

ASH CARTER

EMPLOYMENT

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| 2017 – Present | Director, The Belfer Center for Science & International Affairs, Harvard University Innovation Fellow, Massachusetts Institute of Technology |
| 2015 – 2017 | Secretary of Defense |
| 2014 – 2015 | Distinguished Visiting Fellow, Hoover Institution, Stanford University Senior Executive, Markle Foundation |
| 2011 – 2013 | Deputy Secretary of Defense |
| 2009 – 2011 | Undersecretary of Defense for Acquisition, Technology, and Logistics |
| 2000 – 2009 | Chair, International and Global Affairs Faculty & Professor of Science and International Affairs, John F. Kennedy School of Government, Harvard University |
| 1997 – 2009 | Co-Director (with William J. Perry) Preventive Defense Project Harvard & Stanford Universities |
| 1998 - 2000 | Senior Advisor to the North Korea Policy Review U.S. Department of State |
| 1993 – 1996 | Assistant Secretary of Defense for International Security Policy U.S. Department of Defense |
| 1990 – 1993 | Director, Center for Science and International Affairs Harvard University |
| 1988 – 1990 | Professor and Associate Director, Center for Science and International Affairs Harvard University |
| 1986 - 1988 | Associate Professor Harvard University |
| 1984 - 1986 | Assistant Professor Harvard University |
| 1982 - 1984 | Research Fellow, Center for International Studies Massachusetts Institute of Technology |

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EMPLOYMENT *(continued)*

- 1981 – 1982 Program Analysis and Evaluation, Office of the Secretary of Defense
The Pentagon
- 1980 - 1981 International Security and Commerce Program
Office of Technology Assessment, U.S. Congress
- 1979 - 1980 Research Associate, Theoretical Physics
Rockefeller University, New York
- 1977 - 1979 Physics Instructor ("Tutor" in the Oxford system)
Oxford University – Quantum Mechanics and Relativity
- 1976 Experimental Research Associate, Brookhaven National Laboratory
- 1975 Experimental Research Associate, Fermi National Accelerator Laboratory

EDUCATION

- 1976 – 1979 Oxford University
Ph.D., Theoretical Physics
Rhodes Scholar
Senior Scholar, St. John's College
Best Participant Prize, NATO Center for Subnuclear Physics
- 1972 - 1976 Yale University
B.A., *summa cum laude*
Honors in Medieval History
Honors in Physics
Phi Beta Kappa
Andrew D. White Essay Prize in European History

HONORS AND AWARDS

Distinguished Public Service Medal, Department of Defense (awarded five times – 1994, 1995, 2010, 2012, 2013). The highest award of the Department of Defense.

Joint Distinguished Civilian Service Award, awarded twice by the Chairman and Joint Chiefs of Staff, 2013 and 2017.

Distinguished Civilian Service Award, from the Department of the Army, December 2013.

Distinguished Public Service Award, from the Department of the Navy, December 2013.

Air Force Distinguished Public Service Award, from the Department of the Air Force, January 2017.

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Defense Intelligence Medal, from the Defense Intelligence Agency, April 1998.

Sam Nunn National Security Leadership Award, Center for Strategic & International Studies, January 2017

Eisenhower Award, from the Business Executives for National Security (BENS), May 2016

Eisenhower Award, from the National Defense Industrial Association, for contributions to national defense and the defense industrial base, 2013.

Woodrow Wilson Award for Public Service, from the Woodrow Wilson International Center for Scholars, October 2015

W. Stuart Symington Award, from the Air Force Association, September 2014

Pragmatist & Idealist Award, from the Stimson Center, October 2014

Forum Award, American Physical Society, “For his clear and lucid exposition of the physics issues in the nuclear arms race and his unique ability to combine his physics background and good judgment to clarify the technical parameters of these important public policy issues,” 1988.

Ten Outstanding Young Americans, United States Jaycees, 1987.

