

EDITORIAL

Uncertainty has been the hallmark of scientific endeavour for centuries. In fact, a lack of certainty had almost become accepted as humankind's lot. Towards the latter half of the past century, however, we increasingly came to view certainty as a scientific right. Uncertainty had become the antithesis of good science. The new knowledge explosion had resulted in a decrease or even a cure for uncertainty.

This poses a cruel dilemma for forensic scientists called upon to testify in court where good science is framed in binary thought; right or wrong, black or white. In court, the forensic scientist has to confront Hamlet's choice – to say yes or to say no. After all, statistics is about Type I and Type II errors – the former results in false positives (and hence promotes risk avoidance), and the latter results in false negatives (and hence keeps us from deciding when we ought to). Error is binary, a fork in the road. But does good science lead to certainty? Are our life decisions binary?

As we know, science and life, seldom unfold in a binary way. There are always added complexities. What opinion is the correct one, by what criteria, with what caveats or with what allowance for error? Shakespeare's tormented prince recognised that second-order complexities cloud all first order calculations; to be or not to be. Real forensic problems take time to address and current opinion always remains open to change. In the case of bitemarks for example, science cannot tell us how and when the biter struck, how to allocate intent or mitigation, or even how the skin behaved beneath the teeth. With the presence of both the biter's saliva and the victim's blood, DNA is unable to tell the two body fluids apart. How do we deal with these layers of complexity? How do we deal with doubt?

The answer is: with humility. With an acknowledgement of both the limits of our current scientific knowledge and with an acknowledgement that science is sometimes unable to solve a particular problem. Research fixes our focus on the knowable and can easily lead to an over reliance on fact-finding to solve forensic cases. We need to be ever watchful that we do not lose sight of the partiality and uncertainty of science. Again and again, good science teaches us to think harder about problems, and compels us to reflect on sources of uncertainty and ambiguity. If research is rooted in binary thinking, the result is more akin to skill than to science.

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