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Scientific Evidence in Criminal Cases; Scientific and Expert Evidence in Criminal Advocacy

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BOOK REVIEW

SCIENTIFIC EVIDENCE IN CRIMINAL CASES. By ANDRE A. MOENSSENS,¹ RAY EDWARD MOSES,² and FRED E. INBAU.³ Mineola, New York: The Foundation Press, Inc., 1973, xxxix + 604 pages \$15.00.

SCIENTIFIC AND EXPERT EVIDENCE IN CRIMINAL ADVOCACY. Edited by Juris G. Cederbaums⁴ and Selma Arnold.⁵ New York: Practising Law Institute 1975, xxiv + 537 pages \$25.00.

RONALD J. ALLEN*

An inevitable by-product of the advancement of knowledge has been the increasing complexity and sophistication of the techniques used in the investigation of criminal cases. A would-be Sherlock Holmes no longer must depend solely upon his keen senses and powerful analytical abilities to discover and explicate evidence. Today the criminal investigator can call upon the awesome capacity of the most advanced laboratories in which modern day sorcerers in white coats (also known as chemists and physicists) scurry around performing such arcane rites as electrophoresis, thin layer chromatography, ultra-violet spectrophotometry, and neutron activation and atomic absorption analysis.

Nor have the fields of chemistry and physics been the sole contributors to this expanding knowledge; other disciplines, and criminalists themselves, have advanced understanding in many areas. The result of this burgeoning knowledge has been the creation of a multitude of experts whose special skills, if utilized properly, may greatly facilitate criminal investigations and trials. Yet, these skills are often utilized improperly or not utilized at all during investigation or trial. One significant cause of this is the time it takes for knowledge to be transmitted from other disciplines to law; as Justice Thurgood Marshall has said: "[T]here has been an 'incredible lag' between the development of modern scientific methods of investigation and their ap-

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plication to criminal cases."⁶ The two books under review are attempts to shorten the "lag" between development and implementation of investigatory techniques⁷ by making available to the legal profession, in concise, single volume fashion, discussions of the areas of scientific and expert evidence of the most importance to the criminal practitioner.

I.

The authors of *Scientific Evidence in Criminal Cases*, Professors Moenssens, Moses and Inbau, bring a felicitous blend of academe and practice⁸ to their task, a blend which the book reflects. It is well conceived and organized, thorough in coverage, and lucid. It will be an important tool for the practitioner and a useful reference for the scholar.

The book begins with two very helpful chapters of particular use to the novice practitioner. The first is a discussion of the use of expert testimony and the expert witness. It covers such areas as admissibility of expert testimony, tests for admissibility of scientific evidence, selection and preparation of the expert, and the expert at trial. The reader is taken from the beginning of the process to the end, with helpful commentary provided to enlighten the journey.⁹ This is followed by a discussion of discovery. In light of the potentially

6. *Furman v. Georgia*, 408 U.S. 238, 368 (1971) (Marshall, J., concurring). There are other explanations of nonutilization—the most obvious, and important, being expense.

7. I am using the phrase "investigatory technique" broadly to include any expert assistance or evidence that may come into the criminal case at any point.

8. Each is a law professor. *See* notes 1-3 *supra*. In addition, Moenssens is Director of the Institute for Criminal Justice at the University of Richmond; Moses spent three years as a District Attorney (1966-68) and two years as a U.S. Attorney (1969-70); and Inbau has done innumerable things, among them directing the Chicago Police Scientific Crime Detection Lab (1938-41).

9. As the authors describe the chapter:

This chapter is designed to aid the practitioner in the following particulars:

- (1) Advice is offered on the evidentiary predicate necessary to support expert testimony on any given subject;
- (2) General sources for obtaining expert assistance in particularized instances are identified;
- (3) Consideration is given to the attorney's role in preparing his expert for trial as well as to the minimal standards of preparation for adverse testimony from an opposition expert; and
- (4) An outline of inquiry on both direct and cross-examination of the expert is posited as a guide for questioning the witness, while separate attention is given to the hypothetical question.

A. MOENSSENS, R. MOSES & F. INBAU, *SCIENTIFIC EVIDENCE IN CRIMINAL CASES 2* (1973).

prohibitive cost of many of the investigative techniques presently employed, defense counsel's only access to the information supplied by these techniques may be through discovery of the results of tests run by the state. Chapter two sets forth the ways in which that can be accomplished. The possibilities of informal discovery are discussed, followed by a short presentation of constitutional standards. Finally, various statutory and discretionary techniques, which may be available to the practitioner depending upon the law of his jurisdiction, are noted.

