AMERICAN ACADEMY OF ARTS & SCIENCES

CHERISHING KNOWLEDGE 225th SHAPING THE FUTURE

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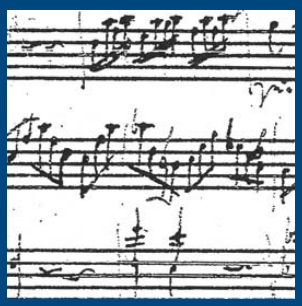

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AMERICAN ACADEMY
OF ARTS & SCIENCES

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AMERICAN ACADEMY
OF ARTS & SCIENCES

Calendar of Events

Thursday, September 7, 2006

Meeting – New York
Cohosted by New York University's John Brademas Center for the Study of Congress

The Broken Branch: How Congress is Failing America and How to Get It Back on Track

Speakers: Norman Ornstein, American Enterprise Institute, and **Thomas Mann**, Brookings Institution

Location: New York University

Saturday, October 7, 2006

Stated Meeting and Induction Ceremony – Cambridge

Location: Sanders Theatre, Harvard University

Wednesday, November 8, 2006

Stated Meeting – Cambridge

Location: House of the Academy

Saturday, November 11, 2006

Stated Meeting – Chicago
Cosponsored by the Franke Institute for the Humanities

Speaker: Philip Gossett, University of Chicago

Wednesday, December 13, 2006

Stated Meeting – Cambridge

Location: House of the Academy

For information and reservations, contact the Events Office (phone: 617-576-5032; email: mevents@amacad.org).

Academy News

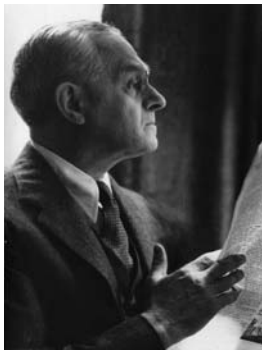
225th Anniversary Publication: Book of Members, 1780–2005

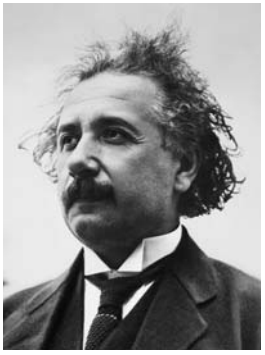
The Academy has published a *Book of Members* as another in a series of activities marking its 225th anniversary. The volume identifies the more than eleven thousand men and women who have been elected to the Academy since its founding in 1780. Current members received a copy of the publication in May 2006. The directory will also be available on the Academy's web site. The Academy is grateful to the Cabot Family Charitable Trust and the other donors who supported its research and publication.

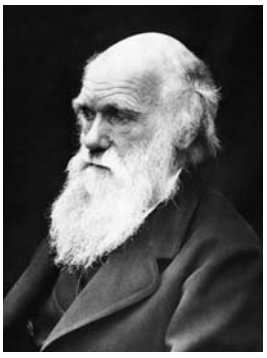
This volume is the first comprehensive list in over one hundred and twenty-five years. In 1780, the sixty-two founding members signed its charter. The following year, the Academy elected its first group of Fellows and Foreign Honorary Members. In 1785, the first volume of the *Memoirs* recorded all members living and deceased. Subsequent cumulative lists were issued in 1833 and 1846, with the most recent directory published as part of the Academy's centennial observance in 1880.

Drawing on these directories as well as on internal membership lists and an array of supplementary print and online sources, the Academy has conceived of this new volume as a general reference tool for members and the broader intellectual community. In addition to basic information such as birth and death dates and the date and residence at time of election, entries include the affiliation of members at the time of election and at the time of the volume's publication, as well as a brief characterization of their overall careers or, for current members, careers to date. The alphabetical roster is supplemented by a list of Academy members according to subject categories. The publication also includes about 150 photographs of members, donated by Corbis-Bettmann. The volume is the result of five years of research led by archivist Clark A. Elliott, under the direction of Alexandra Oleson and Phyllis Bendell. Many Fellows contributed to the work and reviewed portions of the final document relating to their fields and professions.

For 225 years, the men and women whose names appear in this volume have been the Academy's greatest strength. They have established a legacy of leadership that continues to inform scholarship and public policy and advance the life of the mind.







Photographs, left column:
Felix Frankfurter
Martin Luther King, Jr.
Martha Graham
T. S. Eliot

right column:
Marianne Moore
Albert Einstein
Charles Darwin
Alexander Graham Bell

Images donated by Corbis-Bettmann

Project Update

The State of the Humanities

The Initiative for Humanities and Culture promotes the humanities and their importance in American civic and cultural life. The Academy, in collaboration with leading humanities institutions, is developing a comprehensive system for data collection and analysis in the humanities. A new Occasional Paper, *Tracking Changes in the Humanities*, explores some of the complex research issues that have prevented humanities groups from making better use of data and proposes ways of improving and refining existing statistical resources available in the humanities. It provides a foundation for the Academy's current efforts, led by Norman Bradburn, to produce a comprehensive set of Humanities Indicators. This project was recently funded with a generous grant from the Mellon Foundation.

Another focus of the Initiative is to study the evolution and direction of the humanities. Two recent publications explore the history of the humanities in the twentieth century. Academy President Patricia Meyer Spacks is the editor of a special issue of *Dædalus* "On the Humanities," which looks at the changes that have shaped key humanities disciplines over the last hundred years. *The Humanities and the Dynamics of Inclusion since World War II*, edited by Fellow David A. Hollinger and published by Johns Hopkins University Press, examines the role played by the humanities in the half century after World War II when historical determinants presented American higher education with unprecedented challenges and opportunities. Spacks and Hollinger provided the commentaries that follow.

On the Humanities

Patricia Meyer Spacks

Successive revolutions during the past century have energized the sciences in often thrilling ways. The educated public understands that recurrent transformations corroborate the importance of science as an intellectual endeavor, but no comparable understanding appears to apply to the humanities. Here changes prove both less recognizable and less readily acceptable, not only to the public, but even to academics professing the sciences and the social sciences. The group of essays in this issue of *Dædalus*, investigating the processes of growth and change in seven disciplines, reveals revolutions in understanding the humanistic academic enterprise as well as continuities, including links extending from one discipline to another.

The humanities have reimagined and reorganized themselves over the past century, and the stories of individual disciplines – Comparative Literature, American Literature, Art History, African American Studies, Philosophy, Law, and History – suggest some ways in which that process took place. Seven narratives hardly exhaust the permutations of possible change, and many stories yet remain to be told. These accounts by distinguished humanists, however, begin the processes of coming to terms with a tumultuous century of intellectual and social change and of understanding the new concerns, new ways of seeing, and new concepts that have energized the humanities. They demonstrate intellectually powerful trends at work and show the close relation between academic investigations of humanistic fields and large cultural movements.

The disciplines under consideration, although hardly dedicated to "moral uplift," do in fact concern themselves centrally with our culture's constitutive convictions: about justice and law; about right and wrong, good and evil, truth and falsehood; about what to value in works of art, both verbal and visual. These convictions vary over time, as do our understandings of them. Always, though, the humanities demand our alert attention to what we as a culture care about and why, to how our assumptions compare to those of earlier or different cultures, to why what we value matters, to how we can and why we must defend it.

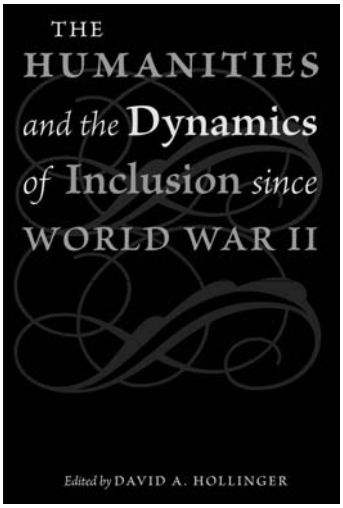
The Spring 2006 issue of *Dædalus* "On the Humanities" mailed in late April. If you would like additional copies, please contact the Academy's Publications Office (telephone: 617-576-5085; email: publications@amacad.org). ■

The Humanities and the Dynamics of Inclusion since World War II

David A. Hollinger

The academic humanities in the United States after World War II were a major institutional apparatus for bringing evidence and reasoning to domains where the rules of evidence are strongly contested and the power of reason often doubted. These domains, on the periphery of an increasingly science-centered academic enterprise, embraced the messy, risk-intensive issues left aside by the more methodologically confident, rigor-displaying social sciences. These domains constituted the borderlands between *Wissenschaft* and opinion, between scholarship and ideology. Here in these borderlands, the demographic and cognitive boundaries of the entire academic enterprise were the least certain.

This book explores that ill-defined intellectual and social territory. At issue was not only the incorporation of what today are called underrepresented demographic groups. At issue, too, were the specific fields and subfields that would be included at the expense of others, the directions taken in expanding the study of foreign cultures in relation to the study of the United States itself, and the role of the academic humanities in American public discourse. Who was included in or excluded from the community of inquirers? What was within or beyond that community's



subject matter? On what basis was this or that idea, text, project, or social group included or excluded? To what extent was scholarship expected to reflect the ethnoracial, religious, or gender group of which a scholar was a member?

The thirteen authors of this volume approach these questions within four discipline-transcending frames of analysis. One is the demography of the humanities professorate during an era when more women, Jews, Catholics, and African Americans are incorporated into faculties. Another is the expansion of the scope of humanistic scholarship and teaching beyond Europe, especially through "Area Studies" programs in partnership with social scientists. A third transdisciplinary frame is the encounter with a range of ideas generated in Europe but often felt to run "against the American grain" on account of an element of skepticism about democracy and popular notions of truth and morality; the political philosophy of émigré intellectual Leo Strauss is one example. The fourth is the social constituency of the humanities, especially through the expansion of higher education in the wake of the G.I. Bill but also through a number of initiatives to bring humanistic learning to a wider public through popular media. Hence *The Humanities and the Dynamics of Inclusion since World War II*, while attentive to developments within disciplines, differs from most historical and contemporary assessments of the humanities in its determination to look across, rather than merely within, disciplines.

To order copies of *The Humanities and the Dynamics of Inclusion since World War II*, please call Johns Hopkins University Press at 800-537-5487 or visit http://www.jhu.edu. ■

On the Humanities

Published as a Special Issue of Dædalus

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The Humanities and the Dynamics of Inclusion since World War II

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Achieving Global Education

In April, the Academy released four new publications in its *Occasional Paper* series. These papers, which consider various aspects of the costs, means, and consequences of providing education to all children ages 6 through 16, present findings of the Academy's project on Universal Basic and Secondary Education (UBASE).

In 2001, Fellows Joel E. Cohen (Rockefeller and Columbia Universities) and David E. Bloom (Harvard University) formally proposed an Academy project that would consider the role that primary and secondary education might play in creating positive global change. With generous funding from the William and Flora Hewlett Foundation, the Academy, and a number of individual donors, they gathered scholars from many institutions and fields to tackle a key set of questions: What do we know about global education and how do we know it? What are the consequences of providing every child with primary and secondary schooling? What is the history of efforts to expand education? What obstacles stand in the way of achieving universal education? What are the best educational practices and innovations for overcoming those obstacles? What will it cost to provide primary and secondary schooling for all children?

The project has produced a number of publications, including articles in *Dædalus* and the IMF's *Finance and Development*, several Academy *Occasional Papers*, and two forthcoming books. Some publications have been translated and distributed in multiple languages.

Many of the publications of the project are available on the Academy's web site, along with more information about the UBASE project (www.amacad.org/projects/ubase.aspx).

Measuring Global Educational Progress

Knowledge of the basic facts about global education is at the heart of the UBASE inquiry, as is knowledge of how these facts are produced and whether they are reliable. Education is, after all, one of the largest and most important investments made by governments and people. Understanding whether this investment leads to the desired ends is crucial to effective government policy and private decision-making.

David Bloom advances this understanding in the UBASE study *Measuring Global Educational Progress*. According to Bloom's calculations, approximately 97 million children of primary school age and 226 million of secondary school age worldwide are not enrolled in school. At current rates of educational progress and demographic change, the corresponding figures in 2015 are projected to be similar (with an increase in the number of primary-aged children not enrolled and a decrease for secondary-aged children).

Developed countries have achieved very high levels of access to primary and secondary education, and educational attainment and completion rates in these countries are also high. Some developing regions, in particular East Asia and Latin America and the Caribbean, likewise have very high enrollment ratios, but only in terms of primary education. In these regions, attainment and completion rates still demand improvement. The data also indicate that on nearly all measures, South Asia and Sub-Saharan Africa lag far behind. Gender differences in favor of boys are common in most developing regions, though not in Latin America and the Caribbean or in Eastern Europe and Central Asia. Gender differences are particularly pronounced in some Sub-Saharan African countries.

Joel E. Cohen

David E. Bloom

Although measures of the quality of education are inadequate, the data indicate that the gap between rich and poor countries is large and shows no signs of narrowing. Bloom extrapolates from the small body of country test-score data, calculating that an estimated 75 – 95 percent of the world's children live in countries where education quality falls short of the average among OECD countries.

Bloom highlights the fact that existing data systems are inadequate, and that the shortcomings may have important consequences. We know the most about the inputs into education, the investments of money and time in the education system. These data shed light on differences between countries and regions, but are incomplete. Information on other aspects of education – e.g., on what is taught and how, on what is learned, and on the long-term consequences of investments in education – is even scarcer.

The dearth of data on education quality, in conjunction with limited data on education outputs, makes it difficult to reach definitive conclusions about the effectiveness of educational practices. Worse still, as Bloom's investigation shows, the validity of some of the most prominent schooling attainment data must be questioned, in light of serious internal inconsistencies. Available cross-national data are not always consistent with the leading country-level data sets or with country-specific population data.

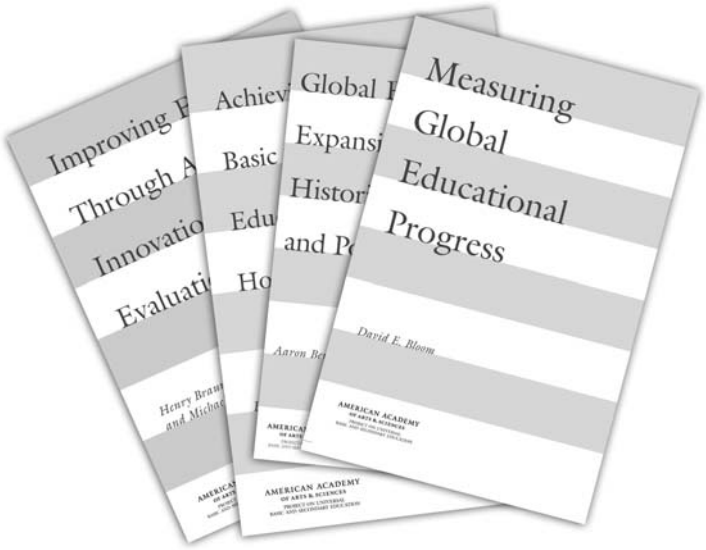
Evidence-based policymaking holds great promise, but that promise can only be realized when relevant and accurate data are available. As Bloom argues in *Measuring Global Educational Progress*, greater and better-coordinated efforts by international organizations could overcome years of insufficient funding and conflicting priorities for data collection, thus improving the quantity and quality of education data.

The Consequences of Global Educational Expansion

If every child in the world received a primary and secondary education of high quality, what would the consequences be? The UBASE project commissioned sociologists Emily Hannum (University of Pennsylvania) and Claudia Buchmann (Duke University) to review the research on the presumed consequences of expanding primary and secondary education.

They find substantial evidence that increased primary and secondary education is associated with improved health and lower population growth. Evidence to support the proposition that investment in education results in growth in gross domestic product is less clear. Although increased individual income is clearly correlated with higher educational attainment, the growth effects of national investments in education are difficult to establish. Evidence is also ambiguous on whether education reduces social inequality and promotes democratization. The summary by Hannum and Buchmann of what is known and what remains uncertain is critical for guiding future policy and research in this area because the rationale for pursuing universal basic and secondary education must be clear if initiatives are to attract political support.

In a forthcoming UBASE paper on the relationship between education and health, Bloom finds that education reduces adult mortality and that the effect is larger than previously thought. In addition, increased schooling is associated with lower blood pressure and lower likelihood of reporting disabilities or functional impairments,



even after accounting for background variables such as age, initial health, and ability. Maternal education has been found to be strongly associated with reduced fertility and improved health outcomes for children. But, as Bloom indicates, much remains unclear about the role of factors that are interposed between education and health.

Historical Legacies, Political Obstacles

As Hannum, Buchmann, and Bloom suggest, the reasons for providing all the world's children with high-quality primary and secondary education are numerous and compelling. In 1990, the international community resoundingly pledged to achieve universal basic education by 2000, and later extended its deadline to 2015. At current rates of progress, this goal will not be met. The unanimity of commitment and shortfall in achievement raise a fundamental question: If universal education is such a good idea, why don't we have it already?

The UBASE project asked this question of Aaron Benavot and Julia Resnik (Hebrew University, Jerusalem) and Javier Corrales (Amherst College). Their findings, published in *Global Educational Expansion: Historical Legacies and Political Obstacles*, bring a healthy dose of realism to estimates of the scale of the UBASE challenge. But by illuminating the challenges, the authors also render them finite.

Benavot and Resnik consider the history and legacy of efforts to achieve universal basic and secondary education. The authors call attention to the complexity of the work remaining. They examine the emergence of compulsory education laws, the transformation of diverse educational frameworks into formal school systems, the problems of inequality and equity that have arisen, and the role played by international organizations in creating an increasingly interconnected global education system.

On the basis of this geographically broad comparative history, the authors offer an essential observation and an important suggestion. The observation is that despite the apparent uniformity in contemporary schooling, past educational models have taken many forms, and motivations for educational expansion have varied widely. The suggestion is that international organizations seeking to facilitate educational expansion need to be attuned to this varied history if their interventions are to succeed. For example, when leaders advocated the decentralization of education in Latin American countries in the 1980s, they ignored the specific social and political purposes for which those schools had been founded, which included ending severe socioeconomic segregation. Decentralization led to a growth of private schools and renewed fragmentation along class lines, which exacerbated the social divide that school centralization was intended to correct. The implication is clear: education advocates, donors, and policy makers who ignore history do so at considerable peril.

Where Benavot and Resnik emphasize the historical legacies with which policy makers must contend, Corrales examines the present political obstacles to and incentives for universal education. His paper highlights the weak, conflicting, and at times perverse political incentives facing those interested in expanding and improving education.

Overall, international sources of leverage are weak. For example, as globalization proceeds, the demand for highly skilled labor is mixed – some industries require an educated labor pool while others seek labor that is cheap and relatively unskilled. Within countries, state authorities rarely face strong political pressures to expand or improve their educational systems. Societal demand for education is frequently weakest in poor regions or countries where it is most needed. From this analysis, it appears that past state mo-

tivations to provide education – to consolidate national identity, win citizen loyalty, or neutralize rival political groups – were most prominent when nationalist, revolutionary, and totalitarian ideologies drove political development. Today, these rationales are less relevant.

Lest education reformers lose hope, Corrales discusses policies that might reinforce the positive incentives for expanding education. He suggests approaches that are aimed at boosting the demand for education by reducing the cost of schooling to individual families; building up the capacity of state agencies to deliver education of high quality; generating additional performance indicators to improve efficiency; containing opposition to educational expansion by compensating those most directly threatened; and strengthening mechanisms for ensuring accountability at all levels of the education system. These informed and ambitious proposals should stimulate necessary discussion.

Assessment, Innovation, Evaluation

The research of Bloom, Benavot, Resnik, and Corrales provides the groundwork from which informed efforts to change education on the ground can be developed. But what of the specific mechanisms for getting students into school, for improving the quality of education, and for ensuring that education is producing the desired outcomes? Henry Braun (Educational Testing Service), Anil Kanjee (Human Sciences Research Council), Eric Bettinger (Case Western Reserve University), and Michael Kremer (Harvard University) take up these questions in their contributions to *Improving Education Through Assessment, Innovation, and Evaluation*.

Although assessment is often seen as a tool to measure student progress, it also allows individuals, communities, and countries to track the quality of schools and educational systems. In theory, if policy makers have access to reliable information on educational quality in specific schools, they can monitor outcomes and tailor policies to local and national needs. If this information is made available to the public, then students and parents may be better able to choose among educational options and demand education of higher quality.

The potential benefits of assessment are not easy to capture, however. Braun and Kanjee observe that educational assessment must overcome a number of implementation challenges. If there are no consequences attached to a test, then it will do little to motivate healthy change; however, if the result of an assessment is highly consequential, then it may engender unproductive or undesirable outcomes such as narrowing the curriculum or "teaching to the test." When assessments are tied to funding decisions, those responsible for the quality of education – teachers, administrators, and state officials – may oppose the release or even the creation of such data.

Braun and Kanjee describe the factors preventing better assessment and review promising national, regional, and international initiatives for improving current practices and resolving this dilemma. They propose that developing countries should participate in international assessments as "associates," without requiring that the results be released internationally. This interim arrangement would generate much-needed data, give developing countries access to expertise, and build local capacity to develop, administer, and analyze tests, while avoiding the political consequences of possible poor performance.

Testing offers a means to track the outcomes of schools and educational systems. But how can education reformers identify the practices that led to improved or worsened outcomes? Deciding whether an educational innovation is responsible for a change in student outcomes is essential for implementing the most effective educational programs.

As Bettinger and Kremer each discuss, one reliable means of evaluating the effects of a program or intervention – namely, randomized controlled experimentation – is now finding use in education. These experiments make it possible to compare pedagogical techniques and systems of management because randomization establishes equivalent participant and nonparticipant groups for comparison. Randomized controlled experiments can, therefore, produce the most credible evaluation of programs.

Kremer reviews the findings from randomized evaluations to determine low-cost means of increasing enrollment. He reports, for example, on a study of a school-based health program that proves to be an extremely cost-effective method of increasing students' participation in school. In the program, deworming medication and iron and vitamin A supplements were provided to pre-school children in Delhi (at a cost of $1.70 per student per year). The treatments were phased in at random to two hundred schools over a two-year period, enabling a comparison of treatment and nontreatment groups. Researchers found that the treatment had the effect of reducing absenteeism by 20 percent, making it an extremely low-cost means of increasing the number of days students are in school. Similar results were found in a randomized, controlled, school-based deworming program in Kenya, which offers hope that the program may be as effective in other regions.

Bettinger explains why randomized evaluations, though they provide highly credible results, remain underutilized guides for policy. Randomized experiments can be expensive and time-consuming. They require technical sophistication to plan, implement, and analyze properly. He notes, however, that certain types of experiments are no more expensive or time-consuming than other rigorous data-collection activities. A more formidable problem is the political justification of delivering a program to only a small set of students or schools while withholding it from a comparison group of students or schools. However, when budgetary constraints make it difficult or impossible to reach all members of a population in a given year, randomly selecting which groups receive the program when may be the fairest way to implement the program and simultaneously permit measurements of its impact.

