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American Institutions and a Civil Society

The American Military
and American Democracy

*Thomas P. Bostick, David M. Kennedy,
and Gregg F. Martin*



The Constitution, the Practice of Democracy, and Unintended Consequences

*Geoffrey R. Stone, David H. Souter,
Heather Gerken, and Mickey Edwards*

ALSO: Induction 2011

Daniel Kahneman Awarded the Talcott Parsons Prize

Commission on the Humanities and Social Sciences

\$1 Million for the Academy's Global Nuclear Future Initiative

Upcoming Events

FEBRUARY

15th

Stated Meeting – Cambridge

*Stage Reading and Panel Discussion:
Remembering H.M.*

Panelists: **Robert Desimone** (McGovern Institute for Brain Research; Massachusetts Institute of Technology); **Suzanne Corkin** (Massachusetts Institute of Technology); **John D. E. Gabrieli** (Massachusetts Institute of Technology); and **Elizabeth Kensinger** (Boston College)

MARCH

3rd

Stated Meeting – Los Angeles

Meeting of Academy Fellows at The Getty Center

Speakers: **James Cuno** (J. Paul Getty Trust) and **Thomas W. Gaehtgens** (Getty Research Institute)

MARCH

14th

Stated Meeting – Cambridge

Amory Symposium and Awarding of the Francis Amory Prize

Advances in Reproductive Biology and Medicine

Speakers: **Patrick C. Walsh** (Johns Hopkins Medical Institutions); **David Conrad Page** (Whitehead Institute; Massachusetts Institute of Technology); and **Patricia K. Donahoe** (Harvard Medical School; Massachusetts General Hospital)

APRIL

12th

Stated Meeting – Cambridge

The United States and North Korea

Speakers: **Stephen Bosworth** (Tufts University) and **Siegfried S. Hecker** (Stanford University)

MAY

16th

Stated Meeting – Cambridge

Spring Concert

Performers: Arron Chamber Ensemble

For updates and additions to the calendar, visit <http://www.amacad.org/event.aspx>.

Notice to Members

The Annual Fund

The Academy's 2011 – 2012 Annual Fund is nearing its closing date of March 31, 2012. With generous gifts from members and friends, Chair of the Board Louis Cabot and Development and Public Relations Committee Chair Alan Dachs hope to surpass \$1.5 million to support the programs of the Academy.

The Annual Fund provides funds for Academy projects and studies, publications and the website, outreach, meetings, and other activities for members. Every gift counts toward reaching our ambitious goal. If you have already made a gift to the Annual Fund, thank you. If not, we urge you to participate by March 31.

For assistance in making a gift to the Academy, please contact the Development Office (email: dev@amacad.org; telephone: 617-576-5057). ■



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A record number of Fellows and Foreign Honorary Members gathered in Cambridge for Induction 2011. The ceremony featured historical readings, musical performances, and presentations by five new Fellows.

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The American Military and American Democracy

Historian David M. Kennedy (Stanford University), Lt. Gen. Thomas P. Bostick (U.S. Army), and Maj. Gen. Gregg F. Martin (National Defense University) suggest how the American public can better understand its military.

The Constitution, the Practice of Democracy, and Unintended Consequences

Associate Justice (retired) of the U.S. Supreme Court David H. Souter, legal scholars Heather Gerken (Yale Law School) and Geoffrey R. Stone (University of Chicago Law School), and former member of Congress Mickey Edwards (Aspen Institute) consider why so much of American rhetoric and practice today skews in the direction of anti-compromise.

55 Two Systems in the Mind

2011 Talcott Parsons Prize Recipient Daniel Kahneman (Princeton University) describes how intuition and reasoning interact in the brain.



Departments

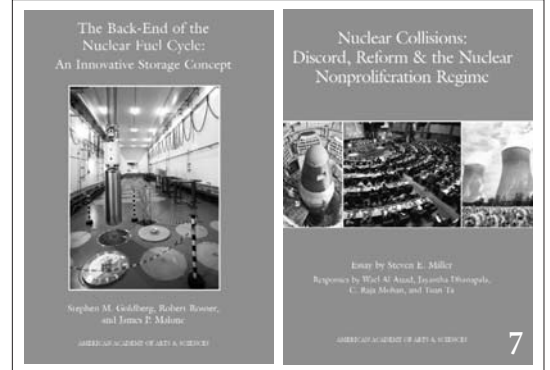
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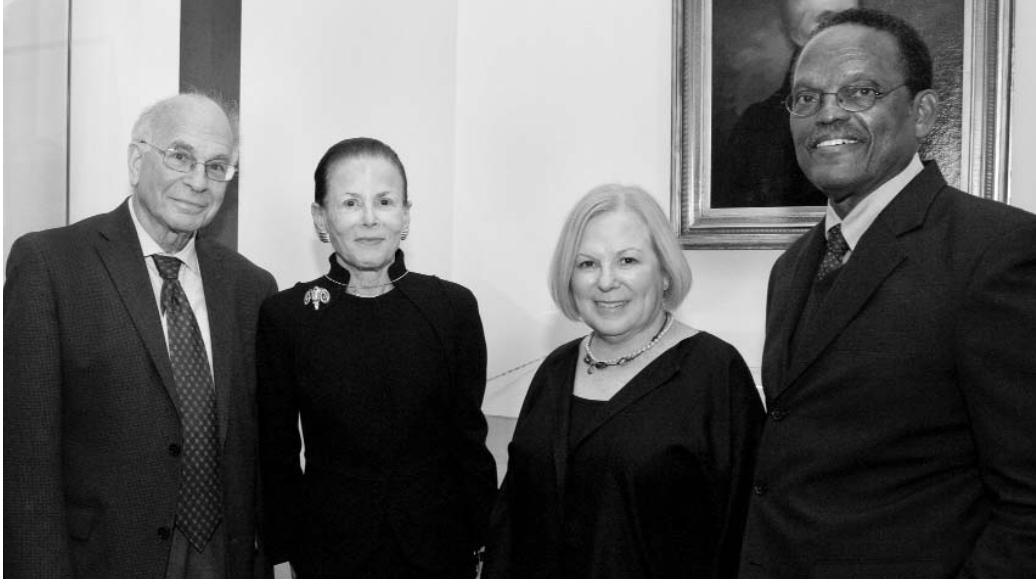
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Clockwise from top: Adam Roberts, Annette Gordon-Reed, David Conrad Page, Frances Hamilton Arnold, William I. Miller; Daniel Kahneman; publication covers: *Nuclear Collisions: Discord, Reform & the Nuclear Nonproliferation Regime* and *The Back-End of the Nuclear Fuel Cycle: An Innovative Storage Concept*; Don M. Randel

Talcott Parsons Prize Awarded to Daniel Kahneman



2011 Talcott Parsons Prize recipient **Daniel Kahneman**, **Harriet Zuckerman**, **Leslie Berlowitz**, and **William Julius Wilson**

On November 9, 2011, the Academy presented the Talcott Parsons Prize to Daniel Kahneman for his outstanding contributions to the social sciences. First awarded in 1974, the Talcott Parsons Prize was established to honor the noted sociologist and former president of the Academy.

With his friend and colleague, the late Amos Tversky, Kahneman conducted pioneering work that laid the foundation for the field of behavioral economics. In the 1970s, they were among the first academics to analyze what sometimes causes people to make wrong choices. Kahneman's work changed how we understand the psychology of markets and individual financial decision-making.

Kahneman is the Eugene Higgins Professor of Psychology, Emeritus; Professor of Psychology and Public Affairs, Emeritus; and Senior Scholar in the Woodrow Wilson School of Public and International Affairs at Princeton University. In 2002, he was awarded the Nobel Prize in Economic Sciences. He was elected a Fellow of the American Academy in 1993.

At the award ceremony, Kahneman delivered a talk on "Two Systems in the Mind" (see page 55 in this issue for his presentation). Academy President Leslie Berlowitz presided over the ceremony; Harriet Zuckerman, Chair of the Talcott Parsons Prize Committee, Senior Fellow at The Andrew W. Mellon Foundation, and Professor of Sociology Emerita at Columbia University, introduced Kahneman; and William Julius Wilson, recipient of the Talcott Parsons Prize in 2003 and the Lewis P. and Linda L. Geysler University Professor at Harvard University, presented the award.

Members of the 2011 Talcott Parsons Prize Committee include Harriet Zuckerman, *Chair* (The Andrew W. Mellon Foundation),

Susan Tufts Fiske (Princeton University), John Mark Hansen (University of Chicago), Tanya Luhrmann (Stanford University), James Poterba (MIT; NBER), Judith Resnik (Yale University), William Julius Wilson (Harvard University), and Leslie Berlowitz (American Academy).

The citation that was presented to Kahneman reads:

You have described the mind as "a machine for jumping to conclusions," and for nearly four decades your pioneering research has shown how the gears and levers of that amazing machine function. By constructing elegant experiments and asking creative questions, your work has revealed answers to some of the most complex mysteries about the human mind – how it processes information, forms judgments, and makes decisions. Your insights and empirical findings have overturned conventional wisdom that for generations guided our understanding of how people perceive and assess risk.

Relying on a highly disciplined approach to probing the automatic system of intuition, and the deliberate system of rational decision-making, you helped define a new area of scholarship – behavioral economics. Your facility to explain clearly abstract principles and describe their practical relevance to everyday life has made your findings accessible to both scholars and the wider public.

Transcending cognitive psychology, behavioral economics, and the science of well-being, your work has enhanced our understanding of the relationship between perception, intuition, emotion, and cognition. ■

Briefings for D.C. Officials on Internet Issues

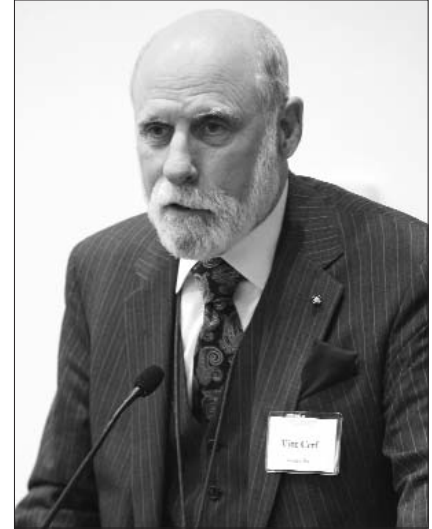
The Academy recently sponsored briefings for executive branch officials and congressional staff on the evolution of the Internet and issues pertaining to trust, access, personal identity, and unruly behavior online. The briefings followed the publication of the Fall 2011 issue of *Dædalus* on “Protecting the Internet as a Public Commons,” guest edited by David D. Clark, Senior Research Scientist at the Massachusetts Institute of Technology. The *Dædalus* volume includes an essay by Vinton G. Cerf, Vice President and Chief Internet Evangelist at Google, as well as essays from legal scholars, sociologists, political scientists, and other computer scientists. The essays examine social and political participation online, the consequences of being disconnected in a digital society, and the roles of government, industry, and private citizens in ensuring the security and utility of the future Internet.

While Washington worries about national security and cyber attacks, individual Internet users are concerned with issues such as stolen identity, loss of privacy, and having their computers corrupted with malware, said David Clark. The character of the Internet will be very much shaped by the steps we take to mitigate these problems. For example, should we modify the Internet so that authorities can identify the person who carries out an action? “Identity is a subtle issue,” Clark noted. “Sometimes you want to know and sometimes you don’t. There have been calls for a uniform, government-centered Internet identification scheme. I would argue this approach would be useful only in certain contexts and if it was applied generally it would be neither effective nor beneficial.”

Vinton Cerf, a co-inventor of the architecture and basic protocols of the Internet, suggested that individual users could protect their own privacy and enhance security by exercising more caution. He recommended starting a “think-before-you-click” or “think-before-you-link” campaign to assist Internet users in avoiding harmful websites: “We get



David D. Clark



Vinton G. Cerf

email that we think came from someone we know, even though it was actually spam that’s generated by something else, and we click on it and we end up on a website that infects our machines and, of course, now we’ve shot ourselves in the foot.” Cerf contributed an essay on “Safety in Cyberspace” to the *Dædalus* volume.

The briefings also featured presentations on “A Contextual Approach to Privacy Online,” by Helen Nissenbaum, Professor of Media, Culture, and Communication and Professor of Computer Science at New York University, and “Doctrine for Cybersecurity,” by Deirdre K. Mulligan, Assistant Professor in the School of Information at the University of California, Berkeley, and Fred B. Schneider, Samuel B. Eckert Professor of Computer Science at Cornell University. Nissenbaum, Mulligan, and Schneider are contributors to the *Dædalus* volume.

Participants in the meeting at the White House Office of Science and Technology Policy included senior privacy and security officials from the National Security Staff, the National Telecommunications and Information Administration, the Federal Trade Commission’s Division of Privacy and Ident-

ity Protection, the Department of Justice, and the Department of State. Approximately seventy legislative and nongovernmental organization staff attended a second session at the House of Representatives. The briefings were organized in coordination with Daniel Weitzner, U.S. Deputy Chief Technology Officer for Internet Policy, and Representative Anna Eshoo (D-California).

A video of the Capitol Hill briefing is available at <http://www.amacad.org/events/internetprivacyandsecurity/>. Copies of *Dædalus* may be purchased from MIT Press (phone: 617-253-2889; email: journals-cs@mit.edu). A Kindle version of the issue is also available at Amazon.com. ■

Commission on the Humanities and Social Sciences—Update

At its second full meeting on December 8 and 9, 2011, in San Francisco, the Academy's Commission on the Humanities and Social Sciences heard reports from its working groups and continued to develop its preliminary recommendations, focusing on both intrinsic and instrumental arguments for the importance of these disciplines to the nation.

The Commission is the Academy's response to a bipartisan call from United States Senators Lamar Alexander (R-Tennessee) and Mark Warner (D-Virginia) and Representatives Tom Petri (R-Wisconsin) and David Price (D-North Carolina) to organize a blue-ribbon group of humanists, policy-makers, educators, business leaders, and funders to examine the nation's system of humanistic, social-scientific, and liberal arts education.

Yang Yu-liang, President of Fudan University in the People's Republic of China, joined Commission members at their recent meeting and described the renewed attention that China is devoting to the humanities and social sciences as critical tools for the promotion of rational thinking, cultural tolerance, and social cooperation.



Kwame Anthony Appiah, Laurance S. Rockefeller University Professor of Philosophy at Princeton University, in conversation with **John Sexton**, President of New York University

Another guest at the meeting, Andrew W. Mellon Foundation President Don Michael Randel spoke about the importance of the humanities and social sciences for Americans at every economic and social level. "We have many people to reach, many with whom we can share the pleasure of being human," Randel said.

Members of the Commission have spent part of their deliberations reaching consensus on ways to communicate to policy leaders and the general public the role that the humanities and social sciences play in American life. The humanities, noted Cochair Richard H. Brodhead, President of Duke University, are "a name for the process by which all the things humans have made, said, thought, and done come back to spark the understandings of other humans across time."

Commission Cochair John W. Rowe, Chairman and Chief Executive Officer of Exelon Corporation, reminded the group that convincing people that the humanities and social sciences are important is only half of the battle. "Our challenge," he said, "is to place a priority on these disciplines at a time when resources are constrained for every purpose."

Commission member Kwame Anthony Appiah, Laurance S. Rockefeller University Professor of Philosophy and the University Center for Human Values at Princeton University, emphasized the importance of the humanities and social sciences for success in an increasingly interconnected global culture. "We have to participate in the world, whether as partners of other people or as leaders in certain of the discussions of the world," he said. "To do



Carolyn "Biddy" Martin, President of Amherst College, and **Drew Gilpin Faust**, President of Harvard University

that, we have to have the capacity for understanding other perspectives."

Appiah serves on the Commission subcommittee examining the importance of the humanities and social sciences to American citizenship and the functioning of democracy. Other members on the subcommittee include Amy Gutmann (University of Pennsylvania), Danielle Allen (Institute for Advanced Study), Tom Campbell (Chapman University Law School), Anthony Marx (New York Public Library), and David Souter (Supreme Court of the United States).

A second subcommittee, focusing on issues related to advanced expertise in the disciplines, includes Pauline Yu (American Council of Learned Societies), Robert Hauser (University of Wisconsin-Madison), and Anthony Grafton (Princeton University). At the meeting in San Francisco, Grafton observed that "university teaching is not teaching a set body of knowledge. It's going after a moving object, which keeps changing. If you're going to do it properly, you have to do research to prepare every class you ever give."

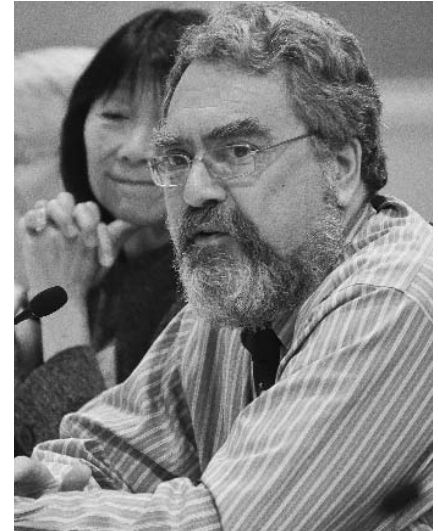
In addition to the meetings of the full Commission and its subcommittees, the Academy has engaged a number of stakeholders in this work, including the leadership of the Association of American Universities, the Association of Public and Land-Grant Universities, the American Council of Learned Societies, the President's Council on the Arts and Humanities, the National Governor's Association, Phi Beta Kappa, the Consortium of Social Science Associations, and the Federation of State Humanities Councils.

"Members of the Commission are participating in a new effort to project a cohesive, positive message about the importance of the humanities and social sciences to our national well-being," noted Academy President Leslie C. Berlowitz. "We have seen significant progress over the last year, as many new voices have been added to the public discussion of these disciplines, and we all look forward to continuing this work in the months ahead."

The Commission will meet again in April in Washington, D.C. ■



Philip Bredeesen, Jr., former Governor of Tennessee



Anthony Grafton, Henry Putnam University Professor of History at Princeton University, and **Pauline Yu**, President of the American Council of Learned Societies

The Andrew W. Mellon Foundation and Carnegie Corporation of New York Support the Commission on the Humanities and Social Sciences



The Academy has received support from two of the country's leading philanthropic organizations to help advance the work of the Commission on the Humanities and Social Sciences.

Grants from the Andrew W. Mellon Foundation and from Carnegie Corporation of New York will promote the Commission's goal of recommending specific steps that government, schools and universities, cultural institutions, businesses, and philanthropic organizations can take to strengthen the humanities and social sciences, which include history, literature, civics, geography, and languages.

The Academy is grateful to the Andrew W. Mellon Foundation and to Carnegie Corporation of New York for helping the Commission move forward with its examination of disciplines critical to the functioning of democracy, to individual fulfillment, and to the nation's ability to compete in a global economy.

New Publications

Beyond Technology: Strengthening Energy Policy through Social Science

U.S. households account for 30 to 40 percent of energy use nationwide, an amount that could be reduced by 20 percent using available, no- to low-cost interventions. To increase public acceptance of alternative energy technologies, policy-makers and technology developers need to pay greater attention to consumer behavior and to how government regulations affect the adoption of clean energy.

A new Academy report, *Beyond Technology: Strengthening Energy Policy through Social Science*, shows how the social sciences can help address energy challenges. It highlights social science tools that could be applied immediately to make energy policy and programs more effective. The report cites, as examples, development of energy efficiency information for home renovation projects and more effective appliance labels. The report also suggests that utilities use social science-based best practices when deploying new technologies, such as smart meters.

“The social sciences are vital to our energy system because they can tell us so much about how individual, household, and community behavior affects the acceptance of innovative technologies,” said Robert W. Fri, Director of the Academy’s Alternative Energy Future project. “Energy savings can only be realized by combining behavioral interventions with useful policies aimed at facilitating their adoption.”

Beyond Technology recommends five strategies for enhancing collaboration between social scientists and policy-makers:

- **Demonstrate the value of social and behavioral research for enhancing the effectiveness of energy policy.** Practical demonstration of how the social sciences can make energy policy more effective will be an important first step in creating a demand for further collaboration.

- **Encourage the use of interdisciplinary social science research within energy programs.** To encourage the application of social science expertise, energy programs should be evaluated to determine how the social sciences could contribute to the improved effectiveness of the programs in the near and long term.

- **Build stronger connections between the energy policy and social science communities.** Bringing policy-makers and social scientists together on substantive issues will build the bridges necessary to make effective use of the social sciences over the long term.

- **Incorporate social science into federal energy policy analysis.** *Beyond Technology* emphasizes the need to incorporate behavioral considerations into energy economic modeling efforts.

- **Engage state and local governments and regulatory communities.** Coordination between regional, state, and local governments will be essential to designing more effective energy policies.


In his foreword to the publication, former Department of Energy Under Secretary for Science Steven E. Koonin affirmed the value of the report and the Academy’s key role in bringing together a variety of constituencies to address critical energy issues. *Beyond Technology* has been cited by the DOE’s Quadrennial Technology Review as evidence of the importance of applying social science expertise to the design of energy technologies and policies.

Beyond Technology is based on ongoing work of the Academy’s Alternative Energy Future project, including a May 2011 workshop held in Washington, D.C. The workshop and report received extensive press coverage in *The Boston Globe*, *USA Today*, and *Science* magazine, and on National Public Radio, among other media outlets.



The Academy is grateful to Robert Fri for his leadership of the Alternative Energy Future project and to the steering group that developed the report’s recommendations: Stephen Ansolabehere (Harvard University), Douglas Arent (National Renewable Energy Laboratory), Ann Carlson (University of California, Los Angeles), Thomas Dietz (Michigan State University), Kelly Sims Gallagher (Tufts University), M. Granger Morgan (Carnegie Mellon University), Maxine Savitz (Honeywell, Inc., ret.), Paul Stern (National Research Council), James Sweeney (Stanford University), and Michael Vandenberg (Vanderbilt Law School).

The Alternative Energy Future project is supported by the DOE and the National Science Foundation, two anonymous foundations, and contributors to the American Academy Intellectual Venture Fund, including The Fremont Group, Kleiner Perkins Caufield & Byers, and Novartis. ■

 *Beyond Technology* is available online at <http://www.amacad.org/pdfs/alternativeEnergy.pdf>. More information about the Alternative Energy Future project may be found on the Academy’s website, www.amacad.org.

GNF Initiative Suggests New Directions for the Nonproliferation Regime and the Nuclear Fuel Cycle

In two forthcoming papers, leaders of the Academy's Global Nuclear Future (GNF) Initiative offer important insights and recommendations for managing the emerging nuclear order.

Nuclear Collisions: Discord, Reform & the Nuclear Nonproliferation Regime, by Steven E. Miller (Harvard University), outlines the main points of contention within the Nuclear Non-Proliferation Treaty (NPT) regime and identifies the issues that have made reform so difficult. "The future of the NPT regime will be heavily shaped by colliding visions," Miller writes. How these deep divergences can be managed, minimized, or overcome is a crucial question for the future.

Miller, codirector of the GNF Initiative, proposes a few measures that may help reduce the distemper of a divided regime, such as focusing on interests rather than rights. He observes, for example, that enrichment "is so costly and so unnecessary (given the existence of a robust nuclear fuel market) that in anything like current market conditions, it makes little sense for any state whose motives are purely peaceful." Miller suggests that using realistic economic calculations in nuclear deliberations could help minimize the politics involved in national decisions to pursue aspects of a nuclear energy program, such as the production of fissile material and nuclear fuel.

The paper includes responses from a group of global experts. Jayantha Dhanapala (Pugwash Conference on Science and World Affairs), Wael Al-Assad (League of Arab States), C. Raja Mohan (*Indian Express*), and Tuan Ta (Office of the Prime Minister of Vietnam) offer commentary and provide international perspectives on how to improve the NPT regime.

In *The Back-End of the Nuclear Fuel Cycle: An Innovative Storage Concept*, Robert Rosner (University of Chicago and senior advisor to the GNF Initiative), Stephen Goldberg (Argonne National Laboratory and research coordinator for the GNF Initiative), and James

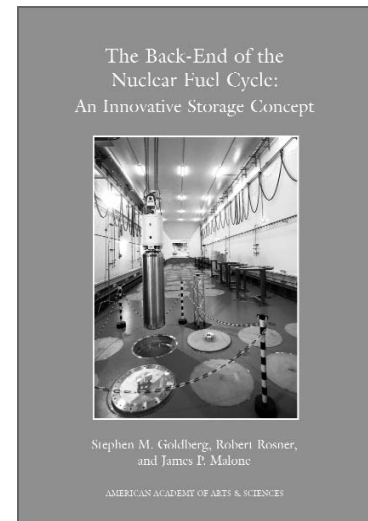
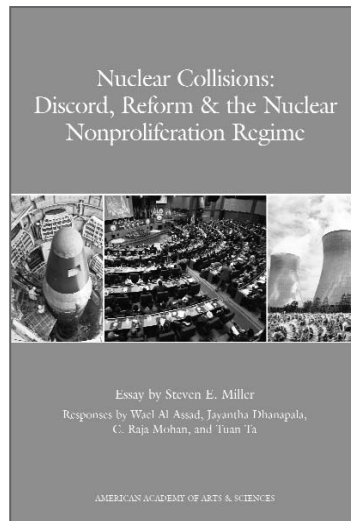
Malone (Lightbridge) advocate for a pragmatic approach to the back-end of the nuclear fuel cycle, one rooted in sound business principles. They argue that when governments and businesses are developing plans for new nuclear energy programs, economic decisions must be considered in light of the established competition in back-end services.


While many proposals for managing the back-end of the fuel cycle exist, this report puts forward a new regional storage concept for used nuclear fuel. This approach is not tied exclusively to new fuel supply and can be utilized for storage of both legacy and future used nuclear fuel inventories. Under the proposed regional storage concept, an independent storage installation would be created and maintained as a business venture; monitoring would be provided by an international governing entity. Economic compensation, among other incentives, could be used to encourage nations to host regional sites for fuel storage and waste disposal.

"There are several reasons to suggest a commercial approach, in the form of an international consortium," the authors state. "[T]he expertise and capital investment of the consortium partners would . . . ensure

that industry best practices are in place. The multinational component would . . . [diminish] political mistrust over proliferation concerns among the consortium's respective states." Furthermore, developing a model partnership between a limited number of countries in the South and East Asia regions – in which all participants have equal rights and protection regardless of the size and style of their governments – could serve as a building block for other such agreements.

An integral part of the GNF Initiative is listening to the goals and objectives of both nuclear aspirants and current nuclear energy countries. Members of the Initiative are working with decision-makers and stakeholders in the Middle East and the South and East Asia regions to improve the regional storage proposal and to further the conversation on ways to strengthen the NPT regime. ■



 *Nuclear Collisions: Discord, Reform & the Nuclear Nonproliferation Regime* and *The Back-End of the Nuclear Fuel Cycle: An Innovative Storage Concept* are available online at <http://www.amacad.org/projects/globalnuclearbooks.aspx>.

