The Forensic Community Can Educate Lawyers, Judges

Robert M. Sanger
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In the sense of the (probably apocryphal) curse, we are living in interesting times. Scientists and professionals working with scientists, along with most intelligent people, have to be concerned with certain actions and attitudes expressed in politics. As was discussed in these pages (Seth Augenstein, June 2017), the forward progress of forensic science is not going to be thwarted by Attorney General Sessions closing down the National Commission on Forensic Science (NCFS) created in 2013 to partner with the National Institute of Standards and Technology (NIST). NIST continues, through the OSACs to carry out the intellectual mandate of the National Academy of Sciences in their now famous 2009 Report. NIST and the OSACs will persist in moving...
forensic science forward, as will the American Academy of Forensic Sciences (AAFS), the academic departments of higher education and the various professional organizations.

The fact is that in the last few years, forensic science has made substantial gains in promulgating higher standards for the various aspects of the profession. In mid-2016, standards were proposed by the United States Department of Justice for expert testimony in forensic disciplines including, anthropology, explosives, general chemistry, geology, glass, footwear and tire impressions, latent prints, hair examination, handwriting, metallurgy, paints and polymers, serology, textile fibers, toxicology, and DNA comparisons. In the fall of 2016, the President’s Council on Advisors on Science and Technology (PCAST) issued a controversial but challenging Report setting forth work that had to be done so that disciplines -- other than single source, non-degraded DNA analysis -- could meet the criteria for scientific validation. The OSACs and the AAFS Academy Standards Board consensus bodies are beginning to publish proposed standards for public discussion. As a result of these activities and others, the quality of forensic science and the quality of the reports and
testimony of forensic scientists have been increasing.

**The Lawyers and Judges a Consumers**

However, there is a significant disconnect. The best intentions at the highest levels of forensic science are still being lost on the consumer – the lawyers and judges. This is not a secret – people like federal Judge Jed Rakoff, former acting Attorney General Sally Yates, as well as many academics studying the matter, have been vocal about the lack of understanding of forensic science among judges and lawyers. It is not that judges and lawyers are expected to be forensic scientists. With rare exception, they are not. The more fundamental problem is that judges and lawyers do not understand the legal interface of forensic science and the law. The result is that, while the best in the forensics profession are promulgating and abiding by the highest professional standards, the “hired guns” among people willing to testify as expert witnesses are still being hired by lawyers, still avoiding intelligent scrutiny by opposing counsel, and still being allowed to testify in court by judges who say, “I am going to let it in and the jury can figure it out.”

This is the unfortunate judicial paradigm. Judges often quip, “I went to law school because I didn’t like math” or “I am not a scientist, how does anyone expect me to judge these scientists.” The legalese used as a basis for ruling is, “The objections to the testimony go to weight, not
admissibility." This paradigm, though prevalent, is wrong. In almost every jurisdiction in the United States, the rules of evidence require that the judge, in the response to an objection by opposing counsel, make preliminary findings as to whether the foundational expertise and facts have been established for expert testimony. In the federal system and in states where the federal Daubert/Kumho Tire standard has been accepted, it is explicit that the judge is the “gatekeeper” with regard to scientific and expert testimony. This means that the judge is obligated by law to open or close the gate – not let everything in and let the jury sort it out. The judge is obligated to make the fundamental determination as to whether or not the proffered testimony is based on real science, whether the expert is an expert in this area of science, whether the data used is reliable and whether the opinion to be given is within the realm of what a real scientist would say based on real science and reliable data.

To those in the forensic sciences who take their profession seriously, this should be a good thing. The standards promulgated in recent years and the work of the various organizations and individuals to assure the reliability of people practicing at the highest levels is undermined by the hired gun “experts” who will testify for whomever hires them without regard for these standards. Yet, that is what we see in the courts all too often. An “expert” is hired who stretches the scientific basis for the analysis of evidence and then exaggerates the results of the analysis or of her or his qualifications. The opposing counsel does not have an adequate grasp of
forensic evidence to make the appropriate objections or the judge foregoes her or his duty as gatekeeper. The result is that either the unsupported testimony goes uncontested or there is an unseemly dispute between the real expert and the hired gun.

This happens because there is inadequate education of lawyers and judges in how to handle forensic expert testimony. Lawyers and judges get a smattering of forensic education but it is far from enough for there to be widespread understanding of what is good science and what is the testimony of a hired gun. Some law schools offer forensic classes as electives but none, so far, have a certificate program that can be accomplished as a part of a J.D. degree program. Only one law school, West Virginia University, offers an L.L.M. in forensic science for lawyers who have obtained their J.D. degrees. There are continuing education classes for lawyers and judges but they are often one time lectures or are interspersed with lectures on other subject matter in larger programs. The National Association of Criminal Defense Lawyers (NACDL) puts on an annual two day program and there are other statewide and regional programs on various forensic subjects for civil and criminal lawyers. But, at the end of the day, most lawyers and judges have only the most superficial idea, if any, as to what counts as good forensic science and what does not.

