Panel I: Challenges for Science, Technology, and Global Security

Initiative for Science, Engineering, and Technology

Neal Lane
Malcolm Gillis University Professor, Rice University

I have been asked to speak about the Academy’s Initiative for Science, Engineering, and Technology, which I cochair with Charles Vest, President of the National Academy of Engineering and former President of MIT. Over the past 60 years, the role of science, engineering, and technology in our lives has changed quite dramatically, and the pace of change is accelerating. The United States’ leadership role is no longer guaranteed. The production and funding of scientific and engineering research are changing throughout the world, especially in Asia. A few days ago we recalled the fiftieth anniversary of Sputnik and the surge of investment in scientific research and science-mathematics education that followed in the United States. But today, in this country, science is increasingly viewed as a cost rather than as an investment. Issues for which science is crucial, for example, stem cell research and climate change, are increasingly complex, and they strike dissonant cultural and political chords in our society. The purpose of this initiative is to think broadly about the role that science and technology play in society today, how that role has changed, and how we can better prepare for the future.

It is fair to ask what the Academy can contribute that other organizations are not already doing. First, the Academy is not a science-advocacy organization. With its strong, distinguished, and long history, with the breadth of its membership, and with its extraordinary convening power, the Academy is well positioned to contribute a unique perspective. Second, the Academy is not in Washington. After spending many years in Washington – and some of you in the audience have had the same experience – I can tell you how difficult it is to get around entrenched viewpoints in that town. Finally, the Academy is not a university. Many of the issues concerning science and its future will benefit from cross-institutional discussions. The Academy can convene many of the brightest people from a variety of institutional sectors, such as scholars, administrators, business leaders, entrepreneurs, and policymakers.

The Initiative is now in its second year, and several projects have emerged under its direction. One project is examining alternative models for federal funding of science, with a particular focus on two specific and related issues: funding for early-career scientists, engineers, and mathematics researchers; and funding for high-risk, high-reward research, sometimes called transformative research. Both, we believe, are critical to the future of science, engineering, and technology in...
this country. Tom Cech, Nobel Laureate and President of the Howard Hughes Medical Institute, is chairing this study, and I and several others in the room are members of the committee. While many reports have recommended increased funding for science and engineering research, which we do not oppose, that is not the focus of this particular study. The committee will analyze and recommend improvements in the investment policies, the funding mechanisms, the management processes, and in the way government goes about funding research. Some of the questions the committee will ask include: What are the effects of boom and bust funding cycles? NIH just went through a doubling of its budget, but all is not well; we need to understand and help explain that situation. What mechanisms do federal agencies have in place to insure that funding flows to early career investigators, and how do agencies evaluate failure? By failure, we mean a less exciting outcome, perhaps, than what you had in mind when you submitted the proposal. The committee has heard from federal funding agencies, private funders, early-career scientists, and Congressional staffers. We hope to complete the report by spring of 2008.

A second project under this Initiative is looking at science and the liberal arts curriculum; it is chaired by Academy Secretary Jerrold Meinwald of Cornell University and John Hildebrand of the University of Arizona. The project focuses on what non-science and nonengineering majors learn about science and technology, and how this knowledge informs their ability to become successful, active, and engaged citizens. We realize that the majority of college and university students do not major in science and engineering, and yet science, engineering, and technology affect many aspects of their lives, from managing their own health care to issues of national concern, such as energy and the environment. The project’s central goal is to promote cross-institutional sharing. The Academy involved 41 colleges and universities from across the country, many of them University Affiliates of the Academy, in this study. Officials from these institutions completed surveys on curricular practices at their respective colleges and universities. This past August the Academy convened representatives from these institutions, including scientists and nonscientists, faculty and deans, to discuss the results of the survey and share best practices and innovative teaching approaches.

A third project emerging under the Initiative concerns scientists and their understanding of the public. There have been many studies on how the public can better understand science. This project approaches the subject from the other direction. We believe we need more of a dialogue than we have had in the past. Scientists do not always understand the larger context of their work and how the public views science, engineering, and technology. We need that understanding, and this project will help us get there. We welcome your ideas and involvement.

The Global Nuclear Future

Steven E. Miller
Director, International Security Program, Belfer Center for Science and International Affairs, Kennedy School of Government, Harvard University

It is my privilege to represent the Committee on International Security Studies, which is one of the longest standing research groups within the Academy. Its work, going back at least five decades, has played a major role in the nation’s thinking about national security affairs.

In a characteristically vivid phrase, Bertrand Russell once wrote that the challenge nuclear weapons pose to mankind is to manage this technology without a catastrophic mistake “until the sun grows cold.” While we can take some comfort in the fact that we have navigated safely the first six decades of the nuclear age — although not without some frightening moments — the real challenge is navigating the eternity that lies ahead.

What is motivating one of the Academy’s new initiatives is the growing feeling in the expert community — and to some extent in the policy world — that the answers of the past are no longer adequate or appropriate for the nuclear challenges of today. The strategic arms control process that governed and stabilized most of the nuclear weapons on the planet in the Soviet-American context is now being dismantled or is in some state of suspended animation. The nonproliferation regime, which is meant to inhibit, or prevent, the spread of nuclear weapons, is eroding. The crises over Iran, Iraq, and North Korea all have at their centers the threat of a spread of nuclear weapons.

