

Biases in forensic experts

Forensic evidence plays a critical role in court proceedings and the administration of justice. It is a powerful tool that can help convict the guilty and avoid wrongful conviction of the innocent. Unfortunately, flaws in forensic evidence are increasingly becoming apparent. Assessments of forensic science have too often focused only on the data and the underlying science, as if they exist in isolation, without sufficiently addressing the process by which forensic experts evaluate and interpret the evidence. After all, it is the forensic expert who observes the data and makes interpretations, and therefore forensic evidence is mediated by human and cognitive factors. A U.S. National Research Council examination of forensic science in 2009, followed by a 2016 evaluation by a presidential panel, along with a U.K. inquiry into fingerprinting in 2011 and a 2015 guidance by the U.K. Forensic Science Regulator, have all expressed concerns about biases in forensic expert decision-making. Where does forensic bias come from, and how can we minimize it?

Forensic experts are too often exposed to irrelevant contextual information, largely because they work with the police and prosecution.

Extraneous information—from a suspect's ethnicity or criminal record to eyewitness identifications, confessions, and other lines of evidence—can potentially cause bias. This can give rise to conclusions that are incorrect or overstated, rather than what forensic decisions should be: impartial decisions, appropriately circumscribed by what the evidence actually supports. A consequence of cognitive biases is that science is misused, and sometimes even abused, in court. Not only can irrelevant information bias a particular aspect of an investigation, it often causes “bias cascade” from one component of an investigation to another and “bias snowball,” whereby the bias increases in strength and momentum as different components of an investigation influence one another. Bias also arises when forensic experts work backward: Rather than having the evidence drive the forensic decision-making pro-

cess, experts work from the target suspect to the evidence.

These problems in forensic decision-making have been largely ignored by the courts, even though there are simple procedural and context management solutions at hand. Biases that arise from exposure to irrelevant contextual information can be minimized by case managers who ensure that only relevant information gets to the appropriate expert. By blinding experts to extraneous information, they only get the particulars that are appropriate for them to have. Bias cascade and bias snowball

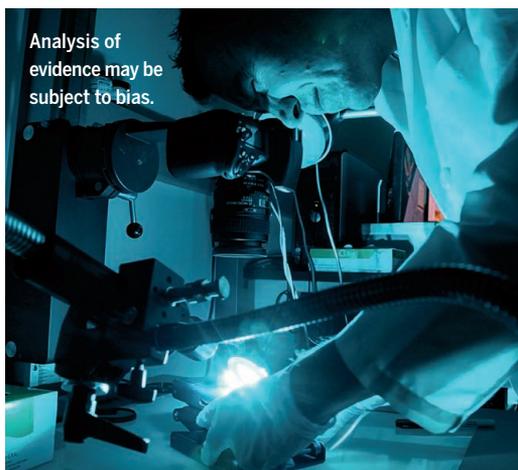
can be minimized by compartmentalization. For example, the person collecting evidence from a crime scene should not be the expert who analyzes that data in the laboratory. In that way, any exposure to extraneous information at a crime scene does not influence the subsequent analysis. Such measures to minimize bias are standard scientific practices and are commonly used in applied sciences, but forensic science has yet to fully adopt them in practice. Target suspect-driven bias could be minimized by tools such as Linear Sequential Unmasking (LSU), whereby experts are only exposed to the target suspect after they have fully analyzed and documented the actual evi-

dence (such as latent fingerprints, DNA, handwriting, or bullet cartridges found at the crime scene).

A major obstacle in adopting such countermeasures is that many forensic experts have a “bias blind spot” to these implicit biases and therefore tend to deny their existence. Forensic experts frequently present their decisions to the court with great confidence and then incorrectly take the court's acceptance of their findings as confirmation that they have not been biased or made a mistake. Acknowledging that bias can influence forensic science experts would be a substantial step toward implementing countermeasures that could greatly improve forensic evidence and the fair administration of justice.

If we want science to serve society, then it must be properly used in the halls of justice.

—Itiel E. Dror



“A consequence of cognitive biases is that science is misused, and sometimes even abused, in court.”



Itiel E. Dror is a senior cognitive neuroscience researcher at University College London, London, UK. i.dror@ucl.ac.uk

Science

Biases in forensic experts

Itiel E. Dror

Science **360** (6386), 243.
DOI: 10.1126/science.aat8443

| | |
|-----------------|---|
| ARTICLE TOOLS | http://science.sciencemag.org/content/360/6386/243 |
| RELATED CONTENT | file:/content |
| PERMISSIONS | http://www.sciencemag.org/help/reprints-and-permissions |

Use of this article is subject to the [Terms of Service](#)

Science (print ISSN 0036-8075; online ISSN 1095-9203) is published by the American Association for the Advancement of Science, 1200 New York Avenue NW, Washington, DC 20005. The title *Science* is a registered trademark of AAAS.

Copyright © 2018 The Authors, some rights reserved; exclusive licensee American Association for the Advancement of Science. No claim to original U.S. Government Works