INTERPRETING IMAGE EVIDENCE: FACIAL MAPPING, POLICE FAMILIARS AND SUPER-RECOGNISERS IN ENGLAND AND AUSTRALIA

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Abstract: London's Metropolitan Police has recently established a team of "super-recognisers" to identify suspects. Limited attention has been given to the use to which their evidence may properly be put during investigations, formal interviews and prosecutions. This article explores the ways investigators have approached the identification of persons of interest in crime-related images and the use of this evidence at trial. It explains that the courts have largely been inattentive to scientific research; particularly notorious difficulties and the (un)reliability of much image interpretation and comparison. Following a review of admissibility jurisprudence in England and Australia and relevant scientific research, it concludes that the strategic use of those with enhanced abilities — to recognise familiar faces and to match unfamiliar faces — would improve the reliability of identifications and offer the potential to circumvent the dangers of unreliability, bias and contamination that threatens current police and expert practice.

Keywords: *identification; images; expert evidence; CCTV; police familiars; super-recogniser; Code D*

I. Suspect Identification

This article reviews the ways investigators in England and Australia use crime-related images to identify persons of interest (POIs).[1] It considers the ways in which identifications by investigators, police familiars, facial mappers and other putative experts are used in investigations, police interviews and prosecutions. It also explores the emergence of a relatively new type of actor, the police

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1 This article considers the interpretation of images by those who were not sensory witnesses to the events. We are not here concerned with eyewitness identification or other direct sensory evidence of identity.

super-recogniser.[2] Following a review of the very different approaches to evidence of identification by police officers in England and Australia, the article provides a summary of scientific research relevant to facial recognition and face matching. This review is revealing because it suggests that the legal regulation of image interpretation in both jurisdictions has been, and continues to be, largely inattentive to what is known by scientists about the difficulty and (un)reliability of facial perception and comparison.

Our review of the admissibility jurisprudence and relevant scientific literature questions practices in both jurisdictions. Liberal English approaches appear too accommodating and Australian approaches are, as we explain, unnecessarily exclusionary. In consequence, we offer a partial solution that might help to repair a vexed area of law in ways that largely avoid the need to rely on the identification evidence of investigating police officers, police familiars and facial mapping experts. Strategic use of independent super-recognisers offers the potential to discipline the interpretation of images by the state while circumventing reliance on conventional identifications that tend to be compromised by uncertainty, inadequate regulation and indifference to scientific knowledge.

II. England and Wales: No Fence, No Gate

Photographs and videos have been admitted and relied upon in English courts for decades.[3] In terms of identifying POIs in images, courts have admitted the impressions of investigators, other police officers and police civilian staff, members of the public, and a range of individuals recognised as *experts*.[4] In this section, we review several of the leading appellate decisions, along with Codes of Practice, on the use of images for purposes of identification. We begin with *Re A-G's Reference (No 2 of 2002)*[5] before moving to consider expert witnesses, the use of ordinary police officers and the more recent emergence of police super-recognisers.

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2 Scientific definition of super-recognition is developed in Section IV(C).

3 Josh P Davis and Tim Valentine, "Human Verification of Identity from Photographic Images" in Tim Valentine and Josh P Davis (eds), *Forensic Facial Identification: Theory and Practice of Identification from Eyewitnesses, Composites and CCTV* (Chichester: Wiley-Blackwell, 2015); Jennifer Mnookin, "The Image of Truth: Photographic Evidence and the Power of Analogy" (1988) 10 Yale Journal of Law & the Humanities 1; Jonathan Finn, *Capturing the Criminal Image: From Mug Shot to Surveillance Society* (Minnesota: University of Minnesota Press, 2009). Photographic likenesses have been admissible in court since the nineteenth century (see *R v Tolson* (1864) 4 F & F 103, 176 ER 488). In *R v Maqsud Ali* [1966] 1 QB 688, 701 Marshall J noted that "[f]or many years now photographs have been admissible in evidence on proof that they are relevant to the issues involved in the case".

4 These groups are not always clearly demarcated or known to be better than jurors. So-called *ad hoc experts* are a good example of boundary blurring.

5 [2003] 1 Cr App R 21.

A. Re A-G's Reference (No 2 of 2002)

One of the most influential decisions concerning the use of images for the purposes of identification in England, is *Re A-G's Reference (No 2 of 2002)*.[6] This case is an important endorsement of the active role reserved for the jury as well as a delineation of the primary types of witness able to proffer identification based on images. We consider the applicability of these witness categories to the interpretations of images and attempts to regulate them in the ensuing sections.

The following passage, extracted from *Re A-G's Reference (No 2 of 2002)*, summarised and endorsed extant legal authority. According to the Court of Appeal:

> "In our judgment, on the authorities, there are, as it seems to us *at least* four circumstances in which, subject to the judicial discretion to exclude, evidence is admissible to show and, subject to appropriate directions in the summing-up, a jury can be invited to conclude that the defendant committed the offence on the basis of a photographic image from the scene of the crime:
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> (i) where the photographic image is sufficiently clear, the jury can compare it with the defendant sitting in the dock (*Dodson and Williams*);
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> (ii) where a witness knows the defendant sufficiently well to recognise him as the offender depicted in the photographic image, he can give evidence of this (*Fowden and White*, *Kajala v Noble*, *Grimer*, *Caldwell and Dixon* and *Blenkinsop*); and this may be so even if the photographic image is no longer available for the jury (*Taylor v Chief Constable of Chester*);
>
> (iii) where a witness who does not know the defendant spends substantial time viewing and analysing photographic images from the scene, thereby acquiring special knowledge which the jury does not have, he can give evidence of identification based on a comparison between those images and a reasonably contemporary photograph of the defendant, provided that the images and the photograph are available to the jury (*Clare and Peach*);
>
> (iv) a suitably qualified expert with facial mapping skills can give opinion evidence of identification based on a comparison between images from the scene, (whether expertly enhanced or not) and a reasonably contemporary photograph of the defendant, provided the images and the photograph are available for the jury (*R v Stockwell* (1993) 97 Cr App R 260, *R v Clarke* [1995] 2 Cr App R 425 and *R v Hookway* [1999] Crim LR 750)".[7]

6 *Ibid*.

7 *Ibid.*, [19], (italics added). The expression "at least" suggests that the categories are not closed.

This extract and the legal authorities it reviews are revealing in their complete insensitivity to published scientific research.[8] We knew quite a lot about face matching in 2003 and, as Section IV reveals, we know even more now.[9] The difficulty and error-prone nature of identification via images, especially unfamiliar face matching, is not reflected in the permissive tone of *Re A-G's Reference (No 2 of 2002)*.[10] Similarly, although the Court of Appeal has accepted that the reliability of identifications from images may be affected by external factors,[11] it has not developed jurisprudence around the variation in the abilities of individuals to recognise and match faces. The recent emergence of police super-recognisers — discussed in Section II(D) — presents a complication as they are not readily accommodated within the existing categories of identification witness, particularly when engaged in the recognition or comparison of unfamiliar faces.

The first of the categories identified by the Court of Appeal preserves a fundamental role for the jury. Provided images are considered "sufficiently clear", the jury is entitled to undertake its own comparisons. Jurors are entitled to compare the (often crime-related) images with the accused in court, as well as to make comparisons with reference images of the accused. In terms of clarity (or image quality), there are no references to how this might be gauged or technical specifications relevant to interpretive accuracy.

The second category enables a witness to identify a POI where they are "know[n] . . . sufficiently well" to facilitate recognition. Here the idea of "familiarity" is introduced, though without explication. We are not told what constitutes "sufficient" familiarity, nor how it may be acquired.[12] Moreover, how does the level of familiarity (and the circumstances in which it was acquired) influence accuracy? And, how should we manage the implication of criminality or suspected criminality that

8 There is some reference to reliability in *R v Clarke* [1995] 2 Cr App R 425, but the Court of Appeal deferred to the trial judge's assessment of the experts. The Court of Appeal made no attempt to evaluate the reliability of the techniques used or the experts' conclusions, or consider whether this might affect the question of whether the evidence was capable of assisting the jury. In *R v Caldwell and Dixon* (1994) 99 Cr App R 73, 77 the Court of Appeal asserted that "[r]ecognition, all would surely agree, is generally more reliable than identification of a stranger and accordingly it ordinarily deserves greater evidential weight". There were no references to relevant scientific literatures in either case.

9 Mike Burton and Rob Jenkins, "Unfamiliar Face Perception" in Andy Calder, Gillian Rhodes, Mark Johnson and Jim Haxby (eds), *The Oxford Handbook of Face Perception* (Oxford: Oxford University Press, 2011).

10 *Re A-G's Reference (No 2 of 2002)* (n.5). We accept that common law courts conventionally draw upon earlier decisions and authority (of which the previous passages disclose an abundance). The categories set out in *Re A-G's Reference* and the permissive responses of the courts are historically contingent and informed by judicial impressions and experience rather than research findings, technical definitions or notorious dangers.

11 Such as, for example, lighting conditions, distance and quality of images.

12 These issues are considered in several Canadian cases: *R v Leaney* [1989] 2 SCR 393, [18], [28]; *R v Anderson* 2005 BCSC 1346.

may provide the explanation for familiarity, for example, through previous associations with the police or other criminal justice personnel?[13]

The third category provides scope for an individual who spends time looking at images — for example, repeatedly watching a closed-circuit television (CCTV) recording — and thereby acquires "special knowledge", to proffer an opinion on identity that might assist the jury.[14] Along with the previous category, this provides a legal basis for individuals, usually investigators or other police officers, to identify persons with whom they have some familiarity, even if the "familiarity" is acquired by repeatedly watching videos and/or comparing images in environments that are highly suggestive.[15] All of the reported cases involve police officers who were aware of the identities of suspects when reviewing the images.[16] Opinions derived from this kind of repeated looking (or listening) are sometimes referred to as *ad hoc expertise*.[17]

The final category pertains to expert evidence, namely the opinions of so-called facial mappers. Individuals with a diverse range of qualifications and backgrounds have been legally recognised as experts and allowed to express their opinions about the identities of persons in images. Facial and body mapping evidence is considered in more detail in Section II(B).

B. Facial mapping and image experts

As foreshadowed, investigators and prosecutors routinely draw upon a range of purported experts to assist with the identification of POIs in images. Recourse to

13 In *R v Fowden* [1982] Crim LR 588, the Court of Appeal held that evidence of recognition by a police officer and a store detective should have been excluded because it could not be tested without causing "prejudice and embarrassment" to the defendants. This case was subsequently confined to its facts by *Caldwell and Dixon* (n.8). The potential prejudice arising from the content of some images, such as where violent acts are depicted, may also be a problem.

14 There is no consideration of how this might relate to, and potentially overlap with, the first category. The assertion that police who have repeatedly studied images have "special knowledge that the Court [does] not possess" (*R v Clare* [1995] 2 Cr App R 333, 338) has led the courts to conclude that such evidence is capable of assisting the tribunal of fact and is, therefore, admissible. This appears to be an application of the assistance requirement for expert evidence (*R v Turner* [1975] QB 834). However, the courts have not sought to apply the tests for admitting expert opinion evidence to this category of witness. In particular, *Turner* provides that, to assist the jury, an expert's testimony must be necessary (in the sense that it should be helpful). As Munday notes, "[t]he courts have not denied that the matters on which [such] police witnesses are testifying are matters which the jury, given time and patience, could judge for themselves": Roderick Munday, "Videotape Evidence and the Advent of the Expert *Ad Hoc*" (1995) 159(33) JP 547.

15 In principle, there appears to be nothing to prevent civilians from conducting this task, but the reported cases concern police officers who are not known to be super-recognisers.

16 That is, they undertook a difficult interpretative activity in highly suggestive conditions. See Section IV(F).

17 Munday questions the pedigree and evidentiary basis for *experts ad hoc* in "Videotape Evidence and the Advent of the Expert *Ad Hoc*" (n.14). In *R v Flynn* [2008] 2 Cr App R 20, [14] the Court of Appeal thought the term *expert ad hoc* was "unhelpful, since those who acquire the specialist knowledge cannot in our view properly be referred to as experts". Repeated viewing (and listening) may not provide the requisite familiarity to significantly enhance accuracy. See also Gary Edmond and Mehera San Roque, "Quasi-Justice: Ad Hoc Expertise and Identification Evidence" (2009) 33 Criminal Law Journal 8.

experts tends to occur when images are of low quality and/or the POI is unknown and so "unfamiliar" to investigators, other police and any civilian witnesses. There are quite a few different types of individuals engaged as *expert* image analysts (or facial mappers).[18] These include engineers, photographers, IT workers, artists, anatomists, physical anthropologists, ex-military intelligence personnel and even podiatrists (for gait and posture).[19] We have italicised the word *expert* because, as we explain in Section IV(D), there is little evidence that their performance is superior to the abilities of jurors. In this instance, enhanced interpretive accuracy is precisely what it means to be an expert.[20] Admissibility criteria that do not direct attention towards demonstrable ability, along with convictions, particularly those upheld on appeal, seem to have convinced lawyers, judges and juries that those presented and admitted as expert witnesses actually possess expertise in the relevant domain, namely the accurate identification of POIs in images.[21]

Re A-G's Reference (No 2 of 2002)[22] affirmed the admissibility of the opinions of facial mapping (and other *expert*) witnesses. Originally, these witnesses tended to use anthropometric approaches, where images were scaled and re-oriented to enable measurements of facial (and other) features. These approaches, which did not employ validated photogrammetric methods, produced crude and inconsistent results. They were relatively easy to discredit and were quickly abandoned. In consequence, most facial mappers now rely on morphological comparisons. These are basically subjective comparisons performed macroscopically — with the naked eye. That is, the examiner looks at images side-by-side on one or more computer screens. Some facial mappers "supplement" their analysis with superimposition; where different images are overlaid or "sliced" and merged.[23] There are few standards governing these activities.

When interpreting images, these *experts* tend to present their evidence in ways that mimic the likelihood framework or strength of expression tables used

18 On facial mapping, see Gary Edmond *et al.*, "Law's Looking Glass: Expert Identification Evidence Derived from Photographic and Video Images" (2009) 20 Current Issues in Criminal Justice 337.

19 Not all of these individuals would self-describe as facial mappers. For convenience, we will employ "facial mapping" as a catch-all label for those allowed to express opinions about the identity of POIs in images, recognising that they might prefer and use different titles. Many of these individuals possess expertise in apparently related domains, the question is whether they are experts in the specific domain of identifying persons in images. As we explain, the labels are less important than demonstrating specific abilities through formal evaluation of methods and performance. A conspicuous exception here is photogrammetry, though this is used relatively rarely and usually involves the provision of error rates.

20 See Kristy Martire and Gary Edmond, "Re-thinking Expertise (and Expert Opinion Evidence)" (2016) 40 Melbourne University Law Review (forthcoming).

21 There has been relatively little engagement with scientific research, particularly validation and/or performance studies. See Gary Edmond, "Legal versus Non-Legal Approaches to Forensic Science Evidence" (2016) 20 International Journal of Evidence and Proof 3.

22 *Re A-G's Reference (No 2 of 2002)* (n.5).

23 Interestingly, independent studies suggest that superimposition tends to make comparison less, rather than more, reliable: see Davis and Valentine, "Human Verification of Identity from Photographic Images" (n.3).

in established forensic sciences.[24] The forms of expression can be vague though suggestive (eg "lends support" or "lends strong support") even when there is no empirical basis (or database) for attributing evidentiary significance.[25] We do not know if different facial mappers would agree with the significance attributed to apparent similarities or even whether the same mapper would produce consistent responses to the same evidence on different occasions.[26] Some facial mapping witnesses report and testify in categorical terms, ie positively identifying the POI. This continues to be allowed under English law, but was more common in decades before *Re A-G's Reference (No 2 of 2002)*[27] and the criticism expressed in *R v Gray*.[28]

Notwithstanding a few spirited challenges in the years surrounding *Re A-G's Reference (No 2 of 2002)* and some judicial concerns, notably in *Gray*, recent decisions have affirmed the potential admissibility of opinions about the identity of persons in images, though the fact that there is no database cataloguing the distribution of face and body features must be made clear to the jury.[29] Traditionally, other limitations, such as techniques not having been validated (eg formally evaluated in conditions where the correct answers are known) and witnesses being routinely exposed to gratuitous, though suggestive, information have not informed admissibility decision-making and are unlikely to lead to exclusion of the evidence under s.78 of the Police and Criminal Evidence Act 1984 (PACE). To the extent that these and other issues have been raised they were for trial, thereby becoming the responsibility of the defence (via cross-examination and the calling of expert evidence in rebuttal), and of the tribunal of fact (in relation to evaluation and the attribution of weight).