What we see is disaffection from all sides: nuclear weapons states, non-nuclear weapons states, and leading Third World states are dissatisfied with the existing political, legal, and institutional infrastructure for governing the nuclear affairs of the planet.

We see a tremendous upsurge in interest in pursuing nuclear power not only because of energy security but also because of global climate change.… Can the United States promote the peaceful use of nuclear energy around the globe without encouraging a similar increase in nuclear proliferation?

Meanwhile, we seem to be entering an era in which nuclear technology is growing and spreading, particularly in the civil nuclear arena. We see a tremendous upsurge in interest in pursuing nuclear power not only because of energy security but also because of global climate change and the need to retreat from excessive reliance on fossil fuels. Even in the United States, whose nuclear industry has long been stagnant, there is for the first time in several decades a license request for a new nuclear power plant. More significantly, today there are several dozen reactors under construction and even more dozens being planned around the world, many of them in developing...
countries. Of course, one of the fundamental realities of nuclear technology is that many of the key components have a dual use: they have applications and implications for both weapons and power generation. If nuclear power spreads widely, the confrontation with Iran could become the template for future problems, as states regarded by Washington as unfriendly, hostile, or irresponsible develop allegedly “peaceful” nuclear programs that excite fears that the true purpose is the acquisition of nuclear weapons. How is the world going to cope with this dilemma?

There is a burgeoning sense that we are approaching a fateful juncture. This past spring, former Senator Sam Nunn argued passionately before Congress that we are nearing a tipping point and we need a fundamental rethinking of the whole nuclear question. This is a challenge that is worthy of both our time and energies, and it is completely consistent with the Academy’s mission of bringing intellectual resources to bear on major national and international problems.

The Committee on International Security Studies has launched a project on the Global Nuclear Future that will examine not only the path that we are on but where we are headed. What alternative futures might exist? And if there are preferable nuclear futures, how do we attain them?

We are trying to mobilize the nuclear community to address what we see as four families of questions. One is how to manage the expansion of civil nuclear power in such a way that we do not exacerbate the problem of nuclear proliferation. If we are going to have two or three or ten times as many reactors in the world in 20 or 50 years, how do we create the legal and institutional infrastructure to insure that generating nuclear electricity does not also produce nuclear weapons around the world? Second, if we are going to have many more nuclear facilities around the world, it is imperative that these facilities have adequate safety and security measures so that the threat of terrorism or accident is kept to a minimum. Third, how do we manage nuclear stability in a changing world? How do we stabilize an environment in which Iran has nuclear weapons, or in which the nuclear crisis is no longer between Moscow and Washington but between Islamabad and Delhi? Are old concepts really applicable in these new contexts? It does not take much thought to realize that many of the factors that made for stability in the Soviet-American context simply do not exist in other regional settings.

Finally, what should America’s nuclear posture be in the context of these wider nuclear challenges? We are launching a new project that will ask what America’s nuclear posture should be in the context of these wider nuclear challenges. Currently we possess 10,000 nuclear weapons. We still have a nuclear-reliant defense posture. We still have a first-use nuclear policy. We still have objections to fulfilling our obligation under Article VI of the Nuclear Nonproliferation Treaty to eliminate nuclear weapons from the U.S. arsenal. What effect does that have? What alternatives exist for American policy? Can the United States promote the peaceful use of nuclear energy around the globe without encouraging a similar increase in nuclear proliferation? How can we best create the nuclear future for our society that maximizes our own safety and also that of the planet? These are the challenges to which we hope to contribute in the coming two to three years.

Securing the Internet as Public Space

David Clark
Senior Research Scientist, Massachusetts Institute of Technology, Computer Science and Artificial Intelligence Laboratory

I would like to frame the Academy’s study on Internet security by telling you a story. You may recall that in April of this year the government of Estonia moved a World War II memorial, a statue of a Russian soldier, from its traditional position to a less prestigious position in a military cemetery. Ethnic Russians in Estonia protested. There were two days of riots, a weekend siege of the Estonian Embassy in Moscow, and closer to the point of this study, a concerted attack on the computer and network infrastructure of Estonia—what we call a cyber attack or a distributed denial of service attack. Hundreds of thousands of computers simultaneously launched floods of traffic on targeted machines in Estonia. This attack clogged computers and networks, and brought the network infrastructure to its knees.

Now, you might reasonably ask, “How could an attacker get access to hundreds of thousands of machines to carry out this attack?” One machine that might have participated in this attack is your machine, the one you left connected to the Internet when you came to Induction. It might surprise you to know that the machine that you thought was just sitting there, waiting for you to tell it what to do, had gone off and attacked Estonia when you were not paying attention. But it could have happened.

So, how did your innocent machine get recruited into this exploit? One answer is malware, a nasty little piece of code running on your machine. Malware allows your machine to receive instructions from an evil master somewhere else on the globe. An attacker may have sent instructions to your computer to march off and attack Estonia.

Well, how did that piece of code get onto your computer? There are a variety of ways it might have gotten there, but one way is through your invitation. You went to a perfectly innocent website and clicked on what you thought was a perfectly innocent webpage. But that webpage had an interesting side effect: it crammed a piece of code down into your computer, and the code started running.

