

DEAN A. WILKENING

PERSONAL

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EDUCATION

Ph.D., Physics, 1982, Harvard University, Cambridge, Massachusetts
A.B. (Phi Beta Kappa), Physics, 1972, University of Chicago, Chicago, Illinois

RESEARCH

1995-present: Director of the Science Program, Center for International Security and Cooperation, Stanford University, Stanford, California

The Science Program, within the Center for International Security and Cooperation, aims to promote scientific and technical analysis of important international security issues and to help educate the next generation of technically-oriented security specialists. As director, I help create, coordinate, and integrate research projects that have a technical security component with other ongoing research efforts at the Center, raise funds, host the Science, Technology and Security seminar series, help select and mentor approximately three Science Fellows that visit the Center each year, and conduct my own research. Currently, my research focuses on ballistic missile defense and bioterrorism. Regarding ballistic missile defense, I have examined the technical feasibility and strategic impact of airborne boost-phase ballistic missile defense systems; and I am currently examining the effectiveness and strategic impact of theater ballistic missile defenses in Northeast Asia and South Asia. With respect to bioterrorism, my research has focused on elucidating the factors that affect the severity of potential biological attacks, including their uncertainties, appropriate strategies for coping with bioterrorism, especially biodefense, and the modeling the efficacy of post-attack medical response strategies, the latter of which led to an investigation of the inhalation anthrax dose-response curve and incubation period distribution. In addition, I have begun to investigate the security implications of increased global reliance on nuclear power, with the aim of improving institutional and technical approaches to safeguarding future nuclear fuel cycles.

1994-1995: Associate Director, Strategy and Doctrine Program, Project AIR FORCE, RAND, Santa Monica, California

Project AIR FORCE is the Federally-Funded Research and Development Center (FFRDC) within RAND that conducts research for the US Air Force. My administrative responsibilities involved setting research agendas, oversight of research teams and budgets, quality control for briefings and reports, and directing “quick response” studies for the US Air Force. My research involved the impact of nuclear, biological, and chemical weapons on US power projection operations, and examining the impact of information technology on the future character of warfare.

1990-1994: Physical Scientist, International Policy Department, RAND, Santa Monica, California

My research involved reformulating US deterrence strategy for the post-Cold War era, examining the offense-defense nuclear balance between the United States and

Russia in an era with reduced nuclear arsenals, and analyzing the impact of deep cuts on US nuclear targeting doctrine.

1988-1990: Director, Force Employment Program, National Defense Research Institute, RAND, Santa Monica, California

The National Defense Research Institute is the FFRDC within RAND that works for the Office of the Secretary of Defense and the Joint Staff. The Force Employment Program conducted research on a range of strategic and theater force issues. As Director, I helped set research priorities, oversaw research teams and budgets, and performed quality control oversight of the research. My research involved the future of tactical reconnaissance, and the impact of the changes taking place in the former Soviet Union on US nuclear strategy.

1983-1988: Physical Scientist, Engineering and Applied Sciences Department, RAND, Santa Monica, California

My research involved strategic nuclear force modernization, technology options for improving US continental air defense, the impact of strategic defenses on deterrence and first-strike stability, arms control verification for bombers and SLCMs, and an assessment of different basing modes for the Small ICBM.

1981-1982: Ford Foundation Post-Doctoral Fellow, the Center for Science and International Affairs, Harvard University, Cambridge, Massachusetts

This post-doctoral fellowship facilitated the transition from physics to national security studies. My research focused on the military uses of outer space.

1976-1981: Graduate Student, Department of Physics, Harvard University, Cambridge, Massachusetts

My research was in experimental atomic physics under the direction of Professor Norman Ramsey. My thesis experiment involved a search for the simultaneous breakdown of parity and time-reversal invariance in the thallium fluoride molecule.

TEACHING

1995-2005: Lectured on nuclear weapon design, nuclear weapon effects, nuclear delivery systems, ballistic missile defense, and bio-terrorism in several courses at Stanford, among them “National Security In A Changing World” (PS138), “The Role of Technology in National Security” (EES 170/270), and “The Rise of Industrial Asia” (PS125).

1995-1999: Taught segments (4-6 lectures) of the course “The Role of Technology in National Security” (EES 170/270) on ballistic missile defense and the proliferation of weapons of mass destruction (especially, chemical and biological weapons) at Stanford with Professors Michael May and William Perry. This course examines case studies of contemporary national security decisions that have a large technical component.

1988-1994: Adjunct Lecturer in the Political Science Department, University of California, Los Angeles, for an introductory survey course (The Nuclear Predicament, PS 139A) covering historical, political, strategic, and technological aspects of the nuclear age.

1985-1988: Lecturer in the Council on Educational Development, University of California, Los Angeles, for an introductory survey course (CED 152) covering historical, political, strategic, and technological aspects of the nuclear age.

