9. The Expert Witness

Sections 9.1 - 9.8

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9.1 Foundation for Expert Witness Testimony

Daubert and *Frye* are discussed at length in Section 7 of this Bench Book and will not be rehashed here. The trial court has broad discretion to determine whether an expert's testimony will be admitted in whole or in part. The National Academy of Sciences' Report, Strengthening Forensic Science, A Path Forward, has been somewhat critical of Federal appellate courts, noting they "have not with any consistency or clarity, imposed standards ensuring the application of scientifically valid reasoning and reliable methodology in criminal cases involving *Daubert* questions."[1] Of course, given the flexibility of the *Daubert* standard, this is not particularly surprising.

Of note, however, in the vast majority of reported criminal cases, trial judges rarely excluded or restricted expert testimony offered by the government. Additionally, most reported opinions show appellate courts deny appeals where the issue is whether the trial court wrongly decided to admit forensic evidence against criminal defendants. Conversely, in civil cases, appellate courts are more likely to second guess a trial court's judgment regarding the admissibility of "purported scientific evidence."[2]

9.1.1 Inclusion or Exclusion: A Judgment Call

Courts may, in their gatekeeper function, choose to exclude expert testimony based on the rules governing their jurisdiction. In *Daubert* states (see Appendix 1), as well as in federal court, the judge has considerable flexibility. For example, a court may choose to exclude an expert on the issue of shaken baby syndrome because the theory or technique in question cannot be tested. Alternatively, the court may decide studies done using monkeys is an acceptable method for testing the theory. A court may decide to exclude evidence because the expert cannot provide a known error rate. Alternatively, the court may decide they are not concerned with the lack of an established error rate.

9.1.2 Limiting Testimony: Another Alternative

Judges may also consider limiting the testimony of an expert witness. For example, in reviewing the proposed testimony of a firearms' examiner, a judge found "no meaningful distinction between a firearms examiner saying that 'the likelihood of another firearm having fired these cartridges is so remote as to be considered a practical impossibility' and saying that his identification is 'an absolute certainty'."[3] Holding neither opinion justified or warranted, the judge recommended limiting the testimony of the expert to stating opinions and the bases for the opinions without any characterization regarding the degree to which the expert was certain.

In 2016, the Attorney General for the United States, Loretta Lynch, issued a Memorandum for Heads of Department Components instructing every federal forensic laboratory to review and, if necessary, amend their policies and procedures regarding expert testimony. The mandate required federal laboratories "ensure that forensic examiners are not using the expressions 'reasonable scientific certainty' or 'reasonable [forensic discipline] certainty' in their reports or their testimony."[4] Further, the mandate instructed department prosecutors refrain from using those expressions when questioning forensic experts in court or presenting forensic reports unless they were required to do so by a judge or by law.[5]

While the use of the term "reasonable degree of scientific certainty" is commonly used in cases involving experts, its use is not mandated by the federal courts or most state courts. Further, this statement has no scientific meaning, nor is this standard employed in scientific disciplines. Science is never certain. There is always room for error.

Problems with the use of the terms "scientific certainty" or "discipline certainty" include:

- The absence of a common definition for the term, both across scientific disciplines and within scientific disciplines
- The "use of the term 'scientific' cloaks the opinion with the rigor, acceptance and reproducibility of scientific study"

- When paired with the word "reasonable" there is a risk the jury may equate the certainty with which the expert offers their opinion with the certainty required by the "beyond a reasonable doubt" standard of proof in criminal cases.
- When coupled with probabilistic testimony, the issue becomes even more confusing, as the juror must evaluate the "reasonable degree of certainty" against a statistic or other probabilistic estimate.[6]

9.1.3 General Rules of Admissibility

While different jurisdictions will have slightly different rules of admissibility, generally speaking an expert's testimony is admissible if:

- The knowledge of the expert will assist the trier of fact to either come to a determination about a fact in issue or understand the evidence in the case and
- The testimony offered is based on "sufficient facts or data"
- The opinions or conclusions are based on principles and methods considered reliable in the scientific community
- The reliable principles and methods were applied reliably in the case at bar.[7]

Other rules of evidence may also come into play when determining whether an expert witness should be allowed to testify. This may include situations where the expert's proposed testimony is not particularly relevant, or where the evidence, while relevant, carries the risk of unfair prejudice, confusing the issues, misleading the jury, causing undue delay or a waste of time, or is needlessly cumulative.[8]

9.2 The Ethics, Duties and Responsibilities of Expert Witnesses

Of course, we would all like to think that expert witnesses have a code of ethics they abide by. However, there is not a single organization that governs ethics for expert witnesses. Instead, there are various organizations that have ethical standards – some with more teeth than others.