Most of the decisions on the admissibility of facial mapping and other *expert* techniques (eg forensic gait analysis)[30] to identify suspects from images, pre-date

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24 Initially, facial mappers tended to be more confident, occasionally positively identifying a POI in low-quality images. Over time, more qualified forms of expression offered the twin benefits of mimicking scientifically based forensic sciences (eg DNA profiling and glass comparison) and offering some insulation where the interpretation was challenged or mistaken. See also Section V(C).

25 See Kristy Martire *et al.*, "The Expression and Interpretation of Uncertain Forensic Science Evidence: Verbal Equivalence, Evidence Strength and the Weak Evidence Effect" (2013) 37 Law and Human Behavior 97.

26 Relevant studies have demonstrated considerable variation between fingerprint examiners and even the same examiner on separate occasions. We should not assume that facial mappers would be any more reliable, either *between* experts or the same expert on different occasions. See Itiel E Dror, "A Hierarchy of Expert Performance" (2016) 5(2) JARMAC 121.

27 *Re A-G's Reference (No 2 of 2002)* (n.5).

28 [2003] EWCA Crim 1001. In *R v Atkins* [2010] 1 Cr App R 8, based on the analysis of a single poor-quality image and the imposition of a grid, a medical artist assigned significant weight to the image evidence. On the "logic of the grid" more generally, consider James Scott, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed* (New Haven: Yale University Press, 1998).

29 Judicial concerns expressed in *Gray* were dismissed in subsequent appellate decisions (eg *R v Gardner* [2004] EWCA Crim 1639, [43] and *Atkins* (n.28), [16]–[18]) on the basis that the particular facial mapper was something of a "bad apple". This characterisation avoided the need to consider whether issues with facial mapping might be systemic.

30 As *R v Otway* [2011] EWCA Crim 3 demonstrates, the admissibility of identification evidence is not dependent on being able to observe the face or some highly discriminating feature (eg mole, scar or tattoo). In addition to facial mapping, over the course of the last decade, the opinions of podiatrists have

the introduction of new rules concerning the reliability of expert evidence. In its 2011 report, *Expert Evidence in Criminal Proceedings in England and Wales*, the Law Commission summarised the common law criteria for admitting expert evidence as comprising tests of "assistance", "expertise" and "impartiality".[31] The Commission recognised that the Court of Appeal had occasionally made reference to the concept of "reliability" as enshrined in *R v Bonython*, the South Australian case,[32] but had held that the "ordinary tests of relevance and reliability" applied to expert opinion evidence and there was no "enhanced reliability test".[33]

The Law Commission deprecated the courts' "laissez-faire approach to the admissibility of expert evidence"[34] and recommended a reliability standard, influenced by the *Daubert*[35] criteria used in all federal proceedings and most state courts in the United States.[36] The Commission acknowledged that its proposals could not improve the reliability of expert evidence in isolation and recommended that they should be accompanied by changes to regulatory schemes to ensure minimum standards for various types of expert evidence, a more critical approach by the judiciary, and training on evidentiary reliability for judges and advocates so that unreliable expert evidence could be appropriately and effectively challenged.[37]

In the absence of a statutory response, the Law Commission's recommendations on admissibility were basically implemented through amendments to the Criminal Procedure Rules (CrimPR) and the Criminal Practice Directions (CPD).[38] CPD 19A acknowledges the common law categories of admissibility: evidence must be

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been increasingly relied upon in attempts to resolve the identity of POIs in images where quality is low and/or the POI is obscured or disguised. The opinions of podiatrists tend to be based on gait, posture, mannerisms and clothing. As with other types of opinions about images, few restrictions have been imposed on *clinical* podiatrists acting as *forensic* podiatrists. On the basis of gait, clinical podiatrists have been allowed to express categorical opinions about the identity of persons in images. See also *R v Dean* [2004] EWCA Crim 319; *R v Ferdinand* [2014] EWCA Crim 1243; *R v MH* [2015] EWCA Crim 585. For commentary, consider Gary Edmond and Emma Cunliffe, "Cinderella Story? The Social Production of a Forensic 'Science'" (2016) 106 Journal of Criminal Law & Criminology (forthcoming).

31 Law Com No 325, paras.2.1–2.11.

32 [1984] SASR 45.

33 Law Commission, Expert Evidence in Criminal Proceedings in England and Wales (n.31) para.2.14. See, for example, *R v Dallagher* [2003] 1 Cr App R 12; *R v Luttrell* [2004] 2 Cr App R 31; *R v Reed* [2010] 1 Cr App R 23.

34 Law Commission, Expert Evidence in Criminal Proceedings in England and Wales (n.31) para.2.16.

35 *Daubert v Merrell Dow Pharmaceuticals Inc* 509 US 579 (1993).

36 Law Commission, Expert Evidence in Criminal Proceedings in England and Wales (n.31) Pt.5.

37 *Ibid*., paras.1.42–1.43 and 5.115.

38 The Government declined to legislate on the basis of the Commission's proposals because the cost of implementing the reforms was unknown (Ministry of Justice, Government's Response to the Law Commission Report: Expert Evidence in Criminal Proceedings in England and Wales (21 November 2013)). Instead the Government asked the Criminal Procedure Rule Committee to explore the possibility of introducing changes to increase the likelihood of expert evidence being challenged where appropriate. Resultant amendments to the CrimPR and CPD were said by the Lord Chief Justice to have been "a novel way of implementing an excellent report": Lord Thomas CJ, "The Future of Forensic Science in Criminal Trials" *Criminal Bar Association Kalisher Lecture* (14 October 2014), available at https://www.judiciary.gov.uk/wp-content/uploads/2014/10/kalisher-lecture-expert-evidence-oct-14.pdf (visited 8 July 2016).

relevant; it must be "needed to provide the court with information likely to be outside the court's own knowledge and experience"; and, the expert witness must be "competent" to give the relevant opinion.[39] In addition, drawing on dicta from *R v Dlugosz*,[40] CPD 19A provides that there must be a "sufficiently reliable scientific basis for the evidence to be admitted".[41] CPD 19A.5 lists a number of factors which are to be taken into account when assessing evidentiary reliability, including: whether the expert has used sound methods, followed established practice and drawn valid inferences;[42] whether the expert has taken account of all relevant information, including matters that might affect the accuracy and reliability of the opinion;[43] whether the material relied upon has been peer reviewed;[44] whether such material falls outside the field of expertise;[45] and, whether the opinion is properly explained.[46]

Use of these factors, which are derived from the Law Commission's report, is intended to promote "a more rigorous approach" to expert evidence by ensuring that an expert's reasoning is properly explained.[47] In addition, CPD 19A.6 lists factors that may detract from the reliability of expert evidence, particularly scientific evidence. "[P]otential flaws" include expert opinion:

> "(a) being based on a hypothesis which has not been subjected to sufficient scrutiny (including, where appropriate, experimental or other testing), or which has failed to stand up to scrutiny;
> (b) being based on an unjustifiable assumption;
> (c) being based on flawed data;
> (d) relying on an examination, technique, method or process which was not properly carried out or applied, or was not appropriate for use in the particular case; or
> (e) relying on an inference or conclusion which has not been properly reached".

A significant amendment to the CrimPR is the addition of rule 19.4(h), which requires experts to include in their reports "such information as the court may need to decide whether the expert's opinion is sufficiently reliable to be admitted".

These amendments to the CrimPR and CPD are yet to produce case law on the admissibility of expert evidence, including facial mapping and other types of *expert*

39 CPD 19A.1.
40 [2013] 1 Cr App R 32.
41 CPD 19A.4.
42 *Ibid.*, 19A.5(a), (b) and (h).
43 *Ibid.*, 19A.5(c) and (f).
44 *Ibid.*, 19A.5(d).
45 *Ibid.*, 19A.5(e).
46 *Ibid.*, 19A.5(b), (g) and (h).
47 See Tony Ward, "A New and More Rigorous Approach to Expert Evidence in England and Wales" (2015) 19(4) E & P 228.

evidence relating to image interpretation for purposes of identification.[48] The extent to which the introduction of the new Practice Directions will have a practical effect upon the approach of the English and Welsh courts to the admissibility of expert evidence remains to be seen.[49]

C. Police interpretation of images and Code D

Pre-trial identification procedures in England and Wales are governed by a Code of Practice issued under s.66 of PACE.[50] The Code of Practice for the Identification of Persons by Police Officers (Code D) is applicable to any identification procedures.[51] Although the police are under a duty to comply with all Codes of Practice, failure to do so does not automatically render evidence inadmissible.[52]

Code D focuses on visual identification[53] and requires a formal identification procedure to be held whenever a witness has identified or purported to identify a suspect, or has expressed an ability to identify the suspect, and the suspect disputes being the person the witness claims to have seen.[54] Rules governing the available

48 To date, only one case has reached the appeal courts and it provides little useful guidance in relation to the issue of evidentiary reliability. In *R (Wright) v Crown Prosecution Service* [2015] EWHC 628 (Admin) the Administrative Court considered questions raised by the new Practice Directions, but the basis of its decision was that the "test for expertise" had not been passed. It may be that the new reliability criteria could be used to challenge expert evidence in identification cases, but the prospect of this happening depends on the advocate or the judge having the will to act. The apparent reluctance on the part of lawyers so far to engage with the new expert evidence provisions of the CPD is not promising in this regard.

49 In other jurisdictions, such as US state and federal courts, new admissibility standards have not necessarily led to the review or exclusion of longstanding techniques. For a revealing discussion of the legal "grandfathering" of admissibility, see Simon Cole, "Grandfathering Evidence: Fingerprint Admissibility Rulings from Jennings to *Llera Plaza* and Back Again" (2004) 41 American Criminal Law Review 1189. See also Gary Edmond, Simon Cole, Emma Cunliffe and Andrew Roberts, "Admissibility Compared: The Reception of Incriminating Expert Evidence (ie, forensic science) in four adversarial jurisdictions" (2013) 3 University of Denver Criminal Law Review 31.

50 PACE 1984, s.66(1)(b).

51 The current version of Code D is applicable from 7 March 2011, available at http://www.gov.uk/government/publications/pace-code-d-2011 (visited 15 July 2016). All references to Code D below are references to the current version unless otherwise stated.

52 Section 67 of PACE provides that any code:

> "shall be admissible in evidence; and if any provision of […] a code appears to the court or tribunal conducting the proceedings to be relevant to any question arising in the proceedings it shall be taken into account in determining that question".

Section 78 of PACE, which we consider further below, provides that a court may exclude prosecution evidence "if it appears to the court that, having regard to all the circumstances, including the circumstances in which the evidence was obtained, the admission of the evidence would have such an adverse effect on the fairness of the proceedings that the court ought not to admit it". The effect of s.67 is that any breach of Code D should be taken into account by a court deciding whether identification evidence should be excluded under s.78.

53 Code D also contains provisions regulating the taking of fingerprints, footwear impressions, samples and photographs for the purposes of identification, as well as other matters.

54 Code D 3.12. An identification procedure need not be held if it would be impracticable or would serve no useful purpose, for example if there is no dispute as to whether the suspect is known to the witness (Code D 3.12(ii)).

procedures are set out in Annexes to Code D.[55] These eyewitness identification procedures are not obviously pertinent to the showing of images to police officers to see whether they recognise those depicted, nor to the comparison of images by police officers.[56]

Before revision, Code D provided that such material should only be shown to potential witnesses, including police officers, on an individual basis to avoid the possibility of collusion (and contamination).[57] The Code further stated that the showing of the material should follow the principles set out for either video identification or identification by photographs, depending upon whether the suspect was known or not known to the police officer.[58] Problems with the Code manifested in *R v Smith*[59] and led to refinements that came into effect in 2011.

In *Smith*, the Court of Appeal accepted that a police officer asked to examine video or photographs is not in the same position as an eyewitness identifying someone he has seen committing a crime.[60] The Court confirmed that the "safeguards which [Code D] is designed to put in place are equally important" to the identification of individuals from moving or still images.[61] In particular, the Court held that there should be "some record which assists in gauging the reliability of the assertion [of recognition]".[62] Such a record should include: the officer's initial reactions to the recording; any words used by way of recognition; any failure to pick out the suspect on first viewing; any failure to pick out anyone else; any words of doubt; and, what it was about the image that triggered the recognition.[63] The Court went on to say that "[a]bsent any such record, it will not be possible to assess the reliability

55 Annex A governs video identification, Annex B regulates identification parades and Annex C concerns group identification. The Code lays down a hierarchy of identification procedures. The types of procedure that may be used and their order of preference depend upon whether the suspect's identity is known to the police and whether he is available (Code D 3.4). If the suspect is known and available, the preferred procedure is a video identification (Code D 3.14), although an identification parade (Code D 3.14), or group identification (Code D 3.14 and 3.16) may be carried out instead in certain circumstances. If the suspect is not known, a witness may be taken to a particular place to see whether they can identify the person they saw previously (a form of "street identification") (Code D 3.2) or the witness may be shown photographs (Code D 3.3 and Annex E).

56 In *R v Lariba* [2015] EWCA Crim 478 the Court of Appeal confirmed that, where police officers have identified suspects in informal circumstances, for example by viewing images or video released to the public on YouTube, Code D imposes a requirement for a formal viewing procedure to take place. The value of a formal procedure when the witness would simply be viewing the same video again is debateable. See Andrew Roberts, "*R v Lariba*" [2015] Crim LR 534 (note) and Andrew Roberts, Josh P Davis and Tim Valentine, "Should We Be Concerned about Street Identifications?" [2014] Crim LR 633.

57 Previous version of Code D, in force from 1 February 2008, 3.28, available at http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/181118/pace-code-d_2008.pdf (visited 6 June 2016).

58 *Ibid*.

59 [2009] 1 Cr App R 36.

60 *Ibid*., [67].

61 *Ibid*.

62 *Ibid*.

63 *Ibid*., [68].

of the recognition",[64] the implication being that the evidence ought to be considered for exclusion via s.78 of PACE.

Revised in the aftermath of *Smith*, Code D now prescribes the procedures to be followed, and records to be kept, where anyone, including a police officer, views images of an individual in videos, photographs or any other visual medium and is asked whether they recognise the person depicted. Part B of section 3 provides that the images must be shown "on an individual basis" to "avoid the possibility of collusion and to provide safeguards against mistaken recognition".[65] In order to facilitate assessment of the recognition, the Code now specifically requires a record to be made of the circumstances and conditions in which it takes place, including:

> "(a) Whether the person knew or was given information concerning the name or identity of any suspect.
> (b) What the person has been told before the viewing about the offence, the person(s) depicted in the images or the offender and by whom.
> (c) How and by whom the witness was asked to view the image or look at the individual.
> (d) Whether the viewing was alone or with others and if with others, the reason for it.
> (e) The arrangements under which the person viewed the film or saw the individual and by whom those arrangements were made.
> (f) Whether the viewing of any images was arranged as part of a mass circulation to police and the public or for selected persons.
> (g) The date time and place images were viewed or further viewed or the individual was seen.
> (h) The times between which the images were viewed or the individual was seen.
> (i) How the viewing of images or sighting of the individual was controlled and by whom.
> (j) Whether the person was familiar with the location shown in any images or the place where they saw the individual and if so, why.
> (k) Whether or not on this occasion, the person claims to recognise any image shown, or any individual seen, as being someone known to them, and if they do:
> (i) the reason
> (ii) the words of recognition
> (iii) any expressions of doubt
> (iv) what features of the image or the individual triggered the recognition".[66]

64 *Ibid*., [69].

65 Code D, para.3.35.

66 *Ibid.*, para.3.36. We accept that many of these factors have potential value, but legal engagement is not informed by scientific research and, as we contend, merely knowing about the conditions or dangers does not enable fact-finders to make well-supported or accurate assessments.

Part B also states that if the suspect is known to the viewer, the showing of images should, as far as possible, comply with the principles set out in Annex A governing video identification procedures. If the suspect is not known, the principles laid down in Annex E for identification by photographs should be followed.[67] Neither Annex A nor Annex E is obviously applicable to cases in which still or moving images are shown to police witnesses.

