CENTER FOR THE STUDY OF LAW,
SCIENCE, AND TECHNOLOGY

MAY 2006

Message from the Director

Andrew Askland, *Director*

This academic year we inaugurated the Master of Laws (LL.M.) in Biotechnology and Genomics with 12 students from diverse backgrounds (two are judges, half are principals in major firms, a couple have international backgrounds). In addition to further bolstering a curriculum already rich in biotechnology related courses, the program features a series of special small group sessions with prominent practitioners and scientists to further deepen the LL.M. students' appreciation of noteworthy trends and breaking developments in this dynamic area of law.

This year's major conference addressed "Forbidding Science: Balancing Freedom, Security, Innovation, and Precaution." It was co-sponsored by a host of prestigious entities, including the American Association for the Advancement of Science and the American Bar Association Section of Science and Technology Law, and boasted an impressive array of presenters. You can view and listen to the individual presentations at the conference website, http://www.law.asu.edu/ForbiddingScience. Another symposium of note addressed "Surveillance Technologies, Privacy, and the Law," and featured Robert O'Harrow, author of *No Place to Hide*, as its keynote speaker.

This year's Hogan & Hartson Presenter was Nobel Laureate Paul Berg, Cahill Professor of Chemistry Emeritus at Stanford University who talked about the uneasy relationship between science, politics and law. The text will be published in a forthcoming issue of *Jurimetrics*.

The Center hosted several notable visitors during the year. Professor Hank Greely (Stanford Law School), Professor Tim Caulfield (University of Alberta Law and Medicine), Professor Jim Chen (University of Minnesota Law) and Arthur Daemmrich (Center for Contemporary History and Policy, Chemical Heritage Foundation) visited during the autumn term. Professor Susan Haack (University of Miami Law and Philosophy) and Special Chief Master Gary Golkiewicz (National Vaccine Injury Compensation Program) visited during this current spring term. There were also another dozen presentations by local practitioners and non-law professionals covering a broad compass of law, science, and technology subjects.

The Center's Certificate and Center Scholar Programs continue to produce excellent results. The former provides coherence and structure to student academic development and has proven an invaluable placement asset. The latter identifies especially strong students for financial and programmatic reinforcement and has helped the College of Law effectively recruit students with science / technology backgrounds and aptitudes.

Contact me at (480) 965-2465 or sandy.askland@asu.edu or visit www.law.asu.edu/lst.

The Coming Paradigm Shift in Forensic Identification Science

By Michael J. Saks, PhD, and Jonathan J. Koehler, PhD

Michael J. Saks

Little more than a decade ago, forensic individualization scientists compared pairs of marks (hand writing, finger prints, tool marks, hair, tire marks, bite marks, etc.), intuited whether the marks matched, and testified in court that whoever or whatever made one made the other. Courts almost never excluded the testimony. Cross-examination rarely questioned the foundations of the asserted expertise or the basis of the analyst's certainty.

Today, that once-complacent corner of the law and science interface has begun to unravel - or at least to regroup. Scientists have begun to question the core assumptions of numerous forensic sciences. Federal funding has materialized to support research that examines long-asserted but unproven claims. Courts have started taking challenges to asserted forensic science expertise seriously. A dispassionate scientist or judge reviewing the current state of the traditional forensic sciences would likely regard their claims as plausible, under-researched, and oversold.

The traditional forensic individualization sciences rest on a central assumption: that two indistinguishable marks must have been produced by a single object. Traditional forensic scientists seek to link crime scene evidence to a single person or object to the exclusion of all others in the world. They do so by leaning on the assumption of discernible uniqueness. According to this assumption, markings produced by different people or objects are observably different. Thus, when a pair of markings is not observably different, criminalists conclude that the marks were made by the same person or object.

Although lacking theoretical or empirical foundations, the assumption of discernible uniqueness offers important practical benefits to the traditional forensic sciences. It enables forensic scientists to draw bold, definitive conclusions that can make or break cases. It excuses the forensic sciences from developing measures of object attributes, collecting population data on the frequencies of variations in those attributes, testing attribute independence, or calculating and explaining the probability that different objects share a common set of observable attributes. Without the discernible uniqueness assumption, far more scientific work would be needed, and criminalists would need to offer more tempered opinions in court.

Legal and scientific forces are converging to drive an emerging skepicism about the claims of the traditional forensic individualization sciences. As a result, these sciences are moving toward a new scientific paradigm. Two such forces are outgrowths of DNA typing: the discovery of erroneous convictions and a model for a scientifically sound identification science. A third force is the momentous change in the legal admissibility standards for expert testimony. A final force grows from studies of error rates across the forensic sciences.