\$1 Million of New Funding for the Global Nuclear Future Initiative

Major new funding has been awarded to the Academy to continue the Global Nuclear Future Project. Grants of \$500,000 from Carnegie Corporation of New York, \$280,000 from The John D. and Catherine T. MacArthur Foundation, and \$150,000 from The William and Flora Hewlett Foundation are advancing the work of the Initiative. The project seeks to promote multilateral fuel cycle arrangements for safe civil nuclear energy programs; strengthen the international nonproliferation regime; and reduce the probability that a terrorist group could steal or acquire material from a nuclear facility.

The GNF Initiative brings together decision-makers and stakeholders that historically have not communicated with each other. The Academy has built a global network – government policy-makers and the heads of nongovernmental organizations, nuclear engineers and industry leaders, social scientists and nonproliferation experts – and is working closely with colleagues at the International Atomic Energy Agency, the United Nations, the League of Arab States, the Association of Southeast Asian Nations, and various state energy agencies.

Recent project activities include policy-oriented work on the physical protection of nuclear facilities and materials; proposals for managing the back-end of the fuel cycle; suggestions for strengthening the international regulatory and nonproliferation regime; and an assessment of the current state and future prospects of the emerging international nuclear order (with a particular focus on the Middle East and Southeast Asia). To bring the project's findings directly to policy-makers, the Academy continues to organize high-level meetings in both the

United States and abroad. The Academy convened key diplomats and nuclear experts during the Nuclear Non-Proliferation Treaty (NPT) Review Conference in May 2010 at the United Nations. A similar meeting is planned for May 2012, during the NPT Preparatory Committee meetings in Vienna, Austria.

The GNF Initiative, which began in 2008, carries on the Academy's long-standing interest in nuclear arms control and energy-security issues. It has previously received major support from The William and Flora Hewlett Foundation, Carnegie Corporation of New York, and the Alfred P. Sloan Foundation. The project has produced several volumes that examine various aspects of nuclear energy – from a technical primer on nuclear reactors to proposals for strengthening the nonproliferation regime (a list of publications appears below). All of these publications are available on the Academy's website at <http://www.amacad.org/projects/globalnuclearbooks.aspx>.

The GNF Initiative is directed by Steven E. Miller (Harvard University) and Scott D. Sagan (Stanford University), with senior advisor Robert Rosner (University of Chicago) and research coordinator Stephen M. Goldberg (Argonne National Laboratory). Advisors to the project include Wael Al-Assad (League of Arab States), Noramly bin Muslim (National University of Malaysia), Albert Carnesale (University of California, Los Angeles), Richard A. Meserve (Carnegie Institution for Science), George Perkovich (Carnegie Endowment for International Peace), William Potter (Monterey Institute of International Studies), John W. Rowe (Exelon Corporation), and George P. Shultz (Stanford University). ■

Publications

Nuclear Collisions: Discord, Reform & the Nuclear Nonproliferation Regime, Essay by Steven E. Miller and Responses by Wael Al-Assad, Jayantha Dhanapala, C. Raja Mohan, and Tuan Ta (American Academy of Arts and Sciences, 2012)

The Back-End of the Nuclear Fuel Cycle: An Innovative Storage Concept, Robert Rosner, Stephen M. Goldberg, and James P. Malone (American Academy of Arts and Sciences, 2012)

Game Changers for Nuclear Energy, Kate Marvel and Michael May (American Academy of Arts and Sciences, 2011)

Nuclear Reactors: Generation to Generation, Stephen M. Goldberg and Robert Rosner (American Academy of Arts and Sciences, 2011)

Shared Responsibilities for Nuclear Disarmament: A Global Debate, Essay by Scott D. Sagan and Responses by James M. Acton, Jayantha Dhanapala, Mustafa Kibaroglu, Harald Müller, Yukio Satoh, Mohamed I. Shaker, and Achilles Zaluvar (American Academy of Arts and Sciences, 2010)

Multinational Approaches to the Nuclear Fuel Cycle, Charles McCombie & Thomas Isaacs, Noramly Bin Muslim, Tariq Rauf, Atsuyuki Suzuki, Frank von Hippel, and Ellen Tauscher (American Academy of Arts and Sciences, 2010)

On the Global Nuclear Future, vols. 1 – 2, *Dædalus* (MIT Press, 2009 – 2010)

Induction Ceremony Presentations

On October 1, 2011, the American Academy inducted its 231st class of Fellows and Foreign Honorary Members at a ceremony held in Cambridge, Massachusetts. The ceremony featured historical readings by film producer **Kathleen Kennedy** of Kennedy/Marshall Company; author and literary critic **Denis Donoghue**, University Professor and Henry James Professor of English and American Letters at New York University; and poet and essayist **Rachel Hadas**, Board of Governors Professor of English at Rutgers, The State University of New Jersey. It also included presentations by five new members (their remarks appear below): groundbreaking researcher and leader in biomolecular engineering **Frances Hamilton Arnold** of the California Institute of Technology; **David Conrad Page**, renowned geneticist and Director of the Whitehead Institute at the Massachusetts Institute of Technology; **Sir Adam Roberts**, President of the British Academy and one of the foremost experts on international strategic affairs; **Annette Gordon-Reed**, Harvard University historian and Pulitzer Prize-winning author of *The Hemingses of Monticello: An American Family*; and **William I. Miller**, President of The Wallace Foundation. The ceremony concluded with a memorable performance by singer-songwriter and new member **Paul Simon**.



Frances Hamilton Arnold

Frances Hamilton Arnold is the Dick and Barbara Dickinson Professor of Chemical Engineering, Bioengineering, and Biochemistry at the California Institute of Technology. She was elected a Fellow of the American Academy in 2011.

What is Life?

Like many of you here today, I was born within a few years of the discovery of DNA's double-helical structure, a discovery that marked the beginning of a revolution in our understanding of life and how it has evolved. That scientific revolution, enabled by technology that allowed us to visualize and explain the molecular basis of life itself, has

we all seem to have an intuition (although not necessarily shared) for what is alive and what is not. We also admire at least some of its known examples.

In lieu of a definition of life, scientists and philosophers usually just make lists of its properties: for example, a living system obtains resources and energy from its environ-

The code of life is intricate, elegant, and stunningly beautiful. We do not know how to write like that; the best we can do is copy and paste sections and make small changes, maybe rearrange them a little. But we are learning quickly.

spawned another technological revolution. This biotechnology revolution is moving so quickly that some of us may live to see life synthesized from nonliving material, a new "origin of life" in the twenty-first century.

Recently I was asked to lead a conversation on the topic "What is Life?" for the benefit of some Hollywood producers and screenwriters looking for compelling storylines. (I'm from Los Angeles, after all, and scientists are storytellers, too.) Like art, and pornography, life is not easy to define. But

ment, and it can replicate itself. Most lists also include the ability to adapt, or evolve. These properties have never all been exhibited by a physical system created by man. This may soon change.

We have not yet created life from nonliving matter, but we are getting wonderfully or, perhaps to some, terrifyingly close. In 2010, scientists constructed the first wholly synthetic genome – the entire million-base genetic code of a simple bacterium – and used it to replace the genetic

code of a closely related organism. This semi-synthetic cell “re-booted”: it grew and reproduced as directed by its laboratory-generated genome.

The technological and scientific advances that enabled this feat have also allowed us to re-program organisms whose behaviors we want to control. For thousands of years humans used artificial selection to modify everything from corn to carrier pigeons. But recently, through genetic engineering, stem cell engineering, or what we now call “synthetic biology,” we have built remarkable new organisms that can convert renewable biomass to fuels and chemicals, organisms that can track down and annihilate pathogens, cells that can grow into desperately needed tissues and organs, or that could feed the planet’s rapidly growing population.

Under the pressure of natural selection, life has created amazing molecules and mechanisms needed for survival in an extraordinary range of environments. A few billion years of Darwinian exploration, innovation, trial and error, success and failure have generated a truly stunning array of solutions to the problem of life. Many of these solutions – often via the DNA that encodes them – can be lifted from their natural contexts and applied to human problems. Compared to any other engineering substrate, biology surely has the most diverse and creative “parts list.” It is also frustratingly unpredictable: we are still woefully ignorant of how to write new DNA code for desired behaviors. But, remember, we have only just recently started to try.

For moviegoers, it’s easy to tell a gripping story of science or scientist gone bad, the experiments that ran amok, the fatal combination of too much power and too little wisdom. It’s much harder to write a compelling tale of tragedy that never happened. But that’s our job. Scientists are optimists – why else would we devote so much effort to

devising intricate experiments to tease out new knowledge? We also continue to innovate, to solve problems, perceived and real. Our world is rife with potential tragedies: rapidly dwindling resources, new diseases that spread with frightening speed, the effects of global warming. The role of science in protecting our lives and our planet is crucial and dramatic. The pressure to find answers is real.

In this era of synthetic biology, I hope that we will look to life for inspiration, and not just a new opportunity for exploitation. The code of life is rich. Like a Beethoven symphony or the poetry of Whitman, it is intricate, elegant, and stunningly beautiful. We do not know how to write like that; the best we can do is copy and paste sections and make small changes, maybe rearrange them a little. But we are learning quickly. I hope that the life we write is beautiful, and that it supports and enriches our own.



David Conrad Page

David Conrad Page is Director of the Whitehead Institute, Professor of Biology at the Massachusetts Institute of Technology, and an Investigator at the Howard Hughes Medical Institute. He was elected a Fellow of the American Academy in 2011.

What We Don’t Know about Sexual Reproduction

I would like to discuss a subject that the learned membership of this Academy may not have spent much time considering: sex. I do not mean having sex. (I’m sure that many of you have thought about that.) I mean understanding – at a basic biological level – how our species propagates itself, by way of the process termed *sexual reproduction*.

Sexual reproduction is a brilliant scheme by which two adults – two prospective parents – each contribute half their genes to the making of an embryo and thereby a child. It is how we transmit our genome, our genes, from one generation to the next. Each of us is a product of sexual reproduction, whether by conventional insemination or by in vitro fertilization.

Outside the realm of science, it is commonly assumed that scientists collectively know or are about to learn everything about the physical world: that the era of discovery is coming to a close, and that we should now focus on practical translation of basic knowledge. Outside the realm of medicine, it is commonly assumed that physicians collectively know or are about to learn everything about the human body. Of course, this is not true in any area of science or medicine and is *especially* not true in the case of reproductive biology, the study of sexual reproduction.

Art, literature, music, and social science are as important as medicine and biology in understanding and conveying both the tragedy and the opportunity that surround our ignorance of sexual reproduction.

In America, fundamental, basic research on human reproduction is meager, it is diminishing, and it is at real risk of being blown off the scientific highway by the onward rush of biomedical research in other areas. Why should members of this Academy care? As I will illustrate, the immediate consequences of our ignorance regarding human reproduction are personal, impacting the lives of many in this room and beyond. The long-term consequences of our ignorance are global.

Consider infertility and contraception, two areas in which there has been an astonishing lack of progress in basic science in recent decades. One of every six American couples of childbearing age is infertile; yet the search for causes, for fundamental understanding of human infertility, is in a primitive, undeveloped state that we all would consider intolerable were we discussing heart disease, high blood pressure, or other disorders of older adults. To be sure, we have means of circumventing infertil-

ity – in vitro fertilization, donor eggs, donor sperm, and other methods of assisted or surrogate reproduction – but these merely bypass infertility’s root causes, which remain largely unknown and unaddressed. And be aware that the principal methods of bypassing infertility were pioneered abroad, or with private funding in the United States – not with federal dollars.

Let me turn to contraception, where there has been no fundamental scientific breakthrough in a half-century. To be precise, it has been fifty-one years since American society was introduced to, and ultimately

transformed by, “the pill,” the first drug to be prescribed for long-term use in a healthy person. Notably, the pill was developed with *private* funds in the United States and Mexico. In 1959, on the eve of the pill’s introduction, then-President Dwight Eisenhower told a reporter who inquired about contraceptives, “I cannot imagine anything more emphatically a subject that is not a proper political or governmental activity or function or responsibility.”

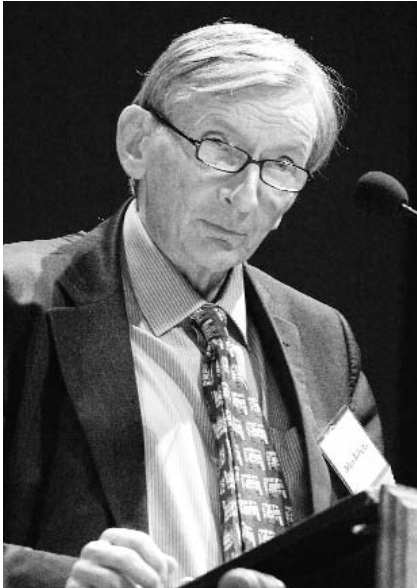
Today, the “male pill” – an old but appealing concept – awaits serious exploration, largely because of our fundamental ignorance of mechanisms underlying male reproductive function. Meanwhile, during the last half-century, the world’s population has increased from three billion to seven billion. In the circles in which I travel, the focus of discussion has shifted from population control to the consequences of its absence: climate change, and shortages of water, food, land, and energy. These are vast, global issues, but they have arisen one child at a time.

In focusing on infertility and contraception, I have only begun to touch on the issues arising from our ignorance of the mechanisms by which the genome is transmitted from one generation to the next. I have said nothing about other medical problems that persist in part because of this lack of understanding: miscarriages, birth defects, and various cancers. I chose this setting to raise the problems engulfing reproductive science because I believe this body can play an important role in their solution.

I believe that art, literature, music, and social science are as important as medicine and biology in understanding and conveying both the tragedy and the opportunity that surround our ignorance of sexual reproduction. You each have achieved prominence in an arena where the ultimate causes of this ignorance reside:

- Taboos against discussion of sexual reproduction and its consequences;
- The lack of political courage to address these issues through funding of education and research; and
- The failure to understand that progress in medicine still depends on basic discoveries whose practical implications are not immediately obvious.

Your talents are needed if we are to stimulate discussion, promote education, and support the research that will help your children, grandchildren, and future generations lead healthier lives, on a planet that can support them.



Adam Roberts

Adam Roberts is President of the British Academy, Senior Research Fellow in the Centre for International Studies at Oxford University, and Emeritus Fellow of Balliol College, Oxford. He was elected a Fellow of the American Academy in 2011.

The Social Sciences and the World

It means a great deal to me to be invited into the company of such a distinguished group of colleagues across the range of academic subjects. I have held the American Academy of Arts and Sciences in awe for precisely fifty years. In 1961, when I was still an undergraduate student at Oxford University, and much concerned about nuclear weapons, I came across the magnificent issue of *Dædalus* on the subject of arms control.¹ It was a multidisciplinary eye-opener. It showed me that questions that were the subject of hot debate (in which I took part, no doubt heatedly) could also be analyzed calmly and perceptively. I was particularly

¹ *Dædalus* 89 (4) (Fall 1960).

impressed not just by the variety of points of view represented, but by the ways in which nuanced positions seemed to make more sense than the reach-me-down standard formulae of much political debate. That issue of *Dædalus*, along with Hedley Bull's excellent book *The Control of the Arms Race*, contributed to my decision a few years later to go into graduate studies in international relations, which I did in 1965 at the London School of Economics.

Today, a half-century later, the international problems that we face stand in need of the same kind of calm, perceptive, and innovative analysis. The social sciences have a key part to play in this.

In respect of many contemporary problems we are all inheritors of one – never completely dominant – tradition in the social sciences and in public life more generally of seeking standard answers that can be applied across the board, to any country. This has been evident, for example, in that tendency in political science to identify the requirements of the good life and then to work out the political system most conducive to it. From there it is but a step to believing that it is good for all the peoples of the world, and even that it can be imposed by the sword.

This is no new tendency. In my country, Jeremy Bentham (1748–1832), one of the great figures of progressive social thought and indeed the inventor of the word *international* and the term *international law*, was much given to seeking universalist solutions. He proposed radical democratic reform for Britain, and indeed for everywhere else as well. He had a walking partner, with whom he went on several three- to four-hour walks in London before breakfast, whose name will be familiar to you: John Quincy Adams, President of the American Academy from 1820 to 1829. In May 1817, Adams – at that time Minister to the Court of St James's – made it clear that he was sus-

picious of the way Bentham regularly upheld the United States as a model for Britain, because the two countries had different starting points.² So here was a nice reversal of roles, with the Englishman tending toward reckless universalism, while his American friend urges caution and cultural relativism.

A few years later, in respect of Libya – which, then known as Tripoli, was almost as much a problem in his lifetime as it is now – Bentham conceived of a plan to use U.S. military force to liberate the country from reactionary and autocratic rule. Sound familiar? In January 1823, he drafted a letter to John Quincy Adams, who by then was U.S. Secretary of State (1817–1824) as well as, rather more important, President of the American Academy. Bentham's letter said:

a body of men, regularly trained, [and] disciplined . . . would be an indispensable requisite. This would be needful to serve as a basis or centre of union, a *point d'appui*, a moving fortress, to which volunteers might come in and attach themselves. With the interests and affections of the people in their favour, . . . small indeed is the number that would be sufficient.³

This sounds awfully like Rumsfeld-lite. Its fundamental intellectual error lay in its belief that the existence of opposition in Tripoli meant that the people there wanted modernization, rationalization, democracy, and a strong central state on Western models. I say this not to criticize the ongoing

² C. F. Adams, ed., *Memoirs of John Quincy Adams, Comprising Portions of his Diary from 1795 to 1848* (Philadelphia: J. B. Lippincott, 1874–1877), vol. III, 539.

³ Draft letter of Bentham to John Quincy Adams, written between January 10 and 13, 1823, and apparently never sent. Philip Schofield, ed., *Securities against Misrule and Other Constitutional Writings for Tripoli and Greece* (Oxford: Oxford University Press, 1990), 149. This volume is part of the excellent series *The Collected Works of Jeremy Bentham*, sponsored by the British Academy.

NATO operation in Libya, with which I have much sympathy, but to warn against some of the facile assumptions about what comes after such actions. Indeed, Bentham took this to the point of comedy when he proposed to Adams, in a letter purporting to be from a representative of Tripoli, that the reformed state's motto should be "the greatest happiness of the greatest number" in

globalization is sweeping the world and creating a common culture. We saw another example in the early reaction to the Arab Spring. I yield to no one in my admiration for civil resistance, but I worried about the easy assumptions that the outcomes might be similar across the Arab world.

This is definitely *not* to say that certain peoples are not capable of building a mod-

ern democratic system, nor is it to say that cultural relativism rules supreme. Nor indeed am I suggesting that we should never seek to spread our ideas and customs. Political and social thought crosses borders as easily as the wind and weather. But it is to say that change has to come from within societies. It may be helped from outside, but any help has to work with the grain of the society concerned. I have sometimes called this a process of induction, and I hope we can celebrate that larger meaning of the term as well as the induction of Fellows in which we are taking part today.

essary that they have local legitimacy – something that has proved notably hard to achieve in Iraq, Afghanistan, and many other countries.

At a time when understanding foreign societies is so necessary – and is apparently in short supply at the highest levels of government – we need the social sciences and the humanities more than ever. The British Academy has been waging a campaign to ensure that, in the perfect storm of change now happening in higher education in the United Kingdom, the very strong claims of the social sciences and humanities will be heard. We are pressing hard on all fronts, but are especially concerned with two issues, both of which are also causes of concern here in the United States. The first is the lack of adequate provision for the support of postgraduate students: this will be an increasingly severe problem in England as students complete their first degrees with a burden of debt around their necks. The second is the situation regarding the study of foreign languages. In the United Kingdom, frankly, the situation has become dire. In both the United Kingdom and the United States we risk becoming nations of monoglots in a world of polyglots.

At a time when understanding foreign societies is so necessary – and is apparently in short supply at the highest levels of government – we need the social sciences and the humanities more than ever.

Arabic.⁴ Sadly, there is no evidence that Bentham's letters to Adams were ever posted.⁵ We can assume that Adams, had he received them, would have been duly skeptical.

This episode is worth recalling because the problem that it exemplifies – of assuming that other societies think like we do, and want exactly the same things – is still very much with us. It is part of the intellectual failure that has marked aspects of the international campaign against terrorism of the past ten years – and it has been a problem in the United Kingdom every bit as much as in the United States. The problem has been made worse by the seductive claims that

This conclusion draws on a tradition in the social sciences – one distinct from the universalist tradition I mentioned earlier. It is a tradition that accepts that different peoples, societies, and states have undergone very different historical experiences, view the world and their place in it very differently, and indeed react to globalization differently. This is a tradition that recognizes that it is not enough for political systems, or military interventions, to have legitimacy from on high, whether from the U.S. government, from international coalitions, or from the UN Security Council. It is also nec-

I'm delighted, and as a new Fellow proud, that the American Academy – which is 122 years older than the jumped-up British Academy – has set up its new Commission on the Humanities and Social Sciences, under the direction of Leslie Berlowitz. I'm especially pleased to see that the new commission is absolutely not structured in a way to suggest that the humanities and social sciences should be seen as counterposed to the physical and biological sciences. In the last few turbulent years, inasmuch as we at the British Academy have achieved anything to protect the subjects we champion, it has been by working very closely with our colleagues in the Royal Society, and indeed sending a joint submission to government

⁴ Draft letter purportedly from Hassuna D'Ghies to John Quincy Adams, written by Bentham between January 13 and February 2, 1823, and apparently never sent; *ibid.*, 166 – 167.

⁵ *Ibid.*, Editorial Introduction, xxxi – xxxii. The excellent Online Adams Catalog of the Massachusetts Historical Society does not contain any indication that the letters were sent; <http://www.masshist.org/adams/catalog>. (Further research conducted by the author at the MHS Library on October 3, 2011, provided new evidence that these letters about Tripoli were never actually sent to John Quincy Adams.)

indicating the common requirements that need to be followed in supporting research in our various subjects.

And that is the point on which I conclude. The great problems that modern societies face – from environmental change to the obesity epidemic, from development in the postcolonial world to the control of weaponry – all these issues require the application of the full range of specialisms and skills represented in this great Academy and that were evident in that issue of *Dædalus* I read fifty years ago. I'm honored to be a member.



Annette Gordon-Reed

Annette Gordon-Reed is Professor of Law at Harvard Law School; the Carol K. Pforzheimer Professor at the Radcliffe Institute for Advanced Study; and Professor of History at Harvard University. She was elected a Fellow of the American Academy in 2011.

Why the Humanities and Social Sciences Matter

I was deeply honored to learn that I had been chosen to become a member of the American Academy of Arts and Sciences, and I feel doubly honored to be given the opportunity to say a few words at this induction ceremony. This organization has had an illustrious history since its founding in 1780 by some of the most prominent figures in American history, most notably John Adams, the American revolutionary and the nation's second president. It is humbling to have my name included on the roster of the distinguished people who have been members of the Academy over the years, including my fellow inductees.

Founding the Academy was an act of hope, on the heels of another supreme act of hope, when the American colonies decided to declare themselves an independent country just four years before this Academy came into existence. What a daring thing to do: to predict and believe that the new nation would cultivate scholars, scientists, and business leaders to rival those found in Europe. Though hope was at the foundation of their belief, Adams and his cohort understood that hope without action would not be enough. The development of scholarly, artistic, and commercial life in America could not be left to chance. Cultivation of each of these endeavors was required if the United States was to become and remain a great nation. As France had done when it created the French Royal Academy of Arts and Sciences, the establishment of the American Academy of Arts and Sciences expressed a commitment to excellence that sent a message to the nation's citizens, and to the world, about the new country's confident aspirations.

Writing from France to his wife Abigail in May 1780, John Adams said, "I must study Politicks and War that my Sons may have liberty to study Mathematicks and Philosophy. My Sons ought to study Mathematicks and Philosophy, Geography, Natural History, Naval Architecture, Navigation, Commerce and Agriculture in order to give their children the right to study Painting, Poetry, Musick, Architecture, Statuary, Tapestry and Porcelaine." Of course, poets and artists have always been among us. But Adams's quote expresses the truth that a country must have a sufficient level of wealth, stability, and security before large numbers of its citizens can engage in pursuits broader than the basic struggle for survival that war and politics – the substitute for war – address.

I was thinking about Adams's quote long before I learned that I would be giving these remarks. Back in February, I was asked to

serve on the Academy's national Commission on the Humanities and Social Sciences, a group formed in response to a bipartisan request from members of the U.S. Senate and House of Representatives. The commission, comprised of leaders from the arts, social sciences, and humanities, is charged with the task of making suggestions for how to "maintain national excellence in humanities and social scientific scholarship

America's students need to draw from every form of creativity – arts, sciences, mathematics – to put them in the position to tackle the tough questions and to solve the difficult problems that inevitably await us as the years unfold.

and education, and to achieve long-term national goals for our intellectual and economic well-being; for a stronger, more vibrant civil society; and for the success of cultural diplomacy in the 21st century." This charge is in keeping with the spirit of this Academy's founding, reinforcing the principle that the country's intellectual and cultural life are matters of national importance and that direct action should be taken to insure the health of both.

One might think that no such exhortations would be necessary, that it is self-evident that the values taught and promoted in the humanities and social sciences are critical to the maintenance of a civilized society. But we live in interesting and difficult times. The global economy is in a parlous state, with no relief in sight. Whole professions and industries are undergoing structural changes that leave no clear picture of what to expect in the coming years. Uncertainty reigns. In times like these, people look for answers and, sometimes, in their despera-

tion, feel it necessary to abandon cherished understandings and values, to look for fixes that appear easy.

One of the easy answers offered in our current panic has been to downplay the study of the humanities, in particular, in favor of so-called hard subjects. From K – 12 into college and postgraduate schools, the message has gone forth that math and the sciences are what really count. Economics, a

social science, today in thrall to quantitative analysis, has been given something of a pass because it is seen as a path to business school.

No one can deny the importance of math, science, and technology. America needs more homegrown engineers and scientists, and the available evidence indicates that our students lack the math and science skills of youngsters in other countries with whom they must compete for jobs and even for places in our own universities. But this is not an either/or proposition. Our students can be proficient in math, science, *and* the humanities. They must be. It is imperative in a globally competitive world that they be deeply and broadly (yes, liberally) educated. No aspect or expression of human insight and talent should be given short shrift. America's students need to draw from every form of creativity – arts, sciences, mathematics – to put them in the position to tackle the tough questions and to solve the difficult problems that inevitably await us as the years unfold.

There is no need to reverse course, to go back to the age of soldiers and politics in which Adams found himself and his country in 1780. As he and others had hoped, through many years of struggle and achievement, we have become a great nation. Despite our current travails, we have the resources – if we choose – to realize the dream of a society where art, science, and mathematics – all forms of human inquiry – are valued and supported. As a member of the Commission on the Humanities and Social Sciences and as a member of the Academy, I hope to help make the case for the kind of liberally educated society that Adams championed. America's future as one of the leaders of the world depends on the complete realization of that vision.



William I. Miller

William I. Miller is President of The Wallace Foundation. He was elected a Fellow of the American Academy in 2008.