Annex A part (a) is primarily directed towards the selection and treatment of images for use in a video identification procedure, although it also provides that the suspect's solicitor shall be given reasonable notification of the time and place the video identification is to be conducted.[68] There are no reported cases of video or photographs being shown to police officers in the presence of a suspect's solicitor. This seems to suggest that if this is a requirement for the showing of images to police officers, it is being overlooked in practice.[69] Part (b) of Annex A requires witnesses to view the video independently.[70] This is intended to avoid influence or collusion (and perhaps belief hardening), and care should be taken not to give any indication of the suspect's identity.[71] Part (b) also specifies information that must be given to the viewer (ordinarily an eyewitness), including that the person they saw on the earlier occasion might not be present and if they cannot make a positive identification they should say so.[72]

When photographs or video of an *unknown* suspect are to be shown to a police officer, the principles in Annex E should be applied. Like Annex A, Annex E places emphasis on the importance of showing images to witnesses individually. Again, many of the provisions pertaining to the selection and treatment of images do not appear applicable to the viewing of images by police officers for purposes of recognition.[73] Annex E also provides that if a witness cannot make a positive identification he should say so, and that if an identification is made, the witness should be asked how sure he is of the recognition.[74] Again, the reported judgments suggest that, in practice, these procedures are not followed when images are presented to police officers.

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67 Code D, para.3.35.

68 *Ibid.*, Annex A, para.9.

69 Compliance, though of potential value, may be impractical.

70 Code D, Annex A, para.11.

71 *Ibid.*, Annex A, para.10. Where a request to review images is based on an officer's prior familiarity with a person, the act of requesting is unavoidably suggestive. This includes requests where police officers scrupulously avoid making any positive suggestions. The request itself suggests to the police officer that investigators believe he knows the identity of the POI.

72 Code D, Annex A, para.11. Some of these provisions could be adapted for officers asked to view video or photographs. For example, images can be shown to an officer individually and he can be instructed that if he is unable to recognise anyone, he should say so.

73 There are no cases involving exclusion of evidence as a result of failure to follow these procedures for police witnesses. Indeed, there are no reported cases in which application has been made to exclude such identification evidence on the basis that the provisions of Annex E have not been followed. This suggests that courts, and perhaps defence practitioners, are unconcerned by breaches of Annex E or believe they can be transcended through judicial directions and warnings.

74 Code D, Annex E, para.5.

Courts have not been especially troubled by risks of contamination and collusion. A few examples help to convey the willingness of judges to admit the impressions of police officers, notwithstanding breaches of Code D or its Annexes. In *R v Swinscoe*,[75] the applicant was convicted of robbery and possession of a firearm on the basis of evidence of recognition by a Detective Constable (T). T had met the applicant on a number of occasions ten years earlier, prior to the applicant's previous conviction for armed robbery. Before viewing CCTV images relating to more recent offences, T was informed that the applicant was the suspect. The Court dismissed the application for leave to appeal, holding that the risk of contamination did not render the recognition evidence inadmissible, particularly in light of the trial judge's "careful and scrupulously fair" summing up, which had referred to the fact that "the name of the applicant had been put into [T's] head".[76]

The applicant in *Tucker v Crown Prosecution Service*[77] applied for leave to appeal against his conviction for robbery on similar grounds. A Police Inspector (M) viewed CCTV images which were said to show the two robbers prior to the commission of the offence. Prior to the viewing, M was told the applicant was a suspect. He was unable to say, when questioned, what had led him to conclude that the image was of the applicant. The admission of M's evidence was challenged on appeal. The Court of Appeal acknowledged that M expected to see the applicant in the video but indicated that leave to appeal would be refused on this ground.[78] The Court explained that Code D did not apply because, at the time the Inspector was asked to view the images, it was not proposed to call him as a witness.[79] The difficulty with this reasoning is that a person who purports to be able to recognise a POI will never be a witness unless and until he has participated in an identification process (and made an identification).

The Court of Appeal came to a similar conclusion in *R v Chaney*.[80] Here, a Detective Constable (E) was asked to look at photographs of a man believed to have stolen a firearm from a gun shop. E was told that other officers believed the photographs showed the appellant. E, who had recently interviewed the appellant in connection with another matter, confirmed that he could identify the appellant and this evidence was adduced at the ensuing trial. The Court of Appeal held that E's evidence was admissible because, at the time, "it was not thought that [he] would be a witness".[81] He only became a witness once he identified the appellant, but by that time, compliance with Annex A or E was impracticable. Again the Court attached significance to the fact that the jury was aware that the officer had been

75 [2005] EWCA Crim 916.
76 *Ibid*., [30].
77 [2008] EWCA Crim 3063.
78 The appeal was allowed on alternative grounds, relating to non-disclosure of other material.
79 *Tucker* (n.77), [9].
80 [2009] 1 Cr App R 35.
81 *Ibid*., [19].

informed of the appellant's name before purporting to recognise him.[82] Further, there was a record of the officer's reaction when he viewed the images, as required by *Smith* (and now by Code D itself).[83]

Conversely, in *R v Jabar*,[84] an appeal against conviction for robbery was allowed where the sole evidence connecting the appellant to the offence consisted of images taken from CCTV. Two police officers purported to recognise the appellant but there was evidence that at least one of them had been told the appellant's name before viewing the images and there were no contemporaneous records of the viewing. The jury was also invited to compare the CCTV and still images with the appellant, whom they had seen throughout the trial. The Court of Appeal allowed the appeal on the basis that the quality of the images was too poor to enable the jury to conclude that the appellant was the robber.[85] The Court did not express a conclusion as to the admissibility of the recognition evidence by the police officers, although it had "concerns" about whether the jury had sufficient guidance as to how to approach this evidence.[86]

These cases capture the Court of Appeal's reluctance to intervene where evidence of recognition by police officers has been obtained in circumstances that breach Code D. If there is a breach of Code D, which is not such as to require the judge to exclude the identification evidence under s.78 of PACE, the breach should be drawn to the attention of the jury.[87] Failure to do so, however, will not necessarily result in the quashing of a subsequent conviction.[88]

D. The appearance of super-recognisers

As we explain more fully in Section IV, individuals vary widely in their ability to recognise (and match) faces. In light of the proliferation of CCTV cameras[89]

82 *Ibid.*, [23], [27].

83 *Ibid*., [21]. In line with other authorities pre-dating the current edition of the Code, recognition by police officers was admitted in *R v Moss* [2011] EWCA Crim 252, even though the officers were given the appellant's name before viewing the images. Following the amendments to Code D, the Court of Appeal held in *R v Selwyn* [2012] EWCA Crim 2968 that the trial judge had been justified in admitting recognition evidence where images were viewed in the presence of another officer, but the reason for that officer's presence was not recorded as required by Code D 3.36(d). The breach did not give rise to unfairness.

84 [2010] EWCA Crim 130.

85 Here the prosecutor both adduced recognition evidence *and* invited the jury to compare poor-quality images with the defendant in the dock. The appeal might have failed if the prosecution had relied on the recognition evidence alone. Although in *R v Doherty* [2016] EWCA Crim 246, the Court of Appeal upheld a conviction where a police officer had testified that he recognised the defendant, notwithstanding defence submissions that the images were too poor to enable the jury to assess the identification. The Court held that, although the photographs were "not as revealing as they might be", their quality was such as to enable the jury to decide whether to accept the recognition evidence.

86 *Jabar* (n.84), [15].

87 *R v Forbes* [2001] 1 AC 473.

88 *R v Williams* [2003] EWCA Crim 3200.

89 As of 2013, the British Security Industry Association estimated that there are between 4 and 5.9 million CCTV surveillance cameras in the United Kingdom: BSIA, The Picture is Not Clear: How Many CCTV Surveillance Cameras in the UK? (July 2013). These figures were quoted by the Surveillance

and government concerns about the number of fraudulent identity documents in circulation,[90] the ability to identify individuals from images seems to be increasingly important for policing and national security — especially border control. Several scientific studies have called for the police and security services to recruit individuals with superior abilities to recognise and process images for the purposes of carrying out facial recognition and comparison tasks.[91] Such individuals are sometimes described as "super-recognisers".

The term "super-recogniser" was coined by American researchers investigating the corresponding category of prosopagnosia (ie face-blindness).[92] Russell, Duchaine and Nakayama hypothesised that just as a small proportion of the population could be considered to have exceptionally poor capacity to remember and process *familiar* faces, so an equivalent proportion of the general population might be found to have an exceptionally high capacity to identify (familiar) faces, and importantly, to also be able to connect their recollection of a face with useful semantic, or identifying, information.[93] The term "super-recogniser" was coined to describe those who performed more than two standard deviations (SD) above average across a number of tests designed to assess participants' abilities in either recognising familiar faces and/or unfamiliar face matching tasks. When similar tests were subsequently administered to over 700 volunteers in the United Kingdom, only 10 achieved the standard proposed by Russell *et al.*, suggesting that less than 2 per cent of the population appear to be "super-recognisers".[94]

In the narrative describing the emergence and deployment of police super-recognisers in England, it was the failure of automated recognition systems following the mass disturbances in London and across the United Kingdom in 2011, which led to their discovery among the ranks of Metropolitan police.

Camera Commissioner in his 2014/15 Annual Report (November 2015), available at http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/480176/51745_SCC_Annual_Report_2014-15_Accessible.pdf (visited 7 July 2016). See Ben Goold, *CCTV and Policing* (Oxford: Oxford University Press, 2004).

90 The Home Office has acknowledged that "there are thousands of fraudulent identity documents in circulation", and has issued *Guidance on Examining Identity Documents* (National Document Fraud Unit, 2016), available at http://www.gov.uk/government/publications/recognising-fraudulent-identity-documents (visited 7 July 2016).

91 Anna K Bobak, Peter J B Hancock and Sarah Bate, "Super-Recognisers in Action: Evidence from Face-Matching and Face Memory Tasks" (2016) 30 Applied Cognitive Psychology 8; David J Robertson, Eilidh Noyes, Andrew J Dowsett, Rob Jenkins and A Mike Burton, "Face Recognition by Metropolitan Police Super-Recognisers" (2016) 11(2) PLoS ONE e0150036; David White, Richard I Kemp, Rob Jenkins, Michael Matheson and A Mike Burton, "Passport Officers' Errors in Face Matching" (2014) 9(8) PLoS ONE e103510; Davis and Valentine, "Human Verification of Identity from Photographic Images" (n.3); Josh P Davis, Ashok Jansari and Karen Lander, "I Never Forget a Face" (2013) 26(10) The Psychologist 726.

92 Richard Russell, Brad Duchaine and Ken Nakayama, "Super-Recognisers: People with Extraordinary Face Recognition Ability" (2009) 16(2) Psychon Bull Rev 252.

93 *Ibid*., Identifying information would not necessarily include the name of the person, but could be information that places the person at a particular location at a particular time.

94 See Davis, Jansari and Lander, "I Never Forget a Face" (n.91).

Ironically, the emergence of police super-recognisers seems to have been a response to the conspicuous limitations of automated systems. Confronted with a large number of images following the riots, confidence in automated facial recognition systems was high.[95] However, notwithstanding the volume and variable quality of the images, successful identifications using facial recognition systems (ie algorithms) were reported to be three, or less.[96] By contrast, a small number of police officers were reported to have identified a disproportionately high number of those successfully prosecuted; most via guilty pleas following identification.[97] Twenty officers identified 609 suspects from approximately 5,000 images, and one officer identified 190. Some of those identified were heavily disguised, and some identifications were based on a single image.[98] It was in this context that the term super-recogniser was first applied to police officers in order to convey extraordinary performances.

It is important to note from the outset, that a high proportion of the identifications in 2011 and thereafter were dependent on the officers in question having prior personal familiarity with those identified. The high rate of identifications *may* have been associated with the types of exceptional ability identified by Russell and colleagues, but many of the identifications appear to be the result of prior exposure and familiarity generated through routine police work in a locale (eg street patrols and arrests).[99]

The Metropolitan Police Super Recogniser Unit was established in May 2015. Located at New Scotland Yard, it drew on selected police officers, on temporary secondment from their ordinary duties, to undertake recognition and comparison tasks. In conjunction with this selection and secondment, attentive scientists began to study and test some of the officers. The Unit consolidated practices developed in the wake of the London disturbances with the goal of maximising the opportunities for the recognition of familiars, but extending also to the comparison and identification of unfamiliar suspects. One of the strategies of the Unit was establishing a more effective mechanism for managing and storing the large number of images generated by public and private surveillance systems. The work of the Unit is supported by a relatively new, large-scale image

95 This included an attempt to harness the facial recognition algorithms of Facebook, calling on members of the Facebook community to upload images and scan for matches among their "friends". The attempt was quickly abandoned as high rates of error became apparent.

96 Josh Davis and Mick Neville, Super Recognisers: The Theory of 'Super Recognisers': Practice, Law and Policy (Northumbria School of Law, University of Northumbria, 14 April 2015).

97 Correct identifications were "verified" by high rates of confessions, and convictions: Davis, Jansari and Lander, "I Never Forget a Face" (n.91). See also Gisli Gudjonsson, *The Psychology of Interrogations and Confessions: A Handbook* (Chichester: Wiley, 2003).

98 See Davis, Jansari and Lander, "I Never Forget a Face" (n.91).

99 In other words, police officers (sometimes custody officers) who have had regular contact with a relatively small group of offenders in a confined geographical area, and who are thus, like the audiences being appealed to via Facebook or other media sites, simply identifying those with whom they have a relatively longstanding familiarity. This task depends more on prior exposure and motivation than a special ability.

database, which enables the sorting of (still) images based on location, offence type and offender descriptors.[100]

London's Metropolitan Police Service has attached the label "super-recogniser" to police officers and civilian police staff who are thought to have exceptional facial recognition abilities but includes individuals who do not meet the kinds of formal scientific criteria proposed by Russell and his colleagues. Police super-recognisers are labelled as such either because they have made successful identifications and/or have performed well in tests facilitated by cognitive scientists at Greenwich University.[101] As of July 2015, 140 employees of the Metropolitan Police were engaged as police super-recognisers.[102] The exact criteria, and any internal testing used to classify employees as police super-recognisers, are not publicly available.[103] We use the term *police super-recogniser* to describe this heterogeneous group, while retaining the labels *super-recogniser* or *genuine super-recogniser* for those who are known to satisfy the kinds of formal criteria advocated by scientists.

Consistent with their origins, the majority of identifications carried out by police super-recognisers were, and remain, those based on prior familiarity derived from previous interactions.[104] Referred to by the Unit as "direct" identifications, these identifications depend on local knowledge and face-to-face (or community) policing experience. The two main "methods" for maximising direct identifications are by way of channelling images from particular geographical areas to officers seconded to the Unit who have relevant local knowledge, and local area identification "events" where groups of local officers, along with those who may have super-recognition abilities, are shown packs of images, drawn from incidents reported in the locale (along with the images of known offenders) and asked if they recognise any of the POIs shown in images associated with unsolved crimes. Supplementing these activities is the distribution of compilations of CCTV images in a regular bulletin — *Caught on Camera* — circulated within the Metropolitan Police by

100 Utilising a database system developed by the private provider Third Forensic, referred to as the FILM database. See also Martin Paul Evison, "The Third Forensics: Images and Allusions" (2015) 25(5) Policing and Society 521.

101 London Assembly: Mayor's Question Time, "Minutes — Appendix 3 — Written Answers" (15 July 2015), available at www.london.gov.uk/moderngov/documents/b12840/Minutes%20-%20Appendix%203%20-%20Written%20Answers%20Wednesday%2015-Jul-2015%2010.00%20London%20Assembly%20Mayors%20Questi.pdf?T=9 (visited 8 July 2016).

102 *Ibid.*

103 See Robertson, Noyes, Dowsett, Jenkins and Burton, "Face Recognition by Metropolitan Police Super-Recognisers" (n.91).

104 Some figures quoted in presentations have included 95 per cent of identifications being "direct" (ie based on face-to-face familiarity and/or local knowledge). This may include the officer bringing to bear additional knowledge of a particular repeat offender's *modus operandi* and relying on contextual or other event-specific information to link an individual with a POI. Interpreting the significance of this figure, however, is complicated by the fact that in some cases (developed below) identifications based on repeat viewing of images of an "unfamiliar" offender will be classified by the officer as a "recognition" or a "direct" identification.

email and more publicly using a website.[105] In addition to direct identifications are those based on the "face snap". This involves displaying large numbers of images, where offenders and offence types are grouped.[106] Police super-recognisers may recognise familiars, recognise individuals from reference images, recognise the same individual appearing in several images (eg multiple robberies) or be asked to undertake face (and body, clothing and *modus operandi*) comparisons. Where a police super-recogniser "recognises" a person or links one offence to another, the identification or association will often provide a lead for investigators hoping to secure confirmatory evidence or a confession.

