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Annotated Bibliography of Ethical Issues in Physics: National Security

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SEC
Bulletin of the Atomic Scientists
67.6(November 2011) pp. 9-18
The assault on Los Alamos National Laboratory: A drama in three acts
The author argues that the low morale at Los Alamos National Lab is largely
due to management issues.

SEC
Bulletin of the Atomic Scientists
67.6(November 2011) pp. 34-43
Coming not so soon to a theater near you: Laser weapons for missile defense
The airborne laser antimissile system is used to illustrate the need for more
transparency in weapons development programs.

SEC, ADV
APS Forum on Physics and Society Newsletter
Volume 40, Number 4 October 2011
Judging Edward Teller: A closer look at one of the most influential scientists
of the Twentieth Century
Istvan Hargittai (reviewed by Leonard R. Solon
Book Review

SEC
Physics Today – September 2011
Volume 64, Issue 9, p. 35
The tide predictions for D-Day
Bruce Parker
The article sketches the full history of tide prediction before focusing on its
applications to the Normandy landing.
The Physics of the Manhattan Project
B. Cameron Reed (reviewed by Bernard L. Cohen)

Adventures in scientific nuclear diplomacy
Siegfried S. Hecker
The author recounts his experiences working on nuclear security issues involving Russia, China, North Korea, and South Africa.

South Korea in focus: The politics of spent fuel storage and disposal
Jungmin Kang
The spent fuel storage facilities in South Korea are rapidly filling up, and this poses a significant problem in a country that is increasing its reliance on nuclear energy.

Inertial confinement fusion energy R&D and nuclear proliferation: The need for direct and transparent review
Robert J. Goldston and Alexander Glaser
The authors discuss overlaps in technology associated with nuclear weapons and that associated with inertial confinement fusion research.
Where is North Korea’s Nuclear Program Heading?
Siegfried S. Hecker
The author describes his visit to North Korea’s Yongbyon Nuclear Complex.

Olli Heinonen: Reporting from the front lines of nuclear proliferation
Interview
The interviewee discusses ways in which the Nuclear Non-Proliferation Treaty should be modified to account for the present global situation.

Judging Edward Teller: A Closer Look at One of the Most Influential Scientists of the Twentieth Century
Istvan Hargittai; Stephen B. Libby, Reviewer
Book Review

An underground lab is being constructed, at which research into nuclear waste storage would be performed.

Nuclear Express: A Political History of the Bomb and its Proliferation
Thomas C. Reed and Danny B. Stillman (reviewed by Peter Lerner)
Book Review
Airport checkpoint technologies take off
Jeremy N. A. Matthews
A brief discussion of scanning technologies.

Working toward a world without nuclear weapons
Sidney D. Drell
The author outlines six concrete steps that need to be taken in the quest to eliminate nuclear weapons. Included is a discussion of means of verification and the role of international cooperation.

NRC Should Perform Non-Proliferation Assessment of Laser Enrichment Technology
Francis Slakey & Linda Cohen
The authors discuss what is known and not known about the uranium enrichment technology known as SILEX.
Reassessing the nuclear renaissance
Paul Nelson
The author looks at nuclear power programs from an international perspective, discussing where nuclear power programs are mostly likely to develop.

Creating the ultimate nuclear reactor
William Sailor
The author describes three different reactor designs that hold promise for mitigating key concerns about nuclear power plants, including the problem of nuclear waste.
SEC
Bulletin of the Atomic Scientists
66.4 (July 2010) pp. 42-57
U.S. nuclear laboratories in a nuclear-zero world
Judith Reppy
The author discusses the history of U.S. nuclear weapons labs, their present structure, their role in the transition to a nuclear-zero world, and their role after the elimination of most nuclear weapons.

SEC
Physics Today—June 2010
Volume 63, Issue 6, pp. 41-46
James Franck: Science and conscience
Frank von Hippel
A brief biography of Franck discusses his role in military research in both WWI and WWII.

ENE, SEC
Bulletin of the Atomic Scientists
66.3 (May 2010) pp. 50-56
It's Time to Give Up on Breeder Reactors
Thomas B. Cochran, Harold A. Feiveson, Zia Mian, M. V. Ramana, Mycle Schneider, and Frank N. von Hippel
An overview of technological, economic, and security issues related to breeder reactors.

SEC
APS Forum on Physics and Society Newsletter
Volume 39, Number 2 April 2010
Beyond Uncertainty: Heisenberg, Quantum Physics and the Bomb
David C. Cassidy (reviewed by Alvin W. Saperstein)
Book Review

SEC/ENE
APS Forum on Physics and Society Newsletter
Volume 39, Number 1 January 2010
Energy, Environment, and Climate
Richard Wolfson (reviewed by Art Hobson)
Book Review
Steven Biegalski, The University of Texas at Austin
Transcribed from video by Drew Masada and Sarah Williams, The University of Texas at Austin
A discussion of the technology behind monitoring for nuclear explosions.