Why Bridges Matter – in Public Works and in Public Life

On our way here, my wife Lynne and I drove over the Anderson Memorial Bridge that links North Harvard Street in Allston with JFK Street in Cambridge. This three-arch bridge over the Charles River, made of reinforced concrete, is not especially large or long. At 440 feet, or about a tenth of a mile, it takes less than fifteen seconds to cross in a car. So it's easy not to give it a second thought.

But if you take a closer look, you might observe that in 1913, the engineering firm of Wheelwright, Haven & Hoyt took pains to cover the concrete in rather handsome brickwork, giving it a Georgian Revival character that ties it visually to the Harvard University buildings on the Cambridge side. You might see a small plaque erected by the

bridge's donor, Larz Anderson, in memory of his father, expressing the hope that the bridge will serve a high purpose. In fact, through careful placement and durable design, the bridge has united the people of two communities for nearly a century.

There are other kinds of bridges that are easy to overlook, that are difficult to build and sustain, and that also play an important public role. By that, I mean "bridging institutions" like the American Academy of Arts and Sciences that connect those with different perspectives and roles on behalf of some common, public purpose. This bridging purpose is visible today in the breadth of disciplines the Academy represents, in the ways in which it shares ideas externally through *Dædalus*, and in its inclusion of Class V members from public affairs, business, and administration, on whose behalf I am honored to speak today. Let me share three stories about how bridging institutions can make a difference.

I have spent most of my life in Columbus, Indiana, a small city of about 44,000. For many years, the main route to Columbus was through a nondescript, congested stretch of four-lane highway. In the 1990s, a number of us decided to try to make improvements, forming a group of local officials and community leaders called The Front Door Project. We wanted an entry that, like the Anderson Bridge, would help establish a sense of place to reflect our community values of innovation and striving for excellence. We brought in experts from outside the community: architects Robert Venturi and Denise Scott Brown to help us rethink how a commercial strip looks and functions, landscape architect Michael Van Valkenburgh to design a greenspace, and bridge designer Jean Muller of Switzerland. For the interstate bridge, Muller proposed a radical new design in which the roadbeds of Interstate 65 were cantilevered on the outside of a cable-stayed structure.

The effort took more than a decade. It made me realize how hard it is to build bridges and connections. After five years of little progress, I took to calling our group The Eternal Door Project. But persistence pays off. Today if you visit Columbus you will be carried into our downtown over two stunning and innovative bridges, between which are a vigorous commercial center and a dramatically landscaped parkway. More recent community initiatives have similarly strengthened the regional public education system and revitalized our downtown. I believe that all these efforts were successful because we assembled the critical ingredients of public-private partnerships – in other words, bridging institutions.

Meanwhile, The Wallace Foundation in New York City, whose presidency I assumed in July, has been trying to tackle the national challenge of strengthening how school principals are trained and supported to become instructional leaders. This also was not easy. Conventional wisdom held that principals were mainly responsible for the three Bs: buildings, budgets, and buses. Today, after eleven years of effort, improving school leadership is a federal priority. Leading districts across the country are creating promising new ways of preparing and supporting principals. Here, too, bridging made the difference: the Foundation brought together researchers, who generated objective evidence that effective principals are crucial to school improvement; policy-makers, who passed new laws; and practitioners, who developed ways to improve their practice. The Foundation is helping share the lessons as widely as possible.

Closer to the Academy, Tufts University professor Christine Economos spearheaded a citywide effort in Somerville, Massachusetts, to combat childhood obesity among first through third graders by combining the efforts of government, educators, restaurant

and gym owners, and volunteers. Shape Up Somerville yielded a modest but statistically significant reduction in the BMI (body mass index) among the city's young children between 2002 and 2007. The influence of this kind of bridging activity is spreading. The Healthy Communities Initiative back in my hometown is now working with Professor Economos to replicate the Somerville program in Columbus.

Let me offer a few thoughts on why these and other institutional bridges matter and what makes them work.

What makes bridging institutions work? Drawing on research from John Kania and Mark Kramer as well as my own experience and that of The Wallace Foundation, here is a short list:

- A shared agenda and approach, with metrics based on agreement about what success looks like;
- The development of trust among partners who closely coordinate their actions;
- Persistence over a long time frame; and
- A team to plan, manage, and support the effort.

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To view or listen to the presentations, visit <http://www.amacad.org/events/Induction2011>.

Bridging institutions respond to and are the best hope to counter the tendency of people in power or seeking power to pursue a narrow agenda.

The problems we face today – whether reducing childhood obesity, strengthening public education, or improving economic opportunity – tend to be complex and complicated, with few “silver bullets.” That means we need everyone’s best thinking and perspectives, from the Ivory Tower to Main Street.

Second, taking action on these problems will rarely be the province of one sector alone. In a time of strained fiscal resources, many believe governments are more likely to make progress when allied with other sectors.

Finally, we need bridging institutions because of the narrowing of political discourse and hardening of ideological lines. Bridging institutions respond to and are the best hope to counter the tendency of people in power or seeking power to pursue a narrow agenda. The key is to tap into the strength of diverse perspectives, thereby embracing the pluralism that is at the heart of our democracy.

Perhaps most important is a respect for the role of evidence and a willingness to acknowledge failure and learn from it, traits that great bridge designers share.

In other words, like bridges, bridging institutions need to be strategically placed, tied to the communities they represent, well designed, and there for the long haul. Partnerships for the public good are not easy to form; many of them fail. But the ones that work are among the most effective tools we have for social innovation and progress.

As you drive home, your route will likely take you over a bridge at some point. As you cross it, I would invite you to think of the words of Henry Petroski, the poetic and prolific professor of engineering and history at Duke University. Bridges, he said, “have become symbols and souls of cities.” Perhaps it is time we accorded their institutional counterparts some of that same affection and regard. Solving some of our most pressing problems may depend on it. ■

Induction Symposium: American Institutions and a Civil Society

The 2011 Induction weekend included a symposium on American Institutions and a Civil Society, which featured two panel discussions: *The American Military and American Democracy*, with Pulitzer Prize-winning historian David M. Kennedy, Donald J. McLachlan Professor of History, Emeritus, at Stanford University; Lt. Gen. Thomas P. Bostick, Deputy Chief of Staff for Personnel for the United States Army; and Maj. Gen. Gregg F. Martin, President of the National Defense University in Washington D.C., and former Commandant of the U.S. Army War College; and *The Constitution, the Practice of Democracy, and Unintended Consequences*, with David H. Souter, Associate Justice (retired) of the Supreme Court of the United States; Heather Gerken, J. Skelly Wright Professor of Law at Yale Law School; Geoffrey R. Stone, Edward H. Levi Distinguished Service Professor at the University of Chicago Law School; and Mickey Edwards, Vice President of the Aspen Institute and former member of Congress. The panel discussions served as the Academy's 1974th Stated Meeting. The following is an edited transcript of the discussions.

The American Military and American Democracy



David M. Kennedy

David M. Kennedy is the Donald J. McLachlan Professor of History, Emeritus, at Stanford University. He has been a Fellow of the American Academy since 1996.

The first panel of this symposium was occasioned by the Summer 2011 issue of *Dædalus*, which I edited and which examines the modern American military. This is not a book promotion event, but I call that issue to your attention as the backdrop for today's discussion.

I chose as an epigraph for the volume a maxim from Cicero: "Arms are of little value in the field unless there is wise counsel at home." That maxim served to focus all the essays in the issue – and our attention here this morning – on the critical importance of the relationship between military institutions and civil society in many different dimensions.

Cicero's point was driven home to me in a much more homely fashion about three years ago, while I was an observer at Warrior Forge, a five-week-long exercise for Army ROTC cadets between their junior and senior years. I spent a week at Fort Lewis, Washington, observing the cadets. Every evening I would have dinner with the instructors. Many times over the course of that week, I was asked some form of the following question: "How can it be that the Army is at war but the nation is not?" That question made vivid for me the possibility of a radical and rather disturbing disjunction between the role of the military in our society today and its relationship to civil society at large.

More recently, someone who has much more authority to speak about this matter than I addressed the relationship between a relatively small, inexpensive force and the larger civil society in whose name it is sent into battle.

In his May 2011 commencement address at West Point, then-Chair of the Joint Chiefs of Staff Admiral Michael Mullen remarked:

There is not a town or a city I visit where people do not convey to me their great pride in what we do. Even those who do not support the wars support the troops, but I fear that they do not know us. I fear they do not comprehend the full weight of the burden we carry or the price we pay when we return from battle. This is important, because a people uninformed about what they are asking the military to endure is a people inevitably unable to fully grasp the scope of the responsibilities our Constitution levies upon them. Were we more representative of the population, were more American families touched by military service, perhaps a more advantageous familiarity would ensue. But we are a small force, rightly volunteers, and less than 1 percent of the population, scattered across the country due to base closings and frequent and lengthy deployments. We're also fairly insular, speaking our own language of sorts, living within our own unique culture.

The *Dædalus* volume keeps questions about the civil-military relationship in play while examining many aspects of the cur-

rent military's nature and characteristics: namely, what today's military does or is asked to do, who does it, why they do it, how they do it, and what challenges the future holds in all those dimensions. The volume begins with an overview of perceived national security needs and priorities – how they have evolved rapidly in the last decade and how they are likely to change going forward. Readers will encounter discussions of

number in perspective, the sixteen million men and several thousand women who were taken into uniform during World War II represented more than 10 percent of the population, a twenty-fold difference in the incidence of military service in the population compared to today. Also, today's military force is relatively inexpensive, although this point is somewhat controversial. Even with the supplemental appropriations for the

about 13 percent of the service members in that cohort. Thus, Hispanics are underrepresented in the armed forces and African Americans are overrepresented. The role of women in the services is a more controversial subject, but it is worth mentioning that women make up almost 51 percent of the population in the eighteen-to-forty-four age cohort, but are only 14 percent of personnel serving in the military. Another consideration is the number of people who are not in uniform but nevertheless undertake military missions – in particular, contractors such as Blackwater (now renamed Xe Services) – that by some measures constituted more than 50 percent of the total U.S. deployment in Iraq.

In a 2010 speech at Duke University, outgoing Secretary of Defense Robert Gates called attention to the unrepresentativeness of the force, urging his audience to think about a career in the armed services. He also pointed out that recruiting disproportionately comes from the South and the Rocky Mountain states.

We have before us four leading questions. First, how well have we defined our national security priorities for the immediate future? Second, how well have we configured and composed the force that is asked to secure those priorities in order to fulfill the mission that they are asked to pursue? Third, what do the configuration and structure of the force imply about political accountability or decisions to use the force? I am particularly interested in how the structure of the force and its nature constrain or amplify the scope that the civil leadership has for political maneuver when making the decision to shoulder arms. Fourth, have we configured the force in line with our professed national values of fairness and shared obligations?

On this last note, I will make a final observation about the relation of service to citizenship in its most inclusive sense. Immigrants

Immigrants in the armed forces are fast-tracked for citizenship. . . . At the same time, no current citizen has been obliged to serve in the military since the advent of the all-volunteer force in 1973. So service can earn you citizenship, but citizenship does not obligate you to serve.

the way definitions of strategic and tactical doctrines have changed commensurately with the evolution of perceived national security priorities. They will find discussions of force configuration and composition that consider whether the demography and structural makeup of the force are complementary with the missions that the force is asked to undertake. There are also accounts of the actual experience of service: the weapons people fight with, the combat situations they find themselves in, the extent to which they are properly trained and prepared for the situations they face, and the circumstances they face once they leave service. The volume's contributors explore the role of the military, both within and beyond the modern battle space.

One of the underlying premises of this morning's discussion is that today's military is not your grandfather's nor even your father's armed force. First, it is relatively small: less than one-half of 1 percent of the American population. To put that

wars in Iraq and Afghanistan, the Department of Defense budget is approximately 5 percent of GDP. At the height of World War II, the military budget was more than 40 percent of GDP, and during the height of the Cold War, it ranged from 8 to 10 percent of GDP. Relative to historical experience, we have a military that is extraordinarily modest in size in relation to the population in whose name it fights, and fairly inexpensive compared to the burden of defense costs borne by the larger economy in recent history. And, of course, today's force is a volunteer force. Although this fact is well known, many of its implications are less familiar.

The volunteer force, by its very nature, is unrepresentative of the population as a whole. For example, African Americans make up about 12.6 percent of people in the labor force between the ages of eighteen and forty-four, but they represent almost 20 percent of members of the armed forces in the same age bracket. Conversely, Hispanics compose 17 percent of the eighteen-to-forty-four age group in the labor force but only

in the armed forces today – that is, the approximately seventy thousand noncitizen aliens who are serving – are fast-tracked for citizenship thanks to measures enacted by the George W. Bush administration. At the same time, no current citizen has been obliged to serve in the military since the advent of the all-volunteer force in 1973. So service can earn you citizenship, but citizenship does not obligate you to serve – an asymmetry that I find very curious. As an illustrious member of this Academy, George Washington, said in 1783: “It may be laid down as a primary position and the basis of our system that every citizen who enjoys the protection of a free government owes not only a proportion of his property but even of his personal service to the defense of it.” We do not have such a system today.



Thomas P. Bostick

Lieutenant General Thomas P. Bostick is Deputy Chief of Staff for Personnel of the United States Army.

We in the Army feel strongly that we must remain connected to the American public, so although I rarely leave the Pentagon, I jumped at the opportunity to speak here today. My father was an Army sergeant for twenty-six-and-a-half years. Growing up with the knowledge that he had gone through President Truman’s executive order to desegregate the force, served in Korea and Vietnam, and lived the life of a soldier while supporting my mom and five kids, I was convinced that his career was not for me. So I have spent thirty-three-and-a-half years in the service, and I am now convinced that he left early.

I sometimes have a hard time explaining what it is that I do. You could say that I am the uniformed head of human resources for the Army. We have 1.1 million soldiers in the Army. We also have 330,000 civilians. About 60 percent of Army personnel are married, so families matter. The Army comprises ac-

tive duty, the Army Reserve, and the National Guard. Each of those segments makes up the Army I work for; they all have my email address and many write to me frequently. And it is a joy to serve them.

I will outline a list of items that are on the Army’s plate and that we are working on today. Some cross over into what David talked about; several may not be in line with the theme of today’s discussion, but they are topics you may have questions about. First and foremost, our mission is to win our nation’s wars in Iraq and Afghanistan. In these cases, we are doing what Congress, the President, and the American people expect us to do. After ten years as an Army at war, we are very concerned about the health of our force. No one would have guessed that we would be engaged in these wars for this long. For the many soldiers who have known only war since they joined the military, the stress is significant.

We are seeing negative signs in a number of different areas. Among active-duty soldiers, suicides have tripled, from about 52 suicides in 2001 to 159 in 2010. Alcohol abuse is prevalent in some soldiers who have stood in combat formations for many years. We are seeing increases in child abuse, sexual abuse, and assaults. Our wounded warrior population has increased significantly: we have three hundred amputees, and twenty-six of them are serving in combat today – something that only rarely happened in the past, when very few amputees even stayed with the Army. Secretary of Veterans Affairs Eric Shinseki, who is an amputee, and retired General Fred Franks, among others, have led the charge that amputees and other wounded, ill, and injured soldiers can continue to serve. Moreover, we have many cases of post-traumatic stress disorder. Traumatic brain injuries have occurred in large numbers because of the type of wars that we are fighting.

We have also been engaged in the repeal of Don’t Ask, Don’t Tell. I sat on the commis-

sion, led by General Counsel of the Department of Defense Jeh Johnson and General Carter Ham, that reviewed the law for more than a year. Now that it has been repealed, I think our military will do just fine. We are also working on a topic that is important to me: women in our military – how they serve, and where they serve. We still have

Less than three out of ten young people can actually wear the military uniform. The remaining seven are unqualified because of education, aptitude, medical conditions, and conduct.

policies that refer to the “front line” of troops, but we no longer fight in that fashion. Indeed, the reality is that many women serve well beyond any front line, despite laws barring them from combat. We must review our policies on women who serve. On the subject of religious freedom, we may in some cases negotiate accommodations for soldiers who wish to wear beards, turbans, longer hair, jewelry, or other items relating to religious observation. Here, the question is, how do we balance the importance of accommodating religious freedom against the strict discipline, policy, and uniformity that is necessary in our Army?

I spent four years as the head recruiter of the Army. In that capacity, I traveled all over America and the world, reaching out to colleges, universities, and high schools, trying to ensure that we can tell our story. I was also in the Pentagon during 9/11, working closely with Secretary of Defense Donald Rumsfeld and the President, and I was present for many of the decisions that were made on that day and in subsequent days. I have also been deployed to Bosnia, Iraq, and other places around the world. Against that background, I can say that despite the current stress on our force, this is the best-trained,

best-equipped, and best-led Army that this country has ever fielded. We are ready to do what the nation asks us to do anywhere, and I am very proud to serve.

Though there are differences of opinion, I and many other leaders prefer an all-volunteer force for a number of reasons. There is a myth that many folks can serve in the Army.

The fact is less than three out of ten young people, aged seventeen to twenty-four, can actually wear the military uniform. The remaining seven are unqualified because of education, aptitude, medical conditions, and conduct. When you see a soldier, he is one of those less than three out of ten who can actually wear the uniform and serve in the Army.

In the Duke University speech that David mentioned, Secretary of Defense Robert Gates said, “Most Americans honor and respect those who have chosen to serve, but to most citizens, this war is an abstraction, a distant and unpleasant series of news items that do not affect them personally.” For that reason, it is important for us to engage with the American public. At one of the many functions that I attended as the Army’s head recruiter, I once shared a hotel elevator with a lady who said to me, “You’re looking mighty fine in that uniform. Have you made sergeant yet?” I looked up to make sure I had my rank on (at that time I was a two-star) and said, “Well, no, I’m actually an officer.” She said, “Oh, I understand. So have you made captain?” But I felt good about the fact that Americans are not thinking about generals and senior leaders. They are thinking about sergeants and captains, and it is those sergeants, captains, and the servicemen and

women ranked below them who are carrying the bulk of the combat force. But it is clear that we need to continue to stay connected to America.

We are about to draw down our Army, from our current active army of 570,000 soldiers to 520,000 by fiscal year 2016. Fifty thousand soldiers will leave the end strength of our force. In addition, about 150,000 soldiers transition out of the military every year. We need your help not just in thanking our troops for their service, but in helping them transition to civilian life. Roughly 30 percent of former soldiers aged eighteen to twenty-four are unemployed. Part of my \$62 billion personnel budget pays unemployment compensation to this cohort. About a half-billion dollars a year goes to unemployed soldiers looking for jobs. Many are talented soldiers. They are medics who have saved the lives of individuals across the battlefields of Iraq and Afghanistan but who lack the credentials to work as medics in an emergency medical team in a hospital. Similarly, I taught engineering at West Point, but if I wanted to take off my uniform tomorrow and teach math at the elementary school where my wife is the principal, I would not meet the certification requirements to do so. Many soldiers face the challenge of becoming professionally certified in the states where they would like to take on a job. We ask for some assistance as these soldiers move on to civilian careers.

Frances Hesselbein, who received the Presidential Medal of Freedom in 1998, said that two institutions have sustained our democracy since our country’s founding: the United States Army – that is, the military – and public education. In turn, we must sustain these institutions. I have encountered many people who thought that the military was not interested in education, but nothing could be further from the truth. Last year, the Post-9/11 GI Bill provided

more than \$5 billion for the men and women of the armed forces to attend college. More than \$60 million of that money went to schools here in Massachusetts in 2010 – 2011. Last year, \$240 million was spent on tuition assistance for soldiers taking courses online or in their local communities while serving on active duty.

I will close by talking about a soldier named Michael from St. Paul, Minnesota. As a senior in high school, Michael wrote a credo outlining how he wanted to live his life. He excelled in sports and loved football, wrestling, weight lifting, and skiing. He thrived on competition and the rush from the crowds shouting his name and the names of his teammates. But while he could have pursued an athletic career, both in college and then perhaps in the pros, he decided against it. He wrote, “When I am on my deathbed, what I’m going to look back on in thirty years is going to be important to me. Will it be thirty years of playing a game that in reality means nothing, or will it be thirty years of protecting the country from all enemies, foreign and domestic? I want to fight for something, be a part of something that is greater than myself.” Michael was killed in Iraq. He was just twenty-two years old. My job, ultimately, is to make sure that soldiers like Michael have everything they need to execute their missions for this country each and every day.



Gregg F. Martin

Major General Gregg F. Martin is President of the National Defense University in Washington, D.C. He formerly served as the 48th Commandant of the United States Army War College in Carlisle, Pennsylvania.

As Commandant of the U.S. Army War College, I am privileged to lead the Army’s graduate school for strategic studies and national security affairs. The War College’s master’s degree serves as a bookend to West Point’s bachelor’s degree. A number of our students complete fellowships at elite universities and think tanks around the country, including Harvard University, MIT, and Stanford University, and I encourage you to get to know them. Get to know your military as well; this is *your* military. We are proud and honored to be serving you in this great country. Take the time to meet ROTC students, to meet the National Guardsmen in your hometowns, and to reach out to the units where you live.

The Army War College was founded 110 years ago, following the Spanish-American War, by Secretary of War Elihu Root. When contemporaries advised him to call it the Army Peace College, Root refused, saying he wanted to focus on war “because it’s that most tragic and horrible of all human conditions which mankind can’t seem to avoid repeating.” The reason for founding the school was “not to promote war but to preserve peace.” Through wise, strong leadership, hopefully we can deter war through that strength and wisdom. The motto of the War College, *prudens futuri*, meaning prudence, or providence, or wisdom for the future, dovetails nicely with the Academy’s mission. We work to develop wise leaders who can advise civilian authorities on the limits of military power, who can explain how best to use military force and when to employ diplomacy, information, or economic power instead of, or in concert with, the military element of power. The ancient Chinese general Sun Tzu said that the epitome of strategy is convincing or persuading someone to do what it is you want them to do without having to fight. But if we must fight, it should only be to create a better peace. We share that mindset at the Army War College.

How does the U.S. military contribute to and help advance a civil, democratic society? Most significantly, the military helps create a secure, orderly international system that gives us the predictability to engage in commerce; to have an economy; and to invest in education, the arts, and science. In an anarchic world where there is no global police force, creating order is the fundamental thing the military does to advance a civil society. Trading ships traversing the oceans do not have naval escorts, but if someone wanted to capture those ships and do us harm, they would have to consider the fact

that the U.S. Navy and Coast Guard are patrolling those waters; an attack might not be worth the risk of retaliation.

In the sixteenth century, Thomas Hobbes wrote in the *Leviathan* that without a force that can impose order and underwrite security, there can be no commerce, “no arts, no letters, no society, and which is worst of all, continual fear and danger of violent death, and the life of man solitary, poor, nasty, brutish, and short.” President Obama delivered a modern version of that message in his Nobel Peace Prize acceptance speech:

I face the world as it is, and cannot stand idle in the face of threats to the American people. For make no mistake, evil does exist in the world. A nonviolent movement could not have halted Hitler’s armies. Negotiations cannot convince al-Qaeda’s leaders to lay down their arms. To say that force may sometimes be necessary is not a call to cynicism, it is a recognition of history, the imperfections of man, and the limits of reason.

In its most fundamental role, the U.S. military establishes the basis on which a civil society is built.

At the national level, the United States has chosen since the Vietnam War to have an all-volunteer force. I like the idea of an all-volunteer force because I believe in free will and the inherent goodness of people being able to choose what they do with their lives, a right that I think is embedded in the Declaration of Independence. The all-volunteer force is also very effective. On the eve of the attack launched from Kuwait into Iraq, when I was a brigade commander, it certainly helped that all our soldiers were volunteers. When we got to Baghdad and faced guerrilla war and insurgency – when we were clearing roadside bombs – the fact that every one of those soldiers was a volunteer made us much more effective. No one was there against his or her will; they all had vol-

unteered. However, as David pointed out, perhaps the country has also lost something with this strictly voluntary approach to military service. In May 2011, I had the opportunity to speak at the Harvard Club in New York City to a group of Harvard alumni who were World War II veterans. What im-

from the Declaration of Independence. We take very seriously the principles of respect for others, listening to people from diverse backgrounds and points of view, and selfless service – all of which are important to creating a team. These values are part of the ethos and culture of the military.

The military helps create a secure, orderly international system that gives us the predictability to engage in commerce; to have an economy; and to invest in education, the arts, and science. In an anarchic world where there is no global police force, creating order is the fundamental thing the military does to advance a civil society.

pressed me about these great Americans, who went on to have distinguished careers as leaders in business, academia, government, and law, was that they had all served in the military. There was a bond, a sense of common purpose uniting them and their generation, that perhaps we have lost over time.

Also at the national level, the military has been an engine of social change. General Bostick mentioned racial integration. In addition, the GI Bill has long promoted education, leadership, and productivity. The institution of the military and the benefits it has provided, have done much for society.

At the institutional level, every officer and soldier takes an oath to support and defend the Constitution. That commitment is taught, discussed, and repeated at enlistments and promotions. Every soldier and officer understands that he or she serves to support and defend the Constitution. Subordination to and respect for civil authority is ingrained; it’s in our DNA; it’s part of the fabric of the U.S. military. From day one, soldiers are instilled with values that come

At the individual level, people join the military today for a variety of reasons, including service, self-development, adventure, and travel. The tremendous young men and women who serve are the reason I have stayed in the Army; they make it a joy and a privilege to serve. When I was a commander at Fort Leonard Wood, Missouri, one of the largest training bases in the country, we did everything from basic training to noncommissioned officer (NCO) education. The military strives to develop soldiers who are competent in the jobs that they are expected to do; who are dedicated to building their character, integrity, and courage; who are committed to others and their team; and who believe in a mission, purpose, and a cause greater than themselves. And when they take off the uniform, it is our goal that they will return to society as better people, better citizens, and better leaders for the country.

The current generation of soldiers, NCOs, and officers is truly a national treasure, as is the entire all-volunteer force. The talent,

courage, innovativeness, and adaptiveness that these Americans have demonstrated in very complex wars are remarkable. We have probably never had a generation of young leaders, in our country or our military, that has done what these young people have done. One of our great strategic challenges will be carrying out the drawdown in a way that retains the best of them for the future.

The all-volunteer force is an effective force, a national treasure, and an ongoing story. As a country, we need to have a conversation about the points raised in the Summer 2011 issue of *Dædalus* on the modern American military and by Professor Kennedy this morning. We need to talk about the growing gap between the military and society. One way to strengthen our civil-military ties is through forums like this one. The Andrew W. Mellon Foundation has endorsed a forum that joins liberal arts colleges with military institutions in the same area. For example, Dickinson College and the Army War College, both in Carlisle, Pennsylvania, are meeting and collaborating as part of this program. The Army War College also hosts two programs that bring in civilians to engage with our students and faculty, and to learn more about their military. One is the National Security Seminar held in June each year, which invites about 150 civilians and distinguished guests from around the country to spend a week with our students. The second is the Senior Leader Staff Ride, which takes groups to the Gettysburg battlefield to explore lessons learned from this epic battle.