CURRENT MEMBERSHIPS & AFFILIATIONS

Member, The MIT Corporation
Advisor, MIT Lincoln Laboratories
Distinguished Visiting Fellow, The MITRE Corporation
Board of Directors, Delta Air Lines, Inc.
Fellow, American Academy of Arts and Sciences
American Physical Society
Member, Aspen Strategy Group
Board Member, Council on Foreign Relations
International Institute for Strategic Studies
National Committee on U.S.-China Relations
Advisor, Goldman Sachs
Honorary Director, The Atlantic Council
Affiliate Member, The Broad Institute
Member, ReWork America Task Force (Markel Foundation)

PREVIOUS MEMBERSHIPS & AFFILIATIONS

International Security Advisory Board to the Secretary of State, 2004-2009
MIT Lincoln Laboratories Advisory Board, 1998-2009, Chairman 2004-2008
Draper Laboratory Corporation, 1999-2009
Senior Partner, Global Technology Partners, LLC, 1998-2009
Consultant to Goldman Sachs on international affairs and technology matters, 1998–2009
Senior Associate, Center for Strategic and International Studies, 2000–2009
National Security Advisory Group to Senate Democratic Leadership, 108th Cong., 2006-08

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PREVIOUS MEMBERSHIPS & AFFILIATIONS *(continued)*

National Missile Defense White Team, 2001–2009
Markle Foundation Task Force on National Security in the Information Age, 2004–2009
Miretek Systems, Inc. Board of Trustees, 1997-2007
National Academy of Sciences Committee on Science and Technology for Countering Terrorism, 2001-2003
Defense Science Board, 1991-93, 1997-2001
Defense Policy Board, U.S. Department of Defense, 1997-2001
Threat Reduction Advisory Committee, U.S. Department of Defense, 1998-2002
Board of Trustees, The MITRE Corporation, 1989-93, 1996-2009
National Academy of Sciences, Committee on International Security and Arms Control, 1990-1993
American Academy of Arts and Sciences, Committee on International Security Studies, 1987-1992
American Association for the Advancement of Science, Committee on Science, Arms Control, and National Security, 1984-1991
White House, President's Council of Advisers on Science and Technology, Panel on National Security, 1990-91
Carnegie Commission on Science, Technology, and Government, Advisory Council, 1990-1993
Chairman of the Editorial Board, *International Security*, 1988-1993
Congressional Office of Technology Assessment, Advisory Panel on START Verification Technologies, 1991-1992
Board of Trustees, German Marshall Fund, 1992-1993
Sandia National Laboratory, President's Advisory Council, 1992-1993
Research Affiliate, Massachusetts Institute of Technology, 1984-1993
Guest Scholar, The Brookings Institution, 1982-1993
Adjunct Professor of Engineering and Public Policy, Carnegie-Mellon University, 1987-1993
Advisory Panel on Military Uses of Space, Office of Technology Assessment, U.S. Congress, 1985-86
Steering Group on Space Weapons, American Academy of Arts and Sciences, 1985-86
Core Study Group on the Effects of Military Efforts in Space, School of Advanced International Studies, Johns Hopkins University, 1985-1986
Consultant, Bureau of Intelligence and Research, U.S. Department of State, 1986-1988
Selection Committee, MacArthur Foundation Fellowships in International Security, 1986-1988
Selection Committee, MacArthur Foundation Grants for Research and Writing in International Security, 1987-1988
Kistiakowsky Scholar, American Academy of Arts and Sciences, 1987-1988
Commission on The Presidency and Science Advising, 1988
Council on Foreign Relations Study Group on the Premises of the NATO Alliance, 1989
Council on Foreign Relations Study Group on Business and Government in an Interdependent World, 1989
Joint Chiefs of Staff Advisory Group on the Future of U.S.-Soviet Military Relations, 1988-1989

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PREVIOUS MEMBERSHIPS & AFFILIATIONS *(continued)*

Congressional Office of Technology Assessment Advisory Panel on START Verification Technologies, 1989-1990
Defense Science Board Task Force on New Scenarios and Intelligence, 1990
National Academy of Sciences Panel on National Security Export Controls, 1990-1991
National Research Council Naval Studies Advisory Committee on the Future of the Aircraft Carrier, 1990-91