Nuclear Non-Proliferation: The Future Depends On Us
Pierre Goldschmidt
The author argues that we need to be proactive in dealing with proliferation threats associated with increased worldwide reliance on nuclear energy.

Defusing Armageddon: Inside NEST, America's Secret Nuclear Bomb Squad
Jeffrey T. Richelson and Dean Wilkening, Reviewer

Initiatives to Enhance Nuclear Stability and Non-Proliferation in the 21st Century
Gerald E. Marsh and George S. Stanford
The author identifies initiatives that should be pursued, including ratifying the Comprehensive Test Ban Treaty and building a fast-breeder reactor.
A brief biography of Joseph Rotblat, including his involvement in the Manhattan Project and in Pugwash.
The Future of US Nuclear Weapons
Richard L. Garwin
Modified from a draft of Richard Garwin’s testimony to the Congressional Commission on the Strategic Posture of the United States focusing mostly on stockpile stewardship but with some discussion of missile defense.

Hiroshima: The World’s Bomb
By Andrew J. Rotter
Reviewed by John L. Roeder
Book Review

3 reasons why the U.S. Senate should ratify the test ban treaty
Robert Nelson
The author briefly reviews the history of the treaty and argues that it will enhance U.S. security, that it is sufficiently verifiable, and that the U.S. stockpile can be maintained without the types of tests that the treaty bans.
Panofsky agonistes: The 1950 loyalty oath at Berkeley
Personal correspondence gives insight into Panofsky’s reaction when confronted with the University of California loyalty oath shortly after World War II.

Berkeley loyalty oath tested politics, fear—not loyalty
Kenneth W. Ford, Howard D. Greyber, Robert P. Crease, and J. D. Jackson

Environmental consequences of nuclear war
Owen B. Toon, Alan Robock, and Richard P. Turco
Modern climate models have been used to revisit the nuclear winter scenarios put forth in the 1980s. Current models still suggest that a war involving a small fraction of existing nuclear weapons could have a devastating impact on the global climate.
Panofsky on Physics, Politics, and Peace: Pief Remembers
Wolfgang K. H. Panofsky and George Trilling, Reviewer

The gas centrifuge and nuclear weapons proliferation
Houston G. Wood, Alexander Glaser, and R. Scott Kemp
The history and physics of the gas centrifuge is discussed, as is its dual use for producing nuclear fuel and nuclear weapon material.

The Chinese nuclear tests, 1964–1996
Thomas C. Reed
An interesting history of nuclear weapons development in China that was revealed, in part, by the Chinese through invitations to visit some of their facilities.

Disrupting Science: Social Movements, American Scientists, and the Politics of the Military, 1945-1975
By Kelly Moore, Reviewed By Joe Levinger
Book Review
The Strategic Offense Initiative? The Soviets and Star Wars
Peter J. Westwick
Not only does this article point out that technological initiatives can have consequences that are not overtly intended, but it also details interplay between scientists and government in the Soviet Union that are not all that different from that interplay in the U. S.

Remembering Reagan and SDI
Harrison H. Schmitt and Peter Westwick

Inside the atomic patent office
Alex Wellerstein
A discussion of how early nuclear technology appeared in 1940s patent applications and how these applications were handled. Makes reference to a patent application filed by Fermi and Szilard.

Detectors could miss bomb-grade uranium at ports, group warns
David Kramer
The NRDC ran a test with depleted uranium, found it escaped detection, then compared the result to shielded, highly-enriched uranium.
The Atomic Bazaar: The Rise of the Nuclear Poor and Deception: Pakistan, the United States, and the Secret Trade in Nuclear Weapons
William Langewiesche, Adrian Levy, Catherine Scott-Clark, and Trevor Findlay, Reviewer
Book Review

Nuclear Weapons: What You Need to Know
Jeremy Bernstein and David Hafemeister, Reviewer
Book Review

What Are Nuclear Weapons For?
Ivan Oelrich
The author argues that the question posed in the title is actually not the correct one to ask. Rather we should be asking, what are the nation’s and the world’s security needs?
While this paper is entirely policy oriented, it gives a good summary of where things stand with the Comprehensive Test Ban Treaty. The U. S. has not ratified the treaty, but as a signatory to it, the terms are adhered to in this country.

Five Days in August: How World War II Became a Nuclear War, by Michael D. Gordin
Reviewed by Cameron Reed
Book Review

The author discusses how nations acquire the expertise needed to join the nuclear club.

Constraining potential bomb builders
Ahmad Shariati and Alisa L. Carrigan
Peace talk: My life negotiating science and policy
W. K. H. Panofsky
This excerpt from the late particle physicist’s autobiography discusses his role as a policy advisor, particularly in the area of national security issues.

What Are Nuclear Weapons For?
Michael May
How the U. S. nuclear weapons stockpile should be managed is determined in part by the U. S. policy on deterrence and first use. The author argues that the weapons should remain only as a deterrent of last resort.

What are Nuclear Weapons For?
John S. Foster, Jr. and Keith B. Payne
The authors describe the roles of deterrence, assurance, dissuasion, and defeat in analyzing U. S. nuclear stockpile needs.

