

Contributors

Andrew Bennett is a professor of government and international affairs at Georgetown University, where his research and teaching focus on international relations theory, qualitative case study research methods, American foreign policy, and US–Russian relations. In addition to conducting his academic work, Professor Bennett served in the US Department of Defense as special assistant to Assistant Secretary for International Security Affairs Joseph S. Nye Jr. in 1994–1995. Dr. Bennett has authored numerous journal articles, book chapters, and conference papers. His book, *Case Studies and Theory Development in the Social Sciences*, coauthored with Alexander George, has been widely acclaimed as an invaluable research guide. He has consulted on case study methods and research design with the US Department of Defense, the US Central Intelligence Agency, and the World Bank. Dr. Bennett holds a PhD in public policy from the Kennedy School of Government at Harvard University.

Jane M. Booker, currently a consultant, was formerly group leader of the Statistics Group at Los Alamos National Laboratory. She is nationally known for her pioneering work in eliciting and analyzing expert knowledge, uncertainty quantification, statistical reliability, and information integration methods. Among her publications are the books *Eliciting and Analyzing Expert Judgment: A Practical Guide*, coauthored with Mary A. Meyer, and *Fuzzy Logic and Probability Applications: Bridging the Gap*, coauthored with Timothy J. Ross and the late W. Jerry Parkinson. Dr. Booker is a member of the Institute of Mathematical Statistics, a fellow of the American Statistical Association, the 1995 recipient of the H. O. Hartley award for service to the statistics profession, and recipient of the prestigious R&D 100 award for the reliability methodology PREDICT. Dr. Booker holds a PhD in statistics from Texas A&M University.

Dallas Boyd is an analyst whose work focuses on nuclear weapons policy and nuclear counterterrorism. Boyd has served as principal investigator for multiple long-term studies relating to nuclear deterrence and counterterrorism. He also has experience conducting technical and policy exchanges with allied foreign governments concerning nuclear counterterrorism, nuclear security, and emergency response. Boyd holds

a BA in history from The Citadel and a master of public policy degree from the Harvard Kennedy School. His writings have been published in the *National Interest*, the *Nonproliferation Review*, *Bulletin of the Atomic Scientists*, *Strategic Studies Quarterly*, *Studies in Conflict and Terrorism*, the *Washington Quarterly*, and *Motorcyclist*.

Michael J. Frankel, one of the nation's leading experts on effects of nuclear weapons, is a technology and national security consultant. Previously he was national security studies fellow at the Johns Hopkins University Applied Physics Laboratory; senior staff member at Penn State University's Applied Research Laboratory, focusing on technologies of nuclear treaty verification; and chief science officer at L-3 Advanced Technology Group. In government service, he was executive director of the Commission to Assess the Threat to the United States from Electromagnetic Pulse Attack where he led development of nuclear threat technology projections; associate director for advanced energetics and nuclear weapons, Office of the Deputy Under Secretary of Defense for Science and Technology; chief scientist, Defense Nuclear Agency's Nuclear Phenomenology Division; congressional fellow, US Senate; and research physicist, Naval Surface Weapons Center. Dr. Frankel holds a PhD in theoretical physics from New York University.

Martin E. Hellman, professor emeritus of electrical engineering at Stanford University, is best known for his co-invention of public key cryptography, the technology that, among other uses, enables secure internet transactions. His current focus is on rethinking national security. During the 1980s, Prof. Hellman helped develop a meaningful dialogue between the Soviet and American scientific communities on how human thinking had to evolve for survival in the nuclear age. This effort culminated in his coediting a book with Prof. Anatoly Gromyko of Moscow, *Breakthrough: Emerging New Thinking*, published simultaneously in Russian and English in 1987 during the rapid change in Soviet-American relations. Prior to joining the faculty at Stanford, Prof. Hellman was at IBM's Watson Research Center from 1968 to 1969 and an assistant professor of electrical engineering at MIT from 1969 to 1971. He has authored over seventy technical papers as well as twelve US patents and a number of foreign equivalents. His work has been recognized by many honors and awards, including election to the National Academy of Engineering and the million-dollar ACM Turing

Award, often called “the Nobel Prize of Computer Science.” He received his BE from New York University and his MS and PhD from Stanford University, all in electrical engineering.

James Scouras is a senior scholar at the Johns Hopkins University Applied Physics Laboratory and the former chief scientist of the Defense Threat Reduction Agency’s Advanced Systems and Concepts Office. His research focuses on assessment and management of global catastrophic risks, with emphasis on nuclear war and the evaluation of policies intended to reduce the risk of its occurrence. Previously, he was program director for risk analysis at the Homeland Security Institute, held research positions at the Institute for Defense Analyses and the RAND Corporation, and lectured on nuclear policy in the University of Maryland’s General Honors Program. Among his publications is the book *A New Nuclear Century: Strategic Stability and Arms Control*, coauthored with Stephen Cimbala. Dr. Scouras earned his PhD in physics from the University of Maryland.

Edward Toton has a career that spans government, academic, and commercial basic research and exploratory development. Now president of a private consulting firm, his previous positions included technical management of Department of Defense–sponsored research in the Strategic Defense Initiative and technical support to the Commission to Assess the Threat to the United States from Electromagnetic Pulse. His research includes assessments of general-purpose force readiness for electromagnetic pulse threats, methodology development for the assessment of the lethality of Strategic Defense Initiative weapon concepts, and characterization of the effectiveness of operational neutralization schemes for suppression of biological aerosols. An underlying theme of his research is the general problem of using sparse data to quantify probabilities of potential failures in systems. Dr. Toton holds a PhD in theoretical physics from the University of Maryland.

George W. Ullrich is senior vice president for strategy development at Applied Research Associates and the former chief technology officer at Schafer Corporation and, prior to that, senior vice president at Science Applications International Corporation. A member of the federal Senior Executive Service since 1984, he has held several prestigious positions within the Department of Defense. As deputy director of the

Defense Nuclear Agency during the 1990s, he spearheaded the transition of the agency to embrace the broader challenges of the post-Cold War era, including treaty verification, weapons of mass destruction counterproliferation, and cooperative threat reduction. As director for weapons systems in the Office of the Secretary of Defense, he received the Secretary of Defense Distinguished Service Medal for his innovative weapon initiatives. He currently serves as a special advisor to the US Strategic Command Strategic Advisory Group's S&T Panel and is a member of the Air Force Scientific Advisory Board. Dr. Ullrich holds a PhD in theoretical physics from Drexel University.