participant in attempting to prove that the applicant had committed murder. Rather than remaining impartial to the outcome and offering his independent expertise to assist the Court he formed the view from speaking with some police and Mr Byrne and from his own assessment of the circumstances that the applicant was guilty and it was his task to assist in proving his guilt. In my opinion if the book and the speech had been available to the defence and the extent of A/Prof Cross' partiality made apparent, his evidence would have been assessed by the jury to be of little if any evidentiary value on any controversial issue.*

GILHAM v R **[2012] NSWCCA 131**

The applicant was convicted at trial of the murder of his parents on 28 August 1993. Mr and Mrs Gilham died as a result of multiple stab wounds. Their bodies were then set alight causing a fire in part of the house. Christopher Gilham was also found dead. He had sustained 17 stab wounds. The applicant maintained that on entering the house he saw that his parents had been murdered by his brother, Christopher. The applicant then stabbed his brother, killing him in anger over what he had done.

In August 1993 the applicant was charged with the murder of his brother but pleaded guilty to manslaughter on the basis of the version he had given to police. In June 1995 the Coroner found that Mr and Mrs Gilham died as a result of stab wounds inflicted by Christopher Gilham. Following a renewed police investigation in 1999 a second inquest was held. The inquest was terminated in April 2000, the Deputy State Coroner referring the matter to the DPP.

It was not until 21 February 2006 that an ex-officio indictment was filed in the Supreme Court charging the applicant with the murder of his parents. On 28 November 2008 he was found guilty. On 11 March 2009 he was sentenced to life imprisonment on each count.

The Crown case against the applicant was a circumstantial one. For present purposes it is convenient to set out the areas of expert evidence relied upon by the Crown which formed some of the appeal grounds:

(i) Evidence of James Munday – Fire Investigator

The Crown called Mr Munday to give evidence about the speed at which and the form in which the fire had spread. For that purpose Mr Munday conducted a number of experiments captured on DVD. During the voir dire, it became apparent that there were a number of variables any one of which could have affected the size and rate of speed of the fire.

At trial the applicant had submitted that the content of the DVD recordings were irrelevant or, alternatively, should be excluded pursuant to section 137 **Evidence Act**. The trial judge admitted the DVDs after an agreed editing process.

On appeal, the Court held that the evidence ought not to have been admitted:

> *[173] The judge's directions based upon the evidence given by Mr Munday suggest that the experiments had very little, if any, probative value, in the absence of a sufficient correlation between what the evidence proved was likely to have occurred, and the experiments shown in the videos. However, as we have earlier noted, there was either insufficient evidence to prove a number of the variables upon which the experiments were based, or alternatively, the variables which were taken into account produced results which may or may not have replicated what actually occurred.*
>
> *[174] In those circumstances, the jury were left to do the best they could with a range of experiments which may or may not have coincided with the events that occurred.*
>
> *[175] For these reasons, we conclude that these experiments had very little, if any, probative value.*
>
> *[176] But the prejudicial effect of these experiments was, in our assessment, very high. The Crown sought to demonstrate that the jury should reject the applicant's account that when he arrived at the scene, it was, in effect, not open for him to have done anything about the fire. After all, the prosecutor submitted to the jury, anyone would have taken steps, when confronted by a fire of low height and slow spread, to have put out the fire before doing anything else.*

(ii) Evidence from Dr Culliford, Dr Cala and Dr Lawrence regarding the similarity of the pattern of stab wounds.

A challenge was made to the admissibility of the evidence of Dr Culliford, Dr Cala and Dr Lawrence as to what they each claimed was a discernible similarity in the grouping or pattern of wounds in all three deceased. This evidence was relied

upon by the Crown to prove that the applicant had killed all three deceased and was therefore guilty of the murders of his parents. The applicant submitted that their evidence failed to meet the prerequisites for admission as opinion evidence in s 79 of the **Evidence Act**. The applicant also submitted that the evidence of all three experts ought to have been rejected in the exercise of the discretion under s 137 of the **Evidence Act**.

The evidence from Dr Lawrence, Dr Culliford and Dr Cala concerning the issue of similarity was referable to the number of stab wounds on the body of each of the deceased, the grouping of the wounds on the chest and back areas, the configuration of the wounds, and the alignment of the wound tracks relative to the bodies of each of the deceased. This evidence was relied upon by the Crown in her address to suggest that the similarity of the wounds were such as to point to one perpetrator for all three killings. McClellan CJ at CL noted at [319]:

> *[319] In her closing address the Crown Prosecutor identified the similarity of stab wounds as one of the "major areas" of the evidence that proved the applicant's guilt. In developing that submission she variously described the number of stab wounds as being "in a tight little group" to the front and back of the chest. She said that this circumstance, together with the fact that on each of the deceased there was a fatal wound on the opposite side of the body, was "quite amazing". She submitted that the presence of 16 grouped stab wounds to the front of Mr Gilham, 14 to Christopher and 14 to the back of Mrs Gilham's chest was an "extraordinary coincidence". She then submitted:*
>
> > *"But one of the things that also makes these stabbings extraordinarily coincidental and extraordinarily similar is the way they must have been inflicted, ladies and gentlemen. You have heard from Dr Culliford, her opinion that to get that sort of precision, you'd have to be - because your legs - because a human being's legs, along with his or her arms, you'd have to be down in a position kneeling or squatting to get the precision to make perfectly, or almost perfectly parallel close wounds into the middle of the body of those victims.*
> >
> > *The Crown submits to you that the person who killed all three would have to have been kneeling because, if one is on one's haunches, if one is squatting, there's just not enough balance to get that sort of precision, you'd have to be kneeling at least on one leg, to get those wounds in those precise positions on the ground in each case. Because undoubtedly, the Crown submits to you, undoubtedly, each of those three people was lying on the floor when those grouped stab wounds were inflicted upon them and you just can't get those angled if you lean down and do it like that, it would be quite an oblique angle, you would be all over the place if you tried to do it on your haunches, well I would be, and I suggest anybody would be because there's no balance in that position, you would have to be kneeling on one knee at least to the side of the body while those wounds were inflicted."*

His Honour continued at [336]

[336] The trial judge's finding that the evidence of similarity between the wounds was relevant in this way obscured what we regard as a critical question, essential to resolve if the evidence was to meet the dual criteria for admission as opinion evidence under s 79. Neither counsel nor the trial judge grappled with this question on the voir dire. As we see it, that question is whether what Dr Culliford and Dr Cala identified as features of similarity in some of the wounds inflicted on the deceased were capable of supporting their further opinion (implicit at the time of the voir dire and explicit at the trial) that the injuries constituted a pattern of some discernible kind. The related question is whether that opinion was based wholly or substantially upon their specialised knowledge such as might rationally affect proof of the assessment by the jury of whether there was one stabber or two.