For example, the National Association of Medical Examiners (NAME) has a Code of Ethics and Conduct. Their Code has five prongs:

- No member shall exercise professional or personal conduct which is adverse to the best interests and purposes of the Association or the profession
- No member shall materially misrepresent their educational training, experience, area of expertise, certification, membership status within NAME or their official title or position
- All shall refrain from providing material misrepresentations of data upon which an expert opinion or conclusion is based
- With the exception of certain members in positions of authority, no member shall issue public statements which appear to represent the positions of name
- NAME members must affirm their understanding and endorsement of the Code each time their membership is up for renewal.[9]

Similarly, the American Society of Crime Lab Directors offers a code of ethics, which states, in part, "No member of ASCLD. . .

- Shall engage in conduct harmful to the profession of forensic science, including, but not limited to:
  - Any proven illegal activity
  - Any documented technical misrepresentation

- Any documented distortion
- Any scholarly falsification as pertaining to membership requirements in ASCLD or their employment

- Shall misrepresent their expertise or credentials
- Knowingly fail to address or attempt to cover up
  - any misrepresentation and/or falsification of analytical work or
  - testimonial presentation or
  - the improper handling of evidentiary material by an employee of their laboratory
- knowingly fail to notify customer(s), through proper laboratory management channels, of
  - material nonconformities or
  - breaches of law or professional standards that adversely affect a previously issued report or testimony from their laboratory.[10]

However, this code of ethics is for crime lab directors, not the forensic scientists themselves. Some professional organizations, such as the American Academy of Forensic Sciences (AAFS)[11] and the American Board of Criminalistics (ABC)[12] offer codes of ethics; however, membership in these organizations is not mandatory for scientists. Often, scientists must pay for their own membership, rather than the crime lab paying for membership. While the ABC requires applicants sit for an exam demonstrating their competence, the same is not true of the AAFS. This is not a criticism of AAFS. Rather, it is simply a recognition that different organizations have differing purposes, and while membership in each has its privileges, not all forensic organizations are the same.

9.2.1 Progress Towards a National Standard of Ethics

In 2010, the Education, Ethics, and Terminology Inter-Agency Working Group (EETIWG) of the National Science and Technology Council's Subcommittee on Forensic Science developed a National Code of Ethics and Professional

Responsibility for Forensic Sciences (NCEPRFS). While the EETIWG recommended that all practitioners who offer reports and/or expert opinion testimony regarding forensic evidence in the United States adopt the code, this recommendation was not acted upon.

In 2016, the National Commission on Forensic Science recommended the adoption of a code of ethics which built on the NCEPRFS. Attorney General Lynch did so for all Department of Justice forensic examiners.[13] The Code includes 15 mandates for forensic science practitioners, and one for lab managers. While this Code was written for forensic scientists, it provides a general framework designed to apply to experts in all disciplines.

9.2.2 Ethical Violations

In recent years, there have been some prominent news articles addressing unethical conduct engaged in by experts. Generally speaking, most unethical conduct falls into one of the following categories:

- Failing to investigate
- Failing to consider all relevant data
- Taking on assignments beyond the expert's ability or competence
- Arriving at conclusions before doing the work
- Falsified data
- Falsified credentials
- Altered data
- False testimony
- Conflicts of interest[14]

Unfortunately, there are a considerable number of examples of unethical conduct in cases involving science. One of the earliest examples involves Scientist Fred Zain, who worked in West Virginia from 1979 to 1989. As a forensic scientist, Zain testified in the murder trial of Glen Dale Woodall about blood and hair evidence.

Originally convicted and sentenced to two life terms without parole, advances in forensic science led to additional testing which exonerated Mr. Woodall. The state of West Virginia settled the subsequent wrongful imprisonment lawsuit for a million dollars after investigating the work of Fred Zain.[15]

An internal audit, a grand jury investigation, and a subsequent legislative probe of Zain's work revealed misconduct including:

- Overstating the strengths of test results
- Overstating and misstating the frequency of statistics associated with genetic evidence
- Falsely reporting testing was performed
- Reporting inconclusive test results as conclusive
- Altering laboratory records
- Deliberately misrepresenting test results
- Failing to report conflicting results
- Implying a match with a suspect when the evidence matched the victim and
- Reporting results that were scientifically impossible.[16]

The state of Massachusetts recently dismissed thousands of drug cases due to the deliberate actions of chemist Annie Dookhan. Ms. Dookhan pled guilty to perjury and evidence tampering, as well as obstruction of justice for her conduct as a forensic scientist in the William A. Hinton State Laboratory Institute in Boston. She tampered with evidence by deliberately introducing drugs into evidentiary samples to ensure a positive test result, forged test results, and misrepresented her qualifications in court.[17]

These are just two of countless examples of ethical breaches by scientists.

