SVENSON BARRISTERS

CROSS-EXAMINING EXPERT WITNESSES

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Contents

> *'I started this project with no preconceived views about the forensic science community. Rather, I simply assumed, as I suspect many of my judicial colleagues do, that forensic science disciplines typically are well-grounded in scientific methodology and that crime laboratories and forensic science practitioners follow proven practices that ensure the validity and reliability of forensic evidence offered in court. I was surprisingly mistaken …'*
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> H. Edwards, 'Solving the Problems That Plague the Forensic Science Community' (2009) 50 *Jurimetrics Journal* 5, 8.

Introduction

1 Much has been written about the complexity of cross-examination. This complexity arises because you must engage in cross-examination with purpose. This might be to elicit admissions or concessions; discredit or undermine the evidence-in-chief; obtain material to establish the credibility of another; or elicit material for use in your closing address. This entails not only mastery of the witness' evidence but also a case theory based on your brief.

2 As there is no "golden rule book" on how to cross-examine a lay witness, the same applies to the cross-examination of an expert witness. This paper (and accompanying presentation) attempts to sketch an outline of how you might develop your cross-examination and to provide you with the confidence to challenge the opinions of an expert.

3 Importantly, although it is oft-said that in cross-examining an expert, you must become an expert yourself, this saying does not always hold true. While you are duty-bound to have a mastery of your brief before cross-examining any witness, there are other pathways available to challenge an expert rather than going toe-to-toe on a topic, which may be the subject-matter expertise of an expert witness.

A case study

4 In early 2017, the defendant, a sober and otherwise attentive driver, was driving home after buying some groceries. The road was straight, and the conditions were good. It was early evening, so he had his lights on low beam but was also assisted with street lights. Suddenly, the driver hit something. He slowed his car and turned around to find the lifeless body of a pedestrian.

5 Behind the defendant was another driver. He confirmed that the defendant's car was travelling at the speed limit, with his lights on and driving straight. He saw what he thought was a pedestrian in mid-air in proximity to the left side of the defendant's car. He confirmed that the brake lights of the defendant's car only activated after he saw the pedestrian in the air.

6 On the roadside, the defendant was interviewed and explained that he was looking straight ahead, and while he might have momentarily checked his speed, his eyes did not otherwise leave the road.

7 The prosecution obtained an expert report which supported the irresistible inference that the defendant was not paying sufficient attention to the road because, if he had been, the defendant would not have missed the pedestrian walking directly in front of him.

8 Based on detailed lux (light) readings from both the defendant's car and the relevant area of the road, coupled with the pedestrian's clothing and his pace, it was calculated that from the moment that the pedestrian stepped foot in the defendant's lane, the defendant's car would have been anywhere between 75 and 123 metres away. Based on a "generous" reaction time of 2.9 seconds and giving the defendant every "due allowance", the car should have stopped eight metres short of the pedestrian. Even allowing for a more significant reaction time, the defendant should have been able to manoeuvre his car around the pedestrian easily. It was calculated that the pedestrian was walking in the defendant's lane for between 4.5 to 7.4 seconds before he was struck. Readings, calculations and numerous research papers supported the expert's opinion.

9 The defendant's instructions were consistent with his roadside interview. Before the first trial and unbeknown to the prosecution, the defence engaged an expert to provide advice on the prosecution's report. The defence expert concluded that the police had done a thorough and professional job and that he agreed with their findings.

10 The first trial resulted in a hung jury. Immediately afterwards, the prosecution embarked upon their quest to patch every hole that was pocked in their case during the first trial. Out of desperation, the defence engaged another expert. His findings were broadly consistent with the prosecution's expert, but he could point to several things that, on a good day, could be used to rustle up some doubt. The defence expert could provide no advice or assistance in relation to any flaws in the findings of either prosecution expert. However, somewhat flippantly, the defence expert, when pressed, advised (in

conference): "well, the last thing I can think of is if the prosecution's expert misused the light sensor and pointed the sensor vertically (i.e., towards the street light) rather than horizontally". The chances of this mistake, however, were "next to zero". This is because the device had a sensor on it, which had to be operated "like a pair of eyes and used on the same plane as the defendant from his vantage point". In other words, if the defendant were sitting in his car looking down the road, he would have been looking on the horizontal plane as opposed to the vertical plane.