PUBLICATIONS

BOOKS

- Keeping the Edge: Managing Defense for the Future.* Editor (with John P. White) and author of three chapters. Cambridge, MA: The MIT Press, 2001.
[translated into Chinese, Military History and Translation Office, MND, ROC, 2002]
- Preventive Defense: A New Security Strategy for America.* With William J. Perry. Washington, DC: The Brookings Institution, 1999.
[translated into Russian by arrangement with Brookings Institution Press, 2003]
[translated into Arabic by arrangement with Brookings Institution Press, February/March 2002]
[translated into Chinese, CIP, 2000]
[translated into Korean, Bestun Korea Agency, 2000]
- Cooperative Denuclearization: From Pledges to Deeds.* Editor with Graham Allison, Steven E. Miller, and Philip Zelikow. Cambridge, MA: Center for Science and International Affairs, Harvard University, 1993.
- A New Concept of Cooperative Security.* With John D. Steinbruner and William J. Perry. Washington, DC: The Brookings Institution, 1992.
- Beyond Spinoff: Military and Commercial Technologies in a Changing World.* With John Alic, Lewis Branscomb, Harvey Brooks and Gerald Epstein. Boston, MA: Harvard Business School Press, 1992.
- Soviet Nuclear Fission: Control of the Nuclear Arsenal in a Disintegrating Soviet Union.* With Kurt Campbell, Steven Miller and Charles Zraket. Cambridge, MA: Center for Science and International Affairs, Harvard University, November 1991.
- Ashton B. Carter on Arms Control.* Kenneth W. Thompson, ed. Lanham, MD: University Press of America, January 1990.
- Managing Nuclear Operations.* Editor (with John Steinbruner and Charles A. Zraket) and author of three chapters. Washington, DC: The Brookings Institution, 1987.

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PUBLICATIONS

BOOKS (continued)

Directed Energy Missile Defense in Space. Washington, DC: Office of Technology Assessment, U.S. Congress, 1984.

Ballistic Missile Defense. Editor (with David N. Schwartz) and author of two chapters. Washington, DC: The Brookings Institution, 1984.

MX Missile Basing (with Classified Annex). Author of chapters on “Launch Under Attack”; “Ballistic Missile Defense”; “Air Mobile Basing”; “Land Mobile Basing”; and (with Theodore Postol) “Command, Control, and Communications”. Washington, DC: Office of Technology Assessment, U.S. Congress, 1981.

ARTICLES

“Reflections on American Grand Strategy in Asia,” *The Belfer Center for Science and International Affairs*, October 2018.

“Shaping Disruptive Technological Change for Public Good,” *The Belfer Center for Science and International Affairs*, August 2018.

“What I Learned From the People Who Built the Atom Bomb,” *MIT Technology Review*, November 27, 2017.

“A Lasting Defeat,” *The Belfer Center for Science and International Affairs*, October 2017.

“How to make the Islamic State’s defeat last,” *The Washington Post*, July 13, 2017, A17

“Nuclear Deterrence: Still the Bedrock of Western Security,” *The American Interest*, vol. 12 No. 6, July-August 2017, pp. 35-40.

“What I Learned from Transforming the U.S. Military’s Approach to Talent.” *Harvard Business Review*, May 23, 2017.

“The Logic of American Strategy in the Middle East,” *Survival*, vol. 59 no. 2, April-May 2017, pp. 13-24.

“Defense at a Time of Strategic Transition,” *The National Interest Online*, February 28, 2017. Available at: <http://nationalinterest.org/feature/defense-time-strategic-transition-19623>.

“A Strong and Balanced Approach to Russia,” *Survival*, vol. 58 no. 6, December 2016–January 2017, pp. 51–62.

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PUBLICATIONS

ARTICLES (continued)

“The Pentagon Must Think Outside of Its Five-Sided Box,” *The National Interest Online*, December 11, 2016. Available at: <http://nationalinterest.org/feature/ashton-carter-the-pentagon-must-think-outside-its-five-sided-18697>.

“Innovation Drive Essential to DoD’s Future,” *DefenseNews*, December 5, 2016. Available at: <http://www.defensenews.com/articles/us-defense-secretary-carter-innovation-drive-essential-to-dods-future>.

“The Rebalance and Asia-Pacific Security,” *Foreign Affairs*, November/December 2016, pp. 65-75.