In preparation for today's event, I asked some young officers and NCOs what I should tell the distinguished group that I would speak with on Sunday. They said: "Get to know us. Learn about who we are, what we believe in." They believe in the greatest virtues and values of our country,

and they are serving you, the American people. They want you to be interested in and more knowledgeable about them. So reach out and build that relationship. This is a military that you can trust. The idea of subordination to civil authority is in our ethos, and we serve you through the elected officials that you put in positions of authority. ■

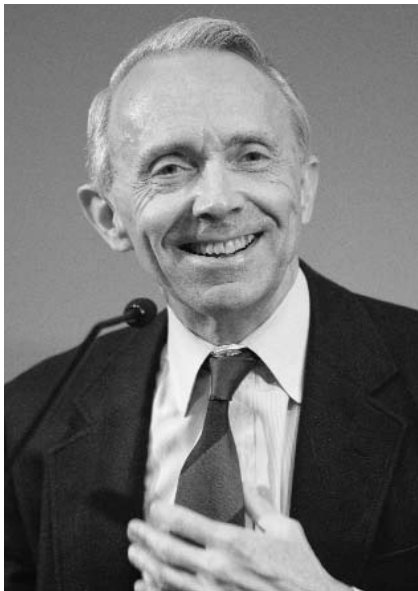
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To view or listen to the presentations, visit <http://www.amacad.org/events/Induction2011>.

Induction Symposium: American Institutions and a Civil Society

The Constitution, the Practice of Democracy, and Unintended Consequences



David H. Souter

David H. Souter is Associate Justice (retired) of the Supreme Court of the United States. He was elected a Fellow of the American Academy of Arts and Sciences in 1997.

We live in a society that is increasingly characterized by a rhetorically and substantially intransigent approach to civic life. *Polarization* is the word used most frequently to characterize public discourse. To constitutional lawyers, there is something very disquieting about the distinct dissonance between a rhetoric and a substance of polarization, on the one hand, and on the other the history of and required practice under the Constitution of the United States.

Those who have studied the history of the 1787 Constitutional Convention invariably point out that, in James Madison's view, the most significant issue to be resolved at the convention was the question of representation in Congress. Would it be allocated on a state-by-state or a population basis? How would representation take into considera-

tion the difference in interests between the slave states and free states? In the end, the terms of congressional representation were established in what is frequently called a "Great Compromise": the states would be equally represented in the Senate; population would be the basis for representation in the House; and the so-called three-fifths clause would account for the institution of slavery, a provision that did not survive the Fourteenth Amendment. The point that lawyers, scholars, and historians of the Constitution always turn back to, as Jack Rakove

not be resolved if either the powers of the government or the civil rights of individuals are viewed as absolutes. Federal authority and individual rights must be regarded as derivatives of competing principles, each good in itself, but neither of which can be exercised to the limit all the time. There is a constant process of adjustment, a constant drawing and shifting of lines, over time and over changes of circumstance. The Constitution simply cannot operate without this kind of compromise. Which is why constitutional lawyers find it disquieting when the Ameri-

We need to look at some of the influences that seem to contribute to the intransigent rhetoric and the reality behind it, and to consider what can be done to mitigate the force of those influences that propel so much of American rhetoric and practice today in the direction of anti-compromise.

puts it in his book *Original Meanings*, is that the compromise was not the sufficient, but the necessary condition for the resolution of the substantial issues at hand. It allowed the convention to propose a Constitution that was ultimately adopted. Thus, the American polity is, in fact, governed by an instrument whose most signal feature is the compromise that made it possible.

But constitutional compromise did not stop there. We all are intuitively aware that exercise of the powers granted to the national government – or, for that matter, reserved to the states – in the structural part of the Constitution can clash with the rights guaranteed to individuals by the Bill of Rights, including the Fourteenth Amendment. These clashes are not resolved by any text in the Constitution itself. And they can-

can polity seems to speak most loudly in terms of anti-compromise: that is, in terms of a rigid absolutism of principle on the part of one speaker or another, or indeed, on the part of one major political party or another.

How long can we expect the American people to support a Constitution that is demonstrably inconsistent with the daily practice of politics in American life? We do not have an answer to that question and we do not want to find out what it may be. Instead of waiting to see, a better alternative is to try to look at some of those influences that seem to contribute to the intransigent rhetoric and the reality behind it, and to consider what can be done to mitigate the force of those influences that propel so much of American rhetoric and practice today in the

direction of anti-compromise. That is the subject my colleagues will address this morning.

We cannot canvas the entire landscape at this symposium. (We will not, for example, discuss the influence of Internet news sources that offer cherry-picking by those who do not want to hear any viewpoint likely to oppose their own, although that practice may feed an inclination toward anti-compromise.) But we will assess how three major features of the political system relate to a culture of intransigence and will consider what can be done about them – if, indeed, they turn out to be culprits. First, Heather Gerken will look at the effects of congressional districting in creating an uncompromising politics. This topic includes the Supreme Court’s acquiescence in districting decisions that protect incumbents when district lines are redrawn, producing “safe seats,” or positions in which political competition is reduced. Next, Geoffrey Stone will address the extent to which current limitations on regulating political campaign finance contribute to extremism. He will also discuss the significance of the popular primary in producing this phenomenon. Finally, Mickey Edwards will examine the political primary issue, offering some practical thoughts on what can be done, from the standpoint of someone who has served in the political arena. There is no non-porous border dividing the subject matter that each member of the panel will discuss, so there will be a certain give-and-take in the flow of the presentations.



Heather Gerken

Heather Gerken is the J. Skelly Wright Professor of Law at Yale Law School.

I will discuss the question of whether our current state of partisan politics and political polarization is caused by districting, and whether the courts, in particular, can do anything about it. I share Justice Souter’s concern about the tension between our constitutional arrangements and our democratic ones. One way to frame the point is with the observation that while our politics is well suited for a parliamentary system, we have a structure that is presidential. The level of political polarization and party cohesion that we see today might work well for a system in which one party can control the entire government, but ours is a system of divided powers and electoral lags. In that kind of system, polarization can wreak havoc. In the best of worlds, nothing gets done. In the worst of them, we play chicken with day-to-day governance issues.

The truth is that our Constitution and our democratic arrangements have never been compatible. Unlike most other constitutions, ours did not contemplate the rise of party politics and the infrastructure that would be necessary to regulate them. At the federal and even the state level, we typically lack the mediating institutions that are an essential part of democratic arrangements elsewhere. As a result, it has fallen to the courts to do much of that regulating. Over the years, as legal scholar Rick Pildes has pointed out, our democratic arrangements have become constitutionalized. *Bush v. Gore* is just the tip of the iceberg: in many areas, the courts set the terms of political engagement and do much of the regulatory work, including in campaign finance, election administration, and redistricting.

Precisely for that reason, many of us now look to the courts – particularly the Supreme Court – to save us from our polarized politics. If the Constitution can be invoked to force the entire country to apportion in keeping with the one person, one vote principle; if it can be invoked to invalidate majority/minority districts that Congress itself mandated; if it can be invoked to influence the outcome of a presidential election, then surely the courts can do something now. The argument seems so easy. Most observers think that polarization is rooted in redistricting – that is, in the blatant effort of self-interested politicians to draw districts that are easy for them to win. These “safe districts,” so the argument goes, cater to extreme voters, not moderates. They elect candidates from the edges of the political spectrum, candidates who bring their extreme views to Washington. According to this story, all we need to do is end these egregious gerrymanders and the parties will return to the center, where Duverger tells us they belong in a first-past-the-post system like our own.

The temptation to tell this story is even greater for anyone who is familiar with the Supreme Court's work in addressing partisan gerrymandering because it is the one area in which the Court has been shy, even deferential, in regulating politics. The Court has confidently entered many parts of the political thicket, but here it has been more circumspect. Its initial foray involved adopting standards so high that no gerrymander could possibly meet them. When the Supreme Court looked to the question again a few years ago, it split so badly that we were left with four justices who believed that the Court could not adjudicate partisan gerrymandering claims; four, including Justice Souter, who believed that it could adjudicate them; and one justice playing Hamlet, saying that maybe the Court could adjudicate them, but not at that time.

As a result, party hacks are well aware that this is the one area of partisan politics where they can act without the Constitution affecting them. Worse, to the extent that the ugliness of partisan gerrymandering has entered into the Court's sights, its instinct has often been to bless it, or at least to tolerate it. Unlike other cases, where the Court has used its considerable muscle to force politicians to do the right thing, the Court has been very willing to tolerate the self-interest that is at the heart of redistricting. It has held as legitimate the practice whereby parties draw districts to protect incumbents and create safe districts. If only, we think, the Court would censor this self-dealing; if only it would eliminate incumbency protection as a legitimate interest; if only it would mandate that some of these districts be competitive, then, perhaps, the moderates would finally have their say.

This is the tale we tell ourselves about the relationship between the Constitution and politics, and I want to offer a skeptical view. I want to tell you that the tale is too simple; we have been too confident in our diagnosis and too quick to think that there is a cure, let alone a cure that the courts can administer.

So let me start with a diagnosis. It seems entirely plausible that gerrymandering is responsible for the current levels of polarization because safe districts mean uncompetitive districts, populated with lots of voters from one side or the other. It would not be

those of their colleagues who enjoy safe seats. If you see a moderate in Congress, the odds are that he comes from a district that leans toward a different party.

But if gerrymandering safe seats is not the source of polarization, what is? Some believe that the problem began with party realignment, starting either in the New Deal era or during the 1960s, when the Voting Rights Act began to shift party allegiances in the South. Still others look to economic factors.

Whatever the source of change, we were once governed by a four-party system, one that contained New England Republicans

The rough-and-tumble nature of politics – the incredible energy behind it – fuels restlessness and change. That makes it harder for us to regulate politics . . . but it does suggest at least one prediction that we can make about the politics of the next decade: they will change.

surprising if these districts elected candidates from the extremes as well. There is just one problem with this story: there is not much evidence to support it. It is true that incumbent reelection rates have been rising and that there are more safe districts now than in the past. But it is not clear that gerrymandering is the cause. Safe districts actually increase more between redistricting cycles than during them. And Senate seats, which cannot be gerrymandered, have also become safer because voters are sorting themselves into enclaves with like-minded people.

Far more important is the fact that safe seats do not appear to be much more likely to produce extreme candidates than competitive seats. On both sides of the aisle, the voting patterns of people from swing districts are only slightly less extreme than

and Southern Democrats. That fractured system allowed for moderation; it allowed for political deals that drew in members from both sides of the aisle. But Southern Democrats and New England Republicans, with a few exceptions, are now an extinct species, at least on the national stage. As a result, the parties are much more closely aligned and disciplined. Some think that political elites are causing polarization, and Geoff will talk about the way that primaries interact with party elites to produce polarized politics. Others think that the real problem, ironically enough, is the well-informed voter – that it's you. You are the ones who know a lot about politics, whom politicians pay attention to, and whose views move farther to the left and the right.

My intent is not to referee these arguments, but I want to suggest that the causes of polarization seem to be at some distance from gerrymandering. As best we can tell, they are complex and contingent sources; the courts might not have enough evidence to fix this problem even if they wanted to. Many of the likely causes of the current political atmosphere are well beyond what courts could conceivably address.

Now, while I believe that the Court cannot save us from our polarized politics, I would like to end on a slightly more cheerful note. Politics is remarkably flexible and dynamic. The parties are changelings; political leaders are shape-shifters. Regulating them is very difficult, something that does not bode particularly well for those of us who want the law to cure what currently ails us.

Take, for example, the struggles in campaign finance to regulate sources of money. Every time we regulate one institution, political interests shape-shift and become another. First, they inhabited the parties, next the 527s, then the 502(c)4s and (c)6s. Karl Rove was once inside the White House; now he is running a shadow Republican party that has no formal authority but hundreds of millions of dollars in its war chest. While the fluid and dynamic nature of politics makes it very difficult to solve a specific problem at a specific moment, it does have one benefit: namely, it ensures that many of these problems will be temporary. Dynamism in politics is a double-edged sword in this respect.

Consider the question of polarization that plagues us all today. For decades, people were concerned that the parties were too weak, too divided, too incoherent. We were not worried about polarized politics; we were worried about races between candidates who gave voters no real choice: it was Tweedle-Dum versus Tweedle-Dee. Even as recently as the last few years, academics have been calling for efforts to make the par-

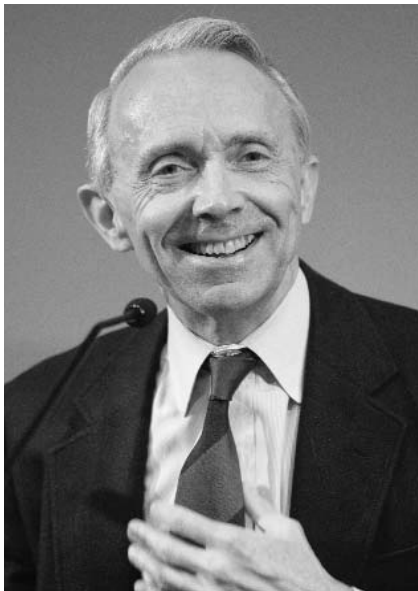
ties *more* coherent, not less. Many academics, for example, were mourning the rise of the candidate-centered election, in which the parties did nothing more than cater to the people running for office and had no influence over the positions that these candidates took. Now, of course, the worry is just the opposite.

One could say sarcastically that the lesson here is “be careful what you wish for,” but I think the lesson is a deeper one. We should be cautious in assuming that political arrangements will remain stable. It would be a mistake to think that what we have now is permanently etched into our system. Political elites will always have the incentive to exploit divisions within the party. There is little question, for example, that the GOP is currently a highly disciplined party, but it is an uneasy alliance. One of my friends likes to joke that the Republican Party is made up of the flat-earthers and the flat-taxers. Setting aside the exaggeration, I do have my doubts about whether the partnership will always remain so stable.

So, too, those on the Democratic side are hardly natural bedfellows. These alliances are ripe for shattering. The rough-and-tumble nature of politics – the incredible energy behind it – fuels restlessness and change. That makes it harder for us to regulate politics, to figure out what the right reform is and to predict its consequences, but it does suggest at least one prediction that we can make about the politics of the next decade: they will change.

Induction Symposium: American Institutions and a Civil Society

The Constitution, the Practice of Democracy, and Unintended Consequences



David H. Souter

David H. Souter is Associate Justice (retired) of the Supreme Court of the United States. He was elected a Fellow of the American Academy of Arts and Sciences in 1997.

We live in a society that is increasingly characterized by a rhetorically and substantially intransigent approach to civic life. *Polarization* is the word used most frequently to characterize public discourse. To constitutional lawyers, there is something very disquieting about the distinct dissonance between a rhetoric and a substance of polarization, on the one hand, and on the other the history of and required practice under the Constitution of the United States.

Those who have studied the history of the 1787 Constitutional Convention invariably point out that, in James Madison's view, the most significant issue to be resolved at the convention was the question of representation in Congress. Would it be allocated on a state-by-state or a population basis? How would representation take into considera-

tion the difference in interests between the slave states and free states? In the end, the terms of congressional representation were established in what is frequently called a "Great Compromise": the states would be equally represented in the Senate; population would be the basis for representation in the House; and the so-called three-fifths clause would account for the institution of slavery, a provision that did not survive the Fourteenth Amendment. The point that lawyers, scholars, and historians of the Constitution always turn back to, as Jack Rakove

not be resolved if either the powers of the government or the civil rights of individuals are viewed as absolutes. Federal authority and individual rights must be regarded as derivatives of competing principles, each good in itself, but neither of which can be exercised to the limit all the time. There is a constant process of adjustment, a constant drawing and shifting of lines, over time and over changes of circumstance. The Constitution simply cannot operate without this kind of compromise. Which is why constitutional lawyers find it disquieting when the Ameri-

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puts it in his book *Original Meanings*, is that the compromise was not the sufficient, but the necessary condition for the resolution of the substantial issues at hand. It allowed the convention to propose a Constitution that was ultimately adopted. Thus, the American polity is, in fact, governed by an instrument whose most signal feature is the compromise that made it possible.

But constitutional compromise did not stop there. We all are intuitively aware that exercise of the powers granted to the national government – or, for that matter, reserved to the states – in the structural part of the Constitution can clash with the rights guaranteed to individuals by the Bill of Rights, including the Fourteenth Amendment. These clashes are not resolved by any text in the Constitution itself. And they can-

can polity seems to speak most loudly in terms of anti-compromise: that is, in terms of a rigid absolutism of principle on the part of one speaker or another, or indeed, on the part of one major political party or another.

How long can we expect the American people to support a Constitution that is demonstrably inconsistent with the daily practice of politics in American life? We do not have an answer to that question and we do not want to find out what it may be. Instead of waiting to see, a better alternative is to try to look at some of those influences that seem to contribute to the intransigent rhetoric and the reality behind it, and to consider what can be done to mitigate the force of those influences that propel so much of American rhetoric and practice today in the

direction of anti-compromise. That is the subject my colleagues will address this morning.

We cannot canvas the entire landscape at this symposium. (We will not, for example, discuss the influence of Internet news sources that offer cherry-picking by those who do not want to hear any viewpoint likely to oppose their own, although that practice may feed an inclination toward anti-compromise.) But we will assess how three major features of the political system relate to a culture of intransigence and will consider what can be done about them – if, indeed, they turn out to be culprits. First, Heather Gerken will look at the effects of congressional districting in creating an uncompromising politics. This topic includes the Supreme Court’s acquiescence in districting decisions that protect incumbents when district lines are redrawn, producing “safe seats,” or positions in which political competition is reduced. Next, Geoffrey Stone will address the extent to which current limitations on regulating political campaign finance contribute to extremism. He will also discuss the significance of the popular primary in producing this phenomenon. Finally, Mickey Edwards will examine the political primary issue, offering some practical thoughts on what can be done, from the standpoint of someone who has served in the political arena. There is no non-porous border dividing the subject matter that each member of the panel will discuss, so there will be a certain give-and-take in the flow of the presentations.



Heather Gerken

Heather Gerken is the J. Skelly Wright Professor of Law at Yale Law School.

I will discuss the question of whether our current state of partisan politics and political polarization is caused by districting, and whether the courts, in particular, can do anything about it. I share Justice Souter’s concern about the tension between our constitutional arrangements and our democratic ones. One way to frame the point is with the observation that while our politics is well suited for a parliamentary system, we have a structure that is presidential. The level of political polarization and party cohesion that we see today might work well for a system in which one party can control the entire government, but ours is a system of divided powers and electoral lags. In that kind of system, polarization can wreak havoc. In the best of worlds, nothing gets done. In the worst of them, we play chicken with day-to-day governance issues.

The truth is that our Constitution and our democratic arrangements have never been compatible. Unlike most other constitutions, ours did not contemplate the rise of party politics and the infrastructure that would be necessary to regulate them. At the federal and even the state level, we typically lack the mediating institutions that are an essential part of democratic arrangements elsewhere. As a result, it has fallen to the courts to do much of that regulating. Over the years, as legal scholar Rick Pildes has pointed out, our democratic arrangements have become constitutionalized. *Bush v. Gore* is just the tip of the iceberg: in many areas, the courts set the terms of political engagement and do much of the regulatory work, including in campaign finance, election administration, and redistricting.

Precisely for that reason, many of us now look to the courts – particularly the Supreme Court – to save us from our polarized politics. If the Constitution can be invoked to force the entire country to apportion in keeping with the one person, one vote principle; if it can be invoked to invalidate majority/minority districts that Congress itself mandated; if it can be invoked to influence the outcome of a presidential election, then surely the courts can do something now. The argument seems so easy. Most observers think that polarization is rooted in redistricting – that is, in the blatant effort of self-interested politicians to draw districts that are easy for them to win. These “safe districts,” so the argument goes, cater to extreme voters, not moderates. They elect candidates from the edges of the political spectrum, candidates who bring their extreme views to Washington. According to this story, all we need to do is end these egregious gerrymanders and the parties will return to the center, where Duverger tells us they belong in a first-past-the-post system like our own.

The temptation to tell this story is even greater for anyone who is familiar with the Supreme Court's work in addressing partisan gerrymandering because it is the one area in which the Court has been shy, even deferential, in regulating politics. The Court has confidently entered many parts of the political thicket, but here it has been more circumspect. Its initial foray involved adopting standards so high that no gerrymander could possibly meet them. When the Supreme Court looked to the question again a few years ago, it split so badly that we were left with four justices who believed that the Court could not adjudicate partisan gerrymandering claims; four, including Justice Souter, who believed that it could adjudicate them; and one justice playing Hamlet, saying that maybe the Court could adjudicate them, but not at that time.

As a result, party hacks are well aware that this is the one area of partisan politics where they can act without the Constitution affecting them. Worse, to the extent that the ugliness of partisan gerrymandering has entered into the Court's sights, its instinct has often been to bless it, or at least to tolerate it. Unlike other cases, where the Court has used its considerable muscle to force politicians to do the right thing, the Court has been very willing to tolerate the self-interest that is at the heart of redistricting. It has held as legitimate the practice whereby parties draw districts to protect incumbents and create safe districts. If only, we think, the Court would censor this self-dealing; if only it would eliminate incumbency protection as a legitimate interest; if only it would mandate that some of these districts be competitive, then, perhaps, the moderates would finally have their say.

This is the tale we tell ourselves about the relationship between the Constitution and politics, and I want to offer a skeptical view. I want to tell you that the tale is too simple; we have been too confident in our diagnosis and too quick to think that there is a cure, let alone a cure that the courts can administer.

So let me start with a diagnosis. It seems entirely plausible that gerrymandering is responsible for the current levels of polarization because safe districts mean uncompetitive districts, populated with lots of voters from one side or the other. It would not be

those of their colleagues who enjoy safe seats. If you see a moderate in Congress, the odds are that he comes from a district that leans toward a different party.

But if gerrymandering safe seats is not the source of polarization, what is? Some believe that the problem began with party realignment, starting either in the New Deal era or during the 1960s, when the Voting Rights Act began to shift party allegiances in the South. Still others look to economic factors.

Whatever the source of change, we were once governed by a four-party system, one that contained New England Republicans

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and Southern Democrats. That fractured system allowed for moderation; it allowed for political deals that drew in members from both sides of the aisle. But Southern Democrats and New England Republicans, with a few exceptions, are now an extinct species, at least on the national stage. As a result, the parties are much more closely aligned and disciplined. Some think that political elites are causing polarization, and Geoff will talk about the way that primaries interact with party elites to produce polarized politics. Others think that the real problem, ironically enough, is the well-informed voter – that it's you. You are the ones who know a lot about politics, whom politicians pay attention to, and whose views move farther to the left and the right.

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Consider the question of polarization that plagues us all today. For decades, people were concerned that the parties were too weak, too divided, too incoherent. We were not worried about polarized politics; we were worried about races between candidates who gave voters no real choice: it was Tweedle-Dum versus Tweedle-Dee. Even as recently as the last few years, academics have been calling for efforts to make the par-

ties *more* coherent, not less. Many academics, for example, were mourning the rise of the candidate-centered election, in which the parties did nothing more than cater to the people running for office and had no influence over the positions that these candidates took. Now, of course, the worry is just the opposite.

One could say sarcastically that the lesson here is “be careful what you wish for,” but I think the lesson is a deeper one. We should be cautious in assuming that political arrangements will remain stable. It would be a mistake to think that what we have now is permanently etched into our system. Political elites will always have the incentive to exploit divisions within the party. There is little question, for example, that the GOP is currently a highly disciplined party, but it is an uneasy alliance. One of my friends likes to joke that the Republican Party is made up of the flat-earthers and the flat-taxers. Setting aside the exaggeration, I do have my doubts about whether the partnership will always remain so stable.

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Geoffrey R. Stone

Geoffrey R. Stone is the Edward H. Levi Distinguished Service Professor at the University of Chicago Law School. He has been a Fellow of the American Academy since 1990.

Polarization in American politics today is generally understood to be a problem. Indeed, the current state of affairs seems incompatible with our constitutional aspirations for the way our government should operate. If the polarization in Washington simply reflected the polarization of the American people, then we could at least take some comfort in knowing that what is happening is the result of what our democracy calls for at the moment. But this turns out not to be true: the American public, in fact, is not all that polarized. Political scientists tell us that, at present, 40 to 45 percent of Americans are more or less moderate in their views, a percentage that has been fairly standard for much of American history. The greater polarization we perceive today is not reflected in the electorate, and that fact should give us pause.

Understanding polarization requires a closer look at how Congress is constituted. In 1970, 47 percent of the members of the U.S. Senate were regarded as moderate. Today, that figure is 5 percent, and it is even lower in the House of Representatives. The decline of moderate views in Congress suggests a kind of dysfunction – a dramatic gap between the views and attitudes of the American people and what we wind up with in our elected representatives. Something is out of whack.

Heather looked at the process of gerrymandering, in which districts are drawn to preserve safe seats, as one possible culprit. As she noted, despite the argument that more extreme candidates are elected in safe districts than in competitive districts, the empirical data suggest that the cause of today's polarization is still not well established. Another possible culprit, perhaps ironically, is the primary system. In line with the theme of this panel, to the extent the primary system is a culprit, it is indeed an example of unintended consequences.

Party primaries came into existence in the late nineteenth and early twentieth centuries, largely as a reaction to the backroom deals of party bosses, who routinely selected candidates without any direct input from the “people,” thus limiting voters to a choice between the two individuals selected for them in smoke-filled rooms. Progressives thought that this arrangement was not a very good way to run a democracy, so they devised the primary as a way to take the selection of candidates out of the control of political hacks. The party primary was thought to be a highly democratizing institution that strengthened the American political system.

Ironically, party primaries are now seen as one of the potential culprits in the polarization problem. There are fairly obvious reasons why that might be so. Because Republicans

and Democrats vote in separate primaries, one candidate is likely to represent more or less the mid-point among Republicans and the other is likely to represent the mid-point among Democrats. Both are likely to be relatively far from the center of the overall electorate. As a consequence, candidates selected in party primaries usually do not reflect the views of the 40 to 45 percent of Americans in the moderate middle. Rather, they tend to represent the 30 percent on either end of the spectrum.

This phenomenon appears to play a large role in producing the kind of polarization we see in our elected officials. We no longer have professional politicians looking for candidates who are most likely to win the general election – that is, candidates near the middle of the political spectrum. After all, if one side produced a moderate candidate and the other a relatively extreme candidate, you could be pretty sure who was more likely to win. The party elite understood this perfectly well.

Making the primary system even worse in this regard is the fact that participation in primary voting has fallen dramatically over the last half-century, from more than 70 percent fifty years ago to about 40 percent today. The people who are most likely to vote in party primaries are those who are most invested in the selection. They are likely to hold more extreme views than more moderate voters. Thus, one potential explanation for our current polarization problem is our use of party primaries, which produce more extreme rather than more moderate candidates for the general election.

How can we solve this problem? One possible solution, short of going back to the party bosses, is the open primary, which allows *anyone* to vote in a party primary, regardless of party affiliation. In 2000, however, the Supreme Court held that open primaries are unconstitutional, stating that the parties have

a First Amendment right of association that guarantees them the right to decide for themselves who can participate in the selection of their own party's candidate. The danger, of course, is that in an open primary of this sort Democrats could participate in a Republican primary to nominate the weakest Republican candidate. To allow individuals who are not members of the party to "distort" the selection process in this manner, the Court reasoned, is an unconstitutional violation of the party's right of free association.

