

PUBLIC POLICY
AND
NUCLEAR THREATS

TRAINING THE NEXT GENERATION

2008 Summer Training Workshop
July 6–26, 2008, UC San Diego

About the Speakers

Marvin L. Adams is the HTRI Professor in the Department of Nuclear Engineering and the director of the Institute for National Security Education and Research at Texas A&M University. His areas of interest include computational transport theory, efficiently massively parallel implementation of coupled-physics calculations, and nuclear reactor analysis and design. Adams is a fellow of the American Nuclear Society. He has been a consultant for the Sandia, Los Alamos, and Lawrence Livermore National Laboratories. He spent more than five years at Lawrence Livermore before joining the faculty at Texas A&M. He received his Ph.D. and M.S.E. in nuclear engineering from the University of Michigan and his B.S. in nuclear engineering from Mississippi State University.

George Anzelon is a physicist at Lawrence Livermore National Laboratory (LLNL). After receiving his Ph.D. in nuclear physics from UCLA in 1973 and spending four years as an Air Force Captain with the Air Force Technical Applications Center (AFTAC), Anzelon joined LLNL's "Z" Division in 1977 to work on detection of hidden nuclear materials. Since 1982, he has worked on analysis of nuclear proliferation, nuclear terrorism, and nuclear safeguards in various capacities from Associate Division Leader to research analyst. Among his other experiences, Anzelon has participated in the inspection of formerly undeclared nuclear programs in Iraq, Libya, North Korea, and elsewhere. From 2000–2002 he worked as a safeguards analyst for the IAEA in Vienna.

Steven Aoki is Deputy Undersecretary of Energy for Counterterrorism at the National Nuclear Security Administration, U.S. Department of Energy. Prior to being appointed to this position, Aoki was the senior advisor for international programs and nonproliferation to the NNSA administrator. Before joining NNSA, he served at the U.S. Department of State as the director of the Office of Proliferation Threat Reduction. During 1993-96, he was on the staff of the National Security Council, with responsibility for nonproliferation and export control policies. Prior to that, he served as special assistant to the undersecretary for international security affairs and in several positions in the Bureaus of Politico-Military Affairs and Near East-South Asian Affairs at the State Department, specializing in nonproliferation, regional security, and counterterrorism activities. From 1978 to 1984 he was a scientific staff member at the Lawrence Livermore National Laboratory. He holds a Ph.D. in physics from the University of Chicago.

Kyle C. Beardsley is an assistant professor of political science at Emory University. He received his B.A. from the University of Maryland and Ph.D. (2006) from UC San Diego. His specializations include international relations, conflict processes, and empirical methodology. Dr. Beardsley is currently exploring the tradeoffs involved in international mediation, the politics of UN intervention, and the role of nuclear weapons in shaping crisis behavior.

Eli Berman is associate professor of economics at UC San Diego and affiliated faculty of the School of International Relations and Pacific Studies. He is also currently research director for international security studies at the UC Institute on Global Conflict and Cooperation. His research interests include labor economics, the economics of religion, labor markets and technological change, economic demography, applied econometrics, economic growth and development, and environmental economics. His work on the economics of Ultra-Orthodox Jewish communities was published in the *Quarterly Journal of Economics* in 2000.

Recent grants from the National Science Foundation (2002 and 2005) have enabled Berman to look closely at relationships between religion and fertility from an economic standpoint. His latest publications include, "Religious Extremism: The Good, the Bad, and the Deadly" (with Laurence R. Iannaccone) in *Public Choice* (2006), and "The Economics of Religion," in the *New Palgrave Encyclopedia of Economics* (with Laurence R. Iannaccone, forthcoming). Berman received his Ph.D. in economics from Harvard University in 1993. He was a National Bureau of Economic Research Sloan Fellow in 1999, was promoted to associate professor (with tenure) at Boston University in 2000, and held the Mitchell Chair in Sustainable Development at Rice University before joining UC San Diego.

Adam Bernstein is group leader for the Advanced Detectors Group in the Physics and Advanced Technologies Directorate at Lawrence Livermore National Laboratory (LLNL). At LLNL, and earlier at Sandia National Laboratories, he has developed novel methods for cooperative monitoring and tracking of nuclear materials and nuclear fuel cycle facilities, including "car-wash" detector systems to detect hidden nuclear material in containerized cargo, and cubic-meter-scale antineutrino detectors for real-time monitoring of power levels and plutonium content in nuclear reactors. He has also worked on nonproliferation policy as a consultant to the Union of Concerned Scientists, and as a post-doctoral fellow at the Center for Nonproliferation Studies, Monterey Institute of International Studies. Bernstein received his Ph.D. in experimental high energy physics from Columbia University.

Ambassador Linton F. Brooks is an independent consultant on national security issues, a Senior Advisor at the Center for Strategic and International Studies, and an advisor to two of the Department of Energy weapons laboratories. He served from July 2002 to January 2007 as Administrator of the U.S. Department of Energy's National Nuclear Security Administration, where he was responsible for the U.S. nuclear weapons program and for the Department of Energy's international nuclear nonproliferation programs.

Amb. Brooks has more than four decades of experience in national security, including service as Assistant Director of the Arms Control and Disarmament Agency, Chief U.S. Negotiator for the Strategic Arms

Reduction Treaty, Director of Defense Programs and Arms Control on the National Security Council staff and a number of Navy and Defense Department assignments as a 30-year career naval officer.

Brooks holds a B.S. in physics from Duke University, where he was elected to Phi Beta Kappa, and an M.A. in government and politics from the University of Maryland. He is a Distinguished Graduate of the U.S. Navy War College and has published a number of prize-winning articles on naval and nuclear strategy.

Robert L. Brown is assistant professor of political science at Temple University (beginning Fall 2008) where he will teach courses on international relations theory and international security. He received his Ph.D. in political science from UC San Diego in June 2008 after completing his dissertation on why countries use international organizations to cooperate on nuclear and chemical weapons but not for biological weapons. His research interests more broadly include international relations theory, international organizations, international security issues, nuclear deterrence, and sovereignty issues. He has an M.A. in international affairs from the George Washington University's Elliott School, where his studies focused on security regimes in Northeast and Southeast Asia, and a B.A. in political science with a minor in Japanese studies from the University of California, where his studies focused on Northeast Asian political economy and development. He has also interned at the Center for Strategic and International Studies (CSIS) in Washington, D.C., and worked previously at The Nautilus Institute on nuclear and Northeast Asian security issues.

