

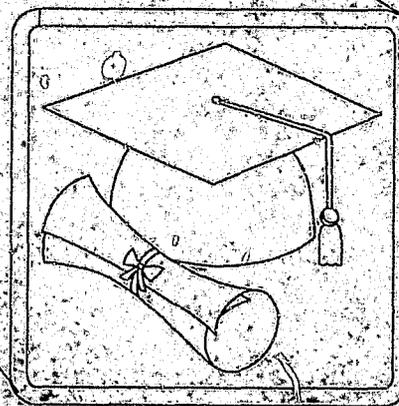


# Crime Laboratory Digest

## *In This Issue:*

*Forensic Science and Legal Education: Laboratories Can Join with Law Schools to Educate Our Future Lawyers*

*Chemistry and Crime: A Science Course for Non-Science Majors*



141707  
141708

# Contents

Message from the Assistant Director In Charge of the FBI Laboratory	99
Editor's Column	100
Feature Article: Forensic Science and Legal Education: Laboratories Can Join With Law Schools to Educate Our Future Lawyers 141707 <i>Carol Henderson Garcia</i>	103
Feature Article: Chemistry and Crime: From Sherlock Holmes to Modern Forensic Science – A Science Course for Non-Science Majors 141708 <i>Lawrence J. Kaplan</i>	107
Meeting Announcements	133
Instructions for Submitting Articles	135
Author Index	136
Subject Index	137

U.S. Department of Justice  
National Institute of Justice

141707-  
141708

This document has been reproduced exactly as received from the person or organization originating it. Points of view or opinions stated in this document are those of the authors and do not necessarily represent the official position or policies of the National Institute of Justice.

Permission to reproduce this copyrighted material has been granted by

Public Domain/FBI

U.S. Dept. of Justice

to the National Criminal Justice Reference Service (NCJRS).

Further reproduction outside of the NCJRS system requires permission of the copyright owner.

# Forensic Science and Legal Education: Laboratories Can Join With Law Schools to Educate Our Future Lawyers

Carol Henderson Garcia  
Shepard Broad Law Center  
Nova University  
Fort Lauderdale, Florida 33314

Many forensic experts lament the fact that lawyers have so little knowledge of forensic science. Even if attorneys are able to locate a forensic expert, they often do not understand the significance of their expertise. One remedy to this problem is to teach forensic science in the law schools.

Legal educators and the legal community are concerned about this lack of scientific knowledge and litigation skills. A recent American Bar Association Task Force proposed the following recommendations: more courses that teach litigation skills, smaller classes and more cooperative law student work, since lawyers commonly work in teams and organizations.

The rapid development of new scientific methods such as DNA "fingerprinting" presents a challenge to the legal community. We need to ensure that lawyers are as well equipped to deal with these new developments as is the scientific community. For example, those engaging in criminal defense work must be certain that laboratory and law enforcement personnel are accurate in their analyses and do not violate personal liberties. Prosecutors need to be prepared to use the new tools and technology effectively, and judges must be equipped to weigh and evaluate the new scientific methods.

Unfortunately, law students are not generally well versed in science. The shortcomings of our educational system are most apparent in the areas of science and technology. "Science educators generally concur that by eighth grade, as many as two-thirds of students have decided they don't like the subject."<sup>1</sup> Jan D. Miller, director of the Public Opinion Laboratory of the Social Science Research Institute of Northern Illinois University, having surveyed 2,000 American adults at all educational levels, concluded that only 17 percent of American college graduates and 25 percent of those with

graduate degrees have even a rudimentary knowledge of science.<sup>2</sup> The number of American students receiving undergraduate degrees in science has declined, according to National Science Foundation statistics.<sup>3</sup>

Many legal educators emphasize only the intellectual skill of analytical reasoning, learned through the "scientific" case method originated at Harvard University by Dean Christopher Columbus Langdell a century ago.<sup>4</sup> This traditional approach does not adequately educate students in other necessary advocacy skills. Augmenting the case method is the problem method. Problem approach courses which teach skills such as interviewing, counseling, problem-solving, negotiation, fact gathering and trial skills are often selected by students only after bar examination subject matter. Furthermore, these courses are often taught in a large class format which does not enhance the learning process. Some schools have attempted to promote the learning process by teaching courses in science and law and by establishing specialized journals and research centers.

Presently, there are 175 accredited law schools in the United States, with 113 professors teaching law and science courses.<sup>5</sup> However, law and science courses may cover many diverse topics such as toxic torts or law and technology. There are far fewer scientific evidence or forensic science courses. Approximately 21 schools have scientific evidence courses. These course offerings vary from lecture courses with 75 to 125, students to seminars and workshops of limited enrollment.