…

[340] In the course of the voir dire the trial judge accepted that there was no organised body of knowledge deriving from recognised principles of medical science which would enable either Dr Cala or Dr Culliford to express an opinion as to whether the wounds sustained by the deceased in this case were inflicted by one killer or more. He apparently accepted Professor Cordner's evidence on that issue. That being the case, the criteria for admission of what remained of the evidence translated into a requirement that Dr Cala or Dr Culliford be shown to have specialised knowledge in the interpretation of stab wounds based upon their training, study or experience as forensic practitioners, and that their opinion that there were discernible similarities in the wounds, manifesting as a discernible and distinct pattern in the wounds sustained by the deceased, was based wholly or substantially upon that knowledge.

…

[346] Even were the evidence admissible under s 79, we are nevertheless satisfied that it ought to have been rejected in the exercise of discretion under s 137 of the Evidence Act. Properly analysed, the evidence of the Crown experts that the wounds "appeared similar" was of little probative value, while the risk that the jury would impermissibly use the collective force of the evidence from the three Crown witnesses to infer that the similarity created a pattern, which was explicable only if the applicant was the perpetrator, was overwhelming. This was a risk that the trial judge's directions could not protect against.

…

[349] We are also satisfied that the Crown Prosecutor's repeated use of various adjectives to describe the similarity in the wounds, which was a submission unsupported by an application for admission of the evidence under s 98 of the Evidence Act, exceeded the legitimate bounds of a closing argument by a Crown Prosecutor. Her approach is the more egregious where the trial judge had not admitted the evidence under s 98 of the Evidence Act and had expressly prevented the expert witnesses from using these very words, or words like them, when describing the extent of similarity in the pattern of injury about which they were permitted to give evidence.

(iii) Dr Lawrence on the level of carbon monoxide:

Dr Lawrence performed the post-mortem examinations in 1993. By the time of the trial he had conducted between 3,000-4,000 post-mortem operations. In part, he gave evidence of carbon monoxide levels in the bodies of the deceased. Importantly, he gave evidence that the carbon monoxide level in the body of Christopher Gilham was 6% which he opined was within the normal range. He concluded that Christopher Gilham was dead when the fire started. This evidence was highly significant in light of the defence case that Christopher was the murderer.

> *[597] From the evidence led at trial it was generally accepted that:*
>
> > *(a) the levels of carbon monoxide in the bodies of Mr and Mrs Gilham and Christopher were four per cent, three per cent and six per cent respectively;*
> >
> > *(b) these were within normal limits; and*
> >
> > *(c) each of them was dead when the fire started.*
>
> *[598] The applicant adduced new evidence on the appeal concerning these questions.*
>
> Professor David Penney
>
> *[599] Professor Penney is a specialist toxicologist. He holds a Doctorate in Philosophy from the University of California, Los Angeles (1969), having obtained earlier primary qualifications in biology and chemistry from Wayne State University, Detroit (1963). He has been studying the effects of carbon monoxide since at least April 1974, when he received a research grant from the United States Public Health Service to study the chronic effects of carbon monoxide on the heart.*
>
> *…*
>
> *[604] Professor Penney considered the normal concentration of carbon monoxide in blood and noted:*
>
> > *"... the normal blood level of COHb in healthy non-smoking adults is 0.4-1.4 per cent. The handbook of the instrument used to measure the Gilhams' COHb, the Radiometer Hemoximeter gives a range of 0.0-0.9 per cent. Normal COHb cannot be said to extend as high as 10 per cent. That is the COHb level seen in humans exposed to 70-80 ppm CO for 10-12 hours. That is not normal, is not allowed by law, and we now know leads to serious health risk. That is the COHb level seen only in a few of very heaviest cigarette smokers. Again, 10 per cent COHb is not normal."*
>
> *[605] He went on to conclude:*

"1. That the carboxyhemoglobin (COHb) values for blood of normal, non-smoking, adult humans is routinely observed in the range 0.4% to 1.4%, encompassing as it does some 99% of such individuals.

2. That the Radiometer Hemoximeter, Model OSM2, instruction manual (handbook) states the COHb 'fraction' (i.e. saturation) for adults (12 subjects) is 0.0-0.9%.

3. That a normal, non-smoking, adult human found to have 6% COHb, alive or dead, has an abnormally high (i.e. elevated) level.

4. That such an individual in 3 must of necessity have recently taken up the additional CO load from an exogenous source.

5. That Christopher Gilham inhaled a significant amount of smoke ... before he died, because CO remains in the body for a very short period of time, leaving quickly when the breathing of fresh air occurs.

6. That in my understanding, the only likely or probable source of respirable CO at the house ... on the night of August 28, 1993 was fire purposely started in that structure.

7. That based on the 'inaccuracy, repeatability, and uncertainty' parameters published for the Hemoximeter, Model OSM2, COHb saturations observed in the normal range (above) for Christopher Gilham, could not have been indicated (i.e. read) as 6% by this instrument, i.e. again, his COHb level was abnormally elevated.

8. That dead bodies do not take up additional CO after death, only before death, and that the COHb level measured after death is the COHb saturation that was present at the instant of death."