“Accelerating the fight to deal ISIL a Lasting Defeat,” *Medium*, October 2016

“We’ll Stamp Out Sex Abuse by UN Troops.” With Michael Fallon (UK Defense Secretary). *The Times of London*, September 8, 2016.

“A Firm Strategic Handshake,” *Times of India*, April 11, 2016.

“It’s Time to Accelerate the ISIL Fight,” *Politico*, January 22, 2016.

“Grow trade to shore up U.S. security.” With John Kerry. *USA TODAY*, June 9, 2015, 7A.

“Iran Deal’s Defense Backstop,” *USA TODAY*, September 4, 2015, 13A.

“Running the Pentagon Right: How to Get the Troops What They Need,” *Foreign Affairs*, January/February 2014, pp. 101-112.

“After the Bomb.” With William J. Perry and Michael M. May. *The New York Times*, 12 June 2007, A-24.

“The Day After: Action in the 24 Hours Following a Nuclear Blast in an American City.” With Michael M. May and William J. Perry. Report based on April 19, 2007 workshop hosted by the Preventive Defense Project, Harvard and Stanford Universities, 31 May 2007.

“China on the March.” With William J. Perry. *The National Interest*, no. 88 (March-April 2007), 16-22. “How Washington Learned to Stop Worrying and Love India’s Bomb.” *Foreign Affairs* (foreignaffairs.org), 10 January 2007.

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PUBLICATIONS

ARTICLES (continued)

“China’s Rise in American Military Strategy.” With William J. Perry. In *China’s March on the 21st Century: A Report of the Aspen Strategy Group*, Kurt M. Campbell and Willow Darsie, eds. Washington, DC: The Aspen Institute, 2007, 107-117.

“Plan B for Iran: What if Nuclear Diplomacy Fails?” With William J. Perry. Report based on May 22, 2006 workshop hosted by the Preventive Defense Project, Harvard and Stanford Universities, 10 September 2006.

“The Case for a Preemptive Strike on North Korea’s Missiles.” With William J. Perry. *TIME* (*time.com*), 8 July 2006.

“America’s New Strategic Partner?” *Foreign Affairs* 85, no. 4 (July-August 2006), 33-44.

“If Necessary, Strike and Destroy.” With William J. Perry. *The Washington Post*, 22 June 2006, A-29.

“Assessing the India Deal.” Testimony before the Committee on Foreign Relations, U.S. Senate. 26 April 2006.

“Toolbox: Containing the Nuclear Red Zone Threat.” With Stephen A. LaMontagne. *The American Interest* 1, no. 3 (Spring 2006), 28-40.

“A Fuel-Cycle Fix.” With Stephen A. LaMontagne. *The Bulletin of the Atomic Scientists* (January- February 2006), 24-25.

“The U.S. Military: Under Strain and at Risk.” With William J. Perry (chair), Madeleine K. Albright, Graham T. Allison, Samuel R. Berger, Gen. Wesley K. Clark, Thomas E. Donilon, Michele A. Flournoy, John D. Podesta, Susan E. Rice, Gen. John M. Shalikashvili, Wendy R. Sherman, Elizabeth D. Sherwood-Randall and James B. Steinberg (members). National Security Advisory Group, January 2006.

“Origins of the Nunn-Lugar Program.” Presentation to the Presidential Conference on William Jefferson Clinton, Hofstra University. 11 November 2005.

“The India Deal: Looking at the Big Picture.” Testimony before the Committee on Foreign Relations, U.S. Senate. 2 November 2005.

“New Approaches for Addressing the Threat of WMD Proliferation.” Presentation to conference on Non-Proliferation of Weapons of Mass Destruction, Tufts University, Fletcher School of Law & Diplomacy. 21 October 2005.

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PUBLICATIONS

ARTICLES (continued)

“Interim Report on Nuclear Threat Reduction and the Fuel Cycle.” Memo to Senator Richard G. Lugar, Chairman, Senate Committee on Foreign Relations. With Ronald Lehman II (co-chair, with Ashton Carter), Robert Einhorn, Alan A. Foley, Arnold Kanter, David Kay, Susan Koch, Lawrence Scheinman, and William Schneider, Jr (members). Policy Advisory Group on Nonproliferation, 1 July 2005.

