

Projects and Studies

At a morning briefing for new members, held on October 11, 2008, leaders of current Academy projects presented updates on their work. Their remarks appear below.

ARISE: Advancing Research in Science and Engineering

Neal Lane

Malcolm Gillis University Professor, Senior Fellow at the James A. Baker III Institute for Public Policy, and Professor in the Department of Physics and Astronomy at Rice University.

As cochair of the Academy's Initiative for Science, Engineering, and Technology (SET), I would like to discuss a report we recently issued on the need to develop funding policies and programs to support early-career scientists and high-risk, potentially high-reward or transformational research. The report, entitled *ARISE: Advancing Research In Science and Engineering*, has received widespread attention in government and in the media.

The purpose of the Academy's SET Initiative is to identify areas of concern in science and technology policy where the Academy's influential voice can make a difference. Our first study focused on the modes used by federal agencies to fund research. We chose not to address how much money ought to be spent – a lot has been said about that matter – but rather how the funds should be allocated. The objective was to complement the findings of the National Academies' report, *Rising above the Gathering Storm*, which dealt with the need for additional federal investment in scientific and technological research and education by the federal government and other policy actions to lower existing barriers to innovation by U.S. industry. The Academy study identified issues that the committee felt were important no matter what the funding levels were.

The project's study committee, chaired by Nobel laureate and President of the Howard Hughes Medical Institute Thomas R. Cech, included scientists and science-policy experts from academia, industry, government, and the private sector. I served on the committee. A headline for the report might read: "If this country really expects to stay in a leadership position in the next century, we need to invest in the people and the ideas to make that happen." It fits well with the Academy's motto: Cherishing Knowledge, Shaping the Future.

I would like to tell you briefly what we had to say about each of these topics and what we felt should be done. In the case of early-career investigators, it is obvious why they are important: they are the future and they face ever-increasing barriers that are much higher than those many of us faced when we were starting

out. Here are some indicators of what lies ahead for young scientists. First, the average age of the recipient of the first competitive National Institutes of Health grant is over forty-two years. Many young people are finding that by the time they get their first competitive grant and have a chance to do anything with it, the tenure clock has run out. This is terribly wasteful in terms of the talent and money invested by the federal government, by universities, and, sometimes, by the parents and spouses who support these young investigators.

Another indicator, the success rate for first-time applicants (and now I am still talking about National Institutes of Health) has declined from 86 percent in 1980 to 28 percent in 2007. The National Science Foundation has had a similar experience. Too much time is spent preparing grant proposals and, if rejected, the



Selected leaders of current Academy projects: front (left to right): Robert H. Legvold (Columbia University), Patricia Meyer Spacks (University of Virginia), Francis Oakley (Williams College), Bruce Western (Harvard University); back (left to right): David Clark (MIT), John D. Steinbruner (University of Maryland), David E. Bloom (Harvard School of Public Health), Steven E. Miller (Harvard Kennedy School), Neal Lane (Rice University), Robert I. Rotberg (Harvard University), Leslie Berlowitz (American Academy), Jesse H. Choper (UC Berkeley School of Law), Scott D. Sagan (Stanford University)

second and third amendments to the original proposals. That time could be spent more productively on research.

The ARISE report makes a number of recommendations to federal agencies, foundations, and universities, including the creation of target grant and seed funding programs for early-career scientists as well as reconsideration of promotion and tenure policies. In addition, the report advocates for the systematic tracking of demographic data about grant applicants on a government-wide basis: the current non-standardized track-

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ing hinders efforts to determine how well we are supporting younger scientists. We also suggest that federal agencies and universities pay special attention to women and their childbearing needs.

In my view, the question of support for high-risk, high-reward research is less straightforward, but based on our discussions at federal agencies and our interviews with people in the research community, it is clear that many years of tight budgets and conservative thinking within funding agencies have created a bias against potentially transformative research. Scientists, both young and established, are often told, "If you don't know it's go-

ing to work, don't put it in your proposal, because it won't get past the reviewers." If America is to remain competitive in the new global environment, we must address this issue through special programs focused on bold research ideas, a strengthened peer-review system, and greater support for the program officers who are making key decisions. These program officers need to be active in the research community, attending conferences, visiting laboratories, and staying current in the field. As many of us who have worked in federal agencies know, the budgets to support these activities have been squeezed over the years and are simply too small.