Police super-recognisers have been engaged in a range of other activities where identity is important. For example, in August 2013, a team of 17 police super-recognisers was deployed at the Notting Hill Carnival to see if they could identify known offenders.[107] They have also been used to identify organised thieves at music concerts and to patrol areas that a suspect is known to frequent with a view to recognition and arrest.[108]

The local area identifications, as well as the identifications made within the Unit itself, are said to be compliant with Code D requirements, and this is reflected in formal statement templates. Instructions given during local area identifications, involving numerous police officers sitting in a large room at separate desks, are believed to comply with Code D.[109] They include directions not to discuss the images with anyone else in the room and to record: the reasons for making the identification; details of the extent and nature of familiarity with the suspect; the level of confidence in the recognition; and, any reasons for doubt. All types of identification, including those that are based on the grouping of images of suspects/

105 Available at http://content.met.police.uk/Site/caughtoncameraметcu (visited 7 July 2016). Police super-recogniser Idris Bada described to reporter Will Storr how looking at the *Caught on Camera* newsletter "… becomes an obsession … I'm always waiting for the next newsletter to come out. There's about 50 faces in each one. I'll do the first half-hour. Sometimes I'm like, hmmm, nothing in this edition. But then I'll go back to it. Yeah, I know this one": Will Storr, "Human Image Banks: Meet the Met's Super-Recognisers" *The Telegraph* (26 March 2013).

106 Also known as a "face net": Lauren Potts, "The Police 'Super-Recognisers' Putting Names to Faces" *BBC News* (19 October 2015), available at www.bbc.com/news/uk-england-34544199 (visited 13 July 2013). Between 2013 and 2015, Austin Caballero stole over £100,000 worth of luxury goods. Police super-recognisers scanned dozens of clips to link him to 41 different offences. Caballero was subsequently arrested following a public appeal: "Serial Thief Jailed after Being Snared by 'Super Recogniser' Police Unit" *The Guardian* (2 April 2016).

107 Christian Jarrett, "Police Super-Recognisers" (2013) 26(10) The Psychologist 713.

108 A serial sexual offender was arrested after officers from the super-recogniser unit viewed CCTV video of the man and patrolled an area where he was likely to be. One of them spotted him walking into a railway station. He was subsequently convicted of sexual assault. See Xan Rice, "The Super-Recognisers of Scotland Yard" *New Statesman* (2 August 2016), available at www.newstatesman.com/politics/uk/2016/08/super-recognisers-scotland-yard (visited 6 October 2016). Over and above these deliberate processes involving attempts to link multiple images of multiple crimes, the unit has reported spontaneous identifications, where police super-recognisers have identified suspects in the street after having seen their images in *Caught on Camera*: Davis and Neville, "Super Recognisers" (n.96).

109 See Davis and Neville, "Super Recognisers" (n.96).

offenders who are not known directly by an officer, are characterised as evidence of *recognition*. This applies regardless of whether the identification is based on "direct" (personal) knowledge or "indirect" knowledge gained by way of repeated exposure to a suspect's image, either serendipitously (for example, their image has been in circulation in the relevant office, police station or bulletin) or by way of a deliberate attempt to group together images of the same person via the "face snap" procedure.

Identifications made within the Unit are recorded in a standardised manner and reviewed by a supervising officer using a process that appears to be loosely modelled on the analysis, comparison, evaluation, and verification (ACE-V) procedures (adopted from latent fingerprint comparison), though without independent verification.[110] Overall, rates of success are signalled by pleas of guilt and successful prosecutions.[111] Known errors by police super-recognisers and police familiars are not disclosed.

So far there are no reported cases involving police super-recognisers as witnesses. In part, this may be because of the way the Unit has characterised members and strategically presented their identification evidence. To its credit, the Unit has not attempted to present members in court as super-recognisers, although it is not entirely clear whether the statements of police officers, and unused material disclosed to the defence, adequately capture or explain the existence of the Unit, its procedures, or the nature, strengths and limitations of these new forms of identification.

There are hints that English courts are starting to admit identification evidence from police officers who have been designated, institutionally, as "super-recognisers",[112] although it is not clear whether the parties or the judge is aware of the Unit or that designation. On the basis of information presented at public forums, members of the Unit appear to make statements and testify as regular

110 The ACE-V "methodology" has been criticised by scientific and technical committees. See National Research Council, *Strengthening Forensic Science in the United States: A Path Forward* (Washington, DC: National Academies Press, 2009) and Expert Working Group on Human Factors in Latent Print Analysis, *Latent Print Examination and Human Factors: Improving the Practice through a Systems Approach* (Washington, DC: US Department of Commerce and National Institute of Standards and Technology, 2012).

111 Rates of success are now being complied for individual officers as well as for the unit as a whole. Figures reported include (in April 2014) 6200+ successful identifications in the previous year. Figures quoted in April 2015 include 1731 "direct" identifications since the establishment of the Unit and 1579 identifications from "face snaps". April 2015 figures also indicate that of the 960 identifications made of MOPAC Priority 7 events in 2015, 27 per cent were made by the Unit. The Unit is also compiling charge and conviction rates for individual officers. For example, one officer has a reported 97 per cent charge rate in over 200 cases). However, figures cited in presentations also include some (albeit low numbers) of errors. While some cooperative research is now reportedly underway (see Davis and Valentine, "Human Verification of Identity from Photographic Images" (n.3)) the enthusiastic reporting of the abilities and potential of these individuals has not, as yet, been matched by critical analysis of the levels of accuracy of "live" identifications — or indeed what it means to *be* accurate, at investigation, or at trial.

112 Josh Davis, Karen Lander, R Evans and Michael Neville, "Facial Identification from CCTV: Investigating Predictors of Exceptional Performance amongst Police Officers" (10–13 April 2012) *European Association of Psychology and Law Conference*, Nicosia, Cyprus.

police witnesses, purporting to have identified the accused in their day-to-day activities (for example, recognising a known offender in images), via local area identifications, or by way of the review of images.

It has been suggested that the systematic use of super-recognisers "has trebled the identification rate for CCTV".[113] It is claimed that over 75 per cent of suspects confess when confronted with CCTV and identification evidence.[114] Care needs to be taken, however, as we know that some suspects confess for reasons that are not necessarily consistent with guilt.[115] Moreover, suspects may be selected because of similarities with persons in crime-related images, perhaps in full knowledge that they have committed similar offences.

Although Code D appears to apply when a police super-recogniser views images for the purposes of recognition, the extent to which its provisions are strictly applied to the viewing of images in practice is unclear. Code D will not be applicable when super-recognisers are matching unfamiliar faces, and no consideration has been given to date as to what, if any, safeguards should be put in place around these procedures or in relation to the presentation of police super-recogniser evidence to suspects in formal interviews or as identification evidence at trial. The current approach to conferring super-recogniser status might be considered incoherent.

E. Overview

English courts have allowed a variety of witnesses to testify to the identity of persons in images, grounding permissive jurisprudence in legal experience and "common sense", though with limited sensitivity to highly pertinent scientific research, some of which directly challenges legal (and presumably popular) assumptions. Courts have not consistently analysed image interpretation and comparison evidence in ways that locate it within conventional admissibility frameworks. Apart from facial mapping (and gait comparison) there are, for example, few references to what makes some image interpretation *opinion* evidence and some recognition, implicitly, a type of *fact* evidence.[116]

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113 London Assembly, "Minutes — Appendix 3" (n.101).

114 See Davis, Jansari and Lander, "I Never Forget a Face" (n.91).

115 We do not know what suspects are told prior to interview, where one or more police super-recognisers has made an identification, and this may vary from case to case. If a suspect is told that they have been identified by a "super-recogniser", we do not know what impact that might have on their mental state in interview and the reliability of any subsequent confession. This is of particular concern in relation to vulnerable suspects, who will not necessarily be legally represented. Although vulnerable suspects ought to have the protection of an appropriate adult, vulnerabilities are not always identified by the police in practice. See Gudjonsson, *The Psychology of Interrogations and Confessions* (n.97).

116 English courts seem to assume that: face recognition and comparison is a relatively straightforward and reasonably accurate process; *thin* legal categories such as "recognition" and "familiarity" will circumvent difficulties and risks that are notorious in uncontradicted scientific literatures; and, dangers and limitations can be effectively explained and mobilized in ways that will enhance face (and body) comparison and accurate decision-making at trial.

There have, in recent years, been attempts to regulate identification by police in terms that are reminiscent of eyewitness procedures. These developments are generally positive, but there appears to be insufficient attention to the risks posed by suggestion (and other human factors) as well as the ability to avoid them. As for police super-recognisers, perhaps typically, their use appears to run ahead of the law and is insufficiently disciplined by scientific research.[117] Rather than develop police procedures and legal practices in ways that are informed by scientific knowledge, expediency and police interests seem to be driving investigative practices and uses in ways that are sub-optimal.[118]

III. The Australian Experience: A Gate Almost Closed

In contrast to the very accommodating approach promoted by investigators and prosecutors and endorsed by judges in England and Wales, over the last two decades Australian courts have been far more restrictive in their responses to police and putative expert witnesses narrating images. Initially, as in England, Australian police were allowed to express opinions about identity, but this was largely forestalled in *Smith v The Queen*.[119] In the wake of *Smith* (2001), and following the English example, investigators began to solicit the opinions of those they presented as experts. For more than a decade Australian courts received this evidence. These *experts* were mainly anatomists — indeed, two anatomists (Professor Henneberg and Dr Sutisno) predominate — along with occasional appearances by a physical anthropologist (Watt) and ex-military intelligence officer (McCourt). Recently, in *Honeysett v The Queen*,[120] the High Court deemed the interpretation and comparison of face and body features by an anatomist to be inadmissible. With police largely ineligible to testify and the status of "experts" now uncertain, the only groups entitled to interpret images seem to be non-police familiars and the tribunal of fact.

A. The opinions of police are largely irrelevant

As images began to proliferate in the 1990s, police interpretations began to inform investigations, plea negotiations and prosecutions. These practices were largely unregulated and were not caught by a set of new evidence statutes — known as the

117 English courts have tended to follow the accommodating attitude advocated by Steyn LJ in *Clarke* (n.8), 429–430: "It would be entirely wrong to deny to the law of evidence the advantages to be gained from new techniques and new advances in science".

118 To their credit, members of the Unit have been supporting scientific research but this tends to follow or study, rather than guide, practice.

119 (2001) 206 CLR 650.

120 (2014) 253 CLR 122.

uniform evidence law (or UEL) — enacted in most Australian jurisdictions from 1995.[121] The first reported case where the evidence of police officers was challenged occurred in *Smith* (2001)[122] — in New South Wales (NSW), a UEL jurisdiction.

The decision in *Smith* (2001) changed the way Australian courts handled the identification of POIs in incriminating images. Two police officers, apparently not involved in the investigation had, as part of their routine work activity (ie trawling through crime-related images), identified Mundarrah Smith as one of several armed robbers in images retrieved from a bank surveillance system.[123] Each of the police officers previously had several interactions with Smith, though of no more than a few hours in total. On the basis of these interactions and informal exposure to the CCTV, both officers, apparently independently, positively identified one of the robbers as Smith.[124] At trial, the only evidence tendered against Smith was the testimony of the two police officers and the images of the robbery. Smith was convicted and appealed.

In the NSW Court of Criminal Appeal (CCA), the Court characterised the evidence of the police officers as "recognition" evidence — for them a species of fact. Employing the, admittedly stronger, example (or analogy) of a husband and wife, the Court explained that such recognition evidence was admissible for the purpose of identification.[125] The CCA upheld the conviction and Smith appealed to the High Court, where events took an unexpected turn.

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121 NSW, the Commonwealth and the ACT in 1995 or developed in Australian common law. Images are only mentioned in relation to parades etc. That Act, now known as the UEL, has been adopted in most jurisdictions and the two largest jurisdictions — namely NSW and Victoria. Much of the Act was drafted in the previous decades, so it is not particularly surprising that the rapid growth in electronics and images did not feature prominently.

122 *Smith* (n.119).

123 See Edmond *et al.*, "Law's Looking Glass" (n.18). For a detailed account, see Kathryn Biber, *Captive Images: Race, Crime, Photography* (Abington, New York: Routledge, 2007).

124 The location of the bank, the involvement and identity of others and even the investigators' suspicions may have been known to these remote observers. See Section IV(F).

125 *R v Smith* (1999) 47 NSWLR 419, 422–424 (Sheller JA):

> "To characterise as evidence of an opinion a witness's testimony that he recognises a person shown in a photograph as a person he knows presents an obvious problem. Logically, what is the difference between that evidence and that witness's evidence that he recognises somebody he met in the street as a person he knows? If a witness is shown a studio photograph of his spouse, who lives with the witness, and gives evidence that the person shown in the photograph is the witness's spouse, common sense and common use of language would not treat that as an expression or evidence of opinion but as direct evidence of the fact: 'that is a photograph of my wife'".

In the High Court, Kirby J agreed:

> "I also accept the point made by Sheller JA that a statement identifying a person, clearly depicted in a studio photograph, as one's spouse (or partner), would normally be regarded as a statement of fact". (*Smith* (n.119), [54])

See also the disagreement in *R v Palmer* [1981] 1 NSWLR 209 between Street CJ, Lusher J and Glass JA. In other cases, the issue is not always explicitly developed; see *Rix v DPP* (NSWCCA, 29 June 1989) and *R v Goodall* [1982] VR 33.

The High Court allowed the appeal. The majority concluded that the evidence of the police officers was inadmissible. They reasoned that because the police officers had no more exposure to Smith than the jury during the course of the trial, their evidence was irrelevant. The majority explained:

> "Because the witness's assertion of identity was founded on material no different from the material available to the jury from its own observation, the witness's assertion that he recognised the appellant is not evidence that could rationally affect the assessment by the jury of the question we have identified. The fact that someone else has reached a conclusion about the identity of the accused and the person in the picture does not provide any logical basis for affecting the jury's assessment of the probability of the existence of that fact when the conclusion is based only on material that is not different in any substantial way from what is available to the jury".[126]

In imposing such an austere approach, the majority accepted that because appearances may change — due to, for example, disguises, variation in hairstyle or weight, or through surgery, injury or ageing — in some circumstances police officers might have advantages relative to the jury and be in a position to proffer probative (ie relevant) evidence.[127] *Smith* (2001) was not such a case.[128]

The remaining judge, Justice Kirby, disagreed with this reasoning. For him, the evidence of the police officers was relevant. The problem was that it was opinion evidence — based on the officers' interpretations of the images — and there was no exception to the exclusionary opinion rule (UEL s.76).[129] The opinions expressed by the police officers were not based on "specialised knowledge", required under the exception for expert opinion evidence (UEL s.79).[130] Similarly, the opinions were not based on what the officers "saw, heard or otherwise perceived about

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126 *Smith* (n.119), [11].

127 *Ibid.*, [15]:

> "… if it is suggested that the appearance of the accused, at trial, differs in some significant way from the accused's appearance at the time of the offence, evidence from someone who knew how the accused looked at the time of the offence, that the picture depicted the accused as he or she appeared at *that* time, would not be irrelevant. Or if it is suggested that there is some distinctive feature revealed by the photographs (as, for example, a manner of walking) which would not be apparent to the jury in court, evidence both of that fact and the witness's conclusion of identity would not be irrelevant".

128 In *Li v The Queen* (2003) 139 A Crim R 281, [106]–[111], a hairline, manner of walking and posture were said to be sufficiently distinctive to enable a police officer to testify.

129 According to UEL s.76(1): "Evidence of an opinion is not admissible to prove the existence of a fact about the existence of which the opinion was expressed".

130 According to UEL s.79(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".

[the] matter or event" and were not necessary to "obtain an adequate account or understanding" of the police officers' evidence, required to engage the exception for lay opinion evidence (UEL s.78).[131] On this analysis there was no admissibility pathway for the relevant opinions of the police officers.