Tai Ming Cheung is a research fellow and research coordinator at IGCC. His responsibilities include managing the institute's track two program the Northeast Asia Cooperation Dialogue (NEACD), which brings together senior foreign ministry and defense officials as well as academics from the United States, China, Japan, South Korea, North Korea, and Russia for informed discussions on regional security issues. He also teaches at the School of International Relations and Pacific Studies (IR/PS) at UC San Diego. Cheung is a long-time analyst of Chinese defense and national security affairs. He was based in Asia from the mid-1980s to 2002 covering political, economic and strategic developments in greater China. He was also a journalist and political and business risk consultant in northeast Asia. He received his Ph.D. from the War Studies Department at King's College, London University, in 2006.

Daniel H. Chivers is an assistant research scientist in the Nuclear Engineering Department at UC Berkeley. His current research involves increasing detection sensitivity for gamma-ray imaging systems for use in homeland security and nuclear materials accountancy programs. As an NSF PPNT Fellow, Chivers has taken part in many projects integrating nuclear technology and national security policy, where his focus has been on the implementation of nuclear forensics as a tool for the prevention nuclear terrorism. Dr. Chivers has interned at the DHS Domestic Nuclear Detection Office where he worked on developing test and evaluation strategies for stand-off and hand-held gamma-ray imaging systems.

John M. Cornwall received his B.A. from Harvard and his Ph.D. from UC Berkeley. He has long been a faculty member at UCLA, where he does research in elementary particle theory, and is the author of about 100 papers in this subject. He has also written some 40 papers on space plasmas in the Earth's

aurora and magnetosphere. He has been a visiting professor at many institutions in the United States and abroad, and for some years was a professor of science and policy analysis at the RAND Graduate School in Santa Monica.

Cornwall has served on the Defense Science Board and is a consultant to the Institute for Defense Analyses and to Los Alamos and Livermore National Laboratories, where he chairs two review committees and is a member of a third. He is a member of the Jason group and has co-authored more than 150 Jason reports. He has authored several works on, and testified to Congress concerning, ballistic missile defense, including as co-author of the report "Countermeasures" of the Union of Concerned Scientists. Among other contributions, he has been an adviser to, and lecturer in, the Public Policy and Nuclear Threats program of the UC Institute on Global Conflict and Cooperation; has served on a National Research Council review panel on nuclear stewardship issues; and chaired the Technical Workshop of the APS/AAAS/CSIS study on the Role of Nuclear Weapons in National Security Policy. He is a Fellow of the American Association for the Advancement of Science and of the American Physical Society.

Matt Cowan joined Lawrence Livermore National Laboratory in 1996. He is a mechanical engineer within the Defense Technologies Engineering Division and currently holds the position of Deputy Program Manager for the LLNL Nuclear Counterterrorism Program. His work experience includes working on Life Extension Programs for the modern U.S. weapons stockpile and high precision material property experiments under strong shock conditions in support of stockpile stewardship. He holds a BSME from Cal Poly San Luis Obispo and a MSME from Stanford University.

Martha Crenshaw is the Colin and Nancy Campbell Professor of Global Issues and Democratic Thought and professor of government at Wesleyan University, where she has taught since 1974. Her current research focus on why the United States is the target of terrorism and the distinction between "old" and "new" terrorism, as well as how campaigns of terrorism come to an end.

Crenshaw has written extensively on the issue of political terrorism; her first article, "The Concept of Revolutionary Terrorism," was published in the *Journal of Conflict Resolution* in 1972. Her recent work includes the chapter on "Coercive Diplomacy and the Response to Terrorism" in *The United States and Coercive Diplomacy* (United States Institute of Peace Press), "Terrorism, Strategies, and Grand Strategies" in *Attacking Terrorism* (Georgetown University Press), and "Counterterrorism in Retrospect" in the July-August 2005 issue of *Foreign Affairs*. She serves on the Executive Board of Women in International Security and chairs the American Political Science Association Task Force on Political Violence and Terrorism.

Crenshaw serves on the editorial boards of the journals *International Security*, *Orbis*, *Political Psychology*, *Security Studies*, and *Terrorism and Political Violence*. She coordinated the working group on political explanations of terrorism for the 2005 Club de Madrid International Summit on Democracy, Terrorism, and Security. She is a lead investigator with the National Center for the Study of Terrorism and the Response to Terrorism at the University of Maryland. She was also the recipient of a John Simon Guggenheim Memorial Foundation Fellowship in 2005–2006.

Bill Daitch is a member of the Senior Executive Service in the Department of Homeland Security. He leads the National Technical Nuclear Forensics Center (NTNFC) in the Domestic Nuclear Detection Office in Washington, D.C. He graduated from the United States Naval Academy in 1983, completed nuclear power and submarine training, and served on nuclear missile submarines in a variety of assignments. He entered the Navy Reserve in 1990, served two tours as Commanding Officer of submarine support detachments, and is currently a Captain serving as the Navy Emergency Preparedness Liaison Officer for Naval District Washington as the focal point for "Defense Support of Civil Authorities" in disaster situations. As a federal civilian he served at the Defense Threat Reduction Agency from 1990 to 2005 as chief of the Nuclear/Radiological Support Branch and other nuclear-related assignments. In April 2005 he transferred from DoD to DHS upon the stand-up of the Domestic Nuclear Detection Office.

Jay Davis is a nuclear physicist trained at the Universities of Texas and Wisconsin. During his career at the Lawrence Livermore National Laboratory, he built accelerators for research in nuclear physics and for materials science in support of the fusion program. He also founded the Center for Accelerator Mass Spectrometry, making possible the application of isotopic tracing and tagging tools to a wide range of problems in the geosciences, toxicology, nutritional sciences and oncology, archaeology, and nuclear forensics. In the national security component of his career, he worked to develop techniques for arms control treaties, was a senior member of the NEST operation, served as an inspector in Iraq for UNSCOM after the First Gulf War, and then served as the founding director of the Defense Threat Reduction Agency. He has more than eighty technical publications in a variety of areas and several patents that form the basis for companies in the bioscience and pharmaceutical sciences area.

In retirement from LLNL since 2002, he now grows grapes, and consults and serves on a variety of foundation and advisory boards, including the Board on Army Science and Technology and the Nuclear and Radiation Studies Board for the National Academy and Threat Reduction Advisory Committee for the Department of Defense. Among his honors are Phi Beta Kappa, an AEC Postdoctoral Fellowship, Fellowship in the American Physics Society, being picked as one of the Centennial Lecturers for the APS's Centennial Year, and the Distinguished Service Medal of the Department of Defense, DoD's highest civilian award.

