BIAS IN FORENSIC INTERPRETATION

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INTRODUCTION

A father and son are involved in a car crash. The father dies. The son is rushed into hospital. In the operating room the surgeon looks at the patient and says, '*I can't do this, that's my son*'. The surgeon, of course, is his mother; but this classic riddle exposes gender bias. In this session however, I discussed 'bias in forensic science' and the following notes outline some of what I think I said!

I have worked across the full landscape of forensics, but I now take instruction predominantly on behalf of the defence. I didn't have to have any surgery to do this - I'm still me, although some hold the view that I have changed ... that's defence scientist bias! In the main I review work that has been done by others, rather than doing it myself. I have come to understand that the frailties of our approach to forensic science are most exposed when observed from a case review perspective and I hoped to share some of my experiences with you, which fell loosely under the heading 'bias in forensic interpretation'.

FORENSIC SCIENCE

We know that the **role of forensic science** is to provide information to help answer questions of importance to investigators and to courts of law. [Jackson et al, 2006, The Nature of Forensic Science Opinion – A Possible Framework to Guide Thinking and Practice in Investigation and in Court Proceedings]. We also have to accept that the forensic science industry is driven by the philosophy 'faster, better, cheaper' ... a bit like NASA. We all understand what is driving this, so the key question is how do we get a 'better relative science return for the money spent' – how do we ensure that the science is robust and that the interpretation of the results is properly weighed up? In order to 'speed up', forensic results are now communicated in a variety of formats, the majority of which are designed to provide a brief summary of the results. Short format reports are epitomised by the SFR: introduced to '*seek to reduce unnecessary costs, bureaucracy and delays in the criminal justice system*'.

> *How do we get a better science return for the money spent?*

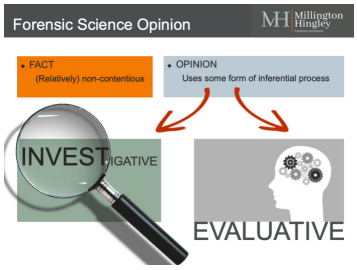
REPORTS

It is implied that **abbreviated reports** will outline the scientific evidence in such a way that the reader can understand the strengths and limitations of the findings in context with their question. They might assume that the findings have been interpreted in context with the case circumstances ... however, in many instances, they have not. For example an SFR might tell us that DNA recovered from a blood sample has matched someone's reference DNA profile. But it won't necessarily tell us what that blood finding means in the context of the case circumstances. At this point you might be thinking, surely if the defendant has provided an account this will have been considered by the scientist. Think again. It is relatively common to approach trial and no one has yet put the DNA and blood findings, as in this example, into context ... in these circumstances 'lay' people might be tempted to fill in the gaps and interpret the evidence. *'Blood matching the victim has been found on the defendant's jacket ... well he must have done it'!*