Now you might be wondering: How did the website get contaminated? I did not go to an “evil” website. I only go to innocent websites. And, second, why did that website have permission to download and start a piece of code on my computer without
ask your permission? Let me start with the first question and teach you some vocabulary as well. In the trade, a computer that has been infested with one of these programs that allows somebody else to take it over is called a zombie. When we have a lot of zombies, we call them a botnet, where ‘bot’ is short for robot. We call the owner of a botnet the bot master or bot herder. (We have this theory that if you cannot solve a problem, you can give it a cute name.)

When the aspiring bot master wants to build a botnet, he looks for any website that appears inadequately administered and insecure. He then craftily attacks the website so its owner never notices. He will creep in, attach a little piece of code to a page that will cause a machine opening that page to download something, creep out again, and then sit and wait for machines to get infested as they touch this webpage. This method is called “drive-by infestation,” or “drive-by downloads.” As each machine gets infested it sends a message to the bot master, and when he has tens of thousands of machines he puts his botnet to work.

Let us return to the Estonia attack for a minute. One of the interesting things is that the attack was immediate. The attackers did not have a chance to build their own botnet. But in this world you do not have to build your own botnet; you just go and rent one. Building and renting botnets is now a specialty business. What this means is people are invading your machine, taking its unused processing capacity, and selling it on the black market. Some botnets are huge. The Dutch government recently broke up a botnet that had one and a half million machines on it.

Let me come back to my second question. Why is it that a webpage could download a piece of code onto your machine without asking your permission? Well, as the web evolved — and this was not Tim Berners-Lee’s original vision when he invented the web, by any means — the designers wanted to be able to load new features onto your computer that did not require any effort on your part. They wanted a world where they could download code onto your machine to “enhance” the experience of using their website. They pushed this design despite the fact that security folks were standing on the sidelines saying, “Don’t do this.” It was a conscious, fully informed decision to sell you a machine that was open to these sorts of attacks by people who had other priorities.

The goal of the Academy study is to look at the security of the Internet. It is tempting to think of this as a purely technical problem — just beat the geeks with sticks until they get it right — and that may be correct in some cases. But when systems designers knowingly install flaws into a system because they see the benefits as outweighing the costs, it becomes a social, legal, and policy problem. To really understand security and the Internet, you must assemble a multidisciplinary team because you have to put your arms around some really big issues. And, in fact, we have struggled because the problem is so big and multidimensional. It involves looking at technical problems, matters of trust, perceptions of risk, and issues of incentives.

The Academy, with its multidisciplinary membership, is a great place to undertake a study like this. So stay tuned, and when you leave home, turn off your computer.

Panel II: Challenges for Education, Humanities and Culture

Universal Basic and Secondary Education

Joel E. Cohen
Abby Rockefeller Mauzé Professor of Populations, Rockefeller University and Columbia University

In 1997, I had a conversation with Leslie Berlowitz about the idea of providing all children in the world with the equivalent of 10 to 12 years of schooling of high quality. Leslie’s vision and the collaboration of David Bloom, an Academy Fellow at the Harvard School of Public Health, led to the creation of the Universal Basic and Secondary Education (UBASE) project. We brought together people from diverse continents, cultures, and fields of learning and action to consider what it would take to educate all the world’s children well for 10 to 12 years, and what kind of a world could result from universal basic and secondary education.

Why is educating all the world’s children well important? Education, if wisely oriented, can benefit individuals and societies demographically, economically, environmentally, and culturally (including politically). Here I sketch some economic and demographic aspects of the promise of educating all the world’s children well.

In 1900, there were 1.6 billion people in the world. In 2001, by World Bank estimates, about 2.7 billion people, nearly 53 percent of the developing world’s 5.2 billion people, were living on the equivalent of $2.15 a day or less (in 1993 U.S. dollars at purchasing power parity). That is poverty. Essentially nobody in the developing countries lived on income that low. More people live in poverty today than were alive in 1900. By the year 2050, the United Nations Population Division anticipates adding to today’s population about 2.6 billion people if men and women continue to have fewer children as suggested by the decline in fertility over the last 40 years. Virtually all of those additional 2.6 billion people will live in the cities of the presently poor countries. If couples have, on average, half a child more than forecast over the next 45 years, we will have by the year 2050 about 1.5 billion more people than anticipated. If couples have, on average, half a child less, we will have by 2050 about 1.4 billion fewer people than anticipated. A difference of one child per woman’s lifetime between now and 2050 entails a difference in the Earth’s population of nearly 3 billion people, which was the total population of the Earth in 1960.

In diverse cultures around the world, women who complete secondary education have, on average, at least 1.5 children fewer than women who complete only primary education, who in turn have fewer children than women who do not complete primary education; and the higher the level of the mother’s education, the better the health and survival of her children. The average number of children per woman’s lifetime associated with each level of a mother’s education varies widely from culture to culture, and in many places the average difference associated with completing secondary education is far larger than a reduction of 1.5 children. Of course, causality runs both ways between education and numbers of children, since girls who get pregnant leave or cannot enter school in many cultures.

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affect enormously, in addition to the numbers of people on the Earth in 2050, their survival, health, human rights, environment, capacity for self-governance, and prosperity.