The book then turns to specific areas of expertise, and the coverage is admirably thorough. There are chapters dealing with all the major areas where "outside" experts are brought into a criminal case. Psychiatry, psychology, and neurology are addressed, as are pathology, toxicology, chemistry, serology, microanalysis, and neutron activation analysis.¹⁰ The more traditional criminalistics methods are also treated: ballistics, fingerprint identification, questioned documents, detection of speeding, and the polygraph.¹¹ Finally, there are chapters on two techniques that are being used increasingly—photography, motion pictures and videotape, and spectrographic voice identification. In short, virtually every topic of serious interest to the criminal practitioner in the area of scientific evidence is discussed.

Furthermore, the textual presentation of materials is done clearly, concisely and thoroughly. The individual chapters are lucid, coherent and complete. In addition, the book's "extra features" make it an enormously valuable source for the practitioner. Glossaries of the most frequently employed terms provide explication of the technical jargon generated by each area. Bibliographies, appended to all but three chapters,¹² refer the reader to books, articles and annotations that furnish an in-depth introduction into the various fields. Of further value to the practitioner are the discussions of the admissibility of the various techniques, helpful case discussions that contain references to the law of many jurisdictions, and tips on how to obtain expert witnesses—often a serious problem for defense counsel.¹³

10. The last chapter in the book, Chapter 16, could be classified here as well. It covers odontology, the use of visual aids at trial (casts, models, maps and drawings), and public opinion polls.

11. There is also a chapter on the little used technique of narcoanalysis, Chapter 15—Narcoanalysis ("Truth Serum") and Hypnosis.

12. Chapter 14—The Polygraph ("Lie-Detector") Technique; Chapter 15—Narcoanalysis ("Truth Serum") and Hypnosis; and Chapter 16—Miscellaneous Techniques.

13. For example, addresses of various organizations that specialize in forensic sciences are provided.

There are, of course, criticisms that can be made of *Scientific Evidence in Criminal Cases*. Some of the discussions of law are little more than case citations. The authors are also guilty of occasionally "tooting their own horns." For example, Professor Inbau has long been a proponent of the admissibility of polygraph evidence and is a co-author of one of the leading works on polygraphs,¹⁴ which is properly cited in the polygraph chapter. However, notwithstanding the voluminous literature on polygraphs, much of it critical of the technique and against admissibility of the results in evidence,¹⁵ there are no citations to any other sources, except another book co-authored by Inbau,¹⁶ and the chapter is the only one of importance without a bibliography.

These criticisms amount to little more than nit-picking, however. The book is very well done and of much use to the practitioner. Moreover, as suggested by the authors,¹⁷ legal educators will find it valuable as well, not only as a reference but as a text in courses or seminars on scientific evidence or investigatory techniques. The presentation of the basic techniques is helpful, but even more helpful are the references that guide the student to an in-depth treatment of a selected topic.¹⁸ In short, whether the desideratum is aid in preparing and trying a case involving a question of scientific evidence, the advancement of students' knowledge, or the advancement of one's own knowledge, *Scientific Evidence in Criminal Cases* will make a valuable contribution.

II.

Unlike the Moenssens, Moses and Inbau book, *Scientific and Expert Evidence in Criminal Advocacy* is disappointing. There are

14. J. REID & F. INBAU, *TRUTH AND DECEPTION: THE POLYGRAPH ("LIE-DETECTOR") TECHNIQUE* (1966).

15. See, e.g., Hermann, *Privacy, the Prospective Employee, and Employment Testing: The Need to Restrict Polygraph and Personality Testing*, 47 WASH. L. REV. 73 (1971); Skolnick, *Scientific Theory and Scientific Evidence: An Analysis of Lie-Detection*, 70 YALE L.J. 694 (1961). For a recent argument in favor of admissibility of polygraph evidence, see Tarlow, *Admissibility of Polygraph Evidence in 1975: An Aid in Determining Credibility in a Perjury-Plagued System*, 26 HASTINGS L.J. 917 (1975). See also LEGAL ADMISSIBILITY OF THE POLYGRAPH (N. Ansley ed. 1975).

16. F. INBAU, A. MOENSSENS & VITULLO, *SCIENTIFIC POLICE INVESTIGATION* (1972).

17. A. MOENSSENS, R. MOSES & F. INBAU, *supra* note 9, at iv.

18. I have used the book in a seminar entitled *Police Investigatory Techniques* and have been very pleased with it.

serious gaps in its coverage, and many of the pieces included¹⁹ are of inferior quality.