Party primaries are now seen as one of the potential culprits in the polarization problem. We no longer have professional politicians looking for candidates who are most likely to win the general election – that is, candidates near the middle of the political spectrum.

More recently, several states have begun experimenting with a different form of open primary, one that is nonpartisan. Anyone can run in this type of primary, and the highest vote-getters, regardless of party affiliation, earn a place on the ballot. This system has the potential to give moderate voters a much greater influence on the selection of candidates who appear on the general election ballot. The parties themselves can either endorse one or both of the candidates selected in the nonpartisan primary, or they can use other mechanisms to put their own candidates on the ballot. The constitutionality of this system remains to be determined, but in 2007, the Supreme Court tentatively suggested that such a system might be constitutional.

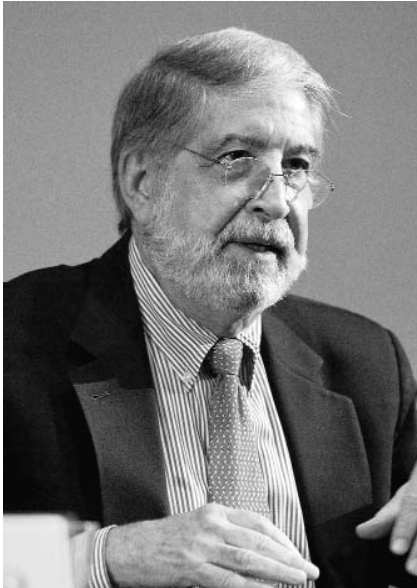
The other issue I want to mention puts the Court in a very different light than the gerrymandering issue. In the gerrymandering context, the Court might be taken to task for being too passive in its willingness to allow states to have partisan gerrymanders. In the campaign finance context, however, the objection to the role of the Court is somewhat different. The concern in this context is that money – particularly corporate and union money – has too great an influence on the political process, creating

concluding that restrictions on the ability of corporations and unions to spend whatever they wished in the political process violate the First Amendment.

That decision put an enormous obstacle in the way of those who believe that the current state of affairs is incompatible with a healthy democratic system. As a practical matter, and short of a constitutional amendment, the only realistic way that *Citizens United* could be overturned is if the fears of Congress and of the dissenters in *Citizens United* prove to be true. In *Citizens United*, the majority argued that the justifications offered by Congress for the law were too speculative to warrant what they saw as a severe restriction on the rights of corporations and unions. If it turns out that the members of Congress who enacted the legislation and the justices who dissented in *Citizens United* were correct, and that a world of freewheeling and unlimited corporate and union political expenditures does indeed have dire consequences for our political system, then a future Court might be in a position to overrule *Citizens United*. The catch-22, however, is that even if the Court at that point is prepared to overrule *Citizens United*, it is highly unlikely that a Congress elected by corporate and union expenditures will be willing to enact legislation restricting the very expenditures that got them elected.

disillusion and alienation on the part of voters, who feel that the "system" is completely outside their control or influence. They may therefore turn away from active participation in our democracy. Money is also viewed as having too great an influence in terms of both corrupting candidates and officeholders and allowing the views and interests of corporations and unions to dominate the political process.

Faced with these considerations, Congress, in bipartisan legislation signed by President George W. Bush, enacted the Bipartisan Campaign Finance Act of 2002, which limited the amount that corporations and unions could spend in political campaigns. Two years ago, in *Citizens United v. Federal Election Commission*, in a sharply divided decision, the Supreme Court held the legislation unconstitutional,



Mickey Edwards

Mickey Edwards is a Vice President of the Aspen Institute and Director of the Institute's Political Leadership Program. He served in Congress for sixteen years.

A successful democracy requires successful institutions that carry out their functions well, that earn the respect of the people, and that therefore make the people comfortable with the system in which they live and in which they are willing to participate. When we talk about our institutions, we note that our political system is not working; our election system is not working; and our governing system is not working. Those are fundamental problems that diminish people's confidence in the institutions that we ask them to support. I believe the root cause of these problems is the amount of control over the election system and the governing system that we have ceded to the political parties that control access to the ballot, how district lines are drawn, who sits on what committees, and how the basic functions of Congress are carried out.

All of us want choices in life. We want choices in our smartphones, and we want choices in the kinds of microwaves we can buy. But we allow two private parties to tell us that unless we are able to jump over major barriers, when we go to the polls in November we may choose, among all the people in our constituency, between Candidate A and Candidate B. I do not know why we insist on more choice among the electronics we use than among the people who make our laws, but we have let our local, state, and federal governments cede the power that we entrust to them to private organizations that have as their only goal the gaining and keeping of power.

I would like to add to what Geoff said about the role of the primary election in producing more extreme candidates, an issue I approach from a purely process and constitutional direction. Take, for instance, the 2010 Delaware U.S. Senate primary. In a state of one million people, thirty thousand voted for Christine O'Donnell, and as a result, Mike Castle, former governor and popular congressman, could not appear on the ballot. Similarly, at the 2010 Republican convention in Utah – a state of three million people – 350,000 voted for someone other than the incumbent Senator Robert Bennett, who then could not appear on the ballot. In most states, a loss in the primary precludes a candidate from appearing on the general election ballot, no matter how many people in the state might have preferred that candidate as their first choice.

When you are elected to public office, you should base your vote on three things only: first, your constituents' preferences and interests; second, your own judgment; and third, what the Constitution allows or prohibits. When you let other factors enter into that equation – voting because it is good for your party, or because of who contributed to your campaign – you are not merely playing

games with politics, you are eroding the entire democratic system. Democracy is not about whether the candidates elected are centrist, or moderate. It is about whether the voters are able to choose among all the possible people they might be able to select to make laws for them in Washington. As Justice Souter mentioned, it would be nice if you had a more centrist outcome. That is not my primary concern, however, because most of the great movements that have made progress in our country – the civil rights movement, the women's movement, the gay rights movement, the labor movement – were not movements from the center. The center has no magic to it. Progress comes from having principles and operating a system whereby the people have choices.

The Constitution states that to be a member of the U.S. Senate or the House of Representatives, you must be an inhabitant of the state from which you are elected. This provision, which broke from previous experiences in governance elsewhere, means that you must know your constituents, their concerns, and their preferences. I served in the House as a Republican in a heavily Democratic district that had not elected a Democrat since 1928. When the Democrats controlled the legislature, they redrew my district. (I should say that Republicans do exactly the same thing.) My district moved from the center of Oklahoma all the way up to Kansas, and then in an upside down "L" halfway over to Arkansas. After the redistricting, I was representing wheat farmers, cattle ranchers, and small-town people whose views, perspectives, and concerns I did not really understand. They were the ones who were hurt by a system that allowed districts to be redrawn according to what served the advantages of the political party in power.

The root cause of our problems is the amount of control over the election system and the governing system that we have ceded to the political parties that control access to the ballot; how district lines are drawn; who sits on what committees; and how the basic functions of Congress are carried out.

When George W. Bush was president, *Washington Post* columnist Dana Milbank wrote that the president was stepping out of his role as head of government to function in his other role as head of state. I was teaching at the Woodrow Wilson School at Princeton University at the time, and I asked my students, “What jumps out at you about that description? Is it basing rights, flyover rights, trade agreements?” The answer is: the president is not the head of government! We do not have a head of government. We have three separate, equal branches of government, and that separation of powers is critical to the way we operate as a free people. Our system vests a great deal of power in Congress, which has the final say over going to war, over tax rates, over spending decisions, over creating or ending programs. The situation in Congress today recalls Gilbert and Sullivan’s *H.M.S. Pinafore*, in which Sir Joseph maintains that he has been appointed ruler of the Queen’s Navy because “I always voted at my party’s call, and never thought of thinking for myself at all.” In Congress, your party label decides how you vote on Elena Kagan’s or Sonia Sotomayor’s confirmation to the Supreme Court; how you vote on economic stimulus; how you vote on almost every kind of issue that comes up.

There are solutions. I favor all candidates running on the same ballot. I favor the non-partisan redistricting commissions that have been implemented in thirteen states. And I favor changing the entire basic functioning of Congress: a shift to nonpartisan staff and taking away from party leaders the ability to choose who sits on what committees in exchange for promises to vote the party line. I would also advocate a move toward a less partisan speakership. But we will not solve the problem unless we change our framework. We keep going back to the theme of, “Take back our government.” We did it in 2010, 2008, 2006, and 2004. Nothing changes! And it is because the system we have is based on the good of the party, not the good of the country. ■

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Advancing Science, Engineering, and Technology Policy

Initiative for Science, Engineering, and Technology



Neal Lane

Neal Lane is the Malcolm Gillis University Professor, Professor of Physics and Astronomy, and Senior Fellow at the James A. Baker III Institute for Public Policy at Rice University. He was elected a Fellow of the American Academy in 1994 and serves as Vice Chair of the Academy's Council. He is also Cochair of the Academy's Initiative for Science, Engineering, and Technology.

I am Cochair of the Academy's Initiative for Science, Engineering, and Technology, and I am privileged to have Charles Vest, President of the National Academy of Engineering and former President of MIT, joining me as the other Cochair. The Initiative is an umbrella for several Academy projects in the science and technology policy area. You will hear about some of the current projects in just a moment, but let me mention others that we have recently completed.

The Academy organized a project to examine the teaching of science to non-science majors at U.S. colleges and universities. What are the goals of the science curriculum at liberal arts institutions? Are those goals

appropriate? Are they being met? A study committee chaired by Jerrold Meinwald of Cornell University and John Hildebrand of the University of Arizona collaborated with provosts, deans, and others from institutions around the country, and the Academy published a volume, *Science and the Educated American: A Core Component of Liberal Education*, that included examples of best practices and recommendations for higher education leaders.

Another project flipped on its head a much-studied topic: public understanding of science. The Academy instead considered scientists' understanding of the public. The

area of study is typical of how Academy work evolves.

Let me say a word about why the Academy is, I believe, well suited to take on this work. The Academy is independent, which permits it the latitude to explore issues that the Fellows believe are important to pursue. Another distinctive feature of Academy studies is their interdisciplinary nature. By drawing on experts from virtually all academic disciplines, as well as leaders from the professions, public affairs, journalism, and the arts, the Academy brings a multidisciplinary, cross-institutional perspective to its examination of an issue.

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capacity of scientists to secure funding, pursue laboratory work, and provide sound advice to policy-makers depends on an understanding of the social implications and likely public responses to their research. Through a series of case studies, this project brought together scientists, journalists, policy-makers, and others to explore these issues. The resulting paper, *Do Scientists Understand the Public?*, generated a great deal of press coverage and conversation in the science blogosphere.

One of the case studies from that project considered the importance of public attitudes in introducing new energy technologies. The examination of that topic led to a new Academy study, *Social Science and the Alternative Energy Future*, which Robert Fri and Kelly Sims Gallagher will discuss later. The process of one project leading into another

In 2008, the Academy organized just such a cross-disciplinary group to assess alternative models for the federal funding of science. The group was chaired by Nobel laureate chemist Thomas Cech, who then headed the Howard Hughes Medical Institute, a position he subsequently left to return to research and teaching at the University of Colorado. There are regular calls from many quarters for more federal money for science and technology research. The Academy committee began its work with a different question: regardless of the size of the pie, what strategies can we adopt to maximize the impact of the government's extensive investment in research?

After twelve months of work, our committee produced a report called *Advancing Research In Science and Engineering*, which has come to be known as the *ARISE* report. In

Advancing Research in Science, Engineering, and Medicine: Creating an Innovation Ecosystem (ARISE II)

answering the question – how to make federal support for science more effective – the committee chose to focus on two primary issues: support for early-career investigators and support for high-risk, high-reward research.

The first *ARISE* report had tangible impact in Washington. Our recommendations for targeted support of early-career investigators and for transformational research were contained in the stimulus legislation and in the Obama administration's first two budgets. And key science and technology funding agencies have strengthened existing programs and adopted new ones to focus on early-career investigators and high-risk research.

The Academy organized a second phase of the *ARISE* project, which Keith Yamamoto, along with Linda Katehi and Leah Jamieson, will now describe.



Keith Yamamoto

Keith Yamamoto is Vice Chancellor for Research, Executive Vice Dean of the School of Medicine, and Professor of Cellular and Molecular Pharmacology at the University of California, San Francisco. He was elected a Fellow of the American Academy in 1989 and serves as Cochair of the Academy's ARISE II project.

I was a member of the *ARISE* I committee, and it was a terrific experience. As you heard from Neal, that committee chose two tight foci: support for new investigators and for transformative research. The *ARISE* II committee, which I cochair with Venkatesh Narayanamurti of Harvard University, has taken almost the polar opposite strategy, stepping back to look at the whole endeavor of research in science and engineering. It has set for itself a broad goal, nothing less than a consideration of the state of twenty-first-century science, engineering, and medicine in the United States, as well as an analysis of how those endeavors can best move forward.

To do this, the committee considered the historical set points that have taken the fields

within science, engineering, and medicine to where they currently reside. And in doing that, we came to understand that the two sectors evolved rather separately – the physical sciences and engineering on one side and the life sciences and medicine on the other – and therefore they need to be approached separately, both to understand their current state and to envision how they can go forward. The physical sciences and engineering, as they evolved, always kept the full spectrum in front of them, from fundamental discovery to application. The life sciences, on the other hand, considered discovery and application to be separate. Basic discoveries in life sciences were considered ivory tower exercises in intellectual discovery and were not viewed as one step toward application. However, with the formation of Genentech in 1976, it suddenly became apparent that direct applications could come from fundamental discoveries in the life sciences. What has made the *ARISE* II project more than an interesting academic exercise is that the physical sciences and engineering and the life sciences and medicine now find themselves at exciting points not only in their own rights but also in terms of how they can integrate and begin to work together moving forward.

Many consider the twentieth century to be the century of physics and chemistry. (At least many scientists believe that.) It was defined by air travel, space exploration, the transistor, the electronics revolution, and so forth. The twenty-first century, according to some, may well be the century of biology: the sequencing of the human genome, understanding disease mechanisms at their core in ways that can be effective for treatment of individual humans, developments in agriculture and plant biology that are multiplying yields of crop plants, and so forth. But the grand opportunity, as perceived by the committee, is to recognize the

interdependence and opportunities for synergy between the life sciences and medicine and the physical sciences and engineering – and then to create a balanced and functioning ecosystem that supports interdependence and synergy. Yet even with recognition, the integration can be uneasy, made more difficult by economic pressures, long-standing policies, and the complex interactions

government, long-established policies that may in fact create perverse incentives and do damage along the way; in industry, retrenchment from early stage research that widens the “valley of death” for application of discoveries from academia.

As you might guess from the scope of this report, it could be complicated to put together a group that would not be beset with

The grand opportunity is to recognize the interdependence and opportunities for synergy between the life sciences and medicine and the physical sciences and engineering – and then to create a balanced and functioning ecosystem that supports interdependence and synergy.

among the three key stakeholders in the research enterprise: academia, industry, and government.

The committee has focused on the interfaces between these three stakeholders insofar as they affect the shape of twenty-first-century science, engineering, and medicine. The interfaces that evolved in the twentieth century need to change, given where the fields have come and the new opportunities for bringing them together. Attention to the interfaces will better empower science, engineering, and medicine to address vexing societal issues of health, environment, food, energy, and so forth.

The committee is forming its final recommendations, and our report will examine the interfaces, consider drivers of change, determine what can best motivate movement in the right directions, and propose specific policy recommendations for each stakeholder group. The committee is looking with eyes wide open at a lot of sacred cows: in academia, tenure and promotion policies; in

divisive opinions and conflicts. I think that is one of the unique characteristics of the Academy: that it can undertake a study of this breadth and depth and still have impactful recommendations because of its convening power, its multidisciplinary approach, and the fact that it is fiercely independent. What will emerge will be a report with substance and impact.

Advancing Research in Science, Engineering, and Medicine: Creating an Innovation Ecosystem (ARISE II)



Linda P.B. Katehi

Linda P.B. Katehi is Chancellor, Professor of Electrical and Computer Engineering, and Professor of Women and Gender Studies at the University of California, Davis. She was elected a Fellow of the American Academy in 2011.

The ARISE II committee is looking at the collaborations between various stakeholders when it comes to innovation. One question that we asked was, why is it that at certain times in our history – during and after World War II, for example – we have been so successful in innovating and creating products with specific uses? In recent times, we have found this innovation ecosystem to be broken, and we have encountered multiple difficulties in trying to move from ideas to services and products.

Right after World War II, a particular ecosystem developed within industry; it was what we mean when we talk about *vertical integration*. The ecosystem was well sustained and comprised many elements all in the same environment: basic research, incentives for specific outcomes, and funding. In-

Our inability to translate all the ideas we have into products or services is directly related to the difficulty in integrating basic research and translation – a problem that is especially difficult in the life sciences.

tegration was optimized because decisions were made by the same organization. Bell Labs and IBM stand out as clear examples of the ecosystem I am describing. There was intent to develop a product and discipline in the process; there was a partnership between individuals doing fundamental research (but for a purpose) and those who would then take the ideas and produce something specific. The outcome of that process was phenomenal, leading to many technological innovations. A lot of industry and markets were developed because of those environments.

Today when we look at the ecosystem, we find that the connections between the various parts are broken. This is because many parts have moved to a variety of sectors. Funding is now dominated by the federal government, with many decisions made by that sector as well. Basic research groups are distributed throughout academia; there are now very few major laboratories in industry. Then, of course, we have the marketplace, which forms itself on the basis of what the need is and what the public wants. In the ecosystem we have today, the ability to move from one component to another is very difficult. Our inability to translate all the ideas we have into products or services is directly related to the difficulty in integrating basic research and translation (a problem that is especially difficult in the life sciences). And the integration between the period of translation and the eventual creation of products that are needed in the market –

and the eventual creation of markets for these new products – is even more difficult to accomplish.

All the components of the ecosystem exist, but different players are making decisions about the various aspects of the ecosystem. With better integration, we will be able to succeed. One thing is for sure: we are not short of ideas, and we are not short of needs in this society. We must find the right way to connect the two.

Advancing Research in Science, Engineering, and Medicine: Creating an Innovation Ecosystem (ARISE II)



Leah Jamieson

Leah Jamieson is the John A. Edwardson Dean of the College of Engineering, the Ransburg Distinguished Professor of Electrical and Computer Engineering, and Professor of Engineering Education at Purdue University. She was elected a Fellow of the American Academy in 2011.

Keith and Linda have given a clear picture of some of the issues and have identified some of the drivers of change in the industry. They explored the changes in where research is being done and the granularity of the organizations in which a research problem is taken from conception, to research, then development, and on through to an actual product. Underlying all of this is a sense that the sustainability of the funding models for research is changing radically. There is enormous concern about the role of the federal government and its inclination to fund or not fund research, as well as recognition that there need to be alternative sources. We have to understand how universities and industry work together and then build on the leverage points for federal funding or other sources of funding.

Industry and universities across all the sectors of the life sciences and medicine and the physical sciences and engineering must work together in constructive ways, maintaining a flow across the scale of basic to applied research.

The committee's recommendations are still being developed, but they all stem from the assumption that industry and universities across all the sectors of the life sciences and medicine and the physical sciences and engineering must work together in constructive ways, maintaining a flow across the scale of basic to applied research. On the industry side, this will affect how one thinks about conflict of interest, about intellectual property, and about the ability for people from industry to interact with faculty: for example, through resident appointments at universities that would allow collaborative research. We need to think about the depth and nature of that collaboration. Can people at universities do something more than work at the fringes of industry's core problems? On the academic side, can we recognize multidisciplinary work? Can we recognize contributions on the applied side, some of which may be shrouded by confidentiality agreements because of industry partnerships? These questions have implications on the value system, rewards system, promotion, tenure, technology transfer, and, again, intellectual property rights. The ARISE II study is focused on science and engineering, but it in fact has implications across entire academic institutions, because change will not happen in a vacuum.

For me, the process of serving on this committee has been enlightening. We came together from all these sectors – industry, academia, government – with very different backgrounds, histories, records of funding models, industry interactions, and kinds of

institution. The first three meetings of the committee might best be described as chaotic. We had to understand each other's problems. We had to suggest other people who could come in to articulate either the challenges or successes they had faced. But understanding did grow among the committee members, and what is now coming together is a very coherent whole, with a depth of appreciation of different histories but a vision for a shared future.

International Agreements on Internet Protection



John D. Steinbruner

John D. Steinbruner is Professor of Public Policy at the School of Public Policy and Director of the Center for International and Security Studies at the University of Maryland. He was elected a Fellow of the American Academy in 1992 and serves as Cochair of the Academy's Committee on International Security Studies.

The spontaneous development of the Internet has made it vulnerable to the potential for intrusion and destruction or disruption of critical social services. The considered judgment at the moment is that these vulnerabilities can be mitigated but not removed by technical means, and that no single sovereign entity is a plausible source of unique protection. So we have an international problem on our hands. The spontaneous process of protection of the Internet has so far been sufficient to hold exploitation within tolerable bounds (a lot of stealing of information goes on, but it is not intolerable) and to prevent the massive acts of disruption and destruction that are, in principle, conceivable. That process is en-

abling a global public service or public utility to emerge, intruding in the daily lives of virtually everyone.

The question is, will this spontaneous process of protection be indefinitely sufficient, or will it ultimately require globally organized protection at a much higher level than now exists? The Academy's project on *International Agreements on Internet Protection* is designed to examine the latter alternative, conceding that the former is also arguable.

The ingredients of global protection, if one imagines an arrangement that would provide serious protection, would have to begin with the categorical legal prohibition of destructive acts targeted at social infrastructure operations.

We are looking at the possibility that globally organized protection will prove to be necessary. It is not too hard to figure out the requirements for serious protection, but coordination would have to be global in scope, meaning it would have to be sponsored in some way by the United States, Russia, and China, the major players in this situation. Protection would have to be narrowly focused; it could not account for everything that one worries about, but rather would focus on acts of destruction or massive disruption directed at critical social assets, including power grids, air traffic control systems, financial clearing processes, emergency response operations, and health care delivery. The ingredients of global protection, if one imagines an arrangement that would provide serious protection, would have to begin with the categorical legal prohibition of destructive acts targeted at social infrastructure operations. I would argue that the power grid is likely to be the test case in this regard. In addition to legal prohibition

of destructive acts, there would have to be common standards of protection involving rules for authenticating source codes and probable separation from the normal Internet. It would take a lot of organization to bring that about: there would have to be compliance monitoring as well as criminal enforcement of these arrangements conducted on a global scale.

The impediments to such an arrangement are obvious. There is serious suspicion and

recrimination among the major players – China, Russia, and the United States. We all are accusing each other of maliciousness of various kinds. In order to untangle that and face it head on, we must engage much broader security subjects, such as the confrontational disposition of nuclear and conventional forces and the legacy policies and attitudes associated with that; and the fear of or allegations of use of the Internet for hostile political intrusion into domestic processes. (China, in particular, is sensitive to this latter point, but Russia is as well.)

The danger if we do not overcome these impediments is the development of highly destructive offensive missions by the United States, Russia, and China. Each would cite the other as a justifiable threat; action would be driven by mutual suspicion, not inherent interest. The practical situation is reminiscent of what was faced immediately after World War II, when there was an effort to imagine how global management of nuclear technology might be imposed to avoid mas-

Protecting the Internet as a Public Commons

sive deployment of nuclear weapons. We pretty much preemptively declared that effort to be unfeasible, and we did not test whether it would have been possible to achieve global standards of protection. We do not want to make the same mistake. Whether or not it can be done, we certainly want to imagine a serious effort toward ensuring protection.

As a practical matter, an official initiative is very unlikely to emerge from the governments at the moment. They simply are not devoting serious enough attention to this topic. But the U.S. government at least has called for detailed public discussion, implying that it cannot operate until society has a better idea of what it wants to do. The Academy's study can be a vital part of that public discussion.



David D. Clark

David D. Clark is a Senior Research Scientist at the MIT Computer Science and Artificial Intelligence Laboratory. He was elected a Fellow of the American Academy in 2002.

The Academy has had a long interest in security, which has historically been centered around arms control, but which has led to interest in cybersecurity as a potential topic of consideration. The recent issue of *Dædalus* that I guest edited, "Protecting the Internet as a Public Commons," draws on the Academy's longtime interest in security topics.

Much of the rhetoric around cybersecurity today focuses on the potential for intense conflict, leading to the use of terms such as *cyberwar*. I'm sensitive to the potential of a major cyberevent that could have catastrophic consequences, but I think for most users, the metaphor of *cyberwar* is a bit shrill. I do not wake up in the morning and wonder whether today is the day that I'm going to be the incidental victim of a cyber-attack any more than I worry about today

being the day my house is overrun by Cossacks. Most Internet users are concerned about less dramatic but more prevalent issues that define the Internet experience as the user perceives it: Is my credit card number going to be stolen? Is my identity going to be stolen? Is today the day that some malicious software on my computer is going to send a spam advertisement for knockoff Viagra to all my friends? You may suffer intense embarrassment.

This issue of *Dædalus* looks at the experience of using the Internet. What do we use it for? Why do some of us not use it? What concerns limit our use? What features shape its use? The question of why some of us do not use the Internet is an important and revealing one. John Horrigan's contribution to the volume reports data from the Pew Internet & American Life Project and data gathered by the Federal Communications Commission. Almost a quarter of American homes surveyed report that they do not use the Internet. One reason is cost, which of course relates to perceived value: if they thought of the Internet as valuable, then it would be worth paying for. But a major reason was fear of "bad things" happening on the Internet. Horrigan's paper makes an important point: as more and more activities move online – for example, applying for jobs – non-users are more and more disenfranchised. This fact should be a major concern to us as a society. We need to try to mitigate the barriers and concerns that limit usage.

Loss of privacy is a recognized concern. Many websites offer long privacy policies that prospective users are required to review and accept on a "take it or leave it" basis. I'm sure many of you have done this. The paper by Helen Nissenbaum in the *Dædalus* issue argues that the current approach is fundamentally flawed. She observes that in the real, or offline, world we do not have such

documents. You did not sign a privacy policy when you came into this auditorium today. Our expectations are shaped by well-understood conventions that arise in particular contexts. We have norms, and we have regulations around health records, commerce, tax returns, library catalog searches, overheard conversations in restaurants that you are supposed to pretend not to hear. In this respect, the term *cyberspace* is misleading because it suggests that online behavior occurs in a unique and different space, with unique and distinctive norms. Nissenbaum argues that most online behavior has a strong ana-

logue in the real world. We should not depend on long privacy agreements to define the set of expectations on the parties; we should understand the context in which the arrangement occurs and the norms and expectations that arise in that context. One can draw a number of conclusions and observations from this collection of papers. In a global world with little global policing, the means by which bad behavior is controlled and stable, harmonious interaction is fostered must largely come from within an experience and not from without. Software defines the rules of engagement that create various online user experiences, whether that be on Facebook, eBay, or email. The Internet is a built artifact, and we can change the rules of engagement if we are only smart enough to know how. Viewed in this way, security is not a technical problem

that calls for a technical fix but a socio-technical issue that is a balancing act among conflicting objectives. For example, identity is a component of developing trust among users, and it is a means of disciplining bad actors. It does not make sense to talk about whether you trust one person more than another if you cannot tell who anyone is because everyone is running around with a bag on his head. On the other hand, mandatory revelation of identity would have tremendously chilling effects. Imagine if you were required to walk around with your name, address, and phone number written in large characters on a placard for all to see. This is not a better option than having a bag on your head. Matters of identity and trust are nuanced aspects of the social fabric, as some of the papers in the *Dædalus* issue make clear. their motivations are. In the early days, we were a bunch of government-funded researchers. We did not quite know what we were doing, but we were trying to build a global platform for society. Most of the investment today comes from the private sector, which, not surprisingly, designs systems and user experiences with an eye toward revenue generation. That driver of progress is fine, but in my view it should not be the only driver for the future of the Internet. Several of the *Dædalus* essays make the point that different futures, with very different social implications, are up for grabs. One of the questions we should ask is, how can we cause the Internet we want for society to come into being?