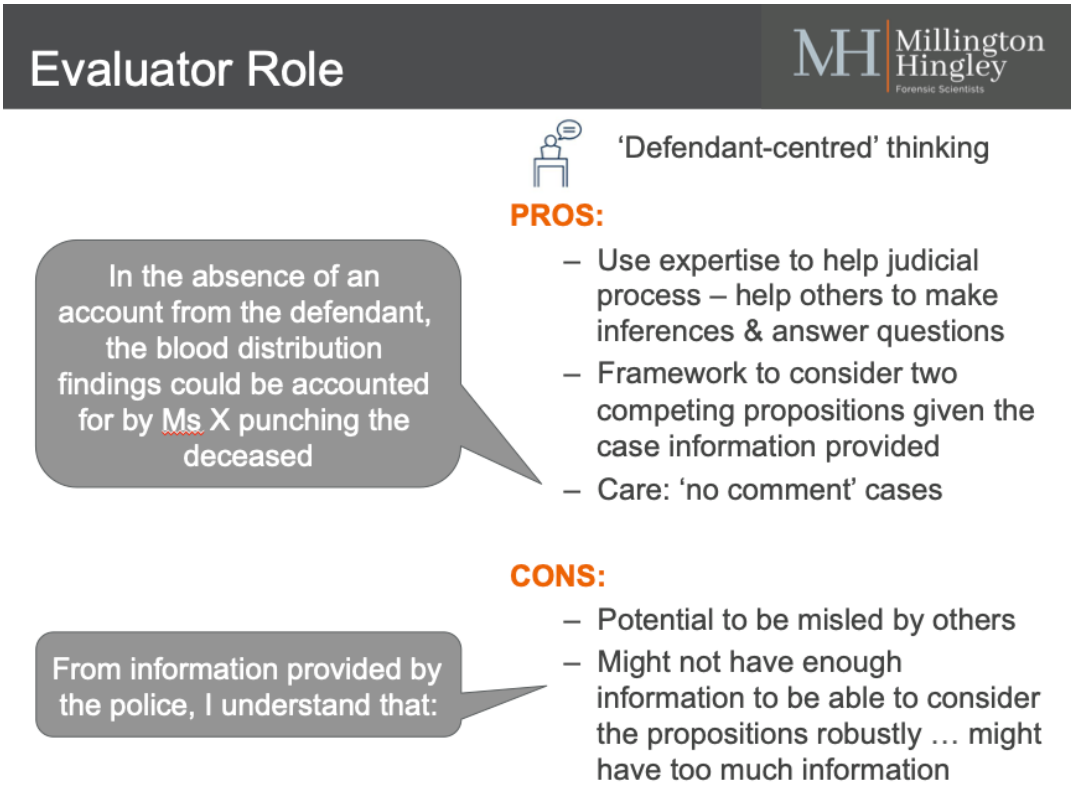
OPINION

Another issue is that **forensic science opinion** is multi-faceted ... and a report can therefore include various forms of conclusion. First of all we might offer up a relatively non-contentious 'fact'. Not much to write home about there, assuming that the analysis is good and the records are correct. We might also offer up a full-blown opinion, which is likely to be based on some form of inferential process. We are actually in the business of providing two main types of opinion: **evaluative opinion** and **investigative opinion**, and the two can be completely different, and have different roles during the life of an investigation.

EVALUATOR



As an **evaluator**, we undertake 'defendant-centred' thinking ... this means using our expertise to help <u>others</u> make inferences and answer questions. The most robust way to weigh up the scientific findings is to consider both sides of the story, based on accounts provided by the prosecution and defence, in light of the information available. This approach can be de-railed when there is no defence alternative, such as in no comment cases. In these circumstances it is possible that the potential significance of the findings, in light of the allegation, could be overstated. *"Well if she's not going to provide an explanation then the presence of blood matching the victim could be because she punched him"!* When forensic scientists are invited to operate in evaluator mode, we can be at our most helpful to the court. However, we are also at our most vulnerable ... because we can be misled by others. Not necessarily intentionally, but if the information that we have is limited or wrong, or if our knowledge is incomplete, then our evaluation could be influenced by that. Much our thinking around contextual bias of course focuses on this problem.



