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The Quality of Forensic Investigation Varies Widely Due to a Lack of Standards

National Research Council

With National Research Council approval and support, the National Academy of Sciences conducted an investigation of forensic technology and in 2009 issued a report stating that much of it is not based on sound science. New procedures, more education, accreditation of laboratories and practitioners, and further research were recommended.

More Research in Forensic Science Is Needed to Prevent Wrongful Convictions

Peter Neufeld

Many innocent people have been convicted on the basis of faulty forensic evidence, which judges and juries have been misled to believe is based on science. The support of Congress in implementing the recommendations of the National Academy of Sciences’ 2009 report is needed.

Both Fraud and Error in Forensic Investigation Are Common

Radley Balko and Roger Koppl

Charlatans have often taken advantage of judges’ and juries’ ignorance about forensic technologies, but there have been even more instances of mistakes on the part of conscientious investigators. The system must be reformed and quality control measures must be instituted.
There Is No Scientific Basis for Trusting Fingerprint Evidence  
Simon A. Cole  
In recent years, there has been growing controversy over the validity and legal admissibility of fingerprint evidence. Judges believe that fingerprinting is reliable, but an increasing number of experts now agree that there is no scientific evidence for such a conclusion.

The Defense Now Has the Right to Question Forensic Analysts During Trials  
Lyle Denniston  
The U.S. Supreme Court has recently ruled that if a crime lab report is introduced as evidence in a trial, the defense has the right to cross-examine the person who prepared it. The Court's majority opinion cited many published reports on the unreliability of forensic evidence.

No: Forensic Evidence Is Not as Unreliable as Recent Reports Suggest  
Efforts to Solve the Problems of Forensic Science Are Already Underway  
Tabatha Wethal  
The state of forensics is not as bad as the 2009 National Academy of Sciences report suggests, for most of the problems cited were already known to those working in the field, and many of the steps it recommends are already being taken. Poor training of analysts is caused by lack of funding.

The Official Report on the State of Forensics Is Interfering with Prosecutions  
Barry Matson  
The 2009 National Academy of Sciences report overlooked all that prosecutors and forensic professionals do to protect the innocent. Its attack on established investigative techniques has already had a negative impact on prosecutors who are seeking the truth.

Forensic Technology Has Been Wrongly Criticized as Unscientific  
Crime Lab Report
Forensic technologies have been developed over a long period of time by qualified researchers, and there is no evidence that they are unreliable. Their critics are uninformed about the ways in which they have been validated. All scientific evidence requires human interpretation.

Chapter 2: Does the “CSI Effect” Influence Verdicts in Jury Trials?

Chapter Preface

Yes: Juries and Lawyers Are Affected by Fictional Portrayals of Crime Investigation

The TV Drama CSI Is Affecting How Jurors React in Real-Life Trials

Richard Willing

So many people watch the television series CSI: Crime Scene Investigation that it is having an effect on how lawyers prepare their cases and choose juries. Many believe juror familiarity with CSI helps the defense, but on the other hand it may also help prosecutors.

The CSI Effect Is Leading to Unwarranted Acquittals

Jeffrey Heinrick

Television-educated jurors are less likely to convict someone who is guilty because the techniques they have observed in fictional cases have not been used. It may eventually become standard procedure in pre-jury screening to make sure that jurors understand forensic technology.

Judges Should Take Steps to Counter CSI’s Influence on Jurors

Joshua K. Marquis

CSI fosters myths about how crime scene investigators work, and it also leads jurors to expect forensic evidence where in many cases it does not exist. As a result, other evidence that once would have led to a conviction is discounted. Judges should do more to combat this trend.

The Criminal Litigation Process Is Being Altered by Fear of the CSI Effect

Tamara F. Lawson
A potential juror’s exposure to the distorted view of criminal prosecution created by *CSI* sways his or her analysis of real evidence. Lawyers and judges are changing their tactics to deal with this, and it has immeasurably changed the way criminal litigation is conducted today. No matter what it is called, there is a real phenomenon that must be controlled to ensure fair trials.

**No: There Is No Evidence That TV Fiction Has Changed Jury Behavior**

Expectation of Forensic Evidence Has No Bearing on Jurors’ Decisions

*Donald E. Shelton*

A study of 1,000 prospective jurors found that although *CSI* viewers had higher expectations for scientific evidence than non-*CSI* viewers, these expectations had little, if any, bearing on the respondents’ willingness to convict.

The *CSI* Effect Exists Only in the Minds of Those Who Propose It

*Kimberlianne Podlas*

There is no empirical evidence that a *CSI* Effect exists; claims that it does are based merely on anecdotes about cases that law enforcement lost when it believed it should have won. The alleged effect does not warrant criminal justice reforms or increased latitude for prosecutors.