Paul K. Davis is a principal researcher at RAND and a professor of policy analysis in the Pardee RAND Graduate School. His research relates to strategic and defense planning, counterterrorism, military transformation, high-level decision support, advanced qualitative and quantitative methods for modeling and simulation, ballistic missile defense, and defense acquisition. His recent books deal with capabilities-based planning, effects-based operations, model composability, and the deterrence and influence component of counterterrorism. Davis is a past member of the Naval Studies Board under the National Academy of Sciences and has served on numerous national studies. He was awarded the Vance R. Warner award by the Military Operations Research Society for lifetime achievement. Dr. Davis has served tours at RAND as a corporate research manager and program manager. Before joining RAND he was a senior executive in the Office of the Secretary of Defense. He holds a B.S. from the University of Michigan and a Ph.D. in chemical physics from the Massachusetts Institute of Technology.

Thomas Doyle is a Ph.D. candidate in political science at UC Irvine. His dissertation will focus on the ethics of nuclear weapons acquisition. Doyle is concerned with the integration of theory and practice and with the justificatory strategies that are used to support or defend political policy amongst states and institutions. Doyle earned a B.A. (Point Loma Nazarene University, 1980) in history and political science, with an emphasis on Cold War history and international politics. He taught high school in Los Angeles Unified School District from 1983–2004. In 1997 and 2001, Doyle was a winner of the "Most Inspirational Teachers in Los Angeles" award given by then Mayor Richard Riordan. He earned a master's degree in education (California State University, Northridge, 1987), a master's degree in philosophy (California State University, Los Angeles, 2001), and a second master's degree in philosophy (UC Irvine, 2005).

Ryan R. Eddy has served as the senior policy advisor to the Presidentially-appointed director at the Domestic Nuclear Detection Office (DNDO), within the Department of Homeland Security (DHS) since July 2005. DNDO was created in April 2005 by President Bush to improve the Nation's capability to prevent radiological and nuclear terrorism. In his role as advisor to the director, he is the primary interface to DHS headquarters staff to develop international and domestic radiation detection policy. In addition, he supports the director with key issues that require Department, interagency, and White House coordination. Eddy also assists in the development and communication of DNDO legislative strategies, including playing an integral role in introducing legislation to authorize the establishment of DNDO that was passed through the SAFE Port Act of 2006.

Prior to joining DNDO, Eddy worked as the confidential assistant to the director for the Office of Science and Technology Policy (OSTP) in the Executive Office of the President. His area of focus was homeland and national security policy issues, including biometrics, export control, and standards. He also helped to shape the overall legislative strategy for OSTP, which helped to stress the importance of federal research and development.

Prior to joining OSTP, Eddy served for three and a half years in the office of the Governor of Arizona, as executive management consultant for the Governor's Office for Excellence in Government (OEG). He earned his B.S. in political science from Arizona State University in 1999.

Robin Frost is the author of the Adelphi Paper "Nuclear Terrorism after 9/11" and a several other monographs, book chapters, and papers on nuclear terrorism and WMD proliferation. He has also published a textbook on business communication and many pieces of radio, print and industrial journalism, and technical documentation. He is presently an intelligence analyst with the International Assessment Staff (IAS) in the Privy Council Office of the Government of Canada. His resume is long and not straightforward; apart from being a writer and editor in various fields, he also has worked as a clinical psychology intern, a bus driver and tour guide, a scuba instructor, a radio news anchor, and an academic.

Matthew Fuhrmann is a post-doctoral research fellow with the Belfer Center's International Security Program and Project on Managing the Atom at Harvard University. He will join the faculty at the department of political science at the University of South Carolina as an assistant professor in January

2009. His general research interests are in the areas of international security, international law, and intrastate conflict. Much of his work focuses on the proliferation of chemical, biological, radiological, and nuclear (CBRN) weapons. He is currently working on a book manuscript entitled *The Proliferation Trap*, which explores the causes and consequences of peaceful nuclear cooperation. He has published or has forthcoming articles in the *Journal of Peace Research*, *Foreign Policy Analysis*, *Problems of Post-Communism*, and *Disarmament Diplomacy*.

Erik Gartzke has held faculty positions at the Pennsylvania State University, Columbia University, and currently at UC San Diego. He received his Ph.D. in political science from the University of Iowa in 1997. A recent report by Thompson ISI ("Web of Science") ranked him among the twenty most prolific and widely cited scholars in conflict studies (out of a pool of 5,311 authors).

Gartzke's work focuses on peace, war, and international institutions. He has written extensively on the liberal determinants of interstate peace, suggesting that the largely forgotten role of markets and economic development—a capitalist peace—is a more decisive factor than representative democracy in making regions less war-prone. A second theme involves the impact of international institutions on warfare and conflict avoidance. These findings develop a middle ground between the contrasting optimism and pessimism of traditional approaches. Certain kinds of intergovernmental organizations have demonstrable, theoretically supportable effects on conflict, though these effects are limited. A final theme focuses more directly on the theoretical causes of war. Published and ongoing research examines how bargains succeed or fail. Rather than relying on human nature, norms, culture, or material forces (power, incentives, constraints), bargaining theory emphasizes actors' beliefs about such factors.

Gartzke's research appears in the *American Political Science Review*, the *American Journal of Political Science*, *International Organization*, *International Studies Quarterly*, the *Journal of Conflict Resolution*, the *Journal of Politics*, *World Politics*, and elsewhere. He is currently working on a book manuscript tentatively titled *The Futility of War: Capitalism, Democracy, and Peace*.

Eugene Glover is the Chief Architect for Homeland Security Initiatives at Lockheed Martin. Glover began his career as a commissioned officer in the United States Air Force where over the course of a twenty-five-year career, he became a recognized authority and mission area specialist in command and control concepts and procedures. Glover spearheaded the development and production of the Asymmetric Missile Defense Initiative (AMDI) Integrated Architecture as was instrumental to the formulation of the supporting concept of operations. This groundbreaking effort has been briefed at the highest levels within the Department of Defense and has been recognized as the cause for a Congressional plus-up to conduct operationally realistic tests using sea based assets and develops a recommended architecture and concept of operations for homeland asymmetric missile defense. He continues to work to develop and broaden the Asymmetric Missile Defense Threat Scenarios to include innovative use of existing tactical resources, an updated operations concept and integrated architecture views.