“Worst Weapons in Worst Hands: U.S. Inaction on the Nuclear Terror Threat since 9/11, and a Path of Action.” With William J. Perry (chair), Madeleine K. Albright, Graham T.

Allison, Samuel R. Berger, Gen. Wesley K. Clark, Thomas E. Donilon, Michele A. Flournoy, John D. Podesta, Susan E. Rice, Gen. John M. Shalikashvili, Wendy R. Sherman, Elizabeth D. Sherwood-Randall and James B. Steinberg (members). National Security Advisory Group, July 2005.

“Worst People and Worst Weapons.” Statement before The 9/11 Public Discourse Project’s Hearings on “The 9/11 Commission Report: The Unfinished Agenda.” 27 June 2005.

“A Failure of Policy, Not Spying.” *The Washington Post*, 5 April 2005, A-23.

“Conversations with *The Forum*: Perspectives on Preemption and National Security.” Interview with Dr. Ashton Carter. *The Fletcher Forum of World Affairs* 29, no. 1 (Winter 2005), 9-12.

“The Essential Features of a Focused Strategy to Deal with the Proliferation Challenge: What Has Been Done and What Is to Be Done?” In *The Challenge of Proliferation: A Report of the Aspen Strategy Group*, Kurt M. Campbell, ed. Washington, DC: The Aspen Institute, 2005, 141-152.

“Overhauling Counterproliferation Intelligence.” Statement before The Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction (The “Robb- Silberman” Commission). 4 October 2004.

“How to Counter WMD.” *Foreign Affairs* 83, no. 5 (September-October 2004), 72-85.

“Implementing a Denuclearization Agreement with North Korea.” Testimony before the Committee on Foreign Relations, U.S. Senate. Hearing report is forthcoming. 15 July 2004.

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PUBLICATIONS

ARTICLES (continued)

- “Overhauling Counterproliferation.” *Technology in Society: An International Journal – Special Issue: Technology and Science: Entering the 21st Century*, George Bugliarello and A. George Schillinger, eds., 26, nos. 2/3 (April/August 2004), 257-269.
- “Seven Steps to Overhaul Counterproliferation.” Testimony before the Armed Services Committee, U.S. House of Representatives. Hearing report is forthcoming. 17 March 2004.
- “Overhauling Counterproliferation.” Testimony before the Committee on Foreign Relations, U.S. Senate. Hearing report is forthcoming. 10 March 2004.
- “Good Nukes, Bad Nukes.” With Arnold Kanter, William J. Perry, and Brent Scowcroft. *The New York Times*, 22 December 2003, section A, 31.
- “The Architecture of Government in the Face of Terrorism.” *Countering Terrorism: Dimensions of Preparedness*, Arnold M. Howitt and Robyn L. Pangi, eds. Cambridge, MA: MIT Press, 2003, 17-36.
- “A Dedicated Organization in Congress.” With Gerald L. Epstein. *Science and Technology Advice for Congress*, M. Granger Morgan and Jon M. Peha, eds. Washington, DC: RFF Press, 2003, 157-163.
- “The Korean Nuclear Crisis: Preventing the Truly Dangerous Spread of Weapons of Mass Destruction.” *Harvard Magazine*, September – October 2003, 38-41.
- “An American Security Policy: Challenge, Opportunity, Commitment.” With William J. Perry (chair), Madeleine K. Albright, Samuel R. Berger, Louis Caldera, Gen. Wesley K. Clark, Michele A. Flournoy, Alfonso E. Lenhardt, John D. Podesta, Gen. John M. Shalikashvili, and Elizabeth Sherwood-Randall (members). National Security Advisory Group, July 2003.
- “A Prescription for Peace.” Review of *No More Killing Fields: Preventing Deadly Conflict* by David A. Hamburg. *Science*, 30 May 2003, 1374.
- “Alternatives to Letting North Korea Go Nuclear.” Testimony before the Committee on Foreign Relations, U.S. Senate. Hearing report is forthcoming. 6 March 2003.

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PUBLICATIONS

ARTICLES (continued)

“The Loose Nukes Crisis in North Korea.” Memorandum to the Senate Democratic Leadership from the National Security Advisory Group. With William J. Perry (chair), Madeleine K. Albright, Samuel R. Berger, Louis Caldera, Wesley Clark, Michele Flournoy, Alfonso E. Lenhardt, John D. Podesta, John Shalikashvili, and Elizabeth Sherwood-Randall (members), 5 March 2003.