Wide Media Coverage of the *CSI* Effect May Itself Influence Jury Reactions

*Simon A. Cole and Rachel Dioso-Villa*

It is often claimed by the media that the *CSI* Effect is an established phenomenon and that it is disadvantageous to prosecutors, although legal scholars have pointed out that it might instead work to their advantage. These claims may be either a self-fulfilling prophecy or a self-denying one.

**Chapter 3: Can New Forensic Technologies Determine If Someone Is Lying?**

Chapter Preface
Yes: New Technologies Can Detect Concealment of Information or Dishonesty

Recordings of Brain Activity Show Whether a Fact Is Stored in Someone’s Memory

Sam Simon

A new forensic technique known as Brain Fingerprinting can determine from brain activity whether a person’s memory contains certain facts about a crime. It does not show guilt or innocence, but it can reveal that claims to have no knowledge of those facts are false.

Brain Scanning Accurately Detects Lies During Experiments

Malcolm Ritter

Research is being done on using fMRI (functional magnetic resonance imaging), a common medical process, as a tool for lie detection. Developers have obtained 90 percent accuracy and hope that after further study, the technique will become admissible in court.

Hand-Held Lie Detectors May Be Useful for Screening Purposes

Bill Dedman

A new hand-held lie detector is being used by the military in war zones, although not on U.S. personnel. It is much less complex and thus even less accurate than a polygraph, but its proponents say it serves to show which people out of a large group should be questioned further.

No: Lie Detection Technologies Are Not Accurate Enough to Use in Criminal Investigations

The Assumption That Physical Reactions Can Detect Lying Is Not Valid

Melissa Mitchell

Brain-based technologies have been promoted as effective in detection of lies, but some scholars believe they are based on false assumptions and will not work any better than polygraphs, which have been increasingly dismissed as unreliable.
Brain Scanning Has Not Been Sufficiently Tested for Public Use

Aalok Mehta

Studies of fMRI lie detection have been successful in controlled lab settings, but it is much too soon to say it will work in real-life situations. It is reckless and unethical to put it into use, when little is known about its limitations, and jurors tend to give too much weight to neuroscience.

Voice Stress Analysis Cannot Adequately Distinguish Lies from Truth

Kelly R. Damphousse

Although voice stress analysis, which detects a person’s stress level by recording voice patterns, is used by many law enforcement agencies, studies have found that it is no better at detecting lies than flipping a coin. However, knowing that it is being used does deter people from lying.

Chapter 4: What Improvements in Forensic Technology Are Being Tried?

Chapter Preface

Improved Techniques for Analyzing Stains Provide Information About Crimes

Matt Martin

New forensic technologies, such as bloodstain pattern analysis and skin cell examination, reveal much more about a crime scene than older methods, and far better tools exist for analyzing substances. But not all the techniques shown on television crime shows are available.

Micro-Stamping of Firearms Is Not an Effective Means of Identifying Criminals

Wendy Wang

California has a law requiring firing pins of new semi-automatic pistols to be engraved with a micro-stamped code, but studies have found that this technology does not work well with all guns and ammunition, and merely linking a cartridge to a gun does not show who fired it.
DNA Testing Is Now Being Used with Non-Violent Crimes

Dan Morse

DNA testing, once used only in cases of murder or rape, is now sometimes employed to solve lesser crimes. Prosecutors say this will lead to more guilty pleas, but defense lawyers fear that it will increase the odds of false matches; moreover, it is creating a backlog of work in DNA labs.

DNA Samples Can Provide Clues to a Crime Suspect’s Physical Appearance

Evan Pellegrino

Studies show that it is possible to predict the hair, eye, and skin color of a suspect from DNA taken at a crime scene. This technique is not yet sophisticated enough to be used as evidence, but it may be a useful tool for crime investigation.

CT Scanning Has Many Advantages over Conventional Autopsies

Douglas Page

Multidetector computed tomography (MDCT) scanning is fast, non-invasive, and can be used when conventional autopsies are not feasible. Furthermore, it can provide information about the cause of death that a conventional autopsy cannot.

Attempts Are Underway to Make Bite Mark Analysis More Scientific

Todd Richmond

Bite mark analysis has long been criticized as unscientific and inaccurate, but now an attempt is being made to create a database of bite marks that will help to determine the rarity of specific bite mark characteristics. However, critics say that skin changes distort bite marks too much.

Soil Analysis Is Becoming a Powerful Technique for Crime Investigation

Louise Murray
New technologies for soil analysis can pinpoint the location from which dirt found at a crime scene or on a suspect has come. They are also extremely valuable for locating buried bodies, as it is possible to detect where the soil has been disturbed.

Research on Decomposing Bodies Provides Important Data for Forensics

Mike Osborne

The Anthropological Research Facility at the University of Tennessee, generally referred to as the Body Farm, provides extremely important information about how bodies decompose. It is used not only to train criminologists but to analyze the bodies of specific crime victims.