During the past decade, scores of people who were convicted of serious crimes — including at least 14 who had been sentenced to death — have been exonerated by DNA analyses of crime scene evidence that had not been tested at the time of their trials. It was not surprising to learn that erroneous convictions sometimes occur, and that new science and technology can help detect and correct those mistakes. Nor was it surprising to learn, that erroneous eyewitness identifications are the most common contributing factor to wrongful convictions. What was unexpected is that erroneous forensic science expert testimony is the second most common contributing factor to wrongful convictions. These data likely understate the relative contribution of forensic science expert testimony to erroneous convictions. Whereas lawyers, police, and lay witnesses participate in virtually every criminal case, forensic science experts participate in a smaller subset of cases—about 10 to 20% of criminal cases during the era when these DNA exonerations were originally tried.

Forensic scientists are the witnesses most likely to present misleading or fraudulent testimony. Deceitful forensic scientists are a minor sidelight to this paper, but a sidelight that underscores cultural differences between normal science and forensic science. In normal science, academically gifted students receive four or more years of doctoral training where much of the socialization into the culture of science takes place. This culture emphasizes methodological rigor, openness, and cautious interpretation of data. In forensic science, 96% of positions are held by persons with bachelor's degrees (or less), 3% master's degrees, and 1% Ph.D.s. When individuals who are not steeped in the culture of science, work in an adversarial, crime fighting culture, there is a substantial risk that a different set of norms will prevail.

Much of the above criticism does not apply to the science of DNA typing as practiced today. Indeed, DNA typing can serve as a model for the traditional forensic sciences in three important respects. First, DNA typing technology was an application of knowledge derived from core scientific disciplines. This provided a stable structure for future empirical work on the technology. Second, the courts and scientists scrutinized

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Intellectual Property Law Hooks Jon Kappes


Jon Kappes

When Jon Kappes, 25, graduates from the Sandra Day O'Connor College of Law in May, his diploma will bear a special designation: Certificate in Law, Science, and Technology: Intellectual Property.

His intellectual path before law school seemed a perfect trajectory – a bachelor's degree in electrical engineering from Colorado State University in Fort Collins, then a fellowship in a new graduate program in radiochemistry funded by the U.S. Department of Energy, accompanied by lab work at the Carlsbad Environmental Monitoring and Research Center studying radioactive analytes, all culminating in a master's degree.

But the idea to go to law school, to take on three more years of learning even with a new marriage, grew from a chance meeting, one of those random collisions that have the power to improve even perfect trajectories.

"While I was in graduate school, there was an alumni dinner for the Department of Electrical Engineering, and my wife and I sat next to an older couple in their mid-60s," Kappes said. "I asked when he got his degree, and he told me about his time at CSU, his career, and how he had gone to law school to become a patent attorney.

"I had never heard of patent attorneys, or any engineers going to law school. We chatted for two hours or so, and his work sounded so interesting."

After the dinner, Kappes started looking at law schools, and his trajectory veered southwest.

"ASU (with its Center for the Study of Law, Science and Technology) stood out because of the Center's efforts to recruit and provide an education in law and science," he said.

As one of 10 Center scholars, Kappes received a scholarship and embarked on the first year of law school, finishing his radiochemistry thesis and defending it during his first semester at ASU.

Kappes excelled in math and science in high school. "I always had a computer at home, and that was when they weren't as ubiquitous as they are now." Electrical engineering was a natural extension, but he loved literature and the arts, too.

"The study of law has enabled me to be much more well-rounded," Kappes said. "It was a different style, but my approach was the same," he said. "You just learn the material and the tests will take care of themselves."

The Center helped provide a framework for his studies. "They help with course selection, bring in speakers, and hold conferences and symposiums, so you can explore areas you otherwise wouldn't know about," he said. "They support *Jurimetrics: The Journal of Law, Science and Technology,* which provides scholarship on these issues, and they often have research assistant opportunities to work with faculty members."

Following his first year of law school, Kappes worked with Executive Director Gary Marchant, researching biomarkers, an area of study central to current medical research and also relevant to many types of litigation including toxic tort litigation. "Biomarkers can be powerful legal tools," Kappes explained. "You identify the presence of something that shows a person has been exposed to something on a consistent basis. The difficulty in proving your case is the requirement to show that the exposure increases your chances of getting cancer or some other ailment by 'X' percent." He also worked with Associate Professor Douglas Sylvester on a paper about privacy issues.

During his second year, he externed with federal district Judge James Teilborg. "I was assigned cases to research and drafted orders that would often become results," he said. "It was amazing as a 2L to have that experience."