Before joining Lockheed Martin, Glover was a senior systems manager at SCITOR Corporation working as a government Systems Engineering and Technical Assistance (SETA) contractor investigating the utility

and employment for unmanned air vehicles (UAVs) in the operational arena. From this he was credited with having developed the first ever Concept of Operations for the Global Hawk UAV. In a similar capacity with the Computer Sciences Corporation, he served as the chief architect for the Joint Theater and Missile Defense Organization's (JTAMDO) Joint Theater Ballistic Missile Defense Integrated Architecture. During that timeframe he also spearheaded the development of the JTAMDO-led Interagency Homeland Air Security Operational Architecture. Prior to his current position, Glover served as the chief architect for the Asymmetric Missile Defense Initiative, leading a cross corporate team of professionals in the development of concept documents, scenarios, integrated architecture views, and analytical tools.

Glover received a B.A. in history summa cum laude from Talladega College. He also holds a M.S. in systems management from USC and an advanced M.S. in higher education administration from George Washington University. His military education includes the Air Command and Staff College, and the Air War College. His awards include various letters of commendation and appreciation from both private industry and government leadership.

Stephan Haggard is currently professor of political science at the School of International Relations and Pacific Studies at UC San Diego. He was interim director of IGCC (1997–99) and is active in the IGCC National Security Fellows program. Haggard's research interests center on the international relations and comparative political economy of East Asia and Latin America. He is currently conducting research on the political and social consequences of globalization. He has written on East Asia's economic growth, the Latin American and East Asian financial crises, democratization, and federalism. His books include *Pathways from the Periphery: The Politics of Growth in the Newly Industrializing Countries* (1990); *The Political Economy of Democratic Transitions* (with Robert Kaufman 1995); *Developing Nations and the Politics of Global Integration* (1995); *The Political Economy of the Asian Financial Crisis* (2000); and *From Silicon Valley to Singapore: Location and Competitive Advantage in the Hard Disk Drive Industry* (with David McKendrick and Richard Doner, 2000). His latest work is *North Korea: Aid, Markets and Reform* (with Marcus Noland, Columbia University Press, 2007). He received his Ph.D. from UC Berkeley.

Michael D. Intriligator is professor of economics at UCLA. He is also professor of political science, professor of public policy in the School of Public Policy and Social Research, and co-director of the Jacob Marschak Interdisciplinary Colloquium on Mathematics in the Behavioral Sciences, all at UCLA. He is also a senior fellow of the Milken Institute in Santa Monica.

Intriligator has been a member of the UCLA faculty since 1963, teaching courses in economic theory, econometrics, mathematical economics, international relations, and health economics, and he has received several distinguished teaching awards. Dr. Intriligator received his S.B. degree in economics at the Massachusetts Institute of Technology; his M.A. at Yale University, where he was the recipient of the Woodrow Wilson Fellowship; and his Ph.D. in economics at the Massachusetts Institute of Technology where he worked with Robert Solow and Paul Samuelson.

Intriligator is the author of more than 200 journal articles and other publications in the areas of economic theory and mathematical economics, econometrics, health economics, reform of the Russian econo-

my, and strategy and arms control, his principal research fields. He is the author of *Mathematical Optimization and Economic Theory* (Prentice-Hall, 1971) and of *Econometric Models, Techniques, and Applications* (Prentice-Hall, 1978, 2d ed., with Ronald G. Bodkin and Cheng Hsiao, 1996) and co-author, with Donald E. Yett, Leonard Drabek and Larry J. Kimbell, of *A Forecasting and Policy Simulation Model of the Health Care Sector* (Lexington, 1978). He is coeditor, with Kenneth J. Arrow, of the *Handbook of Mathematical Economics* (North-Holland, 1981, 1982, 1985); coeditor, with Zvi Griliches, of the *Handbook of Econometrics* (North-Holland, 1982, 1983, 1986); coeditor, with Bernard Brodie and Roman Kolkowicz, of *National Security and International Stability* (Oelgeschlager, Gunn, and Hain, 1983); coeditor, with Dagobert L. Brito and Adele E. Wick, of *Strategies for Managing Nuclear Proliferation* (Lexington, 1983); and coeditor, with Urs Luterbacher, of *Cooperative Models in International Relations Research* (Kluwer, 1994).

Intriligator is vice chair and a member of the board of directors of Economists Allied for Arms Reductions and was president of the Peace Science Society (International) in 1993. He serves on the editorial boards of *Economic Directions*, *Defense and Peace Economics*, and *Conflict Management and Peace Science*. He is a fellow of the Econometric Society, a senior fellow of the Gorbachev Foundation of North America, and an elected member of the Council on Foreign Relations (New York) and the International Institute for Strategic Studies (London). He was elected as a foreign member of the Russian Academy of Sciences in 1999 and inducted in 2000, and he was elected an AAAS Fellow of the American Association for the Advancement of Science in 2001. He was elected president of the Western Economic Association International (WEAI) in 2006.

Sharad Joshi is a postdoctoral fellow at the Center for Nonproliferation Studies at the Monterey Institute of International Studies. He holds a Ph.D. from the Graduate School of Public and International Affairs, University of Pittsburgh. His research focuses on security issues in South Asia, especially nuclear proliferation and terrorism. Joshi has also done consulting work on terrorism financing as well as proliferation in South Asia. At the Monterey Institute's Graduate School of International Policy Studies, he has taught courses on terrorism and WMD in South Asia. He has previously worked as a visiting fellow at the Institute for Defense Studies and Analysis, New Delhi, and adjunct instructor at Duquesne University, Pittsburgh. Joshi earned a Master's degree in politics from the School of International Studies, Jawaharlal Nehru University, New Delhi, an undergraduate degree in economics from the University of Rajasthan, Jaipur, and a certificate in Asian Studies from the University of Pittsburgh. His recent writings have focused on the Indo-U.S. nuclear agreement and missile development in South Asia.

Chen Kane is a fellow with the CSIS International Security Program. She works on projects related to the proliferation of nuclear weapons, weapons of mass destruction, and the International Atomic Energy Agency. She has served as an adviser to the Jebson Center for Counter-Terrorism Studies at Tufts University and the Crown Center for Middle East Studies at Brandeis University. She worked for six years at the Israel Atomic Energy Commission in the External Relations Division, eventually becoming its director. She has held research positions at the Belfer Center for Science and International Affairs at Harvard University and at the Washington Institute for Near East Policy. Prior to joining the Israel Atomic Energy Commission, Kane served as an officer in the Israel Defense Forces. She holds a B.A. in sociology, an-

thropology, and political science from Tel Aviv University, where she also completed an M.A. in security studies. She received her M.A.L.D. and a Ph.D. from Tufts University's Fletcher School of Law and Diplomacy.