…

[617] Dr Lawrence was called by the Crown to give evidence on the appeal, by which time he had read Professor Penney's report. The Crown led the following evidence from him:

"Q. In conference on the telephone with me last week, did I ask you some questions in relation to carbon monoxide haemoglobin levels?

A. Yes you did.

Q. Did you indicate to me in conference that those levels may indicate that each of the three people may have been alive when the fire started?

A. Yes, if you look at the totality of the evidence here. There is no, there is no macroscopic evidence or no visible evidence of smoke in Stephen's airway, but there is some blood there which could obscure a little bit of smoke. Under the microscope there is a very small amount of smoke and --

Q. A small amount of --

A. A small amount of carbon --

Q. Whereabouts did you observe a small amount of carbon?

A. In the lungs.

...

Q. Then in relation to Stephen Gilham in the second report, what did you note in relation to observations in the second autopsy report?

A. An examination of the lung under the microscope - there is a small amount of carbon or black pigment in, around the bronchi.

Q. Where is that in your report?

A. That is in the microscopic examination on page 6 of the final report.

Q. There is some black pigment around the bronchi?

A. Yes.

Q. At page 7 of that report, at point 6 of the report, you noted that there was extensive post-mortem fire damage with extensive burning of the anterior chest wall, face, arms and legs and noted (a) no evidence of smoke inhalation.

A. Yes.

Q. This is under - what's that a reference to? No evidence explaining ...

A. Well, its', I'd modified the thing - I probably should have qualified that to being minimal evidence of smoke inhalation. I think the fact is that the naked eye examination revealed no soot. The histological examination revealed a little bit of soot, but I'm not 100% certain about the significance of histological examination.

Q. Why is that?

A. It is possible to contamination of it, but I think in light of the CO2, the CO level and so forth, I think that it's quite possible that he had taken some breaths during the time of the fire.

Q. That's a combination of the microscopic examination ....

A. Yes.

Q. And the carbon monoxide ...

A. There's also quite a lot of blood in the upper airways and it's possible that the blood could obscure the carbon on direct examination.

Q. In relation to the upper airways?

A. Yes.

Q. You made no observations of any ...

A. I didn't see any, I didn't see any soot and at the time that I did the case, it was my impression that he was dead at the time the fire started. In light of the

4% CO and the carbon in the lungs, it is possible that he did breath a small amount during the fire."

…

[621] Under further questioning Dr Lawrence conceded that he was not adequately qualified to offer an expert opinion about the significance of a level of carbon monoxide between zero and 10 per cent. He also said that he did not inform the prosecutor of his limited level of expertise before giving evidence at the trial. He agreed that the view which he expressed in his evidence on appeal was different from his evidence at the trial.

…

[643] We are satisfied that the evidence enables the following conclusions to be safely drawn:

1. Consistent with the proper concession by the Crown, the evidence of Professor Penney was admissible on the appeal as new evidence (as defined) and is of such quality as to be available for considering as to whether there has been a miscarriage, as was other evidence on the appeal dealing with the same subject matter.

2. Contrary to the way in which the case was put at trial, the evidence before this Court demonstrates that each of the deceased members of the Gilham family were alive when the fire which destroyed the house was lit.

3. Christopher was exposed to the byproducts of fire, including carbon monoxide, for between two and four minutes prior to his death.

4. There is no rationally available, or acceptable, alternative source of carbon monoxide to which Christopher was exposed, and which could account for the level of carbon monoxide in his blood, other than the fire which destroyed the house.

5. There is no evidence, or persuasive inference, which is available to suggest that Christopher could have been exposed for the necessary period (at least two minutes) while downstairs in the house, let alone while supine.

[644] These conclusions contradict two central elements of the Crown case as presented at trial. First, that Christopher was never upstairs, although he may have been briefly on the lower part of the staircase, and second, that each of the members of the Gilham family were killed within five to ten minutes of 3.57 am, as the earliest that the fire could have been started was sometime shortly after 4.15 am, probably around 4.22 am.

[645] By contrast, the applicant's evidence that Christopher was upstairs at the time that he entered the house from the boatshed, and that he was at that time setting his parents alight, provides a plausible explanation for the level of carbon monoxide in Christopher's blood. Whether the new evidence corroborates the applicant's account to the extent that we are satisfied of his innocence is unnecessary for us to determine. What can be said is that the new evidence is in closer conformity to the applicant's exculpatory account than the Crown case theory advanced at trial.

[646] It is inevitable from this that we reach the conclusion that the applicant has lost a fair chance of acquittal, and that a miscarriage of justice has occurred.

The Court in ***Gilham*** raised serious criticisms of the 'expert' evidence adduced in the case and the manner in which it was relied upon in the Crown case. The Crown was in possession of a report provided to the police in 1999 prepared by Professor Cordner. He rejected the proposition that the stab wounds revealed sufficient pattern to support a description of them as similar. In that regard he disputed the conclusions reached by Dr Culliford, Dr Cala and Dr Lawrence.

Professor Cordner prepared a further report (at the request of the applicant's solicitors) for the purposes of the appeal. He had reference to the reports prepared by the other doctors and a copy of the transcript of the Crown Prosecutor's closing address. He was asked to review the materials and provide an objective evaluation of the proposition contended for by the Crown that there was a similar pattern in the wounds sustained by each of the deceased of such significance as to support the conclusion the applicant murdered his parents.

Professor Cordner conducted independent research and concluded there was no distinctive quality to the pattern of the stab wounds to support such a conclusion.

The Court reviewed the authorities relevant to the obligation imposed on a Crown Prosecutor to discharge the function under the rules of professional practice: see [383] to [412]. Importantly, the Court stated that the Crown is simply not entitled to discriminate between experts. In this case there was no proper base to conclude that Professor Cordner was an unreliable witness. The Court held that the failure to call Professor Cordner to give evidence that in his opinion that the analysis of similarities lacked scientific foundation, constituted a miscarriage of justice: [412].