Nuclear Fuel Banks: A View From the South
Fernando de Souza-Barros
Establishing a centralized program for producing nuclear fuel may be the key to growth in the global nuclear power industry without proliferation of nuclear weapons.
Physics of Societal Issues: Calculations on National Security, Environment, and Energy, by David Hafemeister
Reviewed by Cameron Reed
Book Review

The Star Wars Enigma: Behind the Scenes of the Cold War Race for Missile Defense
Nigel Hey and David E. Mosher, Reviewer
Book Review

Nuclear Shadowboxing Vol. 2: Legacies and Challenges, by Alexander DeVolpi, Vladimir E. Minkov, Vadim E. Simonenko and George S. Stanford
Reviewed by Peter B. Lerner
Book Review

Authors' response to book review by Peter Lerner [P&S: July 2007], Alexander DeVolpi, Vladimir E. Minkov, George S. Stanford

Lerner responds, Peter Lerner
Bomb Scare: The History and Future of Nuclear Weapons, by Joseph Cirincione
Reviewed by Cameron Reed
Book Review

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SEC
Physics Today -- June 2007
Volume 60, Issue 6, pp. 54-59
The Challenge of Nuclear Weapons
Sidney D. Drell
The author argues that we need to re-examine our view towards nuclear weapons since the future of the Nuclear Non-proliferation Treaty is uncertain.

Physics Today -- March 2008
Volume 61, Issue 3, pp. 9-10
Difficult Deterrence Decisions
Lewis A. Glenn and Sidney Drell
END LINK

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SEC
Physics Today -- June 2007
Volume 60, Issue 6, pp. 47-52
Eisenhower, Scientists, and Sputnik
John S. Rigden
Eisenhower’s action following the Sputnik launch is put into the larger context of physicists providing advice to the government.

Physics Today -- November 2007
Volume 60, Issue 11, pp. 13-14
Science and the White House
Lawrence Cranberg and John S. Rigden
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Defending Against Nuclear Weapons: A 1950s Proposal
Silvan S. Schweber
History of a proposal to use an electron beam to disrupt incoming warheads.

Footnotes on Particle-Beam Weapon History
Wolfgang Panofsky

How Much Warhead Reliability Is Enough for a Comprehensive Nuclear Test Ban Treaty?
David Hafemeister
The author presents the case that the United States can, within the context of the proposed Comprehensive Test Ban Treaty, maintain nuclear weapons reliability sufficient for a nuclear deterrence posture.
Future of US Nuclear Weapons A Tangle of Visions, Science, and Money
Jim Dawson
Reports on the debate over whether a new Reliable Replacement Warhead should be developed to replace warheads on existing nuclear weapons.

Weapons Experts and Congress Slow Warhead Program
Jim Dawson

Planning Needed for US Nuclear Weapons
Ron Bourgoin

This article, while focusing on engineers, raises issues similar to those physicists involved in weapons development face. It might be useful to pair this article with one on the Manhattan Project.
Embracing junk science-- Imaginary Weapons: A Journey Through the Pentagon's Scientific Underworld
Sharon Weinberger
Reviewed by Lawrence M. Krauss
Book Review

Imaginary Weapons: A Journey Through the Pentagon's Scientific Underworld
Sharon Weinberger and John H. Gibbons, Reviewer
Book Review

The Jasons: The Secret History of Science's Postwar Elite
Wolfgang K. H. Panofsky, Reviewer
Book Review

J. Robert Oppenheimer: A Life
Abraham Pais and Laurie M. Brown, Reviewer
Book Review

Nuclear Proliferation Status, 2006
Joseph Cirincione
Methodical and concise overview of policy and areas of risk.
Monitoring Nuclear Weapons and Nuclear-Explosive Materials: An Assessment of Methods and Capabilities
Steve Fetter and Ben Rusek
A non-technical discussion of what needs to be monitored and what options are currently available.

Response to “Monitoring Nuclear Weapons and Nuclear Explosive Materials”
Jim Fuller

Advances in Nuclear Monitoring Technologies
A technical discussion of detector design and improvements needed to more effectively monitor transport of nuclear weapons-related material.

Reviewed by Peter B. Lerner
Book Review
Reappraising Oppenheimer, Centennial Studies and Reflections. Edited by Cathryn Carson and David Hollinger
Reviewed by Lincoln Wolfenstein
Book Review

Scientists, Security, and Lessons from the Cold War
Charles H. Holbrow
The author describes the Summer Study program, begun early in the Cold War, in which a group of scientists from academia would focus their attention on problems of relevance to national security.

The Jasons: The Secret History of Science's Postwar Elite
Ann Finkbeiner
Reviewed by John Prados
Book Review

Physicists Protest US Nuclear Policy
Toni Feder
Physicists at the University of California San Diego launch a petition drive to urge that the Nuclear Non-Proliferation Treaty not be undermined.
Gerald E. Marsh and George S. Stanford

The authors critique an APS study and suggest that the Nonproliferation Treaty should be modified to address proliferation issues that will arise as nuclear power expands globally.