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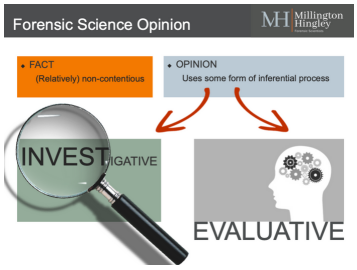
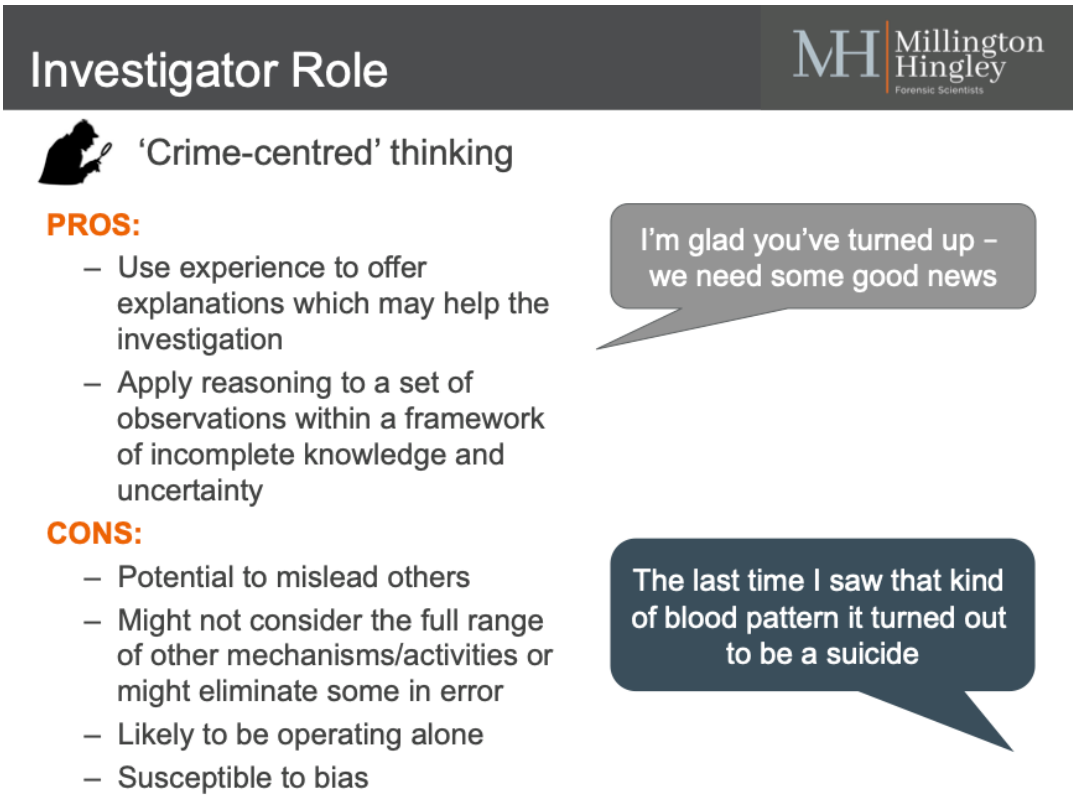
INVESTIGATOR



Working as an **investigator**, we pop a deerstalker hat on and polish off the magnifying glass. In this role we undertake 'crime-centred' thinking and we use our experience and apply reasoning to offer up explanations for a set of observations. Actually, this is when we are at our most vulnerable, because we are operating in an incomplete system – we don't have all of the relevant information or knowledge and there might be uncertainty in our assessments – so our brains can fill in the gaps. As an investigator, we have the potential to mislead others ... '*the last time I saw this kind of blood pattern, it turned out to be a suicide*'. It does not mean that this is a suicide. Although we might try to offer up reasonable explanations for the findings, based on our observations, we might not have openly considered the full range of other possibilities, or we might have cast some aside in error. We often work as an investigator at crime scenes - where the information might be limited, or non-existent, or constantly changing ... and often we work alone and we are outside the relative comfort of the laboratory. We are therefore susceptible to bias.



As an investigator we undertake crime-centred thinking

CASE EXAMPLES

To illustrate these points, I went through few case examples where the scientific findings, in my opinion, were compromised, by the faster, cheaper approach or because the remit of the scientist had been limited by forces outside of their control. Some examples looked at the impact that activities at the scene can have on the interpretation of scientific findings, some considered the limitations of short format reporting.

The first case was a murder investigation in which a scientist had been asked to attend a crime scene to assess a specific area of bloodstaining that had been found. A neighbour had witnessed the assault and had provided an account of the incident. This had naturally provided a focus for the investigation. This example demonstrated how information provided, including to the scientist, could have influenced the initial forensic strategy and the approach taken in interpreting the bloodstaining that was observed. It also touched upon the effectiveness of anti-contamination procedures (to prevent the inadvertent transfer of DNA) and the difficulties in evaluating bloodstaining (at scenes and on clothing/footwear) from photographs and CCTV images.