HONEYSETT v R **[2013] NSWCCA 135**

On 5 June 2013 the Court of Criminal Appeal dismissed an appeal challenging the admission of evidence given by Professor Henneberg of common anatomical features he identified. The case involved an allegation of armed robbery by three offenders. Each offender was wearing dark clothes with a "white pillow or T-shirt wrapped around his head". They fled the scene in a stolen Audi RS 4.

The pink handled hammer carried by the First Offender was located at the scene. On analysis, DNA of the same profile as that of the appellant was found with a trace of a second profile. The profile that was consistent with that of the appellant was said to occur in fewer than one in 10 billion individuals in the general population.

The appellant contented that the significance of this evidence was significantly diminished by virtue of the fact that CCTV footage showed the First Offender wearing gloves.

The Audi RS 4 was recovered after the offence. In it was located a white T shirt. DNA of the same profile as the appellant's DNA was found on the neck of the T-shirt. Forensic evidence was adduced that the amount DNA recovered from the T-shirt was inconsistent with secondary transfer. It was expected to occur in fewer than one in 10 billion individuals in the general population.

The evidence of Professor Henneberg was admitted over objection. He compared images on CCTV footage from the Narrabeen Sands Hotel with film and still photographs of the appellant at the police station.

Professor Henneberg identified 8 features that he claimed were common as between the First Offender and the appellant:

- Adult male.
- "Skinny body build".
- Medium body height.
- "*Carries himself straight so that his hips are standing forward while his back is very clearly visible and here's an anatomical term, lumbar lordosis, which means well-bent small of his back, and this is overhung by the shoulder area"*
- Hair was short.
- His head shape was more football than soccer ball.
- The offender was right handed.
- Dark skin colour.

The Court of Criminal Appeal considered a number of cases where evidence of this kind was led. The CCA distinguished the decision in Morgan. In Morgan, Professor Henneberg's evidence was that there was a "high level of anatomical similarity" between the offender and the appellant. In the present case he identified common characteristics without expressing a conclusion.

The CCA did not regard as determinative of the present case the Court's conclusion in Morgan that Professor Henneberg's qualifications did not equip him to express an opinion about the offender's head and face when it was covered because in Morgan it was covered with a balaclava, whereas here it was T-shirt material, fabric that closely adhered to the head, showing the shape of the "skull vault": [59].

The CCA also held it was a matter for the jury to assess the evidence of Professor Henneberg on the one hand and the evidence of Dr Sutisno (called by the Defence) on the other. It was not a case where Professor Henneberg's evidence was clearly groundless and not fit to be left to the trier of fact: [63].

In rejecting Ground 1 on the appeal the Court said:

> *"67 Professor Henneberg's evidence was limited to identifying similarities between the depictions of the offender and the appellant. Contrary to the appellant's contention in Ground 1, this evidence was not to the effect that the offender and the appellant were similar in appearance. Professor Henneberg stated that they had limited, identified characteristics in common, a statement that falls well short of asserting that "the appellant was similar in appearance to one of the offenders"; particularly when he had pointed out to the jury the common sense proposition that there are multifarious respects in which individuals may differ.*
>
> *68 Professor Henneberg's evidence that he did not identify any differing characteristics did not mean that his evidence, taken as a whole, was to the effect that the offender and the appellant were similar in appearance. His evidence, and the CCTV footage itself, would have made it clear to the jury that the clothing of the offender made it very difficult to do more than identify a very limited number of characteristics. Contrary to the appellant's submission (Reply [17]), the jury could not reasonably have interpreted Professor Henneberg's evidence as being that there were "no points of difference" between the individuals. It was obvious from his evidence that he was in no position to express such a view."*

***HONEYSETT v R* [2014] HCA 29**

A special leave application was successful. The application raised a number of questions including whether the area of "body mapping" or "facial mapping", is an area of specialised knowledge and whether the category of evidence referred to as "ad hoc expertise" is accommodated by section 79.

When the case came before the High Court on the appeal, the respondent made a number of concession that necessarily meant a significant change in the nature of the appeal and the subjects it covered. For instance, the respondent conceded that the Professor's area of specialised knowledge was anatomy. Having made that concession the Court was of the view that he did not have to consider the question of whether "body mapping" or "facial mapping" were indeed areas of specialised knowledge.

Another concession of importance made by the respondent was that ad hoc expertise was not being relied upon as a basis for admission of the evidence. This was a significant shift from the reasoning in the Court of Criminal Appeal.

The High Court upheld the decision of the Appeal. In doing so, the Court said:

> *[23]…Specialised knowledge is knowledge which is outside that of persons who have not by training, study or experience acquired an understanding of the subject matter. It may be of matters that are not of a scientific or technical kind and a person without any formal qualifications may acquire specialised knowledge by experience. However, the person's training, study or experience must result in the acquisition of knowledge. The Macquarie Dictionary defines "knowledge" as "acquaintance with facts, truths, or principles, as from study or investigation"[5] (emphasis added) and it is in this sense that it is used in s 79(1). The concept is captured in Blackmun J's formulation[6] in Daubert v Merrell Dow Pharmaceuticals Inc: "the word 'knowledge' connotes more than subjective belief or unsupported speculation. … [It] applies to any body of known facts or to any body of ideas inferred from such facts or accepted as truths on good grounds"[7].*
>
> *[42] The respondent is nonetheless right to say that the appeal does not raise an issue of whether "body mapping" was shown at the trial to constitute an area of*

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5 *Macquarie Dictionary*, rev 3rd ed (2001) at 1054.

6 The formulation stated was with respect to r 702 of the Federal Rules of Evidence. At that time, the rule provided: "If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise."

7 509 US 579 at 590 (1993), cited in *R v Tang* (2006) 65 NSWLR 681 at 712 [138] per Spigelman CJ.

"specialised knowledge"[8]. In light of the concession that Professor Henneberg's specialised knowledge was confined to anatomy, the appeal does not provide the occasion to consider the appellant's larger challenge respecting the requirement of an independent means of validation before an opinion may be found to be based on "specialised knowledge".