Now some of you may be asking yourselves, "Why is this Academy focusing on these issues?" This is a very good question. We think this study is an excellent example of something this Academy can do by building on its multidisciplinary membership, including fields and professions that reach far beyond science, engineering, and research. Moreover, the Academy's acknowledged status as a neutral party without an ideological agenda – not beholden to government or corporate funders – gives us a special credibility.

Since June, when the Academy released the report, there have been a number of outreach efforts. We have sent the report to more than 6,000 academic, government, industry, and foundations leaders as well as to members of the media and, of course, all of our Fellows. We've been on the Hill, and committee members have conducted briefings at a number of government agencies. There have been more than 135,000 hits on the Academy's website that includes the full text of the report and a summary of the findings.

A number of actions have been taken: we don't take credit for them, but they do dovetail with what we are talking about. The National Institutes of Health has made significant changes to enhance and improve its peer-review system. NIH has also announced a new program of first grants to support high-risk, high-reward research called the EUREKA program. In addition, the National Science Foundation has developed a transformative research initiative.

The next steps are implementation. Many fine reports are written and end up on the shelf. So we need to spread the word, finding anybody who will listen. A new executive branch of government and a new Congress are about to take office. We are actively working to ensure that this report will be part of the transition material for the new administration and that it will have a significant impact in the years to come.

The Global Nuclear Future

Steven E. Miller

Director of the International Security Program at the Belfer Center for Science and International Affairs at Harvard Kennedy School.

The global nuclear order is changing before our eyes. Existing nuclear power programs are being expanded while elsewhere around the world there is a big appetite for adding nuclear power to the energy mix. The upsurge of interest in nuclear power is driven in part by growing global energy demand and serious worries about long-term fossil fuel costs. Further, in many places concerned about global climate

change, nuclear power – the most proven large-scale alternative to fossil fuels – looks more attractive and even more necessary than in the past. Rapid expansion of nuclear power may be necessary if greenhouse gas emissions from use of fossil fuel are to be significantly reduced.

All of this momentum toward nuclear power leads many people to believe that we are on the edge of a so-called nuclear renaissance. But what are the implications of the nuclear world into which we seem to be heading? How can the benefits of nuclear power be obtained while minimizing the risks and potential problems associated with nuclear technology? How can a world in which nuclear technology is both more abundant and more widely spread be safely managed? Moreover, the spread of nuclear power has inherent weapons implications, given the dual-use nature of many of the sensitive nuclear technologies. How can the risks of nuclear proliferation be contained as nuclear power spreads? These are the big questions we are addressing in our project.

With generous support from the William and Flora Hewlett Foundation, we are conducting this study under the auspices of the Academy's Committee on International Security Studies. Three strands of work are being pursued through commissioned research and a series of workshops. First, there is the question of safety and security: the need to ensure that future nuclear facilities meet desirable standards of safety and security to minimize the risk of accident and of terrorist abuse. This concern is particularly evident in the case of nuclear newcomers, places that currently have a declared appetite for nuclear power.

er but do not have an existing legal, technical, or regulatory infrastructure for managing nuclear power.

A second strand of work centers on the management of the nuclear fuel cycle. At the front end of the cycle, we are dealing with fuel supplies, various multilateral schemes, and problems of

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fuel assurances. Above all, we are trying to discourage the spread of the kind of technologies that are proving so troublesome in the case of Iran: if you get national enrichment capabilities, you inherently are providing a weapons option for that state. At the back end of the fuel cycle, we have a waste disposition problem. These wastes are very long-lived, hard and dangerous to handle, and costly to deal with, but they also

have weapons implications because the spent fuel rods contain plutonium, and, if separated, they can help produce a bomb.

The third strand of our work deals with the international nonproliferation regime by examining the adequacy of existing arrangements for enforcing the separation between civilian nuclear power and nuclear weapons programs. Even if you think that the mechanisms now in place are adequate for today's challenges – and many experts do not think that is the case – we want to consider whether these arrangements will be adequate for a future in which there may be many more nuclear power reactors spread across many more countries with a much larger burden of transparency and inspection imposed on the international order.