We should not just accept the Internet as it is, but should ask how it might be made differently and better. . . . How can we cause the Internet we want for society to come into being?

Other papers in the volume look more specifically at the issue of security. A paper by Deirdre Mulligan and Fred Schneider puts forward a proposition that the way to think about network security is by analogy to public health; they argue that we need a doctrine of public cybersecurity. Another set of papers looks at the ways we choose to use the Internet. Kay Schlozman, Sidney Verba, and Henry Brady caution that the Internet does not seem to have changed the nature of U.S. political engagement. Despite hopes that the Internet might be the great leveler in political engagement, they find that political activity online more or less follows established trends in traditional offline political activities.

We should not just accept the Internet as it is, but should ask how it might be made differently and better. And we should ask who is building the Internet today and what

The Humanities and Intellectual Life

The Importance of the Humanities and Knowledge



Don M. Randel

Don M. Randel is President of The Andrew W. Mellon Foundation. He was elected a Fellow of the American Academy in 2001.

These are not particularly happy times for the nation's intellectual and cultural life, and in fact, we are witnessing what amounts to a massive disinvestment in that life. If you think about the context for this state of affairs, and about the circumstances in the past when we did make investments, one is bound to conclude that our current situation rests on facts about our national temperament. We are a nation with a practical turn of mind, a well-developed anti-intellectual streak, an underdeveloped memory, and a focus on the future.

Investments in the national intellectual life have mostly been justified on one of three bases: if they contribute to the gross domestic product, if they contribute to the national defense, or if they help increase the life span of human beings. But what are the values associated with those commitments, and what might be the deficits among those

values? If we make contributions to the gross domestic product, we ought to be concerned about whether the profits from those investments are distributed equitably across society. If we wish to justify the national defense, you would hope that this would be accompanied by real knowledge of the cultures and traditions of other peoples, especially those with whom we might plan to go to war. Perhaps, too, we should know something about the languages and cultures of the people we would hope to be our allies in any such adventure. Yet these two forms of knowledge have been underrepresented in our foreign policy. And finally, we like to in-

Carlos Williams's poem "Asphodel, That Greeny Flower": "It is difficult / to get the news from poems / yet men die miserably every day / for lack / of what is found there."

How does one make a strategy out of that? What should any of us, or the Academy as a whole, want to do about that? Of course, instrumental arguments can be marshaled in support of the humanities and the arts; one can think of many practical reasons why the study of history, the study of the humanities, and the making of art are valuable. Indeed, supporters of the arts are currently bearing down very hard on the instrumental argument. Bring arts to the inner city and it will

Scientists do science for the same reason that artists make art, for the same reason that humanists engage in humanistic scholarship, and it is because they cannot help it. We all are born with a marvelous capacity to ask questions, a desire to explore what is unknown or what is imperfectly known.

invest *now*, and we have been quick to increase investment in the biomedical sciences for the sake of extending the human life span. We need to think also about how to make the benefits of this investment available to a much broader spectrum of society, not just the well-to-do.

What is lacking is not so much a concern about the value proposition of our investment in the intellectual life of the nation; rather, it is the values proposition in our investment – and that is the domain of the humanities and the arts. When we invest in efforts to increase the human life span, we ought to be concerned about why it is that one would want to be a human being in the first place. In thinking about that question, I cannot help but recall the lines from William

be good for business, they say. People will come in from the suburbs; they will hire babysitters; they will use parking lots and tip the parking attendants; they will tip the waiters. All this may create economic activity, but it misses the point of thinking about why human beings make art in the first place. In this context, it is important to remember that there really are not two cultures, as has sometimes been proposed. There is really only one.

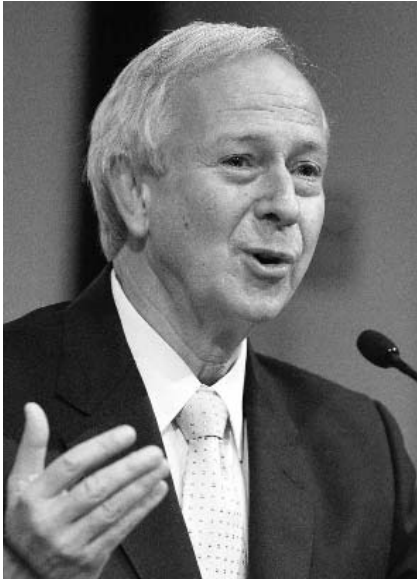
Scientists do science for the same reason that artists make art, for the same reason that humanists engage in humanistic scholarship, and it is because they cannot help it. We all are born with a marvelous capacity to ask questions, a desire to explore what is unknown or what is imperfectly known. One

of the main problems with our schools today is that we beat this curiosity out of young people. We must not pursue the instrumental argument (though it would be nice to pursue it); instead, we must come back to the values that underlie the human pursuit of more or less anything worth pursuing.

When talking about the humanities, we are not really dealing with a question of funding. The National Endowment for the Humanities (NEH) has a budget, if it continues to exist at all, of about \$150 million, a pathetic sum that is approximately equal to the cost of one F22 airplane. (The Department of Defense doesn't even want any more of those planes, but some piece of that plane is made in nearly every congressional district in America. So, needless to say, there are those who think the Defense Department ought to have the planes.) Careful students of our defense budget will wonder why I'm talking about the F22, since it is being discontinued. Why don't I speak about the F35 Lightning Joint Strike Fighter? We do not yet know what that plane will cost, but we are sure that we need it. So it is not a matter of going to Congress to argue for a doubling of the NEH budget, or the National Endowment for the Arts budget, because it would not amount to very much even if we did. But there comes a moment when all of us – scientists, humanists, artists, social scientists – need simply to stand up and claim some space in the national dialogue. Even if it does not lead to an increase in any one organization's budget (though one can think of lots of things to spend money on), we have to be willing to say to the public as vigorously as we can, "What is it that we think is important about life? What should human beings aspire to? How can we make the life of the mind richer for everyone in society?"

The Academy is a wonderful place to frame such a discussion, to bring together people of diverse interests, to try to claim that space in the national dialogue, and that is why the Mellon Foundation is very happy to support the Academy's efforts in this respect. I look forward to learning the outcome, to listening in on the conversation from time to time, and to hearing what all of you will contribute.

The Importance of the Humanities and Social Sciences



Richard H. Brodhead

Richard H. Brodhead is President and Professor of English at Duke University. He was elected a Fellow of the American Academy in 2004 and serves as Cochair of the Academy's Commission on the Humanities and Social Sciences.

The Academy having envisioned it, Congress having requested it, and the Mellon Foundation having partly funded it, a team was pulled together last winter that, in imitation of the adventure film *Ocean's Eleven*, might be called Berlowitz's Fifty. Of those asked to serve on the *Commission on the Humanities and Social Sciences*, most accepted instantly and only two or three declined. Why: because it was clear what we would accomplish? No; because it was clear that something was at stake.

The foundational modes of knowledge are strongly represented in this room, but they are weakly appreciated in our culture, and failing to provide for them exacts a collective cost. Math and science are not yet off the endangered list, but they have had their claim advanced for them in a very compelling way.

In the last six or eight years, the meaning of STEM education for national competitiveness and national security has become a truth universally acknowledged, repeated in almost identical language from State of the Union addresses to PowerPoint presentations delivered at local civics groups.

But no one ever thought that STEM comprised the whole of valuable knowledge, still less that American accomplishments in other fields were in any way more reassuring. (As Norm Augustine has underlined, the poorest level of educational accomplish-

The good news is that there is an immense public appetite for the humanities if it could be successfully tapped.

ment registered in the National Assessment of Educational Progress by American fourth, eighth, and twelfth graders is in history.) What drew members to this Commission is the challenge of making a comparably persuasive case for trans-STEM subjects and skills.

This is a fun task but not a trivially easy one. At our first meeting, the interplay of thirty passionate and articulate intellects did a splendid job of opening up the subject. It's too soon to say where we will come out, but in this first pass, certain general and crucial agreements did become clear.

First, while the title of this Commission implies a familiar map of intellectual divisions, we are committed to connections and integrations, and against every fiction of separation. We do not conceptualize the humanities and social sciences as the list of departments placed in these divisions in arts and sciences faculties. We see them as including every form of expressive creation and human collectivity, from speaking and writing to the arts, to religion and law, to cultures, systems of value and systems of exchange.

Second, we are not interested in pitting the humanities against the sciences or promoting ourselves as STEM's poor but virtuous relation. The group's core belief is in the liberal arts conception of knowledge that incorporates arts *and* sciences: a broad, integrative education that develops multiple modes of knowledge and promotes connectivities among them.

Third, we want to escape from false choices over forms of validation. Perhaps you have noticed: the humanities have not created a mass following by presuming ap-

preciation of their unique intrinsic value. For this reason, those keen to build support reach for other kinds of arguments, among them: the single skill employers value most highly is communication. Or, learning to connect previously unconnected things is the way to creativity and thus the key to innovation and economic success. Or, arts are a key driver of regional economic growth. Or, how can we navigate a globalized world if we don't understand foreign languages, cultures, histories, and values? Or, how can we train citizens for our own multicultural if we don't develop the ability to enter into others' points of view?

Many humanists feel that it betrays their work's value to argue for its social utility, and I will testify that if you have not felt how these subjects expand awareness, furnish the mind, and feed the soul, you don't yet get their power. But if we want to win broader appreciation, we need to sharpen every possible argument in the arsenal of persuasion, not make finicky choices among them. Preaching to the choir will be fine when the need to build the congregation has passed.

The Importance of the Humanities and Social Sciences

Fourth and very quickly: the humanities suffer from the segmentation of their support. No one grows in these powers who is not awakened early and subjected to early training, so the early chapters of education require our special concern. But in this country, those who work in K-8 education, in high schools, in undergraduate colleges, in graduate training, in institutions that support lifelong education – the media, cultural institutions, community organizations – have all been far too isolated from one another, with little sense of shared goals and of how they might pool their resources. To build a more coherent source for powers that require lifelong exercise, we need to find better ways to connect the points.

The bad news is that we can't take for granted that the general population knows or cares about these mental provinces to the extent that our social health requires. The good news is that curiosity is the defining attribute of our species, and there is an immense public appetite for the humanities if it could be successfully tapped. It's heartening that the non-academics on this Commission have been among the most articulate champions for the forms of mind the liberal arts can develop. Now we need to work to build the irresistible case.



Steven Knapp

Steven Knapp is President of The George Washington University. He was elected a Fellow of the American Academy in 2011.

One advantage enjoyed by a university located in Washington, D.C., is the opportunity to host discussions of national and international issues. In recent years, the George Washington University has had the privilege of hosting the Academy with some frequency. In fact, the Academy has been coming to our Foggy Bottom campus for a number of years to participate in the annual meeting of the National Humanities Alliance, which is then followed by a day of advocacy in the halls of government.

This past May, we hosted a fascinating workshop on ways to bring the social sciences to bear on the cultural and social obstacles to the adoption of new energy technologies. The workshop was part of the Academy's *Alternative Energy Future* project, and it is one of many examples of how the Academy not only proclaims but demonstrates the relevance of the humanities and social sciences to the flourishing of this na-

tion and the world beyond it. But why is it necessary either to proclaim or to demonstrate the relevance of the humanities or the social sciences?

I want to focus on the humanities and offer just two reasons, one with ancient and the other with very recent causes. The first, the ancient one, is the doubt that work in the humanities counts as a source of real or useful knowledge. This thought goes back at least as far as Plato's dialogue "Ion." Ion is a rather hapless professional reciter of poetry, whom Socrates badgers into admitting that poetry does not contain any generally useful knowledge because poets don't really possess any genuine expertise; they merely mimic those who do. If we were to update Socrates' critique, we might say something along the following lines: the content of poetry, or the humanities more generally (and to a lesser extent the social sciences), is bound to the particularities of historical context and the lived experience of the occasions that prompt curiosity in the first place, whereas the natural sciences aim at general explanatory laws, whose power does not depend on the particularity of the objects or phenomena that stimulate scientific inquiry. Scientists may initially be stimulated by particular phenomena, but they transcend those phenomena as they develop general ways of explaining them.

The trouble for humanities scholarship in particular is that the more scientific humanities scholarship becomes – that is, the more it strives for general explanatory power – the further it seems to depart from the culturally prestigious objects and events that originally provoked the scholar's interest. This fundamental difference between the logic of scientific and humanistic curiosity is something that I have elsewhere called "the enduring dilemma of the humanities," and it is a challenge that the Academy has been working on, one way or another, since its origin more than 230 years ago. John Adams,

And that's why it matters not only to make the case for but actually to exemplify the kind of careful study and long-term reflection that really do seem to be slipping away from the habits of our society.

around the time that he was envisioning the Academy, remarked that he was hopeful that after a generation focused on war and politics, the American people would be freed to focus on science and engineering, which, in turn, would free the third generation to focus on the humanities. (He went on to list a set of humanities fields that culminated in porcelain!)

The enduring dilemma is always in the background; it is nothing new. A proxy for the second, more recent challenge is what the media like to call the decline of reading. A series of studies published with great fanfare by the National Endowment for the Arts (NEA) has appeared to show, first, a precipitous decline in literary reading and then, over the course of the past decade, a surprisingly rapid recovery. The data and its interpretation, however, are far more complex and controversial than that summary statement would suggest. Some would argue that the so-called decline was really a shift from books and articles to blogs and other items available online. Others would point out that the recent rise in the number of adults reading prose fiction was accompanied by a continuing decline in the readership of poetry and drama. One striking figure in the NEA's 2009 study is that the percentage of American adults who do not read even a single book in the course of a year that is not required by their job or school has risen to 45.7 percent.

My own view is that, thanks to the Internet, we will continue to read more and more, but that the practice of slowly, carefully reading any extended discourse, literary or

otherwise, in book or article form will continue to decline. That decline is both the cause and an effect of a far more troubling decline: a decline in the skills and, equally important, the habits of long-term reflection on the nature and conditions of human existence – reflection on what corporations would call the opportunities and challenges that face our species, or what poets would call our joys and sorrows. And that's why it matters, after all, to have a body with the collective intellectual weight of the American Academy of Arts and Sciences, not only to make the case for but actually to *exemplify* the kind of careful study and long-term reflection that really do seem to be slipping away from the habits of our society.

The Importance of the Humanities and Social Sciences



Diane P. Wood

Diane P. Wood is a Federal Judge on the U.S. Court of Appeals for the Seventh Circuit and a Senior Lecturer at the University of Chicago Law School. She was elected a Fellow of the American Academy in 2004 and serves as a member of the Academy's Trust, Council, and Midwest Regional Committee.

I want to offer a more pragmatic view of what I hope this Commission will be able to achieve. I go back to the fact that it was created at the bipartisan request of Senators Lamar Alexander and Mark Warner and Congressmen Tom Petri and David Price. It was very gratifying to have them say, “We believe this matters. We believe this will make a difference to the future competitiveness of the United States, to the future of the United States as a coherent society.” It should be music to all our ears to know that people in Congress are thinking about these matters. They gave us a challenge: “Tell us what we can do to make a difference. How can we move this forward? Give us a top ten list.”

We all would probably agree with the premise that there is intrinsic value in the humanities, and Don Randel already mentioned the fact that people make instrumental arguments for the humanities. In my mind, I divide the arguments between those for bringing the humanities more effectively to the population as a whole – the supply side or the training side, if you will – and those for helping people understand why the humanities are something they should want, whether intrinsically or otherwise. On the supply side, there is a question of where and how we are going to accomplish the necessary training, and so the Commission thought of dividing our task by age group. The usual breakdown includes the K-12 group, undergraduates at four-year colleges and universities, and graduate students; but we also wanted to remember the places in our educational landscape that are often forgotten. Not everyone goes to one of the universities represented at this table or to the places where many of you went. Many of our fellow citizens wind up with no college training at all, or they attend a community college or vocational school. Professional schools also deserve attention. One of the members of the Commission is the dean of a business school; if we are to secure the role of the humanities throughout our educational system, then we must remember advanced professional studies. Yet even those at four-year colleges might say, “I’m an engineering major, I haven’t looked at a book that wasn’t about engineering since I was a junior in high school.” We do not want that to be the case, and so we are looking at the whole spectrum of education levels and types of institutions.

We also considered community outreach, asking the question: what ought to be within everyone’s core competence? There was some talk about the basic subjects that should be treated, whether history, social sci-

ence, or English. One member of the Commission suggested that we should apply to ourselves the “Wal-Mart test”: can you tell someone in the checkout line at Wal-Mart why it is what we are doing is important?

On the demand side, we have to recognize that there is a disconnect between experience and the value of the humanities. Several members of the Commission suggested a fresh vocabulary. I hate to be frivolous, but when you talk about “liberal arts,” each word in that phrase is scary for some people: *Liberal? We don’t want to do that! And what are the arts for?* Someone suggested “fully balanced curriculum,” which may not be perfect but does suggest a new direction.

John Rowe, Cochair of the Commission, was asked, “What do you as a businessperson value? Would you hire somebody with this background?” He said both of the things that you might expect: “Yes, we in business value the humanities a great deal; but no, we don’t want to hire somebody who can’t add or who otherwise is not competent in some business field we need.”

The Academy is absolutely the right place for this study because we are in a position not only to think about the humanities by drawing on the very broad expertise of Academy members, but also to realize that the humanities will not stand alone. As Dick Brodhead said, we aim to achieve a balance – a linking of the humanities, the sciences, and the other disciplines for the proper functioning of society.

The Importance of the Humanities and Social Sciences



David J. Skorton

David J. Skorton is President of Cornell University as well as Professor in the Departments of Medicine and Pediatrics at Weill Cornell Medical College in New York City and in Biomedical Engineering at the College of Engineering on Cornell's Ithaca campus. He was elected a Fellow of the American Academy in 2011.

I have three messages in my brief remarks. The first is that the Academy really is the place to conduct these kinds of messy but very important studies, because of its convening power, because of its fierce independence, and because we are not afraid to argue with each other behind the scenes.

With all due respect to Don Randel and others (I'm the only non-humanist on the panel, although, in reality, all physicians are humanists), I think it is important that we not only claim a space for the humanities, but claim some support for that space as well. I'm old enough to remember when the budget for the NEH was \$175 million, which was its top. It was 50 percent or more of all the research funding available in the human-

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ities in those days for college and university humanists. Now, because of decisions made by our elected representatives, this endowment has decreased 40 percent in inflation-adjusted dollars during the same years when the National Science Foundation budget has approximately doubled as has that of the National Institutes of Health. So the second of my three messages is that while we are trying to come to terms with what we mean and how we express it, I think that it is important that the NEH and NEA do not go out of existence. A Congressional study committee suggested that both endowments be zeroed out this year, but they were not. This was an important victory not so much because of that tiny bit of money that Don referred to but because of what it says about the *idea* that public money should go to support these areas, just as it goes to support the life and other sciences. My research career was in engineering and medicine, and so I believe those subjects are very important. But the subjects in the humanities and the arts are important, too – important enough to be supported by the taxpayer.

My third and last message is another instrumental reason that I think is very important; it is the reason that I take to the most conservative members of Congress. (Those are the only ones I talk to about this matter, because preaching to the choir is a time-wasting activity right now, when members of our elected bodies appear to be ready to really savage many programs.) I say to them: "When our intelligence agents collect information about those people whom we're fighting around the world, they give that information to analysts, and those analysts are not predominantly physicists or molecular

biologists or physicians. They're humanists and social scientists. So if you want to sleep better at night, make sure that you give enough support to our great colleges and universities. Don't forget to keep teaching the things that you want smart people to be analyzing so that you can sleep better at night."

The Energy Future

The Alternative Energy Future



Kelly Sims Gallagher

Kelly Sims Gallagher is Associate Professor of Energy and Environmental Policy at the Tufts University Fletcher School, where she directs the Energy, Climate, and Innovation research program in the Center for International Environment and Resource Policy.

Thirty-eight years have passed since the first oil crisis, thirty-four since the National Research Council issued its first report on global climate change, and twenty-one since the first Intergovernmental Panel on Climate Change issued its first assessment report. The reasons for change in our energy system – national security or economic competitiveness come to mind – certainly persist, and in some cases they have grown more urgent: climate change, for example. Every American president since Richard Nixon has devised a plan for changing the U.S. energy system, almost all calling for energy independence, but each has failed to meet his objectives.

What has gone wrong, and why? The good news is that during the past four decades, the commercial availability of many advanced,

efficient, and clean-air energy technologies has increased, and costs have fallen substantially for many of these technologies. In the United States at least, some aspects of our environment are cleaner, and we are experiencing better environmental quality. The bad news is that U.S. export competitiveness in alternative energy technologies has fallen behind Germany, Denmark, Japan, and even South Korea and China. The United States ranks 134th among nations in the overall energy efficiency of its economy. Greenhouse

vidual household, community, corporate, or government energy decision-making processes. Consequently, many assumptions made by policy-makers in formulating new energy policy may be incorrect.

As we struggle to address all these energy-related challenges, we must balance our intellectual and financial investment in the physical and natural sciences and engineering with a commitment to the social sciences. The Academy is just the place to explore this topic. There is a pure interest in

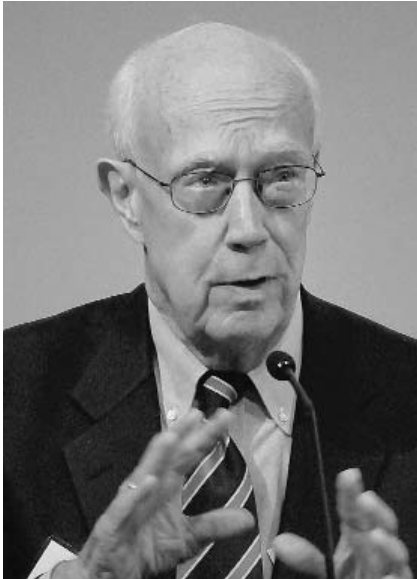
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gas emissions in the United States appeared to have peaked in 2009, but they have rebounded in the last year and remain steadfastly above almost all other advanced economies in per capita or per GDP terms. And while the U.S. oil supply has become more diverse, oil imports currently account for 45 percent of the U.S. trade deficit.

The national energy system is resistant to change. Political will to devise ambitious and strategic energy policy is feeble, resistance from some interests is formidable, and the American public does not appear to pay much attention to energy policy. We have only a rough understanding of how society shapes the energy system, and how it, in turn, affects society. We know precious little about private-sector investments in energy innovation, and we know even less about how they intersect with or duplicate government investments. Furthermore, we do not understand the complex dynamics of indi-

the social sciences here, and the Academy provides more flexibility and intellectual freedom to follow these issues where they go. It permits and, indeed, encourages interdisciplinary study, and gives us the ability to be entrepreneurial with the insights we have been developing.

The Alternative Energy Future



Robert W. Fri

Robert W. Fri is a Visiting Scholar and Senior Fellow Emeritus at Resources for the Future. He was elected a Fellow of the American Academy in 2010 and chairs the Academy's Alternative Energy Future project.

If there is to be a gigantic transition in the energy system – to meet our needs for energy security, environmental protection, and climate change – there has to be a substantial societal transformation that would take place at the same time, both to allow the energy system to change and to adapt to a changed system. We began our project with an intellectual construct of some major issues about that societal transition. We planned to prepare white papers on those major issues and produce a volume of *Dædalus* around them, but once our plan met reality it collapsed.

Two things happened right after we began this project that created our version of chaos. One, climate policy collapsed. The idea of cap and trade, which looked favorable eighteen months ago, collapsed in the U.S. Congress. Meetings in Copenhagen that

were supposed to produce the successor agreement to Kyoto also collapsed. Because climate policy was meant to be the major driver of energy policy, we realized that we needed to rethink the drivers of energy policy and our approach to them.

Two, the President's Council of Advisors on Science and Technology (PCAST) published a report on the energy innovation sys-

tem, the process by which new energy technologies are ultimately diffused throughout the economy. The report made the extraordinary observation that once technology was developed, the barriers to its diffusion had less to do with the technology itself than with the behavior of individuals, households, and institutions in adopting that technology.

Two, the President's Council of Advisors on Science and Technology (PCAST) published a report on the energy innovation sys-

cial sciences and how they relate to energy policy, we'd like to help. We're already working on that problem." They liked the idea, and the result was a May 2011 workshop at George Washington University, where we brought together a number of social scientists and energy policy-makers to introduce them to the idea that the social sciences have a lot to say about how energy policy can be

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So we shifted our plan and made a couple of changes. We added an issue of *Dædalus*: one issue will discuss the postmodern energy picture from a policy viewpoint, the second will look at societal responses to that energy policy. Furthermore, the PCAST report recommended that in order to deal with the problems of individuals, households, and institutions in adopting energy technology, the Department of Energy (DOE) and the National Science Foundation (NSF) should jointly fund a major social science research program. So we went to the key people at DOE and NSF – Steve Koonin, who was then Under Secretary for Science at the DOE, and Cora Marrett, who is Deputy Director of the NSF (both, incidentally, Fellows of the Academy) – and said, "If you are serious about doing something with the so-

successful. That workshop was very productive, and we will issue a report of its recommendations later this year. We are putting together another workshop to be held here in Cambridge in November. It will engage individuals from the private sector around the same kinds of questions raised at the D.C. workshop.

Our changes to the project have been very useful. The workshop had a significant impact on bringing NSF and DOE together and bringing social science into the ambit of energy policy-making at DOE. In fact, the workshop report will be endorsed by both Koonin and Marrett, as a way of saying, "We really do believe that this has got to happen." Their imprimatur will be an important first step toward top-level endorsement. The report will contain a number of actions to help advance the integration of social sciences into the energy-policy framework. It will serve both NSF and DOE, but will be helpful to others as well. For instance, the Committee on the Human Dimensions of Global Change at the National Research Council plans to use our report as a jumping-off place in designing its upcoming research agenda.

Safety, Security, and Safeguards for Nuclear Energy

The first *Dædalus* issue, on energy policy, will be published in Spring 2012, which is opportune because it will coincide with the start of a presidential election campaign. If we do have something useful to say about energy, we will have a fine time to say it. The second issue, on the social sciences, will appear in early 2013, which will coincide with the advent of a new administration in Washington – a good time to talk about institutional issues. Again, I hope that will give us a platform for contributing to the public policy debate.