[43] Professor Henneberg's opinion was not based on his undoubted knowledge of anatomy. Professor Henneberg's knowledge as an anatomist, that the human population includes individuals who have oval shaped heads and individuals who have round shaped heads (when viewed from above), did not form the basis of his conclusion that Offender One and the appellant each have oval shaped heads. That conclusion was based on Professor Henneberg's subjective impression of what he saw when he looked at the images. This observation applies to the evidence of each of the characteristics of which Professor Henneberg gave evidence.

[45] Professor Henneberg's evidence gave the unwarranted appearance of science to the prosecution case that the appellant and Offender One share a number of physical characteristics[9]. Among other things, the use of technical terms to describe those characteristics – Offender One and the appellant are both ectomorphic – was apt to suggest the existence of more telling similarity than to observe that each appeared to be skinny.

[46] Professor Henneberg's opinion was not based wholly or substantially on his specialised knowledge within s 79(1). It was an error of law to admit the evidence.

[48]…Whether the New South Wales Court of Criminal Appeal is right to consider that the repeated listening to an indistinct tape recording or viewing of videotape or film may qualify as an area of specialised knowledge based on the listener's, or viewer's, experience does not arise for determination in this appeal[10]. The respondent acknowledged that Professor Henneberg had not examined the CCTV footage over a lengthy period before forming his opinion. In this Court, the respondent does not maintain the submission that Professor Henneberg's opinion was admissible as that of an ad hoc expert.

SECTION 137

The NSW CCA has repeatedly stated that issues of reliability and credibility are, in the usual course, not relevant to the assessment of probative value. In ***Regina v Shamouil*** [2006] NSWCCA 112, it was held that the focus when considering the term "probative value" is on *capability,* drawing attention to what is *open* for the tribunal of fact to conclude rather than what it is *likely* to conclude. The Court went

[8] See *R v Gray* [2003] EWCA Crim 1001; *R v Gardner* [2004] EWCA Crim 1639; *R v Tang* (2006) 65 NSWLR 681; *Murdoch v The Queen* (2007) 167 A Crim R 329; *R v Atkins* [2010] 1 Cr App R 8; *Morgan v The Queen* (2011) 215 A Crim R 33; *Otway v The Queen* [2011] EWCA Crim 3; *Shepherd v The Queen* [2012] 2 NZLR 609.

[9] *HG v The Queen* (1999) 197 CLR 414 at 429 [44] per Gleeson CJ; *Morgan v The Queen* (2011) 215 A Crim R 33 at 61 [145] per Hidden J.

[10] *R v Tang* (2006) 65 NSWLR 681 at 709 [120], referring to *Butera v Director of Public Prosecutions (Vict)* (1987) 164 CLR 180; *R v Leung* (1999) 47 NSWLR 405 and *Li v The Queen* (2003) 139 A Crim R 281.

on to say that there may be some limited circumstances where credibility and reliability will be relevant in determining probative value:

> *[56] That there may be some, albeit limited, circumstances in which credibility and reliability will be taken into account when determining probative value was indicated by Simpson J in **R v Cook** [2004] NSWCCA 52 in which evidence of flight was sought to be excluded under s137. Her Honour said:*
>
> *"[43] … I am satisfied that it is not the role of a trial judge in NSW, under the Evidence Act, to make a finding of fact about the actual reasons for flight where such evidence is given on behalf of the Crown. That remains the province of the jury. The role of the judge in NSW, at least post-1995, is merely to determine the relative probative value against the danger of unfair prejudice that might result. In saying this, I do not mean to lay down a blanket rule that, in considering evidence on a voir dire in which the issue is the admissibility of evidence having regard to s137, there is never any room for findings concerning credibility. There will be occasions when an assessment of the credibility of the evidence will be inextricably entwined with the balancing process. That means that particular caution must be exercised to ensure that the balancing exercise is not confused with the assessment of credibility, a task committed to the jury. There may, for example, be occasions on which the accused's response is so preposterous as to give rise to the conclusion that it could be accepted by no reasonable jury. The credibility exercise, in those circumstances, is to determine whether the evidence given by (or on behalf of) the accused is capable of belief by the jury. If it is, then its prejudicial effect must be considered. If it is not, then the balancing exercise may well result in an answer favourable to the Crown. That is essentially because any prejudice arising to an accused from putting a preposterous explanation to the jury would not be unfair prejudice."*
>
> *[63] There will be circumstances, as envisaged by Simpson J in Cook supra, where issues of credibility or reliability are such that it is possible for a court to determine that it would not be open to the jury to conclude that the evidence could rationally affect the assessment of the probability of the existence of the fact in issue. In that limited sense McHugh J's observations in Papakosmas that "considerations of reliability are necessarily involved" have application.*

It was not made entirely clear as to the circumstances, *limited as they are*, where issues of credibility and reliability are relevant to determining probative value.

In ***Dupas v The Queen*** [2012] VSCA 328, a five-judge bench of the Victorian Court of Appeal, in a judgement of the Court handed down in December, rejected the approach taken by the NSW CCA in *Shamouil* ((2006) 66 NSWLR 228 to the consideration of an application pursuant to s 137 of the ***Evidence Act*** that evidence be rejected because its probative value is outweighed by the danger of unfair prejudice. The Victorian Court of Appeal found that Spigelman CJ was correct in finding that the legislative intent behind s 137 was to replicate the

common law test ("the *Christie* direction"; *Christie* [1914] AC 545), but that his Honour erred in purporting to re-state what that test was at [49]:

> *"Before the Evidence Act the Christie discretion to exclude evidence at common law for which s 137 is a replacement, did not involve considerations of reliability of the evidence*."

