

Poor People Science and Wrongful Convictions A Talk with Chris Fabricant

- What is “junk forensic science”
 - Forensic science comprises many disciplines and methods. It can offer valuable methods of gathering evidence. However, misapplied forensic methods can have devastating consequences for defendants whose life or liberty is at stake.
 - Fabricant describes “junk forensic science” as subjective speculation masquerading as scientific evidence. No empirical basis for the opinion.
 - “Junk” forensic methods contributed to a large percentage of wrongful convictions. [According to the Innocence Project](#), nearly half of wrongful convictions proven through DNA evidence were a result of misapplied forensic evidence.
 - [Problems in the foundation or application of forensic science](#):
 - Unreliable or invalid forensic discipline
 - Insufficient validation method
 - Misleading or erroneous expert testimony
 - Lab errors
 - Fabricated results
 - Misapplied or unreliable forensic methods include:
 - [Bite mark evidence](#)
 - Hair microscopy
 - Cadaver dogs
 - Arson
 - Comparative bullet lead analysis
 - Blood spatter
 - Shoe treads
 - How bias can seep into forensic science
 - Brandon Mayfield
 - Wrongfully arrested in connection with the 2004 Madrid train bombings on the basis of faulty fingerprint identification. Spanish investigators found a single, incomplete fingerprint near one of the sites of the blast. The FBI matched it to Mayfield and arrested him. He was released after two weeks when the Spanish authorities matched the print to someone else.
 - [FBI Statement on Brandon Mayfield Case](#) (May 24, 2004)
 - [Dr. Itiel Dror](#) studies on forensic science:
 - [Itiel Dror and David Charlton, “Why Experts Make Errors,” 56 Journal of Forensic Identification 600 \(2006\).](#)
 - [Dror et al., “Cognitive Bias in Forensic Anthropology: Visual Assessment of Skeletal Remains Is Susceptible to Confirmation Bias,” 54 Science & Justice 208 \(2014\).](#)
- Development of bite mark evidence

- [People v. Marx](#), 54 Cal. App. 3d 101 (1975)
 - Walter Marx was found guilty of manslaughter and sentenced to prison. Central issue in the appellate decision was the admissibility of expert testimony that the bite on the victim's nose was made by the defendant's teeth. Marx's dental mold and the bite mark on the victim's nose was compared, and dentists testified that they matched. The trial judge allowed the testimony to be admitted. The appellate court affirmed.
 - [People v. Slone](#), 76 Cal. App. 3d 611 (1978): case cited Marx in admitting bite mark testimony.
 - [Bundy v. State](#), 455 So. 2d 330 (Fla. 1984): first Florida bite mark case
 - Ted Bundy was found guilty of killing two students from Florida State University. One of the victims had bite marks on her body. A forensic odontologist testified at trial that Ted Bundy's teeth impression matched the bite mark found on the victim's body.
 - [Robert DuBoise](#) was on death row at the same time as Ted Bundy. The same forensic odontologist that testified at Bundy's trial also testified at DuBoise's trial in 1985. DuBoise was [exonerated in 2020](#).
- Reliability and admissibility standards
 - Daubert standard: [Daubert v. Merrell Dow Pharmaceuticals, Inc.](#), 509 U.S. 579 (1993)
 - Expert testimony must be relevant and foundationally reliable. Nonbinding factors for trial court to consider:
 - Whether the methodology has been or can be tested,
 - Whether the methodology has been peer reviewed and published,
 - The known or potential error rate,
 - Existence and maintenance of standards controlling its operation, and
 - Whether the methodology is generally accepted in the field.
 - Federal Rules of Evidence 702. Testimony by Expert Witnesses
 - Amended in 2000 to codify *Daubert* and progeny cases.

If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliability to the facts of the case.
 - Application post-Daubert

- Empirical evidence supports the view that *Daubert* is more vigorously applied in civil litigation, particularly in cases involving large sums of money. *Daubert* has not been vigorously applied in criminal cases.
 - [Brandon L. Garrett and M. Chris Fabricant, “The Myth of the Reliability Test,” 86 Fordham Law Review 1559 \(2018\)](#)
 - Study looked at whether state judges applied FRE Rule 702 post-*Daubert* reliability test in criminal cases and found that Rule 702 was rarely applied to assess reliability.
- High profile cases
 - [Eddie Lee Howard](#)
 - Howard was convicted and sentenced to death in 1994 for the murder of an elderly white woman in Columbia Mississippi. He was convicted primarily on the basis of bite mark evidence.
 - In 2021, the Mississippi Supreme Court [vacated his conviction](#).
 - [Steven Mark Chaney](#)
 - Chaney was convicted and sentenced to life for the murder of two people on the basis of several types of problematic forensic evidence and testimony. Conviction affirmed on appeal. *Chaney v. State*, 775 S.W.2d 772 (Tex. App. Dallas 1989).
 - In 2018, the Texas Court of Appeals vacated the wrongful conviction. [Ex Parte Steven Mark Chaney](#), 563 S.W.3d 329 (Tex. Crim. App. 2018)
 - [Keith Harward](#)
 - About the wrongful conviction of Keith A Harward and bite mark evidence: Innocence Project’s [“Summary of Commonwealth v. Keith A. Harward”](#)
 - Harward was convicted of rape and murder in 1982 largely on the basis of bite mark evidence. The appellate court affirmed the conviction. [Harward v. Commonwealth of Virginia](#), 5 Va. App. 468, 364 S.E.2d 511 (Va. Ct. App. 1988)
- Areas for reform
 - Standard and procedure setting. For example, ensure that the National institute of Standards and Technology (NIST) conducts scientific evaluations of the validity of forensic science.
 - Retrospective review of cases when problems in forensic science are identified.

Additional Resource

- M. Chris Fabricant, [Junk Science and the American Criminal Justice System](#) (2022)