In addition, Kirby J expressed general concerns about the opinions of investigators:

> "The experience of the law, expressed with increasing conviction during the last two decades, is that very great risks of wrongful conviction and miscarriages of justice can attend identification (and recognition) evidence generally, and particularly where such evidence is based on photographs. In this sense, I see no difference in the dangers caused by evidence of identification from photographs of the offender in action, such as produced by bank surveillance, and identification from photographs of the accused and other suspects held by police. The risks, already large, may be enhanced by the natural desire of a person performing the act of identification to produce an affirmative outcome rather than to admit to incapacity and failure. The risks are still further increased where the person concerned has a relevant professional motivation (even if only subconsciously) to identify a person. One such motivation is that which a police officer quite naturally has to solve a serious crime".[132]

B. The short-lived turn to "experts"

In the aftermath of *Smith* (2001), with the opinions of police officers basically inadmissible in most circumstances, investigators began to engage the services of *experts* to assist with the identification of POIs in images. Initially, these witnesses produced reports and sought to positively identify persons on the basis of images, often of low quality. Legal concerns with the use of these face (and body) mapping witnesses led to judicially imposed constraints in *R v Tang*[133] (for UEL jurisdictions) and *Murdoch v The Queen*[134] (for the residual common law jurisdictions).[135]

The admissibility of an anatomist's interpretation of CCTV images was contested in *Tang*. Somewhat confusingly, the anatomist had positively identified Tang in a report, used a scale of likelihood (ie "strongly support that the two people are likely to be one and the same"), and attributed "unique identifiers" to Tang and

131 Interestingly, in *Kheir v The Queen* (2014) 43 VR 308, [39]–[75], the Victorian court of Appeal, allowed a police officer to express an opinion about the identity of the speaker on a voice intercept via UEL s.78. Section 78 is an exception to the opinion rule for lay opinions based on what a person perceives about a matter or event, where it is necessary to understand their evidence.

132 *Smith* (n.119), [56].

133 (2006) 65 NSWLR 681.

134 (2007) 167 A Crim R 329.

135 See *R v Dastagir* (2013) 224 A Crim R 570.

the POI in images of a robbery.[136] On conviction Tang appealed. The NSW Court of Appeal concluded that there was not sufficient "specialised knowledge" for the anatomist (Dr Sutisno) to express an opinion about identity on the basis of facial comparison (UEL s.79), and deemed the knowledge base for body comparison even weaker. Nevertheless, because the images were of low quality, the anatomist had spent time examining them (recall *Re A-G's Reference (No 2 of 2002)*), and because it was thought that the jury would struggle without assistance, the Court deemed Dr Sutisno's opinions about similarities between Tang and the POI to be admissible as *ad hoc expert* evidence.[137]

Dr Sutisno had made an impermissible (positive) identification, and for that reason, Tang prevailed on appeal.[138] In a future trial, Dr Sutisno would be allowed to express opinions about features said to be similar (or different), but could go no further. The basis for the interpretation of features (said to be similar) in low-quality CCTV and their frequency among the relevant population were left unresolved. This decision is revealing because it seems to suggest that the low quality of the images meant that the Court was reluctant to admit them without assistance. That is interesting, because perceived necessity (or expediency) forms no part of the rules regulating the admission of images or interpretive opinions under the UEL.[139]

One further feature of the *Tang* decision has cast an unfortunate pall over the Australian jurisprudence around expert opinion evidence, extending beyond the interpretation of images. When addressing the need for opinions to be based on "specialised knowledge", having endorsed the definition of "knowledge" employed by the US Supreme Court in *Daubert*,[140] the Chief Justice of NSW nevertheless insisted that "[t]he focus of attention must be on the words 'specialised knowledge', not on the introduction of an extraneous idea such as 'reliability'".[141]

The approach to expert image interpretation from *Tang* was quickly adopted in Australia's common law jurisdictions. In *Murdoch*, Professor Henneberg, another anatomist, positively identified Murdoch in security images. Dr Sutisno, on this occasion called by the defence, criticised his method and opinion. The Northern Territory Court of Appeal agreed with the need to restrict the opinions to descriptions of similarities, but upheld the conviction notwithstanding that the professor had positively identified Murdoch in low-quality images during the trial.

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136 *Tang* (n.133).

137 *Ibid.*, [14], [120].

138 The fact that Dr Sutisno had been exposed to highly suggestive domain-irrelevant information was not addressed.

139 Tang was subsequently convicted in a re-trial where no "expert" evidence was called.

140 *Daubert* (n.35).

141 *Tang* (n.133), [137]. The reference is ironic because *Daubert* (and *Kumho Tire Co v Carmichael* 526 US 137 (1999)) inaugurated a reliability standard for expert evidence in US courts following Rule 702 of the Federal Rules of Evidence (1975). Of interest, these US Supreme Court decisions explained that the word "knowledge" required reliability and this meant validation for scientific and technical forms of evidence.

In the aftermath of *Tang* and *Murdoch*, Henneberg attributed significance to multiple alleged similarities between images of a POI and a known suspect.[142] Rather than merely present a list of features said to be similar in compliance with *Tang* (along with a statement that he could discern no differences), Henneberg offered his impression of the evidentiary significance of these putative similarities. Academic criticism and continuing controversy around the interpretation of images led to successful challenges to *expert* opinion evidence in *Morgan v The Queen* and *Honeysett*.

In *Morgan*,[143] Professor Henneberg reported and testified that he had identified several similarities between a POI — fully clothed and wearing a balaclava — and Morgan. Further, he attributed significance to the similarities he purported to be able to observe in the images. On appeal, the NSW CCA reiterated the constraints imposed in *Tang*, simultaneously questioning the basis of the opinion as well as the relevance of the professor's "training, study and experience".

> "Professor Henneberg claimed, he was able to detect not just a measure of similarity but 'a high level of anatomical similarity' between the two persons. How he was able to do that when no part of the body of the offender in the CCTV images was exposed was, in my view, never satisfactorily explained. … it is not apparent on the evidence how his undoubted anatomical expertise equipped him to take account of the clothing. Notably, he said that he could make observations of the 'head shape, nose and face profile' of the offender, notwithstanding that his head was covered by a balaclava".[144]

Shortly after *Morgan*, a differently constituted appellate board deemed Professor Henneberg's opinion, this time responsively restricted to similarities between Honeysett and yet another disguised offender, to be admissible and affirmed the conviction. The admission of this opinion evidence was appealed to the High Court.

A unanimous High Court upheld the appeal. In essence, the Court concluded that Professor's Henneberg's interpretation of features and comparison of the images was not based on specialised anatomical knowledge and was therefore inadmissible according to s.79 of the UEL:

> "Professor Henneberg's opinion was not based on his undoubted knowledge of anatomy. Professor Henneberg's knowledge as an anatomist … 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

142 Notwithstanding *Tang*, many *expert* reports continued to positively identify or attach significance to the meaning of similarities.

143 (2011) 215 A Crim R 33.

144 *Ibid.*, [140]–[141].

looked at the images. This observation applies to the evidence of each of the characteristics of which Professor Henneberg gave evidence".[145]

Honeysett also reiterated a longstanding anxiety about the potential influence of expert opinions. For the Court, "Professor Henneberg's evidence gave the unwarranted appearance of science to the prosecution case".[146] Unfortunately, despite concerns about the misuse of (here anatomical) expertise, the High Court did not provide criteria to assist with the meaning of "specialised knowledge" and declined to comment on whether Henneberg was an *ad hoc expert* or the status of such evidence under the UEL.

Notwithstanding the exclusion of the evidence of those with limited familiarity in *Smith* (2001), courts in Australia have admitted and continue to admit the identification evidence of those, notably non-investigators, with greater familiarity.[147] In *R v Marsh*,[148] acknowledging the potential difficulty of maintaining a sharp distinction on the fact-opinion boundary, the NSW CCA concluded that a woman could identity a person in images of a bank robbery that she said was her brother. Adverting to the level of familiarity being qualitatively different from that possessed by the police in *Smith* (2001), the Court found her evidence admissible whether characterised as direct or opinion evidence. As opinion they considered "her close familiarity with the appellant … as specialised knowledge based upon experience, enlivening s 79 of the *Evidence Act*".[149] A more recent decision excluded interpretations of a prison melee recorded on CCTV on the grounds that guards possessing familiarity obtained over several months did not possess "specialised knowledge" or, in the alternative, that the probative value of their evidence was outweighed by the danger of unfair prejudice (s.137).[150] The question of whether the identification of a POI in images is recognition (or direct) evidence and therefore fact, or interpretive and therefore opinion, remains unresolved.

C. Overview

In consequence, in the aftermath of *Smith* (2001), *Tang* and *Honeysett*, identification from images by police officers is basically inadmissible. The opinions of those

145 *Honeysett* (n.120), [43].

146 *Ibid.*, [45].

147 This includes familiars who are involved in events, though we are not here concerned with direct experience of criminal acts.

148 [2005] NSWCCA 331.

149 *Ibid.*, [31]–[32].

150 In *R v Sterling* (2014) 19 DCLR(NSW) 74, [90]–[95] the evidence of prison guards, some of whom were deemed more familiar with persons than the police officers in *Smith*, was adduced by the prosecution against an individual accused of attacking a fellow prisoner. Nevertheless, the relevant opinion evidence was excluded as not satisfying the "knowledge" requirement of UEL s.79 or, in the alternative, excluded according to UEL s.137 because the probative value was outweighed by the danger of unfair prejudice. See also *R v Drollett* [2005] NSWCCA 356.

presented as experts is only admissible if the expertise "fits" with the task of comparing faces or body features and remains restricted to the description of similarities. Precisely who such experts are, and even whether they exist, has yet to be resolved. It is far from clear whether non-anatomists, such as military intelligence officers, will be allowed to express their opinions about similarities (and differences) as legally recognised experts. Police super-recognisers are yet to surface in Australia. Those who are familiar with a person, including police or prison guards, may identify them in images associated with criminal acts provided the level of familiarity is sufficient. Perhaps the most disappointing features of the Australian jurisprudence are: the failure to develop the meaning of "specialised knowledge", especially given the rejection of "reliability" in *Tang*; the failure to address the status of *ad hoc* expertise, particularly in UEL jurisdictions; the lack of engagement with relevant scientific research; and, the tendency to leave the interpretation of images to the jury in conjunction with continuing confidence in the efficacy of directions and warnings.

IV. What about Actual Knowledge? Scientific Research on Face Comparison

The foregoing discussion of English and Australian law endeavours to capture the main contours of prevailing legal practice and some of the authoritative decisions. For observers, one of the most prominent and disconcerting features of the legal use of images in both jurisdictions is the lack of engagement with relevant scientific research and the inability of legal institutions to obtain and apply feedback in their practices and performances.

Decades of scientific research into face matching has provided an evidentiary platform for approaching the identification of persons from images.[151] We have clear empirical evidence about levels of performance, risks, and issues that ought to inform legal and investigative engagement with images and image interpretation.[152] This research might be useful for thinking about the types of evidence produced, how investigators and legal institutions should classify evidence derived from images and the individuals interpreting them — regardless of whether it is characterised as fact or opinion and regardless of whether witnesses are presented as experts, police or police super-recognisers, as well as the kinds of procedures that will produce

151 Some of this has permeated legal consciousness and been used to inform procedures around eyewitness identifications and even parts of Code D.

152 Moreover, researchers distinguish between recognition and matching (or comparison). Recognition is memory based. It might be instantaneous and unreflexive or more considered, namely interpretive and deliberative. Matching, in contrast, places fewer demands on memory as images are available for inspection and comparison. Matching also tends to involve strangers. Matching might be fast, even instantaneous, but it tends to be slower and interpretive.

the most reliable evidence. In this section we aim to provide an overview of some mainstream scientific research relevant to recognition and comparison evidence.

A. Familiarity improves performance

In contrast to unfamiliar face matching, those familiar with persons depicted in images are relatively accurate at identifying them.[153] It is well established that humans are much more accurate when asked to match familiar faces than when matching unfamiliar faces.[154] More accurate performance is robust over a wide range of viewing conditions including short duration, low-quality images and even after changes in appearance.[155]

Researchers have suggested that familiar and unfamiliar face matching are fundamentally different tasks. Processing seems to involve qualitatively different operations.[156] Familiar face recognition relies on internal facial features such as eyes, nose and mouth.[157] Unfamiliar face matching focuses more on peripheral features such as face shape and hairstyle.[158] Most face matching does not place high demands on memory. Unfamiliars are often engaged in comparison tasks whereas familiars might simply recognise a person (from their memory) without conscious effort.[159] One researcher has expressed this in the provocative language that unfamiliar faces are not treated as faces.[160] That is, we are "face experts" with faces that we *know* but faces that we don't know are not treated as faces.[161]

153 Ruth Clutterbuck and Robert Johnston, "Demonstrating How Unfamiliar Faces Become Familiar Using a Face Matching Task" (2005) 17 European Journal of Cognitive Psychology 97; Vicki Bruce, Zoe Henderson, Craig Newman and Mike Burton, "Matching Identities of Familiar and Unfamiliar Faces Caught on CCTV Images" (2001) 73 Journal of Experimental Psychology: Applied 207; Mike Burton, Stephen Wilson, Michelle Cowan, and Vicki Bruce, "Face Recognition in Poor-Quality Video: Evidence from Security Surveillance" (1999) 10 Psychological Science 243.

154 See Burton, Wilson, Cowan, and Bruce, "Face Recognition in Poor-Quality Video" (n.153).

155 Rob Jenkins, David White, Xandra Van Montfort, Mike Burton, "Variability in Photos of the Same Face" (2011) 121 Cognition 313.

156 Ahmed Megreya, Adam Sanford and Mike Burton, "Matching Face Images Taken on the Same Day or Months Apart: The Limitations of Photo ID" (2013) 27 Applied Cognitive Psychology 700; Ahmed Megreya and Mike Burton, "Unfamiliar Faces Are Not Faces: Evidence from a Matching Task" (2006) 34 Memory & Cognition 865; Mike Burton, "Why Has Research in Face Recognition Progressed So Slowly? The Importance of Variability" (2013) 66 Quarterly Journal of Experimental Psychology 1467; Mike Burton *et al.*, "Arguments against a Configural Processing Account of Familiar Face Recognition" (2015) 10 Perspectives on Psychological Science 482.

157 Lesley Bonner and Mike Burton, "7-11-Year-Old Children Show an Advantage for Matching and Recognizing the Internal Features of Familiar Faces: Evidence against a Developmental Shift" (2004) 57A Quarterly Journal of Experimental Psychology 1019.

158 Vicki Bruce, Zoe Henderson, Karen Greenwood, Peter Hancock, Mike Burton and Paul Miller, "Verification of Face Identities from Images Captured on Video" (1999) 5 Journal of Experimental Psychology: Applied 339.

159 See Burton, "Why Has Research in Face Recognition Progressed So Slowly? The Importance of Variability" (n.156).

160 See Megreya, Sanford and Burton, "Matching Face Images Taken on the Same Day or Months Apart" (n.156).

161 *Ibid*.

Familiarity can vary from very brief encounters (or even the inspection of mug shots) to intimate interactions over decades.[162] In general, greater familiarity produces greater accuracy, even in demanding conditions.[163] Unfortunately, "our ability to recognise familiar people does not generalise well to unfamiliar faces".[164]

B. Unfamiliar face comparison is difficult and error-prone

A talent for recognition does not necessarily predict face comparison ability.[165] A recent review of face matching research reiterated the early findings "[t]o the surprise of many researchers … face matching appeared to be a much more difficult task than anyone had predicted. … Face matching is a very difficult task to perform".[166] Most of us are prone to error when attempting to match unfamiliar faces.[167] Difficulty and high levels of error are findings that have been sustained across decades of face matching research.

Early studies, by researchers who were to become influential in the domain, found that when asked to match an image of a face with one from a set of ten, respondents made errors in 30 per cent of trials where images of the person who matches were taken on the same day. When the matching face was not included in the set of ten, another (ie the wrong) face was selected about one third of the time.[168] Where pose or expression was altered, error rates approached 40 per cent. In experiments where the choice was reduced to choosing whether two images provided simultaneously were of the same or different persons, participants mistakenly matched images in more than one quarter (27.5 per cent) of trials

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162 Familiarity is improved by exposure (particularly to "person-specific variability"): see Robertson, Noyes, Dowsett, Jenkins and Burton, "Face Recognition by Metropolitan Police Super-Recognisers" (n.91).

163 Super-recognisers might be conceptualised as the equivalent in performance as those with a much greater level of familiarity. These levels, such as number of hours or years of acquaintance could presumably be roughly quantified.