OTHER

Fellow of the American Physical Society

Member of the International Institute for Strategic Studies

Consultant to the U.S. Missile Defense Agency, Department of Defense

Consultant to the RAND Corporation

Consultant to Sandia National Laboratory

Associate at the Center for Health Policy, Stanford University

Participant in the 2002 National Research Council's Committee on Science and Technology for Countering Terrorism, Panel on Biological Issues

Briefed several National Research Council, Defense Science Board and Defense Policy Board committees

Invited to give numerous public talks on technical security issues; lecture in the University of California, San Diego Public Policy and Biological Threats Summer Training program; and interviewed on local television, National Public Radio and the British Broadcasting Corporation on various international security issues.

Helped draft portions of the Senate Bioshield II legislation (S.3)

PUBLICATIONS:

Journal Articles:

Dean A. Wilkening, "Combating Bioterrorism," draft manuscript.

Dean A. Wilkening, "Uncertainties in Predicting the Outcome of Airborne Anthrax Attacks," draft manuscript.

Dean A. Wilkening, "Modeling The Incubation Period Of Inhalational Anthrax," *Medical Decision Making*, Jul-Aug; Vol. 28(4), 2008, pp 593-605.

Dean A. Wilkening, "Sverdlovsk Revisited: Modeling Human Inhalation Anthrax," *Proceedings of the National Academy of Sciences*, Vol. 103, No. 20 (May 16, 2006), pp. 7589-94.

Amy L. Stuart and Dean A. Wilkening, "Degradation of Biological Weapons Agents in the Environment: Implications for Terrorism Response," *Environmental Science and Technology*, Vol. 39, No. 8, 2005, pp 2736-2743.

Dean A. Wilkening, "Airborne Boost-Phase Ballistic Missile Defense," *Science and Global Security*, Vol. 12, No 1-2, 2004, pp. 1-67.

Stanford Study Group, *Container Security Report*, Center for International Security and Cooperation, Stanford University, January 2003.

Stanford Study Group, "Shipping Container Security," *The Journal Of Physical Security*, Vol. 1, No. 1, Los Alamos National Laboratory, 2004.

Dean A. Wilkening, "Keeping National Missile Defense in Perspective," *Issues in Science and Technology*, American Academy of Arts and Sciences, Vol. 18, No. 2 (Winter 2001-02), pp 50-58.

Dean A. Wilkening, "Amending the ABM Treaty," *Survival*, Vol. 42, No. 1 (Spring 2000), International Institute for Strategic Studies, London, pp. 29-45.

Dean A. Wilkening, "A Simple Model For Calculating Ballistic Missile Defense Effectiveness," *Science and Global Security*, Vol. 8 (2000), pp. 183-215.

Dean A. Wilkening, "The Future of Russia's Strategic Nuclear Force," *Survival*, International Institute for Strategic Studies, London, Vol. 40, No. 3 (Autumn 1998), pp. 89-111.

David Gompert, Kenneth Watman, and Dean Wilkening, "Nuclear First Use Revisited," *Survival*, International Institute for Strategic Studies, Autumn 1995.

Dean Wilkening, Kenneth Watman, Michael Kennedy, Richard Darilek, "Strategic Defense and First-Strike Stability," *Survival*, March/April 1987. Also published in *Stability and Strategic Defenses*, eds. J. Barkenbus & A. Weinberg, Washington Institute Press, 1989.

Dean Wilkening, Norman Ramsey, Daniel Larson, "Search for P and T Violations in the Hyperfine Structure of Thallium Fluoride," *Physical Review A*, Vol. 29(2), February 1984.

Dean Wilkening, Gwynne Roshon, Samuel Aronson, "A Study of the Properties of a Prototype Multiwire Drift Chamber Spectrometer," *Nuclear Instruments and Methods*, Vol. 134, 1976.

Book Chapters:

Dean A. Wilkening, "Strategies for Combating Bioterrorism," in *Encyclopedia of Violence, Peace and Conflict, 2nd Edition*, Lester R. Kurtz, ed., Elsevier Inc., Oxford, UK, 2008.

Dean A. Wilkening, "Nuclear Warfare," in *Encyclopedia of Violence, Peace and Conflict, 2nd Edition*, Lester R. Kurtz, ed., Elsevier Inc., Oxford, UK, 2008.

W. K. H. Panofsky and Dean A. Wilkening, "Interdiction of the Delivery of Nuclear Weapons," *US Nuclear Policy*, Chapter 6, in *US Nuclear Weapons Policy: Confronting New Threats*, George Bunn and Christopher Chyba, Eds, Brookings Institution Press, Washington, DC 2006.