The two introductory chapters on the use of scientific evidence in criminal cases²⁰ are followed by chapters on the use of experts from disciplines other than criminalistics. Pathology,²¹ psychiatry,²² neutron activation analysis,²³ and drug identification²⁴ are each discussed. In addition, a few of the more common criminalistic methods are presented—ballistics,²⁵ polygraphs,²⁶ and the breathalyzer.²⁷ Also included are chapters on voice identification,²⁸ and three rather curious selections: one chapter on electronic surveillance²⁹ and two chapters dealing with tax fraud.³⁰

The rationale that guided the selection of topics for inclusion is difficult to ascertain. The editors state that “[i]n this volume, PLI³¹ has gathered technical and scientific articles on subjects most frequently needed by criminal attorneys.”³² Yet, of the three “technical and scientific” areas with which the criminal practitioner is most likely to come into frequent contact—fingerprint identification, questioned documents, and psychiatric evidence—a discussion of only one, psychiatric evidence, is included.³³ These omissions are all the more striking be-

19. Each chapter in this book is individually authored. See notes 20-30 *infra*. Some of the chapters are reprints of articles.

20. George, *Use and Misuse of Scientific Evidence*, and Reed, *Practical Pitfalls in Handling Scientific Evidence*, in SCIENTIFIC AND EXPERT EVIDENCE IN CRIMINAL ADVOCACY 1, 17 (J. Cederbaums & S. Arnold, eds. 1975) [hereinafter cited as Cederbaums & Arnold].

21. Devlin, *The Autopsy in Criminal Cases*, and Wecht, *Forensic Pathology for Trial Lawyers*, in Cederbaums & Arnold 33, 83.

22. Schwartz, *The Proper Use of a Psychiatric Expert*, and Malmquist, *The Complete Psychiatric Evaluation for Legal Purposes*, in Cederbaums & Arnold 97, 131.

23. Krishnan, *Detection of Gunshot Residue on the Hands by Neutron Activation and Atomic Absorption Analysis*, and *Merits and Demerits of Forensic Activation Analysis When Compared to other Trace Analysis Methods*, in Cederbaums & Arnold 185, 199.

24. Stein, Laessig & Indriksons, *An Evaluation of Drug Testing Procedures Used by Forensic Laboratories and the Qualifications of Their Analysts*, in Cederbaums & Arnold 331.

25. Cederbaums, *The Ballistics Investigator*, in Cederbaums & Arnold 169.

26. Laurendi, *Polygraph Testimony*, in Cederbaums & Arnold 211.

27. Belotti, *The Preparation and Trial of a Drunken Driving Case Involving a Breathalyzer*, in Cederbaums & Arnold 419.

28. Tosi, *Voice Identification*, and Thomas, *Voiceprint—Myth or Miracle*, in Cederbaums & Arnold 241, 273.

29. Cederbaums, *Wiretapping and Electronic Surveillance*, in Cederbaums & Arnold 443.

30. Fink, *Accounting Testimony in Tax Frauds—An Overview*, and Crawley & Manning, *Cross-Examination of Government's Technical Tax Expert*, in Cederbaums & Arnold 471, 487.

31. PLI is an acronym for Practising Law Institute, the publisher of the book.

32. Cederbaums & Arnold v.

33. There is a fourth area with which the practitioner is highly likely to come into

cause of inclusion of the chapters on electronic surveillance and tax fraud. The electronic surveillance chapter has nothing to do with expert or scientific evidence. Instead, the chapter is intended, as the author says, to "review both the legislative and judicial attitudes toward electronic surveillance."³⁴ Although such a discussion may be of the utmost importance in another setting, its inclusion in a book purportedly dealing with expert and scientific evidence is difficult to comprehend, especially in light of the gaps in this work.³⁵

The inclusion of the tax fraud chapters is curious for a different reason. Here the issue is not whether expert testimony is involved, for it clearly is in the form of the tax expert (usually an accountant); rather, the issue is the inclusion of this material in a book that appears to be directed to the general criminal practitioner. Most attorneys engaged in tax fraud litigation are highly specialized practitioners. A person with a tax fraud problem rarely goes to a general criminal practitioner; he goes to a tax firm or specialist. At any rate, the criminal practitioner to whom this book is directed is not likely to be handling tax fraud problems. Thus, these chapters will be of little value to a large segment of the book's audience.