164 See Robertson, Noyes, Dowsett, Jenkins and Burton, "Face Recognition by Metropolitan Police Super-Recognisers" (n.91).

165 See White, Kemp, Jenkins, Matheson and Burton, "Passport Officers' Errors in Face Matching" (n.91).

166 Robert Johnston and Markus Bindemann, "Introduction of Forensic Face Matching" (2013) 27 Applied Cognitive Psychology 697, 698. Earlier studies include: Vicki Bruce and Andy Young, "Understanding Face Recognition" (1986) 77 British Journal of Psychology 305; Mike Burton, Vicki Bruce and Robert Johnston, "Understanding Face Recognition with an Interactive Activation Model" (1990) 81 British Journal of Psychology 361. See also Markus Bindemann, Meri Avetisyanm and Kristy Blackwell, "Finding Needles in Haystacks: Identity Mismatch Frequency and Facial Identity Verification" (2010) 16 Journal of Experimental Psychology: Applied 378.

167 This is an unusual activity, and we receive very little feedback in our everyday lives.

168 See Bruce, Henderson, Greenwood, Hancock, Burton and Miller, "Verification of Face Identities from Images Captured on Video" (n.158); Bruce, Henderson, Newman and Burton, "Matching Identities of Familiar and Unfamiliar Faces Caught on CCTV Images" (n.153); Mike Burton, David White and Allan McNeill, "The Glasgow Face Matching Test" (2010) 42 Behavior Research Methods 286; Mike Burton, Stephen Wilson, Michelle Cowan, and Vicki Bruce, "Face Recognition in Poor-Quality Video: Evidence from Security Surveillance" (1999) 10 Psychological Science 243.

and missed actual matches almost half of the time (45 per cent).[169] Most of these comparison tasks, unlike eyewitness identification for example, place no demands on memory. The images (and in some trials actual persons standing in the room) were usually presented simultaneously.

Many, though certainly not all, of the CCTV recordings and other images relied upon by police, familiars, and *experts* are of low quality and not infrequently involve some attempt at disguise. While lowering image quality decreases the accuracy of face matching,[170] surprisingly high levels of error were found using very high quality images or comparing high quality images with actual people. When the target's image was present, errors were made 44 per cent of the time and in 60 per cent of these errors the participants were highly confident about their responses.[171] Higher-quality images appear to increase the confidence of participants. However, errors remain high even when participants have access to high-quality close-ups and substantial time to examine them.[172]

Many variables, such as length of video, facial expression, disguise, lighting, viewing angles and time between images, will influence interpretive (both comparison and recognition) accuracy.[173] In addition, error rates tend to increase as the time between when the images were taken expands, especially where there are changes, such as a new hairstyle, wearing glasses, weight gain or loss or ageing.[174] In one study, where those appearing in a video wore basic disguises (eg sunglasses or a beanie) and the images were collected one year apart:

> "… 44% of participants in culprit present trials incorrectly believed that the defendant was not present in the video. A further 33% of participants who took part in culprit-absent trials wrongly believed that the defendant and the culprit in video were the same person. Of those making errors, 51% were highly confident in that they responded on the extreme intervals".[175]

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169 Megreya and Burton, "Unfamiliar Faces Are Not Faces" (n.156); Zoe Henderson, Vicki Bruce and Mike Burton, "Matching the Faces of Robbers Captured on Video" (2001) 15 Applied Cognitive Psychology 445. Error rates were typically greater than 10 per cent, see David White, Mike Burton, Richard Kemp and Rob Jenkins, "Crowd Effects in Unfamiliar Face Matching" (2013) 27 Applied Cognitive Psychology 769.

170 Markus Bindemann, Janice Attard, Amy Leach and Robert Johnston, "The Effect of Image Pixilation on Unfamiliar Face Matching" (2013) 27 Applied Cognitive Psychology 707.

171 Henderson, Bruce and Burton, "Matching the Faces of Robbers Captured on Video" (n.169); Josh Davis and Tim Valentine, "CCTV on Trial: Matching Video Images with the Defendant in the Dock" (2009) 23 Applied Cognitive Psychology 482, 495.

172 See Davis and Valentine, "CCTV on Trial" (n.171); Graham Davies and Sonya Thasen, "Closed Circuit Television: How Effective an Identification Aid" (2000) 91 British Journal of Psychology 411.

173 See eg Harold Hill and Vicki Bruce, "The Effects of Lighting on the Perception of Facial Surfaces" (1996) 22 Journal of Experimental Psychology: Human Perception and Performance 986; Glenn Porter, "CCTV Images as Evidence" (2009) 41 Australian Journal of Forensic Sciences 11; Bernard Harper and Richard Latto, "Cyclopean Vision, Size Estimation, and Presence in Orthostereoscopic Images" (2001) 10 Presence 312.

174 Megreya, Sanford and Burton, "Matching Face Images Taken on the Same Day or Months Apart" (n.156).

175 See Davis and Valentine, "CCTV on Trial" (n.171) p.493.

A well-known study by Kemp and colleagues explored the ability of cashiers to spot "fraudulent shoppers" as part of an experiment in a retail environment where images were included on credit cards. The experimenters found that cashiers, with financial incentives to prevent "fraud", made high levels of error. Where the fraudulent shopper bore some resemblance to the person in the image on the card, the different identities were missed more than two thirds of the time.[176] Revealingly, the pool of individuals selected to be shoppers, and responsible for causing such high levels of error, were from a single class at a local university. This experiment is one of the reasons banks do not issue credit cards with photographs.

C. Face matching ability is on a continuum

> "[M]ost research has found that identifications of individuals well-known to the observer are normally highly reliable, even when image quality is poor. Nevertheless, familiar face recognition is rarely 100%, even by those with the best face recognition ability".[177]

Human face matching abilities vary considerably. This applies to both familiars and non-familiars. There appears to be "a broad spectrum of face recognition ability".[178] At one end of the spectrum is prosopagnosia. Those suffering from this condition have "exceptionally poor face recognition ability despite normal vision and absence of brain damage or other cognitive deficits".[179] At the other end of the spectrum are those with exceptionally accurate face recognition and matching abilities — the so-called super-recognisers. In the research literature, the label "super-recogniser" reflects a level of demonstrated ability. On the basis of testing, using fairly standard face recognition (ie memory) and face matching tasks,[180] those who scored at least two SD above the mean have been classified as super-recognisers. This is something of a "working definition" and more needs to be done "to establish a reliable standard".[181] There is no evidence that these super-recognisers process faces differently. Rather, it appears they are performing at the "high end of a broad distribution" of ability.[182] Of significance for applied face recognition, the "very large individual differences appear to

176 Richard Kemp, Nicola Towell and Graham Pike, "When Seeing Should Not Be Believing: Photographs, Credit Cards and Fraud" (1997) 11 Applied Cognitive Psychology 211.
177 See Davis and Valentine, "Human Verification of Identity from Photographic Images" (n.3) p.219.
178 See Russell, Duchaine and Nakayama, "Super-Recognisers" (n.92).
179 *Ibid.*
180 Standard tests include the Glasgow Face Matching Test, Cambridge Face Memory Test, Before They Were Famous, Models Face Matching Test, and Pixelated Lookalikes Test.
181 See Davis, Jansari and Lander, "I Never Forget a Face" (n.91) p.727.
182 See Russell, Duchaine and Nakayama, "Super-Recognisers" (n.92) p.256.

be highly stable over time".[183] Further, super-recognisers tend to perform well above average on face comparison, as well as tasks based on recollection (ie memory of faces) — including faces that may have only been seen briefly, perhaps on a "rap sheet" or in a CCTV recording of a separate criminal act perhaps months or years apart.[184] Notwithstanding impressive abilities, super-recognisers make errors.[185]

In 2011, Davis and Valentine tested police officers from the Metropolitan Police who were among the best performers in the identification of suspects from CCTV and other images. Their experiments found that "[s]ome, but not all, of these officers performed far better than a control group of members of the public" across a range of familiar and unfamiliar face matching tasks.[186] "One officer performed more than 3 standard deviations (SD) above the control mean and a few others were more than 2 SD above the control mean". These would appear to be genuine super-recognisers. However, some of the police officers who made successful identifications from CCTV images "recorded distinctly average results on many of the tests",[187] leading Davis *et al*. to note that identifying familiar local suspects "would not require a special talent".[188] A proven record of recognising suspects from still or moving images does not necessarily mean that an officer falls within Russell *et al*.'s super-recogniser classification:

> "[F]or the police a super-recogniser does not need to be extraordinarily good at face recognition; they just need to meticulously scan the regularly updated large database of published suspect images, occasionally recognising one, while always knowing the vast majority will be unknown".[189]

Robertson *et al*. tested four police super-recognisers and found consistently high performance across tests involving both unfamiliar and familiar face matching.[190] A study by Bobak *et al*. examined seven police super-recognisers and found that all were significantly better at matching unfamiliar faces than members of a control group. However, in a second experiment, which required participants to remember unfamiliar faces for a longer period, these super-recognisers outperformed control participants but their overall performance was still generally poor, with an error

183 See Robertson, Noyes, Dowsett, Jenkins and Burton, "Face Recognition by Metropolitan Police Super-Recognisers" (n.91).

184 This is useful because it enables investigators to group events together.

185 See Bobak, Hancock and Bate, "Super-Recognisers in Action" (n.91).

186 See Davis and Valentine, "Human Verification of Identity from Photographic Images" (n.3) p.231.

187 See Davis, Jansari and Lander, "I Never Forget a Face" (n.91).

188 *Ibid*.

189 *Ibid*.

190 See Robertson, Noyes, Dowsett, Jenkins and Burton, "Face Recognition by Metropolitan Police Super-Recognisers" (n.91).

rate of 33 per cent.[191] The researchers also found significant differences within the super-recogniser group, with some being "slightly less super" than others.[192]

D. The performance of "experts" (and algorithms)

There is little independent evidence that so-called face and body matching *experts* perform better when comparing POIs in images than ordinary persons. Many of these *experts* (and those relying on their opinions) appeal to the admission of their evidence and convictions as evidence of their abilities. Legal recognition and admission are not meaningful surrogates for formal evaluation and reveal nothing concrete about validity, reliability or performance.[193] Most facial mapping witnesses produce their opinions after investigators have disclosed the identity of the suspect. In most cases, investigators provide only one set (or perhaps just a few sets) of reference images for comparison. Such processes suggest the desired answer, often in circumstances supported by other evidence, such as disclosure of an admission by an accomplice. There are no scientific studies validating their methods or confirming levels of performance that would warrant treating their evidence as being more reliable than jurors making their own comparisons.[194] There is no evidence that facial mapping *experts* are super-recognisers. Significantly, there is no evidence that so-called expert witnesses rival the performances of super-recognisers. We will return to these important considerations in our conclusion.

One additional issue warrants attention in this context. There are a variety of computer programmes (or algorithms), both available and in construction, designed to assist with image comparison for purposes of identification.[195] These algorithms are most accurate with high-quality images. This often requires user cooperation to enable capture in controlled (ie usable) conditions. Anyone who has been through an international airport with an automated passport system will be familiar with the need for compliance. Unfortunately, most crime-related images and videos

191 See Bobak, Hancock and Bate, "Super-Recognisers in Action" (n.91) p.89.

192 Helen Thomson, "Super-Recognisers Pinpoint Strangers" (21 November 2015) 228 New Scientist 12.

193 The demise of microscopic hair comparison, bullet-lead comparison and bite mark evidence suggest that admission and reliance are not reliable indicators of probative value. See the FBI review of microscopic hair comparison, "FBI Testimony on Microscopic Hair Analysis Contained Errors in at Least 90 Percent of Cases in Ongoing Review" (20 April 2015), available at https://www.fbi.gov/news/pressrel/press-releases/fbi-testimony-on-microscopic-hair-analysis-contained-errors-in-at-least-90-percent-of-cases-in-ongoing-review (visited 21 July 2016); and the statement on bullet-lead comparison: FBI National Press Office, "FBI Laboratory Announces Discontinuation of Bullet Lead Examinations" *National Press Release* (1 September 2005), available at https://archives.fbi.gov/archives/news/pressrel/press-releases/fbi-laboratory-announces-discontinuation-of-bullet-lead-examinations (visited on 22 July 2016). On bite marks, see Erica Beecher-Monas, "Reality Bites: The Illusion of Science in Bite-Mark Evidence" (2009) 30 Cardozo Law Review 1369 and Mark Page *et al.*, "Expert Interpretation of Bitemark Injuries: A Contemporary Qualitative Study" (2013) 58 Journal of Forensic Sciences 664.

194 Though, as Section IV(B) explains, these are all likely to be error-prone. See also David White *et al.*, "Perceptual Expertise in Forensic Facial Image Comparison" (2015) 282 Proceedings of the Royal Society of London B: Biological Sciences 1814.

195 Some are based on features or movement or combinations.

are of low quality, short duration and/or often involve disguises. We accept that algorithms are improving and may eventually outperform humans. At present, however, algorithms perform poorly in comparison to humans when using the images typically available to investigators. Moreover, it is likely that even as the performance of computer systems improves, we will continue to rely on strategic combinations of algorithms and humans (though probably increasingly humans with above-average facial recognition and comparison abilities) to enhance our performance by overcoming the weaknesses inherent in each.[196]

E. Experience comparing unfamiliar faces makes little difference to performance

One surprising, and potentially unsettling, recent research finding is that long experience comparing images may make little difference to performance. This would seem to have application to understanding the abilities and claims around legal reliance on the opinions of police officers and those presented and accepted in England (and Australia) as *experts*.

A study by White and colleagues found that performance in the face matching ability of Australian passport officers was not related to length of experience (ie employment duration) or training.[197] To repeat, there was "no relationship between experience and accuracy".[198] Australian passport officers "were no better on standard measures of face matching than a group of untrained students".[199] In attempting to explain this counter-intuitive finding, White *et al.* emphasised the fact that passport officers "rarely receive feedback on the accuracy of matching decisions".[200] One of the recommendations from this research, of relevance to the engagement of super-recognisers, is to "select staff on the basis of face matching aptitude".[201]

Research confirms that police officers "as a group do not tend to be better at face recognition [or matching] than members of the public".[202] In addition, preliminary

196 Fingerprint examiners use algorithms in combination with their subjective expertise. The algorithms locate highly similar prints, but only examiners match latent prints. Computers are used to match ten prints.

197 See White, Kemp, Jenkins, Matheson and Burton, "Passport Officers' Errors in Face Matching" (n.91).

198 *Ibid*., p.4.

199 See Robertson, Noyes, Dowsett, Jenkins and Burton, "Face Recognition by Metropolitan Police Super-Recognisers" (n.91) p.2, discussing research by White, Kemp, Jenkins, Matheson and Burton, "Passport Officers' Errors in Face Matching" (n.91).

200 See White, Kemp, Jenkins, Matheson and Burton, "Passport Officers' Errors in Face Matching" (n.91) p.5. See also Markus Bindemann, Janice Attard and Robert Johnston, "Perceived Ability and Actual Recognition Accuracy for Unfamiliar and Famous Faces" (2014) 1 Cogent Psychology 1.

201 See White, Kemp, Jenkins, Matheson and Burton, "Passport Officers' Errors in Face Matching" (n.91) p.5.

202 See Davis, Jansari and Lander, "I Never Forget a Face" (n.91) p.728.

studies suggest that training (in anatomy, photography and interpretive techniques) may not significantly enhance face-matching performance.[203]

F. Interpretive tasks are vulnerable to a range of contextual influences

> "Human beings, in all lines of work, make errors. Errors can be prevented by designing systems that make it hard for people to do the wrong thing and easy for people to do the right thing".[204]

Whether performed by police, *experts* or others, image interpretation and comparison is highly susceptible to a range of influences and biases that reduce the accuracy of interpretations. Investigators and courts have not taken the magnitude of these threats to the value of evidence sufficiently seriously.