In many societies, fewer girls than boys enroll and remain in primary school. The educational gap between boys and girls is a problem for many reasons, ethical as well as practical. But, according to Deon Filmer at the World Bank, the gap in primary school participation between the top and the bottom quintiles in the income distribution is much greater than the gap between boys and girls, and the gap in school participation is even greater for children with disabilities than for girls or the poor. The challenges facing universal education include reaching girls, the poor, and the disabled.

The UBASE project aimed to find out how much it would cost to educate all children. Could countries afford to put all children in school for 10 to 12 years or to give them an equivalent education? That question is difficult to answer for at least four reasons (in addition to the paucity of accurate, internationally comparable data).

First, the average cost of educating a child who is not currently in school probably differs from the average cost of educating a child who currently is. The child not in school now may be disabled, may live in a remote rural location, or may have some other handicap. Moreover, supplying a high-quality education to a poor child may, on average, require more in-school resources than are currently expended on the better-off students currently enrolled.

Second, the average cost of enrolling an unenrolled child may be higher than the average cost per currently enrolled student because it may be necessary to compensate families who keep their children at home for the time children spend working for income or handling chores so other household members can work for pay.

For these two reasons, a linear extrapolation from the costs per child already in school to the cost per child not yet in school is speculative.

Third, we do not know how much it would cost to improve the quality of schooling so that parents will want to send their kids to school, rather than send them out to work or keep them home for chores.

Fourth, we do not know by what means people will be educated 20 years from now. Will they be taught in schools? Will they be taught with cell phones, or with MIT’s $100 computer, or with the UK’s Nivo, or with India’s Simputer? Or in some other completely different way?

Despite these difficulties, as part of our project Paul Glewwe and Meng Zhao (for primary schooling) and Melissa Binder (for secondary schooling) estimated that all children could be given the equivalent of a decent primary and secondary education for an additional cost, on top of what developing countries are already spending to educate their children, of probably not more than $70 billion per year. In 2000, for the low- and middle-income countries (about 5.1 billion people), the incremental cost of $70 billion per year would amount to about 1.2 percent of their gross national income (GNI). The GNI of the high-income countries (with about 1 billion people in 2000) was about $25.5 trillion of the world’s $31.5 trillion, and an incremental cost of $70 billion per year would amount to less than 0.3 percent of their GNI. The world, collectively, can afford to educate all its children well, but the poor countries will need some help from the rich countries. The amounts of money needed could be well above the current level of foreign aid but are feasible if the will is present (as the Marshall Plan demonstrated).

Cost is one of several obstacles to universal basic and secondary education. Like cost, none of these additional concerns is insurmountable if all are recognized and dealt with. Competing demands: Education competes for scarce national resources with roads, medical care, and defense. Returns on investment in education are difficult to measure. Lack of information: Internationally comparable, useful data on the quality of primary and secondary schooling are lacking. Political obstacles: Benefits of schooling accrue too slowly to benefit political incumbents. Violence disrupts schools. Cultural barriers: Discrimination inhibits schooling for girls and for linguistic, religious, and ethnic minorities. Historical context: The history of education in a country affects the success of externally imposed educational solutions.

In January 2007, MIT Press published the UBASE project’s first book, entitled Educating All Children: A Global Agenda, which I edited with David Bloom and the Academy’s program officer Martin Malin, now at Harvard. In it, and in an article for the International Monetary Fund’s journal Finance & Development, we identified a number of changes that need to be implemented simultaneously:

- a commitment to extending secondary education of high quality to all children;
- open national, regional, and international discussions on the goals of universal primary and secondary education — that is, what do people want education to achieve?
- a commitment to improving the effectiveness and economic efficiency of education in achieving those goals; this improvement should be driven by reliable data on what children learn; careful experiments with alternative pedagogical techniques and technologies; and comparative studies of the countries that perform best, region by region, with given funding and material resources;
- international recognition of the diversity of educational systems in different countries, and adaptation of aid policies and educational assessment requirements to local contexts;
- more money and higher priority for education — especially an increase in the absolute and relative amount of funding from rich countries for education in poor countries.

Universal high-quality primary and secondary education, wheth-
er through schools or other technologies yet to be developed, is achievable. The sooner and the greater our efforts to achieve universal high-quality primary and secondary education now, the greater the demographic, economic, environmental, and cultural impacts by 2050. Educating all children well – quality counts crucially – is a worthwhile, affordable, and achievable strategy to develop people who can cope with problems, foreseen and unforeseen.

*I thank David E. Bloom for very helpful comments on a prior draft.*

### Initiative for Humanities and Culture

**Patricia Meyer Spacks**

*Edgar F. Shannon Professor of English Emerita, University of Virginia*

The Academy’s Humanities Initiative aspires to make the importance, the meaning, and the history of the humanities more widely comprehensible. At the moment, the Initiative is concentrating on two projects: one involves the collection and organization of data; the other focuses on compiling a collection of essays by academic leaders that will assess the current condition of the humanities.

Humanists, as you may know, often see themselves as being in a state of crisis. This is one of the crisis periods. Widespread perception has it that the place of the humanities in higher education and in popular opinion is diminishing, but do the facts support the perception? Both our projects will help to answer this question. In the short time that I have, however, I would like to concentrate on the project that involves the collection of data.

