(2015) 17 *Flinders Law Journal*

A CLOSER LOOK AT *HONEYSETT*: ENHANCING OUR FORENSIC SCIENCE AND MEDICINE JURISPRUDENCE

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This essay reviews recent High Court jurisprudence on expert opinion evidence in the aftermath of *Honeysett v The Queen*. It endeavours to explain why the court's orientation, particularly its application of s 79(1) of the *Uniform Evidence Law*, produced a decision (and example) of limited practical assistance to lawyers and judges. Nevertheless, our admissibility jurisprudence can be enhanced, using the very terms and definitions advanced in *Honeysett*, to attend to the reliability (really validity, reliability and proficiency) of forensic science and medicine evidence. Currently, when considering the admissibility of forensic science evidence, judges in most Australian jurisdictions do not consider whether forensic science techniques work and whether forensic analysts possess demonstrable abilities. The upshot is that in many cases, especially those involving comparison and pattern matching (the so-called 'identification' sciences) we do not *know* whether those recognised by courts as experts possess relevant expertise — ie. perform better at some task than an ordinary person (eg. a juror). Inattention to validity, reliability and proficiency has allowed highly credentialed 'experts' (and experienced investigators) to express subjective opinions and to speculate in criminal proceedings. Inattention to 'specialised knowledge' has deprived decision makers and fact-finders of insight into the probative value of incriminating opinions. As it stands, the reasoning in *Honeysett* offers limited assistance with the application of s 79 and, without elaboration, is unlikely to prevent the admission and continued reliance on 'subjective belief' and 'unsupported speculation' masquerading as forensic science and medicine.

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I INTRODUCTION

Recently, the High Court of Australia handed down a decision on the admissibility of image interpretation evidence. *Honeysett v The Queen* provided an opportunity for the Court to clarify the application of s 79(1) of the *Uniform Evidence Law* (UEL), the statute regulating the admission of expert opinion in most Australian courtrooms.[1] Unfortunately, the Court decided the case on very narrow, case specific, factors. While comprehensible within the common law tradition, this response represents a lost opportunity. It is my intention to explain why it is imperative for senior appellate courts to provide lawyers and trial judges with heuristics (or criteria) to enable them to meaningfully regulate the admission of expert opinion evidence, especially in criminal proceedings. This essay considers the High Court's *Honeysett* jurisprudence and its application to the facts of the case in order to explain why current responses to impugned expert opinion evidence are not particularly helpful and may even threaten the ability of our courts to facilitate the rational evaluation of evidence.

This essay explains why the application of s 79(1) of the UEL in *Honeysett* is not especially helpful, does not facilitate the ends of justice, and should be supplemented by an admissibility regime that requires trial and appellate judges to attend to reliability (and validity) when the defence challenges forensic science and medicine evidence.[2] While such a recommendation might appear radical, as this essay endeavours to explain, s 79(1) and the *Honeysett* jurisprudence on the meaning of 'knowledge' provide means of enhancing admissibility practice in ways that are commensurate with overriding institutional objectives. In a sense, this essay attempts to explain how (and why) Australian courts might refine the definitions and commitments latent in *Honeysett*, and other High Court decisions, in ways that will improve legal responses to forensic science and medicine evidence.

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1 *Honeysett v The Queen* [2014] HCA 29.

2 'Reliability' is generally used in the sense of trustworthiness, although validity and reliability have technical meanings.

II *HONEYSETT* IN THE HIGH COURT

Obviously, the decision in *Honeysett* did not emerge out of a jurisprudential vacuum. Earlier decisions from the High Court, and the New South Wales Court of Criminal Appeal (NSWCCA), embody the jurisprudence around s 79 and the limited practical assistance it provides to lawyers, trial judges and intermediate courts of appeal. Rather than develop a framework or provide criteria to assist with the admissibility of opinions, including those purporting to be scientific or based on science and medicine, since the UEL came into effect the High Court has demonstrated a tendency to merely re-state s 79. In so doing, the Court has generally been more attentive to requirements of form than the meaning of 'knowledge' and ascertaining whether witnesses possess domain relevant expertise.[3]

A *Jurisprudence on the admissibility of forensic science evidence*

When it comes to s 79(1) of the UEL, bare re-statement seems to have assumed the place of statutory interpretation. In this sense *Honeysett* reiterates earlier admonitions from *HG v The Queen,*[4] *Velevski v The Queen*[5] and *Dasreef Pty Ltd v Hawchar*.[6] Compare the text of the UEL:

> **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.

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3 Reference to 'domain relevant' expertise is intended to draw attention to the need for a heightened ability at some specific task rather than experience in a general or apparently related discipline or area. In many cases expertise will be demonstrated by performance, especially performing better than ordinary persons (ie. non experts). Of significance, most forms of expertise are not transferable. See K Anders Ericsson et al (eds), *The Cambridge Handbook of Expertise and Expert Performance* (Cambridge University Press, 2006).

4 (1999) 197 CLR 414, [39].

5 (2002) 187 ALR 233.

6 (2011) 243 CLR 588, [32].

with the High Court's exegesis in *Honeysett* (and *Dasreef*):

> [23] Section 79(1) states two conditions of admissibility: first, the witness must have "specialised knowledge based on the person's training, study or experience" and, secondly, the opinion must be "wholly or substantially based on that knowledge". The first condition directs attention to the existence of an area of "specialised knowledge" …[7]
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> [24] The second condition of admissibility under s 79(1) allows that it will sometimes be difficult to separate from the body of specialised knowledge on which the expert's opinion depends "observations and knowledge of everyday affairs and events". It is sufficient that the opinion is *substantially* based on specialised knowledge based on training, study or experience. It must be presented in a way that makes it possible for a court to determine that it is so based.[8]

High Court jurisprudence has placed emphasis on the 'two conditions' specified in s 79(1). Prior to *Honeysett*, the major 'supplementation' was to direct attention to the need to be able to determine if the 'two conditions' are satisfied. This concern, initially advanced in *HG*, is repeated in the final sentence in the extract above.[9] In terms of substantive development of the law, we have not come very far in the two decades since the first of the uniform evidence legislation was enacted in 1995.[10]

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7 The remainder of [23], on the subject of 'specialised knowledge', is reproduced below.

8 *Honeysett v The Queen* [2014] HCA 29, [23]-[24]; *Dasreef Pty Ltd v Hawchar (2011) 243 CLR 588,* [32].

9 *HG v The Queen (1999) 197 CLR 414, [39]*: 'the provisions of s 79 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'.

10 See *Evidence Act 1995* (Cth); *Evidence Act 1995* (NSW); *Evidence Act 2001* (Tas); *Evidence Act 2008* (Vic); *Evidence Act 2011* (ACT); *Evidence Act 2013* (NT).

Lack of progress might be considered curious because the High Court has acknowledged dangers, especially in criminal proceedings, attending the admission of opinion evidence not based on 'specialised knowledge'.

> Experts who venture "opinions", (sometimes merely their own inferences 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.[11]

Dasreef clarified the implications of non-compliance with the terms of s 79(1).

> A failure to demonstrate that an opinion expressed by a witness is based on the witness's specialised knowledge based on training, study or experience is a matter that goes to the admissibility of the evidence, not its weight.[12]

Honeysett reiterates this point. Where s 79(1) is not satisfied, it is 'an error of law to admit the evidence'.[13]

What is new in *Honeysett* is attention to the meaning of *specialised knowledge.* Drawing upon *Daubert v Merrell Dow Pharmaceuticals, Inc.* from the Supreme Court of the United States and *R v Tang* from the NSW Court of Criminal Appeal, the High Court offered the following explication:

> [23] "Specialised knowledge" is to be distinguished from matters of "common knowledge". 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

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11 *HG v The Queen (1999) 197 CLR 414*, [44]. See also *Velevski*; *Mallard v R* (2005) 224 CLR 125; See generally Bibi Sangha, Kent Roach and Robert Moles, *Forensic Investigations and Miscarriages of Justice* (Irwin Law, 2010).

12 *Dasreef Pty Ltd v Hawchar (2011) 243 CLR 588*, [42].

13 *Honeysett v The Queen* [2014] HCA 29, [46].

> 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" (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 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".[14]

The nascent interest in 'specialised knowledge' has considerable potential. The previous extract seems to require that when it comes to scientific and technical (and presumably medical) evidence, the witness should be able to identify 'knowledge'. This does not seem to be tacit or implicit knowledge but rather identifiable 'facts, truths, or principles, *as from study or investigation*'.[15] Further, 'training, study or experience' must be capable of producing knowledge — that is, 'must result in the acquisition of knowledge'. 'Knowledge', it would seem, should be separate from the individual and 'more than [the] subjective belief[s]' of individuals or groups. For scientific, biomedical and technical domains, knowledge will ordinarily be the culmination of systematic 'study or investigation'.

Unlike courts in other common law traditions, appellate courts in Australia have not been particularly interested in the reliability (or probative value) of opinion evidence and so they have not produced meaningful heuristics to assist with admissibility decision-making —

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[14] *Honeysett v The Queen* [2014] HCA 29, [23], [26]-[27]: 'In *R v Tang* … Spigelman CJ (Simpson and Adams JJ concurring) cautioned against introducing an extraneous idea such as "reliability" into the determination of admissibility under s 79(1). Importantly, his Honour laid emphasis on the requirement of *knowledge* by reference to the statement in *Daubert* set out earlier in these reasons'. Australian reticence around reliability renders it increasingly marginal among common law jurisdictions; See the discussion in Gary Edmond, 'The admissibility of forensic science and medicine evidence under the Uniform Evidence Law' (2014) 38 *Criminal Law Journal* 136.