Costs of Primary and Secondary Education

Of the many unknowns associated with universal education, the price tag – for books, buildings,

teachers – is one of the most pressing areas of uncertainty. What would it cost to provide every child in the world with a high-quality primary and secondary education? Economists Melissa Binder (University of New Mexico) and Paul Glewwe and Meng Zhao (University of Minnesota) address this question in *Achieving Universal Basic and Secondary Education: How Much Will It Cost?*

Glewwe and Zhao review World Bank, UNICEF, and UNESCO estimates of the annual costs of achieving universal primary school enrollment by 2015. These range from an additional $6.5 billion to $35 billion per year, over and above the approximately $82 billion dollars that developing countries currently spend each year on primary education. The estimates focus on the cost of increasing the number of places for students in schools and the number of teachers to teach them.

However, as Glewwe and Zhao observe, the number of places available is not always the limiting factor in school attendance rates. Parents choose not to send their children to school for various reasons, such as the cost of schooling or a need for labor at home. The true cost of enrolling all primary school-aged children will include the cost of implementing policies that influence those decisions and boost the demand for primary education. Future estimates should account for the cost of these policies – possibly including the provision of school meals, tuition subsidies to families, higher-quality and more reliable teaching, and reductions in rates of repetition and noncompletion. These costs are far more difficult to calculate. Glewwe and Zhao demonstrate that including some of them boosts the total costs substantially.

The cost of achieving universal secondary education will be greater than that for primary education because more children in this age bracket are not now in school and because secondary education is more expensive per pupil. Binder offers a pioneering estimate of the cost of providing spaces to accommodate all children of secondary school age. According to her analysis, if a gradual approach is taken between now and 2015, the annual additional cost would be approximately $34 billion. This cost could fall to $32 billion per year if countries were able to reduce repetition rates significantly. The best (albeit unlikely) scenario, in which policy makers adopt the practices of countries most successful in getting students to attend school, and helping them learn while they are in school, would reduce the additional annual cost to $27 billion. These estimates establish an important foundation upon which future efforts to estimate the costs of universal education can draw.

The UBASE project findings suggest that high-quality primary and secondary education is achievable in the first half of the twenty-first century. In its next phase, the project will focus on identifying and evaluating strategies for expanding access to primary and secondary schooling where it is most needed, and for improving the quality of education for all children. ■

Occasional Papers of the Universal Basic and Secondary Education Project

Benavot, Aaron, Julia Resnik, and Javier Corrales. 2006. *Global Educational Expansion: Historical Legacies and Political Obstacles*.

Bloom, David E. 2006. *Measuring Global Educational Progress*.

Bloom, David E. 2006. *Education, Health and Development: An Under-Explored Nexus*.

Braun, Henry, Anil Kanjee, Eric Bettinger, and Michael Kremer. 2006. *Improving Education Through Assessment, Innovation, and Evaluation*.

Glewwe, Paul, Meng Zhao, and Melissa Binder. 2006. *Achieving Universal Basic and Secondary Education: How Much Will It Cost?*

Hannum, Emily and Claudia Buchmann. 2003. *The Consequences of Global Educational Expansion: Social Science Perspectives*.

UBASE Edited Collections

Cohen, Joel E., David E. Bloom, and Martin Malin (eds.). Forthcoming, 2007. *Universal Basic and Secondary Education*. Cambridge, MA: The MIT Press.

Cohen, Joel E. (ed.). Forthcoming. *Education for All, But for What? International Perspectives on the Goals of Primary and Secondary Education*.

Other Publications of the UBASE Project

Bloom, David E. and Joel E. Cohen. 2002. "Education for All: An Unfinished Revolution." *Dædalus* 131 (3) (Summer): 84 – 86.

Cohen, Joel E. and David E. Bloom. 2005. "Cultivating Minds." *Finance and Development* 42 (2) (June): 9 – 14.

Cohen, Joel E. and David E. Bloom. 2005. "Bombs, Books, and Bucks." Distributed worldwide via *Project Syndicate*. Available at: <http://www.project-syndicate.org/commentary/cohenbloom1>.

Around the Country

In this 225th anniversary year, the Academy has held an increasing number of Stated Meetings and informal gatherings around the country. Campus receptions are an important way to involve more Fellows in the Academy and represent a wonderful opportunity to hear about the significant research of our members.

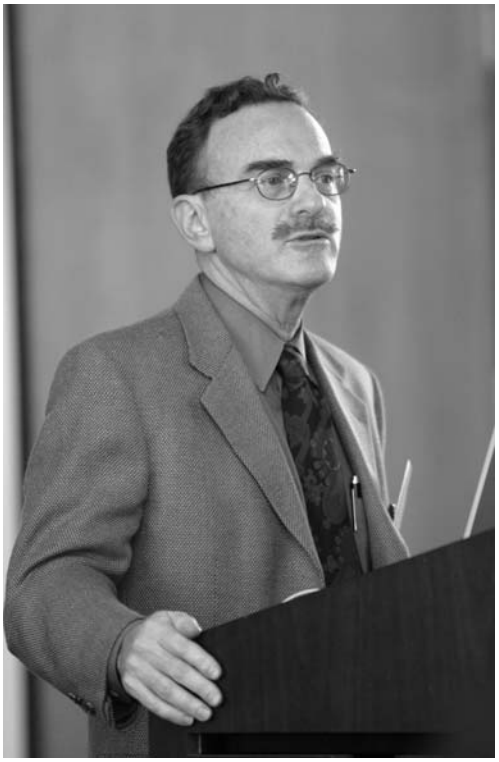
Stanford University – October 14, 2005

David M. Kennedy, Donald J. McLachlan Professor of History, spoke at a reception for Fellows at Stanford University on "The Wages of a Mercenary Army: Issues of Civil-Military Relations." His presentation is reprinted on pages 12–16.

Kenneth Arrow (Stanford University), Thomas Ehrlich (Carnegie Foundation for Advancement of Teaching), and Andreas Acrivos (City College of the City University of New York)

Former Presidents and Fellows Donald Kennedy, Gerhard Casper, and Richard Lyman joined current President and Fellow John Hennessy at the reception.

University of California, Berkeley – October 17, 2005

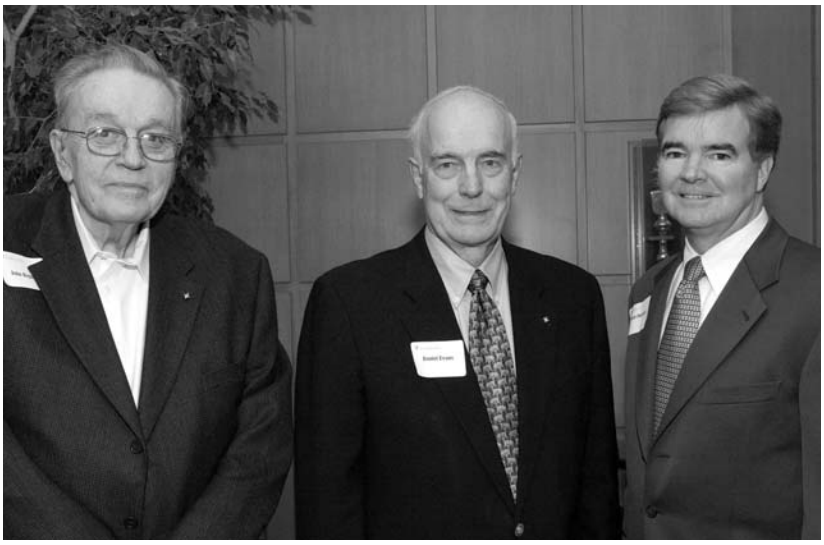


At an informal gathering of Fellows on the Berkeley campus, Randy Schekman, Professor of Cell and Developmental Biology, and Marjorie Shultz, Professor of Law, discussed stem cell research in the laboratory. Their presentations are reprinted on pages 17–22.

Marc Davis, Laura Nader, Frances Townes, and Chancellor Robert Birgeneau (University of California, Berkeley).

Jesse Choper (University of California, Berkeley) and Leslie Berlowitz (American Academy)

University of Washington – October 19, 2005



Fellows John Hogness and Daniel J. Evans with University of Washington President Mark Emmert

Robert H. Waterston (University of Washington) and Robert Alberty (Massachusetts Institute of Technology)

University of California, Irvine – November 21, 2005

Chancellor Michael V. Drake and Bernard Grofman (University of California, Irvine) at a reception held at the Irvine campus.

Larry Overman and Thomas Carew (University of California, Irvine)

University of California, San Diego – November 21, 2005

Veerabhadran Ramanathan, Victor C. Alderson Professor of Ocean Sciences and Director of the Center for Atmospheric Sciences, spoke about "Global Warming" at a gathering of Fellows on the University of California, San Diego, campus. His remarks are reprinted on pages 36–38.

Chancellor Marye Anne Fox

Gordon Gill and Richard Atkinson (University of California, San Diego)

Draft inductees leaving Wilmington, November 1940. Photo credit: Delaware Public Archives

The Wages of a Mercenary Army: Issues of Civil-Military Relations

David M. Kennedy

These remarks were given at a meeting of the American Academy, held at Stanford University on October 14, 2005.

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The *premise* of these remarks is this: The U.S. armed forces today have many of the attributes of a mercenary army. I will shortly explain what I mean by 'mercenary' and offer a brief historical account of how and why such a force came into being – a story with more than a few ironic twists.

More importantly, I want to explore some of the political, and arguably even moral, issues that the existence of a force with those characteristics poses for American society. The *proposition* I wish to advance is this: The current state of civil-military relations in the United States raises some urgent questions about America's role in the world and about the health of our democracy.

I also want to acknowledge at the outset that many people will find it offensive to describe this country's military as having *any* of the characteristics of a mercenary army. I want to emphasize that my use of that term is in no way intended as a criticism of those currently serving in uniform. My own belief is that the profession of arms can be a noble calling, and I harbor no disrespect for those who follow it. Their motives are not my concern here – though their demographic profile suggests some issues to which I will return. My principal interest on this occasion is to undertake neither a psychological nor a sociological analysis of today's service personnel. I want, rather, to explore some structural questions about the relation of the military we now have to the conduct of American foreign policy and especially to the important matter of political accountability.

But the fact remains that some people take the term 'mercenary army' quite literally – no pun intended whatsoever – as 'fighting words.' At the close of these remarks I hope to say something about a bit of a fight they recently provoked and what that dust-up suggests about the current state of American culture, including the implications for institutions of higher education.

My *Random House* dictionary defines 'mercenary' as "working or acting merely for money or other reward. . .hired to serve in

a foreign army." I am not suggesting that American service personnel today work 'merely' for money – though recent recruiting campaigns for the all-volunteer force lay a lot of stress on wages, benefits, and signing bonuses. And, of course, we hire our soldiers and sailors mostly from within our own society, unlike, for example, the much-maligned Hessians whom George III employed to fight against the American Revolutionaries. The exceptions are some sixty thousand noncitizens currently serving in the active-duty forces, prompting the Bush administration to expedite naturalization procedures for aliens in the military.

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In any case, 'mercenary' is a term that carries a lot of negative connotative freight. I'd like to unburden the word of most of that freight and focus on its core meaning, rooted in the Latin term from which it's derived, *mercari* – "to trade" or "to exchange." What are the terms of trade between civil society in this country today and the military organization that fights in its name and on its behalf? What is the relation of service to citizenship and of our current force structure to political decision making?

Our forebears had a ready answer to that question. From the time of the ancient Greeks through the American Revolutionary War and well into the twentieth century, the obligation to bear arms and the privileges of citizenship were intimately linked. In republics from Aristotle's Athens to Machiavelli's Florence and Rembrandt's Amsterdam and Thomas Jefferson's Virginia and Robert Gould Shaw's Boston and beyond, to be a full citizen was to stand ready to shoulder arms – indeed, in many cases, to provide one's own arms, at one's own expense. Their respect for the political consequences of that link between service and citizenship was among the reasons why the Founders were so committed to militias and so worried about standing armies, which Samuel Adams warned were "always dangerous to the liberties of the people." Franklin Roosevelt drew from the same well of doctrine and sentiment in his D-Day Prayer, when he called those G.I.s of the "greatest generation" who were then landing in Normandy "our sons, pride of our nation . . . lately drawn from the ways of peace. . . . They yearn but for the end of battle, for their return to the haven of home." African Americans understood that linkage in the Civil War, and again in World Wars I and II, when they demanded combat roles as a means to advance their claims to full citizenship rights. For more than two millennia, the tradition of the citizen-soldier has served the indispensable purposes of strengthening civic engagement, promoting individual liberty – and, perhaps most notably, encouraging political accountability.

Today that tradition has been seriously compromised. No American is now obligated to military service, few will ever serve in uniform, even fewer will actually taste battle – and fewer still of those who do serve will have ever sat in the classrooms of an elite university like Stanford or any of the other institutions whose faculties contribute so many members to the American Academy of Arts and Sciences.

A comparison with a prior generation's war can illuminate the scale and suggest both the novelty and the gravity of this situation.

In World War II, the United States took some sixteen million men and several thousand women into service, the great majority of them draftees. What's more, it mobilized the economic, social, and psychological resources of the society down to the last factory, railcar, victory garden, and classroom. World War II was a 'total war.' It compelled the participation of all citizens, exacted the last full measure of devotion from some four hundred thousand of them, and required an enormous commitment of the society's energies to secure the ultimate victory.

Today's military, in contrast, numbers just 1.4 million active personnel, with another nearly nine hundred thousand in the reserves – in a country whose population has more than doubled since 1945. Proportionate to population, today's active-duty military establishment is about 4 percent the size of the force that won World War II. What's more, in the behemoth, nearly $13 trillion American economy we now enjoy, the 2005 military budget of some $420 billion is about 3.3 percent of GDP.* That's about one-third of the rate of military expenditure relative to GDP at the height of the Cold War. In World War II that rate was more than 40 percent – a greater than twelvefold difference in the relative incidence of the military's wartime claim on this society's material resources.

What is the relation of service to citizenship and of our current force structure to political decision making?

At the same time, this relatively small and relatively inexpensive force is by far the most potent military establishment the world has ever seen. I say "relatively inexpensive" advisedly. The absolute numbers tell a different story: by some estimates, U.S. defense expenditures, even at 3.3 percent of GDP, are greater than the sum of all other nations' military budgets combined – a calculation that testifies as much to the scale of the U.S. economy as it does to the role of the military in America's conception of its security needs and foreign policy priorities. The American military, in short, is at once exceptionally lean and extraordinarily lethal. It displays what might be called a compound asymmetry: far larger than any potential rival force yet far smaller with respect to the American population and economy than at any time since the onset of World War II.

The implications of this compound asymmetry are unsettling: History's most powerful military force can now be sent into battle in the name of a society that scarcely breaks a sweat when it does so. The United States can wage war while putting at risk very few of its sons and daughters, and only those who go willingly into harm's

* This number excludes extraordinary appropriations of more than $100 billion for the Afghan and Iraq wars.

way. And unlike virtually all previous societies in history, the United States today can inflict prodigiously destructive damage on others while not appreciably disrupting its civilian economy. We have, in short, evolved an unprecedented and uniquely American method of warfare that neither asks nor requires any large-scale personal or material contributions from the citizens on whose behalf that force is deployed.

Some may celebrate these developments as triumphs of the soldierly art, or as testimony to American wealth, know-how, and technological accomplishment. But there's a darker side to this story as well. Among other things, the present structure of civil-military relations constitutes a standing temptation to the kind of military adventurism that the Founders feared was among the greatest dangers of standing armies – a danger embodied in their day in the career of Napoleon Bonaparte, whom Thomas Jefferson described as having "transferred the destinies of the republic from the civil to the military arm." But even Napoleon had somehow to sustain a broad public consensus to support the *levée en masse* and the huge drafts on economic resources that made his adventures possible. He might well have envied a twenty-first-century leader who shared his transformative aspirations and who commanded a compact, low-cost, highly effective force that substantially liberated him from the constraints of available manpower and finite *matériel* that frustrated Napoleon's ambition to remake the world.

How did this situation come about? The ultimate origins of this story, no doubt, trace back to the most primitive efforts to gain advantages of weaponry or wealth over one's adversaries and to do so at the least possible cost. But in the instant American case, the more immediate origins of this train of events lie in the Vietnam era.

In 1968, presidential candidate Richard Nixon sought to dampen the rising tide of anti-Vietnam war protests by pledging to end the draft, the focal point of much campus disruption and a formative factor in the lives of millions of American youths through several decades of the Cold War. Nixon's Defense Secretary, Melvin Laird, commissioned his predecessor under Dwight Eisenhower, Thomas Gates, to study the feasibility of ending conscription, and in 1973 the Selective Service System stopped drafting young men and the United States adopted an all-volunteer force. As the Vietnam War wound down, that force also became smaller, shrinking from forty to just sixteen Army Divisions by the time Nixon left office in 1974. (The Army fielded ninety Divisions in World War II. Today's Army numbers eighteen Divisions – ten active and eight National Guard – down from twenty-eight Divisions at the time of the first Gulf War.)

Vietnam's influence on the size and composition of the armed forces, and on the structure of civil-military relations, did not end there. The last Army Chief of Staff to serve under Nixon, General Creighton Abrams, a veteran of both World War II and the Vietnam War, was among those members of the officer corps deeply disillusioned with the way the military had been used or misused in the Vietnam episode. To prevent the repetition of what he regarded as the mistakes of Vietnam, Abrams devised something called the "Total Force Doctrine." To be sure, the Total Force Doctrine also grew out of budgetary constraints in the 1970s, but its deeper logic was to structure the armed forces in such a way that they could not easily be deployed in the absence of strong and sustainable public support – something that had gone fatally missing in Vietnam.

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Abrams's means to that end was to create a force structure that tightly integrated both active and reserve components. The reserves, of course, were less expensive to maintain than the active forces. But configuring the overall force so that it was inextricably dependent on the reserves served a political as well as a fiscal purpose. The reserves are traditionally composed of somewhat older men with deeper roots and responsibilities in civil society than the typical eighteen-year-old draftee of the Vietnam era. Abrams hoped that with his "Total Force" structure in place, political leaders would hesitate to undertake a major deployment that would deeply disrupt countless communities – unless they were sure of solid and durable public support. In effect, Abrams's doctrine was intended to raise the threshold for presidential demonstration of a genuine threat to national security, and to require presidential cultivation of a broad consensus on the nature and urgency of that threat, as prerequisites for military deployment. It thus amounted to a kind of extra-Constitutional restraint on the President's freedom of action as Commander-in-Chief. Its legislative counterpart was the War Powers Act of 1973, also aimed at restricting the President's ability to commit troops; it passed, not incidentally, over President Nixon's veto. Underlying the War Powers Act, in turn, is the Constitutional provision (Article I, Section 8, paragraph 11) giving Congress the power to declare war. Here it might be noted, however, that Congress has formally exercised that power only five times in the more than two centuries of the Republic's history – while the number of military engagements that might fairly be called 'war' is many times larger, including, in our own time, Korea, Vietnam, Afghanistan, and Iraq. That record suggests a chronically deficient Constitutional mechanism for bringing democratic practices meaningfully to bear on the decision to wage war.

The force of Abrams's ideas persisted into the early years of the Reagan presidency, when Defense Secretary Casper Weinberger took the Total Force Doctrine's logic of insulating the military from ill-considered political decisions several steps further. The precipitating factor in this instance was not Vietnam but Lebanon, where the Reagan administration had sent troops over the objections of the Pentagon and the Joint Chiefs. On October 23, 1983, some 241 Marines died in a suicide attack on their Beirut barracks. Reacting to that catastrophe the following month in a speech entitled "The Uses of Military Power," Weinberger laid down a set of principles governing military deployment that became known as the Weinberger Doctrine:

1. The United States should not commit forces to combat unless the vital national interests of the United States or its allies are involved.

2. U.S. troops should only be committed wholeheartedly and with the clear intention of winning. Otherwise, troops should not be committed.

3. U.S. combat troops should be committed only with clearly defined political and military objectives and with the capacity to accomplish those objectives.

4. The relationship between the objectives and the size and composition of the forces committed should be continually reassessed and adjusted if necessary.

5. U.S. troops should not be committed to battle without a "reasonable assurance" of the support of U.S. public opinion and Congress.

6. The commitment of U.S. troops should be considered only as a last resort.

Seven years later, in the context of the first Gulf War, then Chairman of the Joint Chiefs of Staff General Colin Powell glossed the Weinberger Doctrine – and managed thereby to substitute his own name for Weinberger's in popular understanding of

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the doctrine – by adding the criterion of a viable "exit strategy" for any prospective deployment. Like Abrams a Vietnam veteran, Powell also invoked Weinberger's example of the Beirut bombing, in a speech entitled "U.S. Faces the Challenges Ahead":

> We must not, for example, send military forces into a crisis with an unclear mission they cannot accomplish – such as we did when we sent the U.S. Marines into Lebanon in 1983. We inserted those proud warriors into the middle of a five-faction civil war complete with terrorists, hostage-takers, and a dozen spies in every camp and said, 'Gentlemen, be a buffer.' The results were 241 dead Marines and Navy personnel killed and U.S. withdrawal from the troubled area.

Contrary to many stereotypes about the bloodthirstiness of a so-called warrior class, these various doctrines – Abrams's, Weinberger's, and Powell's – did not seek primarily to provide rationales for doing battle. Instead, they were principally intended as formulas, devised and supported by professional soldiers, for avoiding war if at all possible. Like the Total Force Doctrine that preceded and informed them, the Weinberger Doctrine and the Powell Doctrine grew out of persistent anxiety on the part of senior military leaders that they lived in a world where it was too easy for their political masters to behave irresponsibly, even recklessly – by committing the armed forces to action in the absence of clearly compelling reasons, a well-defined mission, and the reliable, properly informed approval of the citizenry. These were counsels of prudence and responsibility, intended to induce caution and consensus-building when confronting the decision to make war. How effective have they been?

Opinions may well differ about that matter, but one intervening development since the first Gulf War in 1991 has notably weakened the already frail structural inhibitions on rash or imprudent political decisions to resort to military force that Abrams originally tried to build into the very configuration of the armed forces. That event usually goes by the name of the Revolution in Military Affairs, or RMA.

To be sure, there have been many revolutions in military affairs, from the introduction of gunpowder in the Middle Ages to the invention of Blitzkrieg and strategic bombing and the advent of nuclear weapons in the twentieth century, all of which fundamentally redefined strategic as well as tactical doctrines and the very character of warfare. But this newest RMA is notable for the speed with which it has worked its effects, its intimate relation to parallel developments in civil society, and the lack of public understanding of its implications.

Albert Wohlstetter, long an influential theorist of nuclear war at the RAND Corporation, foreshadowed the RMA in a series of articles in the 1980s. Wohlstetter stressed the factor of *accuracy* in determining force composition and war-fighting doctrine. As early as 1983 he proposed that a tenfold improvement in accuracy was roughly equivalent to a thousandfold increase in sheer explosive power. By extension, a hundredfold increase in accuracy amplified destructive potential by a factor of one million.

