Evaluation of the Forensic Science Regulator's recommendations regarding image comparison evidence

**Abstract**

Expert image comparison evidence can be a vastly helpful tool in the search for the truth, a central tenet of the criminal justice system. This evidence assists the court in determining the relationship between a questioned person, vehicle or object shown in video images with known facts and has been approved of judicially in several countries. The United Kingdom’s Forensic Science Regulator has recently recommended significant restrictions on the use of such evidence, effectively relegating the video expert to a technical support role only and mandating the requirement for an image content expert. The author evaluates the recommendations and finds them to be overreaching. The Regulator is attempting to limit the use of a valid forensic science when in fact training and competence are the real issues. The author proposes a more restrained approach, one that does not usurp the role of the court in determining the admissibility of evidence.

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1. Introduction

The Forensic Science Regulator in the United Kingdom (UK) issued a draft statement of principles entitled “Image Enhancement and Image Comparison: Provision of Expert Opinion” in December 2018 [1]. The Regulator proposed significant changes regarding expert opinion evidence as it pertains to image enhancement and/or image comparison when the images are derived from video. By way of FSR Regulatory Notice 01/2019, the Regulator has formally implemented these changes effective July 17, 2019.

Hitherto, an expert in forensic video analysis and related image analysis fields would conduct a thorough interrogation and analysis of the questioned and known video images. The expert would then perform a comparative evaluation of the images for the purpose of offering an expert opinion on whether the subject matter shown in the questioned image is in fact the same subject matter shown in the known image. For example, CCTV images showing a vehicle leaving a crime scene would be examined, addressing such issues as aspect ratio, compression artefacts, motion blur, lighting, resolution, and other technical considerations and would be clarified so as to produce the best quality reliable images for use in image comparison. Known images of a suspect's vehicle would then be similarly examined and clarified. The expert would then conduct a scientific comparison of the questioned and known vehicles and offer a qualitative opinion as to the relationship between the vehicles.

The Regulator proposed that this longstanding practice must stop. In the latest Forensic Science Regulators Annual report [2], published March 15, 2019, the Regulator described the problem thusly:

The Regulator has been made aware that image analysis experts are, on occasion, failing to stay within the bounds of their expertise and failing to communicate effectively to the courts the limitations of work carried out … The expert must have specific expertise in the subject matter on which opinion is expressed. Expertise in CCTV, video, imaging or enhancement does not equate to expertise on the content of the image. Expert evidence is admissible “to furnish the court with scientific information which is likely to be outside the experience and the knowledge of a judge or jury”. It follows that if the individual intending to give evidence is no more ‘expert’ in the objects in the images (for example, cars, clothing) than the jury then his or her opinion is not expert and is not admissible as such.

The Regulator recommended that anyone giving such an opinion must be an expert in both forensic video analysis AND the particular subject matter shown in the images. Therefore, in the above example, an imaging expert could offer expert evidence on such topics as image quality, compression artefacts, and image enhancement. If suitably trained, the expert may also comment on shapes, shadows, size, and surroundings but the expert would be prohibited from offering any qualitative comparison opinion. Rather, a second expert, qualified to comment on the particular type of vehicle shown, after considering all of the technical analysis previously conducted, must be engaged to provide an opinion as to the whether the questioned vehicle is in fact the known vehicle.

It is the author’s respectful opinion that the Regulator’s recommendations, while laudatory at first glance, are in fact overreaching, usurp the role of the trial judge and trier of fact and will
unnecessarily ill-affect the provision of image comparison evidence in court.

2. What is the role and mandate of the Forensic Science Regulator?

Sponsored by the Home Office, the Regulator is a public appointee who operates independently of the Home Office, on behalf of the criminal justice system as a whole.

The role of the Regulator is to ensure that the provision of forensic science services across the criminal justice system is subject to an appropriate regime of scientific quality standards. Its stated mandate includes identifying the requirement for new or improved quality standards; leading on the development of new standards and; where necessary, providing advice and guidance so that providers of forensic science services can demonstrate compliance with common standards.

At this point, the Regulator can make recommendations, but cannot mandate change. However, in 2018 a private member’s bill (The Forensic Science Regulator Bill) was introduced into the House of Commons which, if passed, would provide the Regulator with statutory powers to enact reforms as it relates to the use of forensic science in the criminal justice system. Though this bill is not expected to pass, a future bill with the same objective may.

3. What is the problem that the Regulator is trying to fix?

The Regulator has stated the problem as follows:

The Regulator and the CSFS share concerns that image analysis experts are, on occasion, failing to stay within the bounds of their expertise and are failing to communicate effectively to the courts the limitations of work carried out. Imagery experts have also presented to the Regulator a number of errors caused by comparison experts failing to understand the limitations of certain imagery and artefacts that may be present.

Whilst no details have been provided by the Regulator about the errors made by imagery experts, there is little doubt that errors have occurred. However, a review of reported case law in the UK does not bear out this criticism, aside from cases where an individual expert has been criticized by the court for competence issues.