Some special journals that cover law and science topics are High Technology Law Journal (Boalt Hall, University of California at Berkeley), Journal of Law and Technology (Georgetown University), Journal of Law and Technology (Harvard University), Jurimetrics Journal

(ABA Section of Law, Science and Technology and Arizona State University Law School's Center for the Study of Law, Science and Technology) and Santa Clara High Technology Law Review (Santa Clara University).

Some law schools and universities have set up special centers for law and science research.<sup>6</sup> The Center for Law, Science and Technology at the University of Washington, the Center for Study of Law, Science and Technology at Arizona State University, and the Center for Forensic Science Services at John Marshall Law School are a few examples.

Since the concept of a "science court"<sup>7</sup> to resolve complex scientific or technical questions has not been adopted in the United States, law schools need to address the reality of lawyers dealing with forensic science in their daily practice. Lawyers are capable of understanding scientific issues, perhaps not at the most detailed level of analysis, but they can understand the scientific conclusions and methodologies on which they are based.<sup>8</sup> Information about how scientists think and how scientific institutions work should be presented to law students.<sup>9</sup> A good law and science (or forensic science) course should prepare students to deal with the methodology of a rapidly changing field, not with a fixed body of information.<sup>10</sup>

Any law school curriculum should include courses to familiarize students with science, for several reasons. It is partially through recently graduated judicial clerks that judges acquire new knowledge. Most law students will encounter scientific-legal problems in their careers, and law schools should prepare them. Law graduates are historically over represented in the various branches of government. Finally, a portion of the law students will one day become judges, whether in a traditional court setting or for an administrative agency.<sup>11</sup> It is the law schools' obligation to prepare all law students for their respective careers. With these goals in mind, the faculty of Nova University Law School revised its curriculum during the 1985-86 and 1986-87 academic years.<sup>12</sup> In the 1986-87 academic year, a workshop program of limited enrollment skills-oriented courses was established.<sup>13</sup>

The Scientific Evidence Workshop at Nova is a two-credit course that meets once a week. It is open for enrollment to second and third year students who have completed the basic evidence course. Lectures during the first 2 weeks of class address locating and selecting experts and the rules of evidence and case law regarding the

admissibility of scientific evidence and expert testimony. Next, the class begins meeting with forensic experts in the areas of crime scene examination, fingerprint examination, forensic pathology, forensic odontology, forensic psychiatry, serology, microscopic analysis, document examinations, firearms and toolmarks, arson and explosives, polygraph testing, breathalyzers and other tests for determining blood alcohol level. The students read the appropriate chapters in the text, Scientific Evidence in Criminal Cases,<sup>14</sup> as well as many handouts before each week's lecture. Needless to say, every forensic science subject area cannot be addressed during one semester, but we try to provide the students with an overview of the subject areas they most likely will encounter in law practice.

The students participate in many practical exercises (Figures 1 - 4). They process a staged crime scene, depose a medical examiner, argue a motion in limine<sup>15</sup> and conduct the direct and cross-examination of an expert witness. The experts are genuine, and the problems are drawn from real cases. These practical exercises enhance and reinforce what the students have learned through the lectures and readings.



Figure 1. Students from the Scientific Evidence Workshop processing a simulated crime scene.



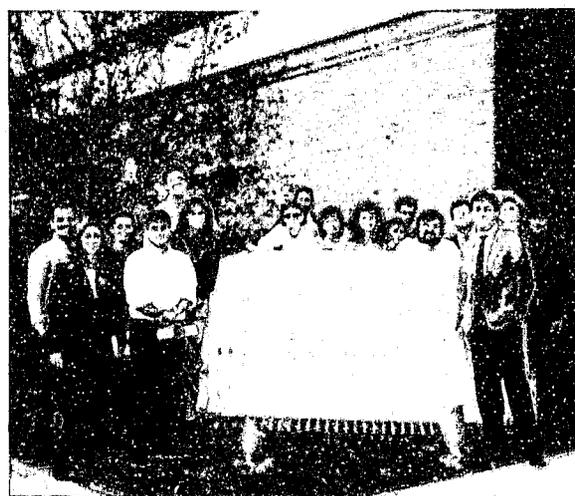
*Figure 2. Blood pattern analyst explains the significance of blood spatter patterns in processing this simulated crime scene.*

For the motion in limine exercise, the students have argued for and against the admissibility of DNA evidence, radioimmunoassay of hair to detect drugs and polygraph results. The deposition exercise always involves a forensic pathologist, and the issues vary from homicide versus suicide to self-defense versus murder. The students have conducted the direct and cross-examinations of tool-mark experts, fingerprint examiners, serologists and blood pattern analysts.