frequent contact—the use of the breathalyzer—and this topic is included. However, the breathalyzer has generally reached a level of acceptance where the only issue is whether the test was properly administered. The proponent of the evidence no longer must have an expert familiar with the scientific principles of the machine testify; only the operator must be called. Thus, breathalyzers are quickly moving out of the realm of scientific evidence in the sense that no scientific evidence must be presented as a predicate to the admissibility of the test's results. *See, e.g.*, N.Y. VEH. & TRAF. LAW § 1195 (McKinney Supp. 1975); *People v. Donaldson*, 36 App. Div. 2d 37, 40, 319 N.Y.S.2d 172, 176 (4th Dep't 1971). ("[W]e think the time has come when we may recognize the general reliability of the Breathalyzer . . . and that it is not necessary to require expert testimony as to the nature, function or scientific principles underlying it.")

I have not included polygraphs in this group because until recently polygraph evidence has generally been excluded at trial, and thus the polygraph has been limited to an investigative tool. Courts are beginning to admit polygraph results pursuant to stipulation, and in other limited circumstances, however, and this fact might signal a general trend in favor of a relaxation of the restriction on the use of this evidence. *See, e.g.*, *United States v. Ridling*, 350 F. Supp. 90 (E.D. Mich. 1972); *United States v. Zeiger*, 350 F. Supp. 685 (D.D.C.), *rev'd per curiam*, 475 F.2d 1280 (D.C. Cir. 1972); *State v. Bush*, 109 Ariz. 487, 512 P.2d 1221 (1973); *Commonwealth v. A. Juvenile*, 313 N.E.2d 120 (Mass. 1974).

I realize that the problems facing practitioners vary greatly and that the topics covered may satisfy some attorney's needs very well. Nonetheless, the absence of any discussion of fingerprints and questioned documents in a book that attempts to generally cover the area of "scientific and expert evidence" dooms the attempt to failure. Moreover, those are not the only topics absent that one might expect to find present. There are no discussions of toxicology, serology or neurology, and but the briefest mention of the increasingly important field of psychology.

34. Cederbaums & Arnold 444.

35. Unfortunately, the explanation may be that the chapter's author is Juris G. Cederbaums, one of the book's editors.

A more serious problem than the poor judgment that was exercised in the selection of topics is the quality of many of the individual chapters. The first chapter typifies much of what follows. Apparently, this chapter was meant to set the stage for the subsequent discussions of particular areas of scientific evidence by giving the reader background material into the problems scientific evidence engenders,³⁶ but it fails even to begin to achieve that goal. This is largely due to the fact that the article is not only practically devoid of substance³⁷ but seemingly confused at points as well. As an example of the latter, consider the jumbling of the very different ideas of reliability, validity and quantification that the following paragraph evinces:

Few things in life operate with 100 percent reliability, and that is likely to apply to the area of scientific evidence. In certain fields, courts have been willing to accept scientific evidence without any statistical basis of probability whatever. A primary illustration is psychiatric evidence, which cannot really be quantified.³⁸

Reliability usually refers simply to consistency of results, and that is very different from validity (to which I assume the second sentence in the quoted passage is referring) which involves the truthfulness (accuracy) of the results.³⁹ Neither is directly related to whether psychiatric evidence can be quantified (which it can, in many different ways: number of psychiatrists testifying, their qualifications, whom they testify for on what issues, etc.).⁴⁰

Moreover, many of the substantive chapters that follow are no better. For example, the chapter on polygraphs that, in conjunction with the other chapters, is supposed to provide a "compact and complete manual for the practitioner"⁴¹ intended to "stimulate original

36. Cederbaums & Arnold v.

37. I realize that the statement in the text is conclusory. The conclusory nature is necessitated by the difficulty of proving a negative—in this case the lack of substance. This could only be done by a detailed discussion of the chapter, which I decline to do. If the reader wishes to obtain an understanding of the basis of my conclusion, I suggest the following discussions be compared: *Compare* Cederbaums & Arnold 5-8 *with* A. MOENSSENS, R. MOSES & F. INBAU, *supra* note 9, at 2-6; and *compare* Cederbaums & Arnold 13-16 *with* A. MOENSSENS, R. MOSES & F. INBAU, *supra* note 9, at 8-27.

38. Cederbaums & Arnold 8.

39. Ennis & Litwack, *Psychiatry and the Presumption of Expertise: Flipping Coins in the Courtroom*, 62 CALIF. L. REV. 693, 697-98 (1974).