[15] On tacit knowledge consider the classic text: Michael Polanyi, *The tacit dimension* (Chicago, 1966); and on analysis: Harry Collins, *Tacit and explicit knowledge* (Chicago, 2010).

sometimes characterised as admissibility 'gatekeeping'.[16] Adhering to the common law tradition, the High Court has expressly refrained from providing more synoptic advice; insisting on more than one occasion that the present appeal was not the occasion to consider whether s 79(1) requires scientific validation or if trial judges should be provided with *Daubert*-style criteria to assist with admissibility determinations.[17] Thus far, the Court has not interpreted the Evidence Acts of UEL jurisdictions to require trial judges to consider the reliability of contested forensic science and medicine evidence. This response, in appeals and to special leave applications, has denied lawyers, trial and intermediate appellate judges substantial assistance with contested expert opinion evidence. The reluctance to engage with reliability (and validity and probative value) might be considered curious, given institutional recognition of specific dangers. As this essay explains, it sits awkwardly with the statutory need for 'knowledge' and its initial elaboration that, at least in relation to opinions based on scientific and technical knowledge, require an 'acquaintance with facts, truths or principles, as from study or experience' and attention to whether inferences from fact are made on 'good grounds'. These, it might be thought, constitute the essence of what a reliability framework might require.

B *The Court's reasoning in Honeysett*

The actual appeal in *Honeysett* focused on the admissibility of opinions derived from security images of a robbery. The robbers were disguised and could not be positively identified. Investigating police engaged the services of an anatomist (Professor Henneberg) to

[16] See *R v Tang* (2006) 65 NSWLR 681. There are a few exceptions, such as the South Australian case of *R v Bonython* (1984) 38 SASR 45, but these are generally unhelpful and have not been read to require judges to consider 'reliability' for admissibility purposes. See also *Osland v The Queen* [1998] HCA 75, [164], footnote 202.

[17] *HG v The Queen (1999) 197 CLR 414*, [40] n10; *Honeysett v The Queen* [2014] HCA 29, [42]. The Court unhelpfully concluded that '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"'. On the *Daubert* 'criteria', see *Daubert v Merrell Dow Pharmaceuticals Inc*. 509 US 579 (1993); *Kumho Tire Co Ltd v Carmichael* 526 US 137 (1999).

compare the crime scene images with reference images of their suspects. The anatomist's comparison involved looking at the two sets of images and identifying features. On the basis of this examination he identified eight features (eg. male, right-handed, ectomorphic somatotype, dolichocephalic brain case, lumbar lordosis and short hair) that were said to be shared, and no observed differences.[18] He produced a short report concluding that there was 'a high level of anatomical similarity' between Honeysett and the person of interest (POI) in the images.[19] This expression was objected to, and the prosecutor only (then) sought to adduce the anatomist's opinion about the bare similarities and lack of differences to assist the jury with the identity of the robber said to be Honeysett.[20] There was other incriminating evidence, including DNA removed from items recovered in the aftermath of the robbery, and apparently worn or carried during the robbery (visible in the CCTV images), that matched the accused's profile. The DNA evidence was not contested, as it was the accused's contention that his DNA had been innocently transferred to the items.[21]

The admissibility of the anatomist's similarity evidence was challenged and a voir dire was conducted on the papers; which included reports by an anatomist and a forensic photographer engaged by the defence.[22] The defence raised problems with the image comparison evidence, insisting that the opinion was not based on 'specialised knowledge'; that the technique had not been validated, and was insufficiently reliable.[23] The trial judge (Bozic

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[18] *Honeysett v The Queen* [2014] HCA 29, [15]-[16]; *Honeysett v The Queen* [2013] NSWCCA 135, [19], [22]–[27], [59].

[19] *Honeysett v The Queen* [2013] NSWCCA 135, [56]–[57]. The conclusion in the anatomist's 'expert certificate' was in terms inconsistent with the requirement of limiting opinions to similarities (and, in theory differences) associated with *R v Tang.*

[20] Opinions — *ad hoc opinions* at least — were limited to describing similarities and differences in *R v Tang* (2006) 65 NSWLR 681. See Section V.

[21] *Honeysett v The Queen* [2014] HCA 29, [9]. On contamination, see, eg, *Fitzgerald v The Queen* [2014] HCA 28.

[22] They were another anatomist (Dr Sutisno) and a forensic photographer (Dr Porter). By way of disclosure, I have published several papers with Dr Porter.

[23] The defence drew heavily on the decision in *Morgan v The Queen* (2011) 215 A Crim R 33.

DCJ) found the evidence admissible according to ss 79(1) and 137 and all the 'experts' were called at trial. The accused was convicted and one of the grounds of appeal to the NSWCCA, and the main ground relied upon in the High Court, concerned the admissibility of the opinions about the similarity of features in the two sets of images.

Reversing the trial judge and the NSWCCA, a unanimous High Court concluded that the anatomist's opinions about similarities between the offender and the accused were inadmissible. In order to explain the Court's reasoning, it is necessary to provide an indication of the 'method' (or technique) relied upon by the anatomist.

> Professor Henneberg's method of "forensic identification" can be shortly described. Professor Henneberg looks at an image of a person and forms an opinion of the person's physical characteristics. His opinion is not based on anthropometric measurement or statistical analysis. Professor Henneberg stated that statistical analysis may yield reliable results when anthropometric measurements can be taken or the photographs are taken at the same angle and in prescribed body positions. Surveillance images and standard police photographs are not of this standard. He explained that his examination of images does not differ from that of a lay observer save that he is an experienced anatomist and he has a good understanding of the shape and proportions of details of the human body.[24]

The Court, in addition, noted the anatomist's attempt to avoid a form of suggestion described as 'displacement'.[25]

> Professor Henneberg made his assessment of the physical characteristics of Offender One before he opened the envelope containing the images of the appellant. He did this to avoid the psychological phenomenon of "displacement", which is the tendency to read the features of a known person into poor quality images.[26]

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[24] *Honeysett v The Queen* [2014] HCA 29, [18].

[25] Courts frequently refer to their own decisions and traditions rather than more relevant (and recent) scientific research and advice. See, eg, *Alexander v R* (1981) 145 CLR 395 and Section III B.

[26] *Honeysett v The Queen* [2014] HCA 29, [14]. In several trials the Professor indicated that he simply took image distortion 'into account' when examining and comparing features in images.

Having reviewed the anatomist's method and opinion evidence, the Court set about applying the 'two conditions', outlined in [23]-[24] above, to his opinion evidence. The Court's application of the two part test might not be considered especially clear or easy to have anticipated, and these issues will re-emerge in the ensuing discussion of the value of *Honeysett* as a guide when forensic science and medicine evidence is challenged in future proceedings. Consider the Court's assessment, reproduced in its entirety:

> [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.[27]
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> [44] The respondent accepted that, with the possible exception of the opinion that Offender One and the appellant are both right-handed, it would have been open to prosecuting counsel in the course of her closing address to have invited the jury to inspect the images and find that Offender One and the appellant share each of the characteristics identified by Professor Henneberg without the necessity of evidence. The reservation respecting right-handedness was based on the circumstance that Professor Henneberg's master's thesis was on the topic of handedness. However, Professor Henneberg's specialised knowledge of handedness was not the basis of his opinion. Professor Henneberg inferred that Offender One and the appellant are each right-handed because he observed that Offender One used his right hand to remove cash from the till and the appellant used his right hand to write his name and insert a swab into his mouth.
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> [45] Professor Henneberg's evidence gave the unwarranted appearance of science to the prosecution case that the appellant and Offender

[27] This was based on the Court's description of the reasoning in *Tang*: 'The opinion that the individual displayed "relatively upright posture" was not wholly or substantially based on Dr Sutisno's specialised knowledge of anatomy. His Honour found that it had not been established at the trial that the comparison of physical attributes – "body mapping" – constituted an area of "specialised knowledge" capable of supporting an opinion of identity'.

> One share a number of physical characteristics. 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.[28]

The first sentence in [43] is important. It confirms that having formal qualifications in an area, and even long experience doing something such as previous face and body comparison (Professor Henneberg appeared in *Murdoch*, *Morgan*, *Honeysett*, *Dastagir*, *Alrekabi* and dozens of other investigations and prosecutions), do not guarantee entry to criminal proceedings for opinions apparently based on them.[29] The remaining sentences are more contentious. They raise the question of how the Court determined that Henneberg's interpretations and comparisons were not substantially based on 'specialised knowledge'.

The Court seems to suggest that when an anatomist interprets an image and/or undertakes a comparison in his head or between two images that this is not based on 'specialised knowledge'. That may or may not be true. No evidence is provided either way and the definitions of 'knowledge' (from [23] above) are not used to explain the contention or the decision more generally.[30] Instead, the Court seems to have broken the image comparison process down into several components and *declared* that the anatomist does not have 'specialised knowledge' relating to discrete aspects of the

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[28] *Honeysett v The Queen* [2014] HCA 29, [43]-[46].

[29] *Murdoch v The Queen* (2007) 167 A Crim R 329; *Morgan v The Queen* (2011) 215 A Crim R 33; *R v Dastagir* (2013) 118 SASR 83; *Honeysett v The Queen* [2013] NSWCCA 135; *R v Alrekabi* [2007] NSWDC 110.

[30] The Court could not undertake its own assessment of the scientific literatures and existing admissibility standards do not encourage lawyers to undertake appropriate investigations when expert opinion evidence is contested. Together, these limitations create problems for appeals and the development of policy that were conspicuous in *Aytugrul v The Queen* (2010) 205 A Crim R 157 and *Aytugrul v The Queen* [2012] HCA 15.

comparison process he purported to engage in. The interpretation of the head shape in the images, for example, was not attributed to (his) anatomical knowledge — 'that the human population includes individuals who have oval shaped heads and individuals who have round heads'. As we shall see, this represents a rather cumbersome way of approaching and regulating expert opinion. Of greater moment, it does not refer to relevant knowledge and reveals nothing about actual capabilities.