S. Paul Kapur is an associate professor in the Department of Strategic Research at the U.S. Naval War College and a visiting professor at Stanford University's Center for International Security and Cooperation. His research interests include deterrence theory, nuclear weapons proliferation, ethno-religious violence, and the international security environment in South Asia. Kapur's recent publications include *Dangerous Deterrent: Nuclear Weapons Proliferation and Conflict in South Asia* (Stanford University Press 2007); and "India and Pakistan's Unstable Peace: Why Nuclear South Asia is Not Like Cold War Europe," *International Security* (fall 2005). He holds a Ph.D. in political science from the University of Chicago.

Kerry Kartchner is senior advisor for strategic planning in the Office of Strategic Planning and Outreach, Bureau of International Security and Nonproliferation, U.S. Department of State. In 2006, he completed a two-year detail to the Advanced Systems and Concepts Office of the Defense Threat Reduction Agency, where he was chief of the Division of Strategy and Policy Studies. Prior to that assignment, he was senior advisor for missile defense policy in the Bureau of Arms Control, U.S. Department of State. His current duties include overseeing the development and execution of a comprehensive public outreach effort on nonproliferation and arms control, as well as advanced planning and outreach initiatives on policies related to deterrence, and weapons of mass destruction.

Kartchner is also an adjunct professor in Missouri State University's Graduate Department of Defense and Strategic Studies, located near Washington, D.C., where he teaches courses on arms control and strategic culture.

Kartchner has more than twenty-five years of experience in the field of national security affairs, with particular emphasis on nuclear weapons policy and arms control. Previous assignments have included serving as the senior State Department representative to the Standing Consultative Commission (for the ABM treaty), and to the Joint Compliance and Inspection Commission (for the START treaty). While serving as senior State Department representative to the Joint Compliance and Inspection Commission, he was chairman and chief U.S. spokesman for the Inspection Protocol Working Group and the Space Launch Issues Working Group.

Kartchner was the recipient of the State Department's first annual Secretary's Award for Public Outreach (2004), and is the recipient of a Meritorious Honor Award (1999) and a Hubert H. Humphrey Arms Control Fellowship (1989), both from the Arms Control and Disarmament Agency. He is the author of the book *Negotiating START: Strategic Arms Reduction Talks and the Quest for Strategic Stability* (New Brunswick: Transaction Books, 1992), as well as a contributor to other journals and edited collections. He has a Ph.D. and M.A. from the University of Southern California (1987 and 1984) and a B.A. in international relations from Brigham Young University (1981). He is a frequent speaker on topics related to arms control, U.S. foreign policy, and ballistic missile defense.

Jonathan Katz is professor of physics at Washington University in St. Louis. His work centers on gamma-ray bursts, the most energetic explosions in the universe. He is the author of the books *The Biggest Bangs: The Mystery of Gamma-Ray Bursts, the Most Violent Explosions in the Universe*, (Oxford, 2002); and *High Energy Astrophysics* (Addison-Wesley, 1997) and more than 100 scientific papers. Katz earned his B.A. in physics in 1970, his M.A. in astronomy and space sciences in 1971 and his Ph.D. in astronomy and space sciences in 1973, all at Cornell University. In addition to gamma-ray burst research, he also works on a number of diverse topics in applied physics, biophysics, and materials science. He is a member of the American Physical Society and a consultant to Los Alamos national Laboratory on a variety of nuclear issues.

Robert E. Kelley is currently a senior inspector in the IAEA Department of Safeguards. He is a nuclear engineer from the United States who has worked in the U.S. Nuclear Complex for more than thirty years. He has worked in nuclear nonproliferation efforts at Livermore, Los Alamos and was director of the Remote Sensing Laboratory in Las Vegas, Nevada. Kelley has field experience as an inspector and chief inspector including four years inspecting Iraq's clandestine nuclear weapons program in the 1992 and 2002 time periods. He also participated in the evaluation of South Africa's nuclear weapons in 1993, and the inspections of the vestiges of Libya's nuclear weapons program in 2004. At IAEA headquarters his main areas of responsibility are in Africa, the Middle East and South Asia. Kelley's practical laboratory experience includes plutonium metallurgy, gas centrifuge design, weapons engineering, nuclear emergency response and remote sensing.

John Kelsay is Distinguished Research Professor and Richard L. Rubenstein Professor of Religion at Florida State University. Professor Kelsay's research and teaching focuses on Muslim and Christian approaches to various questions of political ethics. His most recent book is *Arguing the Just War in Islam* (Harvard University Press, 2007). Kelsay has received fellowships from the John Simon Guggenheim Foundation, the Princeton University Center for Human Values, and the Institute for International Integration Studies (Trinity College, Dublin). He is co-editor of the *Journal of Religious Ethics*.

Matthew Kroenig is an assistant professor in the Department of Government and the Edmund A. Walsh School of Foreign Service at Georgetown University. Kroenig served as a strategist on the policy planning staff in the Office of the Secretary of Defense where he authored the first-ever, U.S. government-wide strategy for deterring terrorist networks. For his work, he received the Office of the Secretary of Defense's Award for Outstanding Achievement.

Dr. Kroenig's research explains the strategic incentives that drive nuclear-capable states to provide sensitive nuclear assistance to non-nuclear-weapon states. His other research focuses on international security, nuclear proliferation, soft power, terrorism, parliaments, and civil war. He is coauthor of *The Handbook of National Legislatures: A Global Survey* (2008). His writings on international security issues have appeared in the *Washington Post*, *Security Studies*, *Foreign Affairs*, *Foreign Policy*, *Democratization*, and other journals. He has held academic fellowships from the National Science Foundation, the Belfer Center for Science and International Affairs at Harvard University, the Center for International

Security and Cooperation at Stanford University, and the UC Institute on Global Conflict and Cooperation. He is a term member of the Council on Foreign Relations and holds a Ph.D. (2007) and M.A. in political science from UC Berkeley.