Dean A. Wilkening, "BCW Attack Scenarios," *The New Terror: Facing the Threat of Biological and Chemical Weapons*, Chapter 4, Sidney D. Drell, Abraham D. Sofaer, and George D. Wilson, eds., Hoover Press, Stanford, CA, 1999.

Dean A. Wilkening, "Nuclear Warfare," in *Encyclopedia of Violence, Peace, and Conflict, Volume 2*, Lester R. Kurtz, ed., Academic Press, 1999, pp. 575-589.

Dean Wilkening, "Future US and Russian Nuclear Forces: Applying Traditional Analysis Methods in an Era of Cooperation," in *New Challenges for Defense Planning: Rethinking How Much Is Enough*, Paul K. Davis, ed., RAND, May 1994.

Dean Wilkening, "Conventional Warfare and Technology," in *American Grand Strategy in the Post-Cold War World, A RAND Anthology*, John Arquilla and Preston Niblack, eds, RAND, 1992.

Dean Wilkening, "Monitoring Bombers and Cruise Missiles," in *Verification and Arms Control*, William. Potter, ed. Lexington Books, 1985.

Dean Wilkening, "Space-Based Weapons," in *National Interests and the Military Use of Space*, ed. William Durch, Ballinger Publishing Co., 1984.

Reports/Monographs:

Chaim Braun, David Elliott, Pavel Podvig, and Dean Wilkening, *Security in a World with Expanding Nuclear Power*, Center for International Security and Cooperation, Stanford University, Stanford, CA, September 2008.

Clifford Singer, James Walsh, and Dean Wilkening, *Reinventing Multilateralism*, Conference Report, Center for Arms Control, Disarmament, and International Security, University of Illinois, Urbana-Champaign, July 2004.

Stanford Study Group, *Container Security Report*, Center for International Security And Cooperation, Stanford University, January 2003.

Panel on Biological Issues, "Human and Agricultural Health Issues," in *Making the Nation Safer: The Role Of Science And Technology In Countering Terrorism*, Institute of Medicine and the National Research Council, National Academies Press, 2002; also published as a separate volume entitled *Countering Bioterrorism: The Role of Science and Technology*, National Academies Press, 2002.

Dena M. Bravata, et al, *Bioterrorism Preparedness and Response: Use of Information Technologies and Decision Support Systems*, Evidence Report/Technology Assessment Number 59, Agency for Health Research and Quality, Publication No. 02-E027, July 2002.

Dean A. Wilkening, *Ballistic-Missile Defence and Strategic Stability*, Adelphi Paper 334, International Institute for Strategic Studies, London, May 2000.

Dean A. Wilkening, "National Missile Defense and the ABM Treaty," in *Strategic Stability and US-Russian Relations*, CISAC Conference Report, Taira Koybaeva, ed., Center for International Security and Cooperation, Stanford University, December 1999.

Dean A. Wilkening, "Stability in South Asia: What Can Be Learned from the US-Russian Cold War Experience," in *Strategic Stability and US-Russian Relations*, CISAC Conference Report, Taira Koybaeva, ed., Center for International Security and Cooperation, Stanford University, December 1999.

Dean A. Wilkening, *How Much Ballistic Missile Defense Is Enough?*, CISAC Working Paper, The Center for International Security and Arms Control, Stanford University, October 1998.

Dean A. Wilkening, *How Much Ballistic Missile Defense Is Too Much?*, CISAC Working Paper, The Center for International Security and Arms Control, Stanford University, October 1998.

Dean A. Wilkening, *A Simple Model For Calculating Ballistic Missile Defense Effectiveness*, CISAC Working Paper, The Center for International Security and Arms Control, Stanford University, August 1998.

Dean A. Wilkening, *The Evolution of Russia's Strategic Nuclear Force*, CISAC Report, The Center for International Security and Arms Control, Stanford University, July 1998.

Brian G. Chow, Gregory S. Jones, Irving Lachow, John Stillion, Dean Wilkening, and Howell Yee, *Air Force Operations in a Chemical and Biological Environment*, RAND, DB-189/1-AF, 1998.

David Gompert, Kenneth Watman, and Dean Wilkening, *US Nuclear Declaratory Policy: The Question of Nuclear First Use*, RAND, MR-596-RC, 1995.

Dean Wilkening and Calvin Shipbaugh, *Strategic Nuclear Arms Control Beyond START II: The Effect on US Military Strategy*, RAND, MR-544-ACDA, 1995.

Dean Wilkening, *The Impact of START II and Limited Nationwide Ballistic Missile Defenses on Deterrence and Crisis Stability*, RAND, MR-430-AF, 1995.

Kenneth Watman and Dean Wilkening, *US Regional Deterrence Strategies*, RAND, MR-490-A/AF, 1995.

Dean Wilkening and Kenneth Watman, *Nuclear Deterrence in a Regional Context*, RAND, MR-500-A/AF, 1995.