The failure to meet that challenge could impinge dramatically on the prospects for utilizing nuclear power in the future. A nonproliferation catastrophe will have enormous ripple effects on the global nuclear power industry. And if you think, as many increasingly do, that nuclear power simply has to be part of the mix for addressing global climate change, then successfully addressing the nonproliferation challenges related to the expansion of nuclear power is a real imperative, not only from a security point of view, but from an energy and climate change point of view as well.

All three strands of our work are driven by the belief that we are entering a world that will be to some large degree unlike the nuclear past. There will be more players, more reactors, more challenges, and also more risks and worries that we will attempt to hold at bay with recommenda-

tions about what arrangements in the future may be best for limiting risk.

One final point: we held our first conference here at the Academy in May 2008. Participants included a remarkable set of interdisciplinary, and even inter-professional, individuals such as physicists, political scientists, economists, nuclear engineers, material science specialists, and industry specialists. At that meeting, a representative of the nuclear power industry showed a slide consisting of concentric circles. He put question marks in the inner circles and explained they represented the challenges that he saw for the global expansion of nuclear power. The two biggest challenges were financial and technical constraints that inhibit the ability to expand nuclear power as rapidly as might be desired.

On the outside ring were problems that, in his view, have been solved, including physical security – the antiterrorism problem – and the nonproliferation problem. He maintained that we have standards, we have rules, and we are following the rules. His comment created an interesting dialogue because those who deal with proliferation said, “No, you don't understand, *these* are the biggest problems,” while the representatives from industry argued, “No, we're dealing with those as effectively as we can.” It was clear that the people in that room do not talk to each other nearly as often as they should. We all get “stove piped” into our own professional disciplines and our own subfields but the Academy's project offers us the opportunity to cross those boundaries.

The Global Nuclear Future

Scott D. Sagan

Professor of Political Science and Codirector of the Center for International Security and Cooperation at Stanford University.

Our project on The Global Nuclear Future is still at a very early stage of development. Here I will lay the groundwork by discussing very briefly the global status of nuclear weapons and nuclear power development today, and how this influences the framework for our project. The three figures presented below provide a graphic display of both successes and challenges that we face.

Looking at nuclear weapons proliferation in Figure 1, there is both good and bad news. Historically, the number of nuclear states has been steadily rising, although not as rapidly as many predicted in the 1960s. Indeed, there have been a number of important nuclear reversals, states that acquired nuclear weapons and then gave them up. Belarus, Ukraine, and Kazakhstan inherited their weapons after the collapse of the Soviet Union. They later were persuaded to ship them back to Russia where some were put into storage, and others were dismantled. The materials in some of the dismantled weapons from the Soviet stockpile were downblended and then shipped to the United States for use in nuclear power plants; much of the energy in the state of Illinois, for example, is produced from nuclear materials that originated in Soviet nuclear weapons. South Africa also had a small number of nuclear weapons but gave them up just before the collapse of the Apartheid regime, keeping its