The Pentagon's Office of Net Assessment energetically pursued the implications of that calculus, recommending that the military capitalize on the information and computer revolutions that were so rapidly and pervasively transforming the civilian

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sector, especially the impressive advances in Very Large Scale Integration (VLSI) technologies, many of them developed here in Silicon Valley. Specifically, proponents of the RMA stressed the potential for dramatic technological upgrading of stealth and stand-off weapons, all-weather and all-terrain fighting capacities, unmanned systems, joint-force integration, miniaturization, range, endurance, speed, and, above all, precision. All of these innovations were on display in the early stages of the 2003 Iraq war – though they have arguably proved far less relevant to the occupational and nation-building missions that followed the conventional military victory.

The Revolution's first fruits were evident in the 1991 Gulf War, when news coverage conspicuously featured the advent of 'smart' air-launched weapons. But historians like Andrew J. Bacevich have already concluded that the first Gulf War is best understood as the "final mission" of a force that had been configured to fight a fairly conventional land battle against Warsaw Pact adversaries in Central Europe. 'Smart bombs' actually accounted for only about 10 percent of the ordnance used in the 1991 Iraqi con-

flict. The decisive action was, in fact, General Norman Schwarzkopf's Blitzkrieg-like flanking attacks against the Iraqi army, a classic World War II–era maneuver, mimicking Patton's great sweep to Argentan in August 1944.

By the time of the second Gulf War in 2003, however, smart munitions made up something approaching 90 percent of the American arsenal. The implications of accuracy as a 'force multiplier' proved to be quite spectacular. By one calculation, in World War II it took 108 aircraft dropping 648 bombs to destroy a single target. During the 2001 campaign in Afghanistan, the first large-scale demonstration of the logic of the RMA, 38 aircraft hit 159 targets in one night. The RMA thus vastly amplified the firepower and effectiveness of the individual soldier, sailor, or airman, making it far more feasible to field a much smaller force capable of wreaking much greater destruction than the lumbering, terrain-bound, largely sightless armies that had clashed on countless battlefields since time immemorial.

So several developments – political, fiscal, and especially technological – have converged in our own day to yield the downsized, affordable, and remarkably efficient military establishment we now have.

To repeat, many observers have applauded these developments, especially the all-volunteer force and the RMA, as triumphs of American values and ingenuity. So perhaps they are. But they may have also incubated a grave threat to the no less important values of political accountability and responsible decision making that Creighton Abrams, Casper Weinberger, and Colin Powell were trying to bolster. In a sense, the RMA has made possible the hijacking of the Total Force Doctrine by underwriting the downsizing of the armed forces to such a degree that only the willing – or the desperate – need serve, and even calling up the Reserves does not have an appreciable impact on civilian society.

It cannot be healthy for a democracy to let something as important as the decision to go to war grow so far removed from broad popular participation and strict accountability. That's why the power to make war was constitutionally located in the legislative branch in the first place. Our current situation makes some supremely important things too easy – things like the violent coercion of other societies and the resort to military solutions – because of the assumption that they will be swifter, more cheaply bought, and more conclusive than what could be accomplished by the more vexatious and tedious process of diplomacy.

The life of a democratic society should be strenuous. It should make demands on its citizens when they are asked to engage with issues of life and death. To be sure, the RMA has made obsolete the kind of huge citizen-army that fought in World War II, but we are in need of some mechanism to ensure that the civilian and military sectors do not become dangerously separate spheres – and to ensure that America makes war only after due deliberation.

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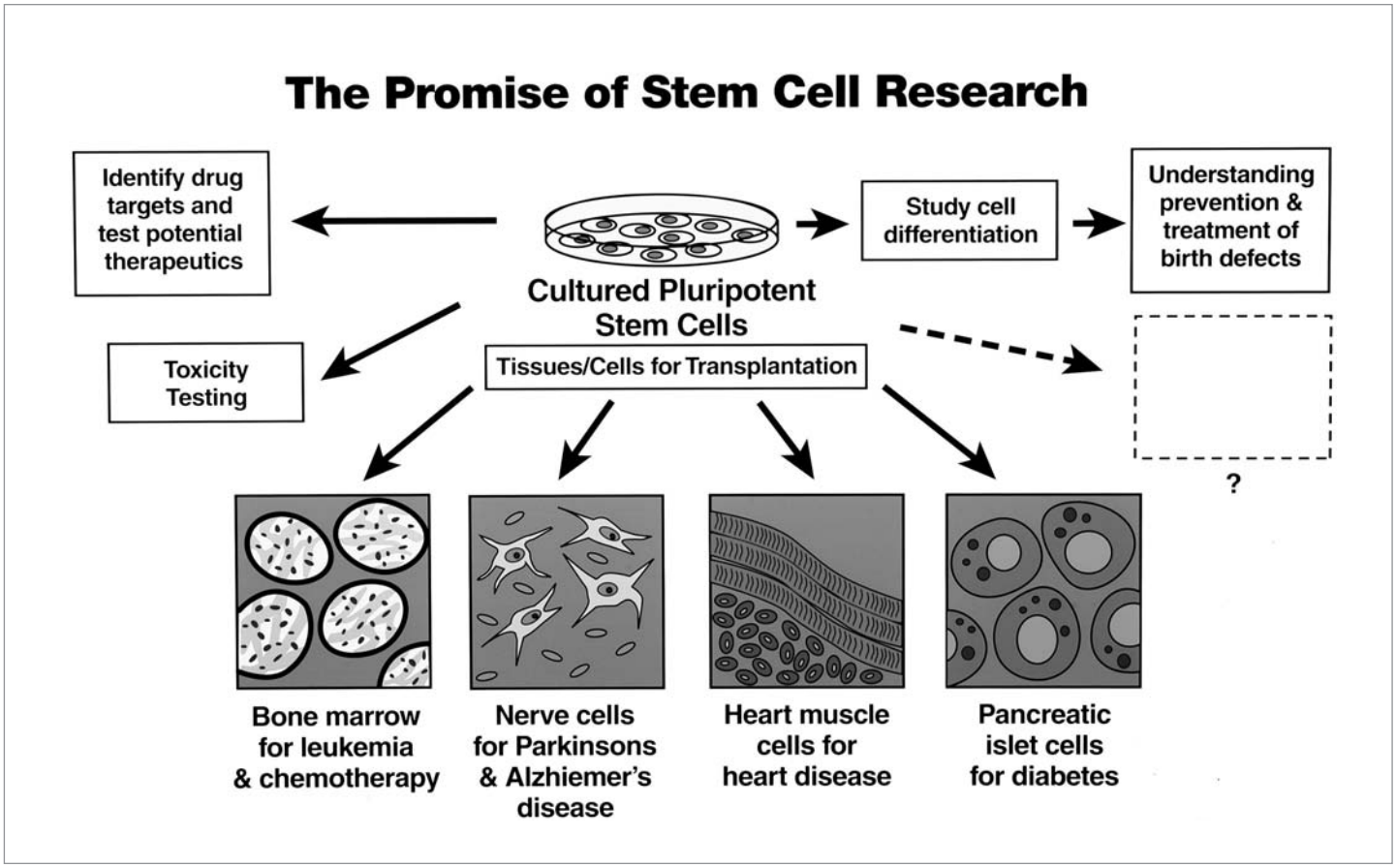
A final word about the separation of civilian and military spheres: Andrew Bacevich reports that in 2000, minorities composed 42 percent of the Army's enlistments. Also, while 46 percent of the civilian population has had at least some college education, only 6.5 percent of the eighteen- to twenty-four-year-olds in the military's enlisted ranks have ever seen the inside of a college classroom. So not only is today's military remarkably small in relation to the overall structure of civil society – a 'minority' institution, as it were – it is also disproportionately composed of racial and ethnic minorities. Whoever they are, and for whatever reasons they enlist, they surely do not make up the kind of citizen-army that we fielded two generations ago – its members drawn from all ranks of society, without respect to background or privilege or education, and mobilized on such a scale that civilian society's deep and durable consent to the shaping and use of that force was absolutely necessary.

Here is another compound asymmetry of worrisome proportions. A hugely preponderant majority of Americans with no risk whatsoever of exposure to military service have, in effect, hired some of the least advantaged of their fellow countrymen to do some of their most dangerous business while the majority goes on with their own affairs unbloodied and undistracted.

When I published a version of these remarks in the *New York Times* in July 2005, I heard from a lot of those countrymen as well as their friends and relatives. Most of them were deeply offended by my use of the word 'mercenary,' and in retrospect I wish I had more carefully defined the particular way in which I was using that term with reference to the general argument about civil-military relations and political accountability. But what was most disturbing to me as I read the hundreds of messages that the piece elicited was how thoroughly marinated they were in the vernacular of bitter, venomous cultural resentment. In comments often colorfully embroidered with vivid anatomical and scatological detail, they castigated the educated classes, the securely employed, and the effete professoriate, as well as an array of 'elite' and presumably clueless institutions like the *New York Times* itself and the major universities – especially those universities, like Stanford, that do not have academically accredited ROTC programs and resist allowing military recruiters on campus. (Those policies, incidentally, go a long way toward ensuring that such universities, which pride themselves on training the next generation's leaders, will have minimal influence on the leadership of a hugely important American institution, the United States armed forces. Why is that a good idea?)

It would be a gross exaggeration to suggest that the cultural divide registered in those reactions is the precursor to the emergence of an American Freikorps or Fasci di Combattimento. But the cultural distance that increasingly and rancorously separates those who serve from those who do not – and insulates some of our greatest universities from the officer corps – undoubtedly exacerbates the cultural tensions that already threaten our social comity, and provides one more reason to worry about the longer-term implications of maintaining an all-volunteer force – not to mention banning ROTC. ■



Stem Cell Research: Opportunities and Challenges

Randy Schekman and Marjorie Shultz

These remarks were given at a meeting of the American Academy, held at the University of California, Berkeley, on October 17, 2005.

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Randy Schekman

For thirty years, I've been a faculty member at Berkeley, working on understanding how processes are organized within very simple cells. However, in 1998, with the advent of the first human embryonic stem cell line, I began to think about the opportunities that were not available in the simple system that I had explored for all these years, and to consider the possibility, here at Berkeley, of exploring the basic biology of embryonic stem cells and how we might eventually apply them in regenerative medicine.

In this talk, I would like to describe some very basic issues that inform the discussion, at least in biology, about the importance of an embryonic stem cell, what we can learn about these cells in basic biology, and how we can apply what we learn to therapy.

For those of you who haven't had biology for a few years, let me start off by describing the most important part of the cell for this discussion: the nucleus. The nucleus of a cell harbors the chromosomes, the genetic information. All of the cells in our body have a blueprint – a barcode – that distinguishes one cell from another. In an adult human there are two hundred different tissues, each of which has a different pattern of turning on and turning off genes. The genes are the words of the paragraph that allow a cell to do what it has to do to become a brain cell, a nerve cell, a muscle cell, a pancreatic cell. There are many different decisions in the development of an embryo that must be made before a brain cell turns on to create some particular neural connection, or before the cell responsible for producing insulin in the pancreas develops to the point where it can secrete insulin into the body.

We need to know how these decisions are made. And though we can, to a small extent, understand some of the basic rules that apply in simpler systems, we are really in the infancy

of understanding how human cells reach these decisions.

There are some basic questions that will help frame our discussion: What is a stem cell? What are the two basic kinds of stem cells? What does it mean to be an embryonic stem cell? How can we study these cells in the laboratory and explore the path they take to produce a brain cell, a pancreatic cell, or a muscle cell? How can we then apply this knowledge?

Only since 1998 have we had the possibility of studying human embryonic stem cells in the laboratory.

There are two kinds of stem cells that you've all heard about if you've read *The New York Times* recently – the basis of the controversy in stem cell biology. On the one hand, we have adult stem cells. In your brain, for example, you have a reservoir of stem cells that have the capacity to develop into new nerve cells, but not into other kinds of cells. Likewise, in your bone marrow, you have cells that give rise to the blood cell system. These are 'adult' stem cells; they've already taken a certain number of steps along the way to becoming the cells that comprise our circulatory system.

These cells are terribly important – not only in normal life, but also in therapy. For example, we can now treat leukemia patients by giving them a new source of hematopoietic, or blood-forming, stem cells. We can treat a child with leukemia, for whom we can find a good match, by killing the leukemic cells and then repopulating the entire blood system with a new set of blood cells. This is a terribly important and very practical application of stem cells – one that continues to be of significance in medicine.

Likewise, other tissues – in the muscle, in the nerve, in the bone – have their own reservoir of adult stem cells. As I indicated earlier, these cells have taken a few steps along the path to sustaining their mature function. However, until now, at least in humans and mammals, it has been impossible, in the laboratory, to coax them backward into producing a progenitor with a more universal fate. These progenitors, commonly referred to as totipotent cells, normally arise only after the fertilization of an egg. Totipotent means that the cell has the ability to become any one of the two hundred different tissues, like a brain cell or a pancreatic cell.

What we'd like to do is to find a population of cells that has this plastic quality. Then we could use these cells in treating a disease like diabetes. In the case of diabetes, only a fairly small population of cells goes bad. These are the cells in what's called the islet – the beta cells of the islet of the pancreas. If we had a way, in the laboratory, of taking these totipotent cells and coaxing them along the path to becoming insulin-secreting beta cells, we would have the possibility of curing diabetes – not merely treating it with insulin, but actually curing the disease.

So where do embryonic stem cells come from? We know a great deal about these cells from studying the cells formed in the early embryo of the mouse. But only since 1998 have we had the possibility of studying human embryonic stem cells in the laboratory – really, a relatively brief period of time. Where do these cells come from? When an egg is fertilized, it begins a series of cell divisions that generates a small population of thoroughly totipotent cells. We can harvest any one of these cells. We can collect, study, and use them in the very early embryo to produce new embryos or stem cells in the laboratory.

After about a week, several hundred cells form a ball called a blastocyst. The ball consists of an outer layer of cells and an inner layer that we can tease out by breaking open the outer layer. Now, this inner layer, called the inner cell mass, contains stem cells that have the ability to grow and divide into a colony of cells on a petri dish.

In 1998, Dr. James Thompson, at the University of Wisconsin, broke open a human embryo, teased out these cells of the inner cell mass, and spread them out on a petri plate with a nourishing layer of goodies. In doing so, he was able to find a rare instance where one of the cells of the inner cell mass divided, and divided again, to produce a clone. These cells can be grown in the laboratory and propagated over a number of passages. What we want to do is understand the capacity of these cells to produce different tissues in the body, but we also want to understand, in the laboratory, how we can sustain these cells in this relatively primitive or plastic state. So there are two important decisions. One is to continue to grow and divide in what is referred to as an undifferentiated state, or a plastic state – one that has the capacity to go in any of two hundred different directions. The second is to coax these cells eventually to produce cells that could be used for transplantation.

We have yet to answer these very basic questions in any systematic way with human cells, but we have some knowledge from experimental model systems. For example, we know how to take embryonic stem cells from a mouse embryo and coax them into producing cells that secrete the chemical neurotransmitter dopamine – the neurotransmitter missing in patients with Parkinson's disease. This very prospect, realized with the mouse, is what we now hope to do with human cells. Eventually, it may be possible to use such human embryonic stem cells in the laboratory to produce all of the cells that would be useful in regenerative medicine.

The most likely application of this technology will be in diseases like diabetes and Parkinson's disease, where only a very small population of cells go bad. By small, I mean, really very small: tens of thousands of cells. In a patient with Parkinson's disease, for example, cells deep in the base of the brain, comprising a structure called the *substantia nigra*, go bad over a period of decades. If we could develop a way of replacing this tiny fraction of cells, we could restore a patient with Parkinson's disease to normal health.

What we want to do is understand the capacity of these cells to produce different tissues in the body, but we also want to understand, in the laboratory, how we can sustain these cells in this relatively primitive or plastic state.

Almost a year ago in California, we passed Proposition 71: The California Stem Cell Research and Cures Initiative. At Berkeley and throughout the state, a number of institutions have formed programs to try to secure

funds from the statewide committee. Although we have all proceeded with good intentions, there are, of course, people who

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oppose this research and who have mounted a legal campaign to block its implementation. Nearly a year later, no bonds have been sold because of a number of lawsuits preventing their sale.

Recently, a judge ruled that some of the lawsuits can be bundled together. However, the opponents are very clever. A lawsuit has been filed to oppose this research, claiming that embryos used in a laboratory would be enslaved, and thus this research would violate the Thirteenth Amendment to the Constitution. As a result, the people who are responsible for implementing this program are very busy trying to defeat these measures. In the meantime, private donations have supported research efforts at the medical schools throughout the state; here at Berkeley as well, we now have some funds to begin this work. So I'm quite confident, in fact, that the will of the people of California will win and this work will begin within a few months.

Other states are trying to copy what we have done in California. Wisconsin, Massachusetts, New York, Illinois, New Jersey, and Connecticut have all mounted similar but smaller campaigns, using state funds to support this kind of research. I'm quite confident that, in the absence of federal legislation, the work will go on. But even at the federal level, this work will eventually take shape because a number of very conservative, anti-abortion Republicans nonetheless favor additional stem cell line derivation. By additional derivations I mean using the blastocysts available in fertility clinics to create additional stem cell lines.

At the federal level, President Bush announced in August 2001 that the stem cell lines that were then available around the world – which ended up amounting to only twentysome stem cell lines – would be available for federal support. But these lines are going bad as we speak. They were grown on a layer of mouse cells to nourish them, and we've discovered, in the intervening years, that the mouse cells produce molecules that subvert the normal machinery of the human cells. So we can never use the human cells that result from these approved stem cell lines in human therapy. We need to learn how to make cell lines grow on a layer without using mouse cells.

For this purpose, an estimated 400,000 embryos are available in fertility clinics around the country – 3 percent of which have been committed for research purposes. Three percent of 400,000 is about 11,000 embryos that we cannot use for any other purpose other than to thaw and throw down the drain. For that reason, a number of Republicans are joining Democrats, in the Senate and in the House, to try to mount additional federal legislation to promote this kind of work. I'm very confident that in the remaining years of the current administration – and certainly into the next administration, whether it's Republican or Democratic – we will have a more permissive policy that will allow at least the derivation of new stem cell lines.

Finally, let me conclude with some remarks about what's happening around the world, because, of course, the rest of the world is not waiting for the federal government in Washington to act. In my career, I've never

I'm very confident that in the remaining years of the current administration – and certainly into the next administration – we will have a more permissive policy that will allow at least the derivation of new stem cell lines.

seen a situation where other countries with less powerful biomedical enterprises have leaped ahead of us. Countries like Singapore, South Korea, Israel, Scandinavia, and Britain now have very advanced programs in human embryonic stem cell research. So we may act, or we may not act, but this work will not rest. Many of us feel very strongly in this country that the most important biomedical enterprise in the world cannot be left behind. I hope you will help us in this effort at Berkeley and elsewhere, but certainly in California, to once again lead the way in what I consider the second revolution in biotechnology. The first was born here in the Bay Area, and the second will as well, through the study and application of these stem cell lines.

Marjorie Shultz

Many legal questions accompany the fast-moving developments in stem cell research, especially human embryonic stem cell research. For instance, one vexing problem is how should we conceptualize, determine, and enforce our understandings about what contributes value to this science. If we say something is patentable and we create certain ownership interests that we can turn into money or into some designated use that the inventor wants to support, what is the value of the intellectual contribution of the researcher, as compared to the "genetic uniqueness" contributed by the tissue donor, as compared to the financial contribution of the venture capitalist who underwrites the effort? We can no longer answer these questions by saying, "Money over here, ultimate values over there." In this presentation, I want to consider two dimensions that have been helpful to me in organizing the range of issues that now confront us.

One dimension involves scale: micro to macro. On the micro level, the involvement of individuals as donors and subjects in stem cell research will implicate a number of our most fundamental individual rights relating to the body, sex, reproduction, and religion. Since these issues entail "ultimate values," they will be dense, challenging, and contested. At the macro end of the continuum, complex questions about broad social policy will also be raised; for example, what intellectual property regime should govern stem cell innovations?

If one dimension is scale, micro to macro, the other dimension that particularly intrigues me is the pressure that biotechnology brings to bear on traditional ways of thinking about and protecting values, such as the sanctity of life, the dignity of individuals, and so forth. Obviously, there are exceptions

to any generalization this broad, but to a substantial degree, the American legal system has striven to protect what it considers to be ultimate rights and values.

On the micro level, the involvement of individuals as donors and subjects in stem cell research will implicate a number of our most fundamental individual rights relating to the body, sex, reproduction, and religion.

Consider sanctity of life as emblematic of that set of issues. A major way we have sought to protect values such as the sanctity of life is by separating them, to a very substantial degree, from economic markets. The National Organ Transplant Act has been the focus of a good deal of conflict because it stipulates that a person cannot buy or sell organs. The problem with that approach is that the need for organs far outruns the supply, so proposals are regularly made to allow some form of incentive or market exchange in order to increase the supply of donor organs. The same principle of separating values and money lies behind laws that deal with such topics as baby selling, slavery, and prostitution. When such issues arise, we almost automatically say, don't mix money into the terrain of persons, bodies, and intimacy.

Conflict over family, reproduction, and sexuality is particularly acute because it not only involves key values (often enshrined by the law as constitutional rights) but also implicates gender roles and family structure – areas that have undergone very significant changes in the past century. Much of the conflict over advances in biotechnology will occur within the reproductive context, which is already fraught with tension. The centrality of the reproductive arena is not simply a result of rapid developments in fertility practice; it also reflects the relative infancy of the science. For example, if we could effectively deliver gene therapy to grown human beings, there would be less pressure regarding things like the selection of embryos and pre-implant genetic diagnosis. If we could better manipulate adult stem cells, the need for research embryos would decline. But because we cannot do these things right now, we are on a collision course between the possibilities of bio-science and technology, on the one hand, and values issues surrounding family, sexuality, and the beginning of life, on the other.

If our traditional strategy for protecting core values is to separate values from money, bioscience and biotechnology raise incredibly difficult challenges to the feasibility and the wisdom of maintaining those walls. Before "big biology," the separation strategy worked pretty well. We had conflicts here and there: Should we legalize prostitution? Does fertility technology overly commercialize women's bodies? Should high-cost health care be a right or a commodity? But recent developments in the life sciences have tremendous commercial potential, putting pressure on values regarding life, family, and reproduction. When so much money can be made in bio-science and bio-technology today – by researchers, corporations, universities, pharmaceutical makers – it becomes far less plausible to safeguard life values by cordoning them off from money and the market.

The legal issues surrounding stem cell research arise from the decreased viability of our traditional strategy. At the micro level, there are fundamental clashes over the beginning of life, and, as we saw last year in the *Schiavo* case, over the end of life as well. The two, of course, are closely involved with each other. All of us are aware that the use of embryos in research – particularly commercialized research – will re-inflame many of the issues surrounding abortion, and that abortion will drive much of the development of bio-science policy, at least for the near term. It is not as if we – as a society, a polity, or a legal system – have agreed on how to manage conflicts about the meaning and definition of life, whether they are related to partial-birth abortion legislation, or whether they focus on which institutions (Congress? Courts? State legislatures?) should play any role in end-of-life decisions. Because we have reached no resolution in these situations, meaning-of-life questions are going to expand into whole new territories as a result of stem cell research.