Eugene Rabinowitch

A short reflection on the impact of nuclear weapons on the world and how scientists have sought to influence nuclear policy.

Kai Bird, Martin J. Sherwin, and John S. Rigden, Reviewer

American Prometheus: The Triumph and Tragedy of J. Robert Oppenheimer

This article provides a good overview of a physicist who was active throughout most of his career in providing advice on technical issues. Topics span the early days of the Manhattan project to the 1980s debate on missile defense.

J. Robert Oppenheimer: And the American Century, David Cassidy

Reviewed by Gary Prézeau
SEC
APS Forum on Physics and Society Newsletter
Volume 34, Number 4 October 2005
The Great Fallout-Cancer Story of 1978 and its Aftermath
Daniel W. Miles
A former resident of St. George Nevada questions repeated stories of excessive cancer rates in the town arising from nuclear testing, contrasting conclusions of books drawn from anecdotal evidence and preliminary reports with his investigation of a variety of other sources.

SEC
Bulletin of Atomic Scientists
61.5 (September-October 2005) pp. 50-57
Empty threat
Nick Schwellenbach
Discusses the history of U.S. policy regarding the threat of an Electromagnetic Pulse triggered by a nuclear weapon. Particular attention is paid to whether there is a real threat that terrorists could generate an EMP.

SEC
Physics Today -- September 2005
Volume 58, Issue 9, p. 34
Bomb Scientists Remember Trinity
Paul Guinnessy
Personal reminiscences and links to films of the Trinity test help underscore the momentous issues faced by physicists working on the Manhattan Project.

SEC
Physics Today -- September 2005
Volume 58, Issue 9, pp. 57-58
Blackett: Physics, War, and Politics in the Twentieth Century
Mary Jo Nye and David Edgerton, Reviewer
Book Review
SEC
Bulletin of the Atomic Scientists
61.4 (July-August 2005): pp. 50-63
Would you have dropped the bomb?
Martin E. Marty, Pervez Hoodbhoy, Thomas Donnelly, Robert L. Gallucci,
Gar Alperovitz, Richard B. Frank, Mary Palevsky, Tadatoshi Akiba
This is a roundtable discussion convened 60 years after the Hiroshima bomb.
Several other articles in this same issue address this topic.

SEC
Physics Today -- July 2005
Volume 58, Issue 7, p. 33
Proliferation Is Key Issue in Nuclear Power Resurgence
Jim Dawson
An APS study group looks at the overlap in technologies associated with
peaceful and military use of nuclear energy.

SEC
APS Forum on Physics and Society Newsletter
Volume 34, Number 3 July 2005
Does National Security Require or Contradict Scientific Integrity?
News article on the issue of whether fraud was involved in lab tests related
to missile defense systems. An investigation was halted when key
information was classified.

SEC
APS Forum on Physics and Society Newsletter
Volume 34, Number 3 July 2005
The Four Faces of Nuclear Terrorism by Charles D. Ferguson and William
C. Potter with Amy Sands, Leonard S. Spector and Fred L. Wehling
Reviewed by Forest Rouse
Book Review
The Pentagon's psychic friends network
Review of “The Men Who Stare at Goats:
By Jon Ronson
Reviewed by Michael Shermer
Book Review

The Uranium Bomb, the Calutron, and the Space-Charge Problem
William E. Parkins
The author writes of his involvement in a World War II project that he
describes as “the greatest example of beating swords into plowshares in the
history of humankind.”

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SEC
APS Forum on Physics and Society Newsletter
Volume 34, Number 2 April 2005
Hans Bethe and Societal Issues
Edwin E. Salpeter
A condensed overview of Bethe’s contributions.

APS Forum on Physics and Society Newsletter
Volume 34, Number 3 July 2005
Hans Bethe and Nuclear Power
Richard Wilson

APS Forum on Physics and Society Newsletter
Volume 34, Number 4 October 2005
UCS and Nuclear Power
Kurt Gottfried

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An Episode among the Many Contributions of Hans Bethe to Physics and Society
Wolfgang K.H. Panofsky
Discusses Bethe’s role in bringing scientists into negotiations related to verifiability of nuclear test ban treaties.

Watching the world: with sensors in the ground, water, and air, the global system to detect nuclear tests already exceeds designers' expectations. Its potential now depends on political will. (Special Report).
Trevor Findlay and Andreas Persbo.
Provides a non-technical overview of detection methods.

Founder and father: Eugene Rabinowitch was a true Renaissance man -- a member of the Manhattan Project, an outstanding thinker, scientist, and writer. And 60 years ago he founded the Bulletin.
Alexander Rabinowitch.
This concise biography explores issues related to the Manhattan project and arms control.

Oppenheimer: Portrait of an Enigma
Jeremy Bernstein and Steven Weinberg, Reviewer
Book Review
BEGIN LINK

SEC
APS Forum on Physics and Society Newsletter
Volume 34, Number 1 January 2005
Underestimating the Consequences of Use of Nuclear Weapons: Condemned to Repeat the Past’s Errors?
Lynn Eden
An article drawing on a book by the same author, providing insight into the book in addition to the review and responses below.