As a third-year law student, Kappes was the first to receive a $1,000 annual Lisa Foundation Award for making significant contributions to the Center.

Kappes brought an engineering concept with him to law school: "cooperate and graduate."

"Law school can sometimes be very competitive, and there is not a lot of opportunity to give back to other students," he said. So Kappes served as an executive of the Moot Court Board, and was responsible for organizing internal competitions and facilitating teams sent to outside competitions.

This summer, as he studies for the bar exam, he will be working with two other students from the Sandra Day O'Connor College of Law, Andrew Paprocki and Bridget Smith, who have been awarded the first patent fellowships at the College. The fellowships are sponsored by alumnus Steven G. Lisa through the Lisa Foundation and Arizona Technology Enterprises (AzTE), ASU's program to transform scientific ideas into marketable products and services.

Kappes plans to practice patent law, helping inventors determine if anyone already holds a patent for their invention and ensuring they receive compensation from companies using their creations. He hopes to stay in Arizona with his wife, Janelle, 27, who has a master's degree in education, and is working for ASU as a coordinator of parent and family programs and finishing her PhD in Educational Policy Studies with an emphasis in higher education. She is doing research on the parents of first generation college students.

First Five Students Earn LLM in Biotechnology and Genomics

The first five students to complete the LLM in Biotechnology and Genomics graduated May 12. They are:

Gregorio Garcia

Mr. Garcia is an associate attorney with the Phoenix law firm, Hopkins and Kreamer, LLP, where he practices in commercial, construction, and personal injury litigation. He received his JD from the Sandra Day O'Connor College of Law at Arizona State University in 1997. He is an active member of the State Bar of Arizona, where he is on the Professionalism Course Oversight Committee, Construction Law Section, and the Trial Practice Section. In addition, he is involved with the Sandra Day O'Connor Inn of Court, Association of Trial Lawyers of America, Los Abogados Bar Association, and the National Hispanic Bar Association.

Ranjana Kumar

In 2003, Ms. Kumar received her Bachelors in Law degree from the Faculty of Law, University of Delhi, India. She has worked with a senior Supreme Court Lawyer in India and served as a legal intern with the International Committee of the Red Cross. During this current academic year, she has been working as a research assistant at the College of Law.

Karen Liepmann

Ms. Liepmann is a shareholder with the Phoenix law firm of Gallagher and Kennedy, PA., where she practices in the fields of general corporate, securities, corporate finance, and IP law. She received her JD from Boston College in 1987. In 2005, she was named "Best of the Bar" in the area of licensing and franchising by The Phoenix Business Journal. She is involved with both the Arizona State Bar Association and the Maricopa County Bar Association and sits on numerous committees and boards including the Phoenix Symphony, Fresh Start Women's Foundation and the Arizona Venture Capital Conference.

Alamu Manickam

Ms. Manickam served as in-house counsel for Pinnacle West Corporation and is a member of the Arizona State Bar Association. She received her law degree in New Zealand in 1995 and an LLM in International Trade from the University of Arizona in 1996. She is the Co-chair of Programs for the National Contract Management Association for the Phoenix-Thunderbird Chapter.

Tom Shaw

Mr. Shaw is a sole practitioner engaged in a general practice. He has served as a judge pro tem for both Mesa and Gilbert Municipal Courts. He has experience as both a prosecutor and a public defender. He received his JD from the Sandra Day O'Connor College of Law at Arizona State University in 1974.

Braden Allenby published RECONSTRUCTING EARTH: TECHNOLOGY AND ENVIRONMENT IN THE AGE OF HUMANS (Island Press), "Toward Inherently Secure and Resilient Societies" (with Jon Fink) in *Science* and "World Views and Determinism" in *Green Business Letter.*

Andrew Askland published "What, Me Worry? The Multi-Front Assault on Privacy" in the *St. Louis University Public Law Journal.*

Guy Cardineau submitted a paper from his lab to the journal *Vaccine* entitled "Plan Made Subunit Vaccine Against Pneumonic and Bubonic Plague is Orally Immunogenic in Mice."


