Science Policy Decision-Making: Educational Modules

Committee

Paul Brest

Co-Chair

Paul Brest is Former Dean and Professor Emeritus (active), at Stanford Law School, a lecturer at the Stanford Graduate School of Business, a faculty co-director of the Stanford Center on Philanthropy and Civil Society, and co-director of the Stanford Law and Policy Lab. He was president of the William and Flora Hewlett Foundation from 2000-2012.

He is co-author of Money Well Spent: A Strategic Guide to Smart Philanthropy (2008), Problem Solving, Decision Making, and Professional Judgment (2010), and articles on constitutional law, philanthropy, and impact investing. His current courses include Problem Solving for Public Policy and Social Change, Measuring and Improving Social Impact, and Advanced Topics in Philanthropy and Impact Investing. He also is the instructor in an online course, Essentials of Nonprofit Strategy, offered by Philanthropy University.

Professor Brest is a fellow in the American Academy of Arts and Sciences, and holds honorary degrees from Northwestern University School of Law and Swarthmore College. Before joining the Stanford Law School faculty in 1969, he clerked for Judge Bailey Aldrich of the U.S. Court of Appeals for the First Circuit and Justice John M. Harlan of the U.S. Supreme Court, and did civil rights litigation with the NAACP Legal Defense and Education Fund in Mississippi.

Saul Perlmutter

Co-Chair

Saul Perlmutter (NAS) is the Franklin W. and Karen Weber Dabby Chair of the Physics Department at the University of California, Berkeley. He graduated from Harvard magna cum laude in 1981, received his PhD from UC Berkeley in 1986. He joined the Berkeley Physics Department in 2004. He is also an astrophysicist at Lawrence Berkeley National Laboratory and leader of the international Supernova Cosmology Project, which first announced the results indicating that the universe will last forever, with its expansion ever accelerating. In 1996, he received the American Astronomical Society's Henri Chretien Award. Perlmutter has also written popular articles for Sky and Telescope magazine and has appeared in recent Public Broadcasting System and BBC documentaries on astronomy and cosmology. Professor Perlmutter, who led one of two teams that simultaneously discovered the accelerating expansion of the universe, was awarded the 2011 Nobel Prize in Physics, which he shares with two members of the rival team.

Arturo Casadevall

Member

Arturo Casadevall (NAM), MD, PhD, is chair of the W. Harry Feinstone Department of Molecular Microbiology and Immunology, Johns Hopkins Bloomberg School of Public Health. Formerly, he was Leo and Julia Forchheimer Professor of Microbiology and Immunology; chair of the Department of Microbiology and Immunology; and professor in the Department of Medicine at the Albert Einstein College of Medicine. He received his BA from Queens College, City University of New York, and MS, MD, and PhD degrees from New York University. His laboratory is interested in the fundamental questions of how microbes cause disease and how the host protects itself against microbes. The laboratory has a multidisciplinary research program spanning several areas of basic immunology and microbiology to address these general questions, which has resulted in more than 650 publications. His laboratory studies are focused on two microbes: the fungus Cryptococcus neoformans, a ubiquitous environmental microbe that is a frequent cause of disease in immunocompromised individuals, Bacillus anthracis, which is a major agent of biological warfare and Mycobacterium tuberculosis, the cause of tuberculosis. He is a fellow of the American Academy of Microbiology and was elected to the American Society for Clinical Investigation, to the American Association of Physicians, and as a fellow of the American Association for the Advancement of Science. Dr. Casadevall has served on numerous advisory committees to the National Institutes of Health, including study sections, strategic planning for the National Institute of Allergy and Infectious Diseases (NIAID), and the blue ribbon panel on response to bioterrorism. He currently cochairs the Board of Scientific Counselors for the NIAID and is a former member of the National Science Advisory Board for Biosecurity (NSABB). He is editor in chief of mBio, serves on the editorial boards of several journals, and has been the recipient of numerous awards, most recently the Solomon A. Berson Medical Alumni Achievement Award in Basic Science of the NYU School of Medicine, the IDSA Kass Lecturer, and the William Hinton Award from the American Society of Microbiology for his efforts in mentoring scientists from underrepresented groups. He is a member of the National Academy of Medicine.