11 The prosecution expert was then cross-examined on this topic. Starting with the "headlight mapping" document, which measured in lux readings the area in front of the car when the low beams were on, the prosecution expert was asked:

> "When you did the headlight mapping, how did you hold the device, do you remember?---The device is placed on the – on the ground, face – face – facing the vehicle.
>
> Therefore the sensor is looking horizontally. It's taken a horizontal plane?---It's – no, level – level with the ro – road surface, facing the vehicle."

12 This was the correct way to use the device.

13 The prosecution expert was then asked about the "street light mapping" of the road:

> "And how did you operate the light meter? Which way was it facing?---The light meter is – is on – was on the ground, facing upwards.
>
> Okay?---The illumination is from overhead street lighting so the device is on the ground facing upwards towards that illumination.
>
> And that, of course, if you just go back to the testing you did of the headlights, that's different to what you did for the headlights?---Yeah. Well, you're – you're facing the light meter towards where the illumination is coming from.
>
> So with the headlight, in effect, your device was placed on the ground, but the sensor was pointing in a horizontal direction - - -?---Yes.
>
> - - - as opposed to, on this occasion, it was laying flat on the ground and going straight up in a vertical direction?---Yes.
>
> Is that how you've been trained to use the light meters?---Well, yeah. Yep. Yes.
>
> And if I suggested, in relation to the way in which you took the measurements on this occasion – so this being at the scene, that you, in fact, were in error. You should have still faced the device so the sensor was facing horizontally. Do you agree or disagree with that?---I would disagree with that. I'm – I'm not – I'm not aware. I'm – I'm not aware of placing in – in that – in that fashion.

> And that is to capture, perhaps, the line of sight, in this case of [the defendant], and to give an indication of his view of the lighting, rather than a bird's-eye view. Do you still disagree?---I'm – I'm capturing the ambient light that is – that is in – that is in the area at – at the time.
>
> And in your opinion, is the light that's projected downwards that you can see, as opposed to horizontally, the same?---Sorry, are you - - -
>
> Sorry - - -?--- - - - you're referring to headlights, as opposed to overhead lights?
>
> No, no. Not – just any lights. Any lights. So if you've got the streetlight, that's shining down. If someone stood above the streetlight and looked down, is that the same measure of light as somebody looking through the light horizontally?---I don't know that I could answer."

14 The prosecution's expert explained that he had been using the device in this way for all of his career, and not only was this how he was trained to use the device, but he also trained others to use the device in this way. His report was also peer reviewed. The net result was that rather than being able to read the fine print from the classifieds under the street light, you would not have been able to read the headline off the front page (nor see the pedestrian). One simple mistake unravelled an otherwise strong, professional and expensive investigation.

15 The defence expert confidently explained to the jury the correct way in which the device should have been used and described the way the prosecution's expert used the device as "potentially very misleading, actually". The poor lighting made the inexplicable explicable, and the jury did not waste much time before acquitting the defendant.

16 The lesson of this case analysis is that even the best of experts can make basic mistakes.

Expert evidence and the law

17 Expert evidence, as Heydon J said in *Dasreef Pty Ltd v Hawchar* (2011) 243 CLR at [90], "is a bridge between data in the form of primary evidence and a conclusion which cannot be reached without the application of expertise."

18 Section 76(1) of the *Evidence Act 2008* (Vic) (**Act**) provides that "[e]vidence of an opinion is not admissible to prove the existence of a fact about the existence of which the opinion was expressed". The opinion rule is subject to a number of exceptions.