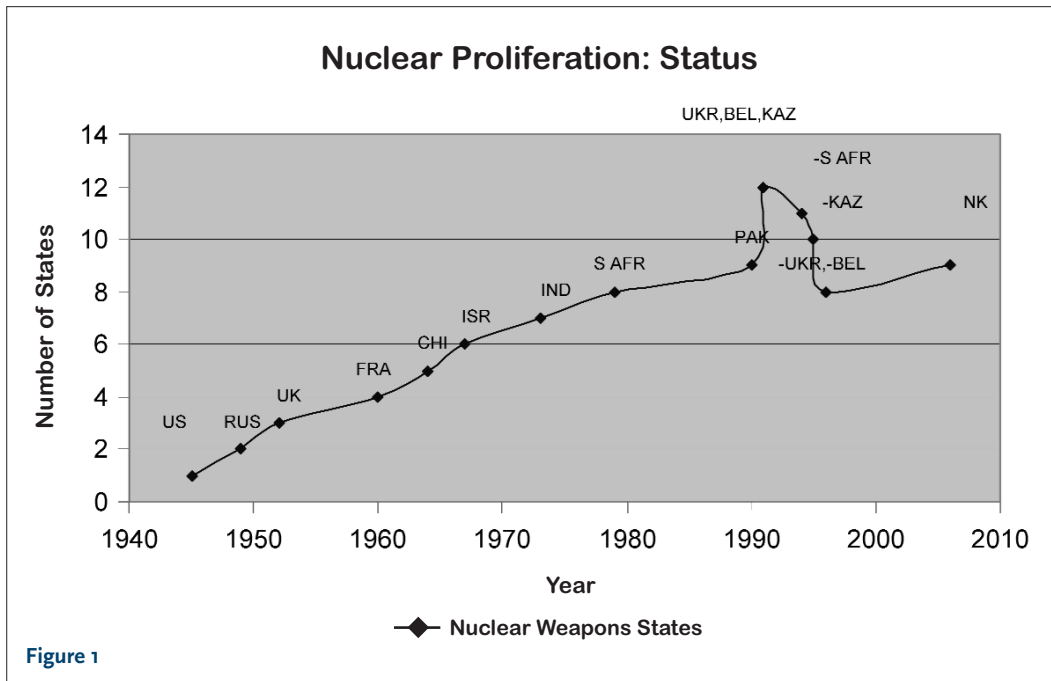


Figure 1

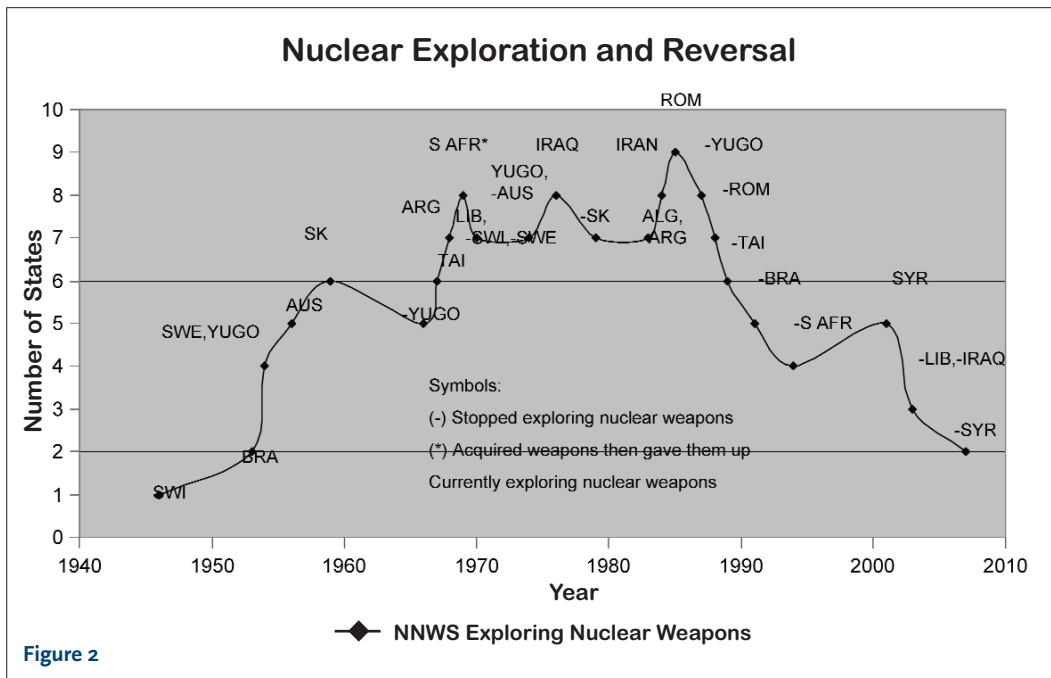


Figure 2

highly enriched uranium in a facility called Pelindaba under full IAEA (International Atomic Energy Agency) safeguard inspections. This positive disarmament record is heartening, but should not lead us to ignore how many others states have started but not completed their own nuclear weapons programs.

Figure 2 shows over time which states started developing nuclear weapons, when they did so, and when they ended their weapons programs. This figure provides only an estimate of this hidden history of proliferation attempts, because governments often try to keep any nuclear weapons research secret from the outside

world. Indeed, this figure had to be amended just in the last year when we discovered that Syria was secretly starting a nuclear weapons program but refusing to inform the IAEA and creating disguises for its reactor. The key Syrian facility was attacked in the summer of 2007 by the Israelis, and IAEA investigators remain

concerned that Syria is secretly concealing its nuclear weapons development work.

