

AAAS

*Science  
and  
Technology  
Policy  
Yearbook*

2002



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# PREFACE

The past year was filled with extraordinary highlights and lowlights. It began with the inauguration of President George W. Bush following an acrimonious and contested election, and ended with the country fighting a war on terrorism in response to the attacks of September 11. It also saw some astounding scientific and technical breakthroughs including the completion of the sequencing of the human genome and the creation of molecular-level electronic circuitry. Science policy dominated many of 2001's news cycles, with stories concerning stem cell research, global climate change, cloning, "space tourism," and an energy crisis making headlines. In light of such an active year, this edition of the *AAAS Science and Technology Policy Yearbook* covers a lot of ground. As in the past, much of the book's content is drawn from the proceedings of the S&T Policy Colloquium held in Washington, DC, in May 2001. In addition, there are important articles and reprints from other sources.

The book opens with a chapter by former presidential science advisor, and former director of the White House Office of Science and Technology Policy, Neal Lane. Lane, who is university professor at Rice University, delivered the 2001 William D. Carey Award Lecture. His address, entitled "Talking Turkey: Science, the Economy, and the Community," explores the scientific community's responsibility for a special brand of leadership in this country.

For the greater part of the year, the new Administration tackled a number of policies regarding complex S&T issues without the advice of a science advisor. The ten-month vacancy, which caused a great deal of hand wringing in the S&T policy community, finally ended with the confirmation of John H. Marburger, III. The four chapters in Part 2 examine the role of S&T policy in the new Bush White House. The part begins with an article by President Bush's economic advisor, Lawrence B. Lindsey, who outlines the challenges that the Administration faces, and the part S&T will play in providing answers. President Emeritus of the Consortium for Oceanographic Research and Education, Admiral James D. Watkins USN (Ret.) provides Chapter 3, and describes some of the S&T policy failures he has witnessed throughout his career, and offers some advice to the new President. David H. Guston of Rutgers, E.J. Woodhouse of Rensselaer Polytechnic Institute, and Daniel Sarewitz of Columbia University's Center for Science, Policy, and Outcomes give additional S&T policy advice, and advocate for so-

cial outcomes-based science policies. Part 2 concludes with a National Academies' report that addresses the hurdles the Administration will face in selecting qualified appointees.

In 2001, both the White House and control of the Senate changed hands, and caused the final budgets to be late in arriving. It was more than two months into fiscal year (FY) 2002 when President Bush and the 107th Congress reached final agreements on FY 2002 appropriations, including federal support for research and development (R&D). However, due to a recession, tax cuts, relief spending after the terrorist attacks, and the war in Afghanistan, the federal budget is returning to budget deficits after four years of surpluses. Part 3 examines the budget and policy context for S&T in FY 2002 and includes chapters from Representative Sherwood L. Boehlert (R-NY), Mark S. Wrighton of Washington University in St. Louis, Senator Jeff Bingaman (D-NM), as well as a reprint from the National Science Board.

In Part 4, five contributors provide divergent views of the impacts that congressional earmarking has had on federal agencies, academia, established scientific norms, and the peer review system. Howard Gobstein of Michigan State University opens with a brief commentary that explains his concern over the "corrosive" effect that earmarking has had on scientific norms. James D. Savage of the University of Virginia follows with a paper outlining the 20-year history of growth in academic earmarking. In Chapter 11, Boston University chancellor John Silber, a proponent of earmarks, responds to his critics and explains why congressional input is needed to fix a broken system. Former Representative and former co-chair of the Congressional Porkbusters Coalition, David Minge, crosses swords with Silber in Chapter 12 and offers a policymakers view of the debate. The part closes with a colorful piece from Norine E. Noonan, a former assistant administrator at the U.S. Environmental Protection Agency, who artfully illustrates how unrequested budgetary earmarks impacted scientific funding at her agency.

Part 5 tackles the new challenges that defense R&D will face in the coming century including capricious budgets, the novelty of information and asymmetric warfare, and security concerns at national labs. The point of views of industry, academia, and the Defense Department are represented by Anita Jones of the University of Virginia, Gerald J. Iafrate of North Carolina State University, France Anne Cordova of the University of California, Santa Barbara, Peter A. Wilson of RAND, and a former deputy under secretary of defense (S&T) Delores M. Etter.