With this background, we can look first at the micro level, where the initial issue is whether we have adequate protections in place for donors of tissues involved in stem cell research. Randy referred to the availability of excess embryos from *in vitro* fertilization. What will we have to tell people before they can provide meaningful consent to use of their embryos for stem cell research? Are we going to place limits on who is allowed to donate? Will we try to screen potential consenters based on their genetic status? Will we seek the kind of race, gender, vulnerability, and class balances that have recently been emphasized in conducting medical research? Who will receive the benefits and burdens of involvement as human subjects, and who will receive access to new treatments?

The fact that the federal regulations protecting human subjects cover tissue donors will bring up another set of legal issues regarding how research will be reviewed in this new context. Many of you have probably dealt with institutional-review bodies. At Berkeley, the Committee for the Protection of Human Subjects reviews a range of issues, including the risk-benefit calculus of the research itself as well as many specific questions about consent and the recruitment of subjects. Is this existing process equitable for this new type of research? Do current systems provide adequate disclosure? Are the risks and benefits adequately explained? Will there be compensation, and if so, for whom and how much? What happens if people are injured as a result of their participation? These constitute another layer of questions to be addressed along with the layer about the rights, obligations, and privileges accorded to a donor.

At the macro end of the continuum, complex questions about broad social policy will also be raised.

To illustrate the difficulty of answering even one of these questions, I want to consider the issue of consent, which entails very demanding criteria about the disclosure of risks and benefits, the purpose of the research, and so on. In many of the new research situations, we won't know our endpoints well enough to inform subjects before they consent. In the area of tissue banking and the creation

of gene databases, we are increasingly encountering this scenario: "I donate today for study A. What happens in a year or two when someone (the same researcher or a different one) wants to use my biologic material to do study C? Or study D?" Does each researcher have to come back to the material donor and get another consent specific to the particular research that is being done then?

Much of the conflict over advances in biotechnology will occur within the reproductive context, which is already fraught with tension.

The problems of consent will be even more difficult in this new context because of what we are doing and what we are going to find. Should tissue donors be able to veto particular kinds of research based on their own religious, personal, or philosophical concerns? What rights or interests should they have? Should the status of those who donate embryos left over after fertility treatment be akin to patients – or more akin to pure research subjects? If they're research subjects, do we arrange their participation based on a contractual type of relationship? Contracts assume that, for the most part, you look out for your interests and I look out for mine. We'll negotiate and make an agreement that establishes permissions and limits. Or do we feel the need to provide donors to stem cell research greater protection than this look-out-for-yourself kind of model? Given that individual researchers, corporate sponsors, governmental agencies, tech-transfer entities, and healthcare providers will sooner or later derive money from these ventures, do we think donors should receive financial compensation, or should they be the primary altruists in the chain of product development?

Here again, we encounter the dilemma about separating or interweaving monetary value with core life values. This issue arose previously in *Moore v. U.C. Regents*, the highly visible case that first put this concern about payment and ownership onto the legal map. After removing a man's cancerous spleen, a group of UCLA researchers developed a cell line from it and sold the development rights to a pharmaceutical company – for a good deal of money and stock. This case raised the question: Should a donor count as one of the "owners" or "shareholders" of whatever commercially valuable product is developed from something that initially came from his unique genetic self?

What if some donors demand to be paid? What if they want to continue exercising control over biological material? One of my colleagues, David Winickoff, a new Berkeley faculty member in the field of Bioethics and Society, has proposed that we give tissue donors the option of participating in something resembling a charitable trust that would preserve for donors a continuing role in governance and a right to negotiate with researchers about the permissible uses of the donated tissue. Now, that may sound a little odd until I tell you that, in the context of medical research, there are already cases in which groups of patients or families with a particular disease or genetic condition have collected a bank of tissue in order to try to persuade a researcher to find which gene is causing their particular problem and thus advance efforts toward treatment.

One case involved Canavan's disease, where families wanted someone to locate the gene for the condition so possible treatments or screening tests could be developed. A researcher took their tissue samples and located the gene responsible for Canavan's. He then promptly marched off to work with a new hospital, and together they patented the discovery and began selling a screening test. But the family group objected: "Hey, wait a second. We wanted this to be available as a free test to the public, so that people who have this condition could learn about it early enough to take ameliorative action." The case pits the individual sources of the donated tissue against the researcher and the hospital who did the research and who hold the patent. In this instance, the group had sufficient credibility and energy, as well as appealing collective goals, to gather samples of genetic material from a very high percentage of families in the world that have a member with Canavan's disease. Does that group have the power, the financial ability, and the right to say how those tissues will be used? Or do those decisions belong to the researcher and the medical center that hold the patent? The fact that neither side in this dispute had the foresight to identify and resolve these issues at the outset illustrates the ways in which new research creates new legal problems.

If we decide that donors have at least some stake, who is entitled to represent that stake? Most people think of the women whose eggs are used as the donors for human embryonic stem cell research. But where there is an embryo (whether contributed by IVF patients who no longer need them, or by donors of gametes to create embryos for research purposes), there is also a male donor. The fact that most people focus on women partly reflects realistic differences in time and risk invested by male and female donors. But it also reflects conventional assumptions about women as altruists divorced from the market, as more vulnerable than men, and as more central to family life. Do both sexes have the same rights when genetic material or tissue is donated to human embryonic stem cell research? Or is the issue mostly related to women? Many people with strong pro-choice views generalize from abortion law to say that every decision that touches any aspect of reproduction should, like choices about abortion, be ceded to women. But to what extent does the abortion rule, that women should control reproductive choices, apply when we're talking about something that, like IVF, occurs outside a woman's body? And what are we going to do if there are conflicts between several potential donors to an embryo?

What kinds of limits should be set by donors? You probably have read about conflicts over reproductive cloning – a process that could create new human beings. Although most people agree that we shouldn't do that, do they also agree that we shouldn't do research that involves chimeric methods? Take a process such as the use of mouse cells in the development of cell lines, or the use of animals to grow human-adapted organs for transplant. Should we set limits on these instances of

Should a donor count as one of the "owners" or "shareholders" of whatever commercially valuable product is developed from something that initially came from his unique genetic self?

"species mixing" because of our concern about the sanctity of human life?

Let me shift now to the macro-level issues. Some of you may be familiar with the Bayh-Dole Act adopted in the 1980s. This legislation created vastly greater incentives for universities and researchers to transfer their discoveries and technological developments into the private sector on the assumption that this approach would advance the public good by promoting faster use of these discoveries and developments. Essentially, the statute provided that the ownership rights to discoveries, even those made through federally funded research, could be transferred to the universities or research institutes that discovered them, which could then license them for use by private, and often for-profit, industry. In effect, the law wrote off the federal (taxpayer) financial investment in the research.

We need incentives to support and drive research so that we can progress in the amelioration of disease and impairment.

Is this the model that we will want to use in the state of California in managing state-funded stem cell research? On the one hand, we need incentives to support and drive research so that we can progress in the amelioration of disease and impairment. But on the other hand, the state is in financial difficulty: it is not funding many needs and services, and those services are not available to people of less than substantial means. The amount of money involved in this California stem cell research edifice, $3 billion, is not trivial. Does the Bayh-Dole model strike the optimal balance between private profit incentives and the public good?

In California, we must ask whether the state and we the taxpayers have any claim to the money expected to flow from stem cell research once it is more advanced. Some have claimed that the state should receive recompense from stem cell research through streams of royalties from patents and inventions developed with state funds. Is that the appropriate solution, or should the state look instead to the economic growth, and consequent increase in tax base, that it hopes will result from stem cell research? Or perhaps the state will benefit sufficiently from a reduction in its health-care costs that could result if we find a cure for diabetes or Parkinson's. We're going to see plenty of legal scrambling around the relationship between this scientific process and the state's control and payback.

Another set of macro-level issues involves what kinds of things ought to be patentable. A number of years ago a new biotechnology invention gave rise to a case called *Chakrabarty*. On the basis of then-prevailing policy, the Patent Office told the inventor-researcher, "No, you can't patent this genetically engineered microorganism [which assisted in cleaning up oil spills in the ocean] because we don't allow ownership of living things." The researcher responded, "Look, I engineered this microorganism that did not previously exist in this form. I ought to be able to patent it so that I can have the rewards of my discovery." The Patent Office's initial position reflected my introductory theme about the walling-off of money from ultimate values. The Supreme Court, on the other hand, ruled for the researcher, saying in effect, "Not so fast. This is an invention. Creating incentives to invent is the whole point of the patent system. We will allow this to be patented."

How will we approach patenting issues in stem cell research? If we thought the patenting of the microorganism that swallows up oil was controversial, what are we going to do with these inner masses of cells that are engaged in the kind of science that Randy was describing? There's already a lot of conflict over the appropriateness of the Patent Office's actions in the area of genetic research. A lot of people are arguing that the Patent Office should not grant patents to discoveries concerning life as permissively as it has. In addition to the moral issues, other questions have been raised about recent Patent Office policy. Is it granting protection too early and too broadly now, such that, instead of incentivizing research progress, proprietary interests actually hinder it? Imagine if, in order to do new "downstream" research, you had to get permission from eighty-seven people whose "upstream" patents were granted before your research. Like the problems about donor rights and Canavan's disease, the recency of our experience in bio-science and the law makes the definition of what has been invented overly vague and broad, creating all kinds of litigation.

Balancing market incentives, on the one hand, and the value of life, on the other, leads to additional problems. Those in the medical field are aware that conflicts of interest have become a very serious problem. There have been significant changes in institutional and researcher roles and responsibilities. For many years, university researchers and the market, for the most part, were doing different things: medical researchers were pursuing knowledge, and the market was pursuing money. Now, we have massive cross-penetration, with industrial involvement in the university and university involvement in industry. In the university context of producing and transmitting knowledge, the strategy of separating market and values has broken down. How, then, do we preserve values, professional ethics, and the objectivity of scientific discovery when economic goals have an increasing influence in universities and on researchers?

My core field is health-care law, and I'm not exaggerating when I say that the fundamental legitimacy of medical research in this country is in trouble because of the degree to which the pharmaceutical industry, in effect, "owns" researchers, owns professional publications, owns peer review, and even owns medical education. We have reached and passed the point where we must question whether we really have something we can accurately call "scientific truth" or "objective knowledge."

How will we approach patenting issues in stem cell research?

I have, at best, given you only a taste of the many issues surrounding stem cell research. I think you'll agree that we're going to be busy as we try to resolve both micro-level and macro-level problems, particularly when the issues implicate both money and values. It may be nearly as difficult to resolve the legal challenges raised by human embryonic stem cell research as it is to move the science forward. ■

John Trumbull, "The Death of General Warren at the Battle of Bunker Hill, June 17, 1775." Photo credit: © Francis G. Mayer/Corbis.

S. T. Lee Lecture in the Humanities: On Writing and Teaching History

David McCullough

This presentation, the third annual S. T. Lee Lecture in the Humanities, was given at the 1894th Stated Meeting, held at the House of the Academy on November 9, 2005.

David McCullough, twice winner of the National Book Award and twice winner of the Pulitzer Prize, is an author, historian, and biographer. He has been a Fellow of the American Academy since 1994.

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This is a story I heard from J. D. McClatchy, the poet: Some years ago, a young teenage girl in a small town in California was walking past the public library. She was alone. Thinking that she had never been in a library before, she decided to go in and see what there was to see. Once inside, she started walking among the aisles of bookshelves, in no particular direction, just random looking. Then, at one point, she reached up, took a book off the shelf, opened it to the first page, and started to read. And she had read only the first page when she decided that she had to have that book. It wouldn't satisfy her to take it out of the library. She had to have it for her own.

So she put it back and went directly to the local bookstore, only to find they didn't have the book. So back to the library she went and stole the book.

She is today the chair of the English department of one of our leading universities. I'm not going to tell you her name because she still has the book. But I want to read to you what she read on that page that made her determined to have it part of her life. The book is *The Woman of Andros*, by Thornton Wilder, published in 1930.

> The Earth sighed as it turned its course; the shadow of night crept gradually along the Mediterranean, and Asia was left in darkness. The great cliff that was one day to be called Gibraltar held for a long time a gleam of red and orange, while across from it the mountains of Atlas showed deep blue pockets in their shin-

History is a lesson in proportions, a larger way of looking at life.

> ing sides. The caves that surround the Neapolitan gulf fell into a profounder shade, each giving forth from the darkness its chiming or its booming sound. Triumph had passed from Greece and wisdom from Egypt, but with the coming on of night they seemed to regain their lost honours, and the land that was soon to be called Holy prepared in the dark its wonderful burden. The sea was large enough to hold a varied weather: a storm played about Sicily and its smoking mountains, but at the mouth of the Nile the water lay like a wet pavement. A fair tripping breeze ruffled the Aegean and all the islands of Greece felt a new freshness at the close of the day.

Now, that's about history, ancient history. But of course, it's very much more than that. We see the colors; we hear the sounds; we have a sense of scale, taking in the whole Mediterranean Sea. It is history in nature: the "fair tripping breeze ruffled the Aegean and all the islands of Greece felt a new freshness at the close of day." Yet it's also art. It is the art of literature applied to history with a result that's magical.

The starving steal bread: this young woman discovered she had a hunger for something she didn't know existed. History, in this instance, hadn't just touched her mind; it had touched her heart.

History is a lesson in proportions, a larger way of looking at life. History tells us, over and over, that nothing happens only where and when it happens. Every act, every event has antecedents and consequences. This ripple effect is found in both time and space, and in the human heart. History is also a lesson in ambiguities, teaching few certainties. But among the certainties it does teach are that nothing ever had to happen the way it happened: things could have gone off in any number of different directions, for any number of different reasons, and almost anywhere along the way. And there never was a foreseeable future or a simpler time past. These, too, are lessons of history.

History is also a lesson in ambiguities, teaching few certainties.

We turn to history – read and write history – to know who we are and where we've come from, to find out what happened and why. But history that sidesteps art, music, literature, and drama – history limited only to politics and the military and social issues – is history with a very great part of the human experience left out. For some chapters of history virtually all that we know is the art – ancient Egypt, for example. Or think of how much of what we feel about the Civil War comes from the photographs by Matthew Brady and Timothy O'Sullivan, or the paintings of Winslow Homer, or the Shaw Memorial on Beacon Hill. Or from the "Battle Hymn of the Republic."

It's my fervent conviction that history ought to be taught in combination with literature, painting, drama, sculpture, and music. Art is the antidote to dryness – to the notion especially popular among young people that history is dry old stuff, of no interest or possible use. "That's history," they say. "Take it to the ash heap." But as the lines by Thornton Wilder so vividly testify, history doesn't have to be dull. It can even lift the heart.

You can tell a great deal about people, past or present, by what they love, just as you can tell a great deal about a society by what it loves. We know about Jefferson's love of architecture and gardening. John Adams read Shakespeare over and over, as he said, "to fathom the labyrinth of human nature." Lincoln loved Bunyan's *Pilgrim's Progress* and Gray's "Elegy in a Country Churchyard." Surely the lines, "Let not Ambition mock their useful toil, / Their homely joys, and destiny obscure; / Nor Grandeur hear with disdainful smile, / The short and simple annals of the Poor," take us right to the heart of Abraham Lincoln.

The ebullient Theodore Roosevelt – emblem of the confident, optimistic, new twentieth-century America – would close himself in a room and read by the hour from the poetry of Edwin Arlington Robinson, poetry filled with grief and loss. And if he loved a book, he would read it again and again throughout his life. I don't know how many times he read *Huckleberry Finn*.

Then there was President Harry Truman, going as often as possible to the National Symphony, the supposedly prosaic Harry Truman. If the program included one of his favorite composers – Mozart, for example – he would take the score with him. Truman was the only twentieth-century president who never had the benefit of a college education, but he adored classical music and he never stopped reading history.

George Washington, in the midst of the most horrendous troubles of 1776, would sit late into the night writing long letters about how he wanted things done at the house at Mount Vernon – how the wainscoting must look, what color paint to use, how the siding for the kitchen should be handled. Reading these letters, you wonder, what in the world is he doing, writing about all that, when there was so much else he had to worry about? I think it was his way of maintaining an equilibrium – an emotional balance – to keep from cracking under the strain.

It's my fervent conviction that history ought to be taught in combination with literature, painting, drama, sculpture, and music.

When General Eisenhower first arrived in England to assume command of the D-Day operations, Churchill advised him to take up some other interest or pastime to help him bear the burdens of his responsibilities. Churchill said that painting had helped him immeasurably in this respect and suggested that Ike give it a try, which he did. And it did save him.

How many times in our drives around Washington or Boston do we look at the statues of bygone generals or politicians and wonder who they are? Yet turn on the radio and there's Gershwin – his music as alive as the day he wrote it.

One of the most vivid examples of how people respond to art, and how their response to art ought to be part of how we understand them as historical figures, is an incident that took place in London in the year 1786. Abigail Adams, during a visit with her husband to the London studio of the American artist Benjamin West, stood for the first time in front of a painting by young John Trumbull, commemorating the Battle of Bunker Hill – *The Death of General Warren at the Battle of*

Bunker Hill, June 17, 1775. Trumbull, a student of West's, had only just completed it.

We mustn't just read what those of other days wrote; we should read what they read.

Now, Abigail Adams had been an eyewitness to the Battle of Bunker Hill, watching from a rock ledge in Quincy. She had also heard numerous accounts from people who had been closer still. General Warren – Dr. Warren – had been the Adams's family physician and a close friend. Now, for the first time, she was seeing the painting. In a letter to her sister, she said, "To speak of its merit, I can only say that in looking at it, my whole frame contracted. My blood shivered. And I felt a faintness at my heart." She then became extremely excited at the prospect of young Trumbull painting the whole story of the Revolutionary War and what a contribution to the country that would be.

There is more to us that comes from art, music, and literature than we realize, much that has become part of us and shaped us in ways most of us are unaware. Let me offer a few examples. Every time you say you're "green with envy" or "in a pickle," you're quoting Shakespeare, whether you know it or not. If you wrap up an argument by declaring "every dog has his day," that too is Shakespeare. If you observe that "To err is human," or "Fools rush in where angels fear to tread," you're quoting lines by Alexander Pope. As for dear old Cervantes, we go along mouthing his words most of all, repeatedly, constantly, happily, one generation after another. Every time you say you "slept not a wink," or "give the devil his due," or call something a "wild goose chase," or say "that's the pot calling the kettle black," you're speaking lines from *Don Quixote*. "Turn over a new leaf." "Birds of a feather flock together." "Mind your own business." "Honesty is the best policy." "I smell a rat." "Mum's the word." All from Cervantes.

Why harp on this? Because you can't understand the people of our own time or any time without an understanding of the culture in which they live or lived. We mustn't just read what those of other days wrote; we should read what they read. Reading the letters of prominent Americans, the protagonists of our founding time, you find them saying things quite profound, or memorable, or moving. And then you find that the words are not theirs; they're quoting what were in their day lines familiar to all.

Of course, you understand, eighteenth-century society was highly advanced. Few, even among the most learned, worried over punctuation. You were free to spell a word however you wished. And no bothering with quotation marks. So often those wonderful lines, that leap out from letters and that are so often attributed to our founders, aren't their lines at all.

Once, working with the Adams papers at the Massachusetts Historical Society, I came upon a sentence that stopped me in my tracks. It was in a letter from John Adams to Abigail. He was trying to keep her spirits up in the midst of the Revolution when everything looked so bleak. He said, "We cannot insure success [in this war] but we can deserve it." I thought, what an amazing line. And, how different from our own time, when all that seems to matter is being first. He was saying that though the outcome is beyond our individual control, how we conduct ourselves is ours to control. And then I happened on the same line in some letters of George Washington, and I thought, this has to be something they are quoting. So I took down *Bartlett's Familiar Quotations* and turned to the section covering the eighteenth century, and after a page or two, there it was.

It's from the play *Cato* by the British writer Joseph Addison, which was the most popular play of the eighteenth century in the English language, on both sides of the Atlantic.

Now, it happens that George Washington was an avid theatergoer. His passions were architecture, landscape design, interior decoration, and the theater. He was known to have attended the theater at least seven times during a visit to New York, shortly before the Revolutionary War. We know he saw *Hamlet* at least once, and over the years he is thought to have seen *Cato* six or seven times. He even had a performance staged for his officers and troops at Valley Forge.

In the real-life struggle of the Revolution, Adams, Washington, and the others saw themselves as cast in lead parts in one of the great historic dramas of all time, and they drew on history for guidance and inspiration. It was not American history – that had not been written as yet – but classical history. The educated among them were fluent in Greek and Latin and could read Thucydides, Cicero, Tacitus, and others in the original. Those who could not read Greek and Latin read the classics in English – or drew inspiration from the play *Cato*.

Again and again during the Revolution, when pouring out their innermost thoughts in private correspondence, these leaders of the Glorious Cause, referred to themselves as playing a role on the stage of history. "Act well the part. Therein, the honor lies." The line is from Pope, one of Washington's favorite poets.

They knew they were part of history, and that they would be judged by history. Such an understanding can be a powerful motivation for exceeding what you take to be your limitations.

A poignant and telling example of this is the story of Nathan Hale. Nathan Hale was one of six brothers who enlisted and fought in the Revolutionary War. Newly graduated from Yale, he was an attractive and popular fellow, and quite naïve. When he volunteered to cross the British lines to bring back intelligence, his friends urged him not to go, warning him that he was not suited for such an assignment. As it was, he was caught and hanged by the British almost immediately, in New York in the summer of 1776. His last words, famously, were, "My only regret is that I have but one life to lose for my country." And they are words straight out of the play *Cato*.

We have to break down the barriers between art and history, music and history, science and history, medicine and history.

I think he delivered the line this way: "My only regret is that I have but one life to lose for *my* country." Not your country, you who are about to hang me. *My* country. And of all that motivated those American soldiers, I believe that was foremost: it was their country, and they would have it their way. In the scores of letters and diaries I read for my book *1776*, many written by men in the ranks, many by junior officers (who were, in effect, men

in the ranks because they were elected by their fellow men in the ranks to be lieutenants), I saw no references to "life, liberty, and the pursuit of happiness," or "all men

We all know from our own experience that the teachers who changed our lives, who opened the windows and let in the fresh air, who gave us the chance to be excited about learning, were the teachers who loved what they were teaching.

are created equal," or the Declaration of Independence. Rather, they seemed to be fighting for their country and a future in which they would have the say about their country and its destiny. Besides, they didn't want the other side to win.

If you understand what the theater and the classical ideals of virtue, honor, and character – character is a Greek word – meant in their time, you begin to understand much about why they were the way they were. And they weren't like we are. They lived in a different time and culture. And by the way, they didn't live in the past. Nothing ever happened in the past; it happened in the present, their present, not ours. Adams and Washington didn't walk about saying, "Isn't this fascinating, living in the past? Aren't we picturesque in our quaint clothes?"

Their present was vastly different from our own. But if we read what they read, if we understand the plays they loved, if we listen to their music, if we look at their paintings, we begin to understand them in ways not possible with the conventional approach to history.