Physics Today -- April 2005
Volume 58, Issue 4, pp. 62-63
Whole World on Fire: Organizations, Knowledge, and Nuclear Weapons Devastation
Lynn Eden and Peter Zimmerman, Reviewer
Book Review

Physics Today -- July 2005
Volume 58, Issue 7, pp. 17-20
Book Review on Fire
John G. Lewis, Harold L. Brode, Lynn Eden, and Peter D. Zimmerman

END LINK

SEC
Science and Engineering Ethics
The bane of “inhumane” weapons and overkill: An overview of increasingly lethal arms and the inadequacy of regulatory controls
Jacques G. Richardson
This is a comprehensive look at weapons of mass destruction from World War I forward.
Is There Really a Cowboy Culture of Arrogance at Los Alamos?
Brad Lee Holian
The author argues that perception of safety and security does not match reality.

Los Alamos Workers Debate the Lab's Safety, Morale, and Leadership
Lee McAtee, David A. Herbert, and Brad Lee Holian

Missing Magazines Highlight Staff Distrust of Los Alamos Management
Paul Guinnessy

Safety and Another Magazine Mystery for Los Alamos
J. Charles Smith and Paul Ginsparg

Teaching About Nuclear Weapons, Michael May
Provides a concise overview of key issues. “My concluding observation is that there is no moral or ethical solution or approach to these problems that is not based on an understanding of the details, both human and technical.”
The morality of weapons research

John Forge

The author argues that an engineer doing weapons research needs to pay careful attention to the “do no harm” standard found in engineering ethics codes.

Proportionality, Just War Theory and Weapons Innovation

John Forge

Edward Teller in the Public Arena

Harold Brown and Michael May

Discusses the extensive role Teller played in the nation’s nuclear program, from its inception up through the Strategic Defense Initiative.

National Academy of Sciences Study on the Comprehensive Nuclear Test Ban Treaty

David Hafemeister

Provides an overview of this study, illuminating some of the science in the report.
Purex and Pyro are Not the Same
William H. Hannum, Gerald E. Marsh, and George S. Stanford
The authors point out that not all nuclear fuel reprocessing techniques are the same and hence the risks and benefits of each should be analyzed on a case by case basis.

Another View of the Role of Nuclear Power
Richard L. Garwin

Response to Garwin’s Paper
William H. Hannum, Gerald E. Marsh, George S. Stanford

Richard Garwin again
Richard L. Garwin

Oil, CO2, and the Potential of Nuclear Energy
Robert W. Albrecht and David Bodansky

A Limit to Growth of Nuclear Fission Power?
Arthur Smith

There is No Such Thing as a Proliferation-Proof Nuclear Fuel Cycle.
W.K.H. Panofsky
Response to Arthur Smith's Letter
Robert Albrecht and David Bodansky

Nuclear Power Know-how is Here and Should be Used
William H. Hannum, Gerald E. Marsh, George S. Stanford

Weaponizability of Reactor-Degraded Plutonium
Alex De Volpe

Ivory Bridges - Connecting Science and Society by Gerhard Sonnert,
Reviewed by Gustaf Mårtensson
Book Review

The Logic of Intelligence Failures
Bruce G. Blair
Takes a mathematical approach to the study of intelligence gathering and threat assessments.

Nuclear Dangers in South Asia
Scott D. Sagan
This article raises a number of issues relevant to proliferation.
Peter J. Westwick and Lillian Hoddeson, Reviewer
Book Review

Illicit Trafficking of Weapons-Usable Nuclear Material: Facts and Uncertainties
Lyudmila Zaitseva and Friedrich Steinhausler
Looks at what is known about this subject, arguing that speculations about what might happen should be grounded in what has happened.

Atoms for peace: did the 50-year-old Atoms for Peace program accelerate nuclear weapons proliferation? The jury has been in for some time on this question, and the answer is yes.
Leonard Weiss
 Discusses the origin of the program and looks at links between it and nations joining the nuclear club.
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SEC
Physics Today -- November 2003
Volume 56, Issue 11, pp. 32-37
Nuclear Bunker Busters, Mini-Nukes, and the US Nuclear Stockpile
Robert W. Nelson
An overview of both policy and technical issues related to the possible
development of nuclear weapons designed to destroy underground
targets.

Physics Today -- May 2004
Volume 57, Issue 5, pp. 15-17
Readers Weigh Options for Bunker Busting Weapons
Bryan L. Fearey, Paul C. White, John St. Ledger, John D. Immele,
Jeffrey Marque, and Robert W. Nelson

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SEC
APS Forum on Physics and Society Newsletter
Volume 32, Number 4 October 2003
The Risks of Nuclear Weapons After the Cold War
W.K.H. Panofsky
This brief article discussed five risks of the post Cold War era.