The Humanities Indicators Project, as we call it, is an ambitious effort to move toward creating an annual compilation of relevant data for the humanities. At present, rational discussion is impeded by the fact that no one really knows much about what is going on in the assorted fields designated as the humanities. Unlike scientists and engineers, humanists have never had available to them a single dependable source of data about their field. The Science and Engineering Indicators, issued biennially by the National Science Foundation, provide information about education and employment over a wide disciplinary range. In the humanities, professional organizations have tried to assemble facts about developments within their disciplines, but the data among fields are generally not compatible since different organizations employ different means of gathering data and different ways of codifying them. You would have a hard time finding out how many undergraduates now major in the humanities, and if you did find out, you could not compare your figure with the number of majors ten years ago, much less twenty years ago.

The American Academy has set out to facilitate the inauguration of a comprehensive system for accumulating and organizing basic information about education and employment in the humanistic disciplines. Figuring out how best to make use of existing data, as well as how to gather new information. It has required the collaboration of men and women from many disciplines: statisticians, social scientists, and humanists – the kind of collaboration that the Academy facilitates. It has also involved many organizations, including the National Science Foundation and the learned societies under the umbrella of the American Council of Learned Societies. And thanks to foundation support and to the leadership of Norman Bradburn of the National Opinion Research Center at the University of Chicago, it is finally happening.

The effort to organize data has proved enormously complicated, but the initial project is now moving toward completion. Professor Bradburn and his assistants are putting together a prototype compilation. It remains to be seen whether the resources will be available to continue updating the available information. This initial version is showing good news and bad news for the humanities. Let me offer a few examples. On the positive side, there turns out to be high job satisfaction among humanities graduates, who believe, by and large, that their education has equipped them well for the work they do. In liberal arts colleges, humanities faculty continue to constitute the most significant portion of all faculty. They also have an impressive presence on two-year college campuses, although most of those teachers do not have Ph.D.s. The humanities has nearly achieved gender parity in its faculty, although in 2004 women still represented less than 40 percent of tenured faculty.

The news about parity, though, is less good than it seems. Although in 2004, 60 percent of doctoral recipients in the humanities were women, the percentage of tenure-track faculty who are women has dropped steadily since 1993. This disconcerting fact means not only that future prospects for tenured women are declining; it also reflects the truth that a large proportion of the increasing group of part-time and adjunct faculty is female.

Most of the bad news apparent so far is fairly predictable. Humanities faculty are the lowest earners in academe, with a median salary over $30,000 lower than the median for faculty in the health sciences. Although job satisfaction among humanities professors is high, they complain about their salaries. The number of undergraduate degrees awarded in the humanities is now close to the 1970s high, but since the total number of bachelor’s degrees has increased, the humanities’ share has diminished, standing far below that of business, for example, which awarded 22 percent of all bachelor’s degrees in 2004. Nonetheless, B.A.s in the humanities remained the third most commonly awarded undergraduate degree.
I would like to begin by expressing the hope that as new Fellows you will take advantage of the unique opportunities offered by the Academy for research and for influencing public policy. The Academy is multidisciplinary, and it is nonpartisan. It can serve as an honest broker for matters of intense and intractable public controversy. A good example is the project that I shall discuss this morning.

This project concerns academic freedom in universities. You may have noticed that universities are now at the center of numerous intense controversies involving issues of academic freedom. I am not now referring to the impact of the present war. I shall not discuss the surveillance of university libraries or the inability of graduate students to obtain visas or the new forms of secrecy that have recently evolved, like the innovative category of information that is “sensitive but not classified.”

Instead, I shall address controversies that are explicitly ideological and that explicitly concern the nature of academic freedom. The Academy has assembled a committee to think about these controversies. The group consists of myself; Geoffrey Stone, a former Provost at the University of Chicago; Jonathan Cole, a former Provost at Columbia; Robert Berdahl, President of the AAU; Nancy Cantor, Chancellor at Syracuse; Larry Kramer, Dean at Stanford Law School; and Pauline Yu, President of the ACLS.

The first subject that this committee addressed is the controversy over “intellectual diversity.” This principle of intellectual diversity has been at the core of much recent debate. There have been legislative initiatives in many states designed to ensure that universities maintain “intellectual diversity” on their faculty.

Of course, in the abstract, diversity may be a good thing. But too frequently the proponents of these initiatives seek to require universities to maintain a faculty that is balanced between political conservatives and liberals. Proponents of these initiatives often cite surveys purporting to demonstrate that the vast majority of certain university departments are registered Democrats rather than Republicans. They believe that the political views of faculty affect their teaching and that therefore universities ought to ensure that their faculty more fairly represent the spectrum of national political views.

I am pleased to report to you that yesterday the Council of the Academy passed a set of resolutions that were drafted by our committee on academic freedom. There are five points. The first point reads:

It is a clear violation of academic freedom to evaluate faculty or students based upon their political beliefs or affiliations.

The third point states:

Academic freedom requires, among other things, that individual faculty be evaluated by experts in their field based upon the quality of their scholarship, teaching, and institutional contributions. Academic freedom requires that this evaluation reflect both rigorous professional standards and the profound value of open intellectual inquiry.