We have to break down the barriers between art and history, music and history, science and history, medicine and history. For it's all part of the same experience – the human experience – and ought to be studied that way, written that way, and taught that way, especially to our children. We have been raising several generations of young Americans who are by and large historically illiterate. I have lectured on college campuses all over the country, and what they don't know is staggering.

And it's our fault. We're not educating our teachers as they should be educated, in the full spirit of the liberal arts. From schools of education, year after year, we are graduating young people with degrees in education who are assigned to teach physics or history, who know little or nothing about such subjects. This must stop. How can they effectively teach something they don't know? More importantly, how can you love something you don't know, any more than you can love someone you don't know? We all know from our own experience that the teachers who changed our lives, who opened the windows and let in the fresh air, who gave us the chance to be excited about learning, were the teachers who loved what they were teaching.

One of the great teachers of teachers was Margaret McFarland, professor of child psychology at the University of Pittsburgh. Her most celebrated and influential student was Fred Rogers, Mister Rogers of television fame. And Fred Rogers, whom I knew from my work in public television, was the first to say that her ideas about teaching were the basis of all that he did with his programs. What matters above all, she said, is attitude. She said, "Attitudes aren't taught; they're caught." If the teacher's attitude is one of enthusiasm and commitment, the student gets that without explanation. "Show them what you love," she said.

The ways in which history can be made to come alive through art, music, and drama are plain as can be. Take a group of children out to draw the Brooklyn Bridge. Take them out onto the bridge, with their sketchpads and crayons and pencils. Very quickly, they're learning about how the bridge was built, why it was built, and what makes it important to the City of New York and the City of Brooklyn. It works. Just as a child cast as Dolly Madison or Frederick Douglas in a grade school production will never forget the experience.

That's the time to get them, in grade school. We know how fast they can learn a language at that age. They can learn *anything* fast. And what's more, they *want* to learn. Once, talking with a sixth-grade class in Montgomery, Alabama, I decided to try explaining how the locks work on the Panama Canal. Many adults have a hard time understanding how a ship nearly the size of the Empire State Building can be lifted some eighty feet above sea level using nothing but the force of gravity. But those children got it right away. And they did in part because they were not afraid to ask any question, not afraid that they might sound foolish. So they asked, and asked again. They wanted to know.

Right now, because of the "No Child Left Behind" program, much of history is being put aside. The concentration is on reading and mathematics. The reading programs are obviously important. But there's not a reason in the world why students can't be reading history. History can be literature. They could be reading Lincoln's Second Inaugural Address. They could be reading Martin Luther King's "Letter from Birmingham Jail." They could be reading Longfellow or Francis Parkman's *The Oregon Trail*. They could be reading all kinds of great works by great historians because history is itself an art form.

Cervantes, in the seventeenth century, said, "Certain historians relate matters so concisely, leaving the most essential part of the story drowned at the bottom of the inkwell, either through negligence, malice or ignorance." Isn't that wonderful? Theodore Roosevelt, who began his first work of history here in Cambridge as a Harvard undergraduate (his *Naval History of the War of 1812* is still among the best works on the subject) and for whom history was a lifelong passion, said that historians must have "the power to embody ghosts, to put flesh and blood on dry bones, to make dead men living before our eyes." The eminent historian Samuel Eliot Morison, also of Harvard, wrote some years ago in an essay entitled "History

If the teacher's attitude is one of enthusiasm and commitment, the student gets that without explanation.

as a Literary Art": "Professors who have risen to positions of eminence by writing dull, solid, valuable monographs that nobody reads outside the profession, teach graduate students to write dull, solid valuable monographs like theirs. The road to

academic security is that of writing dull, valuable monographs. And so, the young men who have a gift for good writing either leave the historical field for something more exciting, or write dull, solid, valuable monographs."

I don't think there's anything much more interesting than the history of our country. And we have to keep it our responsibility to pass that history on to our children and grandchildren. And that's not hard to do. Barbara Tuchman, when asked about this, answered in two words: Tell stories. History, like art, should touch heart and mind. J. H. Plumb, the British historian, once said we need more heartwise historians. How true.

I have three observations I would like to leave with you. One is from a composer, the second from a painter, the third from a dramatist.

Tchaikovsky, on the subject of inspiration: "Inspiration is a guest that doesn't visit lazy people." The second one is from *The Journals of Delacroix*, one of my favorite books. He said, "What I demand is accuracy for the sake of imagination." (When I tell people that to write history you need imagination, sometimes they think, "Oh, he's fooling around with it." But you have to have imagination to transport yourself into those other times, into the skins of those other people.) And lastly, you might like to know that the expression "There's no time like the present" was first used in a play written by Marie Delarivier Manley in the year 1696. ■

Paul Russell (Massachusetts General Hospital) and John Stanbury (Chestnut Hill, Massachusetts)

Joel Moses and Philip Khoury (Massachusetts Institute of Technology)

David McCullough and President Patricia Meyer Spacks

Jay Pritzker Pavilion at Millennium Park. Image © Jose Fuste Raga/Corbis

Shapers of the New City: Cultural Institutions and Universities

Robert Campbell, John Bryan, Richard Franke, James Cuno, and Don Michael Randel

This presentation was given at the 1896th Stated Meeting, held at the Art Institute of Chicago on November 19, 2005.

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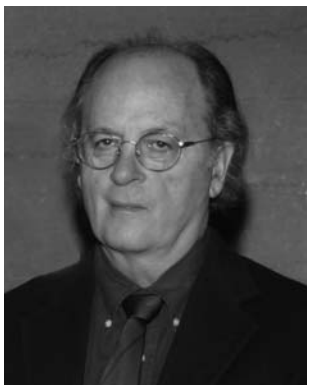
James Cuno is President and Director of the Art Institute of Chicago. He has been a Fellow of the American Academy since 2001.

Don Michael Randel is President of the University of Chicago and President-elect of the Andrew W. Mellon Foundation. He has been a Fellow of the American Academy since 2001.



Robert Campbell

This is the second in what may turn out to be a series of symposiums on this same general topic.

We started in Cambridge, Massachusetts, by asking the question of who today is doing city planning. City planning, as a profession, was created largely for the purpose of implementing the urban design legislation of the 1950s. The federal government poured a great deal of money into Boston, as well as into many other cities. Professional planners came into existence to administer that money. That's a great simplification. But it doesn't seem so simple when you consider the fact that today planning departments in almost every city are "impoverished, powerless, and toothless." I'm quoting words people used when I asked them. So the question then becomes, "Who today does urban design? Who does city planning?"

Living in Cambridge, we noticed that Harvard was about to virtually double its size by moving into Boston. Columbia, meanwhile, is

expanding up Broadway to occupy another large piece of city land. Expansion, then, is one way in which universities are becoming urban designers. The university acquires a significant piece of the city and redesigns it.

We started by asking the question of who today is doing city planning…who today does urban design?

This is much more than an academic exercise, much more than merely building labs, classrooms, and dorms. Harvard, for example, has found that it will have to build new housing and other facilities for the neighborhood it wishes to expand into, in order to gain permission to proceed. And certainly that will be true of Columbia too. It's more than university planning. It's city planning and urban design undertaken by private universities.

Besides expansion, there is a second kind of city planning by universities. This is the regeneration of the neighborhood that surrounds the institution. In many cases, these neighborhoods had declined seriously.

At our symposium in New York we had the Vice President of Penn, Omar Blaik, as well as the President of Columbia, Lee Bollinger, talk about these two types of planning. In the case of Penn – and I think you could say it of Yale and Ohio State and some others, but certainly of Penn – the university was actually worried about whether it could continue to exist on its site. It was ringed by disinvestment, crime, poor-quality housing, and many other problems. It was difficult to attract faculty, especially faculty with children. So Penn began not an expansion but a regeneration, another kind of city planning. And that's been true of other schools as well.

After our New York meeting, I wrote a short article about our topic, and as a result I received many interesting emails. Here is one from Pam Delphinic, a planner who used to be at Princeton and is now at Yale. She writes, "The University of Chicago has developed a whole school district, charter schools, and other university-supported schools for the neighborhood surrounding it. The University of Chicago also has partnered with the city to redevelop vast sections of the blighted South Side of Chicago as well as to restore the F. L. Olmsted-designed park system in South Chicago." That's the kind of thing that we're seeing at Ohio State, at Penn, at Yale, and at many other universities.

Barbara Ryder, Senior Campus Planner at Washington State, wrote, "I read your article about universities as the new city planners and could not agree more. Washington State University is taking the lead because the city planner is tied down with permitting. Apparently he has no staff to do anything but issue permits. Without staff he can barely keep up with basic planning functions in his office of public works." That's the kind of situation, the kind of public planning vacuum, into which other institutions are moving.

So we thought we would come to Chicago and broaden the concept from universities as city planners to universities *and other cultural institutions* as city planners. We chose this topic because we saw what's been happening at Millennium Park, with the expansion of the Art Institute and the involvement by other institutions.

That's as much general framing as I'd like to do. Columbia is the smallest university in the Ivy League in square feet per student, yet it is the third-largest landowner in New York City. That's the kind of scale at which these institutions are working. Only the Catholic Church and NYU, another university, possess more New York land than Columbia. Penn is the largest employer and the largest landowner in Philadelphia. These and other cultural institutions, today, are like the Dukes of Bedford and the other great landholders who created such neighborhoods as Bloomsbury in London around the late eighteenth and early nineteenth century. They are private people doing public things.

We've broadened the concept from universities as city planners to universities and other cultural institutions as city planners.

John Bryan

Throughout my rather long business career in Chicago and during the past five years of my retirement, I've devoted most of my extracurricular time supporting cultural activities, principally the arts and principally here in Chicago. And so I have been able to witness over that time what I have termed a veritable 'explosion' of infrastructure and cultural offerings. Over the past fifteen years, Chicago's art and cultural offerings have flourished as never before. Now I know a comparison is often made with another time, about a century ago, when in 1893 the World's Columbian Exposition was the great catalyst for the first art-and-culture boom in our city. Several of our museums in Chicago were born in the atmosphere of that exposition. And, of course, Daniel Burnham's Orchestra Hall came about at that time. But I can tell you that much more is happening in our time. Chicago has truly dedicated itself to the notion that culture and arts are essential to maintaining an increasingly vibrant city. This has been our strategy, an especially appropriate one for this postindustrial age in which we live.

Our new golden age began in 1991 with the opening of Chicago's new public library, a $140 million building that according to the Guinness Book of Records is the largest public library building in the world. The opening of our new library had an added significance because it gave a home to the Chicago Cultural Center, which is now housed in the beautiful old library building down the street from here. Incidentally, the old library was erected in 1893 and was the first building of the Art Institute.

This new era has seen a lot. New theaters and performing arts venues have sprung up all over Chicago. All of our remarkable mu-

The attention to the cultural life in Chicago is certainly one of the most important elements in redefining our city.

seums have built new facilities. And more are under way and in the second stage of such building. During this time Navy Pier, with its New Shakespeare Theater and Children's Museum, was created; our extraordinary Chicago Humanities Festival was born; and Millennium Park was created. Gardens and flowers have also sprouted all over Chicago, enhancing our beautiful streetscape.

All of this has happened in a relatively short period of time, and it's continuing. The attention to the cultural life in Chicago is certainly one of the most important elements in redefining our city. Today no one talks about Al Capone and all that "bang, bang, shoot 'em up" that we used to hear about. Today Chicago proudly is the city that works. Chicago is the beautiful city on the lake bursting with activity. Chicago has been called the most livable large city in America. Chicago has, in fact, spawned a new love of urban life, for construction cranes and giant condominiums are going up all over the city. Chicago is not just a great place to visit; it is also a great place to live.

People often ask why this has happened. There are a lot of general reasons, some having to do with our economy. But if I could be specific I'd like to point to three reasons. One, I think considerable credit belongs to Chicago's Department of Cultural Affairs. A cabinet-level department that Harold Washington created in 1984, it is solely dedicated to providing arts and cultural services to the people of our city. It is the nation's only free municipal cultural center. It dispenses arts and cultural services not only at its center on Michigan Avenue; it sponsors about a thousand different programs throughout the city. You hear about them in particular throughout the summertime: musical festivals – gospel, blues, jazz. Tonight there is an example of one: the parade marking the lighting of the holiday lights on Michigan Avenue. The Cultural Center also sponsors the Grant Park Symphony, making Chicago the only place in the entire United States – perhaps the world – that offers free classical music to the public in its summer season.

I could go on and on. Chicago's Cultural Center is very meaningful to the life of our city. As you may not know, the Mayor's wife works there every day. She is the Chair of the Chicago Cultural Center Foundation, which leads me to the second reason for Chicago's lively cultural dimensions today. I think it would be impossible to overstate the importance of one individual, namely Richard M. Daly, the Mayor of Chicago for sixteen years. Rich is extraordinarily passionate about every aspect of Chicago, particularly the beauty of our city and how it looks. It's true that he has never seen a tree or flower he didn't like. And he is not the least bit passive. He has an idea every minute for new infrastructure, or new cultural programming, for Chicago. Though he occasionally suffers the slings and arrows of our local press, Mayor Daly is widely recognized throughout the country for his accomplishments in Chicago and his great determination to advance the cultural life of our city.

Third, Chicago has the most extraordinary private sector, one that is intensely proud of its city. Given our inherent competitive instincts, we all want our city and the institutions that define it to be the best they can be

Millennium Park is the best illustration of the value of having a city government dedicated to culture and a united and responsive private sector.

– in fact, to be better than other places. So we in Chicago shamelessly wrap the civic cloak around our community endeavors, and again and again Chicago's private sector responds.

To perhaps best illustrate the value of having a city government dedicated to culture and a united and responsive private sector, I have to tell you a little about the creation of Millennium Park. Our Mayor first envisioned the project as one to develop parkland space on the top of a parking garage. He proposed building it on the site of those deserted railroad tracks on Michigan Avenue. To create the enhancements for the park, the Mayor invited Chicago's private sector to join him in a major private-public partnership – certainly one unparalleled in the history of our city. And so this twenty-six-acre lot of abandoned railroad tracks has been transformed into a free park for the people of Chicago at a cost, not of a billion dollars, but only $500 million. It has been, in every sense, a joint venture, a joint undertaking by the city and the private sector, as represented by a not-for-profit group called Millennium Park, Inc. Ultimately, the city paid for about half of the park and the private sector paid for the other half.

To develop this unsightly and underused space into a culturally uplifting park, we employed the best architects, designers, and artists the world had to offer at the beginning of the twenty-first century. And it worked. Once again we've seen the power of art and architecture make a difference, in providing a lot of excitement and pleasure for a lot of people. But Millennium Park has had other consequences, perhaps less expected. The park has ignited a total revitalization of the central part of the city – the business and the cultural area – what we call the downtown area. And those economic benefits are just beginning. Also more than we imagined, Millennium Park has reinforced Chicago's reputation as the world's best city for modern architecture. I'll not take the time to defend that distinction. But just know that it's undeniably true. At the very least, Millennium Park has provided new icons to advertise our city: we have some new postcards these days.

But even with all this, I must say the most satisfying and perhaps the most surprising dimension of Millennium Park is something that speaks to the livability of the city of Chicago. Millennium Park has become Chicago's meeting place. Some have called Millennium Park a social mixing chamber, a place where people of all income levels and ethnic origins really enjoy coming together. Unfortunately, we often spend a lot of time trying to separate ourselves by where we live and shop and play. But Millennium Park celebrates diversity. It is a warm, welcoming, and friendly place. It has lifted the spirit of Chicago, and it's certainly made the city a more livable place.

Richard Franke

In the middle of the 1980s, I served on the boards of the Chicago Symphony Orchestra, the Lyric Opera, and the University of Chicago. The two musical organizations, along with the other major museums in Chicago, enjoyed international reputations of excellence. But they were concerned about attracting new audiences in the future. Protective of their respective membership, these institutions had grown insular and had a limited ability to engage with and learn from one another.

At the same time I also served as Chairman of the Illinois Humanities Council. We were charged with the responsibility of bringing a broader understanding of the humanities to the public. Recognizing that humanities programming in Chicago was somewhat uninspiring, I looked for a new way to engage the public in ideas. Based on discussions with their board members, I knew that most major cultural institutions had similar needs for

The success of the Festival begins and ends with an idea: to extend the riches of the humanities to everyone.

new members, but had not yet developed strategies to attract new audiences. The situation demanded an approach that would engage both cultural institutions and the public in exciting programming. I specifically wanted to attract new visitors to the respective institutions and offer audiences new ways of engaging with their programming and collections.

The first Chicago Humanities Festival, held on November 11, 1990, at Orchestra Hall and the Art Institute of Chicago, was a new idea born of that search. Eight thoughtful yet accessible programs from four sponsoring institutions addressed the theme *Expressions of Freedom*, including a memorable keynote address by playwright Arthur Miller. Inaugurating what was to become one of Chicago's most culturally rich annual events, the first Festival proved that very different cultural institutions can come together to explore an abstract subject such as freedom through art, music, text, and performance.

I offer a brief history of the beginnings of the Chicago Humanities Festival not simply to recount our early success but to indicate how important the support of the city's cultural institutions was and continues to be to the Festival. After sixteen years of involvement with the Festival, I now view it as a form that harnesses the vast cooperative resources of Chicago's cultural institutions. With 130 programs and over forty thousand Festival attendees this year, we had forty-five sponsoring organizations as partners. It is this spirit of collaboration that I wish to address today.

Specifically, how was the Festival able to tap into this incredible potential in Chicago? It started with a spirited group of civic and business leaders who were well organized and capable of raising money from individuals, corporations, and foundations. In seeking partnerships with other institutions, we sold the benefits of collaboration, including exposure to new audiences. Because the Festival is not a bricks-and-mortar institution, we did not present a threat to partnering organizations. In other words, the Festival does not take one visitor away from our partners. On the contrary, it brings many new customers through their doors. But above all else, the success of the Festival begins and ends with an idea: to extend the riches of the humanities to everyone. It is an idea that reminds collaborating cultural institutions and community funders of their responsibility to the public and one that rekindles a civic idealism unique to Chicago.

What is it about Chicago that nurtures a spirit of collaboration and civic idealism? How did the city foster an unproven enterprise? In *Democracy in America*, Alexis de Tocqueville observed a uniquely American capacity to form civic organizations in order to meet the needs of an expanding population. Combined with a daily influx of new citizens and a fierce sense of pride about its place in the world, Chicago took this organizational capacity to uncharted territories in the last quarter of the nineteenth century. After the fire of 1871, Chicago quickly rebuilt itself as the most advanced industrial capital of the world. But the children of the founding generation of the city were eager to prove that Chicago was a tastemaker as well as a hog-butcher. Emboldened by the city's optimism, commercial leaders such as Hutchinson, Armour, Field, Palmer, Ryerson, and McCormick committed themselves to the business of bringing culture to Chicago. Born of the fire's catharsis and a sense of possibility as limitless as the prairie horizon, this civic idealism founded Chicago's most venerable cultural institutions and culminated in the collaborative effort necessary to put on the Columbian World Exposition of 1893. The individual patronage of the nineteenth century then gave way to the more familiar corporate support of the twentieth century. Providing both the funds and the people to serve on boards, corporations continue to support and serve cultural institutions in the same spirit of civic generosity and cooperation that founded the city.

The Festival is an idea that reminds collaborating cultural institutions and community funders of their responsibility to the public and one that rekindles a civic idealism unique to Chicago.

The Chicago Humanities Festival thrives on the notion that democracy demands an informed citizenry and that the most important ideas are best understood when considered from different perspectives. Because of broad-based financial support, we have been able to keep the cost of Festival events down to $5 per ticket. As a result, people often refer to the two-week Festival as an Open University, which was exactly our intention. By providing a context through art, law, philosophy, history, music, and lit-

erature, it is our hope that the curious individual can then enter more fully into the public conversation about the issues affecting us all. From a modest beginning as a one-day program, the Festival has used this hope as a catalyst for cultural institutions to collaborate with us and with each other and, most importantly, to engage the public in a spirit of democracy. Chicago has responded magnificently and, in the process, nurtured a new kind of institution.

James Cuno

I am going to talk about the Art Institute and our desire to add to our current facilities and, in the process, to reinvest in the cultural ecology of the center of the city. I will speak not just about adding square footage to our buildings, but about advancing our mission as the city's encyclopedic museum – and how this expansion contributes to the civic life of the city.

I like to think that the core mission of an encyclopedic museum like ours is to serve as an instrument for the dissolution of superstition and ignorance by encouraging unfettered inquiry of works of art from all periods of history and from all the world's cultures – how they were made and how they manifest the ineluctable truth of the interrelatedness of cultures. We have this particular obligation and this particular opportunity to engage our visitors on these terms. This work is all the more important today when nationalistic ideologies conspire to divide the peoples of the world, one against another.

It is therefore the mission of the Art Institute of Chicago to provide people a space to engage with works of art that comprise an important part of the world's shared artistic legacy, and which we hold in trust for the public and *their* artistic legacy.

One of the great decisions our founders made in the service of this mission was to place the museum on Michigan Avenue, in the center of the city. After the 1893 World Columbian Exposition, our founders had an opportunity to house the museum in one of the exposition buildings, a few miles south of the city's center. But they chose not to.

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Instead, they chose to put the museum in this building – an administration and conference building for the Exposition – at the nexus of all the modes of transportation into the city. Here people could walk to the museum or arrive by trains, elevated and otherwise, or by bus. Now, of course, they can ride bikes or cars or motorbikes to the museum too. And they would come here because the public library was just down the street, major hotels and businesses were nearby, and the city's government was just down the road. Soon the Symphony would open Symphony Hall just across the street, theaters would multiply throughout the area, and parks would proliferate behind the museum, along the lakefront. In our founders' vision, the museum was meant to be central to the life of the city.

I have been here myself nearly a year and a half now. But when I would come to the Art Institute before moving here, I always felt among its visitors a palpable sense of regard for the museum, as if it were not only a civic institution held in high esteem, but as if it were *their* museum and played an important role in the life of the city and its citizens. When I got here I realized that, in fact, it does. I used to think that this sentiment existed because the Art Institute had done a really good job over the one hundred years of its existence to make sure that it did have a place in the life of the city. But then I realized that, while the Art Institute of Chicago *has* undoubtedly done a really good job for a very long time, it's also just in the nature of Chicago and its citizens to engage in their civic institutions and support and respect them on those terms, so long as the civic institutions maintain that public trust and work on behalf of the city's citizens. We are the Art Institute *of* Chicago, and by sitting us here on Michigan Avenue, in the center of the city and just a few steps off the street, our founders made sure we'd forever be so.

For those of us who have inherited this great advantage, it is our obligation to reinvest in this location and further enrich the cultural capital of the city's center.

Over the years, we have expanded throughout the block between Michigan Avenue and Columbus Drive, and between Monroe and Jackson Streets. And now we are building a new Modern Wing (for our modern and contemporary collections), designed by Renzo Piano, on the northwest corner of our block, just opposite the new Millennium Park and on the same axis as the Frank Gehry-designed Pritzker Pavilion. Not long ago, and throughout our first century, the Millennium Park site was mostly a rail yard and then also a parking lot.