4. Comparison evidence in court

Comparison evidence has been a mainstay in the criminal justice system for decades. Fingerprint comparisons have been used for over a century. In recent decades we have seen forensic comparison science expand to include tool mark identification, hair and fibre, DNA, ballistics, among others. In the UK, since at least the 1990s, forensic experts have engaged in comparing questioned to known images, a rather logical extension in the forensic sciences. Image comparison has an even longer history in the United States where it has been used since at least the 1960s. One need only consider the extensive analysis and comparison of images from the Zapruder film of the assassination of President Kennedy in 1963 to see the early use of these forensic processes.

Comparison evidence has been successfully used in UK courts for many years. In the leading case of Attorney General’s Reference (No. 2 of 2002) [4], the Court of Appeal specifically approved of facial comparisons by someone other than a facial comparison or facial mapping expert. The Court did not specifically refer to an image comparison expert, but noted that:

(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 contemporaneous photograph of the defendant, provided that the images and the photograph are available to the jury

As recently as 2018, the Court of Appeal, in R. v. Coles [5], reviewed the conviction registered at trial, where part of the evidence to be considered by the jury was defence expert evidence comparing CCTV images of a suspected burglar with both the defendant and a clothing exhibit. The expert inferentially was not a content expert (ie. facial mapping or clothing). The Court specifically expressed no concern with the admissibility of this evidence.

Further, the forensic comparison of images has been commonplace and approved of by courts in Canada and the United States.

4.1. Canada

Image comparison evidence has been used frequently in Canadian courts where favorable rulings have been made on the use of such evidence in identifying vehicles, clothing and other objects [6], and people [7]. In two cases, the court was critical of the comparison slides that were proposed to be shown by the expert due to graphics and annotations that the court found objectionable, and they were ruled inadmissible in their proposed format with direction given for required modification [8].

In none of these cases was the expert criticized for competency or subject matter knowledge. Further, a second content expert was not involved in the comparisons undertaken, unlike what the Regulator proposes.

4.2. United States

Similar to Canada, courts in the United States have ruled favorably on the use of image comparison evidence in identifying vehicles [9], clothing and other objects [10], and people [11]. Only in one case was a content expert called to testify regarding the comparisons of the vehicles shown in the images [12]. In all other cases the forensic video expert undertook the comparison.

In the United States, judges are charged with the responsibility of ensuring that only scientifically validated and reliable evidence is presented by expert witnesses. The United States Supreme Court has mandated this in the seminal ruling of Daubert v. Merrell Dow Pharmaceuticals Inc. [13] The Court gave considerable guidance to trial judges as to how to assess scientific evidence in their role as gatekeepers. The Supreme Court of Canada has followed the same approach [14]. The expert image comparison process (without an expert on the subject matter being compared) underwent Daubert scrutiny in United States v. McKreith [15]. The process used was found to be scientifically sound with no concern registered for the imaging expert comparing things for which he was not also a specific content expert.

5. Evaluation of the Forensic Science Regulator’s proposal

The stated concerns of the Regulator are that there have been instances of imagery experts who have exceed the limits of their expertise, who have failed to effectively communicate limitations of their work to the court and have failed to fully understand technical aspects of video images. Respectfully, these are competence and training issues regarding the specific individuals rather than valid criticisms of the comparison science used in image comparison. Moreover, the restriction proposed by the Regulator has three significant and negative impacts on the court process.
The first negative impact is the intrusion by the Regulator into the typical purview of the court. Judges are charged with the responsibility of deciding what evidence should properly be put before a jury and, when such evidence is presented, to caution the jury in their approach to expert evidence. If a proposed expert witness lacks the competence and expertise to provide the tendered expert evidence, then the trial judge can exclude the evidence for those reasons. Proposed expert evidence by a person not sufficiently qualified is inadmissible. The law has been thus in the UK for a great many years. If expert image comparison evidence is presented and the expert does not have specific expertise in Ford vehicles or Nike shoes, for example, then that is a question of weight for the jury to consider. It is not a question of admissibility as the expert is comparing one image to another, a type of analysis the expert is specifically trained to do. The Regulator should not be pre-determining a legal issue, that is, whether such evidence is admissible. That is beyond the role of the Regulator and has long been the province of the court.

The second negative impact is the cost to the litigation process. The approach taken by the Regulator is extreme and represents a sea change in the provision of comparison evidence. She proposes to ban all image comparison evidence where the imaging expert is not also an expert in the content of the images and whether the content (content) expert is not also called to testify. This serves to deny helpful and valuable evidence to the court. Further, it serves to deny defendants the ability to present such evidence when they can scarcely afford to hire one expert let alone the Regulator’s requisite second expert; this is to say nothing of Legal Aid’s expected reticence in funding such expert retainers. It is a truism that the rich get rich and the poor get prison. The Regulator’s proposal is averse to a defendant’s right to mount a full defence by calling expert evidence.