19 Section 79 of the Act provides:

> **79 Exception—opinions based on specialised knowledge**

> (1) If a person has specialised knowledge based on the person's 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.
>
> …

20 For an opinion to be considered as "expert", it must be established, on the balance of probabilities (s 142), that the opinion is wholly or substantially based on specialised knowledge based on her training, study or experience. It should be noted that there is no room for reading in a test of evidentiary reliability as a condition of admissibility.[1]

21 An opinion must also satisfy the "factual basis" rules.[2]

22 *Assumption identification rule*: are the "facts" and "assumptions" on which the expert's opinion is founded disclosed?[3] This rule helps to distinguish between:

a) what the expert has observed and what the expert has been told;

b) to ensure that the expert is basing the opinion only on relevant facts;

c) to ensure that experts do not pick and choose for themselves what aspects of the primary evidence they reject, what they accept, how they interpret it and what the court should find; and

d) to ascertain whether there is substantial correspondence between the facts assumed and the evidence admitted to establish such facts.

23 *Proof of assumption rule*: is there evidence admitted, or to be admitted before the end of the tendering of the party's case, capable of proving matters sufficiently similar to the assumptions made by the expert to render the opinion of value?[4] This rule highlights:

a) the irrelevance of expert opinion evidence resting on assumptions not backed by primary evidence;

b) that an expert opinion may change (or have reduced weight) if assumed facts are proven to be incomplete or inaccurate; and

c) that if the expert's conclusion does not have some rational relationship with the facts proved, it is irrelevant.

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1 *Honeysett v The Queen* (2014) 253 CLR 122, 131-2 [23]; *Tuite v The Queen* (2015) 49 VR 196, 217 [70]; *Lithgow City Council v Jackson* (2011) 244 CLR 352.

2 *Makita (Australia) Pty Ltd v Sprowles* (2001) 52 NSWLR 705, 743-44 [85].

3 *Bugg v Day* (1949) 79 CLR 442, 452 (Dixon J).

4 *Dasreef Pty Ltd v Hawchar* (2011) 243 CLR 588, 631 [109] (Heydon J).

24 *Statement of reasoning rule*: is there a statement of reasoning showing how the "facts" and "assumptions" relate to the opinion stated to reveal that that opinion is based on the expert's specialised knowledge?[5] This rule highlights that:

a) the evidence must reveal the expert's reasoning – how the expert used expertise to reach the opinion stated – because without such a statement it is not possible to say whether the opinion is wholly or substantially based on the specialist knowledge claimed;

b) a statement of reasoning permits such conclusions to be tested by the cross-examiner; and

c) an expert opinion, through a statement of reasoning, must assist a jury (i.e., have utility) in assessing and understanding the evidence presented at trial.

25 These three factual basis rules also provide pathways to attack an expert opinion.

Duty to the court and the Practice Note

26 The common law provides for the duties and responsibilities of expert witnesses. These matters include that expert evidence must be independent of allegiance to any party, must never assume the role of an advocate, must assist the court through objective unbiased opinion, make clear the facts or assumptions underpinning an opinion, and outline the limits of expertise and an opinion.[6]

27 In Victoria, the practice note on expert evidence in criminal trials came into force on 1 July 2014 and was subsequently amended in 2017 (**Practice Note**).[7] It includes detailed specifications as to the content of expert reports but is otherwise concerned with procedural matters and does not address evidentiary reliability. There are also several other practice notes that regulate expert evidence.[8]

28 The purposes of the Practice Note include enhancing the quality and reliability of expert evidence. Importantly, while the Practice Note does not purport to create any new duties, it emphasises that an expert's overriding duty is to the assist the court.

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5 *Dasreef Pty Ltd v Hawchar* (2011) 243 CLR 588, 622-24 [91]-[94] (Heydon J).
6 *Makita (Australia) Pty Ltd v Sprowles* (2001) 52 NSWLR 705, 739-40 [79].
7 Supreme Court of Victoria Practice Note SC CR 3 – *Expert Evidence in Criminal Trials Practice Note*.
8 Supreme Court Rules Order 44 and Form 44A; County Court Practice Note PNCR 1-2014 (Expert Evidence in Criminal Trials); County Court Practice Note PNCR 1-2015 s 20 (Code of Conduct for Expert Witnesses); Federal Court Practice Note CM7 (Expert Witnesses in the Federal Court).