“A Scary Thought: Loose Nukes in North Korea.” With William J. Perry and John M. Shalikashvili. *The Wall Street Journal*, 6 February 2003, A-18.

“Three Crises with North Korea.” Testimony before the Committee on Foreign Relations, U.S. Senate. Hearing report is forthcoming. 4 February 2003.

“The Crisis Last Time.” With William J. Perry. *The New York Times*, 19 January 2003, section 4, 13.

Making the Nation Safer: The Role of Science and Technology in Countering Terrorism. With Lewis M. Branscomb, Richard D. Klausner, et al. Washington, DC: The National Academies Press, 2002.

“Nuclear Over North Korea: Back to the Brink.” *The Washington Post*, 20 October 2002, B-1 & B-5.

Protecting America's Freedom in the Information Age. With Zoe Baird, James L. Barkdale, Philip Zelikow et al. (The Markle Foundation Task Force on National Security in the Information Age). Markle Foundation, October 2002.

“Arms Control and Nuclear Terrorism: A Global Coalition Against Catastrophic Terrorism.” Testimony on the Moscow Treaty on Strategic Offensive Reductions (SORT) before the Armed Services Committee, U.S. Senate. Hearing report is forthcoming. 1 August 2002.

“Roles for the White House and the New Department.” Testimony on the Relationship between a Department of Homeland Security and the Intelligence Community before the Governmental Affairs Committee, U.S. Senate, 26 June 2002.

“Throw the Net Worldwide.” *The Washington Post*, 12 June 2002, A-31. “Counterterror’s Management Style.” *The New York Times*, 8 June 2002, A-27.

Trip Report: Nunn-Lugar Sites in Russia. A memo to colleagues of the Preventive Defense Project. 3 June 2002.

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PUBLICATIONS

ARTICLES (continued)

- “A New Era, A New Threat.” With Richard Lugar. *Financial Times*, 23 May 2002, 15.
“Ashton B. Carter on Homeland Security (ref: The Architecture of Government in the Face of Terrorism).” Testimony on Homeland Security before the Appropriations Committee, U.S. Senate. 10 April 2002.
- “Understanding Terrorism: A Harvard Magazine Roundtable.” With Eva Bellin, Philip B. Heymann, David Little, Louise M. Richardson and Jessica E. Stern. *Harvard Magazine* (January-February 2002), 36-49.
- “The Architecture of Government in the Face of Terrorism.” *International Security* 26, no. 3, (Winter 2001/02), 5-23.
- “How Ridge can secure the homeland.” *The Boston Globe*, 4 October 2001.
- “National Security Strategy.” In *American Military Strategy: Memos to a President*, Philip D. Zelikow, editor. New York, NY: W.W. Norton & Company, 2001, 33-48.
- “National Innovation to Combat Catastrophic Terrorism.” In *FirePower in the Lab: Automation in the Fight Against Infectious Diseases and Bioterrorism*, Scott P. Layne, Tony J. Beugelsdijk, and C. Kumar N. Patel, eds. Washington, DC: Joseph Henry Press, 2001, 187-191.
- “Beyond the Counterproliferation Initiative.” With L. Celeste Johnson. In *Twenty-First Century Weapons Proliferation: Are We Ready?*, Henry Sokolski and James M. Ludes, eds. Portland, OR: Frank Cass Publishers, 2001.
- “Keeping America's Military Edge.” *Foreign Affairs* 80, no. 1 (January-February 2001), 90-105.
- “Countering Proliferation.” Testimony to the Committee on Foreign Relations, United States Senate, 106th Congress, 2nd Session. Hearing Report is forthcoming. 30 March 2000.
- “The Perils of Complacency: Adapting U.S. Defense to Future Needs.” Testimony to the Senate Armed Services Committee, Subcommittee on Emerging Threats and Capabilities. Hearing Report is forthcoming. 21 March 2000.
- “Adapting US Defence to Future Needs.” *Survival* 41, no. 4 (Winter 1999-2000), 101-123.
- “Beyond the Counterproliferation Initiative to a ‘Revolution in Counterproliferation Affairs.’” With L. Celeste Johnson. *National Security Studies Quarterly* 5, no. 3 (Summer 1999), 88-90.