The fourth principle declares:

The application of professional disciplinary standards by experts in the field allows ample room for intellectual debate within the academy; it is compatible with the robust expression of different perspectives. Although colleges and universities may properly seek a faculty of widely varying views, they may not pursue this goal by considering political beliefs or affiliations.

(If you are interested in reading the complete statement of principles, you may find it on page 25 in this issue of the Bulletin.)

We believe that these resolutions provide a basis on which questions of “intellectual diversity” can be addressed in a manner that is consistent with academic freedom. We hope to encourage disciplinary societies to endorse these resolutions. We hope to use these resolutions to appeal to universities affiliated with the Academy to crystallize consensus among educational leaders about relevant principles of academic freedom.

The next step in our project will be to address more complicated issues. You may be aware of the many controversies in which it is contended that universities “indoctrinate” rather than “educate” their students. We hope to explore the principles of academic freedom that are relevant to such controversies. We mean to ask how education can be distinguished from indoctrination.

There is no doubt, for example, that most contemporary professors of biology teach evolution rather than intelligent design. Most professors of biology do not even refer to intelligent design. This is not uncontroversial in an era when presidential candidates profess to believe in intelligent design rather than evolution. We must ask, therefore, whether it would be a violation of academic freedom to require biology professors to offer a “balanced” presentation of these politically contentious matters.

In current debates it is commonly asserted that teaching that is not “balanced” improperly indoctrinates students. But this assertion requires analysis. If I am teaching Kant, for example, must I expose my students to the competing views of Bentham and Hume? Of the indefinitely large number of ethical views that “compete” with Kant, which ones must a professor teach in order to offer her students a “balanced” presentation? Would it violate academic freedom if a state legislature, or if the board of trustees of a private university, were to require a philosophy professor to teach Kant in a “balanced”

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way? What are the precise circumstances in which a lack of balance suggests indoctrination? When and how may professors in a classroom properly offer students only one point of view about matters that are political controversial?

Some recent legislative initiatives take a different tack and seek to prohibit professors from creating a “hostile educational environment.” Many important questions of academic freedom are raised by such initiatives. Would it violate academic freedom if a state were to pass a law prohibiting professors from criticizing the views of their students, if such students were to experience this criticism as creating a hostile environment? If your instinct is that such laws would infringe on academic freedom, can your instinct be reconciled with civil rights legislation that prohibits the creation of a “hostile environment” based upon race or sex?

Recent debates raise many such difficult questions. The nonpartisan, disinterested, and multidisciplinary environment of the Academy is an ideal environment in which such questions can be calmly and dispassionately evaluated. With some luck, the efforts of the Academy may influence the tenor and outcome of current disputes about the nature of academic freedom.

Panel III: Challenges for Social Policy and American Institutions
The Independence of the Judiciary
Linda Greenhouse
Supreme Court correspondent, The New York Times

Our project on the Independence of the Judiciary is in a transitional phase. In fact, it began as something else: we originally called it Congress and the Court. The project began in the late 1990s when we discerned that something quite unusual had happened in the relationship between the Supreme Court and branches of our government. We convened a series of closed-door meetings among the stakeholders in this issue – namely, Supreme Court Justices, a number of whom are members of the Academy, and key players on the Hill – to facilitate a conversation, in the hope that discussion would lead to understanding. Eventually the crisis eased, and the Court stopped doing what it had been doing.

But another problem emerged: threats to the independence of the judiciary, both at the federal and state level. The Academy has held a series of meetings about these threats; the most recent was held last April in Washington, D.C., when the Academy and the American Philosophical Society, our sister society from the founding period of the country, had its first-ever joint meeting. Sandra Day O’Connor, retired Associate Justice of the U.S. Supreme Court; Judith Kaye, Chief Judge of the State of New York; Charles Geyh, Professor of Law at Indiana University; and I participated in a panel discussion on judicial independence. We are currently working with Georgetown Law School on a publication that will touch on various aspects of this issue.

To give you a sense of the range of issues that we are exploring: Federal judges believe that the matter of compensation is a major threat to the independence of their branch. State court judges feel this too. In the middle of our panel last April, Chief Judge Kaye had to keep her cell phone on because of a crisis in the New York legislature concerning the passage of a pay increase for judges. The New York judges ended up suing the state to get more money. Last fall, a group called J.A.L.L. 4 Judges sponsored a referendum that would have imposed criminal liability on judges for making “wrong decisions.” Fortunately it failed.

These issues would benefit both from public conversation and scholarly inquiry, as well as the Academy’s ability to bring together people who do not usually have a forum to talk to one another. That is the premise of our project on the Independence of the Judiciary.

The Media in Society
Loren F. Ghiglione
Richard Schwarzslose Professor of Media Ethics, Northwestern University

In 2005, the Academy initiated a study of the news media, with funding from the Annenberg Foundation Trust at Sunnylands. The project first focused on informing the public and influencing policymaking in two areas: science and technology, and business and economics.

The Academy convened two groups. One, made up of scientists, science journalists, and academics, is chaired by Donald Kennedy, President Emeritus of Stanford and Editor-in-Chief of Science, and Geneva Overholser, former Editor of the Des Moines Register and now the Curtis B. Hurley Professor in Public Affairs Reporting at the Missouri School of Journalism. The study is exploring how the news media report science and technology. The other group includes advisors Alan Blinder and Alan Krueger, economists at Princeton University, and Norman Pearlstine, Senior Advisor of the Carlyle Group and former Editor-in-Chief of Time, Inc. This study is examining the reporting of business and economic policy issues. Within the next year, both study groups will prepare final reports,
It is unclear what the future media landscape will look like, except to say that it will be digital and different.

with recommendations for improving reporting in their respective areas.