In the more complicated Figure 3 I show the number of states that have developed nuclear power and/or nuclear research reactors and therefore have some experience in dealing with nuclear technology. Some of the research reactors use highly enriched uranium, although the global clean-up program is trying to switch all of them to low enriched uranium in order to reduce terrorist risks, since highly enriched uranium can also be used for a bomb. This figure also shows countries that are engaged in uranium enrichment or plutonium reprocessing, either of which produces serious proliferation and security risks. If you *enrich* low-enriched uranium to fuel a power plant, for example, you can easily also make highly enriched uranium for nuclear weapons. In addition, the spent fuel rods coming out of a power reactor have plutonium in them, and if you have an ability to reprocess, you can turn that plutonium into weapons-grade material for a nuclear bomb. One serious problem we face in a world of expanding nuclear power, and demand for nuclear fuel, is how to control the fuel cycle so that more and more states do not develop enrichment and reprocessing plants, which would make such states “latent” nuclear weapons powers.

In Figure 3 you can see that the gap between countries that are using nuclear research reactors or power reactors for civilian, legitimate, treaty-acceptable purposes and those that have nuclear weapons is very significant. Our project focuses on how best to maintain that gap and potentially increase it.

Most specialists predict at least some continued global growth of nuclear power, and most predict some degree of spread of nuclear power to new countries, states that may not have highly developed regulatory systems or advanced security programs to prevent theft or diversion. Experts disagree, however, on the rapidity and ultimate level of growth in nuclear power for both economic and environmental reasons: the massive capital costs for the construction of nuclear reactors are all frontloaded, for example, and some countries' publics are highly opposed to nuclear waste storage. At the very time that the interest in nuclear power is increasing around the world, however, we have great challenges with the nonproliferation treaty (NPT). How can we best ensure that as nuclear power expands around the world, it does not inadvertently increase the danger of ma-

terials falling into the hands of terrorists or new countries dropping out of the treaty and using their new technology and new understandings to develop nuclear weapons? What kinds of new cooperative arms control measures could be negotiated to reduce these risks? The Global Nuclear Future Initiative is designed to bring together scholars and practitioners from both the nuclear power and nuclear weapons nonproliferation communities to answer these important questions.

Reconsidering the Rules of Space

John D. Steinbruner

Professor of Public Policy and Director of the Center for International and Security Studies at the University of Maryland

This project is examining the global security implications of U.S. policy in space. In recent years, the United States has made a disproportionate investment in military capability, creating a global power capacity that no other country can match or is anywhere close to matching. In terms of military operations, we really are in a league by ourselves.

Under the Bush administration, this established advantage has been associated with the implied intention to build a degree of superiority sufficient to allow the United States to eliminate any

serious threat with preemptive attack rather than by relying on deterrent effects. That intention has been most explicitly stated in our space policy, where a series of officially pronounced documents formulate an aspiration to utilize space for national advantage and deny a similar capability to any other country. This violates established legal rules, and it is not feasible for technical

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and economic reasons, which are well reviewed in the first of several monographs issued by our project. Physically and economically, we are not going to be able to dominate space in the way these documents claim.

The extensive effort to pursue this aspiration, however, will reinforce significantly the capacity to engage in highly intrusive long-range attack capability, resulting in a new dimension of military capability with significant implications. That emerging capability is likely to be of concern to other governments, China in particular, and could in-