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PUBLICATIONS

ARTICLES (continued)

“Defining NATO’s Purpose.” With William J. Perry, and Hilary D. Driscoll. In *NATO at Fifty: Perspectives on the Future of the Atlantic Alliance*, Susan Eisenhower, ed. Washington, DC: The Center for Political and Strategic Studies, 1999.

“Catastrophic Terrorism: Tackling the New Danger.” With John M. Deutch and Philip Zelikow. *Foreign Affairs* 77, no. 6 (November-December 1998), 80-94.

Catastrophic Terrorism: Elements of a National Policy. With John M. Deutch and Philip Zelikow. Preventive Defense Project publications, vol. 1, no. 6, Center for International Security and Cooperation (CISAC), Stanford University, October 1998.

“Grand Terrorism: A New Threat to National Security.” Peter L. Hays et al., eds. *Countering the Proliferation and Use of Weapons of Mass Destruction*. New York: McGraw-Hill, 1998.

Fulfilling the Promise: Building an Enduring Security Relationship Between Ukraine and NATO. With Steven E. Miller and Elizabeth Sherwood-Randall. Cambridge, MA and Stanford, CA: Preventive Defense Project publications 1, no. 4 (1998).

“Move Closer to China, Not Far, for Security.” With John M. Deutch and William J. Perry. *USA Today*, 11 June 1998.

The Content of U.S. Engagement with China. With William J. Perry. Cambridge, MA and Stanford, CA: Preventive Defense Project publications 1, no. 2 (July 1998).

NATO After Madrid: Looking to the Future. With Coit D. Blacker, Warren Christopher, David A. Hamburg, and William J. Perry. Cambridge, MA and Stanford, CA: Preventive Defense Project publications 1, no. 1 (June 1998).

“No Nukes? Not Yet.” With John M. Deutch, *Wall St. Journal*, 4 March 1997.

“The Imperatives for Cooperation.” With Janne E. Nolan, John D. Steinbruner, Kenneth Flamm, Steven E. Miller, David Mussington, and William J. Perry. In *Global Engagement: Cooperation and Security in the Twenty-first Century*, Janne E. Nolan, ed. Washington, DC: The Brookings Institution, 1994.

“Cooperative Security and the Former Soviet Union: Near-Term Challenges.” With Steven E. Miller. In *Global Engagement: Cooperation and Security in the Twenty-first Century*, Janne E. Nolan, ed. Washington, DC: The Brookings Institution, 1994.

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PUBLICATIONS

ARTICLES (continued)

- “Export Control Reform in High Technology.” Statement to the House Committee on Science, Space, and Technology, Field Hearing, no. 57 (13 August 1993), 160-170. Washington: USGPO, 1993.
- “The Role of Intelligence in Managing Proliferation.” With Robert D. Blackwill. In *New Nuclear Nations: Consequences for U.S. Policy*, Robert D. Blackwill and Albert Carnesale, eds. New York: Council on Foreign Relations, 1993.
- “Reducing the Nuclear Dangers from the Former Soviet Union.” *Arms Control Today* 22, no. 1 (January-February 1992).
- “Actions to Reduce the Nuclear Danger in the Former Soviet Union.” Testimony to the House Armed Services Committee, Defense Policy Panel. Hearing Report is forthcoming. December 1991.
- “Technical Demarcations for ASAT and BMD Systems.” With Donald L. Hafner and Thomas H. Johnson. In *Peaceful and Non-Peaceful Uses of Space: Problems of Definition for the Prevention of an Arms Race*, Bhupendra Jasani, ed. New York: Taylor & Francis, 1991. “Emerging Themes in Nuclear Arms Control.” *Daedalus* 120, no. 1 (Winter 1991).
- “New Scenarios for American Defense.” Defense Science Board, report of the Scenarios and Intelligence Task Force, September 1990.
- New Thinking and American Defense Technology*. With William J. Perry. Report of the Carnegie Commission on Science, Technology, and Government. August 1990.
- “Command and Control of Nuclear Forces.” In *A Primer for the Nuclear Age*, Graham T. Allison et al., eds. Lanham, MD: University Press of America, CSIA Occasional Paper, no.6 (1990).
- “Testing Weapons in Space.” *Scientific American*, July 1989.
- “The Relationship Between the Defense and Commercial Technology Bases.” Testimony at Hearings on National Defense Authorization Act for FY90 (HR2461), H.A.S.C. Hearings Report, Serial No. 101-10, February 1989.
- “Underlying Military Objectives” and “Limitations and Allowances for Space-Based Weapons.” In *Defending Deterrence: Managing the ABM Treaty Regime into the 21st Century*, *An American Academy of Arts and Sciences Study*, Antonia Chayes and Paul Doty, eds. Pergamon-Brassey, 1989.