If the initial **forensic strategy**, or questions that are being asked, in some way limit the scope of the work that is being done, how do we assess what impact this might have on future work? Such as if/when the information changes or if the forensic strategy is revised? I don't think we have a sufficient understanding as a community of how initial steps can compromise our ability to answer different questions in the future. How can we ensure that forensic strategy has not been influenced by contextual information, and how do we execute an open-minded investigation when a key driver is to cut costs?

How do we ensure that a forensic strategy has not been influenced by contextual information?

NO COMMENT

Take for example '**no comment cases**'. If no account is available from the defendant, there is no alternative against which to moderate or evaluate the findings. In these cases the strength of the forensic evidence can be overstated. I showed a set of heavily and extensively bloodstained clothing, which in the absence of a 'better' explanation could be because the wearer stabbed their partner to death. However, if the defendant states that they found their partner and moved them in order to deliver first aid, the blood findings are reduced to inconclusive – they are neutralised because the wearer interacted closely with the injured party. Reports which only consider the findings in the context of the allegation are commonly issued in cases where there is no alternative account available, and the reader might assume that the findings therefore tip the scales in favour of the prosecution.

DNA MIXTURES

In another case, the complainant was attacked by a group of people and their bag was snatched. During the struggle the complainant's coat was ripped, supposedly as a result of being grabbed. A sample of material was recovered from the damaged area of the coat and subjected to DNA profiling. The SFR indicated that the sample comprised cellular material, that a full DNA profile had been obtained and that the profile matched an individual, Male 1, with a match probability of 1 in a billion. That individual was charged and brought to trial. It wasn't until the trial that a witness statement regarding the DNA match was requested. That statement outlined that in fact the DNA result comprised a **mixture of DNA** from at least 6 individuals. There was no clear major contributor of DNA and because of its complexity, the result was not suitable for a specialist statistical evaluation. In the absence of any reliable method by which to evaluate the complex information in the DNA profile (which was discussed in more detail by Professor Syndercombe-Court) it rendered the result inconclusive. This was a long way from a match probability of a billion as presented in the SFR.

DNA TRANSFER

In the final case, a mixed DNA profile was obtained from the knot in a bag of cocaine wraps and this identified a potential suspect. At their trial an exhibit list was provided (in the unused material) that provided a timeline and order in which the exhibits were seized. It revealed that the exhibit recovered immediately before the wraps was the defendant's mobile phone, such that it provided a mechanism for **DNA transfer**. Our knowledge of how DNA can transfer is arguably limited, and yet DNA findings continue to be presented, including in court, without having been evaluated in context with the case circumstances.

The examples presented considered some activities that could impact on DNA evidence, and there are likely to be many more that we don't know about. I barely know where my house keys are half the time, so I certainly wouldn't be able to provide a comprehensive account of where my DNA could be. It is therefore critical that we move away from the idea that a DNA match demonstrates a positive association with an activity. It might, of course, but there are also a wide range of circumstances where it might not.

> *Do you know where your DNA is?*

CONCLUSIONS

If the strengths and limitations of the scientific evidence are not readily apparent in whatever form of report you have access to, including if the findings have not been evaluated in light of the allegation and defence alternative, you have to consider that you could be blind to what the scientific findings mean in the context of the case. ... we also know that our brains will fill in the gaps and this could mean that significance is attached to a particular result that is not backed up by the science. Our entire discipline is built on the philosophy that **every contact leaves a trace** and so it would be unwise to think that our own interpretations are immune to the influence of our own experiences and external influences. We shouldn't fear bias, but is critical that forensic science processes include mechanisms to identify, minimise and realistically mitigate against it.

> *every contact leaves a trace ... and has the potential to contribute to our own bias*

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