Another issue, raised in [44], concerns the relevance of the anatomist's evidence. If the jury could have undertaken some (or all) of the comparisons without assistance then the anatomist's opinions were redundant. In that case, Henneberg's opinions are not based on '*specialised* knowledge' and, following *Smith v The Queen,* should be treated as irrelevant.[31] There was, however, no evidence about Henneberg's performance at image interpretation and comparison relative to ordinary persons.

Paragraph [45] embodies anxieties about qualifications, experience and specialist vocabularies masquerading as science or expertise. The contention that the opinion is 'unwarranted' is not based on any evidence and is, once again, declaratory.

The Court's exemplary application of s 79(1) is not especially helpful to the reader or to lawyers, trial and appellate judges trying to glean insight from the judgment. The remainder of this essay explains some of the limitations with the High Court's declaratory approach along with the consequences of failing to engage with 'specialised knowledge'.

[31] *Smith v The Queen* (2001) 206 CLR 650.

III PROBLEMS WITH *HONEYSETT* AS AN EXEMPLIFICATION

The main problem with *Honeysett* is that the High Court has not provided practical assistance to trial and appellate courts confronted with admissibility challenges to the state's forensic science and medicine evidence under s 79(1). The High Court's definition of 'knowledge' is helpful, in a preliminary sort of way, but *Honeysett* does not afford adequate practical guidance on how the definitions of 'knowledge', from [23] above, should be applied. Significantly, similar definitions issued by the Court of Criminal Appeal (CCA) in *R v Tang*[32] did not provide effective assistance to the courts of NSW. They did not identify (or anticipate) the issues raised by the High Court or adopt a similarly exclusionary posture.[33] Like *Tang*, *Honeysett* provides few insights, and no specific criteria, that might be considered by trial judges when called upon to decide on admissibility challenges.[34] The central issues of what it means for an opinion to be 'wholly or substantially based on' 'specialised knowledge' and what is required for that 'knowledge' to be based on 'training, study or experience' are rehearsed but neither explored nor explained in any detail. Definitions of 'knowledge' consistent with the need for 'reliability' — imposed in other common law systems — are latent but not used to inform decision-making.[35]

To the extent that it is considered (in Australian courts), the need for 'knowledge' tends to be satisfied by rather superficial reference to formal training, legally recognised 'fields' (such as facial mapping or anatomy) and experience doing the same or similar things.

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[32] (2006) 65 NSWLR 681.

[33] *Morgan* was one of few cases where judges excluded the opinions of an anatomist about the identity or features of persons in images.

[34] *Honeysett* does not preclude applying a reliability standard, or criteria like those advocated in *Daubert*. Moreover, it does not endorse the category of ad hoc expertise. See Section 5.

[35] See, eg, *R v DD* [2000] 2 SCR 275; *R v J-LJ* [2000] 2 SCR 600; *R v Trochym* [2007] 1 SCR 239; Law Commission of England and Wales, *Expert Evidence in Criminal Proceedings in England and Wales* (The Stationery Office, 2011); Sir Brian Leveson, *Review of the Effectiveness of Criminal Justice* (HMSO, 2015), [228] (emphasis in original).

'Specialised knowledge' is often referred to but, notwithstanding its prominence in s 79(1), it rarely plays a decisive role in legal decisions. As paragraphs [43]-[46], above, indicate, *Honeysett* is not exceptional in this regard. Current approaches tend to trivialise, or elide, both 'knowledge' and the qualifier 'specialised'. The High Court's approach to admissibility in *Honeysett* might encourage the exclusion of a small amount of forensic science evidence, and this might be preferable to admission in some cases. However, the two conditions and their cryptic application do not address actual capabilities, relevant knowledge (both the validity of the technique and scientific literatures on image comparison) and are unlikely to lead to consistent legal responses to image interpretation or other types of contested forensic science and medicine evidence.

A Honeysett *under the magnifying glass*

We can observe some of the problems with the High Court's approach to the admission of forensic science evidence by reviewing the reasoning in *Honeysett v The Queen*.[36] The Court concluded that the opinions were not based on 'specialised knowledge' but 'gave the unwarranted appearance of science to the prosecution case' thereby compromising the jury's ability to evaluate the evidence. Approaching admissibility from the perspective of whether particular opinions are based on anatomy (or some sub-component of anatomy) is both more complex and of less utility than asking directly whether the opinion is derived using a technique that is *known* to be (valid and) reliable and whether the analyst — be they anatomist, fingerprint examiner, passport examiner and so on[37] — possesses domain relevant expertise. That is, whether the anatomist is *known* to have, from 'study or investigation', superior image interpretation and comparison abilities to those of laypersons. Under this alternative approach, recourse to the value of the particular technique and the actual proficiency of the analyst subsumes reference to a 'field' or discipline presented, or postulated, as relevant. Such an approach is more likely to avoid controvertible readings of the abilities of

[36] *Honeysett v The Queen* [2014] HCA 29.

[37] See Gary Edmond, 'What Lawyers should know about the forensic "sciences"' (2015) 36 *Adelaide Law Review 33.*

anatomists (and others). From this vantage, 'specialised knowledge' becomes the outcome of formal evaluation (such as published validation studies and other rigorous research), the refinement of techniques, the development of standards (based on validation) and so on.

The great benefit with this refined approach is that it answers the persistent question, at the heart of legal engagement with non-legal expertise: *How do we know this individual is really an expert in the relevant domain?* The answer to that question should be based upon identifiable 'knowledge'. Simultaneously, that knowledge and information about experience *and proficiency*, should inform our understanding of the probative value of the technique and derivative opinion. Directing attention to relevant specialised knowledge provides information that enables lawyers and judges to ascertain if the opinion is relevant, assess whether the opinion satisfies s 79(1), determine an indicative probative value (that will include the highest probative value sustainable) as well as many of the serious dangers of unfair prejudice according to ss 135 and 137. The High Court's approach, in contrast, does not address these issues or facilitate their comprehension and resolution. Rather, somewhat arbitrarily, it breaks a particular task down into components and, in an act of epistemic gerrymandering, excludes image interpretation and comparison from the anatomist's remit without knowing anything about the actual capabilities of anatomists and physical anthropologists.[38]

Rather than attend to validity and reliability — that is, whether there was independent experimental evidence confirming the anatomist's ability to interpret accurately and compare features from CCTV (or other images) and reference images to assist with the identification of an offender — the High Court directed its attention

[38] These sorts of issues were conspicuous in the Chamberlain trial, appeal and (to a lesser degree) the Royal Commission around whether an odontologist could speak about damage to fabrics cause by teeth and whether a textile scientist could speak about bite marks and their appearance on fabrics. Only later, when scientists who were neither odontologists nor textile scientists conducted crude experiments with dogs and textiles, was that question definitively answered.

to the technique and its components. The High Court found the anatomist's opinion to be inadmissible on the basis that he was not a specialist in image interpretation or comparison: the opinion was 'Professor Henneberg's subjective impression of what he saw when he looked at the images'.[39]

Consequently, and notwithstanding the court finding the anatomist's evidence (apparently relevant but) inadmissible, we do not know if the issue of image interpretation or comparison is really a problem.[40] They are merely what the High Court declared to be a problem — in the absence of any experimental evidence (ie. knowledge) on the subject. This is speculative at best.[41] Unfortunately, the kinds of studies that would have provided insight into the anatomist's expertise with images, along with some indication of its probative value, have not been performed. That is a pity, because validation (and rigorous performance) studies would have enabled the Court (and any jury) to make a rational decision about the value of the technique and the opinion rather than guess or declare in ignorance — ie. without knowledge. Attention to performance would have prevented the need to speculate and invoke issues (of unknown significance), such as image interpretation and comparison, to ground their concerns and exclusion.

In the absence of formal evaluation, we do not know if the anatomist's opinion: is relevant (because his level of performance is superior to the performance of ordinary persons);[42] ought to be admitted (because the anatomist is known to perform much better than ordinary persons and so is an expert — ie. where the opinion is based on 'specialised knowledge'); or ought to be excluded (because the anatomist performs not much better, similar to, or worse than

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[39] *Honeysett v The Queen* [2014] HCA 29, [43]. Many forms of genuine expertise are inescapably subjective.

[40] On relevance, see *Honeysett v The Queen* [2014] HCA 29, [44].

[41] Although, in the absence of appropriate validation, exclusion will often be a sensible response because validity and proficiency are unknown and the opinion is not readily susceptible to evaluation.

[42] *Uniform Evidence Law* ss 55, 56; See also *Smith v The Queen* (2001) 206 CLR 650.

ordinary persons).[43] For all we know the court excluded highly probative 'identification' evidence.[44] The difficulty is that in the absence of validation studies and rigorous proficiency testing we have no relevant *knowledge* and therefore no basis to judge.[45] Exclusion might be an appropriate response in such circumstances, but the High Court did not provide an appropriate framework for decision-makers confronted with contested expertise.

The High Court's decision and jurisprudence provide little practical assistance to trial judges and appellate courts subsequently asked to adjudicate on the admissibility of forensic science and medicine evidence. Revealingly, courts confronted with similar opinion evidence in *Tang, Murdoch v The Queen*, *Morgan v The Queen*, *Honeysett,* and *R v Dastigir* did not identify the issue ultimately relied upon by the High Court as a significant problem.[46] On what basis could a lawyer or judge anticipate that the lack of image interpretation expertise is the appropriate legal ground for exclusion? The High Court's decision is likely to generate inconsistent responses that may bear no relationship to knowledge, actual expertise, or the probative value of opinions.[47]

The Court's reliance on interpretation and comparison raises additional practical considerations. What would happen if the

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[43] The last category might apply to both relevance (ss 55, 56), as well as ss 135, 137. Weak and speculative 'expert' opinions will often introduce a range of threats to fact-finding.