In ***Dupas***, the Court of Appeal said:

> *68 With great respect to Spigelman CJ, however, the analysis in Shamouil is founded on a misapprehension of the role of the judge under the common law test. From its inception as a discretionary rule, it has always been necessary when the Christie discretion was invoked for a trial judge to have regard to the reliability of the evidence. The judge was to assess what weight it might reasonably be given. As we shall seek to show, the approach adopted in Shamouil, and followed subsequently, has not preserved but has materially altered the relationship between trial judge and jury. By divesting the trial judge of a power that had previously existed, a safeguard was removed that is critical to the avoidance of miscarriages of justice and to ensuring that the accused has a fair trial. Hence it is to the common law that we first turn.*

The Court proceeded to review a number of cases where the Christie discretion was considered in the context of identification cases to demonstrate that judges routinely considered the weakness or inherent unreliability of such evidence: [69-114].

The Court referred to the joint judgment of Brennan, McGregor and Lochardt JJ in ***Duff v The Queen*** (1979) 39 FLR 315, where it was stated that the Christie discretion to reject admissible evidence of identification 'requires an evaluation by the trial judge of the probative force which a jury might reasonably attribute to the evidence if it be admitted' [at 84].

In ***R v Tugaga*** (1994) 74 A Crim R 190, Hunt CJ at CL, at 193 (with whom Gleeson CJ and Abadee J agreed) referred to the right of a trial judge to exclude identification evidence in the exercise of discretion, on the basis that "by reason of its poor quality its probative value is outweighed by its prejudicial effect' (Dupas at [94]).

The object of the discretion was not to deny the jury probative evidence but to prevent the jury's exposure to evidence which, because of its doubtful reliability,

the jury might attach more weight than it deserved.[11] In analysing the way in which the discretion was applied the Court in Dupas said (at [78]):

> "*When the unfair prejudice was said to be a risk that the jury would attach undue weight to the impugned evidence, the trial judge was required to evaluate what weight could reasonably be assigned to that evidence, in order to assess whether there was such risk. That called for some assessment of the reliability and quality of the evidence, matters ordinarily viewed as being separate and distinct from the credibility of the witness from whom the evidence was to be elicited"*

The unmistakable legislative intent is that the test under s 137 should continue to be informed by, and applied in conformity with, its common law origins. ***R v Christie*** transformed the practice of not admitting certain types of evidence into a discretionary rule of exclusion, to be exercised where the accused would be prejudiced. In ***Dupas,*** the Court noted, at [71]

> *"The practice concerned admissible evidence which was viewed by the trial judge as having 'little value in its direct bearing upon the case' but might "operate seriously to the prejudice of the accused'. The rule was intended to enable the exclusion of evidence that had little evidential value but might affect the minds of the jury and so seriously prejudice the fairness of the trial."*

In Dupas, the Court expressed the following conclusions (a*t para 63):*

> *63 For the following reasons, we are compelled to the view that Shamouil and the other decisions that have applied it are manifestly wrong and should not be followed. We are compelled to the conclusion that we should depart from the reasoning and conclusion in Shamouil as error can be demonstrated with a degree of clarity by the application of the correct legal analysis.[9] Our conclusions are as follows:*
>
> *(a) The common law did require the trial judge, in assessing probative value, to evaluate the weight that the jury could rationally attach to the evidence. The contrary conclusion was inconsistent with a continuous line of High Court authority.*
>
> *(b) The legislative intention, as disclosed by the language of s 137 and its context, is that the task under s 137 is the same as that at common law.*
>
> *(c) The trial judge undertaking the balancing task is only obliged to assume that the jury will accept the evidence to be truthful but is not required to make an assumption that its reliability will be accepted. The phrase 'taken at its highest' is more appropriately used in considering a no case submission, when the judge must accept that the jury may find the evidence credible and reliable.*
>
> *(d) In order to determine the capacity of the evidence rationally to affect the determination of a fact in issue, the judge is required to make some assessment of the weight that the jury could, acting reasonably, give to that evidence. Where it is*

[11] Dupas at [76]

contended that the quality or frailties of the evidence would result in the jury attaching more weight to the evidence than it deserved, the trial judge is obliged to assess the extent of the risk. That does not require the trial judge to anticipate the weight that the jury would or will attach to it. The judge is obliged to assess what probative value the jury could assign to the evidence, against which must be balanced the risk that the jury will give the evidence disproportionate weight.

(e) So to construe s 137 accords with the language of the statute and its context. To construe it otherwise does not.

(f) Such a construction does not involve any enlargement of the powers of a trial judge or any encroachment upon the traditional jury function.

R v XY **[2013] NSWCCA 121**

In ***R v XY*** [2013] NSWCCA 121 the New South Wales Court of Criminal Appeal considered the conflict in the authorities and sat a bench of five to do so.

Basten JA decided at [65] that there was "no compelling reason to depart from the general approach accepted in *Shamouil*". His Honour was of the view that "it was doubtful as to how far *Dupas* departed from the principles stated in *Shamouil*, read in context".

On the other hand, Simpson J considered that the two decisions were "in sharp conflict" (at [97]). At [160]-[161] her Honour set out the position of the two courts:

"What this Court said in Shamouil was:

"60 The preponderant body of authority in this Court is in favour of a restrictive approach to the circumstances in which issues of reliability and credibility are to be taken into account in determining the probative value of evidence for purposes of determining questions of admissibility. There is no reason to change that approach.

...

64 To adopt any other approach would be to usurp for a trial judge critical aspects of the traditional role of a jury. In the case of evidence of critical significance, such a ruling by a trial judge would, in substance, be equivalent to directing a verdict of acquittal on the basis that the trial judge was of the view that a verdict of guilty would be unsafe and unsatisfactory. As the High Court said in that different, but not irrelevant, context in Doney v The Queen [[1990] HCA 51] [1990] HCA 51; 171 CLR 207 at 275, this is not a permissible 'basis for enlarging the powers of a trial judge at the expense of the traditional jury function'. In my opinion, the same is true if a trial judge can determine the weight of evidence when applying s 137."