The threat posed by human factors, eg biases such as suggestion and confirmation, is one of the emerging issues confronting the contemporary forensic sciences.[205] In a recent review, the US National Academy of Sciences focused unprecedented attention on "the extent to which practitioners in a particular forensic discipline rely on human interpretation that could be tainted by error, the threat of bias, or the absence of sound operational procedures and robust performance standards".[206] The National Academy of Sciences explained that:

> "Human judgment is subject to many different types of bias, because we unconsciously pick up cues from our environment and factor them in an unstated way into our mental analyses. Those mental analyses might also be affected by unwarranted assumptions and a degree of overconfidence that we do not even recognize in ourselves. Such cognitive biases are not the result of character flaws; instead, they are common features of decision making, and they cannot be willed away. A familiar example is

203 Laboratory studies have found that the effects of training are non-existent or small. See Hamood Alenezi and Markus Bindemann, "The Effects of Feedback on Face-Matching Accuracy" (2013) 27 Applied Cognitive Psychology 735; David White, Richard Kemp, Rob Jenkins and Mike Burton, "Feedback Training for Facial Image Comparison" (2014) 21 Psychonomics Bulletin & Review 100; Alice Towler, David White and Richard Kemp, "Evaluating Training Methods for Facial Image Comparison: The Face Shape Strategy Does Not Work" (2014) 43 Perception 214.

204 See National Academy of Sciences, Institute of Medicine, Committee on Quality of Health Care in America, *To Err Is Human: Building a Safer Health System* (New York: McGraw-Hill Companies, 1999).

205 Simon Cole and William Thompson, "Forensic Science and Wrongful Conviction" in Ronald Huff and Martin Killias (eds), *Wrongful Convictions and Miscarriages of Justice* (London: Routledge, 2013) pp.111–135. See also Expert Working Group on Human Factors in Latent Print Analysis, *Latent Print Examination and Human Factors: Improving the Practice through a Systems Approach* (Washington, DC: US National Institute of Standards and Technology and US National Institute of Justice, 2012).

206 National Research Council, *Strengthening Forensic Science in the United States: A Path Forward* (Washington, DC: National Academies Press, 2009) p.9.

> how the common desire to please others (or avoid conflict) can skew one's judgment if co-workers or supervisors suggest that they are hoping for, or have reached, a particular outcome".[207]

These issues and dangers apply to the interpretation of images and should inform the stringency with which we regulate interpretations.[208]

There is no evidence that police or forensic scientists are more resistant to contextual bias and contamination than others. Against expectations (and legal experience), training, long experience doing comparisons, critical thinking and even being aware of problems and dangers do not enable an interpreter to overcome undesirable influences, such as explicit or implicit suggestions. Studies have demonstrated that exposure to gratuitous information can cause experienced forensic scientists to change, and even reverse, their interpretations of data. These include match decisions by latent fingerprint examiners and conclusions as to whether the accused's profile forms part of a mixed DNA sample.[209] In terms of images, repeatedly viewing images with a suspect in mind may lead the observer to ignore exculpatory cues while placing greater weight on frames where there appears to be more similarity.[210] It is significant that the high levels of error encountered in the studies summarised in Section IV(B) did not involve suggestion or other attempts to bias participants.

It is vitally important to prevent unnecessary exposure to gratuitous information or processes that have the potential to bias and introduce errors because these cannot be easily identified or effectively repaired "downstream", during trial and appeals. Importantly, the value of independent identifications — in non-suggestive conditions — is unnecessarily compromised and lost.[211]

V. Discussion

In this section, it is our intention to raise a number of concerns, particularly issues illuminated by the scientific research. Some of these pose genuine challenges to criminal justice practice, especially the desire to place the increasing reliance

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207 *Ibid.*, p.122; Expert Working Group, *Latent Print Examination and Human Factors* (n.205).

208 See National Commission on Forensic Science, "Ensuring That Forensic Analysis Is Based upon Task-Relevant Information" (2015), available at https://www.justice.gov/ncfs/file/818196/download.

209 Itiel Dror, David Charlton and Ailsa Peron "Contextual Information Renders Experts Vulnerable to Making Erroneous Identifications" (2006) 156 Forensic Science International 74; Itiel E Dror and Greg Hampikian, "Subjectivity and Bias in Forensic DNA Mixture Interpretation" (2011) 51 Science and Justice 204.

210 See Davis and Valentine, "Human Verification of Identity from Photographic Images" (n.3) p.217.

211 Non-identification by a familiar may be very useful, especially if it encourages police to review their main suspect. This is much more valuable than suggestive identifications that confirm suspicions in something of a tunnel vision. See Keith Findley and Michael Scott, "The Multiple Dimensions of Tunnel Vision in Criminal Cases" (2006) Wisconsin Law Review 291.

on images as a means of intelligence and as evidence in prosecutions on a more scientifically based footing.

A. Conceptual and role confusion: experts, super-recognisers, familiars and voyeurs

The contingent manner in which courts have been confronted with different types of evidence derived from images, along with variation in the quality of rules, defence challenges and judicial responses, has produced a not especially coherent set of categories and approaches to evidence of identification from images. This applies both within and across jurisdictions. Furthermore, most of the current legal categories and practices are not informed by scientific research or sufficiently responsive to notorious risks. In this sub-section, we want to draw attention to the different types of witness and some of the differences in their evidence.

First, those presenting evidence as *expert* witnesses (such as facial mappers or forensic podiatrists), should be able to demonstrate that they can assist the tribunal of fact.[212] If there is no independent empirical evidence of enhanced ability in performing the specific task, then —regardless of their qualifications, experience doing the task, or ability to enhance images — we do not know if they can assist the jury.[213] To the extent that evidentiary reliability is now a factor under the CPD,[214] it might be difficult for these witnesses to demonstrate that there is a sufficiently reliable basis for admitting their opinions.[215] The procedures and capabilities of *experts* should be formally evaluated so that we have an idea of the probative value of their evidence. Similarly, if courts allow specific groups of police to testify as experts — on the basis that they can do what jurors cannot — then their ability to identify persons in images should be demonstrable rather than declaratory. Legal recognition, before techniques or abilities are formally evaluated and demonstrated to work, places "the cart before the horse". Simultaneously, it raises the spectre of mistaken identification.

Second, in the scientific literature, super-recognisers are individuals who possess an exceptionally good memory for faces and are able to subsequently recognise or match them. Their level of performance is consistently much better than average.[216] Indeed, scientific definitions of super-recognisers place them at the extreme end of human performance. In some cases, they are able to match faces on the basis of previous exposure to just a few, low-quality images, where the face

212 See *Otway* (n.30).

213 See *Turner* (n.14).

214 Tony Ward, "Expert Evidence and the Law Commission: Implementation without Legislation?" [2013] Crim LR 561.

215 CPD 19A.

216 Interestingly, as with most expertise, superior performance remembering and comparing faces is not transferable. Super-recognisers are not better than average at matching species of flower, for example. See Davis, Jansari and Lander, "I Never Forget a Face" (n.91) p.728.

may be partially obscured.[217] On the basis of performance-based definitions, not all police officers currently recruited to examine or compare images could be classified as super-recognisers.[218] While police may characterise such individuals as "super-recognisers" for purposes of intelligence gathering, public engagement and crime prevention, such representations may be misleading. The use of the term "super-recogniser" in the context of formal interviews with suspects, plea negotiations and prosecutions misrepresents known capabilities. Investigators should make the nature of any identification they are relying upon transparent.

Some police officers are super-recognisers (probably around 1 to 2 per cent, depending on the performance-based definition), however some of those proffering interpretations of images or purporting to recognise persons in images, regardless of their title or the organisation of their work, are reporting or testifying on the basis of some degree of familiarity. This could be based on previous exposure or repeatedly viewing images. Those who acquire familiarity on the basis of routine (ie non-investigative) work might be engaged to assist with the identification of POIs, but they do not, on that basis, become super-recognisers. Custody managers, for example, may be familiar with a large number of individuals from a particular locality.[219] They might claim to be able to identify familiar persons in images but they are not, on that basis, super-recognisers. Rather, they are a species of familiar.[220]

In general, (though subject to our conclusion), familiars should be able to testify about identity, although there are dangers where familiarity is very limited, obtained during the course of an investigation, or held by criminal justice personnel, whether police, prison staff or parole officers. These dangers are accentuated where persons are suggested or selections are reinforced. Ironically, previous exposure to "villains" might threaten the accuracy of decision-making in the criminal justice context, because there is a risk that those "familiar" with local offenders will be more likely to identify a usual or familiar suspect who resembles the person in the image. Like those whose biometric data is retained on police databases, these suspects are also more susceptible to adventitious matches.[221]

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217 *Ibid*.

218 *Ibid*., p.728: "It is impossible to know the 'ground truth' as to suspect guilt, despite subsequent legal decisions; nevertheless, when confronted with CCTV images, over 75 per cent confess in police interview".

219 *Ibid*. "… most of the identifications made by the officers were of familiar local suspects". Custody managers might also be super-recognisers, but the correlation is accidental and it is likely that most are not.

220 Andrew Roberts, "Eyewitness Identification and Facial Image Comparison Evidence in Common Law Jurisdictions" in Josh P Davis and Tim Valentine (eds), *Forensic Facial Identification: Theory and Practice of Identification from Eyewitnesses, Composites and CCTV* (Chichester: Wiley 2015) p.311. If we persist with police familiars, we should also have objective information, preferably video, of the conditions in which police officers made their "identifications". Where the only persons present are police, in the absence of video, "it may" as Roberts observes "be difficult to establish the veracity of any record that has been made".

221 See Michael Lynch *et al.*, *Truth Machine: The Contentious History of DNA Finger-Printing* (Chicago: University of Chicago Press, 2008) p.145.

In general, only criminal justice personnel who are not involved in the investigation and make identifications through non-suggestive procedures should be allowed to opine about identity. Drawing on scientific research, and the threats to cognition from suggestion, procedures (outlined in a revised Code D or some equivalent) could guarantee these conditions.[222] Such procedures enhance the probative value of identification evidence, although, as we explain in our conclusion, strategic use of *independent* super-recognisers may provide a means of effectively eliminating the need to rely on criminal justice personnel, facial mapping *experts*, and even police super-recognisers.

As for investigators who repeatedly watch or compare images (ie the investigative voyeurs allowed by the *Re A-G's Reference (No 2 of 2002)*),[223] this is not only an inefficient use of resources, it produces identifications that are not particularly reliable. In general, we should not encourage investigators to testify about the identity of persons they are investigating. Unless an investigator possesses demonstrably enhanced abilities (such as those possessed by super-recognisers), there is no reason to believe that their impressions will be significantly more accurate than the interpretations of ordinary persons (or the collective efforts of a jury).[224] More problematically, any benefit is compromised by the suggestive manner in which the comparisons are undertaken and the ubiquitous risk of contamination and error. We are not dependent on investigative (or other police) familiars. We can, after all, use genuine super-recognisers who are not immersed in the investigation or aware of other suggestive information, in their stead.

B. Recognition and identification as fact or opinion

Another conceptual difficulty threatening the use and evaluation of identification evidence derived from images is the issue of whether the evidence is opinion or fact. Traditionally, most courts have treated recognition as a species of fact and interpretation as a species of opinion. While such classifications have not been strictly applied, they do have implications for admissibility and the effectiveness of trial safeguards.[225]

We can explain the issue as follows. Facial mappers offer opinions about the persons in images on the basis of their examination or comparison of features and details in images. These are interpretative and produce opinion evidence. Familiars, however, may recognise the person in the image instantaneously — ie without conscious reflection. In such circumstances, the non-reflexive and unthinking nature of the activity might lead to the characterisation of the impression as fact

222 Only rarely, because of the threat to accuracy, will there be credible reasons for excusing non-compliance.

223 *Re A-G's Reference (No 2 of 2002)* (n.5).

224 Collective interpretations of images tend to be less accurate than the combination of interpretations performed independently. See Section VI.

225 For example, in Australia, opinion evidence is regulated by the exclusionary opinion rule (UEL, s.76) and exceptions for lay opinion (s.78) and individuals with relevant "specialised knowledge" (s.79).

evidence. Alternatively, a familiar may take time with an image and in this case the more deliberate interpretive effort might be more accurately characterised as opinion. It might involve reflection, and incorporate consideration of clothing, hair style, posture and even movement. Similarly, super-recognisers might recognise a person without reflection (ie from memory) or through deliberate effort (eg by direct comparison or reflection). These, sometimes subtle, distinctions are not always readily susceptible to retrospective determination.[226] In many cases involving identification by familiars and (police) super-recognisers, we will not know the precise conditions in which an image or images were examined, the time taken to identify a person or whether the process was suggestive. In such circumstances it may make sense for courts to direct more attention to the production of identification evidence and to adopt a precautionary approach.

In principle, we suggest that it is preferable to treat all of this identification evidence as species of opinion, thereby avoiding speculative attempts to determine how long recognition (or identification) actually took. Treating such evidence as opinion also brings into play specific rules and protections, not necessarily applicable to fact (or recognition).[227] That is, there is a need to attend to whether those purporting to identify persons are genuinely expert (or sufficiently familiar) and whether their opinions are sufficiently reliable (at least in England and Wales).

C. What should familiars and super-recognisers be allowed to say?

Another issue, flowing from scientific research confirming the difficulty of face matching, high levels of mistakes by strangers, and non-trivial levels of error by familiars and even super-recognisers, is what should familiars and super-recognisers be allowed to say about images or identification? While courts have traditionally allowed these witnesses to make positive identifications and explain the reasons for their beliefs, there is little evidence that familiars and super-recognisers are capable of providing the actual reasons for their heightened capabilities. They are not positioned to accurately capture and explain the reasons for any identification.[228] They certainly cannot do so when the identification is instantaneous or without reflection — so-called recognition evidence.

Where familiars and super-recognisers purport to explain the reasons for an identification (eg using face and body features, clothing or gait, and so forth), it does not follow that they will capture the actual reasons for their belief. Any explanation is likely to be some kind of *ex post facto* rationalisation of inaccessible cognitive

226 To this end, it may be useful to classify these kinds of *identification* evidence as opinion evidence. This avoids the need to determine the exact nature of any identification — was it instantaneous, did the observer reflect and so forth — while bringing the evidence within the rules regulating opinion evidence.

227 See the procedural rules discussed in Section II(B).

228 Drawing on Polanyi, Gigerenzer describes this as knowing more than we can tell. See Gerd Gigerenzer, *Risk Savvy: How to Make Good Decisions* (New York: Penguin, 2015) p.107 and Michael Polanyi, *The Tacit Dimension* (Chicago: University of Chicago Press, 1966) p.4.

processes. Much of the cognitive work involved in comparing and recognising does not appear to be available. It is "hidden" from consciousness. Consequently, explanations will tend to be reconstructions. Revealingly, Davis and colleagues found that police "officers articulating a greater quantity of information about their own face-recognition 'strategies', often performed worse than other officers on empirical tests of face recognition".[229]

This raises fundamental questions about what familiars and super-recognisers should be able to say in their testimony and written reports.[230] It might be that, apart from the actual conclusion, and some impression of confidence, they should be discouraged from venturing forth.[231] We might also wonder about the value of cross-examination where a witness's impression is based on an internal and inaccessible cognitive process.

Ideally, the opinions of familiars and super-recognisers might be combined with the results of relevant studies so that decision-makers have access to indicative levels of performance which include the risk of error.[232] In principle, the results of studies on the performance of familiars or the results of personal performance in tests that demonstrate ability as a super-recogniser (and therefore status as a special, perhaps expert, witness) should be disclosed to the defence.[233] The provision of such information is consistent with the need to explain the basis of any opinion.[234] Such disclosure would, simultaneously, have the benefit of demonstrating both heightened performance as well as the real and ubiquitous risk of error.[235] Self-evidently, such approaches are not consistent with current practices used in relation to police identification witnesses.

Similar difficulties arise with respect to facial mapping *experts*. Though, in this case, in the absence of validated methods and empirically derived information about performance, all such *experts* can credibly opine is what they did, because they do not know if their techniques work or how well, in what conditions, or their level of performance relative to others. Unfortunately, describing the procedure

229 See Davis, Jansari and Lander, "I Never Forget a Face" (n.91) p.728.

230 As "experts", these individuals should write reports. But they should not fabricate reasons and explanations retrospectively.

231 Otherwise we might be hearing about impressions of how an impression was formed. This seems highly undesirable, and likely to mislead.

232 David Faigman, Jonathan Monahan and Christopher Slobogin, "Group to Individual (G2i) Inference in Scientific Expert Testimony" (2014) 81 University Chicago Law Review 417.

233 These should presumably be disclosed if the state intends to rely on the evidence of super-recognisers and familiars, however characterized. Enhanced ability is precisely what it means to be a super-recogniser.