Joe S. Cecil

Member

Joe S. Cecil, JD, PhD is a Senior Research Associate and Project Director in the Division of Research at the Federal Judicial Center. Currently he is directing the Center's Program on Scientific and Technical Evidence. As part of this program he served as principal editor of the first two editions of the Center's Reference Manual on Scientific Evidence, a third edition of which was recently published in collaboration with the National Academies. He has served as a member of several panels of the National Academy of Sciences, including the Committee on Identifying the Needs of the Forensic Science Community, and presently is serving as a member of the Committee on Science, Technology, and Law. He is currently directing a research project that examines the difficulties that arise with expert testimony in federal courts, with an emphasis on clinical medical testimony and forensic science evidence. Other areas of research interest include access to federal courts, federal civil and appellate procedure, jury competence in complex civil litigation, and assessment of rule of law in emerging democracies. Dr. Cecil received his JD and a PhD in psychology from Northwestern University.

William C. Clark

Member

William Clark (NAS) is the Harvey Brooks Professor of International Science, Public Policy and Human Development at Harvard University’s John F. Kennedy School of Government. Trained as an ecologist, his research focuses on sustainability science: understanding the interactions of human and environmental systems with a view toward advancing the goals of sustainable development. He is particularly interested in how institutional arrangements affect the linkage between knowledge and action in the sustainability arena.

At Harvard, he currently co-directs the Sustainability Science Program. He is co-author of Pursuing Sustainability: A Guide to Science and Practice (Princeton, 2016), Adaptive Environmental Assessment and Management (Wiley, 1978), and Redesigning Rural Development (Hopkins, 1982); editor of the Carbon Dioxide Review (Oxford, 1982); coeditor of Sustainable Development of the Biosphere (Cambridge, 1986), The Earth Transformed by Human Action (Cambridge, 1990), Learning to Manage Global Environmental Risks (MIT, 2001), Global Environmental Assessments (MIT, 2006) and The Global Health System: Institutions in a Time of Transition (Harvard, 2010); and co-chair of the U.S. National Research Council’s study Our Common Journey: A Transition Toward Sustainability (NAP, 1999). He serves on the editorial board of the Proceedings of the National Academy of Sciences. Clark is a member of the National Academy of Sciences and a Fellow of the American Association for the Advancement of Science. He is a recipient of the MacArthur Prize, the Humboldt Prize, the Kennedy School’s Carballo Award for excellence in teaching, and the Harvard College Phi Beta Kappa Prize for Excellence in Teaching.

Steven N. Goodman

Member

Steven N. Goodman, MD, MHS, PhD, is Professor of Medicine, Health Research and Policy, and Associate Dean for Clinical and Translational Research, Stanford University School of Medicine where he has been since 2011. He spent the preceding two decades on the faculties of the Johns Hopkins Schools of Medicine and Public Health, where he worked as an epidemiologist and biostatistician involved in clinical research, teaching extensively on research methodology, co-directing the epidemiology doctoral program and leading two major curriculum re-design efforts in research methods. His primary interests are in the foundations of statistical and scientific inference, the ethics of clinical research, and the way in which evidence from biomedical research is generated, interpreted and applied. He directs the NIH-supported medical research training programs at Stanford and is the co-director of METRICS (Meta-research Innovation Center at Stanford) a new center devoted to studying and improving the validity of the scientific literature.

He is senior statistical editor for the Annals of Internal Medicine, where he has served since 1987, and for the past decade was Editor-in-chief of Clinical Trials, a research methods journal. He is scientific advisor to the national Blue Cross-Blue Shield Technology Assessment Program and serves as Vice-chair of the Methodology Committee of Patient Centered Outcomes Research Institute (PCORI). He has served on numerous NAM committees, including Veterans and Agent Orange, Committee on Alternatives to Daubert Standards, Immunization Safety, co-chaired a 2011 committee on drug safety, and currently serves on a committee on clinical trial data sharing.

John D. Graham

Member

John D. Graham is Dean, Indiana University School of Public and Environmental Affairs (SPEA). Graham's research interests include government reform, energy and the environment, and the future of the automobile in both developed and developing countries. He came to SPEA after serving as Dean of the Frederick Pardee RAND Graduate School at the RAND Corporation in California. Prior to joining RAND, Dr. Graham served in the White House Office of Management and Budget (OMB) from 2001-06. As the Senate-confirmed Administrator of the Office of Information and Regulatory Affairs, he led a staff of 50 career policy analysts who reviewed major regulatory proposals from Cabinet agencies. Prior to his role at OMB, Dr. Graham was a Professor of Policy and Decision Sciences at the Harvard School of Public Health. From 1990 to 2001, Dr. Graham founded and led the Harvard Center for Risk Analysis. In 1995, he was elected President of the Society for Risk Analysis, an international membership organization of 2,400 scientists and engineers.