What the Victorian Court of Appeal said in Dupas was encapsulated in para [63], set out below:

> *"For the following reasons, we are compelled to the view that Shamouil and the other decisions that have applied it are manifestly wrong and should not be followed. We are compelled to the conclusion that we should depart from the reasoning and conclusion in Shamouil as error can be demonstrated with a degree of clarity by the application of the correct legal analysis ... Our conclusions are as follows:*
>
> *(a) The common law did require the trial judge, in assessing probative value, to evaluate the weight that the jury could rationally attach to the evidence. The contrary conclusion was inconsistent with a continuous line of High Court authority.*
>
> *(b) The legislative intention, as disclosed by the language of s 137 and its context, is that the task under s 137 is the same as that at common law.*
>
> *(c) The trial judge undertaking the balancing task is only obliged to assume that the jury will accept the evidence to be truthful but is not required to make an assumption that its reliability will be accepted. The phrase 'taken at its highest' is more appropriately used in considering a no case submission, when the judge must accept that the jury may find the evidence credible and reliable.*
>
> *(d) In order to determine the capacity of the evidence rationally to affect the determination of a fact in issue,* ***the judge is required to make some assessment of the weight that the jury could, acting reasonably, give to that evidence****. Where it is contended that the quality or frailties of the evidence would result in the jury attaching more weight to the evidence than it deserved, the trial judge is obliged to assess the extent of the risk. That does not require the trial judge to anticipate the weight that the jury would or will attach to it. The judge is obliged to assess what probative value the jury could assign to the evidence, against which must be balanced the risk that the jury will give the evidence disproportionate weight.*
>
> *(e) So to construe s 137 accords with the language of the statute and its context. To construe it otherwise does not.*
>
> *(f) Such a construction does not involve any enlargement of the powers of a trial judge or any encroachment upon the traditional jury function."*
>
> [The emphasis was included by Simpson J]

Her Honour referred to her earlier judgments in *R v Cook* [2004] NSWCCA 52, *R v Mundine* [2008] NSWCCA 55, *R v Fletcher* [2005] NSWCCA 338 and her concurrence in *R v Shamouil* itself. Her Honour adhered to her earlier stated views.

Hoeben CJ at CL said (at [86]-[89]):

"In relation to s137 of the Evidence Act 1995, subject to the following observations, I agree with Basten JA and Simpson J that when assessing the probative value of the prosecution evidence sought to be excluded, the Court should not consider its credibility, reliability or weight. I specifically adopt what was said by Basten JA at [66] - [67].

Accordingly, I agree that the Courts of NSW should follow R v Shamouil [2006] NSWCCA 112; 66 NSWLR 228 when applying s137 of the Evidence Act 1995.

Where I differ from their Honours is as follows. When assessing the probative value of the prosecution evidence sought to be excluded, i.e., its capacity to support the prosecution case, a court can take into account the fact of competing inferences which might be available on the evidence, as distinct from determining which inference or inferences should be or are most likely to be preferred. It was that to which the court was referring in DSJ v R; NS v R [2012] NSWCCA 9 at [10] (Bathurst CJ); [11] (Allsop P) and [78] (Whealy JA)."

Here, as Basten JA, Blanch and Price JJ have pointed out, there were alternative inferences available which were inconsistent with the prosecution case and which were objectively plausible. That is a matter which can properly be taken into account when carrying out the balancing exercise required by s137 to determine whether the probative value of the evidence is outweighed by its prejudicial effect."

Blanch J provided a helpful summary of the authorities at [189]-[204] without ever referring to the decision in *Dupas*. At [201]-[202] Blanch J noted with apparent approval the approach taken by Bathurst CJ and Whealey JA in *DSJ v R; NS v R* [2012] NSWCCA 9 at [201]-[203]:

"In assessing the probative value of evidence in DSJ v R; NS v R [2012] NSWCCA 9 Bathurst CJ said at [10]:

> *"However, as Whealy JA has pointed out (at [78]-[81]), the trial judge in forming a view as to whether the evidence has significant probative value must consider by reference to the evidence itself or other evidence adduced or to be adduced by the party tendering it, whether there is a real possibility of an alternate explanation inconsistent with (in this case) the guilt of the party against whom it is tendered."*
>
> *(Allsop P agreed with that comment at [11]).*

At [78] Whealy JA said:

> *"... the trial Judge must ask whether the possibility of such an alternative explanation substantially alters his (or her) view as to the significant capacity of the Crown evidence, if accepted, to establish the fact in issue. Does the alternative possibility, in the Judge's view, rob the evidence of its otherwise cogent capacity to prove the Crown's case? If it does not, the trial judge may safely conclude that the evidence has significant probative value."*

> The judgment of Whealy JA was endorsed by Bathurst CJ, Allsop P, McClellan CJ at CJ and McCallum J."

Price J said at [224] that it was unnecessary to consider the conflict in the authorities but said at [225]:

> *"In my opinion, the approach taken in Dupas does much to avoid evidence being before a jury which in reality (rather than being taken at its highest in favour of the Crown) has little probative value and is outweighed by the danger of unfair prejudice to the accused."*

In ***R v Burton*** [2013] NSWCCA 335 Simpson J observed that *DSJ v R* was decided under s 98 of the *Evidence Act* (and not s 101 or s 137) and held at [181] that it "does not necessarily follow that the identical approach must be taken with respect to contentious evidence where objection is taken under s 137". Her Honour noted at [183] the three steps required by s 137 and at [184] held that the "exercise required by s 98 is different". As to the decision in *XY*, Simpson J decided at [194]:

> *"Accordingly, by a majority (Basten JA, Hoeben CJ at CL and myself, Blanch J not expressly deciding, Price J contra) the Court decided that trial judges in NSW should continue to disregard questions of credibility, reliability and weight in dealing with the admission of evidence challenged under s 137. However, Hoeben CJ at CL and Blanch J further considered that the existence of "competing inferences" (or alternative interpretations) was relevant to the assessment of probative value.*

It was on the basis of the views expressed by Hoeben CJ at CL and Blanch J that the primary Judge based his ruling. Simpson J held that this was wrong and the decision was overturned. Her Honour concluded the discussion on s 137 as follows at [196]-[197]:

> *"I am unable to accept that the existence of "competing inferences" available to be drawn from (or alternative interpretations of) the proposed prosecution evidence has any part to play in the assessment of probative value for the purpose of s 137 of the Evidence Act. That is because of the different exercise required by (for example) s 98, and s 137. Section 98 requires an assessment of the significance of the probative value of the evidence tendered as coincidence evidence in the context of the whole of the case of the tendering party. That is why, in DSJ, it was held that the existence of alternative explanations could have a bearing on the significance of the probative value of the evidence.*
>
> *Section 137 requires assessment of the probative value of the evidence without regard to other evidence in the Crown case (s 137 applies only to evidence*

tendered by the prosecution) but balanced against the danger of any unfair prejudice."