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PUBLICATIONS

ARTICLES (continued)

- “Telecommunications Policy and National Security.” In *Changing the Rules: Technological Change, International Competition, and Regulation in Communications*, Robert Crandall and Kenneth Flamm, eds. Washington, DC: The Brookings Institution, 1989.
- “Permitted and Prohibited Space Testing Under the ABM Treaty.” In *Technologies for Security and Arms Control: Threats and Promises*, ed. Eric H. Arnett. American Association for the Advancement of Science, 1989.
- “Analyzing the Dual Use Technologies Question.” Harvard University, Science, Technology, and Public Policy Program Discussion Paper 89, no. 5 (1989).
- “A New Era in Science Advising.” *Science and Technology Advice to the President, Congress, and Judiciary*, William T. Golden, ed. Pergamon, 1988.
- “Nuclear Command and Control: The Next Thirty Years of Technological Change.” With John S. Quilty and Charles A. Zraket. In *The Future of Nuclear Weapons: The Next Thirty Years*. Los Alamos National Laboratory, 1988.
- “The Structure of Possible U.S.-Soviet Agreements Regarding Missile Defense.” In *On the Defensive?: The Future of SDI*, Joseph S. Nye, Jr. and James A. Schear, eds. Lanham, MD: University Press of America, 1988.
- “Permitted and Prohibited Space Testing Under the ABM Treaty.” Testimony before the Special Panel on the Strategic Defense Initiative, *Hearings Before the Strategic Defense Initiative Panel of the Committee on Armed Services, U.S. House of Representatives* (100th Congress, 2nd Session), 29 September 1988.
- Crisis Stability and Nuclear War* (with others). American Academy of Arts and Sciences and the Cornell University Peace Studies Program, January 1987.
- “Current and Future Military Uses of Space.” In *Seeking Stability in Space: Anti-Satellite Weapons and the Evolving Space Regime*, Joseph S. Nye, Jr. and James A. Schear, eds. Lanham, MD: University Press of America, 1987.
- “Interpreting the ABM Treaty: Agreed Limitations on Military Activities in Space.” *Proceedings of the Thirty-Seventh Pugwash Conference on Science and World Affairs*, Gmunden am Traunsee Austria, 1-6 September 1987.
- “Military Uses of Space.” In *The High Technologies and Reducing the Risk of War*, H. Guyford Stever and Heinz R. Pagels, eds. *Annals of the New York Academy of Sciences* 489, (1986).

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PUBLICATIONS

ARTICLES (continued)

“The Relationship of ASAT and BMD Systems.” *Daedalus* (Spring 1985).

“The Strategic Defense Initiative.” Hearings before the Committee on Armed Services, United States Senate (99th Congress, 1st session). 18 March 1985, *Department of Defense Authorization for Appropriations for Fiscal Year 1986*, Part 7 (Strategic and Theater Nuclear Forces), 4021-4036.

“Command and Control of Nuclear War.” *Scientific American* (January 1985).

“Satellites and Anti-Satellites: The Limits of the Possible.” *International Security* 10, no. 4, (Spring 1984).

“CP Violation in B-Meson Decays.” With A.I. Sanda, *Physical Review D* 23, no. 7 (April 1981): 1567- 1579.

“CP Nonconservation in Cascade Decays of B Mesons.” With A.I. Sanda. *Physical Review Letters* 45, no. 12 (September 1980): 952-954.

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