Father John Langan, S.J., was named the Joseph Cardinal Bernardin Professor of Catholic Social Thought at Georgetown University in 1999. He is a senior research scholar in the Kennedy Institute, where from 1987 to 1999 he served as Rose Kennedy Professor of Christian Ethics, and a professor in the philosophy department as well as a member of the core faculty of the School of Foreign Service at Georgetown. He teaches courses on ethical theory, on ethics and international affairs, human rights, just war theory, and capitalism and morality. He has edited or co-edited six books, among which are *Human Rights in the Americas: The Struggle for Consensus* (1982), *The Nuclear Dilemma and the Just War Tradition* (1986), *The American Search for Peace: Moral Reasoning, National Security, and Religious Hope* (1991), and *Catholic Universities in Church and Society* (1993).

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Levi holds a Ph.D. from the University of London (King's College), where he was affiliated with the Department of War Studies and was the SSHRC William E. Taylor fellow. He holds an M.A. in physics from Princeton University, where he studied string theory and cosmology, and a B.Sc. (Hons.) in mathematical physics from Queen's University (Kingston).

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Michael May is professor emeritus (research) in the School of Engineering and a senior fellow with the Freeman-Spogli Institute for International Studies at Stanford University. He is the former co-director of Stanford University's Center for International Security and Cooperation, having served seven years in that capacity through January 2000. May is director emeritus of the Lawrence Livermore National Laboratory where he worked from 1952 to 1988. While there, he held a variety of research and development positions, serving as director from 1965 to 1971.

May was technical adviser to the Threshold Test Ban Treaty negotiating team; a member of the U.S. delegation to the Strategic Arms Limitation Talks; and at various times has been a member of the Defense Science Board, the General Advisory Committee to the AEC, the Secretary of Energy Advisory Board, the RAND Corporation Board of Trustees, and the Committee on International Security and Arms Control of the National Academy of Sciences. He is a member of the Council on Foreign Relations and the Pacific Council on International Policy, and a Fellow of the American Physical Society and the American Association for the Advancement of Science.

May received the Distinguished Public Service and Distinguished Civilian Service Medals from the Department of Defense, and the Ernest Orlando Lawrence Award from the Atomic Energy Commission, as well as other awards. May's current research interests are in the area of safeguarding the nuclear fuel cycle, nuclear terrorism, energy, security and environment, and the relation of nuclear weapons and foreign policy.

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Pilat has taught in the Department of Government at Cornell University and the College of William and Mary, and in the Department of History at Georgetown University. He has been a senior associate member of St. Antony's College, University of Oxford, a visiting fellow at Cornell's Peace Studies Program and a Philip E. Mosely Fellow at the Center for Strategic and International Studies. Dr. Pilat has lectured widely at academic and policy institutions, including Harvard University, Princeton University, Stanford University, UC Berkeley, UCLA, the Naval Postgraduate School, the Woodrow Wilson International Center for Scholars, the Institute for Defense Analysis, the RAND Corporation, McGill University, the University of Oxford, King's College London, the École Polytechnique, the Fondation pour la Recherche Stratégique, the Commissariat à l'Énergie Atomique, the Deutsche Gesellschaft für Auswärtiges Politik, the Stiftung Wissenschaft und Politik, the NATO Defense College, the Moscow State Institute for International Affairs, the University of Tokyo, Keio University, and Fudan University. He has written numerous articles and opinion pieces for U.S. and European scholarly journals and newspapers, and is the author

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Pavel Podvig is a researcher at the Center for International Security and Cooperation at Stanford University. Before coming to Stanford in 2004, he worked at the Center for Arms Control Studies at the Moscow Institute of Physics and Technology (MIPT), which was the first independent research organization in Russia dedicated to analysis of technical issues related to arms control and disarmament. In Moscow, Podvig was the leader of a major research project and the editor of the book *Russian Strategic Nuclear Forces* (MIT Press, 2001). In recognition of his work in Russia, the American Physical Society awarded Podvig the Leo Szilard Lectureship Award of 2008 (with Anatoli Diakov). In 2000–2004, Podvig worked with the Program on Science and Global Security at Princeton University and earlier with the Security Studies Program at MIT. His current research focuses on the Russian strategic forces and nuclear weapons complex, as well as technical and political aspects of nuclear nonproliferation, disarmament, missile defense, and U.S.–Russian arms control process.

Podvig received his degree in physics from MIPT and his Ph.D. in political science from the Moscow Institute of World Economy and International Relations. Since 2001, Podvig has been a member of the Board of Directors of the *Bulletin of the Atomic Scientists*. He is a member of the APS Committee on International Freedom of Scientists and is serving as the chair of the committee in 2008.

Jonathan D. Pollack is professor of Asian and Pacific Studies and chairman of the Asia-Pacific Studies Group at the U.S. Naval War College, in Newport, Rhode Island. Between 2000 and 2004 he also served as chair of the college's Strategic Research Department. Pollack's major research interests include U.S.–China relations; East Asian international politics; Chinese national security policy; U.S. foreign policy and defense strategy; Korean politics and foreign policy; and East Asian technological and military development. He has frequently briefed U.S. government departments and agencies on these issues, and also interacts extensively with government officials and policy analysts across East Asia. In addition, he is a regular media contributor in the United States and abroad, including numerous op-eds and strategic commentaries.

After completing his Ph.D. at the University of Michigan, Pollack was a post-doctoral fellow at Harvard University. He then joined the Rand Corporation, where he served in various research and management capacities, including as chair of the Political Science Department, corporate research manager for international policy, and senior advisor for international policy. Pollack has taught strategic studies, East Asian international relations, and Chinese security and foreign policy at Brandeis University, the Rand Graduate School of Policy Studies, UCLA, and the Naval War College. He is a member of the International Institute for Strategic Studies, the Council on Foreign Relations, and the Committee on International Security and Arms Control, a standing committee of the National Academy of Sciences.

Pollack is presently completing a multi-year project on major strategy and policy issues facing the United States in the Asia-Pacific region. In addition to publishing numerous reports, research monographs and edited volumes, he contributes regularly to leading professional journals in the United States and Asia.