29 The Practice Note also sets out procedural requirements for all expert reports in criminal trials, regardless as to what issue the opinion is directed. This requirement also includes that an expert must disclose the existence of any disagreement or controversy within the relevant field of specialised knowledge which is directly relevant to the opinion.[9]

30 Furthermore, in relation to other procedural matters, the Practice Note mandates that a party who commissioned the expert report must provide any other party on request with copies or access to material provided to the expert. Finally, the Practice Note reinforces the time honourable principle that there is no property in a witness.[10]

Concurrent evidence

31 Part 13 of the Practice Notes sets out procedures for the giving of consecutive or concurrent evidence.

32 Concurrent evidence generally permits a more structured discussion amongst experts. In particular, this mode of giving evidence avoids the conventional (and, possibly, false) claim that an adversarial trial is both the best procedure to understand and test expert evidence.[11]

33 This ***may*** have multiple benefits to a jury[12]:

a) evidence on a single topic would be given at the same time, rather than such evidence being split and repeated multiple times.

b) where an expert agrees with a matter, there would be less of a need for repetition and a jury's time and attention is not wasted.

c) it *may* be expected that the experts would act in a less adversarial manner and may express a more nuanced opinion.

34 There are, however, multiple disadvantages:

a) the prosecution's experts are able to comment and, possibly, contextualise the opinion of defence experts during concurrent evidence.

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9 *Practice Note*, [6.2].

10 *Harmony Shipping Co v Saudi Europe Line* (C.A.) [1979] 1 WLR 1380.

11 Gary Edmond, 'Forensic science and the myth of adversarial testing' (2020) 32(2) *Current Issues in Criminal Justice* 146, 147.

12 Ian Freckelton QC et al, *Expert Evidence and Criminal Jury Trials* (Oxford University Press, 2016) 56.

b) there is less control over a witness giving evidence because of the way in which questions are posed to each expert in turn.

c) experience has shown that an expert who has a (so-called) "softer" personality or less experience may be more likely to agree with a more senior expert or one who has a (so-called) "stronger" personality.

d) it is often very difficult to challenge the expertise, reasoning, methodology, and facts and assumptions of an expert report when witnesses are being cross-examined concurrently. There is always a risk that you might undermine your own witness's opinion.

e) issues of credit rarely arise. If so, then it may be necessary to deal with this topic prior to the concurrent evidence.

Where to start your preparation

35 Before cross-examining an opponent's expert, request particulars of the evidence the prosecution intends to lead and insist on a level of precision. Not all of the expert's evidence is admissible and before you embark upon your expedition to have some of it excluded, find out whether the prosecution even intends to lead it.

36 Request disclosure of all notes, the witness' curriculum vitae, their published papers, the letter of instructions, and all communication between the prosecution and the witness together with the evidence that was provided to the witness. If the witness relied on papers written by other authors, then request them or obtain them yourself. On the last suggestion, there could be a tactical advantage in sourcing the papers yourself in that your preparation would be masked from the witness. It might surprise you that some experts have not thoroughly read the papers or have taken a finding out of context.

37 Since there is no property in a witness, obtain instructions for you to confer with the witness. You will usually find that the most professional and highly regarded experts are comfortable listing the concessions they are willing to make or detailing the shortfalls in their opinions. It also allows you the opportunity to gauge how they will present and develop a rapport that will allow for the cross-examination to be efficiently polished. Unwarranted hostility can be the hallmark of either conscious or subconscious bias or the product of doubt or insecurity.

38 Your cross-examination can be loosely grouped into two different areas – pre-trial cross-examination and trial cross-examination. There are of course exceptions to this grouping. The reason why a line is pencilled in between both approaches is that the former approach is usually designed to challenge the admissibility of the opinion or to probe their position for weaknesses. Whereby the latter approach is done in real-time before the judge of the fact and is generally designed to target the weight of the evidence.