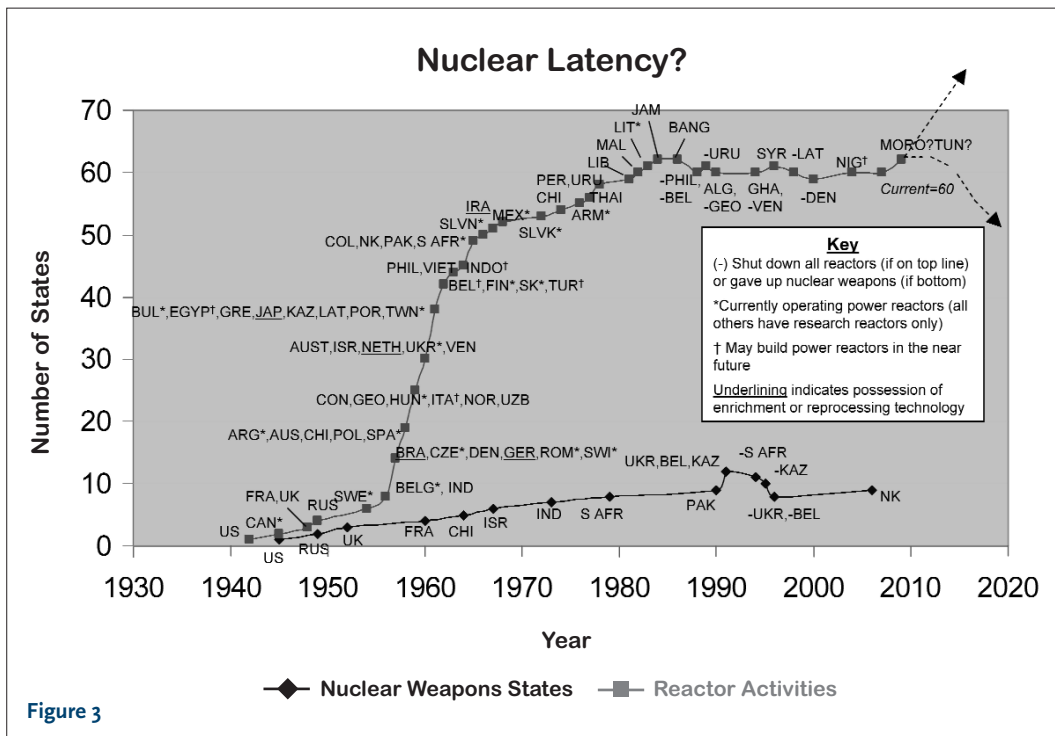


Figure 3

duce preparations to attack U.S. space assets, thereby creating a threat to those assets that would not otherwise exist.

Our assets in space are very valuable, and very vulnerable. In this situation, we argue that it is in America's interests to initiate negotiations designed specifically to prohibit interference with space assets, to set a rule against that, and, more generally, to convey reassurance regarding the responsible use of U.S. military capability.

Many of you may be aware that for 30 years the United States – alone in the world – has refused to negotiate on this subject; in fact, we have refused to contemplate even discussing an elaboration of the rules of space. If you can imagine climbing up and viewing the scene from some emotionally detached perspective, this is bizarre behavior on our behalf, especially since we have an overwhelming interest in establishing protective rules for our assets. It indicates that there is a serious problem in our political system in determining our real interests.

Countering Corruption in Nation-States

Robert I. Rotberg

Director of the Program on Intrastate Conflict and Conflict Resolution at Harvard Kennedy School and President of the World Peace Foundation

This Academy study represents a bold attempt to assess the enormous impact that corruption is having worldwide. Almost nothing strangles growth in the developing world more than corruption, yet the World Bank did not regard it as a serious issue until the 1990s. Peter Eigen, who is involved in our project, almost single-handedly brought corruption out of the closet in 1991–1992 when, after leaving the World Bank, he founded Transparency International. Nothing keeps people hungry more than corruption. Nothing keeps people in the developing world unhealthy and ill-educated more than corruption. Nothing causes more conflict in the world, particularly in the developing world, than corruption. Nothing undercuts good governance more than corruption. And nothing undercuts security more than corruption.

Think for a moment about Congo, Nigeria, Somalia, Burma, even Russia. The killings in the Niger Delta may be largely the result of corrupt practices in Nigeria. Look at what happened in Burma during the cyclone. One of the principal elements behind corruption is greed – a motivating force that is certainly evident in the developed world but which seems to be more prevalent in new societies than in some older ones. One reason may be the kind of leadership that begets good governance. The difference between Botswana and Singapore, where there is little corruption, and Nigeria,

Congo, Laos, or Burma can be traced clearly to the quality of leadership in these countries.