Adam Chodorow

Adam Chodorow published "Economic Analysis in Judicial Decision Making - An Assessment Based on Judge Posner's Tax Decisions" in *Virginia Tax Review.*

Ira Ellman just completed a pilot study, using about 300 members of the jury pool in Pima County, for an empirical project examining how people make decisions about the fair level of child support. This project is being conducted in collaboration with Sandy Braver of the ASU Psychology Department and Robert Maccoun of the Goldman School of Public Policy at UC Berkeley. The results of the pilot were very encouraging and they are now preparing a grant application to the Smith Richardson Foundation for funding of the full study. Ellman, using his Pedrick Funds, has initiated a speaker series under the auspices of the new Law and Psychology Program. The faculty seminars, which will include members of the psychology department as well as the law school, will be a regular Monday noon event during February and March of 2007. The series is entitled the Pedrick Seminars on Empirical Analysis of Legal Policy Issues and is planned to occur every odd-numbered year. The following speakers are confirmed, with a few more pending: Feb 5 - Neil Malamuth (UCLA Department of Communications); Feb 12 - Thomas Lyon (JD/PhD psychologist on the USC law faculty); Feb 19 - Robert Cialdini (Regents' Professor, ASU Psychology Department); Feb 26 - Franklin Zimring (Boalt Hall); Mar 5 - Rob MacCoun (social psychologist at the Public Policy School at UC Berkeley).

Aaron Fellmeth will be giving an invited panel presentation at the American Political Science Association's Annual Meeting in September 2006 on "Gender, Power, and Civilian Immunity." In his capacity as Chair of the International Law Association (American Branch)'s International IP Committee, he is organizing a panel for International Law Weekend (October 2006) on "Global Patent Law Harmonization: Problems and Prospects." Incidentally, Doug Sylvester will be one of the panelists. He is also organizing a conference at ASU on International Trade and the Doha Development Round that is currently planned for some time in December 2006. Finally, he recently completed an article entitled "Three Modern Challenges to Civilian Immunity."

Betsy Grey published "Homeland Security and Federal Relief: A Proposal for a Permanent Compensation System for Domestic Terrorist Victims" in the *NYU Journal of Legislation and Public Policy.*

David Kaye published the Second Cumulative Supplement to THE NEW WIGMORE, A TREATISE ON EVIDENCE: EXPERT EVIDENCE, 2005 (with two co-authors); MODERN SCIENTIFIC EVIDENCE: THE LAW AND SCIENCE OF EXPERT TESTIMONY, 3d ed. 2006-2007 (with three co-authors); and ANNOTATED REFERENCE MANUAL ON SCIENTIFIC EVIDENCE, ed. (with three co-authors). His recent articles include: The NRC Bullet-Lead Report: Should Science Committees Make Legal Findings?, *Jurimetrics,* Fall 2005; On "Falsification" and "Falsifiability": The First Daubert Factor and the Philosophy of Science, *Jurimetrics,* Summer 2005; and Testing Jury Reforms, *Delaware Lawyer*, Fall 2005 (with three co-authors). Works in progress include: MCCORMICK ON EVIDENCE, 6th ed. 2006 (K. Broun, ed., in press) (with five co-authors); Third Cumulative Supplement to The New Wigmore, A Treatise on Evidence: Expert Evidence, 2006 (with two co-authors) (in press); "Legal Challenges to Forensic DNA Typing," in FORENSIC DNA TYPING, 2006 (Victor Weedn, ed., in press); "DNA Probabilities in People v. Prince: When Are Racial and Ethnic Statistics Relevant?", in Festschrift for D.A. Freedman, Institute of Mathematical Statistics, 2006 (T. Speed, ed., in press); "Revisiting Dreyfus: A More Complete Account of a Trial by Mathematics," *Minnesota Law Review* (in press); "Who Needs Special Needs? Comments on the Constitutionality of Collecting DNA and Other Biometric Data from Arrestees," *Journal of Law, Medicine and Ethics* (Summer 2006, in press); "Behavioral Genetics Research and Criminal DNA Databanks," *Law and Contemporary Problems,* 2006 (in press); Scientific Evidence, in ENCYCLOPEDIA OF LAW AND SOCIETY, 2006 (David S. Clark, ed. in press); and Hans Zeisel, in ENCYCLOPEDIA OF LAW AND SOCIETY, 2006 (David S. Clark, ed., in press). He was also an invited speaker at the National Symposium on DNA Fingerprinting and Civil Liberties, Boston, Mass., May, 2006; presented the Deinard Memorial Lecturer on Law and Medicine at the University of Minnesota, Jan. 2006; moderated the AALS Evidence Section Program on Empirical Research in Evidence, AALS Meeting, Washington, D.C., Jan. 2006; was an invited speaker at the National Academy of Sciences Sackler Colloquium on Forensic Science: The Nexis of Science and the Law, Nov. 2005; and served on the committee reviewing awards to China for the Fulbright Commission, Washington, D.C., Nov. 2005.