[44] For commentary, see Gary Edmond and Mehera San Roque, 'Before the High Court - *Honeysett v The Queen*: Forensic science, "specialised knowledge" and the Uniform Evidence Law' (2014) 36 *Sydney Law Review* 323.

[45] Research on image comparison and unfamiliar face matching confirm that it is a difficult, error-prone activity. Ordinary people make errors in about one in five attempts in favorable conditions.

[46] The High Court did not raise this as a problem for police officers or the jury in *Smith v The Queen* (2001) 206 CLR 650. See also *R v Tang* (2006) 65 NSWLR 681; *Murdoch v The Queen* (2007) 167 A Crim R 329; *Morgan v The Queen* (2011) 215 A Crim R 33; *R v Dastigir* [2013] SASCFC 109; *Honeysett v The Queen* [2014] HCA 29. Although *Morgan* comes closest, being one of the few cases to exclude the opinion evidence; albeit after years of directed academic critique.

[47] *Honeysett v The Queen* [2014] HCA 29, [42].

anatomist undertook training in image interpretation, photography or image comparison? Would the High Court and other courts be obliged to admit his opinions even though there would still be no evidence (ie. independent *knowledge*) that the anatomist performs better than a jury? On this issue, extant research suggests that: 1) long experience comparing faces does not result in enhanced accuracy when performing standardised face matching tasks; and 2) basic training in anatomy and photography do not improve the accuracy of those asked to compare and identify persons in images.[48]

Further tensions in the Court's approach, specifically in breaking the task into what are said to be its constitutive components, and considering the comparison of each characteristic as a separate opinion, emerge in relation to the issue of handedness. Notably, the anatomist had undertaken formal study on that subject. Notwithstanding this research, the Court concluded that, like the opinion on head shape, the opinion on handedness was not based on 'Professor Henneberg's specialised knowledge of handedness'. However, had Professor Henneberg's research involved the consideration of handedness based on images or observations, the High Court might have found it more difficult to exclude his opinion on this issue applying the reasoning proffered in *Honeysett*. And yet, without formal evaluation we would be, once again, essentially ignorant about the value of his opinion.[49]

By not attending to the most informative indicia of expertise, legal responses to forensic science and medicine are likely to be plagued and diverted by issues and arguments of limited significance. The High Court's decision is likely to embroil lawyers and judges in unnecessarily complex and intractable disputes about whether an opinion can be indexed to some 'field' or experience and its relationship with the components of a technique, rather than determine whether techniques work by reference to formal

[48] See Alice Towler, *Evaluating training for facial image comparison* (PhD, UNSW, 2015).

[49] In this case the issue of handedness, by itself, was not particularly probative.

evaluation and other scientific literatures bearing directly on 'knowledge'.[50]

In continuing to think about guidance and the application of s 79(1), the approach in *Honeysett* is constraining in other ways. It is unclear whether the decision is restricted to identifying humans (as opposed to shoes or vehicles), or to body comparison where the person of interest is disguised. Trial and intermediate courts of appeal have already circumvented its exclusionary implications by distinguishing the interpretation of non-human objects. The decision might also be read narrowly: having no application to so-called facial mapping, or to body mapping (admitted as *ad hoc expertise*, more below) or to emerging 'fields' such as forensic gait analysis. After all, the High Court seems to implicitly condone *Tang* — according to the Supreme Court of Victoria, Court of Appeal in *Tuite v The Queen*,[51] at least — and does not suggest that admission of the opinion in that case was mistaken or the reasoning apocryphal.[52] *Honeysett* offers limited assistance in relation to future admissibility determinations around contested image and voice comparisons, and other techniques from the forensic sciences and medicine.[53]

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[50] Again, it may be that in some areas (but not the comparison sciences) these kinds of exercises are inescapable.

[51] [2015] VSCA 148.

[52] It is far from obvious, that the High Court accepted *Tang's* rejection of an 'extraneous idea such as "reliability"'. In *Tuite v The Queen [2015] VSCA 148*, [58], [70] the Victorian Court of Appeal effectively endorsed *R v Tang* (2006) 65 NSWLR 681, concluding that there is scope for 'specialised knowledge' that is not reliable. That may be right, but it seems like unnecessary epistemic subtlety. The primary issue for our criminal justice system, and its personnel endeavoring to secure the assistance of non-legal expertise, is what value do opinions based on 'specialised knowledge' *that is not reliable* have for accusatorial practice? Are we willing to base convictions on such 'knowledge'? And, can our criminal procedures and personnel deal with such opinions. See Brian Leiter, 'The Epistemology of Admissibility: Why Even Good Philosophy of Science Would Not Make for Good Philosophy of Evidence' (1997) *Brigham Young University Law Review* 803.

[53] See *Meade v The Queen* [2015] VSCA 171; *R v Carroll* [2015] NSWDC 116 (the case, though not this particular decision).

When it comes to other comparison and pattern recognition domains (such as those involving latent fingerprints, hair and fibres, shoe and tyre marks, documents and hand writing, voices, soil, blood spatter, ballistics and tool marks, bullet lead analysis, paint, bite marks, gait and so on) the implications of *Honeysett* are potentially disruptive. Do fingerprint, ballistics, shoe and tyre mark examiners (and others) — routinely engaged in the interpretation and comparison of images — possess appropriate expertise to undertake these tasks? What is the relevant 'specialised knowledge'? If rigorously applied, does *Honeysett* threaten the admissibility of techniques that are known to be probative, such as latent fingerprint comparisons, for example? Is the image interpretation and comparison performed by latent fingerprint examiners based on 'knowledge'?[54] If not, would it be the result of judges treating similar issues differently in order to preserve the admissibility of a longstanding technique? [55] On this point, do latent fingerprint examiners receive (or possess) more training and/or experience in image interpretation and comparison than anatomists?[56] The failure to look beyond the specific case is not merely myopic; it unnecessarily threatens some reliable techniques while not providing assistance with admissibility challenges more generally.

Opinions derived from demonstrably valid and reliable techniques operated by proficient analysts contribute to rational decision-making because they are readily susceptible to evaluation. Other opinions are basically *ipse dixit*. They threaten criminal proceedings

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[54] See Gary Edmond et al, 'How to cross-examine forensic scientists: A guide for Lawyers' (2014) 39 *Australian Bar Review* 174.

[55] In recent years studies have confirmed the probative value of latent fingerprint evidence while simultaneously recognising that examiners make mistakes and techniques in use in Australia and elsewhere unnecessarily threaten the value of fingerprint evidence. See Gary Edmond, Matthew B Thompson and Jason M Tangen, 'A Guide to Interpreting Forensic Testimony: Scientific Approaches to Fingerprint Evidence' (2014) 13 *Law, Probability and Risk* 1.

[56] Complicating the High Court's approach: anatomical knowledge might be considered, by some — even if only in favorable conditions — to include the ability to interpret and describe the features of the body based on comparisons (from images) or the use of stored forms. Professor Henneberg possesses expertise in comparative anatomy; being the incumbent Wood Jones Professor of Anthropological and Comparative Anatomy at the University of Adelaide.

because, ignorant of their probative value, there are real dangers that decision makers will misunderstand or misuse opinion evidence. Speculative opinions are not easily accommodated within the conventional adversarial trial. There are always risks that the technique might not be valid or reliable, that the analyst might not be very good, and may be mistaken. In the absence of 'knowledge' the magnitude of those risks will be unknown, but the risk that they will be under-estimated ubiquitous and non-trivial. Decision-makers (including appellate courts) have demonstrated a tendency to be overly impressed by experience, demeanour, confidence and apparent plausibility and insufficiently attentive to more direct indicia of knowledge and probative value.

B *Some additional issues*

There are other difficulties implicit in *Honeysett* that have yet to be considered by Australian courts. One set of issues, conspicuous in *Honeysett* and most cases involving forensic science and medicine evidence, concerns the way this evidence is produced and reported and the way *different strands* of evidence are described and combined in criminal proceedings.[57] The concern here is whether the evidence is produced in conditions that reduce or eliminate notorious threats to cognition (ie. cognitive biases) and whether forensic science evidence is presented as independent corroboration of other facets of the case against the accused.[58] Historically, forensic science evidence has been produced in circumstances where forensic analysts did not protect themselves from cognitive contamination. They were routinely exposed to a great deal of information about the case and the accused that was not relevant to their analysis or interpretation. Exposure to gratuitous information unnecessarily introduces a range of notorious risks to cognition (and accuracy) but is almost never referenced by prosecutors, defence lawyers or judges when different strands of incriminating evidence are presented to the trier of fact —

[57] This did not loom large in the High Court but was obviously an important issue at trial.

[58] See Gary Edmond et al, 'Contextual bias and cross-contamination in the forensic sciences: The corrosive implications for investigations, plea bargains, trials and appeals' (2015) 14 *Law, Probability & Risk* 1.

very often as independent corroboration of the state's case.[59] There is a need to be very careful about the way such evidence is presented and combined when considering the admissibility of opinion evidence under ss 79(1) and 137 as well as the criminal standard or proof.