9.3 The Independence and Impartiality of Experts General Principles

In theory, experts are independent and impartial. They are given data pertaining to their area of expertise and asked to opine as to its meaning or significance, or to offer an interpretation. The expert's evaluation stems from their knowledge, which may be scientific or technical in nature, or it may be based on some other specialized knowledge. Experts answer questions such as:

- What happens when a car with balding tires drives around a bend at 10 miles over the posted speed limit in the rain?
- Can an error in coding create a security risk for a website?
- Is a parent unfit to retain custody of their children?

To answer these and other questions directed towards experts, they must have sufficient facts or data, which is used to apply their methods. The methods or principles applied must be reliable and, depending on the state rules, sometimes must be generally accepted in the relevant scientific or technical community.

When an expert has a scientific, technical, or otherwise specialized foundation of knowledge, experience, skill, training, or education, and they have reviewed the relevant data, they draw their conclusions or opinions.

When attorneys hire experts, both the attorney and the expert should be clear on this guiding principle: experts are paid for their knowledge, experience, skill, training, or education, not for a given opinion. Experts and attorneys should both be clear on the fact that no particular outcome can be guaranteed prior to reviewing the relevant data.

9.4 Stating Facts or Assumptions, and Considering All Material Facts

In any case involving expert testimony, the conclusions presented will rely in part on facts, and in part on assumptions. Some, but not all, disagreement between experts can be attributed to two differences: a difference in the facts supplied by the attorneys, and a difference in the assumptions made by the expert. Assumptions should be supported by relevant facts.

The Federal Rules of Civil Procedure require experts disclose certain information within their report. Specifically, the Rules require reports include, among other things:

- A complete statement of all opinions of the expert, and the basis and reasons for the opinions
- The facts or the data the witness relied upon when forming their conclusions
- Disclosure of any exhibits the expert will use to either summarize or support their findings.[18]

Similarly, the Canadian Institute of Chartered Business Valuators (CICBV) require experts include in their reports the assumptions they relied on, as well as the procedures they followed to determine the appropriateness and reasonableness of their assumptions. Experts are required to classify their assumptions as follows:

- Assumptions the expert is directed to take, that are not within his/her area of expertise;
- Those assumptions made by the Expert, within his/her area of expertise and based on scope of work executed by him/her; and
- Those assumptions that the Expert is directed to take on matters that are within his/her area of expertise, but where the Expert was not provided opportunity to execute a scope of work appropriate to add assurance to the assumption.[19]

By differentiating between facts relied upon and assumptions made, the expert clarifies what they are basing their opinion on. This can help the attorneys as well as the trier of fact. It provides a clearer comparison between the conclusions of different experts.

One of the challenges attorneys face is their lack of understanding of what is, or may be, "material facts" conflicting with their limited expert budget. Experts typically charge by the hour, and while an attorney may have the luxury of providing every bit of data for their expert to review, often, attorneys must make judgment calls about what they will and won't provide an expert. An experienced attorney will preface their disclosures with a discussion with the expert. While the Federal Rules of Criminal Procedure do not require experts detail the facts or data upon which their conclusions are based,[20] it is none the less good practice for the experts to do so.

9.5 Red Flags: Lack of Objectivity / Impartiality

The role of an expert witness is to first, examine the evidence and draw conclusions about the evidence. When testifying, the role of the expert is to convey these conclusions or opinions to the trier of fact. Their role is *not* to simply attempt to counter the other side's expert, or to "win" the case. Nonetheless, sometimes in their belief in the "rightness" of their conclusions, they lose track of their objective role as experts.

While there have been rare cases where an expert's lack of objectivity resulted in the exclusion of the testimony, in many instances, the apparent lack of objectivity has been found to go to weight, not admissibility. The lawyers are left to expose the prejudices to the fact finder.

One clue which may indicate a lack of objectivity or impartiality may be indicated by who the expert works for regularly. If an expert only testifies for one side, this may be an indication of bias. However, there are several circumstances which could lead to such "one sided" testimony. For example, a person who works for the state-run crime lab may routinely testify for the prosecution. This makes a certain amount of sense, as most often, a forensic crime laboratory's evidence will support the prosecution's theory. Similarly, a chemist who performs studies on the cancer-causing potential of certain pesticides on animals may never be called to testify by a pesticide manufacturer.

Judges may have to decide whether an expert's lack of objectivity calls for exclusion of testimony or only goes to the weight the trier of fact should give it.

One way courts can explore potential bias is by considering, for example, the crime laboratory's policy regarding meeting with and answering questions from defense attorneys.