Dennis Karjala was on a joint ASU/UA panel presenting reactions to and analyzing the recent Supreme Court peer-to-peer music copying case MGM v. Grokster. Works in progress include "Harry Potter, Tanya Grotter, and the Copyright Derivative Work" (forthcoming in the Arizona State Law Journal), "Congestion Externalities as a Basis for Extended Copyright Protection" (forthcoming in the *Georgetown Law J.*), and "Biotech Patents and Indigenous Peoples" (forthcoming in *Minnesota Journal of Law, Science, and Technology*).

Orde Kittrie was appointed to the board of directors of the Phoenix Committee on Foreign Relations and elected to the board of directors of Los Abogados, the Hispanic Bar Association of Maricopa County. He completed an article on immigration law reform, which is scheduled to be published by the *Iowa Law Review.*

Richard Mahoney published "Role of Intellectual Property in the Development and Introduction of Vaccines in Developing Countries" in INTELLECTUAL PROPERTY RIGHTS AND VACCINES IN DEVELOPING COUNTRIES; "Intellectual Property, Drug Regulation, and Building Product Innovation Capability in Biotechnology: The Case of Hepatitis B in Korea" (with K Lee and M Yun) in *Innovation Strategy Today;* "Health Innovation Networks to Help Developing Countries Address Neglected Diseases" (with Morel, et al) in *Science*; and "Innovation Systems and Global Health" in *Global Forum Update on Research for Health.*


Gary Marchant

Gary Marchant recently published an article entitled "Genetic Data in Toxic Tort Litigation" in the Spring 2006 issue of the *Journal of Law & Policy.* He also was the author of a chapter entitled "Applications of Biomarkers in Forensics and Toxic Tort Proceedings" in the book TOXICOLOGICAL BIOMARKERS published by Tay-

lor & Francis this spring. Professor Marchant was a committee member and co-author of a National Academy of Sciences report issued in March 2006 on "State and Federal Standards for Mobile-Source Emissions." He is also currently serving on a National Academy of Sciences Committee on Applications of Toxicogenomic Technologies to Predictive Toxicology. Marchant is also co-editing and writing several chapters of a book entitled GENOMICS AND ENVIRONMENTAL REGULATION: ETHICAL, LEGAL AND POLICY ISSUES that will be published by John Hopkins University Press in 2007. Recent presentations include: The Intersection of Law & Science (State Bar of Arizona CLE on Scientific Evidence, April 2006), Legal, Ethical and Policy Issues with Pharmacogenomics (TGEN, April 2006), Regulatory and Legal Implications of Hormesis (Society of Toxicology Annual Meeting, San Diego, March, 2006), Aspirations and Limitations of the Precautionary Principle (Society of Toxicology Annual Meeting, San Diego, March 2006), Incorporating Genetic Susceptibility Data in Standard-Setting for Air Pollutants (Society of Toxicology Annual Meeting, San Diego, March 2006), Global Positioning Systems (GPS), Privacy and the Law (Conference on Surveillance Technologies, Privacy and the Law, ASU College of Law, Feb. 2006), Genetics and Criminal Responsibility (ASU Adventures in Learning Lecture Series, Feb.2006), Evolution, Creation, and the Law (MetaNexus Board Meeting, Tempe, Jan. 2006), and The Problems with the Precautionary Principle (Washington Health Legislative Conference, Seattle, Dec. 2005).


James Nickel

James Nickel published "Poverty and Rights" in *Philosophical Quarterly,* which won the journal's 2004 essay prize; "Who Needs Freedom of Religion" in the *Colorado Law Review* and "Gould on Democracy and Human Rights" (a review essay) in *Journal of Global Ethics*.

Jonathan Rose will publish "Feodo de Compedibus Vocato le Sewet: The 15th Century Prison 'Oeconomy'", in Brand, Lewis & Mitchell, eds., LAW IN THE CITY (forthcoming). He published "English Legal History and Interdisciplinary Legal Studies", in Musson, ed., BOUNDARIES OF THE LAW: GEOGRAPHY, GENDER AND JURISDICTION IN MEDIEVAL AND EARLY MODERN EUROPE (2005) and "Litigation and Political Conflict in Fifteenth-Century East Anglia: Conspiracy and Attaint Actions and Sir John Fastolf" in *Journal of Legal History* (2006). He was a Visiting Fellow, Clare Hall and Visiting Member of the Faculty of Law, University of Cambridge, England, in 2005 and was elected a Life Member, Clare Hall at the University of Cambridge.

Erica Rosenberg published four newspaper editorials, two in The Arizona Republic, on "Time to Give Native Veterans Lost Wages" and "Bush's Forest Initiative an Undemocratic Plan," and one each in the Los Angeles Times and the Albuquerque Journal.