I would like to get back to those big intellectual questions that we developed at the outset of this project, and I think we will. But we have certainly had an interesting time over the last year making adjustments to the project. I believe we are now poised to make some important contributions.



Scott D. Sagan

Scott D. Sagan is the Caroline S.G. Munro Professor of Political Science, Senior Fellow at the Freeman Spogli Institute, and Codirector Emeritus of the Center for International Security and Cooperation at Stanford University. He was elected a Fellow of the American Academy in 2008 and serves as Codirector of the Academy's Global Nuclear Future Initiative.

When Academy President Leslie Berlowitz came to my Stanford office a number of years ago to ask whether I would be interested in sharing the leadership responsibilities for an Academy project looking at the nuclear future, I pulled out the pathbreaking 1960 issue of *Dædalus* on arms control off my shelf. Several influential scholars and policy-makers – Hubert Humphrey, Henry Kissinger, Thomas Schelling, Paul Doty – were involved with that extraordinarily important issue. It was called “the bible of arms control” by John F. Kennedy, and it created arms control as a legitimate topic for both scholarly analysis and govern-

ment consideration. The 1960 *Dædalus* issue was the first major publication to argue that it was in the United States’ interest for the Soviet Union to have invulnerable second-strike nuclear forces, because then the Soviets would be less fearful of an American attack and might be willing to have some constraints on their behavior and their nuclear forces. This was a conceptual innovation and, eventually, contributed to a significant policy breakthrough.

That issue also created a tradition of Academy projects and publications related to arms control and the nuclear future. A *Dædalus* issue from 1975, “Arms, Defense, and Arms Control,” showed how arms control had become part of the American defense policy establishment; the United States had developed an arms control branch of the State Department, for example. Many of the same authors from the 1960 issue contributed to this new volume, but the focus was on integrating defense policy with arms control. By 1991, the Soviet Union had collapsed, and the Academy devoted an issue to looking back on thirty years of arms control: “Arms Control: Thirty Years On.” The issue marked the first time that non-Americans were invited to comment on this topic in *Dædalus*, and it contained a great deal of historical reflection: what the role of arms control had been, and what it should be in the future.

In 2009 – 2010, our project produced two volumes of *Dædalus*, not on arms control in the traditional sense of Russian-American arms control or Chinese-American nuclear arms control, though those topics are still important. Instead we focused on what we see as the even more important question for the global nuclear future. That is, can we have the spread of nuclear energy to more countries, or expansion within countries that have it already, without also creating security challenges related to nuclear weapons, nuclear

Can we have the spread of nuclear energy to more countries, or expansion within countries that have it already, without also creating security challenges related to nuclear weapons, nuclear proliferation, nuclear terrorism, or nuclear safety?

proliferation, nuclear terrorism, or nuclear safety? Our project believed that thinking through that problem and identifying some potential solutions would be very valuable. So we assembled a group of international voices – from France, Egypt, Brazil, Iran, Sri Lanka, Russia, Japan, and America – to debate these issues. It is a diverse group not only in terms of profession or discipline – we have social scientists, scientists, businessmen, diplomats, leaders of international organizations, and politicians – but also in terms of the range of perspectives. Thomas Schelling, for example, argues in the first of the two issues that getting rid of nuclear weapons would be a very bad thing, creating conditions that would allow for a conventional World War III. In that same issue, Sam Nunn argues quite the opposite position: that doing away with nuclear weapons in a verifiable manner would be extraordinarily important to produce more security for both the United States and other nations.

The *Dædalus* volumes have been just one part of our effort to reach out to international audiences and to policy-makers, both domestic and international. The project has been equally active in promoting global discussions and dialogues about how best to reduce nuclear risks. For example, in May 2010 the Academy, along with Carnegie Corporation of New York, brought together past and current diplomats dealing with global nuclear issues to meet with our project leaders during one of the lunch breaks at the Nuclear Non-

Proliferation Treaty (NPT) Review Conference at the United Nations. The meeting, which included Libran Cabactulan, President of the 2010 NPT Review Conference, gave us an opportunity to discuss what the NPT means today and how it can be improved.

Safety, Security, and Safeguards for Nuclear Energy



Steven E. Miller

Steven E. Miller is Director of the International Security Program at the Belfer Center for Science and International Affairs at the Harvard Kennedy School. He was elected a Fellow of the American Academy in 2006 and serves as Co-director of the Academy's Global Nuclear Future Initiative. He is also Cochair of the Academy's Committee on International Security Studies.

On March 11, 2011, a massive earthquake off the northeast coast of Japan triggered an enormous tsunami that exceeded the design parameters of the Fukushima Daiichi Nuclear Power Plant, located near the coast. The plant was swamped and lost complete power for a protracted period of time. This outage led to a loss of cooling, which caused the heat build-up that subsequently produced hydrogen explosions, radioactivity releases, core meltdowns, and so on. Though the earthquake and tsunami caused a vast human tragedy, there was almost no direct loss of life from the nuclear accident. It was, however, massively disrupt-

tive and resulted in fifty-mile or more evacuation zones (including some areas that will be uninhabitable for some time to come), huge losses of energy, significant decreases in economic activity, and massive cleanup costs. The aggregate impacts of the Fukushima accident are estimated to measure in the hundreds of billions of dollars.

It will be some time before all the details of this experience are fully gathered and understood, but the story that is emerging seems to suggest that the fundamental problems involved unwise design choices, poor decisions about safety criteria, and considerable management and regulatory failures

phenomenon. In the last half-dozen years, more than 60 additional states have approached the International Atomic Energy Agency (IAEA) expressing serious interest in pursuing nuclear power. If you take the aggregate pipe dreams of every nation that is thinking about nuclear power, several decades down the road we could be living in a world where nuclear power is much more widely distributed, including in a number of countries that are new to nuclear power. But even if many nuclear dreams never come true, we are almost certain to witness a substantial spread of nuclear power to additional countries. The global nuclear landscape is changing.

Are the governance arrangements we have for managing nuclear power on a global scale adequate today, and will they be sufficient for the future?

by the responsible parties in Japan. The Fukushima experience vivifies the set of issues that we are trying to address in the Academy's Global Nuclear Future Initiative. It reminds us of a fundamental question: how can humankind manage this technology in a way that harvests the benefits of nuclear power while avoiding the potential adverse risks and consequences? Keep in mind that Japan has a mature, sophisticated nuclear sector; this was not some neophyte struggling to deal with the accident. Nevertheless, by virtue of the various governance arrangements for handling the nuclear industry in Japan, it was not only the reactors that were overwhelmed by the tsunami but also the human capacity to respond.

We live in a world with 440 nuclear reactors distributed across approximately 30 countries. The most recent reactor to go live, subsequent to Fukushima, was in Iran in May 2011, at a place called Bushehr. Iran is merely the spearhead of a much wider phe-

This scenario raises the question of whether the governance arrangements we have for managing nuclear power on a global scale are adequate today, and whether they will be sufficient for the future. The additional stress that could arise from the growth and expansion of nuclear power is one of the things that has animated our project. Fukushima is a wrinkle in the sense that it will probably slow and constrain the future growth of nuclear power; but Scott and his team at Stanford have been monitoring the situation very closely, and the reality is that most of the states that are seriously interested in pursuing nuclear power have explicitly articulated an intention to move forward, despite Fukushima, for a variety of reasons.

Our project is looking at safety issues, fuel cycle management issues, and the nonproliferation implications of the large-scale spread and expansion of nuclear power around the world. We are thinking about

Safety, Security, and Safeguards for Nuclear Energy

ways to improve or adjust the collective governance mechanisms that currently exist to manage the global nuclear order. We held a workshop in August 2010 called *Game Changers for Nuclear Energy*; we considered the potential for a large-scale accident and what that might mean for the trajectory of nuclear power. We are undertaking significant policy outreach, not only in the United States but also with the IAEA, the World Institute of Nuclear Security, the Arab League, and the Association of Southeast Asian Nations. We are working hard to ensure that our project's voice is heard in the debate over how to build appropriate structures to buffer against the Fukushima-like possibilities that could arise in relation to nuclear power.



Robert Rosner

Robert Rosner is the William E. Wrather Distinguished Service Professor in the Departments of Astronomy and Astrophysics and Physics at the University of Chicago, where he also serves as Founding Director of the Energy Policy Institute at Chicago (EPIC). He was elected a Fellow of the American Academy in 2001 and serves as a member of the Academy's Council. He also serves as Senior Advisor to the Academy's Global Nuclear Future Initiative.

The Fukushima disaster happened when we were in the process of planning a project workshop on nuclear energy to be held in Chicago. We reconfigured the workshop to respond to the disaster, and here the convening power of the Academy really mattered. We gathered an international group of experts, including of course the Japanese. A very important element of our project that both Scott and Steve alluded to is a belief that in the nuclear arena in particular, the time for America to lecture the rest of the world has long passed. In fact, for us to be effective in the work that we do, it is es-

sential that we have the kind of international, multidisciplinary, cross-institutional conversations that are the hallmark of this project and of the work of the Academy in general.

There is still much to be learned about what happened at Fukushima, but some lessons are already clear. One lesson has to do with the role of the operator and the regulator. When dealing with critical technology (that is, technology where the downside risks can be enormous) under emergency conditions, decisions by on-site operators, taking into account site-specific emergency plans, must take precedence. Yet in the case of Fukushima, there was wrangling between the on-site staff and senior TEPCO executives back in Tokyo. For example, the issue was whether the on-site staff should be allowed to vent the main pressure vessels of the reactors. The folks in Tokyo said no, likely for political reasons. It is arguable that the lack of venting early on contributed to the hydrogen explosions that led to much greater radioactivity releases than would have happened if the pressure vessels had been vented.

Several questions arise: How did the operators come to this point? Where was the regulator? What is the relationship between the regulator and the operator? It has become clear that despite the fact that Japan has an extremely well-developed nuclear sector from a technical point of view, it is underdeveloped from the human factor viewpoint. Japan had not implemented the lessons learned from accidents such as Three Mile Island – namely, that the (government) regulator must be independent of both the operator and the government promoter of the regulated industry.

There is also the question of how to take humans out of the command chain under conditions where speed of response is of the essence. The aircraft industry, for example,

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has designed planes so that if a plane enters stall conditions, automatic systems respond first. (It is interesting to note that the recent Air France disaster over the Atlantic was a case of the operators, the pilots, fighting the automatic system, to bad effect.) Can that kind of thinking, whereby humans are removed from the emergency response system wherever possible, be a guiding light for the nuclear industry worldwide? It is our hope as a group, working with our international colleagues, that the nuclear industry will move aggressively to a world where the human factor – the relationship between the regulator and the operator – is clarified and engaged in a sensible way. ■

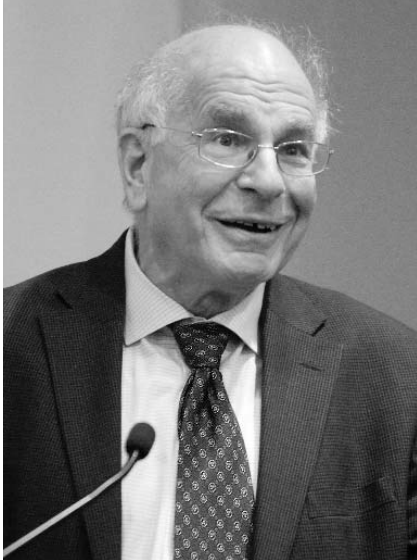
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To view or listen to the presentations, visit <http://www.amacad.org/events/Induction2011>.

Two Systems in the Mind

On November 9, 2011, Daniel Kahneman was awarded the Talcott Parsons Prize by the American Academy for his pioneering research in behavioral economics. The award, presented at a ceremony in Cambridge, honors outstanding contributions to the social sciences. At the award ceremony, Kahneman spoke on “Two Systems in the Mind.” An edited transcript of his presentation follows.



Daniel Kahneman

Daniel Kahneman, recipient of the American Academy's 2011 Talcott Parsons Prize, is a Senior Scholar and the Eugene Higgins Professor of Psychology, Emeritus, and Professor of Psychology and Public Affairs, Emeritus, at Princeton University. He has been a Fellow of the American Academy since 1993.

The work for which I am being honored was done in collaboration with Amos Tversky (see photographs on next page); he and I had a lot of fun studying judgment and decision-making together. For fifteen years, I had the exceptional joy of being part-owner of a mind that was much better than my mind, and I think Amos felt the same way. We somehow were better together than we were singly.

The research that we did was essentially introspective. We certainly collected data, but that was almost incidental. Our major method was simply to spend many hours together every day, generating puzzles for each other. What we were looking for were cases in which we knew the answer to a puzzle,

but our intuition wanted to say something else. That is, we were looking for counter-intuitive ideas in our own thinking, and we devised many problems in which the intuitive answer is wrong.

To give you a sense of how that works, consider this example: Steve, who is a meek and tidy soul, has a need for order and structure and a passion for detail. Is he more likely to be a librarian or a farmer? Bearing the description of Steve in mind, your intuition tells you that he resembles a librarian much more than a farmer. That resemblance is immediately transformed into a judgment of probability. This process happens to most people, and it happens very quickly and quite robustly.

In many cases, people can easily solve problems correctly when presented with two versions. For example, how much would you pay for a cold cut of meat that is 90 percent fat free, and how much would you pay for cold cuts that are 10 percent fat? When those two problems are shown together, people see that they are identical. Viewed separately, however, they are not identical: people will pay more for 90 percent fat free than for 10 percent fat. There is an immediate intuitive reaction to each description, an emotional reaction that is translated into the price that people are willing to pay.

Such self-contained and very short examples were the key to the cross-disciplinary impact of our work. This feature was largely incidental; we presented the problems as part of the text so that people would read the examples and relate them to their own experience. I think that if we had presented the data only in the manner in which psychological data are conventionally presented, it would have had very little impact. But because we included such relatable examples, people outside the discipline could

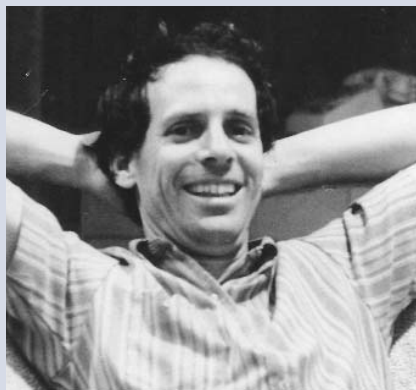
appreciate that yes, this is something that they had not suspected about their own thinking.

The examples make us keenly aware of two kinds of thinking. There is intuition, and then there is computation, or reasoning. The very first study that Amos and I did together was of the statistical intuitions of statisticians – that is, people who were quite versed in statistics – and we demonstrated that their intuitions were indeed flawed. The contrast between intuition and reasoning has long been known, but in the past twenty years, it has attracted considerable attention. In psychology, we now speak of two types of thinking. Figure 1 reveals one way that thoughts come to mind. The lady in the photograph is angry, and you know that she is angry as soon as you see her – as quickly as you know that her hair is dark. The important aspect of the experience is that it is something that happens to you, it is not something that you do. You do not decide to make a judgment of this person. You just



Figure 1

Amos Tversky (1937 – 1996)



perceive her. The ancient Greeks described seeing the world as largely a passive experience. In the same way, intuitive ideas come to mind unbidden, on their own. When you look at this picture, notice also that perception involves an element of prediction. You already know something about what the woman will sound like, and you know something about the general character of the next thing that she will say.

A simple mathematical problem demonstrates another way that thoughts come to mind. When first faced with the problem of, say, 24×17 , probably nothing comes to mind. In order to generate the answer, you have to do something entirely different. You have to bring up a program that you learned in elementary school, and then you have to complete a series of steps, all the while remembering the partial products and what to do next. This is not something that happens to you, it is something you do. Now, $2 + 2 = 4$ happens to you, but $17 \times 24 = 408$ is something you have to do. The experience that we have in solving the problem makes us the authors of the product; there is a sense of agency and will. Performing this action requires focused attention.

Furthermore, it is effortful, and there are several ways of measuring effort. One is physiological: the area of the pupil of the eye will dilate by approximately 50 percent; heart rate will increase; and many other changes will occur while a person is engaged in solving that problem. More important, the fact that

this computation is effortful means that you cannot carry it out while doing something else that is demanding. Very few people can – and no one should try – to complete that computation while making a left turn into traffic. Attention is a limited resource, and the amount required to perform the computation leaves very little to perform other tasks. If there is a priority, such as making a left turn into traffic, you will stop the computation. Everyone has an executive control that allocates attention to different tasks. It determines when attention is required for some operations and not for others.

Psychologists have had much to say about the two types of mental operations. One is automatic, experienced passively and usually rapidly. We have called it “fast thinking.” The other is effortful, deliberate, demanding of attention. Automaticity is the defining feature of fast thinking, or Type 1 thinking. Effort and deliberate attention are the main characteristics of Type 2 processes.

I have adopted a different terminology: I speak of System 1 and System 2. I want to apologize for using this terminology because it is considered almost sinful in the circles in which I travel. System 1 and System 2 are fictitious characters; they do not exist as systems or have a distinctive home in the brain. Yet, I think these terms are very useful. To explain my choice, I turn to the book *Moonwalking with Einstein* (2011). In the story, author Joshua Foer, who is the brother of writer Jonathan Safran Foer and is himself a science

writer, undergoes memory training and, a year later, becomes the Memory Champion of the United States. He can memorize decks of cards in a couple of minutes and perform many other feats of memory that most people would consider – and that he, himself, had considered – incredible. What makes this kind of accomplishment possible?

It turns out that the human mind and human memory are much better at some tasks than others. Evolution has shaped our brains so that there are tasks we do easily and others we don’t do easily. In particular, we are terrible at remembering lists, but we are very good at remembering routes through space. If you want to remember a list, you must imagine a familiar route and mentally distribute the items in the list around that route. Then you can find these items when you need them. This is basically how people memorize decks of cards and perform other miracles of memory.

We are also not very good at understanding sentences that have abstract subjects, but we are very good at thinking about agents. Agents can be people or other things that act. We can assign actions to them, remember what they do, and, in some sense, remember why they do it. We form a global image of agents.

My choice of terms is considered a sin because we are not supposed to explain the behavior of the mind by invoking smaller minds within the mind. The reliance on *homunculi* is a terrible thing to do if you are a psychologist. Nevertheless, I will speak of System 1 and System 2 because I think it is easier for people – myself included – to think about systems than to think about the more abstract Type 1 and Type 2. We can always translate any statement about System 1 into Type 1 characteristics. For example, we

can say that System 1 generates emotions; in Type 1 terms, we would say that emotions arise automatically, effortlessly, and relatively quickly when the appropriate stimulus arises. But it is often simpler to speak of the characteristics of System 1 and System 2.

System 2 performs complex computations and intentional actions, mental as well as physical. It is useful to think of System 2 as the executive control of what we think and what we do. That turns out to be a difficult task; controlling ourselves demands effort. We know that self-control is impaired when we are engaged in the effort of doing other things. For example, if you ask people to remember seven digits, and then to perform other tasks while keeping those seven digits in mind, they will behave differently than they would if they were not trying to remember seven digits. Given a choice between sinful chocolate cake and virtuous fruit salad, they are more likely to choose the chocolate cake if they are trying to remember the seven digits because the effort impairs self-control. Self-control is part of the limited resources system, and we can deplete the limited resources system so that after someone has tried for ten minutes to watch an emotional film while keeping a straight face, the ability to perform a hand-grip task is weakened. The person is less able to perform the act of will that is needed to make a powerful hand grip.

Now that I have introduced you to the two systems, I will tell you a few things about System 1. Most of the information we have about System 1 was not available when Amos and I did our work. When you put fairly recent psychological research together with what we knew, things begin to make more sense.

Let me give you an example of the new research. One study was done in a U.K. laboratory where, as is often the case in U.K.

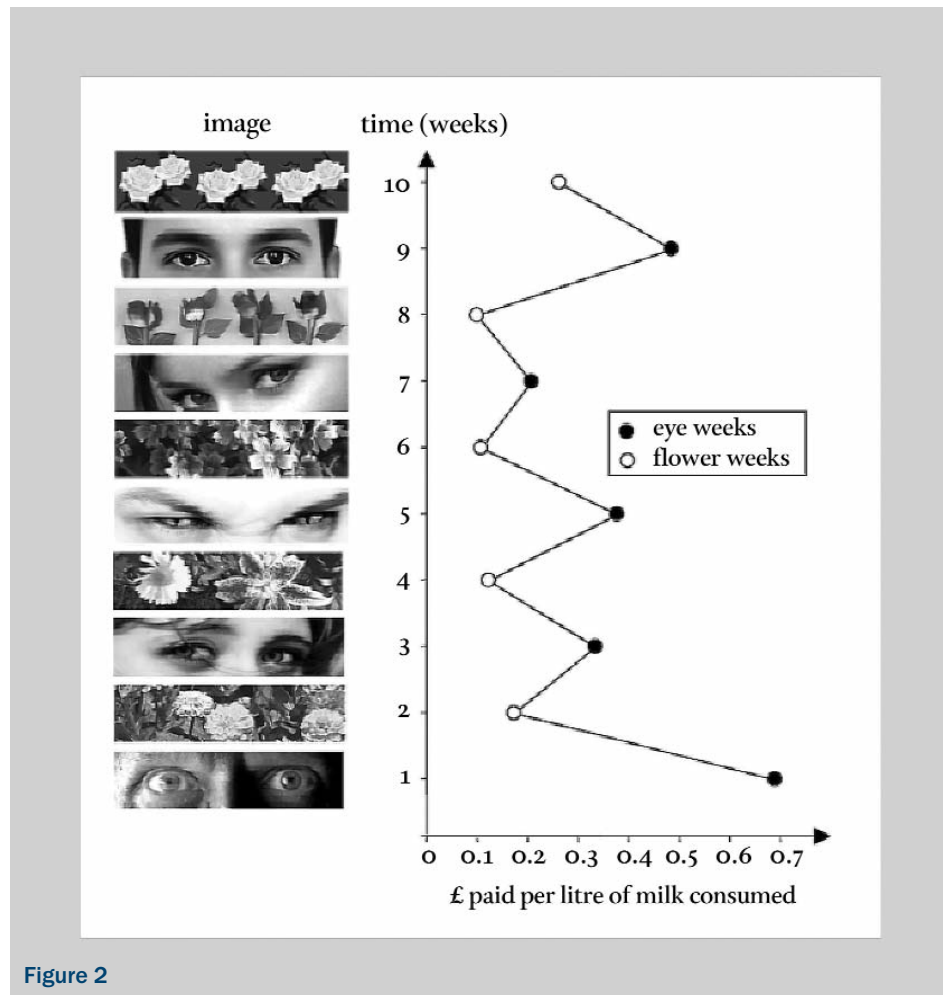


Figure 2

laboratories, there was a little room where people could help themselves to coffee, tea, biscuits, and milk. There was an honesty box into which people deposited money. Someone had the idea to put a poster on top of the honesty box that would change from week to week (see Figure 2). In the first week, the poster featured two gigantic eyes (see the bottom of Figure 2), and people contributed about 70 pence. The second week, the poster was of flowers, and the contributions fell to less than 20 pence. The third week, it was eyes again, and contributions rose; the fourth week, it was flowers, and contributions fell. This pattern, which continued over several weeks, is a very large and completely mysterious effect insofar as the people contributing to the honesty box are concerned. They barely knew the posters were there; they had no idea what was happening to them. Their unconscious actions were the result of operations within the as-

sociative system. That is, we make a powerful association between eyes and being watched, between eyes and morality, and between eyes and behaving well. The significant effect that this association can have on behavior operates without people being aware of it. We learn from this experiment and many others like it that symbolic connection in associative memory can control behavior.

System 1 is not only responsible for emotions, but also for skillful behavior. We have what we call intuitive expertise, evident in chess masters who can see a situation and say, "white mates in three," or in physicians who can diagnose a disease at a glance. Highly skilled responses become automatic and therefore have the characteristics of System 1 activities. Here again, the skilled solutions are experienced as if they came to mind by themselves. All the moves that come to the mind of a master chess player

In order to answer a difficult question, we answer a related, easier question. The substitution of an easy question for a hard one is the mechanism of what Amos and I labeled “judgment by heuristics.” Some heuristics are applied deliberately, but many are applied automatically.

are strong moves, and the diagnoses that occur spontaneously to a very experienced physician tend to be correct, so correct intuitions are part of System 1. System 1 is a repository of the knowledge that we have about the world, and its performance is extraordinary.

For instance, there is a study in which people listen to a series of spoken sentences while the events in their brains are recorded. At some point, an upper-class British male voice says, “I have large tattoos all down my back.” Within approximately three-tenths of a second of hearing the sentence, the brain responds with a characteristic signature of surprise. An incongruity has been detected. Probably all of you detected it from my description at about that speed. You have to recognize that the voice is upper-class British male. Somehow, you have to remember or make the connection that an upper-class British male probably does not have tattoos down his back. The conjunction is surprising, and the brain responds with surprise. In our terms, System 1 would detect the abnormality, then activate System 2 to process the incongruity in greater depth. World knowledge is built into this process.

I will give you an experience of this phenomenon, though you will not enjoy it. In the last twenty years, we have learned that something happens to anyone who sees the

two words *banana* and *vomit* together. First, you read the words automatically. That is, you did not decide to read the words; in fact, you had no choice: this is a System 1 activity. Second, unpleasant memories and images came to your mind. Third, there was a physical reaction: you recoiled. Everyone who has been exposed to such words – to threat words – has recoiled. The effect is slight, but it is measurable. You made a disgusted face; you felt disgust. Interestingly, many of the changes that occur, all of which happen very quickly, tend to reinforce each other. The emotion of disgust makes you produce a disgusted face. Making a disgusted face reinforces the feeling of disgust. We know that making people shape their face in particular ways has an effect on their emotions. For example, if people hold a pencil horizontally between their lips, they find cartoons funnier, because holding a pencil like this forces your face into a slight replica of a smile, and that makes things funnier. Putting a pencil the other way makes you frown, and you find cartoons less funny. So what emerges from this reaction is a coherent pattern of activation.

Having seen the two words, you are prepared to see other words that belong to the same context, so that if you were listening to words spoken in a whisper, you would find it easier than usual to recognize *smell*, *hang-*

over, *nausea*, and many other associated words. In a sense, you are prepared for them. A number of physiological changes also occur, indicating that you are generally more vigilant because the stimulus is threatening.

Finally, there is the word *banana*. Nothing suggests that bananas caused the illness, but that connection was made. The associative memory automatically searches for a causal explanation. *Bananas* are available for a cause, so for a short while you might stay away from bananas because they appear to have caused illness. All of this happens automatically and is a characteristic of how System 1 works. Our associative system is a huge network of ideas. Any stimulus or situation activates a small subset of those ideas. Activation spreads so that you are now prepared for other ideas, although they do not come consciously to mind. An important feature of this process is that it is highly context-dependent.