The pre-trial approach

39 The party intending to call the witness bears the onus of satisfying the court that the witness is an expert. Before conceding that they are, you would be well placed to read a paper written by Weinberg J, titled "*Juries, Judges, and Junk Science – Expert Evidence on Trial*".[13] Some witnesses easily fall within a field of expertise, but some do not. Then, there is "junk science."

40 Often reports are dressed in complicated language that masks an opinion that is within the realms of a layperson. Strip the evidence back and ask whether the witness has a set of skills or knowledge that elevates them above that of the judge or jury. For example, if evidence has been tendered of a measured shoe print and the shoe has been tendered, what skills would that witness possess above the jury to compare the two? Despite this, the prosecution sometimes presents evidence of an "expert" to provide their opinion of the comparison between a shoe print and the shoe. The same might apply to a tyre and a track.

41 Allowing an "expert" to give this evidence might provide an "unwarranted appearance of science"[14] and increase the seductive effects of the evidence. The same can be said with the analysis of some blood stains. Does the witness really possess superior skills to that of a jury in determining that a blood stain came from a droplet of blood falling onto the ground? What an "expert" would opine is a blood "transfer stain" is what we lay people call a smudge.

42 Whilst there are many ways to target the admissibility of a report, the most common are:

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13 A paper delivered by the Hon. Justice Mark Weinberg at the Australian Academy of Science and Australian Academy of Law Joint Symposium 'The Reception, Quality and Evaluation of Scientific Evidence in Australian Courts', Federal Court of Australia, Sydney, on 19 August 2020.

14 *Honeysett v The Queen* (2014) 253 CLR 122, 138 [45].

a) the claimed area of expertise is not a sufficiently recognised field of specialist knowledge;

b) the area of expertise claimed is within common knowledge and is therefore irrelevant; or

c) the witness does not have the training, qualifications or experience necessary to be classified as an expert witness.

43 Admissibility can also be attacked through the "factual basis" rules pathways:

a) the evidence does not establish facts on which the opinion is based;

b) assumed facts are incomplete or inaccurate; or

c) the facts have been "cherry-picked".

44 In Gary Edmond et al, "How to cross-examine forensic scientists: A guide for lawyers" (2014) 39 *Australian Bar Review* 173, the authors list a number of considerations to which counsel or solicitors should turn their minds. The paper goes as far as to list scripted questions. After reading the paper, you may ask yourself why you have not asked these types of questions before.

45 For example, at a committal hearing, why not ask the witness "why are you better placed to give this opinion than a layperson?" No doubt you will be provided with an answer along the lines of "well, I have such and such qualifications and have been giving evidence in these types of cases for the last 20 years." Well, so what. Do not mistake confidence as an endorsement of truth. Confidence in answering a question is said to be a misleading guide to accuracy.[15] The witness could have unknowingly been misleading the courts for those 20 years. It would be akin to a barrister responding to a challenge from the Bench with "I have been asking this type of question for the last 20 years." Both of which are unsatisfactory answers. Follow the question up with whether there is any independent evidence that confirms that the employed technique actually works.

46 Ask the witness to explain the foundational reasoning behind their opinion and how it was tested. The "vibe" does not cut it. Has the technique been validated? In other words, has the technique been used in circumstances where the correct answer is known? If it

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15 Emma Cunliffe, 'Judging, Fast and Slow: Using Decision-Making Theory to Explore Judicial Fact Determination' (2014) 18(2) *The International Journal of Evidence & Proof* 139, 160.

was, did the technique arrive at the correct answer? How was the technique validated? If other studies were used to validate the technique, then what are the studies? The validation studies should then provide information and the circumstances as to when the technique is said to have worked. It should also, as a by-product, detail the limitations of the technique and the potential sources of errors.