These problems emerge in *Honeysett* in relation to the DNA and image evidence, particularly the formation of opinions on the images, their presentation at trial and treatment on appeal. The DNA match in *Honeysett* does not provide independent corroboration of the opinion of the anatomist (or validate his 'method').[60] There are several reasons for this. First, the image comparison process was highly suggestive.[61] The anatomist very likely knew about the DNA match, other evidence and the beliefs of investigators implicating Honeysett, when undertaking the comparison. The DNA evidence is presumably one of the reasons investigators settled upon Honeysett. In consequence, the anatomist was probably aware of not only a DNA match but the likelihood that Honeysett's DNA was on an offender database when undertaking the comparison. Even if specific information about Honeysett was not disclosed the process itself was suggestive. The provision of only a small number of comparator images (and no foils) implied that (the investigators believed) *Honeysett* was one of the offenders. Why else would the police, once again, engage the services of the anatomist?[62] The opinions about the

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59 Itiel E Dror, David Charlton and Ailsa E Péron, 'Contextual Information Renders Experts Vulnerable to Making Erroneous Identifications' (2006) 156 *Forensic Science International* 74.

60 See *Honeysett v The Queen* [2013] NSWCCA 135, [71]-[75] where the various strands of evidence are treated as independent.

61 *Honeysett v The Queen* [2014] HCA 29, [13]. The 'police asked him to conduct anatomical comparisons of an offender and a known person'.

62 One-to-one comparisons are highly suggestive and studies spanning a range of forensic domains indicate that they are more error prone than comparisons with foils. See Larry Miller, 'Procedural bias in forensic science examinations of human hair' (1987) 11 *Law & Human Behavior* 157; Saul M Kassin, Itiel E Dror and Jeff Kukucka, 'The forensic confirmation bias: Problems, perspectives, and proposed solutions' (2013) 2 *Journal of Applied Research in Memory & Cognition* 42; Michael Risinger et al, 'The *Daubert*/ *Kumho* Implications of Observer Effects in Forensic Science: Hidden Problems of Expectation and Suggestion' (2002) 90 *University of California Law Review* 1.

images were not independent of the other evidence. They were generated in circumstances where the answer desired by investigators was suggested (even if only implicitly) through the information they provided as well as the process. Secondly, the existence of the other inculpatory evidence does not confirm whether the anatomist's opinion is right or wrong or whether his method works. In *Honeysett*, the defendant provided an innocent explanation for the DNA on the objects.[63] While this might be improbable, it is not impossible, and so the DNA evidence does not validate the method or provide *independent* corroboration for the anatomist's opinions. The two strands of evidence are not independent. Consequently, issues of suggestion and other threats to cognition compromise their combination and weight.

It is important to make clear that the anatomist's contention that risks from bias and suggestion — purportedly captured by the idea of 'displacement' (*Honeysett* [14] reproduced above) — are managed by the 'method' he uses are misguided and misleading. Simply writing down one set of features before moving to the next does not prevent displacement or other insidious forms of cognitive contamination. The anatomist knows that the police believe the second set of features is the same as those in the first set of images (even if the features are disguised or distorted). Henneberg's 'method' and response to 'displacement' do not substantially address notorious threats to cognitive processing.[64]

For the purpose of admission we need to know whether the technique works. This should be ascertained independently of other

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[63] See *Honeysett v The Queen* [2014] HCA 29, [9]; and *Honeysett v The Queen* [2013] NSWCCA 135, [32]-[34].

[64] See generally Expert Working Group on Human Factors in Latent Print Analysis, *Latent Print Examination and Human Factors: Improving the Practice through a Systems Approach* (US National Institute of Standards and Technology and US National Institute of Justice, 17 February 2012); Anthony Campbell, *The Fingerprint Inquiry Report* (Scotland, December 2011); National Academy of Sciences, Institute of Medicine, Committee on Quality of Health Care in America, *To Err Is Human: Building A Safer Health System* (McGraw-Hill Companies, 1999).

evidence of guilt. Validation studies provide valuable insights for investigators, prosecutors, trial judges and decision-makers. We should expect the opinions of those presented as experts to be obtained in conditions that are not unnecessarily suggestive. And yet, in almost all image (and voice) comparison cases and many other forensic sciences, the materials are presented to the analyst in a manner that suggests a particular identity. In some *ad hoc expert* cases (see Section V below) the 'expert' is a police officer or translator working on the investigation fully apprised of details of the case and even inadmissible information about the suspect(s).

Though not discussed in any detail, the trial and appeals in *Honeysett* also provide some insight into the value of defence experts. *Honeysett* is atypical because the defence had access to several 'rebuttal' experts.[65] Most persons charged and prosecuted do not have access to independent expert advice.[66] The liberal admission of incriminating expert opinion creates burdens and converts issues that should be determined by reference to 'knowledge' at the point of admission into tactical decisions for the defence. Decisions about whether to seek funding for rebuttal witnesses and potentially magnify issues at trial, and what these might mean for admission or evaluation, become tactical and understood by courts of appeal as tactical. In the absence of evidence of validity, reliability and proficiency the defence should not be required to make tactical decisions around the response to the speculative claims of those the prosecution will present, and trial judges recognise, as forensic scientists or experts.

Significantly, the rebuttal witnesses in *Honeysett* did not persuade the trial judge or court of appeal that the anatomist's evidence was inadmissible. Interestingly, in *Honeysett*, as in *Murdoch* previously, inattention to validity and reliability resulted in the spectacle of two anatomists — both of unknown ability when it comes to image

[65] This was also true of *Wood v R* (2012) 84 NSWLR 581; *Gilham v R* (2012) 224 A Crim R 22.

[66] Jacqueline Horan et al, *The presentation of expert evidence in Australian criminal trials* (ongoing ARC Linkage Project funded research).

interpretation and comparison — perpetuating their professional rivalry through the courts. Neither has evaluated their method(s). Consequently, we do not know if Henneberg is better than Sutisno or Sutisno is better than Henneberg. We do not know if either 'method' produces opinions better than chance or better than those that a judge or jury might entertain. To admit incriminating opinions in the hope that the value of the evidence will be clarified for lay persons during the course of an adversarial proceedings, in conjunction with the presentation of other (not necessarily independent) evidence, is optimistic. Moreover, the attempt to gauge the value of (untested) techniques and derivative opinions during the course of proceedings — especially where it happens over and over — is a profound waste of the state's resources and a threat to both rectitude and fairness.[67]

In general, when it comes to admissibility, expert opinions and the techniques they are based upon, should stand or fall on their own. The question of whether an opinion about the identity of a person or source of some trace is admissible should be indexed to knowledge and indicative probative value rather than the strength of the case or capabilities attributed to trial safeguards. In the absence of 'knowledge', strength of the case, cross-examination, the possibility of rebuttal witnesses and scope for judicial directions, should not mediate the reception of the state's forensic science and medicine evidence. They do not guarantee that the value of techniques and the proficiency of forensic analysts will be clarified.

IV BEYOND MORPHOLOGY: A SUBSTANTIAL EPISTEMIC TURN

What does it mean for an opinion to be wholly or substantially based on specialised knowledge? What does it mean for specialised knowledge to be based on training, study or experience? Our judges have directed attention to the form of s 79(1), such that these two

[67] Gary Edmond and Andrew Roberts, 'Procedural Fairness, the Criminal Trial and Forensic Science and Medicine' (2011) 33 *Sydney Law Review* 359.

questions are said to be important. But they have offered limited practical guidance on how they should be answered, particularly the implications of the need for the opinion to be grounded in 'specialised knowledge'. In *Honeysett*, the High Court added to the definition of 'knowledge' without providing an exemplary application. In response, it is worth thinking about the meaning and application of 'specialised knowledge'.

I accept that a one-size-fits-all approach might not be desirable for admissibility decision-making — especially beyond criminal proceedings.[68] There is, however, a need for admissibility standards that are not merely a 'rubber stamp' for the state's forensic 'science' and 'medicine' evidence. The terms of s 79(1) seem to demand just that. For, opinions are not to be based on 'training, study or experience' but rather 'wholly or substantially based on … knowledge' that is independent of the analyst. If the requisite 'knowledge' is not treated as being independent of the analyst — ie. something that the analyst can refer to or provide evidence of — then there would be no need for it and no ability to assess it. We would, in that case, admit the opinions of those with apparently relevant 'training, study or experience'.[69] Perhaps unwittingly, the drafters of s 79(1) distinguished 'knowledge' from 'training, study or experience' such that where an opinion is impugned there is a need to attend to both.

We should avoid substituting the requirement for 'knowledge' with consideration of whether the particular opinion seems reasonable or plausible on the basis of the analysts' (long) training or experience. Section 79(1) requires 'knowledge'. Ordinarily, forensic analysts should be able to refer to published studies (usually

[68] See Gary Edmond, 'Pathological Science? Demonstrable Reliability and Expert Pathology Evidence' in Kent Roach (ed), *Pediatric Forensic Pathology and the Justice System* (Queen's Printer for Ontario, 2008) 96.

[69] It may be that this is what some forms of expertise are actually like, but that is the subject of another essay. Though, see Gary Edmond et al, 'Contextual bias and cross-contamination in the forensic sciences: The corrosive implications for investigations, plea bargains, trials and appeals' (2015) 14 *Law, Probability & Risk* 1.

validation studies) that support the claims being made and the accuracy of the technique in the specific conditions.[70] The court in *Honeysett* insisted that 'the person's training, study or experience must result in the acquisition of knowledge'.[71] In the context of forensic science and medicine, and particularly comparison techniques in regular use, this must mean that the techniques have been formally evaluated. In the very definitions of knowledge adopted from the *Macquarie Dictionary, Daubert* and *Tang,* the High Court distinguished 'subjective belief' and 'unsupported speculation' from drawing inferences from facts on 'good grounds'.[72] For those proffering opinions, presented as expert (or those of forensic scientists), the only good grounds available are derived through formal evaluation.[73] The results of techniques that have never been formally tested are part of a belief system, perhaps shared by groups.[74] But these beliefs are not necessarily reliable and not 'accepted as truths on good grounds'. Inattention to 'knowledge', along with a failure to recognise that formal testing produces 'knowledge' for the modern forensic sciences, frustrates legal practice when it comes to admitting and evaluating forensic science and medicine evidence.