Common themes have emerged from the two study groups. First, changes in technology, coupled with changes in patterns of news consumption and advertising, are eroding the income sources that have long sustained mainstream media. Second, these changes are affecting how the public receives information and how reporters gather and disseminate news.

It is unclear what the future media landscape will look like, except to say that it will be digital and different. As an outgrowth of the two study groups, the Academy convened experts in journalism and the media to consider “the future of news,” with programs in New York and Washington, D.C. As a senior scholar in residence at the Academy this summer, I was invited to fashion a broader, longer-term Academy project.

The questions that might be addressed by such a project are of such urgency and enormity that they would benefit from examination by Academy members in many disciplines and fields. For example:

- What can historians, scholars of literature, and others in the humanities and arts tell us about past technological, institutional, human, and cultural change as well as the possible effects of current change and future change on journalism and the dissemination of news?
- As the news media, once society’s gatekeepers, learn to live with the greater transparency of the Internet, what can we learn from philosophers and ethicists about how to increase the accountability and credibility of all those who present news?
- What can psychologists, psychiatrists, and researchers tell us about human behavior that will help the news media more effectively present accurate, fair, in-depth, and in-context information while also satisfying the public’s expectation for speedier, click-of-the-button access to that information?
- Given the Academy’s current focus on business and science reporting, can experts in computer sciences, technology, business, public policy, and philanthropy help redesign existing nonprofit entities or invent new ones to guarantee the future transmission of essential news, however complex? Can changes in government policy stimulate the availability of necessary news without threatening First Amendment freedoms?

Given time constraints, I will mention only three Academy initiatives that might help to answer these questions and others:

1. Research. The Academy’s Visiting Scholars Program selects seven to eight postdoctoral scholars and junior faculty each year. Since the Visiting Scholars’ offices are normally vacant from mid-May through August, they could become a temporary home for researchers addressing questions about news in a digital-age democracy.

2. Studies. Building on its strength as a convener of multidisciplinary groups, the Academy could form teams of news practitioners, scholars, and other experts across the disciplines to tackle multyear projects. A team from history, literature, the arts, and other fields might, for example: conduct public presentations and conferences – with Web streaming for schools nationwide – about the impact of changing technology; produce books about the future of news and democracy (and offer free electronic versions); develop modules to invigorate the teaching of media history; stimulate the teaching of news literacy to nonjournalism students, who are increasingly amateur cell-phone producers as well as consumers of news; or create a website that invites bloggers, editorial writers, broadcasters, and the public to participate in a nationwide conversation about the impact of new technology on the news.

3. Evaluations. The Academy could sponsor evaluations of high-profile news media, both local and national, to examine their news performance, independence, and ethics. These evaluations, presented in print, audio, and video formats, could inform the national discussion about the role of the news media today and tomorrow.

I hope the Academy, with the help of foundations and you, will be able to undertake one or more of these initiatives. The future of news essential to a free society deserves the Academy’s attention and intellectual leadership.

Leadership and Professional Responsibility
Gerald Rosenfeld
Deputy Chairman, Rothschild North America; Clinical Professor of Business, New York University

A number of years ago, Martin Lipton and Larry Sonsini, corporate lawyers, and Jay Lorsch, management scholar at the Harvard Business School, helped the Academy launch a study that was stimulated by the corporate scandals and corporate failures of the early 2000s—the Enron, WorldCom, and other well-publicized situations. The study focused largely on the role of gatekeepers.

This project will focus on professional responsibility, and how it interacts in the business and corporate world as well as how it interacts in the training of young professionals across the academic community.

- namely, lawyers, accountants, corporate directors, regulators, investment bankers, and business journalists – and how they interacted in those corporate failures. The Academy convened several meetings, resulting in the publication Restoring Trust in American Business. The book has had a significant influence on a number of universities as well as on teachers of the gatekeeper professions.
The project is now moving into a broader study of the professions. It will focus on professional responsibility and how it interacts in the business and corporate world as well as how it interacts in the training of young professionals across the academic community. We welcome input from Fellows interested in this subject. We hope our study will be of benefit to emerging professionals, teachers of emerging professionals, and to the people who currently work across disciplines.

Rakesh Khurana
Associate Professor of Organizational Behavior, Harvard Business School

The ability of the professions, and especially the professionals, to self-govern their occupations is increasingly under question. The Academy’s initial study in this area highlighted the importance of professional responsibility in business. One of the themes that came out of our study was a systematic decline in the status and nature of professions, especially business, law, journalism, accounting, and the like. In our book, we learned that terms such as professionalism have become economically untenable models for many occupations. Some contributors felt that law firms should no longer be seen as professional organizations; they are institutions organized around a market logic. Absent an energetic response by professional leadership and professional schools, we think there is the potential for a sudden collapse of a profession in a single generation, much as we saw with auditing: a highly regarded occupation, once guided by a professional ethos of serving the public interest, lost its status overnight as a consequence of accountancy’s weakened professional ethos.