47 Ask the witness whether they have had their personal proficiency tested. If they have, then by who and what was the result? Often, especially with police witnesses, the report is "peer-reviewed". The question should be "by whom and what was the process?" "Was the person who undertook the review aware of your opinion or conclusion before arriving at their conclusion?" Ask whether there have been instances where the reviewing officer has disagreed with a report?

48 What material was the witness given? What was the briefing note and what was conveyed to the witness? Was the witness asked, for example, to analyse a scene from scratch or were they asked to comment on the prosecution's already established case theory? Did they pursue that theory with blinkers on?

49 Find out what influences were at play. For example, what was the witness told about the defendant? Did the police share his criminal history or police intelligence? Was the witness told of another expert's conclusion? Exposure to these types of influences has the potential to influence or even reverse a conclusion. Studies have suggested that a witness is more likely to be confident in their findings if they are aware of other evidence or opinions that support them.[16] (The same reasoning applies to a lay identification witness. Imagine the difference in their court presentation if that lay identification witness was told before testifying that "the person you identified as being the robber was also independently identified through DNA evidence." The confidence in their own testimony would be unshakable and make them an impressive witness in the eyes of the jury.)

50 If there are multiple "expert" witnesses, determine a chronology of the initial engagement and ask the witness if they recommended another "expert" to the prosecution. You should be extremely cautious (and concerned) where an expert witness

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16 Gary Edmond et al, "How to cross-examine forensic scientists: A guide for lawyers" (2014) 39 *Australian Bar Review* 173, 186 and 187.

attempts to bolster their own reliability (or credibility) through another expert that they recommended.

51 Why did the witness use specific terminology to express their opinion? You should familiarise yourself with the "prosecutor's fallacy". Despite its moniker, it is an error that can be committed by both ends of the Bar table.[17] The prosecutor's fallacy involves the "transposition of the conditional", that is, it takes a statement about the probability of one thing (X) relative to another (Y) and inverts it to a statement about the probability of Y relative to X. In relation to DNA evidence, it takes the random match probability, which is the probability of a DNA match if the accused was the (or a) source of the DNA and inverts it to a probability that the accused is the (or a) source, given the DNA match. The risk is that the jury will reason that the evidence about the DNA ratio or match probability expresses the probability that the incriminating DNA was the accused's DNA. However, DNA evidence is only ever expressed in terms of probability, and never as a certainty.

The trial approach

52 Sometimes, the battle can be won before the expert even enters the witness box. In order to provide an opinion, the expert must have a foundation laid in evidence before the jury. If important evidence that formed the cornerstone of the expert's opinion is not in evidence, then the opinion is not admissible. If the foundational evidence cannot be removed, then it can still take on water in terms of reducing the reliability or credibility of that evidence. It matters little what the expert's opinion is if the jury is uncomfortable with the receipt of the source evidence.

53 Seek concessions and focus on issues that will impact on the weight of the expert opinion. For example, the expert's qualifications or experience; the correctness and accuracy of the methodology used, and its appropriateness to the circumstances; any gaps in tests or investigations conducted; the degree to which many assumptions were reasonable at the time they were made; the correctness of the assumptions; the reasoning process leading to the opinion; comparison between the opinion and other expert opinions; and actual or apprehended bias.

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17 For a recent example, see *Ali v The Queen* [2022] VSCA 31.

Conclusion

54 As identified from the outset, you must remember the purpose for which you are engaging in cross-examination. You must have a clear strategy which is directed towards assisting or advance your case theory.

55 You should then identify the pathway to challenge the expert opinion – pre-trial (admissibility) or during trial (weight). These considerations, as well as the factual basis rules, will stand in you good stead when preparing to cross-examination an expert.

56 Returning to the case analysis at the start, the expert's incorrect use of the light testing device was discovered by chance. Three (nearly four) experts missed the error. Had counsel[18] asked the types of questions suggested by Gary Edmond et al at the committal hearing, then the defence would not have been reliant on chance.

Dated: Thursday, 15 June 2023

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[18] Some defence barrister named David Jones.