Robert Powell is Robson Professor of Political Science at UC Berkeley and previously taught at the University of Michigan and Harvard. He specializes in the use of game theory to study international conflict and political conflict more generally. He is the author of *Nuclear Deterrence Theory: The Search for Credibility* (Cambridge University Press, 1990); *In the Shadow of Power: States and Strategies in International Politics* (Princeton University Press, 1999); "Nuclear Deterrence Theory, Nuclear Proliferation, and National Missile Defense" (*International Security*, 2003); and "The Inefficient Use of Power: Costly Conflict with Complete Information" (*American Political Science Review*, 2004). More recently he has focused on the problem of allocating defensive resources against strategic attackers like terrorist groups, and has written "Defending Against Terrorist Attacks with Limited Resources" (*American Political Science Review*, 2007). He holds a B.S. in mathematics from Harvey Mudd College; an M.Phil in international relations from Cambridge University; and a Ph.D. in economics from UC Berkeley. He has been a Fulbright Scholar to the United Kingdom and is a member of the American Academy of Arts and Sciences (2004).

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Rockwood teaches classes in the IAEA's training courses and national and regional outreach programs. She is also a regular lecturer at the International School of Nuclear Law in Montpellier, France, and the World Nuclear University Summer Institute.

Rockwood received her B.A. from UC Berkeley and her J.D. from the University of California's Hastings College of the Law. She is a member of the State Bar of California and of the Washington, D.C., Bar Association.

Scott Sagan is a professor of political science and co-director of Stanford's Center for International Security and Cooperation. Before joining the Stanford faculty, Sagan was a lecturer in the Department of Government at Harvard University and served as a special assistant to the Director of the Organization of the Joint Chiefs of Staff in the Pentagon. He has also served as a consultant to the office of the Secretary of Defense and at the Los Alamos National Laboratory. Sagan is the author of *Moving Targets: Nuclear Strategy and National Security* (Princeton University Press, 1989), *The Limits of Safety: Organizations, Accidents, and Nuclear Weapons* (Princeton University Press, 1993), and co-author with Kenneth N. Waltz of *The Spread of Nuclear Weapons: A Debate Renewed* (W. W. Norton, 2002). He is the co-editor of *Planning the Unthinkable* (Cornell University Press, 2000) with Peter R. Lavoy and James L. Wirtz.

Currently, Sagan's main research interests are nuclear proliferation in South Asia, ethics and international relations, and accidents in complex organizations. Sagan was the recipient of Stanford University's 1996 Hoagland Prize for Undergraduate Teaching and the 1998 Dean's Award for Distinguished Teaching. As part of CISAC's mission of training the next generation of security specialists, he and Professor Stephen Stedman founded Stanford's Interschool Honors Program in International Security.

John Scott was educated at UC Berkeley, where he received both his B.S. and Ph.D. in nuclear engineering in 1993 and 1998, respectively. He joined Los Alamos National Laboratory (LANL) at the end of 1998 as a post-doctoral research associate in the Thermonuclear Applications group and became a technical staff member in 2000. As a staff member, the primary focus of his work has been on evaluating the performance of secondaries in nuclear weapons systems. He was the secondary weapon physics design lead on the LANL team for the first Reliable Replacement Warhead competition. Currently, he is the deputy group leader for the B61 section of the nuclear weapons design division at LANL.

Susan Shirk is director of the University of California system-wide Institute on Global Conflict and Cooperation and professor of political science in the School of International Relations and Pacific Studies, University of California, San Diego. From 1997 to 2000, Shirk served as Deputy Assistant Secretary of State in the Bureau of East Asia and Pacific Affairs, with responsibility for the People's Republic of China, Taiwan, Hong Kong, and Mongolia.

Prof. Shirk founded in 1993 and continues to lead the Northeast Asia Cooperation Dialogue (NEACD), a "track two," or unofficial, forum for discussions of security issues among defense and foreign ministry officials and academics from the United States, Japan, China, Russia, South Korea, and North Korea.

Shirk's publications include her books *How China Opened Its Door: The Political Success of the PRC's Foreign Trade and Investment Reforms*; *The Political Logic of Economic Reform in China*; and *Competi-*

tive Comrades: Career Incentives and Student Strategies in China. Her latest book, *China: Fragile Superpower*, was published by Oxford University Press in 2007.

Shirk served as a member of the U.S. Defense Policy Board, the Board of Governors for the East-West Center (Hawaii), the Board of Trustees of the U.S.-Japan Foundation, and the Board of Directors of the National Committee on United States-China Relations. She is a member of the Council on Foreign Relations, and an emeritus member of the Aspen Strategy Group. As senior advisor to the Albright Group, Shirk advises private-sector clients on China and East Asia. She received her B.A. in political science from Mount Holyoke College, her M.A. in Asian studies from UC Berkeley, and her Ph.D. in political science from the Massachusetts Institute of Technology.

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Harold P. Smith is Distinguished Visiting Scholar and professor with the Goldman School of Public Policy at UC Berkeley, where he focuses on the impact of technology on foreign and defense policy. He serves as an advisor to prime contractors, think tanks, and national laboratories in the defense industry.

In 1993, Smith accepted an appointment with the Clinton administration as Assistant to the Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs with responsibilities for reduction and maintenance of the U.S. and NATO arsenals of nuclear weapons, dismantlement of the chemical weapon stockpile, oversight of the chemical and biological defense programs, management of counter-proliferation acquisition, and management of treaties related to strategic weapons. He was responsible for implementation of the Cooperative Threat Reduction (Nunn-Lugar) program. He returned to private life in 1998.

In 1960, after receiving his Ph.D. in nuclear engineering from MIT, he joined the faculty of UC Berkeley, where he published extensively on the optimal control of exotic nuclear systems and on the interaction of radiation with surfaces, including ion implantation of silicon. He retired as professor and chairman of the Department of Applied Science in 1976 to pursue his interests in managerial consulting and entre-

preneurial ventures. The Palmer Smith Corporation, a consulting firm specializing in management of high technology programs, was established and retained by many of the largest defense contractors. He was one of the early principals of SAIC, RDA-Logicon, and JAYCOR.

Smith was awarded a White House fellowship in 1966 and was assigned as a special assistant to the Secretary of Defense. Since that time, he has served as an advisor to numerous governmental boards on national security policy, giving particular attention to projects requiring a broad range of technical and managerial skills. Of particular note are his chairmanship of the Vulnerability Task Force of the Defense Science Board and a special study for (then) Secretary of Defense Schlesinger on the Airborne Warning and Control System (AWACS); i.e. the Smith Report.

Smith is a Fellow of the American Physical Society and a Commander in the Legion of Honor of France. He has thrice received the highest honor granted by the Department of Defense for civilian service, the Distinguished Public Service Award, as well as awards by the Military Services and Agencies. In addition to technical papers, he has published articles of public interest, related to national security, in the New York Times, Christian Science Monitor, Wall Street Journal, US News and World Report, and Arms Control Today.