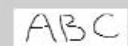
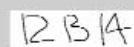



Figure 3

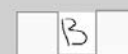



Figure 4

System 1 generates stories, and they tend to be coherent stories in response to stimuli. What I mean by a story is the causal connection that people search for automatically. I do not have time to tell you about the many experiments showing this process, but I can demonstrate the most important aspect: namely, the coherent solution that is imposed. Figure 3 is a familiar demonstration from psychology in the context of perception. You read the first series of characters as “A, B, C,” the second as “12, 13, 14.” Of course, as Figure 4 reveals, the *B* and the *13* are physically identical. In the context of letters, the same figure is read as a letter that in the context of numbers is read as a number. When you take the context into account in interpreting any part of the situation, the ambiguity is suppressed. You are not aware when you see the *B* that it could just as well be a *13*. The suppression of ambiguity is a general feature of System 1. So we generate coherent stories and solutions to problems. They come to mind very easily, and we are not aware that things could be otherwise. I could say much more about System 1, but I will add one key idea.

A remarkable feature of our thinking is our expertise. It is not only chess masters who have expertise. We have expertise in driving. I have expertise in recognizing my wife’s mood from the first word on the telephone, and I am certainly not alone in that proficiency. But there are questions in which we do not have expertise, and which are quite difficult to answer. But System 1 generates answers to those impossible questions, such as, how happy are you? Or, what is the probability that President Obama will be reelected? We have many answers to impossible questions, and they arise very quickly in our minds. Analysis shows that in

order to answer a difficult question, we answer a related, easier question. The substitution of an easy question for a hard one is the mechanism of what Amos and I labeled *judgment by heuristics*. Some heuristics are applied deliberately, but many are applied automatically. One example is buying travel insurance.

The particular study I am about to discuss was carried out at a time when terror incidents were affecting Europe. Some people were asked how much they would pay for insurance that pays \$100,000 in case of death for any reason. Other people were instead asked how much they would pay for insurance that pays \$100,000 in case of death in a terror incident. The study showed that people would pay much more for the second policy than for the first. If they had seen both problems together, they likely would not have offered to pay more for one policy than for the other, but they saw only one problem. Deciding how much you would pay for insurance is very difficult. But you do know how afraid you are. The paradoxical pattern of willingness to pay reflects the fact that people are more afraid of dying in a terror incident than of dying for any reason. Fear does not obey the logic of inclusion, and responses that are based on fear do not obey the rules of inclusion. This is how we violate logic. This is why the heuristics of judgment generate biases and errors.

I will end with a quick demonstration. I will tell you about Julie, a young woman who is a graduating senior at a university. I will tell you one fact about her: that she read fluently when she was four years old. Now, I will ask, what is her GPA? Oddly enough, you all know to some extent what her GPA is. It came to your mind very quickly; it is more than 3.2, less than 4.0, and probably

somewhere between 3.6 and 3.7, depending on how much grade inflation there is at the institution you have in mind. But we know the mechanism of how this happens. When I tell you about someone who read fluently at age four, you have an impression of how precocious she was. Then, when I ask you what her GPA is, you generate an answer that is about as extreme as your initial impression of the precocity of a child who reads fluently at age four. This is a ridiculous way of answering the question because it violates every principle of statistics, but that is the way our intuition works: we substitute an easy question for a hard one.

There is much more to be said about System 1. I have just written a book about it, but I won’t give away the entire book. ■

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Daniel Kahneman, *Thinking, Fast and Slow* (New York: Farrar, Straus and Giroux, 2011)



To view or listen to the presentation, visit <http://www.amacad.org/events/talcottparsons2011>.

Remembrance Corinne Schelling



The American Academy has a long history of involvement in the study of ethnic and racial pluralism at home and abroad. Much of this involvement is attributable to the interest and effort of Corinne Schelling. Over a span of twenty years, we worked with Corinne on three such projects that produced three Academy-sponsored volumes: *Ethnicity: Theory and Experience*, edited by Nathan Glazer and Daniel P. Moynihan (1975); *Ethnic Pluralism and Public Policy: Achieving Equality in the United States and Britain*, edited by Nathan Glazer and Ken Young (1983); and *Immigrants in Two Democracies: French and American Experience*, edited by Donald L. Horowitz and Gérard Noiriel (1992). In every case, Corinne's steady guiding hand was responsible for bringing the project to fruition. She helped deal with grantors, connect us with partners overseas, bring on participants, arrange meetings, and shepherd the essays through the publication process. She worked quietly and always agreeably, utilizing what we called in the preface to the *Immigrants* volume, "her unique combination of initiative, insight, and persistence."

Corinne continued her involvement with the Academy's work on ethnic pluralism in the 1990s, helping organize a particularly expansive comparative project bringing together scholars in Germany with American specialists. This effort resulted in the publication of five volumes, edited variously by Myron Weiner, Peter Schuck, Ranier Münz, and other German and American participants. With Corinne's help, the final comparative project in this series brought in participants from Japan, leading to the publication of *Temporary Workers or Future Citizens? Japanese and U.S. Migration Policies*, edited by Myron Weiner and Tadashi Hanami (1998).

Corinne contributed to many other Academy projects, including the Future of the Metropolis, directed by Elmer W. Johnson. She also oversaw many of the Academy's regional activities.

Corinne Schelling passed away on December 19, 2011. She epitomized the dedication and intelligence required of Academy staff to gather the human and material resources to make a project successful. Without her, the Academy would have been a much less interesting venue for intellectual exchange.

Donald L. Horowitz
Duke University

Nathan Glazer
Harvard University

As of press time, several Fellows of the Academy, listed below, had been nominated or appointed to key posts in the Obama administration:

Bonnie Bassler (Princeton University): Member, National Science Board, National Science Foundation

Ashton B. Carter (Harvard University): Under Secretary of Defense for Acquisition, Technology & Logistics, Department of Defense

Larry V. Hedges (Northwestern University): Member, Board of Directors of the National Board for Education Sciences

Judith Kimble (University of Wisconsin-Madison): Member, President's Committee on the National Medal of Science

Alan Krueger (Princeton University): Chairman, White House Council of Economic Advisers

Margaret Murnane (University of Colorado): Chairman, President's Committee on the National Medal of Science

Anneila I. Sargent (California Institute of Technology): Member, National Science Board, National Science Foundation

Jeremy C. Stein (Harvard University): Governor, Board of Governors of the Federal Reserve System

Owen N. Witte (University of California, Los Angeles): Member, President's Cancer Panel

Select Prizes and Awards

Nobel Prizes, 2011

Economics

Christopher Sims (Princeton University)

Physics

Saul Perlmutter (University of California, Berkeley; Lawrence Berkeley National Laboratory)

Adam Riess (Johns Hopkins University; Space Telescope Science Institute)

Physiology or Medicine

Jules A. Hoffmann (Centre National de la Recherche Scientifique, France)

Wolf Foundation Prizes, 2012

Arts

Placido Domingo (New York, New York)

Chemistry

A. Paul Alivisatos (University of California, Berkeley; Lawrence Berkeley National Laboratory)

Charles M. Lieber (Harvard University)

Mathematics

Michael Aschbacher (California Institute of Technology)

Luis Caffarelli (University of Texas at Austin)

Medicine

Ronald M. Evans (Salk Institute for Biological Studies)

National Medal of Science

Jacqueline K. Barton (California Institute of Technology)

Ralph L. Brinster (University of Pennsylvania)

Shu Chien (University of California, San Diego)

Peter J. Stang (University of Utah)

Srinivasa S. R. Varadhan (New York University)

Other Awards

Joyce Appleby (University of California, Los Angeles) was named a 2012 Haskins Prize Lecturer by the American Council of Learned Societies.

Phaedon Avouris (IBM Thomas J. Watson Research Center) received the David Turnbull Lectureship Award, given by the Materials Research Society.

Bernard Bailyn (Harvard University) received the Samuel Eliot Morison Award from the USS Constitution Museum.

Bonnie Bassler (Princeton University) was named the 2012 Laureate for North America of the L'OREAL-UNESCO Awards "For Women in Science."

Ted Belytschko (Northwestern University) was awarded the 2011 William Prager Medal of the Society of Engineering Science.

Peter Brown (Princeton University) was awarded a 2011 Balzan Prize.

Sean B. Carroll (University of Wisconsin-Madison) is the recipient of the Benjamin Franklin Medal in Life Science, given by the Franklin Institute.

John Chambers (Cisco Systems) is the recipient of the Bower Award for Business Leadership given by the Franklin Institute.

David D. Clark (Massachusetts Institute of Technology) is the recipient of the Oxford Internet Institute Lifetime Achievement Award.

Alfred W. Crompton (Harvard University) was awarded the A.S. Romer-G.G. Simpson Medal by the Society of Vertebrate Paleontology.

Lester Crown (Henry Crown & Company), **James S. Crown** (Henry Crown & Company), and the Crown Family were awarded a 2011 Carnegie Medal of Philanthropy.

William H. Danforth (Washington University in St. Louis) and the Danforth Family were awarded a 2011 Carnegie Medal of Philanthropy.

Ingrid Daubechies (Duke University) is the recipient of the 2011 IEEE Jack S. Kilby Signal Processing Medal.

Judi Dench (London, United Kingdom) was named a 2011 Praemium Imperiale laureate by the Japan Art Association.

Mildred Dresselhaus (Massachusetts Institute of Technology) was awarded the Enrico Fermi Award, given by the U.S. Department of Energy. She shares the award with **Burton Richter** (Stanford Linear Accelerator Center).

Stephen Emlen (Cornell University) received the Distinguished Animal Behaviorist Award from the Animal Behavior Society.

Daniel W. Foster (University of Texas Southwestern Medical Center) is the recipient of the 2011 TIAA-CREF Distinguished Medical Educator Award.

Shafi Goldwasser (Massachusetts Institute of Technology; Weizmann Institute of Science, Israel) is the recipient of the 2011 IEEE Emanuel R. Piore Award.

Stephen Greenblatt (Harvard University) won the National Book Award for nonfiction for *The Swerve: How the World Became Modern*.

Charlotte Greenspan (Ithaca, New York; Academy Scholar in Residence, 2011) received an ASCAP Deems Taylor Award for her book *Pick Yourself Up: Dorothy Fields and the American Musical*.

Jeffrey C. Hall (University of Maine) was awarded the 2011 Louisa Gross Horwitz Prize, given by Columbia University. He shares the award with **Michael Rosbash** (Brandeis University) and **Michael W. Young** (Rockefeller University).

John L. Hennessy (Stanford University) has been named the 2012 Institute of Electrical and Electronics Engineers (IEEE) Medal of Honor recipient.

Berthold Hölldobler (Arizona State University) received the Cothenius Medal from the German National Academy of Sciences.

Paul Houston (Georgia Institute of Technology) was named a Fellow of the American Chemical Society.

Freeman A. Hrabowski III (University of Maryland, Baltimore County) is the recipient of a Centennial Academic Leadership Award, given by Carnegie Corporation of New York.

Fredric Jameson (Duke University) is the recipient of the Modern Language Association's Award for Lifetime Scholarly Achievement.

Martin Karplus (Harvard University) has been awarded the Antonio Feltrinelli International Prize in Chemistry by the Accademia Nazionale dei Lincei.

Fred Kavli (Kavli Foundation) was awarded a 2011 Carnegie Medal of Philanthropy.

Russell Lande (Imperial College London) was awarded a 2011 Balzan Prize.

Leonard Lauder (Estée Lauder Companies Inc.), Evelyn Lauder † (Estée Lauder Companies Inc.), and the Lauder Family were awarded a 2011 Carnegie Medal of Philanthropy.

Ricardo Legorreta † (Legorreta & Legorreta Arquitectos) was named a 2011 Praemium Imperiale laureate by the Japan Art Association.

Barbara Liskov (Massachusetts Institute of Technology) is among the recipients of the fourth annual Katayanagi Prizes in Computer Science.

Richard A. Meserve (Carnegie Institution for Science) was elected a Foreign Member of the Russian Academy of Sciences.

Mortimer Mishkin (National Institute of Mental Health) and **Leslie Ungerleider** (National Institute of Mental Health) are recipients of the 2012 Grawemeyer Award in Psychology.

Ellen Stone Mosley-Thompson (Ohio State University) and **Lonnie G. Thompson** (Ohio State University) were awarded the Benjamin Franklin Medal in Earth and Environmental Science by the Franklin Institute.

Martha Nussbaum (University of Chicago) is the recipient of Phi Beta Kappa's Sidney Hook Memorial Award.

Pierre Omidyar (Omidyar Network) and Pamela Omidyar (Omidyar Network) were awarded a 2011 Carnegie Medal of Philanthropy.

Joseph Pedlosky (Woods Hole Oceanographic Institution) was awarded the 2011 Maurice Ewing Medal of the American Geophysical Union.

Robert D. Putnam (Harvard University) and David E. Campbell (University of Notre Dame) were awarded the 2011 Woodrow Wilson Foundation Award from the American Political Science Association for their book *American Grace: How Religion Divides and Unites Us*.

C.R. Rao (C.R. Rao Advanced Institute of Mathematics, Statistics and Computer Science, India) was awarded an honorary Doctorate of Science from the University of Colombo, Sri Lanka.

Burton Richter (Stanford Linear Accelerator Center) was awarded the Enrico Fermi Award, given by the U.S. Department of Energy. He shares the award with **Mildred Dresselhaus** (Massachusetts Institute of Technology).

Felix Rohatyn (Lazard Ltd.) is the recipient of the 2012 John C. Whitehead Award for Distinguished Public Service and Financial Leadership, given by the Museum of American Finance.

Ares Rosakis (California Institute of Technology) was awarded the 2011 A. Cermal Eringen Medal of the Society of Engineering Science.

Michael Rosbash (Brandeis University) was awarded the 2011 Louisa Gross Horwitz Prize, given by Columbia University. He shares the award with **Jeffrey C. Hall** (University of Maine) and **Michael W. Young** (Rockefeller University).

Ira Rubinoff (Smithsonian Tropical Research Institute) is the recipient of the Joseph Henry Gold Medal, given by the Smithsonian Institution.

Marshall Sahlins (University of Chicago) has been named a Chevalier des Arts et des Lettres by the French Ministry of Culture.

Esa-Pekka Salonen (Philharmonia Orchestra) has won the 2012 Grawemeyer Award for Music Composition.

Henry Samuelli (Broadcom Corporation) is the recipient of the 2011 Dr. Morris Chang Exemplary Leadership Award, given by the Global Semiconductor Alliance.

Frederick Schauer (University of Virginia) is the recipient of the Marshall-Wythe Medallion, given by the William & Mary Law School.

Joseph Silk (Johns Hopkins University; University of Oxford) was awarded a 2011 Balzan Prize.

Ralph Snyderman (Duke Medicine) received the William G. Anlyan, MD, Lifetime Achievement Award, given by the Duke Medical Alumni Association.

Haim Sompolinsky (Hebrew University of Jerusalem) was awarded the Swartz Prize for Theoretical and Computational Neuroscience, given by the Society for Neuroscience.

Patricia Meyer Spacks (University of Virginia) is the recipient of Phi Beta Kappa's Award for Distinguished Service to the Humanities.

Rashid Sunyaev (Max Planck Institute for Astrophysics) was awarded the Benjamin Franklin Medal in Physics by the Franklin Institute.

Leslie Ungerleider (National Institute of Mental Health) and **Mortimer Mishkin** (National Institute of Mental Health) are recipients of the 2012 Grawemeyer Award in Psychology.

Bill Viola (Bill Viola Studio) was named a 2011 Praemium Imperiale laureate by the Japan Art Association.

Frederick Wiseman (Zipporah Films, Inc.) received the Cinema Eye's 2012 Legacy Award for the documentary *Titicut Follies*.

Christian Wolff (Dartmouth College) is the 2011 recipient of the Walter Cerf Award for Outstanding Achievement in the Arts, given by the Vermont Arts Council.

Chi-Huey Wong (Scripps Research Institute) received the 2012 Arthur C. Cope Award for Organic Chemistry from the American Chemical Society.

Sunney Xie (Harvard University) received the Founders Award from the Biophysical Society.

New Appointments

Robert Berdahl (formerly Association of American Universities) was appointed interim President of the University of Oregon.

Timothy J. Berners-Lee (Massachusetts Institute of Technology; World Wide Web Consortium) was elected to the Board of Trustees of the Ford Foundation.

Chi Van Dang (Johns Hopkins University) has been appointed Director of the Abramson Cancer Center of the University of Pennsylvania.

Edward P. Djerejian (Rice University; Djerejian Global Consultancies, LLP) has been named to the Board of Trustees of Carnegie Corporation of New York.

Martin Feldstein (Harvard University) joined the Advisory Board of Paulson & Co. Inc.

Robert M. Gates (Sedro-Wolley, Washington) has been named Chancellor of the College of William & Mary.

Laurie H. Glimcher (Harvard University) has been appointed Dean of Weill Cornell Medical College.

†Deceased

Helen Hobbs (University of Texas Southwestern Medical Center) was elected to the Board of Directors of Pfizer Inc.

Paul Hoffman (Woodstock, New York) was named President and Chief Executive Officer of the Liberty Science Center.

J. Larry Jameson (University of Pennsylvania Perelman School of Medicine) was elected to the Board of Directors of the University City Science Center.

Michael I. Jordan (University of California, Berkeley) has been appointed to the Technical Advisory Board of Rearden Commerce.

Philip Levine (New York University) was named Poet Laureate of the United States.

Arthur D. Levinson (Genentech) was named nonexecutive Chairman of the Board of Apple.

Michael Lynch (Indiana University) was elected Vice President of the Board of Directors of the Genetics Society of America.

Paul Marks (Memorial Sloan-Kettering Cancer Center) joined the Scientific Advisory Board of Cellceutix Corporation.

Raghuram G. Rajan (University of Chicago Booth School of Business) joined the Group of Thirty (G30).

Neil L. Rudenstine (ARTstor) was named Chairman of the Board of Trustees of the New York Public Library.

Randy W. Schekman (University of California, Berkeley) has been named Editor-in-Chief of *eLife*.

Paul Schimmel (Scripps Research Institute) has been appointed to the Scientific Advisory Board of WaferGen Biosystems, Inc.

Inder M. Verma (Salk Institute for Biological Studies) was named Editor-in-Chief of the *Proceedings of the National Academy of Sciences (PNAS)*.

Meg Whitman (eBay) was named President and Chief Executive Officer of Hewlett-Packard Company.

Select Publications

Poetry

Henri Cole (Ohio State University). *Touch*. Farrar, Straus and Giroux, September 2011

Rita Dove (University of Virginia), ed. *The Penguin Anthology of 20th Century American Poetry*. Penguin, November 2011

Geoffrey Hill (University of Oxford). *Clavics*. Enitharmon Press, August 2011

Fiction

Aharon Appelfeld (Ben-Gurion University of the Negev, Israel). *Until the Dawn's Light*. Schocken, October 2011

Russell Banks (Princeton University). *Lost Memory of Skin*. Ecco, September 2011

Nonfiction

Jill Abramson (New York Times). *The Puppy Diaries: Raising a Dog Named Scout*. Times Books/Henry Holt & Company, October 2011

Peter Ackroyd (London Times). *London Under: The Secret History Beneath the Streets*. Nan A. Talese, November 2011

Margaret Atwood (Toronto, Canada). *In Other Worlds: SF and the Human Imagination*. Nan A. Talese, October 2011

Robert N. Bellah (University of California, Berkeley). *Religion in Human Evolution: From the Paleolithic to the Axial Age*. Belknap Press of Harvard University Press, September 2011

Hans Belting (Internationales Forschungszentrum Kulturwissen, Germany). *An Anthropology of Images: Picture, Medium, Body*. Princeton University Press, September 2011

Eli Broad (Eli and Edythe Broad Foundation). *The Art of Being Unreasonable: Lessons in Unconventional Thinking*. Wiley, May 2012

Peter Brooks (Princeton University). *Enigmas of Identity*. Princeton University Press, November 2011

Zbigniew Brzezinski (Center for Strategic & International Studies). *Strategic Vision: America and the Crisis of Global Power*. Basic Books, February 2012

James Cuno (J. Paul Getty Trust). *Museums Matter: In Praise of the Encyclopedic Museum*. University of Chicago Press, December 2011

Michael C. Dawson (University of Chicago). *Not in Our Lifetimes: The Future of Black Politics*. University of Chicago Press, November 2011

Joan Didion (New York, New York). *Blue Nights*. Knopf, November 2011

Denis Donoghue (New York University). *Irish Essays*. Cambridge University Press, May 2011

Ariel Dorfman (Duke University). *Feeding on Dreams: Confessions of an Unrepentant Exile*. Houghton Mifflin Harcourt, September 2011

Greg J. Duncan (University of California, Irvine) and Richard J. Murnane (Harvard Graduate School of Education), eds. *Whither Opportunity? Rising Inequality, Schools, and Children's Life Chances*. Russell Sage Foundation, September 2011

Jean Bethke Elshtain (University of Chicago Divinity School). *Sovereignty: God, State, and Self*. Basic Books, April 2012

Paul Farmer (Harvard University). *Haiti after the Earthquake*. PublicAffairs, July 2011

Joachim Frank (Columbia University), ed. *Molecular Machines in Biology: Workshop of the Cell*. Cambridge University Press, December 2011

Victor R. Fuchs (Stanford University). *Who Shall Live?: Health, Economics, and Social Choice*. World Scientific Publishing Company, June 2011

John Lewis Gaddis (Yale University). *George F. Kennan: An American Life*. Penguin, November 2011

Henry Louis Gates, Jr. (Harvard University). *Life Upon These Shores: Looking at African American History, 1513 – 2008*. Knopf, November 2011

Claire Gaudiani (New York University) and David Graham Burnett (Gaudiani Associates). *Daughters of the Declaration: How Women Social Entrepreneurs Built the American Dream*. PublicAffairs, November 2011

Michael S. Gazzaniga (University of California, Santa Barbara). *Who's in Charge? Free Will and the Science of the Brain*. Ecco, November 2011

Jack Goldsmith (Harvard Law School). *Power and Constraint: The Accountable Presidency after 9/11*. W. W. Norton, March 2012

Stephen Greenblatt (Harvard University). *The Swerve: How the World Became Modern*. W. W. Norton, September 2011

Jerome Groopman (Harvard Medical School) and Pamela Hartzband (Harvard Medical School). *Your Medical Mind: How to Decide What is Right for You*. Penguin Press, September 2011

Rachel Hadas (Rutgers, The State University of New Jersey). *Strange Relation: A Memoir of Marriage, Dementia, and Poetry*. Paul Dry Books, February 2011

Gertrude Himmelfarb (Washington, D.C.). *The People of the Book: Philosemitism in England, from Cromwell to Churchill*. Encounter Books, November 2011

Jerome Kagan (Harvard University). *Psychology's Ghosts: The Crisis in the Profession and the Way Back*. Yale University Press, March 2012

Steven Knapp (George Washington University) and Philip Clayton (Claremont School of Theology). *The Predicament of Belief: Science, Philosophy, and Faith*. Oxford University Press, December 2011

Lawrence Lessig (Harvard Law School). *Republic, Lost: How Money Corrupts Congress – and a Plan to Stop It*. Twelve Books, October 2011

Margaret Levi (University of Washington), **Susan Stokes** (Yale University), James Johnson (University of Rochester), and Jack Knight (Duke University). *Designing Democratic Government: Making Institutions Work*. Russell Sage Foundation, September 2011

John Lithgow (Los Angeles, California). *Drama: An Actor's Education*. Harper, September 2011

Joseph B. Martin (Harvard Medical School). *Alfalfa to Ivy: Memoir of a Harvard Medical School Dean*. University of Alberta Press, August 2011

J. Hillis Miller (University of California, Irvine). *The Conflagration of Community: Fiction before and after Auschwitz*. University of Chicago Press, September 2011

Riccardo Muti (Milan, Italy). *Riccardo Muti – An Autobiography: First the Music, Then the Words*. Rizzoli Ex Libris, October 2011

Katherine Newman (Johns Hopkins University). *The Accordion Family: Boomerang Kids, Anxious Parents, and the Private Toll of Global Competition*. Beacon Press, January 2012

Mark A. Noll (University of Notre Dame). *Jesus Christ and the Life of the Mind*. Wm. B. Eerdmans Publishing, July 2011

Steven Pinker (Harvard University). *The Better Angels of Our Nature: Why Violence Has Declined*. Viking, October 2011

Alvin Plantinga (University of Notre Dame). *Where the Conflict Really Lies: Science, Religion, and Naturalism*. Oxford University Press, November 2011

Lisa Randall (Harvard University). *Knocking on Heaven's Door: How Physics and Scientific Thinking Illuminate the Universe and the Modern World*. Ecco, September 2011

Daniel Roche (Collège de France). *La gloire et la puissance*. Fayard, November 2011

Joan Wallach Scott (Institute for Advanced Study). *The Fantasy of Feminist History*. Duke University Press, October 2011

Theda Skocpol (Harvard University) and Vanessa Williamson (Harvard University). *The Tea Party and the Remaking of Republican Conservatism*. Oxford University Press, January 2012

Arthur M. Squires (Virginia Polytechnic Institute and State University). *From Toumai to G. Stein and O. Wilde*. CreateSpace, July 2011

Robert A. M. Stern (Robert A. M. Stern Architects; Yale University). *Tradition and Invention in Architecture*. Yale University Press, February 2012

Susan Stokes (Yale University), **Margaret Levi** (University of Washington), James Johnson (University of Rochester), and Jack Knight (Duke University). *Designing Democratic Government: Making Institutions Work*. Russell Sage Foundation, September 2011

Ezra F. Vogel (Harvard University). *Deng Xiaoping and the Transformation of China*. Belknap Press of Harvard University Press, September 2011

Alice Waters (Chez Panisse Foundation; Chez Panisse). *Forty Years of Chez Panisse: The Power of Gathering*. Clarkson Potter, August 2011

Barbara Weinstein (New York University) and A. Ricardo López (Western Washington University), eds. *The Making of the Middle Class: Toward a Transnational History*. Duke University Press, February 2012

Bruce Western (Harvard University), David B. Grusky (Stanford University), and Christopher Wimer (Stanford Center for the Study of Poverty and Inequality). *The Great Recession*. Russell Sage Foundation, October 2011

Shing-Tung Yau (Harvard University) and Steve Nadis (Astronomy). *The Shape of Inner Space: String Theory and the Geometry of the Universe's Hidden Dimensions*. Basic Books, March 2012

Theodore Ziolkowski (Princeton University). *Gilgamesh among Us: Modern Encounters with the Ancient Epic*. Cornell University Press, December 2011

Theodore Ziolkowski (Princeton University), ed. *Peter Hacks: Senecas Tod*. Aurora Verlag, July 2011

Exhibitions

White Gold: Highlights from the Arnhold Collection of Meissen Porcelain in the Portico Gallery for Decorative Arts and Sculpture at the Frick Collection, through April 2012.

We invite all Fellows and Foreign Honorary Members to send notices about their recent and forthcoming publications, scientific findings, exhibitions and performances, and honors and prizes to bulletin@amacad.org. ■

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