PRACTICAL CONSIDERATIONS WHEN CROSS-EXAMINING EXPERT WITNESSES

The preparation for cross-examination of expert evidence requires the practitioner to become conversant in the area of specialised knowledge claimed by the expert witness. Such preparation is time consuming and requires painstaking attention to detail. The practitioner should be familiar with the recent literature relevant to the topic. Ideally an expert should be retained to explain the subject matter and to provide an opinion about alternative hypotheses.

If there is to be a challenge to the expertise of a particular witness, the practitioner must verify the information contained in the curriculum vitae. In some cases cross-examination of the expert witness at a committal proceeding is useful in determining the witness' expertise.

There is a relatively small number of expert witnesses giving evidence in criminal trials. Many have given evidence in other proceedings. A useful tool in cross-examination can be the transcript of evidence given by the same witness in earlier proceedings about the same/similar subject.

Preparation also involves obtaining access to material referred to and relied upon by the witness to form the opinion expressed. The subpoena is a useful tool in this regard. In a DNA case, for example, it may be helpful to have access to the following materials:[12]

- The DAL case file including any electronic file relevant to the case;
- Any other documents, including calculations, notes and reports prepared in connection to the investigation;
- All emails and other correspondence in connection to the investigation of the case;

[12] These items were suggested by Richard Wilson, Public Defender.

- Forensic biology methods manuals on the processing, interpretation and reporting of DNA evidence;

Gary Edmonds has written extensively on the topic of expert evidence and the importance of assessing reliability when considering admissibility. He has suggested a number of indicia of reliability that can sharpen the focus of the cross-examination and may bear upon the judge's assessment of the admissibility of the evidence. The indicia of reliability are reproduced here:[13]

- What is the error rate—for the technique, as well as the equipment and practitioner?

- Has the technique or theory been applied in circumstances that reflect its intended purpose or known accuracy? Departures from established applications require justification.

- Does the technique or opinion use ideas, theories, and equipment from other fields? Would the appropriations be acceptable to those in the primary field?

- Has the technique or theory been described and endorsed in the literature? This should include some consideration of where and by whom and with what qualifications.

- Is the reference in the literature substantial or incidental? Is it merely the author's opinion or something more?

- Has the publication, technique, or opinion undergone peer review? Logically, peer acceptance of techniques and theories should take priority over peer review of individual results or applications. Where the reliability of a technique is unknown, positive peer review may be (epistemologically but not sociologically) meaningless.

- Is there a substantial body of academic writing approving the technique or approach?

[13] Supra n 2 at p 43

- To what extent is the technique or theory accepted? Is the technique or theory only discussed in forensic scientific and forensic medical circles? In assessing the extent of acceptance, the judge should consider what evidence supports acceptance—opinions based on personal impression or hearsay and incidental references in the relevant literature may not be enough to support claims about wide acceptance. The fact that support comes from earlier judgments rather than scientists or scientific, technical, and biomedical publications will usually be significant.

- Is the expert merely expressing a personal opinion (ipse dixit)? To what extent is the expert evidence extrapolation or speculation? Is the expert evidence more than an educated guess? Is this clearly explained?

- Does the expert evidence actually form part of a field or specialization? Judges should not be too eager to accept the existence of narrow specializations or new fields based on limited research and publication.

- Does the evidence go beyond the expert's recognized area of expertise?

- In determining the existence of a field or specialization, it may be useful to ascertain whether there are practitioners and experts outside the state's investigative agencies. If so, what do they think?

- Is the technique or theory novel? Does it rely on established principles? Is it controversial?

- Is the evidence processed or interpreted by humans or machines? How often are they tested or calibrated?

- Does the evidence have a verification process? Was it applied? Were protocols followed?

- Is there a system of quality assurance or formal peer review? Was it followed?

- To what extent is the expert evidence founded on proven facts (and admissible evidence)?
- Has the expert explained the basis for the technique, theory, or opinion? Is it comprehensible and logical?
- Has the expert evidence been tainted or influenced by inculpatory or adverse information and opinions? Did the expert have close contact with the investigators or were they formally and substantially independent?
- Has the expert made serious mistakes in other investigations or prosecutions? Has the expert been subjected to adverse judicial comment?
- Does the expert invariably work for the prosecution (or defence)?
- Are the techniques or conclusions based on individual case studies or more broadly based and statistical approaches such as epidemiology and meta-analysis?
- How confident is the expert? Does the expert express high levels of confidence or quantify certitude in the absence of validation and accuracy studies?
- Is this a feature of his or her regular practice?
- Is the expert willing to make concessions?
- How extensive is the expert's education, training, and experience? Are they directly relevant?

CONCLUSION

The probative value of scientific evidence can be very compelling. Where the science is valid and the expert opinion based on established and peer reviewed scientific foundation, there is legitimate basis for its admission into evidence.

However, there has to be rigorous testing of the basis of the 'expertise' and the 'expert' opinion proffered.

> '*Imposing a reliability standard will help to extricate judges from the responsibility for wrongful convictions, enable the courts to regulate their own processes, and prevent police, investigators and experts from presenting unfounded claims, educated guesses, speculation, and unadulterated prejudice as credible scientific or medical knowledge'.*[14]

Judge D Yehia SC

[14] Supra n 1 at p50