I am writing to raise my concerns with regards to recent comments made by the FSR in relation to photographic comparison.

As it currently stands, there are three (3) groups who can provide photographic comparison evidence in relation an unfamiliar subject:1,2

1. An individual who has spent substantial time viewing and analysing evidential images, familiarising themselves with the subject, and who is deemed to have gained “a special knowledge that the court did not possess” (R -v- Clare and Peach, 1995);
2. When an image is judged to be sufficiently clear, the jury can be asked compare it with the defendant (R -v- Dodson and Williams, 1984);
3. An expert in photographic comparison.

In my opinion, there appears to be not only a disparity between the statement made by the FSR (“image enhancement experts should not provide expert evidence in relation to comparing objects in relation to which they have no demonstrable expertise.”) and these guidelines, but an even larger disparity between the three (3) groups. Photographic comparison is a Forensic Science. It should therefore be reproducible, repeatable, objective and free from bias. The only way that this can be ensured is through the following of a set methodology, which in the case of photographic comparison is known as ACE-V (Analysis, Comparison, Evaluation, Verification).

In relation to the ad-hoc expertise (the individual who has worked with the imagery for a number of hours), their background would generally not be a scientific one, so steps would not be taken to minimise biases. More than likely they will be working closely with the case so are biased by other information (context bias) and will have most likely met or viewed higher quality imagery of the person, leading to confirmation biases3.

They will not have a set procedure as they do not perform regular comparisons, so the method cannot be repeated as is most likely a binary result of “it is the same person” or “it isn’t the same person”. Binary comparisons are not possible as the dataset from which the subject is taken is not limited to two outcomes, such as the flip of a coin would be. The conclusion should be based on guidance to indicate the level of support, to make transparent how the analysis resulted in

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1 National Crime Agency, CPS, and MET Police, “Forensic Image Comparison and Interpretation Evidence: Guidance for Prosecutors and Investigators.”.
the conclusion reached, and allow the tryers of fact to determine how the weight of evidence applies to the entire case.

A further issue is the poor understanding of digital imagery and how elements such as compression artefacts, lighting and subject to camera geometry will misrepresent the capture environment⁴. Without this knowledge, decisions are essentially being made based on unintendedly misleading information.

The commonality of certain features will also be an unknown element to the ad hoc examiner, as they do not perform regular comparisons, which could lead to attributing a higher weighting to some features. I have witnessed first-hand the positive identification of a subject a by Police Officer through a subject being black with a wide nose and of a large build. Clearly that is not enough information to result in a positive identification, and I would go as far as to say it is dangerous.

In relation to jury members, they may be subject to even stronger biases than the previous group, as not only will they have seen the defendant in person, they will have also been influenced by all the other evidence presented in the case as well as the barristers’ arguments. These will have an impact regardless of the quality of the imagery⁵. Similar to the individual from the first group, they will likely have no understanding of digital imagery, which, even with high quality images can have misleading details relating to lighting, resolution and slight differences in subject to camera geometry⁶. They too will have no method or scale and it will just be a binary, highly subjective result⁷.

Group 3, the photographic comparison experts, will always analyse the low-quality imagery first to minimise confirmation bias, will have little to no information with regards to other biasing information and will have no external pressures from higher management or barristers. They will follow a set methodology which is repeatable for every examination, have a strong understanding of digital imagery and the misrepresentation issues that come with it, and use a transparent scale⁸. Although the elements of morphological analysis are essentially subjective, the objective scientific framework in which is it housed minimises this as far as possible. When dealing with low quality imagery a human element will always be required, as the arthrometric systems used by computers are highly unreliable when comparing objects of low resolution, differing angles, with multiple compression artefacts⁹. Aside from the

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aforementioned obvious advantages, various studies have shown experts recording consistently higher identification rates than the general public, with up to twice the identifications and half the errors\textsuperscript{10, 11}.

In relation to the statement made by the FSR, “image enhancement experts should not provide expert evidence in relation to comparing objects in relation to which they have no demonstrable expertise.”, an expertise in the methodology and digital imagery far outweighs any expertise in a specific object. Documenting the true representation of features is vital, taking into account any changes that may have occurred during the capture of the imagery. An analogy would be a dentist attempting to examine teeth captured in a video at a poor angle, low lighting, with lens distortion, and a number of compression artefacts such as blockiness and mosquito noise. It is not his expertise in the teeth that is important, but his methodology and understanding of the digital imagery.

In summary:

**Ad Hoc Experts**
- Confirmation bias from viewing higher quality imagery/suspect first;
- Confirmation bias from other material relating to the case;
- Possible base-rate fallacy bias in which a certain individual is expected to have committed the crime;
- Highly subjective;
- No application of a scientific methodology, so not repeatable and highly subjective;
- Little to no understanding of digital imagery and mis-representations it can cause;
- No scale to represent the findings or the confidence of the findings;
- No experience of the commonality of features as they do not perform regular comparisons
- Non-impartial, most likely involved with the case.

**Jury Members**
- Confirmation bias from viewing suspect first;
- Confirmation bias from other material relating to the case;
- Biases caused by the arguments put forward in the courtroom;
- Possible base-rate fallacy bias in which a certain individual is expected to have committed the crime, especially as they are in the dock;
- No application of a scientific methodology, so not repeatable;
- Highly subjective;
- Little to no understanding of digital imagery and mis-representations it can cause;
- No scale to represent the findings or the confidence of the findings;
- No experience of the commonality of features as they do not perform regular comparisons.

Photographic Comparison Experts
- Procedures put in place to minimize confirmation bias;
- Impartial analysis;
- Repeatable methodology;
- Subjectivity minimised by using a completely objective methodology;
- Strong understanding of digital imagery concepts;
- Strong understanding of terminology of features as reference material constantly reviewed;
- Research shows higher identification and lower error rates than the public;
- Transparent guidance and scale for reporting results of analysis;
- Review of comparison by a second examiner.

The disparity between the three parties should be of huge concern to the justice system, and in my opinion consideration of the groups that can currently give evidence should be given to provide a perspective as to how forensic examiners can assist the court through the application of scientific principles, which I would have thought are the cornerstone of forensic science.

Photographic comparisons will always be a key component of evidence, and moving forwards it is likely that this will only increase. The ad-hoc examiners and juries will continue to draw conclusions, whether through giving evidence or not, as they write police reports and watch CCTV in the courtroom. Forensic image experts are essential to the ensuring defendants receive a fair trial by providing an objective, bias free, scientific comparison to confirm or challenge identifications made by non-experts.

28 August 2018