While many people like to think of business and management as a profession at the same level as law and medicine, they do not fall into the same category. Another theme that emerged from our study, and this is a more complicated issue, is that while many people like to think of business and management as a profession at the same level as law and medicine, they do not fall into the same category. If we think about professions as having an agreed-upon body of knowledge; a commitment to use that knowledge to advance societal interests before private interests; and a capacity for self-regulation, which includes oaths, licensing, and certification exams, it is clear that you cannot apply those criteria to the many people who are now coming out of business schools. Lacking a better term, there has not been much work done on what we call the “protoprofessionals” – executives, boards of directors, investment bankers. While this group may claim to have a status equivalent to that of doctors, lawyers, or scientists, those claims are often not reciprocally organized insofar as a commitment to put society’s interests ahead of personal interests, nor do these protoprofessionals have the institutions that really give them the hallmarks of a profession. How does this affect what is taught in business schools? What impact does it have on what is taught in law schools? How do these protoprofessions stand up against the professional institutions that I just mentioned, especially when profit goals often replace the obligation to the client or to the public?

Our universities, especially our professional schools, bear some responsibility in hastening the devolution of some of these professions. While the professional schools may be the source of the trouble, they may also be part of the solution. The knowledge and training necessary to reinvigorate the professions exist in these schools. Without their initiative, we will not be able to train a generation of students with these professional values. This is an ideal project for the Academy because it is messy, big, politically tinged, and culturally charged. For an untenured faculty member, it is a model project to undertake.

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Statement on Academic Freedom

An Academy study group, cochaired by Jonathan R. Cole (Columbia University), Robert C. Post (Yale Law School), and Geoffrey R. Stone (University of Chicago), drafted a statement on academic freedom as part of a project on challenges to higher education. The project focused on calls for intellectual diversity and the challenges such demands pose to traditional notions of academic freedom. The preamble and statement (reprinted below) were adopted by the Council of the Academy and distributed to academic leaders throughout the country. The Study Group also includes: Robert M. Berdahl (Association of American Universities), Nancy E. Cantor (Syracuse University), Larry D. Kramer (Stanford Law School), and Pauline Yu (American Council of Learned Societies).

Preamble

Citing surveys that “increasingly reveal ideological imbalance in the classroom, evidence of politicization, and public concern over these issues,”1 groups such as Students for Academic Freedom and the American Council of Trustees and Alumni have sponsored legislative initiatives in Congress and in at least 24 state legislatures to “break the liberal hold on academia”2 by redressing the “marked political imbalance among college faculty.”3 In essence these initiatives seek to promote “intellectual diversity”4 among college faculty by requiring institutions of higher education to maintain a proper balance between faculty who are politically conservative and politically liberal.

In response to these initiatives, the American Academy’s Initiative on Higher Education convened a study group to evaluate such legislation in light of basic principles of academic freedom. These principles hold that faculty should be judged on the professional merit of their work and not on their political affiliation or outlook. The study group has drafted a statement of basic principles. It hopes that the adoption of this statement by the Academy and other academic institutions, professional associations, and learned societies will help to counter legislative initiatives that threaten to undermine academic freedom on campuses. The Academy applauds all leaders in higher education who are willing to speak out with their boards, their faculty, their students, and their alumni wherever and whenever principles of academic freedom are threatened, and it has drafted this Statement of Principles in the expectation that it might be useful for this purpose.

Statement of Principles

1. It is a clear violation of academic freedom to evaluate faculty or students based upon their political beliefs or affiliations.5

2. The principle of academic freedom is at the very core of American higher education. It is the indispensable condition for colleges and universities that seek to expand the domain of knowledge. Academic freedom enables scholars, researchers, teachers, and students to pursue their curiosity in whatever direction it leads them. Academic freedom promotes scholarly competence and achievement; it establishes open intellectual inquiry; and it has produced the extraordinary insights and discoveries that are the hallmark of American higher education. Academic freedom fosters scholarly and scientific innovation by protecting those who challenge orthodoxies. It is the responsibility of college and university trustees, administrators, faculty, and students to respect, preserve, protect, and defend academic freedom.

3. Academic freedom requires, among other things, that individual faculty be evaluated by experts in their field based upon the quality of their scholarship, teaching, and institutional contributions. Academic freedom requires that this evaluation reflect both rigorous professional standards and the profound value of open intellectual inquiry.

4. The application of professional disciplinary standards by experts in the field allows ample room for intellectual debate within the academy; it is compatible with the robust expression of different perspectives. Although colleges and universities may properly seek a faculty of widely varying views, they may not pursue this goal by considering political beliefs or affiliations.

5. In the event that there is reason to believe that discrimination among faculty on the basis of their political beliefs or affiliations has occurred, the proper remedy is through procedures established by the institution for the protection of academic freedom. It is the responsibility of colleges and universities to have in place appropriate procedures to protect and preserve academic freedom, and it is the responsibility of administrators and faculty to implement these procedures in a fair and responsible manner.


4 Ibid., 1.

5 For secular colleges and universities, it would also be a clear violation of academic freedom to evaluate faculty or students upon their religious beliefs or affiliations. This principle may not apply, however, to colleges and universities with overtly theological missions.