The legal profession needs to do more and is much too slow in stepping up to the plate. Some
law schools, like the one I teach at, are considering implementing a certificate program to be earned along with a J.D. The idea is to offer a fundamental course in the forensic science emphasizing the law regarding admissibility, integrity of evidence and scope of expert opinions along with an overview of the major forensic disciplines. This course will be followed by electives in various forensic specialties followed by a paper. The idea is not to train forensic scientists but to train lawyers to be able to interface with forensic experts, to litigate the admissibility of experts who do not make the grade and to make intelligent choices regarding the hiring of experts. Presumably, well-trained lawyers will be able to educate the judges on a case by case basis. Eventually, some of these lawyers will themselves become judges and bring this education with them. The process is not in place around the country and, meanwhile, continuing education courses for lawyers and judges are not accomplishing on the job training in a comprehensive fashion.

**What Can Forensic Scientists Do?**

It is in the interest of all forensic scientists who take their profession seriously to step up and educate the lawyers and judges as to the standards that should be met. Presumably, the forensic scientist taking on this task will meet the standards. If the expert hired by opposing counsel suffers from any deficiency, it will stand out by comparison. But, more importantly, the forensic scientist needs to explain in detail how
she or he meets these standards, explain why the standards are legally required and relevant, and explain in detail how the opposing counsel’s expert fails to meet the standards. This will require the forensic scientist to understand the legal requirements and standards which will vary according to the jurisdiction and apply them to the particular testimony at hand. Of course, the lawyers and judges should be doing this on their own -- but they are not, so it is up to the forensic scientist to do the groundwork.

The forensic scientist should be able to answer all of the questions with regard to her or his own work. The forensic scientist should encourage the lawyer to ask the same questions of the expert proffered by opposing counsel. Here is a template:

- Establish precisely what science or expertise is involved in the analysis of the evidence:
  - Is it a real science and “falsifiable?”
  - Is it peer reviewed?
  - Is it subject to error rates?
  - Is there regular proficiency testing?
  - Are there “black box” studies that meet the scientific criteria for validity?
  - Is it generally accepted on the scientific community?
  - Have the criticisms of the NAS Report or the PCAST Report been met?
• Establish that the witness is a scientist or expert with expertise in the particular subject matter:
  ○ Is the witness trained in the specific area (board certification is of significance but not required)?
  ○ Has the witness published in peer reviewed journals on the subject matter?
  ○ Has the witness been subject to proficiency testing in double blind studies?
  ○ Has the witness continued with training and education in the scientific subject?
  ○ Does the witness have all professional licenses and certifications?

• If a laboratory or equipment is used in the analysis:
  ○ Is the laboratory certified by ANAB or ASCLD/LABS?
  ○ Is the equipment inspected, calibrated, cleaned and kept in proper repair?
  ○ Is the laboratory subject to error rates?
  ○ Is the laboratory subject to regular proficiency testing in double blind studies?
  ○ Does the laboratory maintain up to date technology and techniques?
  ○ Are laboratory protocols published, available for inspection and up to date?
- Does the laboratory have all licenses and certifications?

- With regard to the evidence or data analyzed:
  - Was it properly collected?
  - Were adequate control samples collected?
  - Was it properly preserved?
  - Is there a valid chain of custody?
  - Is the evidence or data otherwise reliable?

- With regard to the processes used to test or evaluate the evidence or data:
  - Are they supported by the science?
  - Are they up to date?
  - Was there any in-laboratory contamination?
  - Were all protocols followed?
  - Were there tests run to control for variables in the environment from which evidence was collected?
  - Were tests run to control for variables in the laboratory, the reagents, the equipment or the testing process?
  - Were all procedures documented in the bench notes and report forms?
  - Were all evidence and results of tests preserved or documented, including print-outs, photographs, graphs, SEM images, and electropherograms?
Were portions of evidentiary samples preserved for retesting?
Were confirmatory tests conducted?

With regard to the opinions formed which might be offered as testimony:
- Is there a hypothesis that is supported by the data?
- Are there alternative hypotheses that are not ruled out by the data?
- Can the data be explained or the evidence be shown to the jury in a way that they jury can see the salient points that will be relied upon in the opinion?
- Can the scientific basis for the opinion be clearly explained to the jury?
- Is the opinion devoid of exaggeration, advocacy, or other forms of overreaching?
- Does the opinion avoid scientifically meaningless words like, “To a reasonable degree of scientific certainty,” or “it is a match,” or “100% certain.”
- Is any quantitative opinion supported by a robust database whether expressed in numbers or words?
- Is the opinion what a real scientist would say based on real science and reliable data?

Conclusion
While these are interesting times politically, they are also exciting times in the progress of science. Forensic science, in particular, has been making tremendous progress in the last few years in raising the bar for analysis, report writing and testimony. Yet, while those at the highest levels of forensic science are making this progress, the courts are still plagued by hired guns who serve as paid advocates, not scientists. Regrettably, the disconnect with the justice system lies in the fact that many lawyers and judges are still woefully unprepared to resist these hired guns and unscientific testimony. As a result, it is the forensic scientist who should take the lead and present the lawyer with all of the information that supports a valid scientific opinion and the lack of which on the part of any other expert would render that expert’s opinion suspect.

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