So eighteen months ago, when Millennium Park became an instant and palpable success, we committed ourselves to building the project Renzo Piano had begun designing five years earlier. It was obvious that we needed additional space. But it was equally obvious that the city needed us to complete the development of these central blocks by finishing our block and by connecting to the park's block via a bridge across the street. Because Millennium Park is not a sylvan glad – it is more like a pachinko parlor or a pinball machine. People are constantly in

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motion, moving in and out and through the park, considering its sculptural and architectural attractions, attending concerts, and admiring the views of the facades of Michigan Avenue or out to the lake. We anticipate that these mobile visitors to the park will inevitably walk up and across our bridge, to the third floor of the western pavilion of our Modern Wing to look back on the park, the city, and the lake; get refreshments in our restaurant; and descend into the museum to complete the circuit: from Michigan Avenue through the park to the museum through the museum and out again onto Michigan Avenue (and, of course, in reverse too).

Thus, the purpose of the new Modern Wing is to present our modern and contemporary collections, engage with Millennium Park, and complete the 'cultural circuit.' In this way, it is an investment in the city's center. Our new building will expand our gallery square footage by some 33 percent, affording our curatorial departments and Department of Museum Education more space for their collections and programs. We will also be able to reinstall all of our collections and render more coherent presentations of them, emphasizing the interrelatedness of the cultures they represent. At the same time, we will be investing in the city's center and broadening our footprint where it matters most in Chicago – on Michigan Avenue at the city's center. This puts our encyclopedic collections, comprising an important part of the world's shared artistic legacy, where millions of people live, work, and gather every year, and where Chicago represents itself to the world.

Our mission drives our expansion. Our mission is simply to preserve and share our collections for the citizens of Chicago and all who come to this great city. We are building our new Modern Wing for just this reason.

Don Michael Randel

If you were to look at the boards of directors of some institutions and the people who brought them into being, you would see a remarkable set of intersections and overlapping groups – that private sector to which John alluded and which was powerfully important in bringing this great modern city and these great cultural institutions into being. The city and its cultural institutions formed then, as they form now, a powerful fabric, a result of the realization on the part of the community's leading citizens that you could not have a great city without these great cultural institutions.

If we skip forward to today and you look at the boards of directors or trustees of the Art Institute, the Chicago Symphony Orchestra, the Lyric Opera, the Public Library, the University of Chicago, and so on, you see a similar picture. We have it instanced for us here: both John and Rich belong to the board of the University of Chicago as well as serve on the Art Institute or the Symphony, and so on. Here again what we see is the private sector, that is to say, the community's leading citizens, creating an extraordinary spirit – one that doesn't exist in any other city of this size – by serving together on the great institutions that give the city life, engaging the humanities, the arts, and its general intellectual life. We would not be the city we are if it weren't for the intersections in this community that make it strong.

Let's talk about the University of Chicago's role in particular. If we think about universities' relationships to the cities that surround them, it must be said that, especially in the great cities, the universities that have most strongly engaged their communities, the world immediately around them, have been, in the main, universities that at some point had a gun to their head. That is, engagement was often a matter of – or perceived to be a matter of – survival in the face of very difficult urban problems. Engagement was also to some degree a matter of self-defense, sometimes leaving behind a terrible bitterness on the part of the community. If you follow the affairs of Harvard or Columbia or Penn, you will know that to this day there is substantial controversy about the degree to which they wish to acquire land beyond their borders. The University of Chicago, too, at one point had a gun to its head. When the collapse of the South Side took place, a flight of well-to-do families and a great migration from the South of African Americans resulted in an economic decline that led the University to consider whether it could survive in its neighborhood.

That is the first chapter, but not the only chapter, in the relationship between the University of Chicago and this city. In those days the University acquired a certain amount of property purely as a defensive activity. It was deeply involved in the first great wave of urban renewal, with benefits and deficits that we now understand very much better than we could have foreseen. But we are now in a second chapter, at least, of the relationship with the community. And it's a very different kind of relationship, one that derives from the spirit that created the University and the city's other cultural institutions. It derives from a wish to be an important part of the community and to contribute notably to the betterment of the city as a whole, in particular to that part of the city that surrounds us.

The University's relationship with the community derives from a wish to be an important part of the community and to contribute notably to the betterment of the city as a whole.

How do we think about doing this? For a start, we must bear in mind that the University's principal product is ideas. How can we put ideas to work? We don't have vast resources that we are able to invest or commit

to these things in general – unless in the defensive mode. But we do have powerful ideas that can be brought to bear on the great urban problems of our time. This furthermore is a problem of a kind that University of Chicago faculties like very much to tackle: the Big Problem that crosses many boundaries, what I typically describe as the mother of all interdisciplinary problems. If you think about the problems of urban centers, they entail the question of housing, the question of schools, the question of safe streets, the question of economic development. None of these problems can be solved in isolation. We can invest in housing, but nobody will want to live in that housing if there's not a decent school nearby. But nobody will want to live in that housing and send their kids to that school if the streets aren't safe. And nobody will want to live in that community and send their kids to that school if the streets are safe but there's no place to earn a living and no place to buy groceries.

Our realization then is that what we must do is put ideas to work to solve these problems in concert with one another and in concert with other city institutions that are working on them. The result is a deep engagement with the public schools in the city of Chicago, with the Chicago Housing Authority, and with the local community structures that enable one to work effectively in those communities. We certainly learned a long time ago that one does not do community development by showing up and giving orders, or even simply voicing great pronouncements built on powerful ideas. One must work with local community organizations, and so we are deeply engaged with large churches immediately to the south of us and with other institutions working in these communities. Furthermore, we have made and abided by an agreement that we will not seek to purchase land in the neighborhood immediately beyond our borders. This agreement has been very important to a community that has sometimes thought of us in the past as rapacious and interested in driving out poor people, and in more modern times as gentrifying out poor people. So we have a very clear understanding with the community that we're not buying land there,

We have a responsibility to be responsible citizens, to contribute to the improvement of the life of the city . . . .We do so by contributing what we make best, namely, good ideas.

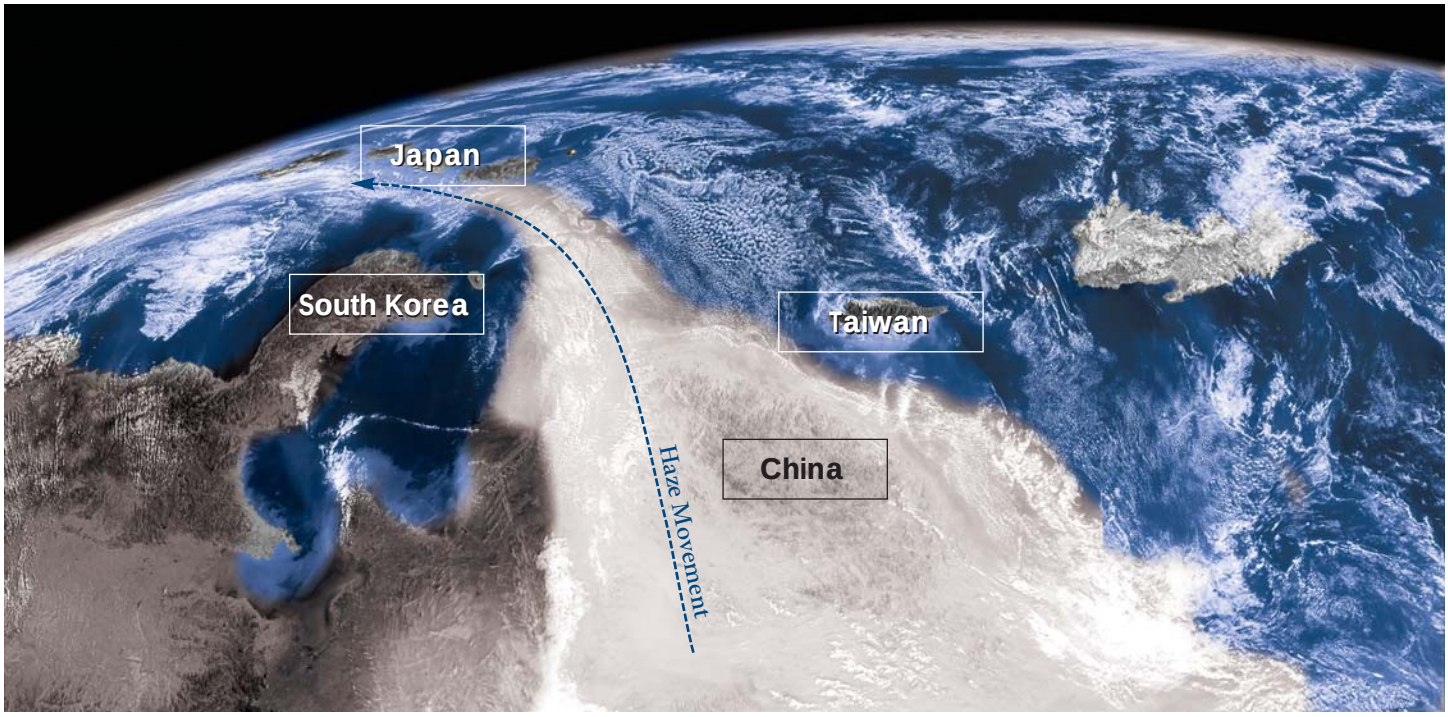
but we are helping to create schools that will strengthen the ability of people in those neighborhoods to go on and enjoy a better life. One of the ironies of this is that we, the brainiest institution of them all in the view of some, perhaps even in the view of ourselves, have a very large police force. If we ask our neighbors, what can we do for you, they don't say, send us a Nobel laureate in economics. They say, send us your police force. The University's police force, working with the city police force, covers from 64th Street all the way up to 39th Street, well beyond the boundaries of our academic buildings or any property that we happen to own. Again, this is for the sake of solving problems in concert with one another, to create safe streets so there will be a place where people are willing to live, where housing can flourish, where schools can flourish.

We don't propose to take over the Chicago school system. Although the Mayor would love to have us do fifty charter schools, the fact is we are on a path to do five charter schools. Those schools will not only benefit the kids who will attend them but also be a test bed for the ideas generated by our faculty about how you can teach the most disadvantaged kids how to read as well as anybody. We are now more deeply engaged than ever, but the schools project has been going on for quite some time; my predecessor Hugo Sonnenschein, a member of this Academy with us tonight, gave it the first great impetus, and we are pleased now to see it truly flourish. The effort with the public schools has attracted substantial resources from, once again, this community of citizens in the city of Chicago. People who are not our alumni or who might otherwise have no connection to us have been very generous in providing resources to support the University's Center for Urban School Improvement. The result is a picture somewhat different from those you may read about at other institutions. We believe that, as one of the city's biggest employers and one of its biggest economic entities, we have a responsibility to be responsible citizens, to contribute to the improvement of the life of the city as a whole and also to the communities immediately around us. We do so by contributing what we make best, namely, good ideas. We do so in collaboration with institutions, both public and private, across Chicago. And we do so because we want to be an important part of the long-term future of what is, we all agree, the greatest city in America. ■

John Bryan (Millennium Park, Inc.) and Joseph Rosa (Art Institute of Chicago)

Heather and Edwin Taylor (University of Chicago)

Members of the Academy's Midwest Council: Tanya Luhrmann (University of Chicago), Robert M. Wald (University of Chicago), Emiko Ohnuki-Tierney (University of Wisconsin, Madison), President Patricia Meyer Spacks (University of Virginia), Chief Executive Officer Leslie Berlowitz (American Academy), Geoffrey R. Stone (University of Chicago), and John Katzenellenbogen (University of Illinois at Urbana-Champaign)



Satellite image of brown haze flowing across the East China Sea past the Korean Peninsula and northeastward toward Japan. Image courtesy of the SeaWiFS Project, NASA/Goddard Space Flight Center, and ORBIMAGE.

Global Warming

Veerabhadran Ramanathan

These remarks were given at a meeting of the American Academy, held at the University of California, San Diego on November 21, 2005.

Veerabhadran Ramanathan is Victor C. Alderson Professor of Ocean Sciences and Director of the Center for Atmospheric Sciences at the University of California, San Diego. He has been a Fellow of the American Academy since 1995.

The effect of greenhouse gases on global warming is, in my opinion, the most important environmental issue facing the world today. Our knowledge of the underlying causes of climate change is growing, but the problem brims with uncertainties, raising serious scientific and ethical questions.

In studies of global temperatures, one question always arises at the outset: When did humans become a major force in modifying the climate system? My own timetable begins in the 1950s, when the world's population increased by over 60 percent, resulting in a perceptible impact on many indices of change. With high-precision observations, my late colleague, Dave Keeling, produced the single most important times-series data set for the study of global change. He demonstrated that the amount of carbon dioxide in the atmosphere increased by about 20 percent since the time he began his work in the mid-1950s. If you take one million molecules of air, approximately 375 will be carbon dioxide. Compare this with the fact that in the last four hundred thousand years, the amount of CO_2 concentration has never been larger than 290 parts per million.

The rapidity of the increase leaves little doubt that human impact is the cause. What lies behind such a significant increase in a relatively short time? The lifetime of carbon dioxide is over a century. If today you release a can of CO_2, roughly 25 – 35 percent of it will still be with us a hundred years from now.

What happens to this CO_2? The air carries it around until it covers the entire planet like a blanket of gases. In fact, no matter where we measure – the Arctic, the Antarctic, the surface, or 20 miles above the surface – we detect the increase in CO_2. Fossil-fuel combustion and biomass burning are the major sources for this increase.

Why should we worry about this blanket of added CO_2 and other greenhouse gases? The fundamental energy source for the planet is sunlight. However, not all of the solar energy is absorbed: about 30 percent is reflected back to space by clouds, the atmosphere, and land and sea surface, including sea ice, ice sheets, and the like. The planet is warmed by the remaining 70 percent and, in turn, re-radiates the heat as infrared energy (also known as thermal energy or heat radiation). Over the long term, climate is governed by the balance between the incoming solar heating and the cooling associated with the outgoing infrared energy. The added CO_2 upsets this balance by absorbing and re-emitting the infrared energy. In this process, the blanket of CO_2 acts just like a wool blanket on a cold night by trapping the outgoing infrared heat within the surface-atmosphere system and causing the planet to become warmer.

The fact that added CO_2 can lead to a large global warming was estimated more than

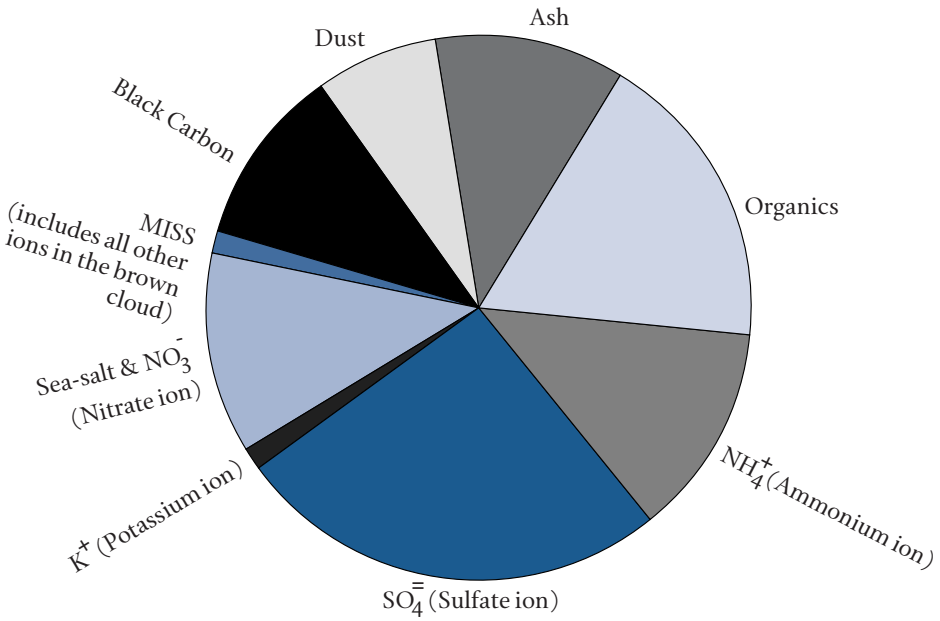
The effect of greenhouse gases on global warming is, in my opinion, the most important environmental issue facing the world today.

110 years ago by the Swedish Nobelist Svante Arrhenius. In the mid-1970s a series of complications began to unfold, leading to the realization that carbon dioxide was not the only cause of global warming. Mario Molina and Sherwood Rowland's research on the impact of chlorofluorocarbons (CFCs) on the ozone hole led to my investigations on the potential greenhouse effect of CFCs. Our research revealed the unexpected result that adding one molecule of CFC to the atmosphere would have the same greenhouse effect as adding more than ten thousand molecules of CO_2. The fact that CFCs, which are relatively rare in the atmosphere, could be such a powerful force in global warming was initially met with disbelief. But as other researchers reproduced our findings, a Pandora's box of greenhouse gases, including methane, ozone, halocarbons used as refrigerants and propellants, and nitrous oxide from fertilizer, began to open.

We could no longer ignore the effect of greenhouse gases and our sense that global warming would occur much earlier than we might have imagined. My work with climatologist Roland Madden some twenty-five years ago revealed that the impact of global warming would become discernible by the year 2000. Meeting in 2001, the Intergovernmental Panel of Climate Change, consisting of a group of over a thousand scientists, confirmed our prediction.

Coincident with the greenhouse gas warming is the appearance of atmospheric brown clouds. If greenhouse gases are the ultimate end product of fossil fuel and CO_2, then particulates in the air represent an intermediate phase. A brown haze is generally associated with urban areas, but in 1999, the Indian Ocean Experiment (INDOEX), involving more than two hundred scientists, focused on a brown cloud that spans an entire continent and ocean. As coleader of this experiment (with P. J. Crutzen), which deployed six aircraft and two ships with several tens of instruments, I had the opportunity to observe from the C-130 aircraft the brown clouds spreading from South Asia and blanketing most of the North Indian Ocean. We then used satellite data to show that the South Asian brown haze occurs every year generally between November and May. It consists of a 3 km mixture of anthropogenic (human-produced) sulfates, nitrates, organics, black carbon, dust and fly ash particles, and natural aerosols such as sea salt and mineral dust. Measurements from aircraft, ships, and surface stations involved in the experiment found that biomass burning and fossil-fuel combustion contribute as much as 75 percent to the observed aerosol.

Composition of a brown cloud



As emissions from fossil fuel and black carbon have increased, monsoonal rainfall and surface sunlight have decreased.

Black carbon is probably the most insidious component of the haze as far as health is concerned; it is also the most important factor in terms of climate change. During the INDOEX campaign we deployed a suite of high-precision radiometers to discover that black carbon and other absorbing particles in the brown haze over the Indian Ocean and the Arabian Sea reduced sunlight by as much as 10 – 15 percent. The sunlight-reduction effect at the surface was larger by a factor of two or more than estimated by climate models. In terms of the ocean surface, black carbon in the brown haze reduces the average radiative heating by as much as 10 percent and enhances atmospheric solar radiative heating by as much as 50 – 100 percent.

Aerosols also produce more cloud drops, which increase the reflection of solar radiation by clouds, adding to the surface-cooling effect; and decrease the size of cloud drops and suppress precipitation.

The link between aerosols and precipitation represents an added complication. As emissions from fossil fuel and black carbon have increased, monsoonal rainfall and surface sunlight have decreased. Modeling research conducted by us with the climate-system model developed by the National Center for Atmospheric Research in Boulder, Colorado, indicates that three factors may contribute to the drying effect. First, sunlight provides the energy to evaporate water from the ocean, causing rainfall. With reduced sunlight the evaporation from the ocean decreases and, as a result, the rainfall decreases. Second, as solar absorption by black carbon heats the atmosphere, it cools the surface by shielding it from the sun. This redistribution of sunlight

causes warmer air to overlie the colder surfaces, suppressing rainfall. Finally, the brown haze appears to slow summer monsoonal circulation, leading to a reduction in precipitation over South Asia. These findings are important reasons for reducing air pollution.

We continue to face a number of uncertainties in our efforts to predict climate change.

Lest you think that air pollution is a confined problem, I want to emphasize that long-range wind transport means that pollution on the East Coast of the United States is going across the Atlantic to Europe, European pollution is traveling to Asia, and Asian pollution is coming back to America. To better understand how atmospheric brown clouds impact the environment, climate, and the quality of life, we have launched a project to integrate scientific findings with impact assessment. With support from the United Nations Environment Program and the National Oceanic and Atmospheric Administration, we are working with scientists from Sweden, Germany, China, India, Japan, and other Asian countries to develop a system of strategically located ground-based observatories in the Indo-Asian and Pacific regions to monitor atmospheric pollution. Together with satellite data and periodic aircraft measurement, these observatories will document changes in aerosol content, pollutant gases, and some greenhouse gases, enhancing the predictive capacities of climate models. We hope that in time this work will revolutionize how we look at the atmosphere.

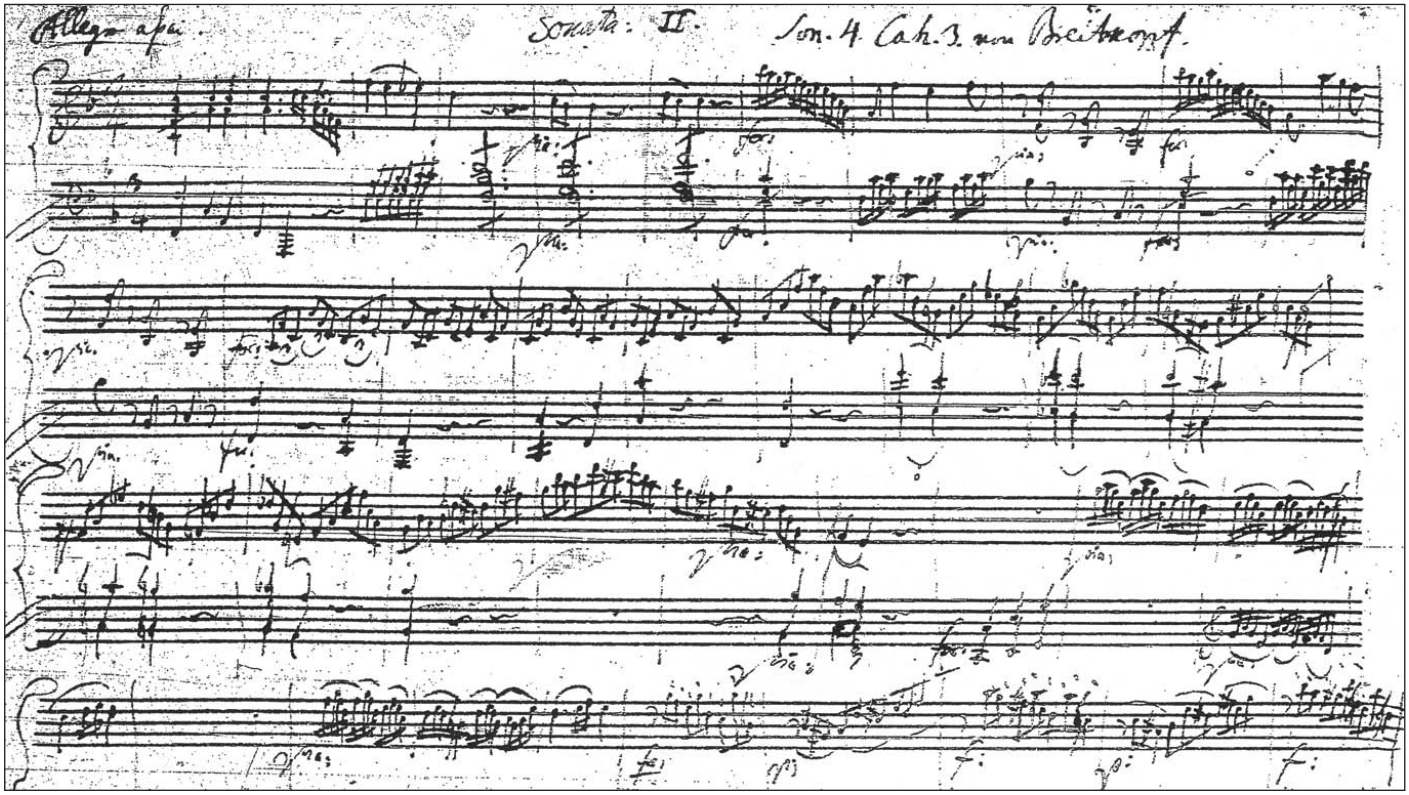
However, we continue to face a number of uncertainties in our efforts to predict climate change. First, by the beginning of the next century, the global population will reach about nine billion, and people in the developing world will be striving to achieve Western standards of living. Their efforts will result in enormous amounts of atmospheric pollutants and other stresses on the environment.