Dean Wilkening, Michael Mihalka, Edward Harshberger, Mary Chenoweth, Bill Dean, Elizabeth Yu, *Tactical Reconnaissance Support for FOFA in the 1990s*; RAND, N-3398-PA&E, December 1994.

Mario Juncosa and Dean Wilkening, *Insufficiency of Fly-Out Sample Size for F-22 versus F-15 OT&E*, RAND, PM-163-AF, 1993.

Dean Wilkening, *A Future Targeting Doctrine for US Strategic Nuclear Forces*, CTS-23-90, Center for Technical Studies on Security, Energy, and Arms Control, Lawrence Livermore Laboratory, June 1991.

Dean Wilkening, *The Future of Flexible Response*, RAND, WD-4795-RC, June 1990.

Dean Wilkening, Kenneth Watman, Michael Kennedy, Richard Darilek, *Strategic Defenses and Crisis Stability*, RAND, N-2511-AF, April 1989.

Dean Wilkening, Kenneth Saunders, Walter Perry, Karl Hoffmayer, Eliza Wojtaszek, *US Tactical Warning Options for Soviet Cruise Missile Attacks*, RAND, R-3763-AF, March 1989.

Stanford Working Group, "Potential Verification Provisions for Long-Range, Nuclear-Armed Sea-Launched Cruise Missiles," *Stanford Workshop Report*, Center for International Security and Arms Control, Stanford University, July 1988.

Dean Wilkening, Edward Warner III, David Ochmanek, Claire Mitchell, Gary Massey, Michael Kennedy, Robert Nurick, *The Air Force Strategic Force Modernization Program: Costs, Effectiveness, and Alternatives*, RAND, WD-3774-AF, January 1988.

Dean Wilkening, *Responding to the Cruise Missile Threat to North America*, RAND, WD-3889-AF, August 1988.

Russel Shaver, Al Barbour, Ted Garber, Karl Hoffmayer, Arnold Kanter, Michael Kennedy, Zachary Lansdowne, Dean Wilkening, *A Comparison of Basing and Missile Options for the Small ICBM Program*, RAND, R-3538-AF, April 1987.

Dean Wilkening, Kenneth Watman, *Strategic Defenses and First-Strike Stability*, RAND, R-3412-RC, November 1986.

Edward Warner III, Dean Wilkening, David Ochmanek, Claire Mitchell, Gary Massey, Randy DeValk, Michael Kennedy, Karl Hoffmayer, *US Strategic Force Modernization Roadmap*, RAND, WD-3131, July 1986.

Richard Darilek, Michael Kennedy, Dean Wilkening, Kenneth Watman, Tim Webb, *Toward Strategic Defense: Problems and Prospects of Transition*, RAND, WD-3076, June 1986.

Michael Kennedy, Dean Wilkening, *Central Strategic Exchange Model: Structure and Results*, RAND, WD-2825-JCS, December 1985.

Dean Wilkening, *Approaches to Quantifying Crisis Stability*, RAND, WD-2844-JCS, December 1985.

Dean Wilkening, *Bomber Metrics for Arms Control*, RAND, N-2150-USDP, June 1984.

Jim Dewar, Carl Builder, Peter deLeon, Charles Hudson, Ken Phillips, Dean Wilkening, *The Reemerging Competition Between Nuclear and Nonnuclear Weapons*, RAND, WD-2186-AF, March 1984.

Letters & Editorials:

Dean Wilkening, "The Elephant and the Mouse," Opinion Section, *San Francisco Chronicle*, June 26, 2006.

Dean Wilkening, "Letters: Boost-Phase Missile Defense Debate Continues," *Physics Today*, Vol. 57, No. 7, July 2004, pp 13-14.

Vipin Gupta and Dean Wilkening, "Korea: A case for containment," *The San Diego Union-Tribune*, February, 11, 2003.

Dean A. Wilkening, "Counterterrorism is top priority, so why rush to kill ABM treaty?" *San Jose Mercury News*, Perspective section, December 16, 2001.

Unpublished Manuscripts:

Dean A. Wilkening, "Ballistic Missile Defense and the Weaponization of Space," paper presented to the Lawyer's Alliance for World Security conference on "Issues Related to Weaponization of Outer Space," November 13, 2002.

Dean A. Wilkening, "Airborne Boost-Phase Ballistic Missile Defense," manuscript originally to be published as a chapter in a white paper on national missile defense by the Lawyers Alliance for World Security, fall 2001.

Dean A. Wilkening, "The International Impact of U.S. National Missile Defense," paper prepared for the Monterey Strategy Group, November 1999.

Dean A. Wilkening, "ABM Treaty Compliance: Past Concerns and Future Debates," presented at a workshop on *Arms Control Treaty Compliance*, hosted by Michael Moody and Amy Sands in Washington DC, 1999.