Erica Rosenburg

Michael Saks published "Forensic Science: Grand Goals, Tragic Flaws, and Judicial Gatekeeping" in *Judges Journal;* "A Multi-attribute Utility Analysis of Legal Policy Responses to Medical Adverse Events" (with Strouse & Schweitzer) in *DePaul Law Review.* (Symposium: Starting Over?: Redesigning the Medical Malpractice System); "Evidence after Dauber" (with Faigman) in the *Annual Rev. of Law & Society;* and "The Coming Paradigm Shift in Forensic Identification Science" (with Koehler) in *Science*. He also published (with Faigman, Kaye & Sanders) the ANNOTATED REFERENCE MANUAL ON SCIENTIFIC EVIDENCE - SECOND and (with Faigman, Kaye & Sanders, eds.) MODERN SCIENTIFIC EVIDENCE: THE LAW AND SCIENCE OF EXPERT TESTIMONY (WEST). His forthcoming works include "Law and Science" in the ENCYCLOPEDIA OF LEGAL HISTORY; "Pitfalls and Ethics of Expert Testimony" (with Lanyon) in EXPERT PSYCHOLOGICAL TESTIMONY FOR THE COURTS (M. Constanzo, D. Krauss, & K. Pezdek, Eds.); "A Meta-analysis of the Effects of Jury Size" (with Marti) in *Law and Human Behavior* (reprinted in THE JURY SYSTEM: CONTEMPORARY SCHOLARSHIP); and "Evidence Scholarship Reconsidered: Results of the Interdisciplinary Turn" (with Park) in the *Boston College Law Review.*

Dan Strouse recently published "Informed Consent to Genetic Research on Banked Human Tissue" in *Jurimetrics,* exploring the legal and ethical problems arising from the conduct of genetic research unforeseen at the time of the initial collection of tissue; with co-authors Michael Saks and Nicholas Schweitzer, "A Multi-Attribute Utility Analysis of Legal System Responses to Medical Injuries" in the *DePaul Law Review,* evaluating potential benefits and weaknesses of several competing policy alternatives in the debate over medical malpractice reform; and "The 'Item Veto' Case, Bennett v. Napolitano: What About the Merits?" in the *Arizona State Law Journal,* analyzing the (undecided) merits of a recent Arizona Supreme Court case involving the constitutionality of the governor's use of the item-veto power. He is the Director of the Research Ethics Unit of a multi-year NIMH grant awarded to ASU's Prevention Research Center on Families in Stress, and recently accepted an invitation to become a member of the Affiliates Council of ASU's Lincoln Center for Applied Ethics.

Douglas Sylvester published "The Lessons of Nuremberg and the Trial of Saddam Hussein: in EVIL, LAW AND THE STATE PERSPECTIVES ON STATE POWER AND VIOLENCE, John T. Parry, ed.,(2006); "Counting on Confidentiality: Legal and Statistical Approaches to Federal Privacy Law After the USA PATRIOT Act" in the *Wisconsin Law Review* (2005, with Sharon Lohr); and "The Security of our Secrets: A History of Privacy and Confidentiality in Law and Statistical Practice" in the *Denver University Law Review* (2005 with Sharon Lohr).

Laurence Winer published a review essay of MEDIA AND SOVEREIGNTY: THE GLOBAL INFORMATION REVOLUTION AND ITS CHALLENGE TO STATE POWER, by Monroe Price, in *Jurimetrics*.

Roselle Wissler published "The Role of Antecedent and Procedural Characteristics in Mediation: A Review of the Research" in *Blackwell Handbook of Mediation and Conflict Resolution,* "Leading Horses to Water: The Impact of an ADR 'Confer and Report' Rule on Settlement and ADR Use" in *Justice System Journal* (with Dauber), and "How Do We Know that Mediation Training Works?" in *Dispute Resolution Magazine* (with Hinshaw). "The Effects of an ADR Confer and Report Rule" (with Dauber) is forthcoming in *Dispute Resolution*. In addition, she completed a report of the study of court connected arbitration that she conducted for the Arizona Supreme Court (available at www.law.asu.edu/LodestarDisputeResolution), as well as two articles reporting the findings, "Mandatory Arbitration in Arizona: Structure and Performance" and "Lawyer Views on Mandatory Arbitration," in *Arizona Attorney.* She and Robert Dauber currently are working with the Arizona Supreme Court Committee on Compulsory Arbitration as they determine what changes to make to Arizona's arbitration rules and procedures based on the study findings. In her role as a panel member for the Federal Judicial Center's Program for Consultations in Dispute Resolution, she advised two federal district courts how to monitor and evaluate their ADR programs.