SEC
APS Forum on Physics and Society Newsletter
Volume 32, Number 4 October 2003
An Alternative Nuclear Posture
Michael May
A mostly policy oriented paper critiquing then-current U.S. nuclear policy
and offering an alternative.
Weapons of Mass Destruction in Iraq, North Korea, and Iran: Hype, Hope, or Hysteria?
Philip E. Coyle, III
The author argues that how we define “weapons of mass destruction” has important policy implications.

Ballistic missile Defense Revisited
W.K.H. Panofsky
Provides a concise overview of ballistic missile defense and puts it into the larger context of U. S. defense policy.

Protecting Nuclear Material and Facilities: A Standards-Based Approach
Charles D. Ferguson
Proposes five standards to improve security related to fissile material.

Between MOX and a hard place: it costs more, it's as dangerous to make as a bomb, and burning MOX creates almost as much plutonium as it gets rid of. Other than that, it's a great idea.
Adolfo Reparaz
Does it make sense to convert weapons-grade plutonium into mixed oxide fuel for nuclear power plants?
APS Study Points to Severe Limits on Boost-Phase Missile Defense
Jim Dawson
This article summarizes key conclusions from the report on a two year study that examined various proposed defenses against a variety of missile systems.

Boost-Phase Defense Against Intercontinental Ballistic Missiles
Daniel Kleppner, Frederick K. Lamb, and David E. Mosher
A more detailed article by authors of the study.

Boost-Phase Missile Defense Debate Continues
Dean Wilkening, Richard L. Garwin, Michael Levi, Truman Hunter, Daniel Kleppner, Frederick K. Lamb, and David Mosher

How Ulam set the stage: history has not given enough credit to the main man behind the H-bomb.
Bengt Carlson
A historical look written by a contemporary of Teller and Ulam at Los Alamos.
This brief exchange between an editor and a “retiring” reviewer illustrates an interesting intersection between publication issues and international policy issues.

A news article highlighting the difficulties with international collaborations in science.

For scientists (members of JASON) took the initiative in 1966 to study the possible use of nuclear weapons in Vietnam, in response to casual mention of the possibility.

A report on Los Alamos scientists who devised an improved means for detecting fissile material. Muons would be recorded entering and leaving an object under surveillance, and scattering patterns would be used to determine composition.
SEC
Physics Today -- May 2003
Volume 56, Issue 5, pp. 59-60
Brotherhood of the Bomb: The Tangled Lives and Loyalties of Robert
Oppenheimer, Ernest Lawrence, and Edward Teller
Gregg Herken and Silvan Schweber, Reviewer
Book Review

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SEC
Physics Today -- April 2003
Volume 56, Issue 4, pp. 39-44
Technical and Policy Issues of Counterterrorism—A Primer for
Physicists
Jay Davis and Don Prosnitz
This paper is mostly policy-oriented, but it does include a section on
technical challenges that the physics community can help address.

Physics Today -- September 2003
Volume 56, Issue 9, pp. 16-17
Counterterrorism Priorities and Policy
Ben Zuckerman, Henry E. Heatherly, Martin A. Ebert, Jay Davis, and
Don Prosnitz

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SEC
Physics Today -- April 2003
Volume 56, Issue 4, pp. 32-34
US Research Grants Are Critical to Former Soviet Weapons Scientists, but
Not a Long-Term Solution
Jim Dawson
A news article on the difficulty of ensuring gainful employment of former
Soviet Weapons scientists through joint research programs with U.S.
corporations.
This is a brief commentary, but it does a nice job of illustrating the interest of many of the Manhattan Project Physicists in policies associated with nuclear weapons.

Brotherhood of the Bomb by Gregg Herken
Reviewed by Andrew M.B Sessler
Book Review

A Convenient Spy: Wen Ho Lee and the Politics of Nuclear Espionage by Dan Stober and Ian Hoffman
Reviewed by Peter Lerner
Book Review

Something New Under the Sun: An Environmental History of the 20th Century World, by J.R. McNeill
Reviewed by Tina Kaarsberg
Book Review

No experience necessary: the Nth country experiment showed that three post-docs with no nuclear knowledge could design a working atom bomb.
Dan Stober
Reports on the experiment performed in 1964 by Lawrence Livermore.
Sniffer Plane Secrets and Political Courage
Alan J. Scott
While this article straddles the fence between science/society issues and political analysis, it does serve to illustrate the importance of openness in scientific inquiry by examining a celebrated case of fraud in military research.

Russian Early-Warning System and Danger of Inadvertent Launch
Pavel Podvig
The author provides an account of the development of Russia’s early-warning system, designed to detect incoming missiles as part of a launch-on-warning plan. Though there has been significant deterioration in the early-warning system, the author argues that this does not threaten nuclear stability since the Russian military has never relied much on the system anyway.
The author argues that an expansion of the nuclear power industry significant enough to make a significant dent in the global warming problem will cause an unavoidable increase in the risk of proliferation of nuclear weapons.

This investigation of the Comprehensive Test Ban Treaty by the National Academy of Sciences provides a nice case study on scientific organizations providing technical advice.