Scott Snyder is a senior associate in the International Relations program of the Asia Foundation and Pacific Forum CSIS, and is based in Washington, D.C. He spent four years in Seoul as Korea Representative of the Asia Foundation between 2000 and 2004. Previously, he served as a program officer in the Research and Studies Program of the U.S. Institute of Peace, and as acting director of the Asia Society's Contemporary Affairs Program. Snyder has published numerous op-ed pieces and journal articles and is a frequent commentator on Asian security issues with a particular focus on the Korean peninsula. He has recently edited, with L. Gordon Flake, a study titled *Paved With Good Intentions: The NGO Experience in North Korea* (2003), and is author of *Negotiating on the Edge: North Korean Negotiating Behavior* (1999).

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Etel Solingen is professor of political science at UC Irvine. Her most recent book *Nuclear Logics: Contrasting Paths in East Asia and the Middle East* (Princeton University Press 2007) is the recipient of the 2008 Woodrow Wilson Foundation Award for the best book on government, politics, or international affairs by the American Political Science Association, and of the 2008 APSA's Robert Jervis and Paul Schroeder Award for the Best Book on International History and Politics.

Solingen was vice-president of the International Studies Association, president of the International Political Economy Section of ISA, and the recipient of a MacArthur Foundation Research and Writing Award on Peace and International Cooperation, a Social Science Research Council-Mac Arthur Foundation Fellowship on Peace and Security in a Changing World, a Japan Foundation/SSRC Abe Fellowship, and a Center for Global Partnership/Japan Foundation fellowship, and Carnegie Corporation, USIP, Sloan Foundation, Columbia Foundation and other grants.

Solingen is also the author of *Regional Orders at Century's Dawn: Global and Domestic Influences on Grand Strategy* (Princeton University Press, 1998), *Industrial Policy, Technology, and International Bargaining: Designing Nuclear Industries in Argentina and Brazil* (Stanford University Press, 1996) and editor of *Scientists and the State* (University of Michigan Press, 1994). Her articles on international relations theory, international political economy, comparative regionalism, institutional theory, democratization, and international security appeared in the *American Political Science Review*, *International Organization*, *International Studies Quarterly*, *Comparative Politics*, *International Security*, *Global Governance*, *Journal of Peace Research*, *Journal of Theoretical Politics*, *International Relations of Asia-Pacific*, *Journal of Democracy*, *Asian Survey*, and *International History Review*, among others. She served as Chair of the Institute on Global Conflict and Cooperation's Steering Committee between 2004 and 2008, and is currently Review Essay Editor of the journal *International Organization*.

Frank von Hippel, a nuclear physicist, is a professor of public and international affairs at Princeton University. He has worked on fissile material policy issues for the past 30 years including those relating to commercialization of plutonium recycle, ending the production of plutonium and highly-enriched uranium for weapons, and ending the use of highly enriched uranium as a reactor fuel. He is currently co-chair of the International Panel on Fissile Materials. In 1993–94, he served as assistant director for national security in the White House Office of Science and Technology Policy and played a major role in developing U.S.-Russian cooperative programs to increase the security of Russian nuclear-weapons materials. He was a MacArthur Foundation Prize Fellow during 1993–98, and in 1994 was awarded the Hilliard Roderick Prize for excellence in Science, Arms Control, and International Security by the American Association for the Advancement of Science. He received his Ph.D. in physics from Oxford University, where he was a Rhodes Scholar.

Michael O. Wheeler is on detached duty from the Institute for Defense Analyses (IDA) to the Defense Threat Reduction Agency (DTRA) where he serves as director of its in-house think tank, the Advanced

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Wheeler received his B.S. at the Air Force Academy, an M.A. from Georgetown University, and an M.A. and Ph.D. from the University of Arizona. He also is a graduate of National War College and MIT's Seminar XXI executive development program. During his Air Force career from which he retired in 1990, Wheeler taught at the Air Force Academy, served in Tactical and Strategic Air Commands, was a planner on the Air Staff and special assistant to the Chief of Staff of the Air Force and the Chairman of the Joint Chiefs of Staff (JCS), served at the State Department while a White House fellow and on detached duty to the National Security Council, was chief of the Nuclear Negotiations Division on the Joint Staff, and ended his military career as arms control advisor to the JCS Chairman.

Wheeler is a recipient of the Defense Distinguished Service Medal and the Chairman of the Joint Chiefs of Staff Medal for Outstanding Public Service. Wheeler also is a Vietnam veteran and was awarded the Bronze Star. He is a member of the International Institute for Strategic Studies, the American Society of International Law, the American Political Science Association, and the International Studies Association. Wheeler has authored a number of monographs, book chapters, and articles on strategic issues related to weapons of mass destruction.

Randy Willoughby is professor of political science and international relations at the University of San Diego. He received his B.A. summa cum laude from UCLA and his Ph.D. (1988) from UC Berkeley, both in political science. As a graduate student, he worked on research projects in the Executive Office of the President in Washington D.C. and with the UC Institute on Global Conflict and Cooperation. He has edited or co-edited books on ballistic missile defense, conventional arms control, and drug trafficking. His most recent publications have focused on French politics and security in the South Pacific and on security issues affecting the San Diego Tijuana border.

Herbert York was tapped to work on the Manhattan Project the year he received his M.S. in physics from the University of Rochester (1943). His illustrious career includes many distinctions, among them science advisor to President Eisenhower and first chief scientist and co-founder of the Advanced Research Projects Agency (ARPA/DoD). From 1979-81 York was an ambassador and chief negotiator at the trilateral Comprehensive Test Ban talks between the United States, Great Britain, and the Soviet Union, held in Geneva. His academic career included stints as the first chancellor of UC San Diego (1961-64), and founder and first director of IGCC (1983-88). He was also acting chancellor of UC San Diego (1970-72).

In 2000, York received three major awards recognizing his contributions to science. The first, the Enrico Fermi award, is a Presidential award-one of the oldest and most prestigious science and technology

awards given by the U.S. Government and recognizes scientists of international stature for a lifetime of exceptional achievement in the development, use, or production of energy (broadly defined to include the science and technology of nuclear, atomic, molecular, and particle interactions and effects). York also received the Vannevar Bush award from the National Science Foundation's National Science Board. Finally, York received the Clark Kerr Award for Distinguished Leadership in Higher Education, created in 1968 by UC Berkeley's Academic Senate to honor individuals who have made an extraordinary and distinguished contribution to the advancement of higher education.