234 Indeed, the provision of such material would usually be required by the disclosure regime in England, as anything confirming that a super-recogniser had made errors might reasonably be considered capable of undermining the prosecution case or assisting a defence of mistaken identification (Criminal Procedure and Investigations Act 1996, s.3). Here, the basis is not necessary some retrospective attempt to explain the process, but rather, scientific evidence supporting the individual's ability (for super-recognition) or the enhanced abilities of familiars along with the exposure grounding the familiarity.

235 See Bobak, Hancock and Bate, "Super-Recognisers in Action" (n.91).

reveals nothing about performance and does not render an opinion susceptible to rational evaluation.

D. Explaining risks and dangers during the trial is ineffective

Currently, super-recognisers, police familiars and *expert* witnesses are entitled to proffer admissible evidence in England, provided that *legally known dangers* with the evidence are brought to the attention of the decision-maker. There is, for example, an expectation that the absence of a database will be disclosed in facial mapping cases.[236] For police identifications, courts expect compliance with relevant codes and images to be of "sufficient quality". These approaches are inadequate. They are not only indifferent to relevant scientific knowledge, they do not assist with fact finding.

At trial, risks and uncertainties are currently managed through cross-examination and judicial warnings. What prosecutors, defence advocates and judges have not recognised is that merely knowing about risks, methodological limitations and even mainstream scientific research does not place the decision-maker in a position to rationally evaluate evidence proffered by an identification witness.[237] This point is acute where the decision-maker will be asked to examine any images themselves, regardless of any judicial directions or warnings. We are not, after all, able to control how we perceive images. And yet, the way lawyers, judges and jurors approach images in criminal proceedings is highly suggestive. When looking at crime-related images, they already know things about the accused — who sits separately in the courtroom. The fact of prosecution implies that senior representatives of the state believe that the POI in the images is the accused. These are not neutral (or even favourable) conditions for reliable comparisons or interpretations. Judicial warnings that aim to guide or correct perception and other cognitive processes have a Canute-like quality.[238]

E. Trial safeguards?

Identification evidence is powerful, but simultaneously risky. In its 1976 report, the Devlin Committee recognised that traditional adversarial safeguards might be limited with respect to identification:

> "The weapon of cross-examination is blunted. A witness says that he recognizes the man, and that is that or almost that. There is no story to be

236 See *Atkins* (n.28).

237 Gary Edmond, "Forensic Science Evidence and the Conditions for Rational (Jury) Evaluation" [2015] MULR 17. See also President's Advisory Council on Science and Technology, *Forensic Science in Criminal Courts: Ensuring Scientific Validity of Feature-Comparison Methods* (Washington, D.C.: Office of the President of the United States, 2016) p.143.

238 According to one version of the legend, King Canute acquired a newfound humility from his encounter on the beach.

> dissected, just a simple assertion to be accepted or rejected. If a witness thinks that he has a good memory for faces when in fact he has a poor one, there is no way of detecting the failing".[239]

These dangers are likely to be accentuated where the identification involves images, available to the decision-makers, and the witness is a police officer said to be familiar with the (implicitly criminal) accused, a police officer who is said to be some kind of super-recogniser, or a highly qualified individual said to be an expert in image interpretation.

Trial safeguards are unlikely to adequately identify and convey limitations and in many cases will be incapable of placing the decision-maker in a position to rationally evaluate identification evidence — whether fact or opinion. Earlier we explained why cross-examination might not be particularly effective at teasing out or explaining unconscious cognitive processes. Similarly, judicial instructions, directions and warnings are incapable of disciplining image interpretations. "Unfortunately, face-matching accuracy is not improved, even after warnings of the high risk of error".[240] Defence experts offering methodological criticisms, by way of rebuttal, may make criminal proceedings appear fair(er), but they are unlikely to correct or balance positive identification evidence proffered by experienced investigators, even when testifying about serious dangers notorious among mainstream scientists and even when the identification is mistaken.[241]

Telling jurors that appropriate procedures were not used, that a technique has not been validated, that there is no database, or that the police did not comply with the terms of a Code, does not enable them to make allowances and somehow evaluate the evidence. It does not follow that merely explaining potential problems to fact-finders will reduce the dangers. Moreover, as Roberts summarises:

> "too much faith is placed in the capacity of the forensic processes of the criminal trial to reveal unreliable and inaccurate identification evidence, and a belief that problems with such evidence can be dealt with effectively by issuing warning and directions to the jury".[242]

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239 Home Office, Report to the Secretary of State for the Home Department of the Departmental Committee on Evidence of Identification in Criminal Cases (HMSO HC 338, 26 April 1976), para.1.25. See also Report of Committee of Inquiry into the Case of Mr Adolf Beck (Cmd No 2315, 1904): "…evidence as to identity based on personal impressions however bona fide, is perhaps of all classes of evidence the least to be relied upon …".

240 See Davis and Valentine, "Human Verification of Identity from Photographic Images" (n.3) p.217.

241 Gary Edmond and Mehera San Roque, "The Cool Crucible: Forensic Science and the Frailty of the Criminal Trial" (2012) 24 Current Issues in Criminal Justice 51.

242 Roberts, "Eyewitness Identification and Facial Image Comparison Evidence in Common Law Jurisdictions" in Davis and Valentine (eds), *Forensic Facial Identification: Theory and Practice of Identification from Eyewitnesses, Composites and CCTV* (n.220).

The failure to prevent suggestive processes may, for example, result in an error that will not be identified because of the way cases are assembled. All actors — the super-recogniser, police familiars, the facial mapper (as well as lawyers, judges and jury) — are more likely to make mistakes when the identity of the person in an image is suggested to them. Telling a jury that suggestion may increase the risk of the police witnesses misidentifying a POI is unlikely to convey the magnitude or likelihood of that risk.[243] Preliminary studies suggest that in difficult interpretive conditions (eg with low-quality images or disguises), laypersons tend to defer to the opinions of *image experts* even when their opinions about identity are wrong.

While judges have some sense of potential problems with identification, and even identifications from images, there is very limited evidence of any familiarity with modern scientific research. There is no indication that the judges in *Swinscoe*,[244] *Tucker*,[245] *Chaney*[246] and *Honeysett*,[247] by way of example, were conversant with extensive literatures on the magnitude of threats to perception and accuracy posed by contamination (ie suggestion).

Admittedly, Code D endeavours to respond to a variety of risks known to various degrees by some attentive lawyers and judges, but not in a manner that clearly embraces the magnitude of threats posed to cognition (and identifications). Threats to cognition are analogous to contamination in the processing of forensic science evidence. They can be subtle, inadvertent and operate unconsciously, and yet they can change (even reverse) the way evidence is perceived and processed, even by veteran police officers.[248] Code D should be revised to incorporate the results of scientific research and the best advice of peak scientific organisations, such as the Royal Society, National Academies, and the Forensic Science Regulator. If highly trained medical doctors, physicists and forensic scientists cannot resist insidious influences, and have developed procedures to eliminate these notorious risks (eg double-blind clinical trials), then we cannot assume that investigators without training in scientific methods and lacking familiarity with relevant research, will somehow be able to resist these pernicious influences, design processes to avoid them or credibly (and impartially) explain the dangers to lawyers and other laypersons during the course of adversarial criminal proceedings.[249]

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243 Ironically, drawing attention to such issues may itself contribute to the contamination of cognitive processing.

244 See *Swinscoe* (n.75).

245 See *Tucker* (n.77).

246 See *Chaney* (n.80).

247 See *Honeysett* (n.120).

248 These are not moral or personal failings, but part of our human condition.

249 Christopher Robertson and Aaron Kesselheim (eds), *Blinding as a Solution to Bias: Strengthening Biomedical Science, Forensic Science, and Law* (Atlanta, GA: Elsevier, 2016). See, for example, Harry Collins, *Gravity's Ghost: Scientific Discovery in the Twenty-First Century* (Chicago: University of Chicago Press, 2014).

F. Investigations, trials and appeals do not provide lessons and feedback

Investigations, guilty pleas, trials, convictions and appeals, do not provide systematic insight into the value of techniques, procedures or abilities. They do not provide structured information about limitations, uncertainty and errors. They do not reveal the identity of super-recognisers or whether facial mapping and other identification techniques actually work. Moreover, trials and appeals do not provide credible means of assessing the validity of techniques, the proficiency of individuals, nor whether exposure to domain-irrelevant information has been influential or resulted in error. Validation, reliability and risks from human factors must be assessed through formal evaluation, empirically-based standard operating procedures and regulated through rigorous admissibility gatekeeping.

Perhaps equally disturbing, trials and appeals have not provided lawyers and judges — individually or collectively — with a sophisticated sense of dangers. Judges have not facilitated means of bringing mainstream scientific research before them. They are, in consequence, left to rely upon (and reify) traditional rules and procedures, judicial experience, "common sense", and the materials generated through idiosyncratic cases.

VI. Radical Conclusions: Exclude Facial Mapping and Police Familiar Evidence

This conclusion reiterates two important findings before moving to discuss more radical implications. First, we have presented an outline of the conspicuous disjuncture between legal rules and practice and scientific research on identification from images. Legal practices in England and Australia are markedly inconsistent with the results of scientific research. Moreover, there are no good reasons for the disparity. It is far from clear that courts are aware of this displacement, and there are no discernible efforts to explain practices that are inconsistent with scientific research and advice. Second, English and Australian criminal justice systems have responded to the challenges posed by the recent proliferation of images in very different ways. Judges, and others, in both jurisdictions have endeavoured to regulate image evidence while responding to *legally* notorious dangers. Largely inattentive to relevant scientific research, and the capabilities and limitations established therein, these two legal regimes have produced a range of undesirable, indeed sub-optimal, responses.

To put this starkly, English courts have, on the whole, been excessively liberal, whereas Australian courts have been overly exclusionary. These respective failings could be substantially repaired by more tightly coupling legal rules and practice with known abilities and dangers. That is, England should assume a more exclusionary posture if it hopes to secure reasonably reliable image interpretations. Australia, to the extent that policymakers and judges intend to use reliable opinions

about images, might cautiously admit more opinion evidence. Both jurisdictions should be interested in the opinions of familiars, genuine super-recognisers and procedures (or algorithms) that are demonstrably valid and reliable. Attention to who is doing what, and the conditions in which identifications are obtained, as well as requiring procedures that are effective in producing accurate interpretations and avoiding cognitive contamination, would produce more probative evidence for criminal investigations, prosecutions and appeals. Courts should adopt more rigorous, scientifically informed approaches to enhance the quality and value of image evidence.

One emergent feature of this article is the very different epistemic status of (non-investigative) familiarity and super-recognition on the one hand, as opposed to other kinds of *expert* image interpretation for the purpose of identification on the other. An implication flowing from this difference concerns whether, in the absence of formal validation and indicative error rates, we should allow so-called expert witnesses to testify at all. Similar concerns apply to those who acquire familiarity through the repeated viewing of images, particularly during the course of an investigation. While familiarity tends to produce reasonably accurate identifications, the conditions in which criminal justice personnel are enlisted tends to erode the reliability of these opinions (and opens officers to accusations of collusion). Moreover, prior interactions with police may introduce an unnecessary threat to the fairness of proceedings — especially if the accused's prior criminality becomes part of the explanation for police familiarity.

Sensitive to current practices, scientific research and criminal justice aspirations, we recommend formally suspending the use of image *experts* (ie facial mappers and others whose techniques have not been formally evaluated) and police familiars and replacing them with *independent* super-recognisers.[250] This would involve some kind of substitution in England, where super-recognisers — under an alternative nomenclature — could replace these other witnesses.[251] In Australia, courts would need to develop means of admitting the opinions of super-recognisers, potentially as a type of expert witness. Although this recommendation might initially be perceived as an unnecessary over-reaction, to practices in England at least, we would remind the reader of the considerable experimental evidence supporting the enhanced abilities of super-recognisers. Moreover, through the use of independent super-recognisers, we could obtain identification evidence that is no less reliable than currently provided by police, though obtained in conditions that are guaranteed to be free from suggestion and other forms of contamination.

250 It is our contention that we should discontinue using *expert* witnesses for image interpretation until they, or the algorithms they produce, are demonstrably superior to super-recognisers.

251 As a procedural innovation, this is not unlike the recording of police interviews. It would remove the need for police to have to explain or justify identifications because that would be done by super-recognisers separated from investigators, ideally as part of an independent unit.

We propose that a small group of super-recognisers should be established, ideally outside of any police service, though certainly isolated from investigators, for the purpose of identifying POIs in images. Scientific research confirms that, at present, genuine super-recognisers represent the most accurate means of identification. Independence would enable them to produce identification evidence in circumstances that eliminate contextual bias and other threats, such as collusion and fabrication. Independent super-recognisers could effectively replace all of the other witnesses currently proffering their impressions of POIs in images,[252] although we might be willing to hear from familiars who are not part of the criminal justice system.[253] Independent super-recognisers could be used to test police suspicions through non-suggestive processes, where they are exposed to sets of images without knowing what is expected.

There are several substantial advantages with the use of super-recognisers. We could, for example, have several super-recognisers working independently in parallel on similar sets of images so that, through "crowd sourcing", the levels of accuracy could be raised significantly.[254] Such possibilities are not available with police and other familiars. Including images where the identity of persons is known (ie ground truth) among the tasks imposed on these super-recognisers would also allow the performance of the system to be gauged in ways that would enable the generation and provision of an indicative level of performance (ie error) to the decision-maker. Super-recognisers, properly regulated and organised, could satisfy the emerging legal need for reliability, even if they are unusual experts in that they may not be able to explain their expertise or the reasons for particular identifications.[255] If explanations are required, we may need to call upon cognitive scientists, such as those responsible for the face matching research reviewed in Section IV to explain procedures and levels of performance.

The use of super-recognisers for the purposes of admissible identifications would largely eliminate the need for police identifications based on Code D. Investigating police could be more flexible with crime-related images. They would not have to proffer opinions about the identity of persons in images in court.[256]

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252 We appreciate that in some cases it may be appropriate to rely on investigative familiars. Nevertheless, studies could determine whether super-recognisers (who are strangers) can perform as well as police officers who are not super-recognisers but have some familiarity with the suspect(s). If super-recognisers are as good, we might be able to simply avoid the need to contaminate the trial with the opinions of investigators or those whose evidence will inadvertently disclose that the accused has a criminal past.

253 That is, to the extent that their performance is at least as good as that of independent super-recognisers — based on standardized studies.

254 See White, Burton, Kemp and Jenkins, "Crowd Effects in Unfamiliar Face Matching" (n.169).

255 Criminal Procedural Rules, Pt.19. See also Sir Brian Leveson, Review of Efficiency in Criminal Proceedings *Judiciary of England and Wales* (2015), paras.223–232, available at https://www.judiciary.gov.uk/wp-content/uploads/2015/01/review-of-efficiency-in-criminal-proceedings-20151.pdf.

256 There may still be occasions where investigating and other police might testify, such as where they know that an individual wears a particular jacket or moves in a particular way. However, unless these are quite distinctive, the probative value of this evidence might be questioned.

They could avoid the suggestion of fabrication or collusion by the defence.[257] Investigating police could seek information from other police about the identity of the POI, and this could be rapidly reviewed by appropriately blinded groups of independent super-recognisers.[258]

We have wasted millions of dollars obtaining and contesting facial mapping *expertise* and questionable identifications produced by investigators. We have allowed police to testify even though their identifications were obtained in circumstances known to dramatically, though unwittingly, increase the level of error. We have allowed investigators to become *ad hoc experts* on the basis of simply watching the same video over and over. These practices are undesirable and likely to subvert criminal justice objectives and values. They were inattentive to scientific research on performance, threats to accuracy and, in consequence, jeopardise factual rectitude in cases where identity is the central issue. Attending to scientific research, in this area at least, provides practical means of improving the way we exploit images. As the availability of images continues to expand, it is time we began to revise our procedures, institutional arrangements and admissibility practices in order to enhance the reliability of identification evidence.[259]

257 Investigators would not have direct access to super-recognisers to avoid suggestion and contamination. Both identifications and non-identifications by super-recognisers would obviously be subject to rules of disclosure.

258 There are methods to present evidence in non-suggestive ways and these sorts of processes can be designed or reviewed by cognitive scientists to both avoid risks and monitor performance. On models, see Dan E Krane *et al.*, "Sequential Unmasking: A Means of Minimizing Observer Effects in Forensic DNA Interpretation" (2008) 53 Journal of Forensic Sciences 1006.

259 Until algorithms become a viable means of performing or assisting with identifications.