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SEC
APS Forum on Physics and Society Newsletter
Volume 31, Number 4 October 2002
Heisenberg, Bohr and the Atom Bomb
Wolfgang Liebert
Copenhagen in Europe: Why not the Same Debate as in the US ? Jean-Jacques Salomon
The Role of German Physicists in WWII Science
Harry Lipkin
Creating a New Past: Heisenberg and Radioactive Decay
Alvin M. Saperstein and Betsy Pugel
A collection of essays revolving around the issue of Heisenberg’s role in the quest for nuclear weapons in Nazi Germany.

APS Forum on Physics and Society Newsletter
Volume 32, Number 2 April 2003
Why Did Heisenberg go to Copenhagen?
Klaus Gottstein

END LINK

SEC
Bulletin of the Atomic Scientists
58.5 (September-October 2002): pp. 48-53
Laser defenses: what if they work?
Geoffrey Forden
Provides an overview of current U. S. missile defense projects, arguing that even when a missile is successfully hit by a defense system, there can still be significant casualties caused by it.
Does the U.S. Need New Nuclear Weapons?  
Frank N. von Hippel
The author suggests that calls for the development of new types of nuclear weapons may go hand in hand with a shift in the perspective that nuclear weapons should only be considered weapons of last resort. He calls on physicists to take an active role in the debate.

Nuclear Earth-Penetrators: a Dangerous Fantasy  
A. DeVolpi

Lowering the bar: the government wants to save money by loosening radiation exposure standards--how low will it go? LeRoy Moore. This discussion of radiation standards looks at competing exposure models: the linear, no-threshold model and the threshold model. It also provides interesting insight into policy formulation in a political and scientific environment.
The Bohr letters: no more uncertainty.
William Sweet
The author argues that the recent release of letters written by Bohr lay to rest the story that Heisenberg tried to broker a deal in 1941 to forestall development of nuclear weapons.

No Nazi bomb program (Letter to the Editor).
Harry J. Lipkin

Two commentaries on dirty bombs. The second is from congressional testimony.
Humanitarian De-mining and the Quest for Better Ways to Locate Buried Non-metallic Objects
Surajit Sen and Ronald L. Woodfin
The author reviews recent advances is technology to locate land mines, noting that more research is needed to develop safe and effective de-mining equipment.

Mine Detection and the Need for New Technology
Patrick Blagden
Not written in response to the above article but covers the same general topic from a different perspective, so it makes a good companion piece.

The Phantom Defense: America's Pursuit of the Star Wars Illusion. Craig Eisendrath, Melvin A. Goodman, and Gerald E. Marsh Praeger
Reviewed by Mike Moore
Book Review

National Labs Focus on Tools against Terrorism in Wake of Airliner and Anthrax Attacks
Jim Dawson
A news article that illustrates the impact that major events can have on the mission of our national labs.
Edward Condon and the Cold War Politics of Loyalty
Jessica Wang
Edward Condon, head of the National Bureau of Standards, did battle with the House Committee on Un-American Activities sparked by his support for arms control and other policies viewed as left leaning.

Edward Condon Remembered
Mark A. Wilson, Leonard X. Finegold, and R. Robert Brattain

A Physicist with the Air Force in World War II
A personal reflection of a physicist who played an active role in developing military instrumentation during World War II.
Alex E. S. Green

Nations Tackle Nuclear Terrorist Threat
Paul Guinnessey
A brief overview of efforts to ensure that fissile material does not wind up in the hands of terrorists.
The Early Days of Pugwash
Joseph Rotblat
A participant in the Pugwash Conferences describes the history of these meetings between scientists on opposite sides of the Iron Curtain during the Cold War.

Plutonium disposal, the third way.
Allison Macfarlane, Frank von Hippel, Jungmin Kang and Robert Nelson
The authors discuss a technique for preparing plutonium for long-term storage.

How to Think About Proliferation and Nuclear Power
William C. Sailor.
The author explores the relationship between a civilian nuclear power program and a nation acquiring nuclear weapons.

“...The world is growing, is using up the available fossil fuels that are contaminating the globe. The only available solution is a major worldwide expansion of nuclear power.”
Leukemia from Military Use of Depleted Uranium

Bernard Cohen.

The author argues that evidence indicates that the use of depleted uranium in weapons does not result in a measurable increase in leukemia.

Depleted Uranium and Leukemia--a rejoinder to Williams

Bernard L. Cohen

Magical THINKING.

Arjun Makhijani, Hisham Zerriffi and Annie Makhijani

This is an early look at transmutation as one way to handle nuclear waste. It could be interesting to compare it with more recent articles.

The integral fast reactor could do it (letter)

George S. Stanford

(see also response following)
In verification we trust. (political issues and questions about verification of nuclear arms under Comprehensive Test Ban Treaty).

Trevor Findlay and Oliver Meier

A report on a scientific study on the issue of verification of the Comprehensive Nuclear Test Ban Treaty. The study concludes that nuclear tests can be detected with high probability using existing technology.
The author provides an overview of the articles in this special issue.

Discusses some of the challenges in battlefield technology related to guidance, detection, and communications. Authors argue that society benefits when battlefield precision is improved.