May 2006

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FORUM is published for alumni,
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LL.M. Program in Biotechnology Off to a Strong Start:

The nation's first and only LLM Program in Biotechnology and Genomics welcomed its inaugural class this past autumn. Twelve students are enrolled, two of whom are sitting judges, four of whom are principals in major valley law firms, and two of whom are associates in major firms. One is a veteran solo practitioner, another is in the general counsel's office for a Valley health care organization, another was in-house counsel for a Valley corporation, and the 12th is a member of the Bar Council of India. The current class has undertaken a joint writing exercise to focus their varied experiences and perspectives on a single issue and plans to publish their writing upon its completion. For more information, visit www.law.asu.edu/Biotech.

Forbidding Science Conference Proves An Enormous Success:

The Center and an impressive array of co-sponsors coordinated a January conference that was both a critical and popular success. More than 250 attended the two-day conference, titled Forbidding Science: Balancing Freedom, Security, Innovation, and Precaution. Speakers, including ASU President Michael Crow, University of Chicago's Clark Harding Professor Leon Kass, and ASU Professor of Life Sciences Roy Curtiss III, addressed whether scientific research should be restricted or whether there was a legal or constitutional right to conduct research. Three case studies were considered: Pathogen Research / Biosafety; Nanotechnology; and Cognitive Enhancement. The last panel discussed the prospects for governing research.

New Patent Litigation Fellowships Awarded with Arizona Technology Enterprises:

A new program for students with patent law interests, funded by alumnus Steven G. Lisa, began this spring semester. The program will fund two students to work directly within Arizona Technology Enterprises with AzTE's and Steven G. Lisa. Ltd.'s legal team to help identify, prosecute, license and, if necessary, litigate patents obtained on ASU's most commercially significant inventions. The first fellows are second year law students Andrew Paprocki and Bridget Smith, who were selected based on their impressive academic backgrounds and interest in patent law. This opportunity extends the student opportunities within AzTE, which already hosts the College's Technology Transfer Clinic, which permits students to participate in the process of evaluating inventions, devising market strategies and undertaking patent protection efforts. The litigation fellowships will operate year round, providing tuition remission assistance during the spring and autumn semesters and a generous stipend during the summer. In addition, a separate $1000 Annual Lisa Foundation Award will be given to an outstanding third year ASU law student who has made significant contributions to the College of Law's Center for the Study of Law, Science, & Technology. The first recipient of this award is Jon Kappes, who received his JD as well as a certificate in intellectual property from the College in May.

Joint JD / PhD in Psychology Takes Off:

The College of Law and the Department of Psychology at Arizona State University are now offering a dual degree program that will commence in autumn 2006. It will provide students with traditional and cutting-edge knowledge and skills in the interdisciplinary field of law and psychology. The program will educate a small cadre of talented students who possess psycho-legal interests and career aspirations to investigate issues important to the substantive law, legal procedure, and legal decision-making. Whereas a Ph.D. normally takes at least six years and the J.D. takes three years, the program is crafted to permit students to acquire both degrees in six or seven years. The Program has a public policy orientation, with the goal of training students to hold professional positions in academia, think-tanks, government agencies, and public interest, non-governmental organizations.

Paul Berg, Nobel Laureate, Delivers Hogan & Hartson Jurimetrics Presentation:

Paul Berg, Professor Emeritus in Biochemistry at the Stanford University School of Medicine, delivered the 5th Annual Hogan & Hartson Jurimetrics Presentation in honor of Lee Loevinger on March 1. The title of his presentation was "Brilliant Science, Dark Politics, Uncertain Law." Berg, who won a Nobel Prize for Chemistry in 1980, for contributions to basic research in nucleic acids, has focused his research on the mechanism of recombinational repair of double-strand breaks in DNA.

Surveillance Technologies: Privacy and the Law:

Robert O'Harrow, the author of *No Place to Hide*, a provocative examination of the profound changes in the gathering and exchange of electronic data since 9/11, was the keynote speaker for a February mini-conference titled Surveillance Technologies: Privacy and the Law. The conference considered the benefits, privacy risks, and legal issues of surveillance technologies, radio frequency IDs, global positioning systems and vehicle "black boxes." Other speakers were Jenae Naumann, Naumann Law Office; Assistant City Attorney, City of Tempe, whose talk was titled Radiofrequency Identification (RFID) Technology and Privacy; and from the Sandra Day O'Connor College of Law, Gary Marchant, on Global Positioning Systems and Privacy; Andrew Askland, on Automobile "Black Boxes" and Privacy, and Douglas Sylvester on Promoting Privacy through Technology.