The third negative impact is overreach, which treats all image comparison evidence the same and without any contextual consideration. The recommendation of the Regulator that the person conducting the comparison be an expert in the content being compared has merit in limited cases depending upon what the question is that is being asked. For example, if the question is “What kind of vehicle is shown?” then it makes perfect sense that an expert in BMWs should be called to give expert evidence when the vehicle shown is a BMW. That expert would be well placed to answer that identification question in preference to an imaging expert, although the BMW expert may require input from an imaging expert as a BMW expert is more likely familiar with vehicles physically present, not how they appear in images under typical surveillance conditions. However, if the question is “Is the questioned vehicle the same vehicle shown in the known images?” then a vehicle expert is not required because the question asked is fundamentally different, even though this difference may not be readily apparent at first glance. Here, the expert has been asked to examine two vehicles and to undertake a forensic comparison for the purpose of determining whether they are the same. Year, make and model of the vehicle are not questions the expert has been asked to answer. Rather, the question is that of scientific image comparison, irrespective of the specific type of vehicle shown. A properly trained image expert is fully capable of comparing vehicles, as well as clothing and other objects. The expert is trained to understand how the imaging process affects the applicable subject matter and to look at class and individual characteristics for both similarities and dissimilarities. Evaluation of damage and other individual characteristics allows an imaging expert to offer meaningful opinions on identification using a scale. The Forensic Scale (sometimes referred to as the “likelihood scale” or “scale of conclusions”), shown below, is used by image comparison experts to properly describe the strength of their opinion.

A further example of image comparison where a content expert should not be required is geolocation comparison analysis. Imaging experts are tasked with determining whether a questioned location shown in an image is a known location. While it may be helpful, an expert in forestry or topography is not additionally required.

To be clear, there are some image content areas where specific expertise is and should be required. For example, comparing faces is a task that should not be undertaken by imaging experts without specialized training. Such complex comparisons should be undertaken by experts in facial comparison or facial mapping. These are experts who have undertaken robust comprehensive training in both imaging, and facial evaluation and comparison, and are thus the most qualified people to provide such opinions. While the Court of Appeal, in Attorney General’s Reference (No. 2 of 2002), did not specifically mandate that an image comparison expert be engaged, that level of expertise would certainly be prudent.

There already exists considerable guidance on how image comparison should be conducted, what qualifications an expert in this area should possess, and how this evidence should be presented, both in report format and courtroom testimony. Much of that guidance actually comes from the Regulator. For example, in 2016, the Regulator, in conjunction with the National Crime Agency, the Crown Prosecution Service and the Metropolitan Police, issued a report entitled “Forensic Image Comparison and Interpretation Evidence: Guidance for Prosecutors and Investigators” [16]. In this document, the requirement of competency and quality standards expected by the Regulator and the criminal justice system of image comparison experts, together with detailed process guidance, are set out in detail. Further guidance is set out by the Regulator in the 2014 report entitled “Codes of Practice and Conduct — Appendix: Digital Forensics — Video Analysis” [17] and the 2017 report entitled “Codes of Practice and Conduct for Forensic Science Providers and Practitioners in the Criminal Justice System” [18]. Beyond the Regulator’s own substantive documents, the Scientific Working Group on Digital Evidence (SWGDE) has published best practice documents for digital forensic video analysis [19] and photographic comparisons for all scientific disciplines [20].

The Regulator’s stated concerns are with certain individuals who are already not following the Regulator’s instructive guidelines and advice. As stated earlier, these are competence and training issues, not issues with image comparison science. The Regulator’s focus should be on individual practitioners rather than seeking to change the way forensic image evaluation and comparison is conducted. In focusing on the science, the Regulator has, respectfully, missed the mark.

6. Recommendations and conclusion

Rather than issuing an outright prohibition on imaging experts offering an evaluative opinion on the comparison of images using a forensic scale without specific additional content expertise, the Regulator should focus on mandating appropriate training and certification standards so that only properly trained experts conduct and testify to such comparisons. A qualified expert is well equipped
to offer meaningful and intelligent opinions on image comparison using the scientific method that the court expects. That expert need not also be an expert in the content shown. Nor need a second content expert be retained when the question is one of image comparison. The following approach is recommended:

1. When the task is solely one of image comparison, whether of vehicles, clothing, weapons or other objects, a forensic video analyst is required. A content expert is not necessary.
2. When the task is one of determining the type of vehicle, clothing, weapon or other object shown, a content expert is needed, in addition to a forensic video analyst.
3. Facial identification requires an expert in facial comparison or facial mapping, together with a forensic video analyst, unless the facial expert is also cross-trained in forensic video analysis, as occurs in a number of police and forensic agencies.

The approach taken by the Regulator is unnecessarily broad in that it far overreaches the problems sought to be remedied. Mandatory training and certification will ensure that only qualified experts testify. The court will then have the benefit of expert assistance without a pre-determined denial of potentially valuable evidence to the court without the judge even being asked to rule on it.

Declaration of interest

The author is a barrister and solicitor who has led image comparison evidence for years as a Crown Prosecutor with the Alberta Crown Prosecution Service in Canada. He is also a law lecturer on the subject of video evidence and forensic video analysis law for the Law Enforcement and Emergency Services Video Association International Inc. and teaches in several countries. The author does not teach an image comparison course. The author obtained his legal education in the United States, Canada and the United Kingdom (University of Cambridge).

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