When it comes to forensic science and medicine evidence, particularly techniques used routinely by investigators, we should expect to see the results of validation studies, description of limitations, indicative error rates, evidence of proficiency and

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70 There may, on occasion, be a need for cautious extrapolation.

71 *Honeysett v The Queen* [2014] HCA 29, [23].

72 *Honeysett v The Queen* [2014] HCA 29, [23].

73 Tradition, personal beliefs and even the commitments of parochial 'fields' do not provide good grounds if assumptions, techniques and performance have not been independently evaluated. See National Research Council (of the National Academy of Sciences), *Strengthening the Forensic Sciences in the United States: A Path Forward* (The National Academies Press, 2009).

74 See the commentary around 'guilds' and misguided belief systems in Michael Saks and Jonathan Koehler, 'The Coming Paradigm Shift in Forensic Identification Science' (2005) 309 *Science* 892; Michael Saks and David Faigman, 'Failed Forensics: How Forensic Science Lost Its Way and How It Might Yet Find It' (2008) 4 *Annual Review of Law & Social Science* 149; Gary Edmond et al, 'Model forensic science' (2016) 48 *Australian Journal of Forensic Sciences* (forthcoming).

reference to ongoing controversies and criticism, all proactively and transparently disclosed in expert reports, certificates and testimony.[75] This information should be publicly available, and certainly provided to the parties, so that the defence can make sensible decisions about whether to challenge admissibility, pursue concessions or negotiate a plea. It should be available so that if admissibility is challenged judges and courts of appeal can identify the 'specialised knowledge' an opinion is purportedly based upon, make sensible assessments of the probative value of the evidence as well as consider dangers associated with admission. Where opinion evidence is admitted some 'knowledge' is required by the trier of fact, to the extent that we expect them to rationally evaluate expert opinions in reaching their verdict. [76] Where opinion evidence is contested the need for knowledge is acute. On appeal, in many cases courts of appeal will need to have the means to evaluate expert opinion evidence, especially if admissibility (ie. UEL ss 55, 56, 79, 108C, 135, 137) or directions on expert evidence constitute grounds of appeal.

Significantly, these kinds of information are already required by expert witness codes of conduct and practice directions in most jurisdictions (eg. NSW, Victoria and the Federal Court) and consistent with professional codes for forensic scientists (eg. ANZFSS Code of Ethics).[77] Many reports and certificates do not comply with these expectations because the information is simply not available; never having been generated in the first place. Legal inattention and insensitivity to validity and reliability have contributed to the lack of research and the dearth of pertinent knowledge. Many opinions, currently recognised and admitted under

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[75] See Bryan Found et al, 'Reporting on the comparison and interpretation of pattern evidence' (2012) 44 *Australian Journal of Forensic Sciences* 193.

[76] See *Davie v Magistrates of Edinburgh* [1953] SC 34; *Makita (Australia) Pty Ltd v Sprowles* (2001) 52 NSWLR 705 (Heydon JA). See also Joseph Miller and Ronald Allen, 'The Common Law Theory of Experts: Deference or Education' (1993) 87 *Northwestern University Law Review* 1131; Gary Edmond, 'The conditions for rational (jury) evaluation of forensic science evidence' (2015) *Melbourne University Law Review* (forthcoming).

[77] See, eg, Federal Court of Australia, Practice Note CM 7 of 2014 — Expert witnesses in proceedings in the Federal Court of Australia, 4 June 2013; Supreme Court of Victoria, Practice Note No 2 of 2014 — Expert Evidence in Criminal Trials, 25 June 2014.

the pretence of expertise or experience, are not demonstrably based on knowledge (or ability).

In *Dasreef* and *Honeysett* the High Court emphasised the need to attend to relevance: 'what is the fact in issue that the party tendering the evidence asserts the opinion proves or assists in proving'.[78] At trial the anatomist's opinion was 'tendered to prove that Offender One and the appellant shared similar physical characteristics in support of a conclusion of identity'.[79] If this is the fundamental legal question then our admissibility jurisprudence and trial practice should be directed to addressing it. In *Honeysett*, our lack of knowledge about the value of image comparison techniques, especially where people are disguised, should have been decisive. In the absence of formal evaluation of these techniques, the anatomist's opinion was speculative. Comparing images might seem like a reasonable thing to do, and the anatomist(s) might even be able to do it reasonably accurately. The problem is that in the absence of formal testing we no reason to believe that the opinions are more than unsupported speculation — ie. *ipse dixit*. Claims about the enhanced performance of anatomists, or a specific anatomist, cannot be 'accepted as truths on good grounds'. [80] Importantly, in the accusatorial context, they are not readily susceptible to lay evaluation.[81] The only way that we can determine if the anatomist's opinion is relevant and capable of assisting with identification is to know whether the technique works and how well. We need demonstrable evidence of his ability. Other claims and inquiries are superficial and potentially misleading. In the comparison (or 'identification') sciences, 'specialised knowledge' requires validation of the underlying technique and 'training, study or experience' should support demonstrable evidence of individual proficiency or ability.

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78 *Honeysett v The Queen* [2014] HCA 29, [25]; *Dasreef Pty Ltd v Hawchar* (2011) 243 CLR 588, [31].

79 *Honeysett v The Queen* [2014] HCA 29, [25].

80 See Ibid [18].

81 See, eg, Harry Collins, *Are we all scientific experts now?* (Polity, 2014); Gary Edmond, 'The conditions for rational (jury) evaluation of forensic science evidence' (2015) *Melbourne University Law Review* (forthcoming).

More than a decade after experts were initially asked to assist with the interpretation of images in the wake of *Smith v The Queen*,[82] legal inattention to 'knowledge' has discouraged interest in validation and proficiency studies of the techniques routinely relied upon in investigations and prosecutions. When it comes to the state adducing opinions said to be expert from those represented as scientists or forensic scientists, there is a need for us to be able to answer questions such as whether this individual is actually an expert in the specific domain and whether their techniques have been credibly evaluated and shown to work. These questions, raised by the need to identify the 'knowledge' on which opinions are based, represent a much better approach to admissibility than purporting to break a technique down into its 'constitutive parts' purportedly to determine whether — but really to declare that — the analyst, or those from some putative 'field' does or does not possesses relevant expertise.

V *AD HOC EXPERTISE* BREEDS CONTEMPT

Another problem with *Honeysett* is the reluctance to address, let alone resolve, the festering issue of *ad hoc expertise*.[83] Strategic action by the respondent during the appeal, preserving its access to ad hoc expertise in future prosecutions, enabled the High Court to avoid having to engage the issue.

> 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. 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

[82] (2001) 206 CLR 650.

[83] *Honeysett v The Queen* [2014] HCA 29, [42], [47]-[48]. In *Honeysett*, the Crown's strategic (and perhaps cynical) concession on appeal effectively precluded the Court from considering validity or the continuing operation of ad hoc expertise as an exception to s 76.

> does not maintain the submission that Professor Henneberg's opinion was admissible as that of an ad hoc expert.[84]

The arguments in this essay help to explain why continuing recourse to ad hoc expertise is misguided. We should be wary of creating or expanding common law categories of pseudo or quasi-expertise, inconsistent with the terms of the UEL, for the convenience of the state.[85] The appropriate response is to require those called upon to express their opinions about the identity of speakers or those in images to satisfy an enumerated exception to the exclusionary opinion rule (ie. UEL s 76).

The High Court referred to the decision in *R v Tang*[86] to assist with its definition of 'knowledge'. In that case the NSWCCA concluded that opinions about body shape and posture proffered by another anatomist were not based on 'specialised knowledge' capable of supporting positive identification:

> The opinion that the individual displayed "relatively upright posture" was not wholly or substantially based on Dr Sutisno's specialised knowledge of anatomy. His Honour found that it had not been established at the trial that the comparison of physical attributes — "body mapping" — constituted an area of "specialised knowledge" capable of supporting an opinion of identity.[87]

The High Court did not refer to the fact that notwithstanding the lack of relevant specialised knowledge the NSWCCA would have allowed Sutisno to testify because she was an anatomist who had spent time looking at images of the robbery and reference photographs of Tang.[88] According to the CCA, this made Sutisno an

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84 Ibid [48].

85 Gary Edmond and Mehera San Roque, 'Quasi-Justice: Ad Hoc Expertise and Identification Evidence' (2009) 33 *Criminal Law Journal* 8.

86 (2006) 65 NSWLR 681.

87 *Honeysett v The Queen* [2014] HCA 29, [27].

88 See *R v Tang* (2006) 65 NSWLR 681, [85]. Alternative responses, such as allowing the jury to compare the images themselves (unaided) or excluding the images because of their low quality were unpalatable to the CCA. The lawyers

ad hoc expert who should be allowed to express her opinions about features, describe similarities and determine if there were significant differences. This framework shaped the reception of Henneberg's opinion evidence and practically prevented him from going beyond describing similarities (and no differences). The absence of validation studies supporting Sutisno's technique and the fact that we have no idea about her level of performance assumed no real significance in the decision in *Tang*.[89] Though, unlike the subsequent decisions in *Honeysett* and *Dasreef*, the CCA seemed reluctant to exclude the opinion evidence. The CCA was willing to countenance the prosecutor introducing Sutisno's as a highly qualified anatomist even though her legally-recognised 'expertise' — namely interpreting and comparing low quality images on the basis of repeated exposure — would be merely *ad hoc*.[90]

Because the issue was side-stepped in *Honeysett*, it is uncertain if Professor Henneberg's opinions about similarities might yet be admissible as ad hoc expert opinions in NSW (and elsewhere) even though they were not (according to the High Court) based on his specialised knowledge of anatomy or any identified knowledge. *Honeysett* says nothing about the outcome in *Tang* and the willingness of the NSW courts to admit such evidence under s 79(1) or as a vestige of the common law somehow exempt from the application of s 76.[91]

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and judges in *Tang* were oblivious to the considerable literature on unfamiliar face matching and its problems.