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applications of the technology in individual cases. As a result, early, unscientific practices were rooted out. Third, DNA typing offered data-based, probabilistic assessments of the meaning of evidentiary "matches." This practice represented an advance over potentially misleading match/no-match claims associated with other forensic identification sciences.

Immediately after DNA's first courtroom appearance in the 1980s, scientists from disciplines as varied as statistics, psychology, and evolutionary biology debated the strengths and limitations of forensic DNA evidence. Blue ribbon panels were convened, conferences were held, unscientific practices were identified, data were collected, critical papers were written, and standards were developed and implemented. The scientific debates focused on the adequacy of DNA databases, the computation of DNA match probabilities, the training of DNA analysts, the presentation of DNA matches in the courtroom, and the role of error rates. In some cases, disputants worked together to find common ground. These matters were not resolved by the forensic scientists themselves, by fiat, or by neglect. Most exaggerated claims and counterclaims about DNA evidence have been replaced by scientifically defensible propositions. Although some disagreement remains, the scientific process worked.

One of the great strengths of DNA typing is that it uses a statistical approach based on population genetics theory and empirical testing. Experts evaluate matches between suspects and crime scene DNA evidence in terms of the probability of random matches across different reference populations (e.g., different ethnicities). These probabilities are derived from databases that identify the frequency with which various alleles occur at different locations on the DNA strand. The traditional forensic sciences could and should emulate this approach. Each subfield must construct databases of sample characteristics and use these databases to support a probabilistic approach to identification. Fingerprinting could be one of the first areas to make the transition to this approach because large fingerprint databases already exist. The greatest challenge in this effort would be to develop measures of the complex images presented by fingerprints, tool marks, bite marks, handwriting, etc. Forensic scientists will need to work with experts in differential geometry, topology, or other fields to develop workable measures.

A second data collection effort that would strengthen the scientific foundation of the forensic sciences involves estimating error rates. Although the theoretical promise of forensic technology is considerable, the practical value of any particular technology is limited by the extent to which potentially important errors arise. The best way to identify the frequency with which errors occur is to conduct blind, external proficiency tests using realistic samples.

A proficiency test requires analysts to make judgments about samples whose properties are known. External proficiency tests are conducted by an agency unaffiliated with the forensic scientist's laboratory. Externality is important to the integrity of proficiency tests because laboratories have strong incentives to be perceived as error-free. An even better test would be a blind proficiency test, in which the analyst believes the test materials are part of ordinary case work. Blindness increases the validity of proficiency test results because it ensures that analysts treat the test sample as they would other case samples. Although proficiency tests are used in many forensic sciences, the tests are generally infrequent, internal, and unrealistic; blind tests are practically nonexistent.

The traditional forensic sciences need look no further than their newest sister discipline, DNA typing, for guidance on how to put the science into forensic identification science. This effort should begin with adoption of the basic-research model. Just as DNA scientists tested the genetic assumptions that undergirded DNA typing theory (e.g.,Hardy-Weinberg equilibrium), traditional forensic scientists should design experiments that test the core assumptions of their fields. As basic research knowledge grows, experts will be able to inform courts about the relative strengths and weaknesses of their theories and methods, and suggest how that knowledge applies to individual cases.

At the same time, data should be collected on the frequency with which markings and attribute variations occur in different populations. In addition to their case-specific benefits, these data may also facilitate the development of artificial intelligence or computer-aided pattern recognition programs for the identification sciences. Forensic scientists might also adopt protocols, such as blind examinations in combination with realistic samples, that minimize the risks that their success rates will be inflated and their conclusions biased by extraneous evidence and assumptions. When matches are identified, forensic scientists in all fields would compute and report random-match probabilities similar to those used in DNA typing. These estimates—in combination with error rate estimates provided by mandatory, well constructed proficiency tests—would inform fact-finders about the probative value of the evidentiary match.

Simply put, we envision a paradigm shift in the traditional forensic identification sciences in which untested assumptions and semi-informed guesswork are replaced by a sound scientific foundation and justifiable protocols. Although obstacles exist both inside and outside forensic science, the time is ripe for the traditional forensic sciences to replace antiquated assumptions of uniqueness and perfection with a more defensible empirical and probabilistic foundation.

This is an abridged version of an article published in Science *(39 Science 892 (2005)). Read the full text at law.asu.edu. Michael Saks, PhD, is a Professor of Law & Psychology at the Sandra Day O'Connor College of Law at Arizona State University. Jonathan J. Koehler, PhD, is a professor of Behavioral Decision Making in the McCombs School of Business at the University of Texas at Austin.*

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