Our project at the Academy is preparing a book that describes the problems of corruption in the world. It analyzes its causes, prescribes remedies, and concludes with a number of critical case studies of how corruption affects security and the global order. There are chapters on the changing nature and character of corruption, including a discus-

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sion of corruption and human rights and the relation between corruption and health and education. We also consider corruption in the trafficking of humans, drugs, and arms as well as corruption and terrorism and the impact of corruption on the proliferation of weapons of mass destruction.

The book examines the impact of leadership on multinational corporations and on how corporate leadership deals with corruption. There are several case studies. We have two chapters on Nigeria, one focusing on how its people regard corruption; and a second on how corruption is

destroying the fabric of Nigerian society. Papua New Guinea, one of the most corrupt places in the world, and Russia are the subject of the other case studies. The book, now in the editing stage, will be a valuable resource for scholars in international development, international relations, and comparative politics.

U.S. Policy toward Russia

Robert H. Legvold

Marshall D. Shulman Professor Emeritus of Political Science at Columbia University

For four years, the Carnegie Corporation has funded important work in Russian studies and on international relations involving the areas surrounding the Russian state. Recently the Carnegie Corporation grew impatient with the lack of serious, systematic, long-term, and broad-visioned thinking about the U.S.-Russian relationship, which in fact has become the victim of years of fragmentary thinking that focuses on only a limited but important range of issues, such as horizontal proliferation, loose nukes, or oil and gas in the Caspian Sea area. For many people, Russia was no longer an issue that required serious thought.

Within the last year, however, Russia has again become central to U.S. foreign policy. In response, the Carnegie Corporation wanted to launch a national effort to re-examine U.S. foreign policy toward Russia, and the question became where to locate such a study. As I became involved in the project, it seemed to me that the ideal location would be the American Academy for the rea-

sons that Neal Lane outlined earlier. It is a national organization, a neutral organization, and an independent organization. Above all, it is rich in human resources representing a diversity of fields and professions.

In terms of the project itself, we set two basic tasks for the participants. The first was to do something that U.S. foreign policy has not done through all the administrations since the collapse of the Soviet Union, and which think tanks, task forces, and commissions have not accomplished – namely to situate Russia in the context of overall U.S. foreign policy priorities. What is the relevance of Russia to the five or six most important international issues currently facing the United States? To what degree is Russia indispensable on any of these issues? In what cases is cooperation with Russia desirable? In what cases is it essentially unnecessary? There are very few areas in which Russian cooperation is unnecessary, including the rebuilding of the alliance with Europe, with whom we have a divide in terms of how we are going to deal with Russia and its neighbors.

Our second purpose is to design a policy that is comprehensive, coherent, and well-integrated across issue areas. Again, U.S. policy has not done this. The task is difficult conceptually, and in policy circles, it has not seemed worth the effort given the down-graded status we assigned to the Russians.

In order to build some perspective on where we want the U.S.-Russian relationship to be five years from now, we need to step back from the current climate, which has been deteriorating for the last three or four years, and particularly since the Russian-Georgian War last summer. We

need to develop a more effective policy that encompasses the difficult questions that lie ahead: from nonproliferation and NATO membership for Ukraine or Georgia to missile defense in Europe around Poland and the Czech Republic. Other issues include oil, gas, and energy, and the dynamics within the Eurasian landmass, including the critical Islamic southern front. These concerns must be embedded in a strategic dialogue that addresses the framing issues of European nuclear security, energy securi-

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ty, and mutual security in and around the Eurasian landmass. And we need to act in a way that will serve the country, not simply by providing a new administration with policy recommendations, but by helping to stimulate a reconsideration of our Russian relations within congressional committees, the media, and world affairs councils.

To undertake its work, our project established three working groups: one at the Carnegie Moscow Center, where a 12-part seminar examined the security dimensions in U.S.-Russian relations, including areas of potential nuclear cooperation; a second in Washington with a six-part seminar centering on the broader is-

ssues surrounding the relationship; and a third, six-part seminar at the Center for Strategic and International Studies on the economic dimension of the relationship. In addition, former U.S. Ambassador to Russia James F. Collins is coordinating conversations with other former ambassadors on the issues of structure in U.S.-Russian relations. The findings of these groups will be used by a steering group, which will design a basic document that addresses the two tasks outlined earlier, as well as a series of more specific documents designed to inform the administration and Congress.