Ben W. Heineman, Jr.

Member

Benjamin W. Heineman, Jr. was GE's Senior Vice President-General Counsel from 1987-2003, and then Senior Vice President for Law and Public Affairs from 2004 until his retirement at the end of 2005. He is currently Senior Fellow at Harvard Law School's Program on the Legal Profession and its Program on Corporate Governance, Senior Fellow at the Belfer Center for Science and International Affairs at Harvard's Kennedy School of Government and Lecturer in Law at Yale Law School. A Rhodes Scholar, editor-in-chief of the Yale Law Journal and law clerk to Supreme Court Justice Potter Stewart, Mr. Heineman was assistant secretary for policy at the Department of Health, Education and Welfare and practiced public interest law and constitutional law prior to his service at GE. His book, High Performance with High Integrity, was published in June, 2008 by the Harvard Business Press. He writes and lectures frequently on business, law, public policy and international affairs. He is also the author of books on British race relations and the American presidency.

He is a member of the American Philosophical Society, a fellow of the American Academy of Arts and Sciences, a member of the National Academy of Science's Committee on Science, Technology and Law. He is recipient of the American Lawyer's Lifetime Achievement Award and the Lifetime Achievement Award of Board Member Magazine. He was named one of the top 50 Innovators in Law in the Past 50 Years by the American Lawyer, one of America's 100 most influential lawyers by the National Law Journal, one of the 100 most influential individuals on business ethics by Ethisphere Magazine and one of the 100 most influential people in corporate governance by the National Association of Corporate Directors. He serves on the boards of Memorial Sloan Kettering Cancer Center (chair of patient care committee), the Center for Strategic and International Studies (chair of program committee), Transparency International-USA (chair of program committee) and the Committee for Economic Development. He is a member of the board of trustees of Central European University. He has served on an international panel advising the President of the World Bank on governance and anti-corruption, and given the Oliver Smithies Lectures at Oxford University. He is a graduate of Harvard College (BA – high honors in history), Oxford University (B.Litt – political sociology) and Yale Law School (JD).

Dan Kahan

Member

Dan Kahan is the Elizabeth K. Dollard Professor of Law and Professor of Psychology at Yale Law School. In addition to risk perception, his areas of research include criminal law and evidence. Prior to coming to Yale in 1999, Professor Kahan was on the faculty of the University of Chicago Law School. He also served as a law clerk to Justice Thurgood Marshall of the U.S. Supreme Court (1990-91) and to Judge Harry Edwards of the United States Court of Appeals for the D.C. Circuit (1989-90). He received his BA from Middlebury College and his JD from Harvard University.

Norman G. Lederman

Member

Norman G. Lederman is Distinguished Professor, Mathematics and Science Education, Illinois Institute of Technology. Dr. Lederman has taught a full range of graduate (Masters and Doctoral) courses in secondary science education and supervised teaching interns. Dr. Lederman received his PhD in Science Education from Syracuse University (1983); MS in Secondary Education from Bradley University (1977); MS in Biology from New York University (1973); BS in Biology from Bradley University (1971).
Before arriving at his present position, he was Professor of Science and Mathematics Education at Oregon State University since 1985, Assistant Professor of Teacher Education, SUNY/Albany (1984-85) and Assistant Professor of Science Teaching, Syracuse University (1983-84). Dr. Lederman taught high school Biology at Eureka (IL) High School (1974-79) as well as college level biology at Onondaga Community College (1979-82) and Illinois Central College (1976-79). He has received the Illinois Outstanding Biology Teacher Award (1979), a Presidential Citation for Distinguished Service from the Association for the Education of Teachers in Science (AETS, 1986), the Burlington Resources Foundation Faculty Achievement Award for Excellence in Teaching and Research (1992), the AETS Outstanding Mentor Award (2000), and the National Association for Research in Science Teaching Award for Outstanding JRST Paper (2001).

Dr. Lederman is internationally known for his research and scholarship on the development of students' and teachers' conceptions of nature of science and scientific inquiry. He has also studied preservice and inservice teachers' knowledge structures of subject matter and pedagogy, pedagogical content knowledge, and teachers' concerns and beliefs. Dr. Lederman has been author or editor of 10 books, including an elementary science teaching methods textbook. He is editor of the recently published Handbook for Research on Science Education. He has written 15 book chapters and published over 200 articles in professional refereed journals. In addition, Dr. Lederman has made over 500 presentations at professional conferences and meetings around the world.