Second, there are the unsolved questions surrounding the rate and masking of global warming. The extent of global warming is not fully reflected in the Earth's *surface* temperatures. The additional heat trapped by the increase in greenhouse gases from the late nineteenth century to the present time has committed the planet to a global warming in the range of 1°C to 3°C. We have realized only a fraction (25 – 50 percent) of this warming. Some of this warming has been masked by the dimming due to brown clouds, and the remaining heat is stored in the depths of the ocean to be released later. Through the process of convective overturning, oceans transfer infrared energy to their deepest layers and hold the heat, delaying the impact of global warming. Whether this stored heat will warm the atmosphere in a few decades or a few centuries is unknown. The delay of the warming by decades to centuries by the flywheel effect of ocean mixing, when combined with the century or more lifetime of CO_2 (and molecules of other greenhouse gases) in the atmosphere, presents policymakers with the central moral dilemma of the global-warming problem. Every decade we delay in taking action, we are committing the planet to additional warming that future generations have to deal with.

Every decade we delay in taking action, we are committing the planet to additional warming that future generations have to deal with.

The masking effect is equally troubling. We now know that the surface-cooling effect of aerosols may have masked as much as 50 percent of the global warming caused by greenhouse gases, presenting a serious dilemma for the global community: If we attempt to reduce air pollution because of its effect on health, we may see an amplification of global warming. At the same time, if greenhouse gases are curbed because of our concerns about global warming, the brown clouds may weaken the Earth's water cycle, particularly the monsoonal rainfall in Asia, leaving us with conflicting options involving those regions negatively impacted by global warming and those negatively impacted by air pollution.

Although we talk about global averages in discussions of global warming, we cannot forget the marked changes that also occur at the regional level, affecting most severely the poorest people on Earth. International cooperation among scientists and among nations will be essential if we are to effectively address the formidable political, social, and ethical consequences of global warming. Among the many obvious reasons for the urgent need for international collaboration is the fact that the developed nations are the major contributors to the greenhouse gases while the developing nations are the major sources for particles in the brown clouds. ■



Autograph manuscript of Mozart's Piano Sonata in F Major. Reprinted by permission of Biblioteka Jagiellonska.

An Evening with Robert Levin

Introduction by Lewis Lockwood

This presentation was given at the 1897th Stated Meeting, held at the House of the Academy on December 2, 2005. Robert Levin's presentation included a musical performance of works by Wolfgang Amadeus Mozart and Arnold Schoenberg.

Robert Levin is Dwight P. Robinson, Jr. Professor of the Humanities at Harvard University. He has been a Fellow of the American Academy since 2000.

Lewis Lockwood, a Fellow of the American Academy since 1984, is Fanny Peabody Professor of Music, Emeritus, at Harvard University.

Lewis Lockwood

On a Friday and Sunday in late April 2001, Robert Levin was scheduled to play the Mozart C Major Piano Concerto, K. 467, and the obbligato piano part to a Mozart Concert Aria part, K. 505, with the Handel and Haydn Society at Boston's Symphony Hall. But on Wednesday of that week, the singer Dominique Labelle had to cancel, and so conductor Christopher Hogwood asked Levin to play K. 386, a Mozart Rondo for Piano and Orchestra, instead. Though Robert Levin had not played this rondo for seven years, he relearned it in a day and a half and played it that Friday evening. All was well, if a little frantic.

The next morning, the Boston Symphony Orchestra called and asked Levin if he could possibly step in to play the Beethoven Fourth Piano Concerto that night since Alfred Brendel, the scheduled pianist, had injured his back. Brendel was also supposed to play the Beethoven Second Concerto, but the BSO magnanimously felt that two concertos was more than they should ask for in an emergency situation, so they would substitute a symphony instead. Levin rushed over to Symphony Hall for a 10:30 a.m. rehearsal and ran through the Fourth Concerto to Seiji Ozawa's satisfaction. Then Seiji said, "You can also do the Second Concerto on Tuesday night, yes?" So Levin played the Beethoven Fourth Concerto with the BSO Saturday night, and went back to the Handel and Haydn Society to play the Mozart concerto and rondo on Sunday afternoon. Then he relearned the Beethoven Second, which he hadn't played in four years, and did both Beethoven concertos with the BSO at the Tuesday concert to loud applause.

This was a single memorable episode in the career of a colleague whom I regard as one of the most gifted and versatile musicians of our time – but it doesn't suggest the full range of his activities. For many years, Robert Levin has appeared as concerto soloist with major orchestras, as well as recital pianist, playing a repertoire that stretches from Bach to Harbison and Wyner. He also plays with chamber music ensembles all over the world and has made many recordings. And he often gives piano concerts with his wife, Ya-Fei Chuang.

As concerto soloist, Levin regularly improvises his cadenzas and adds improvised embellishments, building on years of close study of the performance practices of earlier times.

All his knowledge is balanced by an innate ability to realize the beauty of a Mozartian or Schubertian line. Mozart scholarship knows Robert Levin as a full-time, full-fledged professional colleague, who has written a number of articles and book chapters on Mozart and related subjects, plus liner notes for recordings of works from Bach to Debussy. Wherever you look in Mozart scholarship, Levin is there – articulate, informed, and with a terrifying memory. His completions of unfinished Mozart works are especially well known. They began with his Harvard undergraduate thesis of 1968 entitled "The Unfinished Works of W. A. Mozart." Most recently they include the great Mozart C Minor Mass, K. 427, premiered last January, and the celebrated Mozart Requiem, which has been performed many times. His reconstruction of the Symphonie Concertante for Winds, first heard in Salzburg, is now the standard version.

From my own vantage point as a scholar, I have profited greatly from his insights both in conversations and in his critical reading of my work. When Levin graduated *summa cum laude* from Harvard in 1968 at age twenty, Rudolph Serkin invited him to become head of the Theory Department at the Curtis Institute. After five years at Curtis, he went on to full-time teaching positions at SUNY Purchase and at the Staatliche Hochschule für Müsik in Freiburg. In 1993 he returned to Harvard and, a year later, became Dwight P. Robinson, Jr. Professor of the Humanities. Somehow Levin also managed to hold down the all-important role of department head tutor for many years. He regularly coaches chamber music and gives courses on performance and analysis as well as general courses on classical and swing music. Suffice it to say that he is a musician of prodigious talent, an extraordinary colleague, and a remarkably gifted human being.

Robert Levin

One scarcely knows what to do after a buildup like that, so I guess I should proceed to the subject at hand – which, on the one hand, is completely coincidental and, on the other hand, is anything but: Why are the names of two sonatas – Piano Sonata in C Major, K. 279, and Piano Sonata in F Major, K. 280 – printed on your program today?

When we think about Mozart's early sonatas, we might be tempted to regard them as the rather preliminary essays of a composer who is not yet entirely a master. After all, when Mozart wrote these pieces, he was nineteen, and one wonders how seriously one should take the work of a nineteen-year-old. (Of course, if that person's name is Felix Mendelssohn, we ought to take him rather seriously indeed, because anyone who could write the octet at the age of sixteen has pretty much gone, as the people in Kansas City say, about as far as he can go. It is daunting to imagine someone like Mendelssohn, whose achievements were so spectacular by the time he was a mid-teenager – he wrote the *Midsummer Night's Dream* overture and scherzo when he was seventeen – that he spent his maturity in agonizing self-doubt and self-criticism. In fact, he could not bring himself to publish the "Italian" symphony because he thought it simply wasn't good enough. I think we all agree that it's rather good and that we are very happy to hear it frequently.)

K. 279 and K. 280 were the first in a set of six sonatas. It's rather bizarre that they were the first when you consider the fact that, from the age of seven, this little tot was being trumpeted as a great genius, a prodigy of nature who was regularly taken by his father to be presented to all of the courts of Europe, or any place where a snuff box stuffed with gold coins could be taken home as a souvenir. Consider the frontispiece of his Opus One – SONATAS FOR THE HARPSICHORD/ Which can be played with Violin Accompaniment / Dedicated / TO MADAME VICTOIRE / DE FRANCE / By J. G. Wolfgang Mozart of Salzburg / Age 7 / OPUS THE FIRST [1] – or his Opus Two (Agé de neuf ans). He composed these keyboard sonatas with an obbligato violin part, but real sonatas for the keyboard, without an adjunct violin or flute, did not issue from his pen until he was nearly twenty – a very surprising fact.

If Mozart is playing all of the time, what is he playing? Why shouldn't he be playing his own music? When you realize that the first original concerto that Mozart composed dates from his seventeenth year, there are questions that scholars and musicians alike need to ask about the growth of Mozart's vernacular and its connection with practical exigencies.

1 SONATES POUR LE CLAVECIN / Qui peuvent se jouer avec l'Accompagnement de Violin / Dediées / A MADAME VICTOIRE / DE FRANCE / Par J. G. Wolfgang Mozart de Salzbourg / Agé de Sept ans / ŒUVRE PREMIERE.

The manuscript of the six sonatas is a very interesting document indeed. The first movement of the first sonata is missing, but it is known to have been written on a different kind of paper from all of the rest. Apart from that first movement, these six sonatas are written out one after the other: Mozart finishes the last movement of one sonata on the front side of a sheet of paper and goes right on with the next one on the back, suggesting that this was probably not the first time he set this music to paper. In the case of the last sonata, however, there is

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some indication that, at a certain stage, he began to take more risks about how soon he would write something down. The last sonata begins with quite a bit of the first movement, which he then thoroughly crosses out and replaces with a final version.

What would cause Mozart to reject part of a composition that is in a relatively polished state? In the case of Mozart, we do not have a plenitude of sketches as we have for Beethoven, where once one has figured out how to read Beethoven's handwriting, one has the opportunity to follow layers of gestation – all sorts of dead ends, blind alleys, improvements, dry runs, new approaches. In a letter to his father about the opera *Idomeneo*, Mozart declared, "Everything is composed, but nothing is written down." But we must be careful about this issue. Eight years after he died, Mozart's widow destroyed about 90 percent of his sketches, feeling that they had no value. (Maybe they had no value to her, but I think we would have liked to look over his shoulder.) The only sketches that survived were for unknown works or sheets that contained ideas for known pieces but also included unidentifiable material.

If one knows how to read these sketches, one often can reconstruct the state of Mozart's writing desk. It becomes clear that while he was working on a particular composition, the piece of paper that survived was to the right of the manuscript. As he worked and encountered a problem, he went over to and scribbled on that extra piece of paper. When he solved the problem, he then transferred the music, in a more polished form, to what were for him both a draft and a final version of the work.

Forensic approaches to Mozart scholarship that have developed in the last twenty or thirty years have enabled us to get a view of the creative process that would have been unimaginable in earlier times. We had relied upon the judgment of the most faithful and enlightened Mozartian of the time, Alfred Einstein, who edited the third edition of the chronological Köchel catalog of Mozart's work – those sacred K numbers we all deal with when confronting Mozart. Einstein was reduced to thinking about twin pieces in the same sort of cycle of creative thought. Having finished a string quartet, for example, Mozart might get an idea for another string quartet.

When more rarefied specialists put themselves to the task of examining the evidence, several interesting thoughts emerged. For instance, Dr. Wolfgang Plath, a German musicologist who was one of the coeditors of the Complete Works edition of Mozart

What would cause Mozart to reject part of a composition that is in a relatively polished state?

published by Bärenreiter, spent a good deal of his life staring at how Mozart wrote sharps, flats, naturals, and the like. It doesn't sound very promising – it would seem that a flat is a flat and a sharp is a sharp. But Plath discovered sea changes in Mozart's handwriting, just as you would in your handwriting if you went back and looked at the letters that you might have written from camp. Plath was able to find specific moments when Mozart changed the shape of these notations. Once he made that discovery, he could start to sort the autographs, including the undated ones, by the forms of these little sharps and flats.

Meanwhile, Dr. Alan Tyson at Oxford had a different idea. He believed that since music paper was expensive, Mozart tended to use it up in its entirety before he procured more. By contrast, Beethoven didn't seem to be worried about music paper – he used reams of it, putting only three bars on a page and then crossing them out forty times over. Mozart was much more economical, but not as economical as Bach, who, if he had an inch-and-a-half left at the end of a chorus, would squash a recitative, half bar by half bar, into that remaining space at the end of the score.

Tyson's theory was that Mozart used music paper the way most people use postage stamps, that is, we use up the stamps we have before we buy new ones. Sorting out the music paper Mozart used over his entire life, Tyson protocolled the watermark and the distance in millimeters from the top line of music to the bottom line for every paper type he encountered. Then he looked at the number of pieces written on each paper type and hypothesized that the works on each type that are undated probably fall within the same time span as those that are dated. This discovery may not seem terribly remarkable, but some of Mozart's pieces have been redated by as much as ten years by that simple premise. And then consider that one gentleman working at Augsburg in southern Germany and another working at Oxford in England, who were not in regular contact, reached conclusions that are about 99 percent identical.

As you begin to look at how a composer writes, you learn such startling things that you no longer have to nourish useless myths that tend to hide the reality of the creative process. In the winter of 1782 – 1783, Mozart was working on three piano concertos, the ones we now call nos. 11, 12, and 13 – the F Major, K. 413; the A Major, K. 414; and the C Major, K. 415. A few years ago, I was in Kraków looking at the autographs to these three concertos, and I was able to see things that one cannot see on a photocopy or a microfilm, which of course are monochrome. For one, if Mozart was in the middle of writing something with a quill and suddenly decided that he didn't like the note he wrote, he would flick his thumb over the ink and smear it. (He must have had a very black thumb.) Then he would write in the correction and if the correction required more adjustment, he would erase it. On photocopies, you can't see the erasures. Sometimes, you can't even

Forensic approaches to Mozart scholarship that have developed in the last twenty or thirty years have enabled us to get a view of the creative process that would have been unimaginable in earlier times.

see them if you hold the paper up to an incandescent bulb. You would need ultraviolet light, or even infrared light, if you really cared that much. And why shouldn't we? It's rather interesting. But when you see, without the benefit of a magnifying glass or any of the special accoutrements, just the way the ink looks on the page, you can make some astonishing discoveries.

Looking at the manuscripts, I found that each one of these concertos, which consists of three movements, displays four different tints of ink on almost every page. I don't mean, of course, red and blue, or black and green. I mean whatever the chemist happened to mix and whatever happened to be on his table at the time. One was sort of blackish; another was brown-yellow; the third was a lighter shade of brown; and the fourth was gray. What you can see is that Mozart is working in layers. He drafts the entirety of the movement from beginning to end with the primary voices, which are the first violin and the bass line. When the piano comes in, he switches to the piano. If the oboe is going to make a rude retort, he will go to the oboe and write down the rude retort, lest he forget it later, and then return to the main idea again. If he gets into trouble, he goes to the sketch, scribbles a little bit, and then goes back to the main manuscript. He makes a second pass: maybe the second violin will be notated at this stage, or the viola, and perhaps he'll fill in the winds and the brass. Then he'll come back and polish a few things.

On every page, you see each of the layers of this process, from beginning to end, in these four tints of ink. Inescapably, we must come to the conclusion – however regretfully we do it because it doesn't make us feel very good about our own accomplishments – that Mozart is conceiving all nine movements of these three piano concertos at the same time

in his head. He is composing with such a degree of precision that he can write down only the principal ideas, then the next most important ideas, and then the ones that follow, without having to make corrections when he gets to the third level. If he had to transfer the oboe to the bassoon, or the violin to the viola, you could say, "Oh well, it was a good stab," and know then that he had to fix a few mistakes, but you don't find much of that. And this is where the worst news comes: these nine movements of these three pieces were not the only things that Mozart was writing at the time. In effect, the amount of music Mozart was juggling in his brain was alarming. Furthermore, if he heard a piece, he might stick it in the back of his mind and use it ten years later.

Now I want to return to the two sonatas I mentioned at the beginning. What is interesting about them is that they reveal Mozart as a young man of disarming self-confidence. The first, the Sonata in C Major, is what I would call a "seat of the pants" affair. The first movement is a series of random little ideas following Mozart's whim; it barely has a structure. It's only the charm of the whole thing – the ease of the rhetoric – that makes you willing to listen to his chatter. Likewise, in the second movement of the piece, a more *cantabile* piece, there's a volatile sense that

As you begin to look at how a composer writes, you learn such startling things that you no longer have to nourish useless myths that tend to hide the reality of the creative process.

the piece will go where it's supposed to go, from the first key to the second key, and come back as well-behaved pieces of music should do in the eighteenth century. But there is also a sense that he might just turn to the left if the whim so strikes him. A few times, you actually hear him do so. The last movement is an irreverent, absolutely rapscallion romp.

I'm going to play this piece very disrespectfully because I think it's time to listen to this music in the off-the-cuff manner in which, I think, it was really devised. We've embalmed this music for two hundred years and made it pretty. When we make it beautiful, it becomes something as decorative and as lovely as a paperweight that someone gives you for Christmas; after a few weeks, you don't even notice it. Or the Hummel porcelain figurine that sits on one of your upper shelves; only when a visitor takes note of it does it get your attention. We have done something like that to Mozart. One of my friends in Boston says that he's ashamed when he listens to Mozart on a local classical radio station because the 9:00 a.m. time block signals that you are listening to an hour of relaxing music. Did Michelangelo, did Rembrandt, did Shakespeare want you to relax? Or did they want to turn your insides out and tell you something about your own deepest terrors and desires? No, this music, even if Mozart was nineteen, is not about relaxation. In contemplating these early sonatas, I think the point is to realize their manic quality. It is a lot easier to play them calmly; they sound perfectly fine. But you won't have any sense of the level of fever that's going on in Mozart's imagination.

(Robert Levin performs K. 279.)

While I was growing up in New York, I had the great pleasure of playing for about ten years with Felix Galimir. I consider him one of my most important teachers, although the way I studied with him was to play chamber music with him, a privilege that simply defies rational explanation. At one point I suggested that our chamber group might play the Webern transcription of the Schoenberg First Chamber Symphony in the upcoming season. Most of the time, Felix was not terribly enthusiastic about my suggestions, but his eyes glowed with that one. He said, "Now that's a good idea." When I came into the first rehearsal, he said, "Guess when I last played this piece." I said, "I don't know, Felix, when did you last play it?" I knew I was being set up. "At the premiere."

In the days of Felix, first in Vienna and later in America, there was something known as the Krasner sandwich. It consisted of having beloved classics on the outer edges of a concert program with a challenging contemporary work in the middle. It owes its name to the violinist Louis Krasner, Felix's brother-in-law, who lived and taught in Boston for many years. I would like to propose such a Krasner sandwich tonight in honor of my dear friends Dorothea and Reinhold Brinkmann, interpolating Arnold Schoenberg's

One of the most fascinating advantages of gravitating back and forth between scholarship and performance is that one constantly seeks the practical consequences of one's intellectual discoveries.

Six Little Piano Pieces (*Sechs kleine Klavierstücke*), op. 19, between the two Mozart sonatas. Like the sorbet that cleanses the palate between the fish and the meat course, Schoenberg's dazzling miniatures, in the most varied character, are also in every way the true successors of Mozart's mercurial compositions.

(Robert Levin performs Schoenberg Op. 19 and Mozart K. 280.)

One of the most fascinating advantages of gravitating back and forth between scholarship and performance is that one constantly seeks the practical consequences of one's intellectual discoveries. You could call much of what you have heard tonight an interpretation – or misinterpretation, if you like – and dismiss it that way. But the argument that I'd like to make is that everything that goes on in what I play is something that I see in the piece. In fact, Liszt wrote a famous sonata called *Après une lecture du Dante* – the famous Dante sonata. Liszt read Dante and, in a fever pitch, wrote music that drew upon his reading of Dante. What I have shown you tonight is what I have found in my reading of Mozart. ■

Robert Levin and Lewis Lockwood (Harvard University)

Roy Glauber (Harvard University) and James Carroll (Boston, MA)

Joseph Pedlosky (Woods Hole Oceanographic Institution), Eugene Skolnikoff (Massachusetts Institute of Technology), and Carl Wunsch (Massachusetts Institute of Technology)

A Remembrance

Challenges in a New Century: The Engaged Citizen

At the 1845th Stated Meeting, held in New York City on March 19, 2001, James O. Freedman spoke eloquently about his fundamental belief that intellectuals have a responsibility to inform and guide society. His presentation is reprinted below.

James O. Freedman

In one of the finest commencement speeches I know, William Faulkner told the graduation class of Pine Manor Junior College in 1953: "What's wrong with this world is, it's not finished yet. It is not completed to that point where man can put his final signature to the job and say, 'It is finished, we made it, and it works.'"

Faulkner, of course, was right. The world is not yet "finished," and for the Academy that means there is a daunting agenda of work to be done. Who can view the international scene and not find challenges in the elimination of nuclear weapons, the resettlement of international refugees, and the development of a foreign policy that at once protects our national interests and reflects our devotion to principles of human rights? Who can witness events in Africa and not be concerned with ethnic conflict and the problems of hunger, of malnutrition, of population control, and of disease, which afflict a great portion of that continent?

Who can look at the Third World and not be shaken by the relentless force of globalization and by a distribution of resources that thwarts the aspiration of millions of persons, that stunts the health of innocent children, and that threatens a global confrontation between the haves and the have-nots?