89 See, eg, *R v Tang* (2006) 65 NSWLR 681, [23], [24]-[28], [33]. Similarly, the court effectively overlooked the anatomist's willingness, in the absence of formal evaluation of her techniques, to positively identify, or suggest identification, through the expressions she employed. She used terms, such as 'unique' and indicated that the accused and the robber were 'one and the same', in her report and testimony in ways that were likely to mislead the jury.

90 That is, prosecutors tend to present ad hoc experts as implicitly expert, and usually emphasise their training, study and experience even when it has no known relevance to the accuracy of comparison of sounds or images.

91 See, eg, *R v Leung and Wong* (1999) 47 NSWLR 405; *R v Riscutta & Niga* [2003] NSWCCA 170.

There are dangers in allowing those (eg. police, interpreters, investigators and those who are experts in other domains) who are not known to possess demonstrable expertise in a specific domain of 'identification' to express opinions about identity on the basis of repeatedly watching videos or listening to sound recordings.[92] Unlike experts, many ad hoc experts do not write reports and do not comply with codes of conduct and practice directions for expert witnesses. In many cases they do not comply because they are unfamiliar with rules and, even if they were aware, could not satisfy their requirements. Frequently, they do not know about relevant literature and methods, about notorious risks and dangers to cognition, or even how error prone those who are confident about their identifications can be.[93] These 'failures' or limits should raise concerns and serve to reinforce the incompatibility of ad hoc expertise with the terms of s 79(1) and other procedures designed to assure the quality and impartiality of expert opinion evidence.[94]

The High Court's reluctance to address ad hoc expertise, the issue of reliability (and validity) and whether s 76 covers the field means that opinions about the identity of speakers and persons in images continue to plague investigations, prosecutions and the courts.[95] Revealingly, the outcome in *Honeysett* is inconsistent with the outcome in *Tang*. The opinion evidence was admissible in *Tang* — albeit with a modification to the terminology — but very similar evidence was said to be inadmissible in *Honeysett*. Although, it is far

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92 See Kirby J in *Smith v The Queen* (2001) 206 CLR 650.

93 Ignorance of relevant research and knowledge, along with limits and uncertainties, undermines the effectiveness of cross-examination as a safeguard.

94 The reports of Henneberg and Sutisno (like the reports of many forensic scientists) appear deficient when juxtaposed to jurisdictional practice directions.

95 Recourse to *Uniform Evidence Law* s 78 is not an appropriate response. Not only does the section appear to refer to sensory witnesses (rather than those watching or listening to recordings of events), where admitting the opinion is necessary to understand the witness's perception of the matter or event, but such a broad reading would allow a great deal of forensic science evidence into the trial via the back door — without the need to attend to 'specialised knowledge' or 'training, study or experience'. Cf *Kheir v The Queen* [2014] VSCA 200; and obiter in *Smith v The Queen* (2001) 206 CLR 650.

from inconceivable that the opinion of an anatomist or a person from another specialisation (eg. IT, art, military intelligence, podiatry, fingerprints) will be proffered as ad hoc expert evidence and admitted by an Australian court. Can the fact that Sutisno might have looked at the images for some indeterminate period of time longer than Henneberg really support admissibility under the UEL? Can the limitations with anatomical knowledge be circumvented by recourse to different types of training and experience? Could a latent fingerprint examiner, for example, testify about similarities and even 'match' faces and bodies on the basis of her training and experience interpreting and comparing images of fingerprints?

It may be that we need to direct more attention to the question of *familiarity* in relation to voice and image comparisons.[96] For, a voluminous scientific literature confirms that familiars are consistently more accurate than strangers (ie. anatomists, judges and jurors) when it comes to identifying persons in voice and image recordings.[97] This does, however, create difficulties and our expert opinion jurisprudence, concerned as it is with 'knowledge', is not well oriented to resolving them. Opinions about the identity of persons derived from repeated listening to sound recordings and/or watching images are not easily reconciled with the exceptions for opinions based on specialised knowledge and linked to training, study and experience. In some cases admissibility may rest entirely on quite limited 'experience' with, really exposure to, individual persons or recordings of them. This sits awkwardly with s 79(1).

There is, in addition, the question of whether investigators and others whose employment, if disclosed, might unfairly prejudice the accused (eg. police, prison guards and parole officers) should be allowed to express their incriminating opinions about identity based on familiarity.[98] Difficulties here are accentuated by the fact that

[96] Precisely what 'familiarity' entails will require careful attention to scientific literatures and the context of specific cases.

[97] See, eg, *R v Marsh* [2005] NSWCCA 31; *Murdoch v The Queen* (2007) 167 A Crim R 329.

[98] See *R v Leaney* [1989] 2 SCR 393, 415. Admitting the opinions of investigators and criminal justice personnel introduces a range of dangers, in addition to the

investigators are often exposed to a wide range of information and identity might be suggested by insights from beyond the images or sounds. It is difficult to explore effectively bare opinions, usually made in confident terms (often positively identifying a person), proffered by an experienced police officer, during a trial. Even more problematically, research suggests that allowing persons to examine images or listen to the recordings in conjunction with 'expert' evidence (or following other forms of, even implicit, suggestion) is likely to significantly influence interpretation. Where interpretative tasks are difficult, people tend to accept, or defer to, the opinions of those represented as experts regardless of whether their opinions are correct.[99]

If s 79(1) is not satisfied, the witness is not a legally recognisable expert. Once again, the advantage of attending to validity and reliability should be obvious. Rather than having to speculate about whether repeatedly watching a video or listening to a voice recording makes someone an expert (and how good they are), we should be expecting to see evidence that these tasks do substantially enhance performance and the conditions in which performance is enhanced — eg. around low quality images, where the recordings are of short duration, or where recordings cross languages. There is scientific literature on these subjects and courts should expect to be exposed to and have to engage with them.[100]

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risk of misidentification. The opinions of investigators and criminal justice personnel will often suggest prior criminality or suspicion. Consider the prejudice attending the testimony of a parole officer or prison guard asked to identify a person of interest in a CCTV recording. Investigators and criminal justice personnel may also be exposed to a range of gratuitous, though suggestive and prejudicial, information. Consider the opinion of a translator who has heard telephone intercepts relating to criminal activities that are not part of the prosecution and may even rely on names and mannerisms (like the features relied upon by Professor Henneberg). See also *R v Rix* [2005] NSWCCA 31; *R v Stirling; R v McCook* [2014] NSWDC 199.

99 Richard Kemp, Stephanie Heidecker and Nicola Johnston, 'Identification of suspects from video: Facial mapping experts and the impact of their evidence' (Paper presented at the 18th Conference of the European Association of Psychology and Law, Maastricht, 2-5 July 2008), xxx.

100 See *Tuite v The Queen [2015] VSCA 148*, [103]-[104].

VI SECTION 137

> **137 Exclusion of prejudicial evidence in criminal proceedings**
> In a criminal proceeding, the court must refuse to admit evidence adduced by the prosecutor if its probative value is outweighed by the danger of unfair prejudice to the defendant.

Limitations with *Honeysett* are accentuated by the application of s 137 (or the *Christie* discretion) in most Australian jurisdictions.[101] The CCA in NSW has, for example, insisted that trial judges should not consider the actual probative value of evidence when undertaking the balancing exercise mandated by s 137 (and s 135). Following *Tang* and *R v Shamouil*, this means that in NSW, as applied, sections 79, 135 and 137 (and 55, 56) do not require a trial judge (or an appeal court) to consider the reliability or actual probative value of forensic science and medicine evidence. In consequence, admissibility is determined largely on the basis of judicial impressions of epiphenomenal considerations on the basis of judicial impressions. Overwhelmingly, questions about the probative value of contested forensic science and medicine evidence are left for the trial and the trier of fact.

The NSWCCA has insisted that only exceptionally might a trial judge consider the probative value of evidence when asked to exclude it on the basis of s 137 of the UEL.[102] (Such an approach is difficult to reconcile with the text of s 137). Rather than obtain information, such as the results of validation studies, that would enable a trial judge to determine the conditions in which a technique is known to work, as well as provide an indication of its accuracy and the analyst's proficiency, the judge is obliged to take the probative value of the opinion 'at its highest' and to undertake the mandated balancing exercise on that basis.[103] This approach adds

[101] *R v Christie* [1914] AC 545.
[102] Though without providing any guidance on conditions that might require attention to actual probative value.
[103] See, eg, *R v Shamouil* [2006] NSWCCA 112; *R v XY* [2013] NSWCCA 121.

little to the s 79 jurisprudence and renders s 137 practically moribund.[104]

There are several reasons for this. First, for most forensic science and medicine evidence only formal scientific evaluation enables a person to ascertain the validity and reliability of the technique and derivative opinion. Taking opinion evidence at its highest requires the trial judge (and court of appeal) to have a clear indication of the range of credible values. Where the technique has not been formally validated, claims about *the highest value* are nothing but a (judicial) guess. Second, many of the dangers associated with forensic science and medicine evidence flow from the tribunal of fact misunderstanding or over-valuing the evidence, or deferring to highly credentialed witnesses.[105] Yet, it is only when the value (or more realistically, an indicative probative value) is known that the admittedly fraught balancing exercise around probative value and the danger of unfair prejudice to the accused can be undertaken.[106] By not requiring evidence of validity and reliability, to the extent that judges actually purport to enact s 137, they are engaged in a speculative exercise. Trial judges guess at the probative value and their speculative impressions inform how they treat potential dangers. Where judges deem the probative value to be high they are unlikely to find it outweighed by dangers. Perversely, judicial deeming is not necessarily indexed to actual probative value or known dangers. Third, complicating the balancing exercise, there is a tendency among lawyers and judges to believe that those with formal qualifications and experience are highly proficient even though a U.S. National Academy of Sciences' report expressed grave concerns about such assumptions.[107] Judges (and most jurors) do not seem to

[104] See Gary Edmond et al, '*Christie*, section 137 and forensic science evidence after *Dupas v The Queen* and *R v XY*' (2014) 40 *Monash Law Review* 389.