Dr. Lederman has served as President of the National Association for Research in Science Teaching (NARST), the Association for the Education of Teachers in Science (AETS), and the Oregon Educational Research Association. He has also served as Director of Teacher Education for the National Science Teachers Association (NSTA), Director of the Northwest Region of AETS, North American Director of the International Council of Associations for Science Education and served on the Board of Directors of NSTA, AETS, NARST, and the School Science and Mathematics Association. Dr. Lederman served as the Editor of the journal School Science and Mathematics for 10 years and serves, or has served, on the Editorial Boards of the American Educational Research Journal, Canadian Journal of Science, Mathematics, and Technology Education, International Journal of Science Education, International Journal of Science and Mathematics Education, Journal of Research in Science Teaching, Journal of Elementary Science Education, Journal of Science Teacher Education, Science and Education, and Science Education.

Fred D. Ledley

Member

Fred D. Ledley, MD, is the director of the Center for Integration of Science and Industry and a Professor in the Department of Natural and Applied Sciences and Department of Management and at Bentley University in Waltham, Mass. A recognized opinion leader in the integration of basic biological science with medicine, business, society, and education, he has written more than 170 papers and patent 5 applications in fields ranging from molecular and human genetics and gene therapy to bioethics, biopharmaceutical development, and biotechnology. Ledley has served on the faculties of the Baylor College of Medicine and the Howard Hughes Medical Institute, and was involved in founding several biotechnology companies including GeneMedicine, Inc. and Variagenics Inc. in the area of gene therapy and personalized medicine, serving in roles ranging from VP R&D and CSO, to President & CEO. At Bentley, Ledley spearheaded strategic initiatives to reorganize and reorient the school's science programs and better prepare business students for leadership roles in technology-driven enterprise. He serves as Chair of the National Biomedical Research Foundation and has served on the Board of Directors of the Massachusetts Biotechnology Council, the Board of Overseers of Boston Children's Hospital, and as a consultant to industry, academia, and government. His research focuses on strategies for accelerating the translation of scientific discoveries for public benefit. He has a BS from the University of Maryland, an MD from Georgetown University, trained in Pediatrics and Genetics at the Children's Hospital/Harvard Medical School, and was a post-doctoral fellow with Dr. David Baltimore at the Center for Cancer Research at the Massachusetts Institute of Technology.

Cathryn A. Manduca

Member

Cathy Manduca is Director, Science Education Resource Center (SERC), Carleton College. She is engaged in a wide variety of professional development projects for undergraduate faculty that use workshops, virtual events, and community authored websites to facilitate sharing of teaching materials and expertise. In association with this work, SERC has developed tools and strategies for disseminating educational resources, and engages in evaluation and research projects, including research on faculty learning in professional development programs and its impact on teaching and student learning. As part of this work, Manduca directs InTeGrate, an NSF funded STEP Center improving geoscience literacy and preparing a workforce that can use geoscience to address the challenges faced by society. Manduca is also the Executive Director of the National Association of Geoscience Teachers (NAGT). Established in 1937, NAGT works to foster improvement in the teaching of the earth sciences at all levels of formal and informal instruction, to emphasize the cultural significance of the earth sciences, and to disseminate knowledge in this field to the general public. Manduca received her BA in Geology from Williams College and her PhD in Geology from the California Institute of Technology. She is a fellow of the AAAS, and has received the American Geophysical Union prize for excellence in geophysical education, and the SCIENCE prize for online resources in education.

Catherine H. Middlecamp

Member

Cathy Middlecamp is Professor, Nelson Institute for Environmental Studies and the Integrated Liberal Studies Program (Howe Bascom Professor), University of Wisconsin-Madison. Middlecamp graduated from Cornell University in 1972 with distinction in all subjects, earned her PhD in chemistry from UW-Madison, and also holds a Master's degree in Education. On her campus, state-wide, and nationally she has been recognized for her excellence in teaching and service to a diverse group of students. She is the Editor-in-Chief for Chemistry in Context, a project of the American Chemical Society, and has served the lead author for the chapters on nuclear energy, air quality, stratospheric ozone depletion, acid rain, and polymers. Other recognition from the American Chemical Society includes being elected as a Fellow (2009) and receiving national awards for incorporating sustainability into the chemistry curriculum (2011), for encouraging women in careers in the chemical sciences (2003), and for fostering diversity (2001).