Who can survey the nation's landscape and not be troubled by looming issues of sustainability – the pollution of our rivers, the poisoning of our air, the erosion of our soil, and the unremitting encroachment upon our wilderness and wildlife? Who can participate in American society and not appreciate that our country faces enduring questions of poverty, income inequality, and bringing minorities into the mainstream of educational and occupational opportunity?

Advancing truth, knowledge, and understanding on issues such as these is the goal of the American Academy. We have long admired the awe-inspiring achievements of those intellectuals who work in the natural sciences, in eliminating disease, perfecting new surgeries, exploring the universe, and mastering the atom. But we have been less than hospitable to – even skeptical of – intellectuals of other kinds.

Continued on page 45

In Memoriam

James O. Freedman

It is with deep sorrow that the Officers, Councilors, and members of the Trust of the American Academy mourn the loss of James O. Freedman, distinguished legal scholar, university leader, and President of the Academy from 2000 – 2001. Throughout his academic career and as President of the University of Iowa and Dartmouth College, Jim worked to advance diversity and social justice. In words and actions, he demonstrated the importance of what he called "an opening up of mind and spirit to a symphony of different persons, cultures, traditions, and languages." Nothing was more important to him than the values of a liberal education and the concept of "intellectual wholeness" – values that are embodied in the work of the Academy.

Although he was able to serve as the Academy's President for only a short time, he shared with all of us his extraordinary insight into the role of the intellectual in contemporary society. We remember, with special pleasure, the Academy's trip to Paris in 2000; Jim was a wonderful host for our first Stated Meeting abroad. He symbolized what was uppermost in the minds of the Academy's founders: the concept of the engaged citizen.

The depth of Jim's knowledge, the breadth of his interests, the intensity of his passion for intellectual integrity, and his courageous personal battle against serious illness earned him a special place in the academic community and beyond. The Academy was honored to have him as a Fellow and as President.

The Engaged Citizen

Continued from page 44

Despite the demands of an increasingly complex society, the role of the intellectual in this country is seriously undervalued. In looking for immediate and specific results, we often ignore the less readily quantifiable but critical contributions of social scientists and humanists. Yet with respect to virtually every pressing social concern of our time – from race to poverty, from immigration to individualism – the writings of intellectuals have brought important issues forward, placing them on the national agenda and shaping our thoughts.

Suspicion and resentment of the life of the mind has had a long history in this country. In his seminal work, *Anti-intellectualism in American Life*, Richard Hofstadter wrote in 1963 that intellectuals were thought of as either tucked away in a distant ivory tower or residing nearby and dangerous, threatening religious evangelicalism on the one hand and political populism on the other.

For those of an evangelical cast of mind, Hofstadter wrote, the rational pursuit of truth seemed to threaten religious dogma; they believed that professors who taught the superiority of reason to faith were corrupting America's youth. For those of a populist cast of mind, intellectuals represented the authority of experts rather than the sovereignty of the people. They feared that power was slipping away from the "common man" into the hands of an educated elite – discrete, insular, and self-appointed – endangering democratic values and challenging egalitarian ideals.

Today, a generation after the publication of Hofstadter's book, suspicion of intellectuals reveals itself still: in widespread attacks on higher education and on the professorate in particular, in renewed calls for a narrow vocationalism and practicality in college curricula, and in perennial efforts to abolish the National Endowments for the Humanities and the Arts – both of which are vital sources of support for intellectuals.

Yet in a society excessively devoted to the bottom line – what William James called the "cash value" of ideas – intellectuals play a vital role in offering a more elevated approach to democratic debate. Through their teaching and writing, they free us from the tyranny of shortsightedness by enlarging our understanding of historical and social context. They provide us with an alternative to a society of self-promotion and networking, a culture obsessed with who is in and who is out, who is hot and who is not, a country mesmerized by the tinsel of fame and the echo of sound bites.

So I speak not merely in defense of intellectuals but in celebration of them. We need to appreciate that intellectuals are gifted individuals with unconventional angles of vision, often endowed with an exceptional capacity to advance the common good. We need to acknowledge that intellectuals make significant and enduring contributions to our lives and to helping Americans exercise the responsibilities of democratic citizenship.

We need, in short, to affirm that supporting the mission of intellectuals as critics, scholars, teachers, thinkers, and writers is one of the wisest investments we can make as a people. I hope the Academy will ever make that affirmation. ■

President James O. Freedman with William T. Golden (New York City) and Vartan Gregorian (Carnegie Corporation of New York) at the New York Stated Meeting on March 19, 2001.

Noteworthy

Select Prizes and Awards

Robert Altman (Sandcastle 5 Productions) received an Honorary Oscar from the Academy of Motion Picture Arts and Sciences.

Brian J. L. Berry (University of Texas at Dallas) was awarded the 2005 Lauréat Prix International de Géographie Vautrin Lud.

Timothy J. Clark (University of California, Berkeley), **Thomas Nagel** (New York University), and **Stephen Owen** (Harvard University) are among the recipients of the Distinguished Achievement Awards, given by the Andrew W. Mellon Foundation.

Marc Davis (University of California, Berkeley) is the recipient of the 2006 Dannie Heineman Prize for Astrophysics, awarded by the American Institute of Physics and the American Astronomical Society.

E. L. Doctorow (New York University) received the National Book Critics Circle prize for fiction and the 2006 PEN/Faulkner prize for *The March*.

Alexander W. Dreyfoos (Dreyfoos Group) is the recipient of the 2006 Woodrow Wilson Award for Corporate Citizenship, given by the Woodrow Wilson International Center for Scholars.

Martin Dworkin (University of Minnesota) is the recipient of the 2006 USFCC/J. Roger Porter Award, supported by the United States Federation for Culture Collections (USFCC) and the American Society for Microbiology.

Gerald Early (Washington University in St. Louis) is the recipient of the Phi Beta Kappa Society Award for Distinguished Service to the Humanities.

Daniel Freedman (Massachusetts Institute of Technology) is among the recipients of the 2006 Dannie Heineman Prize for Mathematical Physics, awarded on behalf of the Heineman Foundation by the American Institute of Physics and the American Physical Society.

Jane Goodall (Jane Goodall Institute) was awarded the Officier de l'Ordre de la Légion d'Honneur by the French Republic and was presented with a 60th Anniversary Medal from the United Nations Educational, Scientific, and Cultural Organization (UNESCO).

Francine du Plessix Gray (New York City) was awarded the National Book Critics Circle prize for autobiography for *Them*.

Lars Peter Hansen (University of Chicago) was awarded the 2006 Erwin Plein Nemmers Prize in Economics.

Wayne A. Hendrickson (Columbia University), **Joan Massagué** (Memorial Sloan-Kettering Cancer Center), and **Mitchell J. Feigenbaum** (Rockefeller University) are among the recipients of the Mayor's Awards for Excellence in Science and Technology, administered by the New York Academy of Sciences in partnership with the New York City Department of Cultural Affairs.

Thomas Kailath (Stanford University) is among the recipients of the 2006 Silicon Valley Engineering Hall of Fame Award.

Donald Keough (Allen & Company) was inducted into the Advertising Hall of Fame.

Mary-Claire King (University of Washington) was awarded the Dr A.H. Heineken Prize for Medicine by the Royal Netherlands Academy of Arts and Sciences.

Robert Langlands (Institute for Advanced Study) was awarded the 2006 Frederic Esser Nemmers Prize in Mathematics.

Ang Lee (Ang Lee Productions) received an Oscar for Best Director of a Motion Picture for *Brokeback Mountain*, given by the Academy of Motion Picture Arts and Sciences. He also received the Directors Guild of America award for Best Director for *Brokeback Mountain*.

Jane Lubchenco (Oregon State University) received the 2005 Public Understanding of Science and Technology Award, given by the American Association for the Advancement of Science.

Yo-Yo Ma (Cambridge, MA) is among the recipients of the 2006 Dan David Prize, awarded by the Dan David Foundation.

Jerrold Meinwald (Cornell University) and **Thomas Eisner** (Cornell University) have been awarded the 2006 Grand Prix de la Fondation de la Maison de la Chimie.

Joel Mokyr (Northwestern University) was awarded the Dr A.H. Heineken Prize for History by the Royal Netherlands Academy of Arts and Sciences.

Edmund S. Morgan (Yale University) was awarded a Pulitzer Prize Special Citation.

John Mueller (Ohio State University) was awarded the Lepgold Prize by Georgetown University for his book *The Remnants of War*.

Stuart Pimm (Duke University) is the recipient of the 2006 Edward T. LaRoe III Memorial Award, given by the Society of Conservation Biology. He was also awarded the Dr A.H. Heineken Prize for Environmental Sciences by the Royal Netherlands Academy of Arts and Sciences.

Steven Stanley (University of Hawaii) was awarded the Mary Clark Thompson Medal by the National Academy of Sciences.

Charles Tilly (Columbia University) is the recipient of the Phi Beta Kappa Society Sidney Hook Memorial Award.

Richard Wilbur (Smith College) was awarded the Ruth Lilly Poetry Prize of the Poetry Foundation.

New Appointments

George Conrades (Akamai Technologies, Inc.) has joined the Board of Directors of Microbia, Inc.

Gerald Fink (Whitehead Institute for Biomedical Research) has joined the Scientific Advisory Board of GlycoFi.

Lawrence Marshall Gold (SomaLogic, Inc.) has joined the Scientific Advisory Board of Lifeline Therapeutics, Inc.

Rosalyn Higgins (International Court of Justice) was elected President of the International Court of Justice.

William Kelley (University of Pennsylvania) has been elected to the Board of Directors of PolyMedix, Inc.

Philip Khoury (Massachusetts Institute of Technology) has been named Associate Provost of the Massachusetts Institute of Technology.

N. Michael McKinnell (Kallmann McKinnell & Wood Architects) has been appointed to the United States Commission of Fine Arts.

James Meindl (Georgia Institute of Technology) has been appointed to the Technical Advisory Board of TiaLinx, Inc.

James M. Poterba (Massachusetts Institute of Technology) has been appointed to the CREF Board of Trustees.

Lisa Randall (Harvard University) has been appointed to the Scientific Advisory Board of Duravest, Inc.

Select Publications

Poetry

Seamus Heaney (Dublin, Ireland). *District and Circle*. Farrar, Straus & Giroux, May 2006

Fiction

Carlos Fuentes (University of Cambridge). *The Eagle's Throne*. Random House, May 2006

Philip Roth (New York City). *Everyman*. Houghton Mifflin, May 2006

Anne Tyler (Baltimore, Maryland). *Digging to America*. Knopf, May 2006

Nonfiction

Stephen L. Adler (Institute for Advanced Study). *Adventures in Theoretical Physics – Selected Papers with Commentaries*. World Scientific Publishing, April 2006

Madeline Albright (Washington, D.C.). *The Mighty and the Almighty: Reflections on America, God, and World Affairs*. Harper Collins, May 2006

David Attenborough (Richmond, Surrey, United Kingdom). *Life in the Undergrowth*. Princeton University Press, January 2006

Alan J. Auerbach (University of California, Berkeley), David Card (University of California, Berkeley), and John M. Quigley (University of California, Berkeley), eds. *Public Policy and the Income Distribution*. Russell Sage Foundation, March 2006

James L. Axtell (College of William and Mary). *The Making of Princeton University: From Woodrow Wilson to the Present*. Princeton University Press, April 2006

Thomas Bender (New York University). *A Nation Among Nations: America's Place in World History*. Hill & Wang, April 2006

David Bevington (University of Chicago). *How to Read a Shakespeare Play*. Blackwell Publishers, April 2006

Derek Bok (Harvard University). *Our Underachieving Colleges: A Candid Look at How Much Students Learn and Why They Should Be Learning More*. Princeton University Press, December 2005

James Carroll (Boston, MA). *House of War: The Pentagon and the Disastrous Rise of American Power*. Houghton Mifflin, May 2006

Norm Chomsky (Massachusetts Institute of Technology). *Failed State: America*. Metropolitan, May 2006

Chip Colwell-Chanthaphonh (Visiting Scholar, 2005 – 2006) and Karen D. Vitelli (Indiana University, Bloomington). *Archaeological Ethics*. AltaMira Press, February 2006

Chip Colwell-Chanthaphonh (Visiting Scholar, 2005 – 2006) and T. J. Ferguson (Anthropological Research, LLC). *History Is the Land: Multivocal Tribal Traditions in Arizona's San Pedro Valley*. University of Arizona Press, April 2006

Frederick Cooper (New York University), Craig Calhoun (Social Science Research Council; New York University), and Kevin W. Moore (University of North Carolina, Greensboro). *Lessons of Empire: Imperial Histories and American Power*. The New Press, April 2006

Frederick Crews (University of California, Berkeley). *Follies of the Wise: Dissenting Essays*. Shoemaker & Hoard, March 2006

Robert Dallek (Boston University) and Terry Golway (Maplewood, NJ). *Let Every Nation Know: John F. Kennedy in His Own Words*. Sourcebooks/MediaFusion, April 2006

Natalie Zemon Davis (University of Toronto). *Trickster Travels: A Sixteenth-Century Muslim Between Worlds*. Hill & Wang, March 2006

Ronald Dworkin (New York University). *Justice in Robes*. Harvard University Press, April 2006

Loren Graham (Massachusetts Institute of Technology). *Moscow Stories*. Indiana University Press, April 2006

Hans Ulrich Gumbrecht (Stanford University). *In Praise of Athletic Beauty*. Harvard University Press, April 2006

Gertrude Himmelfarb (Washington, D.C.). *The Moral Imagination: From Edmund Burke to Lionel Trilling*. Ivan R. Dee, April 2006

Jerome Kagan (Harvard University). *An Argument for Mind*. Yale University Press, April 2006

Edward M. Kennedy (U.S. Senate). *America Back on Track*. Viking Adult, April 2006

Nannerl O. Keohane (Princeton University). *Higher Ground: Ethics and Leadership in the Modern University*. Duke University Press, May 2006

Arthur Kleinman (Harvard University), Adriana Petryna (The New School), and Andrew Lakoff (University of California, San Diego), eds. *Global Pharmaceuticals: Ethics, Markets, Practices*. Duke University Press, April 2006

Alan B. Krueger (Princeton University), Anders Björklund (Stockholm University), Melissa A. Clark (Mathematica Policy Research, Inc.), Per-Anders Edin (Uppsala University), and Peter Fredriksson (Uppsala University). *The Market Comes to Education in Sweden: An Evaluation of Sweden's Surprising School Reforms*. Russell Sage Foundation, January 2006

Wolf Lepenies (Wissenschaftkolleg zu Berlin). *The Seduction of Culture in German History*. Princeton University Press, April 2006

Juan Linz (Yale University). *Robert Michels, Political Sociology and the Future of Democracy*. Transaction Publishers, April 2006

Catherine A. MacKinnon (University of Michigan Law School). *Are Women Human? and Other International Dialogues*. Harvard University Press, April 2006

Charles S. Maier (Harvard University). *Among Empires: American Ascendancy and its Predecessors*. Harvard University Press, April 2006

Thomas E. Mann (Brookings Institution) and **Norman Ornstein** (American Enterprise Institute). *The Broken Branch: How Congress Is Failing America and How to Get It Back on Track*. Oxford University Press, January 2006

Jaroslav Pelikan (Yale University). *Whose Bible Is It? A Short History of the Scriptures*. Penguin Books, January 2006

David Remnick (*The New Yorker*). *Reporting: Writings from* The New Yorker. Knopf, May 2006

Simon Schama (Columbia University). *Rough Crossings: Britain, the Slaves, and the American Revolution*. Ecco, April 2006

Amartya Sen (Harvard University). *Identity and Violence: The Illusion of Destiny*. W. W. Norton, March 2006

Wole Soyinka (Abeokuta, Nigeria). *You Must Set Forth at Dawn: A Memoir*. Random House, April 2006

Patricia Meyer Spacks (University of Virginia). *Novel Beginnings: Experiments in Eighteenth-Century English Fiction*. Yale University Press, May 2006

Charles Tilly (Columbia University). *Why? What Happens When People Give Reasons. . . and Why*. Princeton University Press, April 2006

Edward O. Wilson (Harvard University). *Selected Writings, 1949 – 2006*. Johns Hopkins University Press, February 2006

Gordon S. Wood (Brown University). *Revolutionary Characters: What Made the Founders Different*. Penguin Press, May 2006

Exhibitions

John Baldessari (University of California, Los Angeles): upcoming shows at Cristina Guerra Contemporary Art, Lisbon, Portugal, June 2006; Kunstmuseum Bonn and Bonner Kunstverein, Bonn, Germany, October 29, 2006 – January 21, 2007.

Chuck Close (New York, NY): "Chuck Close: Process and Collaboration" at the Madison Museum of Contemporary Art, Madison, Wisconsin, July 22 – October 1, 2006.

Bruce Nauman (Galisteo, NM): "Bruce Nauman" at Tate Liverpool, Liverpool, England, May 19 – August 28, 2006.

Jules Olitski (Marlboro, VT): "Jules Olitski: Works on Paper" at Luther W. Brady Art Gallery, George Washington University, Washington, D.C., May 10 – July 14, 2006.

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. ■

From the Archives

Benjamin Franklin and the American Academy

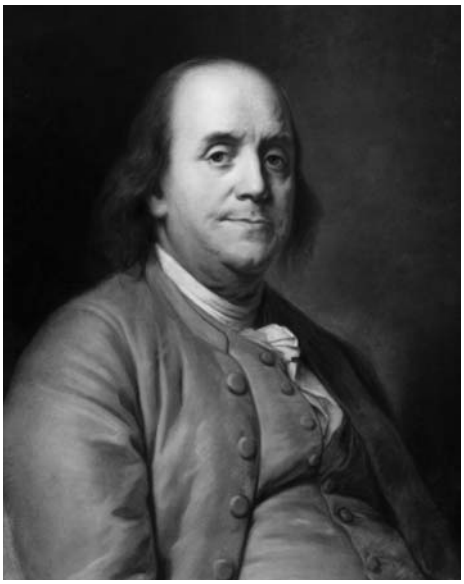

Image donated by Corbis-Bettmann

This year marks the 300th anniversary of the birth of Benjamin Franklin, a Fellow of the American Academy from 1781 – 1790. Franklin's connections to the Academy, however, began many years before his election to membership. The American Philosophical Society (APS), founded by Franklin in Philadelphia in 1743, was a significant model for John Adams when he formed the American Academy in 1780. As early as 1776, Adams wrote to his wife Abigail from Philadelphia: "If I ever get through this Scene of Politics and War, I will spend the Remainder of my days, in endeavoring to instruct my countrymen in the Art of making the most of their Abilities and Virtues; an Art, which they have hitherto, too much neglected. A philosophical society shall be established at Boston, if I have Wit and Address enough to accomplish it, sometime or other."[1] Four years later, the newly chartered Academy held its first meeting.

In January of 1781, the Academy held its first annual election of members. Franklin, in Paris at the time serving as American Commissioner to France, was one of fourteen Fellows chosen to join the original sixty-two charter members. In a letter to Franklin informing him of his election, Academy Corresponding Secretary Joseph Willard wrote: "The Society [Academy] esteems itself dignified in having your name added to the catalogue; a name so much and so deservedly celebrated, not only through your native country, but also through Europe; and it flatters itself, that it will ever have your favor and encouragement. I hope the Philadelphia Society, for which you are particularly interested, and this in Massachusetts, will be not only an honor to the United States of America, but also of extensive utility to the public, as they cannot fail of being, if the ends of their institutions are properly pursued."[2]

During his years in France, Franklin corresponded with members of the Academy, particularly his close friend, James Bowdoin, the Academy's first president. When Franklin was abroad, he also served the Academy by forwarding its notices and publications to scientists and learned societies in Europe. His endorsement of the Academy was further evident when, upon his death in 1790, he bequeathed to the Academy his handsome 32-volume folio set of *Les Arts et Les Métiers*. Ironically Bowdoin died that same year, leaving the Academy his library, which included a fine vellum-bound manuscript, now known as "the Bowdoin manuscript." It contains copies of Franklin's "letters and papers on electricity, lightning, etc.," with additions and corrections by Franklin in his own hand.

Throughout its history, the Academy has celebrated Franklin's birth in a variety of ways. On his bicentenary in 1906, the Academy sent the APS a "cordial expression of appreciation of the services to Science and Humanity of Benjamin Franklin, its founder," and the APS reciprocated with a Benjamin Franklin Medal, struck by the United States Congress to commemorate Franklin's 200th birthday.

In 1956, an Academy Committee on Franklin's 250th anniversary organized a symposium on atmospheric research, followed by a musical presentation. E. Power Biggs, a Fellow of the Academy and one of the preeminent organists of the past century, demonstrated the use of a glass armonica, a musical instrument invented by Franklin.

In April 2005, the Academy marked its 225th anniversary, and Franklin was again the focus of attention. At a celebration in Cambridge, Academy members Mary Maples Dunn and Richard S. Dunn, Co-Executive Directors of the American Philosophical Society, presented the Academy with a tribute from its sister institution: a striking facsimile of a document from the APS's manuscript collections – Franklin's certificate of membership in the Academy. ■

1 As quoted in Walter Muir Whitehill, "Early Learned Societies in Boston and Vicinity," in *The Pursuit of Knowledge in the Early American Republic*, ed. Alexandra Oleson and Sanborn C. Brown (Baltimore: Johns Hopkins University Press, 1976). Original letter from John to Abigail Adams, 3 August 1776, is in the Massachusetts Historical Society.

2 Joseph Willard to Benjamin Franklin, 9 February 1781; in the *Papers of Benjamin Franklin*, Vol. 21, no. 55, American Philosophical Society.

Annual Giving at New Levels

This past year, the Academy reached new Annual Fund levels. The fund total surpassed the $1 million mark for the sixth consecutive year, exceeding $1.4 million for the first time. Gifts increased 15 percent and the number of donors was up 13 percent over the previous year – record totals in both areas.

Vice President and Chair of the Academy Trust Louis Cabot noted that "the support of all of our Fellows is critically important. We rely on the Annual Fund to launch new research projects and studies and to support a growing number of programs and activities across the country."

Setting the pace with individual leadership gifts were: Leonore Annenberg, Stephen D. Bechtel, Jr., Louis W. Cabot, Lewis B. Cullman, William T. Golden, Walter B. Hewlett, Martin Lipton, Peter Nicholas, Carl H. Pforzheimer III, John and Cynthia Reed, and E. John Rosenwald, Jr.

The Academy is deeply grateful to the cochairs of the Development and Public Relations Committee, Louis W. Cabot and Robert A. Alberty, and to the committee members – Jesse H. Choper, Michael E. Gellert, William T. Golden, Charles M. Haar, Jack W. Peltason, and Nicholas Zervas – for the dedication and hard work that helped to make this 225th anniversary year Annual Fund such a success.

President Patricia Meyer Spacks expressed deep appreciation to all of the Fellows, friends, and foundations for their generous contributions this year. A complete list of contributors to the 2005 – 2006 Annual Fund will appear in the Academy's Annual Report, to be issued in the fall of 2006. ■

AMERICAN ACADEMY
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