- Does the crime lab willingly meet with attorneys from either side?

- Does the crime lab report visits from defense counsel to the prosecution, but not report prosecution visits to the defense?
- Are there different policies for meeting with prosecution and defense attorneys?
- Is the crime lab funded by the prosecution or a law enforcement agency?

Treating all participants in a criminal case equally shows a measure of independence, regardless of who is footing the bill for the work. On the other hand, a crime lab that only cooperates with one side may lack impartiality.

The Federal Rules of Civil Procedure require disclosure of some information that may provide the court with insight about a given witness. Expert witnesses must disclose:

- The qualifications of the witness, including a list of all publications the witness has authored in the past 10 years
- A list of cases where the witness testified as an expert by deposition or at trial within the past four years and
- Information on who the expert is compensated for the review of the case, as well as their testimony.[21]

This information may provide the court with some information about an expert's fundamental approach to the science in question. While there are experts who routinely testify for both sides of an issue, many experts are regularly relied on only by one side or the other. This is not to say that if someone only testifies for plaintiffs, for example, in personal injury cases that they are not objective. This is merely a starting point.

Overstating the strength of one's opinion or going beyond the scope of the supported science are both red flags which should alert the court of the possibility of a lack of impartiality. Examples include:

- A forensic DNA expert testifying a male DNA profile found on an adult woman's intimate swabs proves a rape occurred
- A firearms expert testifying the absence of gunshot residue proves one did not fire a weapon
- An arson expert testifying the evidence the fire was intentionally set proves the accused set the fire
- A parenting expert testifying mothers are always the better choice as the custodial parent.

There are certain recognized forms of bias which can influence a person, whether they are a lawyer, judge, or scientist. Confirmation bias, for example, recognizes our tendency to identify with information that confirms what we already believe, while ignoring information inconsistent with our beliefs. Anchoring bias refers to a human's tendency to place more than appropriate levels of reliance on the first piece of information acquired. Observer expectation bias refers to the tendency to believe data that agrees with their expected outcomes, while disbelieving or downplaying corresponding data that conflicts with their expectations.[22]

9.6 Knowledge Outside Witness's Expertise

Witnesses should know the limits of their expertise. They should also feel comfortable drawing the line clearly and have the freedom to refuse to answer a question beyond their knowledge. Unfortunately, this does not always happen. Some experts are more than willing to opine on information beyond their expertise. When a judge, as gatekeeper, has determined an expert is qualified to testify about one topic, and the expert, on their own or at the prompting of the attorney, ventures into another area, what is the court to do? To a certain extent, this judgment call may be dictated by a judge's own philosophy. Some judges may feel compelled to jump in and stop a witness or seek clarification as to the intention of the attorneys or the knowledge of the witness. Other judges are content to remain silent unless or until someone voices an objection.

There is a very real risk of an attorney asking the expert a question outside their area of expertise. Examples of this include:

- Asking a crime scene tech how frequently a gun yields a usable forensic DNA profile
- Allowing a forensic biologist to testify to blood spatter patterns
- Permitting an arson expert to offer an opinion about whether the autopsy photos of the lungs indicate the presence of smoke

Attorneys and judges alike would do well to familiarize themselves with the witness' curriculum vitae, which should clearly document where a witness does, or does not, have the requisite expertise to testify about a certain issue. In a case where there is doubt about whether or not a witness has the requisite expertise, providing the witness the opportunity to point out where, on their CV, they have established the knowledge, skill, experience, training, or education can bring clarity to the issue.

9.7 Five Things Judges Should Know About Experts

1. Experts may not actually be experts, but rather people who claim expertise, coupled with lawyers who don't challenge the basis for their claims.

2. Experts may be willing to testify beyond their area of expertise.

3. Laboratory accreditation is not a commentary on a scientist's individual competence.

4. Membership in scientific organizations may or may not mean anything beyond the ability to pay for membership.

5. Most experts sincerely believe their evaluation of the evidence. Their level of confidence in their results, however, is not correlated with the likelihood that they are right.

9.8 Endnotes

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5. *Id*.

6. Jules Epstein, *Unreasonable Certainty: A Call to Abandon "Reasonable Degree of Scientific Testimony* " Terminology https://www2.law.temple.edu/aer/unreasonable-certainty-call-abandon-reasonable-degree-scientific-testimony-terminology/

7. *See, e.g*., Fed. R. Evid. 702.

8. *See generally*, Fed. R. Evid. 401 and 403.

9. NAT'L ASSOC. OF MED. EXAMINERS CODE OF ETHICS & CONDUCT, https://www.thename.org/code-of-ethics

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21. Fed. R. Civ. P. 26 (a) (2) (B) (iv – vi)

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