The Scientific Evidence Workshop could not be taught without the support and cooperation of the forensic science community. The medical examiners' offices have made case files available as teaching tools, and crime laboratories have provided reports and volunteered personnel for the mock trials. This interaction with the university also benefits the crime laboratories because their less experienced personnel have acquired courtroom training through participation in the mock trial exercises.

This workshop not only introduces the students to the legal principles of the admissibility of scientific evidence and the basics of the experts' fields; it also addresses ethical dilemmas facing experts and attorneys. For example, many of the students are surprised to learn that expert witnesses may also have ethical codes to obey pursuant to their membership in professional associations.

The students learn how to establish a rapport with experts in the interviewing and deposition exercises. They also learn the difficulties encountered by experts such as time constraints, budget limitations and even pressures exerted by law



*Figure 3. Class field trip to Metro-Dade Medical Examiner's Department for forensic pathology lecture and autopsy observation.*

enforcement personnel. The experts convey their frustrations with attorneys who do not allow sufficient preparation time and provide inadequate information. They also share with the class their most devastating cross-examination experiences, which greatly interest the students.

In summary, laboratories and law schools need to coordinate their educational efforts. It would benefit laboratories to contact local law schools to find out if law and forensic science or law and scientific evidence courses exist. If not, laboratories should indicate their availability and willingness to improve legal education by offering their services to professors teaching evidence, criminal law and trial advocacy. Forensic scientists should volunteer to participate in classes and seminars such as criminal procedure, law and psychiatry, interviewing, counseling and negotiation, law and medicine, legal malpractice seminars and pretrial practice classes. A cooperative educational effort among the laboratories and law schools will result in a greater understanding between the law and science professions, as well as better educated attorneys.

Carol Henderson Garcia is a professor of law at Nova University. She would appreciate any information regarding cooperative education ventures between laboratories and law schools and/or bar associations, district attorneys' offices and public defenders' offices. Please contact her for copies of her course syllabi or class exercises at the following address: Shepard Broad Law Center, Nova University, 3305 College Avenue, Room 224, Fort Lauderdale, Florida 33314 (telephone: 305-452-6170 or FAX: 305-452-6227).

## NOTES

1. *Cole, K. C. (1990). Science under scrutiny, New York Times, January 7 (Education Life Special Section), p. 18.*
2. *Hazen, R. M. and Trefil, J. (1991). Quick, what's a quark? The New York Times Magazine, January 13, p. 24.*
3. \_\_\_\_\_ (1990). United States science in decline, *Nature* 345:655. (National Science Foundation Statistics showed a decline of more than 20,000 degrees in science between 1986-1988).
4. *Stevens, R. (1983). Law School: Legal Education in America from the 1850's to the 1980's. University of North Carolina Press, Chapel Hill, North Carolina, pp. 52-56.*
5. *Association of American Law Schools (1991). The 1991-1992 Directory of American Law Teachers. West Publishing Co., St. Paul, Minnesota and Foundation Press, Inc., Westbury, New York.*
6. *Crowley, L., Illman, D. and Von Beck, D. (1991). A Survey of Law, Science, and Technology Study in U. S. Law Schools. The Center for Law, Science and Technology, University of Washington, Seattle, Washington (unpublished).*
7. *Symposium (1979). Curbing ignorance and arrogance: the science court proposal and alternatives, Jurimetrics J. 19:385; Martin, J. A. (1977). The proposed "science court," Mich. Law Rev. 75:1058; Kantowitz, A. (1967). Proposal for an institution for scientific judgment, Science 156:763.*
8. *Merges, R. P. (1988). The nature and necessity of law and science, J. Leg. Educ. 38:315, 326.*
9. *Ibid.*
10. *Ibid.*
11. *Ibid., pp. 327-328.*
12. *Abrams, R. I. and Masinter, M. R. (1987). The new Nova curriculum: training lawyers for the twenty-first century, Nova Law Rev. 12:77.*
13. *Ibid., p. 78.*
14. *Moenssens, A. A., Inbau, F. E. and Starrs, J. E. (1986). Scientific Evidence in Criminal Cases. 3rd ed. Foundation Press, Mineola, New York.*
15. A motion in limine is a pretrial motion requesting the court to exclude, limit or admit certain evidence.