A fairly detailed introduction to missile defense systems, including discussion of proposed technologies and available countermeasures.

Investigates how deterioration of nuclear weapons can be monitored when direct testing of weapons is prohibited by treaty.

Focuses on satellite-based intelligence gathering.
Physics Today -- July 2001
Volume 54, Issue 7, pp. 11-12
Physics and National Security: Of Missiles, Mines, and Morality
Allen B. Thomson, Lisbeth Gronlund, David C. Wright, George N. Lewis, Lowell J. Burnett, Greg Root, Eric W. McFarland, and Sidney D. Drell
END LINK

SEC
Bulletin of the Atomic Scientists
56.6 (November 2000): pp. 43-50
In the Beginning (nuclear physics, secrecy).
Peter J. Westwick.
Discusses the evolution of classification in nuclear weapons research during the 1940s and 1950s in the U. S.

SEC
Bulletin of the Atomic Scientists
56.6 (November 2000): pp. 51-56
What's left to protect (nuclear secrets on the open).
Howard Morland.
A discussion of the workings of the hydrogen bomb as well as efforts to keep key aspects of the process secret.

BEGIN LINK

SEC
Bulletin of the Atomic Scientists
56.6 (November 2000): pp. 57-62
Secrets that matter (nuclear energy)
David Albright.
The author argues that while secrecy has been useful in slowing the spread of nuclear weapons, there has been an overemphasis on classifying information.

Bulletin of the Atomic Scientists
57.1 (January 2001): p4
A more even-handed Uncle Sam (letter)
Chuck Hansen
END LINK
A Radar History of World War II: Technical and Military Imperatives
Louis Brown and Robert H. March, Reviewer
Book Review

Hitler's Uranium Club: the Secret Recordings at Farm Hall: Jeremy Bernstein
Heisenberg and the Nazi Atomic Bomb Project: Paul Lawrence Rose
Reviewed by Leo Sarto
Book Review

Shootin' for the moon (history of space defense programs)
Jeffrey T. Richelson
This history provides an interesting look at a variety of weapons systems that were contemplated but never developed and deployed.

CTBT, SSP, and U.S. National Security
Sidney Drell
A good overview of issues associated with the Comprehensive Test Ban Treaty.
Their Day in the Sun: Women of the Manhattan Project
Ruth H. Howes, Caroline L. Herzenberg, and Benjamin C. Zulueta,
Reviewer
Book Review

Women Authors, Scientists Critiqued
Frieda A. Stahl and Benjamin C. Zulueta

Their Day in the Sun: Women of the Manhattan Project: Ruth H. Howes and Caroline L. Herzenberg, reviewed by Joan Mason
A Historical Perspective on Copenhagen
David C. Cassidy
A discussion of what is known about why Heisenberg undertook fission research in Germany during World War II.

The German Uranium Project
Hans A. Bethe
The author argues that Heisenberg did not, in fact, pursue the development of nuclear weapons during World War II.

Heisenberg's Message to Bohr: Who Knows?
Klaus Gottstein, Harry J. Lipkin, Donald C. Sachs, and David C. Cassidy

In the Shadow of the Bomb: Bethe, Oppenheimer, and the Moral Responsibility of the Scientist
Silvan S. Schweber and Sidney D. Drell, Reviewer
This article provides a physicist’s take on issues related to nuclear strategy, and it addresses the role physicists have played in arms races.

This article presents an argument that the issues of safety and reliability need to be looked at separately when looking nuclear stockpile maintenance.

Review of a book in which physicists examine issues related to nuclear weapons.

Provides both a brief overview of the Wen Ho Lee case to date as well as reaction of some of the physics community to his case.
SEC
Bulletin of the Atomic Scientists
56.2 (March 2000): pp. 30-35
The Target is Russia. (ballistic missile defense system could jeopardize arms reduction).
Theodore A. Postol
The author argues that deployment of a proposed missile defense system would be viewed by Russia and China as an escalation of the arms race and that the United States may have already violated the ABM treaty with some components of the system.

SEC
Bulletin of the Atomic Scientists
56.2 (March 2000): pp. 36-41
The wrong plan (a better ballistic missile defense strategy)
Richard L. Garwin
The author argues that it is easier to intercept a missile from potential small nuclear states such as North Korea by going after it in the boost phase where counter measures are much more difficult to develop.

SEC
Physics Today -- February 2000
Volume 53, Issue 2 pp. 46-48
Los Alamos Director Talks About Security Problems, Morale, and Recruiting Young Scientists at Lab
Interview with Los Alamos Director John C. Browne

SEC
Bulletin of the Atomic Scientists
56.1 (January 2000): pp. 47-50
We'll be sorry
W. K. H. Panofsky
The author reflects on the failure of the Comprehensive Test Ban Treaty to be ratified by the U. S. Senate, analyzing arguments that were used by those opposing the treaty. He examines the extent of the nuclear stockpile, arguing that there exist means to readily assure that the U. S. maintains a sufficient deterrence without the need of testing.