40. This may appear to be little more than a semantic quibble, but I think there is more to it than that. The book is explicitly designed to explain scientific and technical areas to lawyers, and in the very first chapter fairly basic concepts are bungled. Such carelessness is, I think, particularly regrettable in a book of this sort.

41. Cederbaums & Arnold v.

thought,"⁴² is nothing more than a transcript of a polygraph expert being examined in court. How this is supposed to function as a manual or to stimulate thought quite honestly escapes me. Had the transcript been of a full-blown evidentiary hearing where the admissibility of polygraph evidence was at issue and a multitude of experts testified on various aspects of the polygraph, then this format might have been useful in presenting the operation of the polygraph and the problems that it and the admissibility of its results present. But the transcript used is simply of a rather uninteresting examination of a single polygraph operator who, although he is surely a competent operator, does not appear to be particularly well versed in the technical aspects of his art.⁴³ Perhaps more disturbing than the contents of this chapter, though, is what the chapter indicates about the standards of the book. A book of this sort, it seems to me, proceeds upon a presumption of expertise, and the reader is entitled to expect that the requisite knowledge and skills have been tapped and utilized in its formation. Yet, this standard is frequently not met by *Scientific and Expert Evidence in Criminal Advocacy*.⁴⁴

42. *Id.* at vii.

43. For example, at one point the operator is asked what the galvanic skin response is, and he responds:

GSR is the galvanic skin response, which is a phenomenon whereby if an infinitesimal amount of electricity is dispatched through the fingers . . . and that person is more or less zeroed in on a sensitivity meter on the polygraph, which may or may not have something to do with the skin conductivity or resistance. All it does is indicate that something happens when electricity is sent into the fingers of the body. What it is, is still a phenomenon.

Id. at 221-22. What it is, is the electrodermal response, which in all likelihood varies according to the activity of the sweat pores in the hand, although there are other possible explanations. J. REID & F. INBAU, *supra* note 14, at 219-25.

This chapter also reflects another troublesome point. The editors apparently exercised their editing prerogative sparingly—much too sparingly, in fact. Consider the following portion of the transcript that concludes a section entitled EKG ADMISSIBLE:

Q. [Y]ou know that as a defense lawyer, I investigate cases fairly thoroughly.

A. Yes sir.

Q. That as one associated with the field of polygraphy, I would give an examiner a pretty good briefing before I would ask him to run a test?

A. Yes.

Q. And you also know that the examiner most called upon across the country is Mr. H.?

A. I do not know that.

Q. Do you know Mr. H.?

A. I met Mr. H. at the last symposium in Chicago this year.

Q. You do not know his reputation among policemen?

A. No.

Cederbaums & Arnold 236.

44. Perhaps the most shocking example of this is the chapter on ballistics (Chapter 7), authored by one of the editors, Juris G. Cederbaums. The substantiation of every point made in the article is contained in the one and only footnote, which reads: "Article based on materials made available to editor by ballistics experts." *Id.* at 169.

An occasional chapter is not afflicted with this problem, but some of these suffer from a defect just as serious: they are written by experts for other experts in the various disciplines, and are thus largely incomprehensible to the non-expert to whom this book is directed.⁴⁵ There is one notable exception to both of the above criticisms, however, and that is the chapter on drug testing procedures,⁴⁶ which is reprinted from the *Wisconsin Law Review*.⁴⁷ This article is a clear presentation of many of the testing procedures used in identifying drugs. It is well done and better, in fact, than its counterpart in Moenssens, Moses and Inbau's work.

Finally, all of the "extras" that make the work by Moenssens, Moses and Inbau so valuable are virtually absent here. There are no bibliographies⁴⁸ or glossaries, and only occasionally are there helpful references. In short, the book is not very well done. It is deficient in coverage and content, and will be of very little use to either the practitioner or the scholar.

45. For example, consider the following description of neutron activation analysis: The activation is generally done at a thermal neutron flux of approximately $10^{13}n \text{ cm}^{-2} \cdot \text{sec}^{-1}$. The counting is done using a 3" x 3" NaI (TI) crystal or a 35 cm³ lithium drifted germanium detector connected respectively to a 400 channel or 4096 channel pulseheight analyzer.

Id. at 200.

46. Chapter 13.

47. 1973 WIS. L. REV. 727.

48. There are three appendices: Appendix A: Texts, References and Journals Submitted to Dodge Library to Support Proposed M.S. on Forensic Chemistry Program at Northeastern University; Appendix B: Voiceprint Appellate Cases; Appendix C: Emerging Constitutional Issues in Law and Psychiatry—an Outline.