Part 6 offers four chapters on the current regulatory environment for science and touches on old and new concerns such as conflict of interest, accountability and availability of data, and the protection of human subjects. In the second of his two chapters, David H. Guston writes on the integration of societally-mandated regulations and their impact upon scientific integrity and responsibility. In Chapter 20, Greg Koski of the Office for Human Research Protections, HHS, offers his insights on the protection of human subjects in research. Philip E. Rubin of the National Science Foundation (NSF) outlines NSF's activities concerning human protection in Chapter 21. The part concludes with Howard K. Schachman of the University of California, Berkeley, who discusses the impact of regulation on biomedical research.

Part 7 takes a look at some of the forces driving growth in industrial R&D, the impact that it is having on academic research, and policies that the nation should consider in order to benefit from R&D growth. The five chapters in this part are provided by AAAS/RAND Technology Policy Fellow Parry M. Norling; editor-at-large for *Technology Review*, Robert Buderer; David C. Mowery of the University of California, Berkeley; Duncan T. Moore of the University of Rochester (and former associate director of the Office of Science and Technology Policy), and BEST (Building Engineering and Science Talent) president John Yochelson.

If the technological developments the 20th century are any kind of indicator, then the 21st century is likely to herald a plethora of new breakthroughs and disruptive technologies. The chapters in Part 8 attempt to forecast what changes are in store for us, and the challenges that policymakers will face over issues like personal privacy, national security, and rapidly increasing inequality. Included here are chapters from Mary L. Good of the University of Arkansas, Little Rock, Anthony W. Czarnik, chief scientist at Sensors for Medicine and Science, Inc, Leonard Krishtalka of the University of Kansas, Thomas A. Finholt of the University of Michigan, Daryl E. Chubin of the National Action Council for Minorities in Engineering, Diana Hicks of CHI Research, Inc, and an excerpt from "Road Map for National Security: Imperative for Change," by the U.S. Commission on National Security/21st Century.

The *Yearbook* concludes with three chapters in Part 9. Chapter 35 is by Hubert Markl, president of the Max Planck Society, who discusses science and technology (S&T) in Germany and the European Union. Chapter 36 contains an excerpt from a thought provoking report on

basic research in the service of public interest by Lewis M. Branscomb, Gerald Holton, and Gerhard Sonnert of Harvard University. The volume closes with a second chapter from Representative Sherwood L. Boehlert that deals with the impact of terrorism on academic R&D.

As in past years, this *Yearbook* was produced by the staff of the AAAS Directorate for Science and Policy Programs with guidance and support from the Committee on Science, Engineering, and Public Policy (COSEPP). Related AAAS publications include the annual series of AAAS R&D Reports, published in the spring, which examine funding trends and policy issues associated with R&D in the President's budget, and their fall counterparts, the AAAS Reports on Congressional Action on R&D in the Federal Budget, which present the results of the annual congressional budget process.

Periodic updates on science and technology policy and budget issues are provided on the R&D Budget and Policy Program home page on the directorate's web site and through a newsletter, *Science and Technology in Congress*, published monthly in hardcopy and on the web when Congress is in session. The directorate maintains e-mail lists to inform regular readers when updates have been posted on the web. Information about these and other AAAS science and technology policy publications, programs, meetings, and services can be found on the web at [www.aaas.org/spp](http://www.aaas.org/spp).

A number of the Colloquium papers included in this volume are based on texts provided by the authors; others have been prepared from transcripts of presentations delivered at the meeting. All have been professionally edited and reviewed by their authors prior to publication. The reader should note that the views and opinions expressed in these papers are those of the authors and do not necessarily represent the views of AAAS.

Many people contributed to this *Yearbook* and we are grateful for their contributions. Most important, of course, are the authors whose works are contained here and whose ideas are the *raison d'être* for the book. We appreciate the efforts of editors Celia McEnaney and Rebecca Brune, production manager Kate Ramoth, indexer Michelle Smith, and cover designer Peggy Friedlander. And, once again, we acknowledge with gratitude the contributions of the members of COSEPP. The full text of past editions of this *Yearbook* are available online at [www.aaas.org/spp/yearbook](http://www.aaas.org/spp/yearbook).

Up-to-date information about AAAS's S&T policy activities and publications may also be obtained by contacting the Directorate at AAAS, 1200 New York Avenue, NW, Washington, DC 20005 (telephone: 202 326 6600; fax: 202 289 4950; e-mail: [science\\_policy@aaas.org](mailto:science_policy@aaas.org)). Comments on this book and suggestions for articles to be included in future editions are welcome. Please address them to the editors at the address above (e-mail: [ateich](mailto:ateich), [snelson](mailto:snelson), or [slita@aaas.org](mailto:slita@aaas.org)).

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