[105] *HG v R* [1999] HCA 2, [44].

[106] These might not always be as incommensurable as jurists have suggested. For, insight into probative value often provides direct insights into some of the major dangers. Cf *Pfennig v The Queen* (1995) 182 CLR 461, 514-15 (McHugh J); *Bendix Autolite Corp v Midwesco Enterprises Inc*, 486 US 888, 897 (1988) (Scalia J).

[107] National Research Council (of the National Academy of Sciences), *Strengthening the Forensic Sciences in the United States: A Path Forward* (The National Academies Press, 2009): More specifically, consider the limited

have appreciated the dangers of such commitments or the importance of formally validating techniques and rigorously assessing proficiency in order to obtain a clear idea of probative value.

In many cases juries (and judges) are asked to evaluate forensic science and medicine evidence without the kinds of information that are required to undertake that task.[108] This oversight may not prevent juries and judges from evaluating forensic science and medicine evidence, as the *Honeysett* trials and appeals make clear, but it does mean they are not evaluating the evidence in a way that could be characterised as rational — in the sense of being based on *knowledge*. Instead, decision-makers are compelled to speculate about probative value using factors, such as experience and the boundaries of 'fields', apparent plausibility, resilience in cross-examination and witness demeanour. These factors do not address the fundamental issues around whether the witness is an expert at some specific activity and how well they perform.

In Victoria, in contrast, the Court of Appeal recently insisted that due to emerging problems with the forensic sciences, along with the perceived inability to consider reliability under s 79(1), trial judges should consider the actual probative value of forensic science and medicine evidence when applying s 137.

> To prevent unfair prejudice of that kind, it is essential that the reliability of expert evidence be established to the court's satisfaction (under s 137) before it is led. We have concluded that the touchstone of reliability for this purpose is proof of appropriate validation, both of the underlying science (where necessary) and of the particular methodology being employed.[109]

While the approach adopted by the Court of Appeal in Victoria represents a significant improvement over the CCA's indifference to

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impact of training and long experience on the performance of passport examiners in David White et al, 'Passport Officers' Errors in Face Matching' (2014) 9 *PLOS ONE* e103510.

[108] Edmond, above n 75.

[109] *Tuite v The Queen [2015] VSCA 148*, [11].

the text of s 137, potential limitations persist. First, the reluctance to attend to validity and reliability as part of 'knowledge' has meant that the Victorian Court of Appeal has used a safeguard of general application to address problems with a specific type of evidence more appropriately regulated by ss 76 and 79(1). Second, because the highest courts in Victoria and NSW disagree on the construction of s 137, this issue is likely to go before the High Court. Were the High Court to endorse NSW's ischemic approach to probative value, the ability to consider the validity and reliability of expert evidence (in Victoria) will be short-lived. Third, conventionally, the party challenging admissibility under s 137 carries the burden. With respect to the state's forensic science and medicine evidence, it is unreasonable to require the defendant to demonstrate a lack of probative value or reasons for concern rather than require the proponent (ie. the state) to proactively support the probative value of techniques and derivative opinions with positive evidence. Fourth, s 79(1) imposes a bright line or threshold whereas s 137 involves a balancing exercise. Judges might be willing to admit weak and speculative evidence, notwithstanding the terms of s 137, where they believe the dangers are not significant or can be mitigated by trial safeguards — especially judicial instruction and warnings.[110]

Notwithstanding several disadvantages and risks, one advantage of using s 137 is that it only applies to criminal proceedings and operates asymmetrically. Consequently, once an evidentiary burden is discharged by the defendant, the prosecution should assume responsibility for persuading the court that on the balance of probabilities the actual probative value of the evidence outweighs the various dangers of unfair prejudice — which will usually be informed by insights into validity, uncertainty, limitations, errors and ability.[111]

[110] Yet, in the absence of evidence of validity and reliability judicial directions and warnings will be proffered largely in ignorance. That is, trial judges will not be in a position to credibly speak about limitations, uncertainties and the magnitude of dangers.

[111] The goals of criminal proceedings are not isomorphic with the overarching objectives of civil proceedings.

In principle, there is nothing preventing a trial judge from considering reliability under s 79(1) as part of the requirement of 'knowledge' *and* under s 137 in relation to the need to balance the probative value of opinions based on specialised knowledge against the dangers of unfair prejudice to the accused. Indeed, this twofold approach is not only more consistent with the terms of the UEL, it also provides a credible means of regulating expert opinions that might not be readily susceptible to formal evaluation.

VI JOINING THE 'PIXELS' IN *HONEYSETT*

The High Court's current approach to the admissibility of *expert* opinion does not use the requirement for 'knowledge' to ascertain whether a technique (or method or process) actually works. Section 79(1) has not been operationalised to facilitate the rational evaluation of expert opinion evidence in criminal proceedings. Henneberg's evidence was excluded because the Court declared that his opinions were 'based on … subjective impression[s] of what he saw when he looked at the images'.[112] Various lawyers and courts spent a lot of time thinking about the boundaries of anatomy, and image interpretation and comparison, rather than addressing the fundamental epistemic question: Can he do it, how well, and how do we know?

At the end of the day, after multiple appeals, hundreds of thousands, perhaps millions, of dollars spent investigating, prosecuting and appealing; we still do not know whether the person in the images of the robbery is *Honeysett*. We are still without demonstrably valid and reliable techniques for image interpretation and comparison for the growing number of cases where images are available. Remarkably, our current jurisprudence on opinions based on 'specialised knowledge' (so-called expert opinion evidence) does not at any stage address the question of whether the witness is in fact

[112] *Honeysett v The Queen* [2014] HCA 29, [42]: 'the appeal does not raise an issue of whether "body mapping" was shown at the trial to constitute an area of "specialised knowledge"'.

an expert in the specific domain, or more particularly, doing the specific analysis.

Inattention to the meaning of 'specialised knowledge' and its application to proffered opinions manifest in a range of practical problems. Current jurisprudence on the admission of contested forensic science and medicine evidence is generally deficient in the following areas:

- It does not provide practical guidance. Lawyers and trial judges are not provisioned with useful criteria to help them determine whether the 'two conditions' are satisfied.
- It does not direct attention to whether the technique has been evaluated or the abilities of forensic scientists. In many cases we do not know if the person is expert at the specific task.
- It does not engage systematically with limitations, uncertainties and the ubiquitous risk of error.
- It requires trial and appellate judges to speculate about whether some issue or practice is sufficiently related to 'knowledge' or ought to be excluded.
- It encourages, or tolerates, lawyers, courts and juries focusing and relying on what are often superficial (or epiphenomenal) qualities such as formal qualifications, experience and previous legal admission rather than criteria that reference 'knowledge'.
- It tends to exaggerate the value of 'experience' and/or replace the need for 'knowledge' with the possession of 'experience' or formal training.
- It is insufficiently attentive to contextual bias, cognitive contamination and the cross-contamination of evidence.
- It does not assist with probative value or dangers of unfair prejudice under s 137 and *Christie*. It requires trial and appellate judges to speculate about the probative value of evidence (especially when taking the value of opinions 'at their highest').

- It privileges admission and bolsters confidence in conventional trial and appellate practice, and especially trial safeguards, even though they do not repair the failure to have formally evaluated a technique.
- It does not guarantee that the kinds of information and insights required by the trier of fact will be available and, where appropriate, discussed during the trial — via evidence-in-chief, cross-examination or raised through judicial directions and warnings.
- Systematic indifference to 'knowledge' retards institutional learning and undermines the ability to develop sensible policy based on evidence and mainstream scientific approaches to research and practice.

While there are debilitating limitations with the approach in *Honeysett*, these are largely remediable within our existing statutory framework using the jurisprudence of form (from *HG* and *Dasreef*) and applying emerging definitions of 'specialised knowledge'. *Honeysett* refers to the need for an 'acquaintance with facts, truths, or principles, as from study or investigation' or 'known facts or any body of ideas inferred from such facts or accepted as truths on good grounds'. Using the definition of knowledge outlined in *Honeysett*, courts might reasonably require those presented as experts to provide evidence of ability when admission is challenged, to avoid speculative opinions and attendant dangers.

Current Australian approaches to admissibility produce inconsistent outcomes, admit unreliable opinions and contribute to cases being substantially unfair to those accused as the value of the opinion evidence remains unknown and is not presented in ways susceptible to rational evaluation. Trial safeguards, such as cross-examination, rebuttal experts and judicial directions and warnings are unlikely to repair these conditions. When it comes to forensic science and medicine evidence, especially contested evidence, our jurisprudence should require the kinds of standards and values

employed by mainstream scientists and biomedical researchers.[113] Our current admissibility jurisprudence does not engage usefully with 'specialised knowledge' and does not facilitate the rational assessment of a kind of evidence that has created difficulties for lawyers, judges and jurors for centuries. It is time that changed. It is time that s 79(1) was interpreted and applied to enable questions, identified in successive High Court decisions, to be answered in ways that make expert opinions conducive to assessment by judges and, more importantly, the trier of fact.

[113] To the extent that legal practice departs from, or is indifferent to, the best scientific advice, research and methods, judges should provide persuasive justifications.