Over the past 20 years, Cathy Middlecamp has designed, supervised and taught in a number of programs for students under-represented in the sciences, both collegiate and pre-collegiate. She is co-author of the book, How to Survive and Even Excel in General Chemistry, and has contributed chapters to several books on women in science. In 1998, she was elected a member of the UW-Madison Teaching Academy. She has also been a member of the national advisory board member for the Women and Scientific Literacy at the American Association of Colleges and Universities, the task force co-leader for Women and Diversity at Project Kaleidoscope, and a national advisor for Montana's Rural Women and Girls in Science Project. She is the editor of a discovery-based laboratory project on the Web, based in Puerto Rico.

Jennifer L. Mnookin

Member

Jennifer Mnookin, JD, PhD, is Dean and David G. Price Professor of Law at the University of California, Los Angeles. She joined the UCLA faculty in 2005; her previous academic appointments include Professor of Law and Barron F. Black Research Professor at the University of Virginia School of Law, and Visiting Professor of Law at the Harvard Law School. She teaches Evidence; Torts; Scientific and Expert Evidence; as well as seminars in topics relating to expert evidence and law and popular culture. From 2007-2009, she served as Vice Dean for Faculty and Research.

Mnookin researches and writes primarily in the area of evidence, particularly expert and scientific evidence, and the use of forensic science in court. She has written on a variety of evidence-related subjects, including, among others, Daubert and the appropriate standards for expert evidence; forms of forensic science including latent fingerprint examination and handwriting identification; DNA profiling; expert evidence and the Confrontation Clause; documentary films and legal evidence; and the history of expert evidence. Mnookin's most recent publications include "The Need for a Research Culture in the Forensic Sciences" (with co-authors), 58 UCLA Law Review 725 (2011); The Ira M. Belfer Lecture: "The Courts, The National Academy of Sciences, and the Future of Forensic Science," 75 Brooklyn Law Review 1209 (2010), and "The Use of Technology in Human Expert Domains: Challenges and Risks Arising From the Use of Automated Fingerprint Identification Systems in Forensic Science" (with Itiel Dror), Law, Probability & Risk (2010).

Professor Mnookin received her AB from Harvard University, her JD from the Yale Law School, and a PhD in the History and Social Study of Science and Technology from the Massachusetts Institute of Technology.

Richard L. Revesz

Member

Richard L. Revesz is Lawrence King Professor of Law, Dean Emeritus, and Director, Institute for Policy Integrity, New York University School of Law. Revesz is a leading scholar in several areas of environmental law and policy, including the allocation of authority between the federal government and the states, the use of cost-benefit analysis, and the design of liability rules. In 2008, he published Retaking Rationality: How Cost-Benefit Analysis Can Better Protect the Environment and Our Health. Dean Revesz is also the faculty director of NYU's Institute for Policy Integrity, a non-partisan think-tank that advocates for an unbiased approach to cost-benefit analysis. He is a member of the Administrative Conference of the U.S., has served on the National Research Council (NRC)'s Committee on Health, Environmental, and Other External Costs and Benefits of Energy Production and Consumption, and on the Science Advisory Board of the U.S. Environmental Protection Agency. He is a Trustee of the American Museum of Natural History, a Fellow of the American Academy of Arts and Sciences, and a member of the Council on Foreign Relations and of the American Law Institute.

Carl P. Simon

Member

Carl P. Simon is Professor of Mathematics, Economics, Complex Systems and Public Policy at The University of Michigan. He was the founding Director of the UM Center for the Study of Complex Systems (1999-2009) and the Associate Director for Social Science and Policy of the Michigan Memorial Phoenix Energy Institute. He is currently Director of the U-M Science and Technology Policy Program.

His research interests center around the theory and applications of dynamical systems. He has applied dynamic modeling to the spread of AIDS (in particular the role of primary infection), staph infection, malaria and gonorrhea, to the spread of crime, and to the evolution of ecological and economic systems. His research team won the 1995 Howard M. Temin Award in Epidemiology for Scientific Excellence in the Fight against HIV/AIDS and the 2005 Kenneth Rothman Epidemiology Prize for paper of the year in Epidemiology.

He was named the U-M LS&A Distinguished Senior Lecturer for 2007 and received the U-M Distinguished Faculty Achievement Award in 2012.

Anne-Marie C. Mazza

Staff Officer