The outreach has already begun. I have worked with the Russian government and with the Russian Embassy in Washington; with the Foreign Relations Committee in the Senate; with key people within the administration, particularly at the State Department; and with both presidential campaigns. I am also working with the new Hart-Hagel Bipartisan Commission on U.S. Policy toward Russia. Outreach is critical because it is going to require a lot of hands to deal with the challenge of redesigning this policy. In this effort, I believe that the Academy project is essentially the bellwether for what will happen nationally.

I would hope that if this project succeeds even marginally, it will inspire reconsideration of other essential elements in U.S. foreign policy, including the U.S.-China relationship, our interactions with the world of Islam, and, of course, questions of global governance that are now being driven so forcefully by the current national and international financial crisis.

The Challenge of Mass Incarceration in America

Bruce Western

Professor of Sociology and Director of the Multidisciplinary Program in Inequality & Social Policy at Harvard Kennedy School

For most of the twentieth century, imprisonment in America was very rare. The incarceration rate was 100 per 100,000, meaning that just one tenth of 1 percent of the population was behind bars on any given day. So why should the Academy convene a group of social scientists, lawyers, and policymakers to study incarceration in America? The answer lies in the tremendous growth of the prison and jail population in this country since the 1970s. That population has grown every single year for the last 35 years, until today the incarceration rate stands at about five times its historic average. In fact, the incarceration rate in America is the highest in the world, exceeding that of Russia and some former Soviet republics and the Republic of South Africa, which are the nearest competitors.

What is the significance of this historically high rate of incarceration? The average level of incarceration is perhaps less important than its distribution across the population. Although imprisonment is very rare in the general population, about 15 percent of men born since the late 1970s will go to prison at some point in their lives if they have never attended college. For young, non-college educated African American men, 35 percent will go to prison at some point. And among young black men who have dropped out of high school, 70 percent will

have prison records. So the experience of young adulthood has been transformed by the growth in incarceration rates in the United States, and the effects of this transformation have been concentrated overwhelmingly among those who have never been to college, and among African Americans in particular.

The prison is a vivid symbol of both social order and social failure. Something fundamental has changed about its role in American society, and we suspect something fundamental has changed within American society as a consequence.

If we think that the astonishing rate of incarceration that prevails today is simply due to very high rates of crime among young men with little schooling, we have to remember that this level of incarceration is entirely new. Prison has only become a normal part of the life course for low-educated young men over the last 10 years. Researchers working on the problem are also finding – as you might expect – that a prison record brings a whole array of diminished life chances. Men coming out of prison have a high risk of contracting an infectious disease and have extremely low earnings and high rates of joblessness. They are unlikely to get

married, but if they do, they are extremely likely to get divorced or separated. Employment and marriage are extremely important, because criminologists find that they are two key steppingstones on a path out of crime. If incarceration is undermining people's economic prospects and disrupting family life, the expansion of the penal system may indeed be a self-defeating strategy for crime control, because we are undermining the conditions that promote criminal desistance.

There is solid evidence that the growth of the prison population has produced real gains in public safety and contributed to falling crime rates, particularly through the 1990s. Poor communities that supply most of the nation's prison population are also most exposed to the risks of serious violence. Given its considerable social cost, though, I think we need to understand the extent to which prison reduces crime. We also need to ask whether prison may undermine public safety in the long run by returning to society large numbers of young men with few prospects, broken families, and the stigma of a prison record.

The Academy is playing a vital role in addressing these questions. The statistics I have quoted point to a deep crisis in our poorest communities, but the situation is largely unknown except to a small group of researchers. When Leslie Berlowitz first came to me with the idea of convening a group to study mass incarceration in America, she presented the opportunity for a broader public conversation about what has largely been a subterranean issue. The convening power of the Academy has allowed us to draw together the best researchers from around the

country, from all the social science specializations, and from the professions as well. The breadth of the Academy's membership will also allow us to enlist artists and humanists in our investigation – a novel experience for me, certainly, and for many in the group.

The prison is a vivid symbol of both social order and social failure. Something fundamental has changed about its role in American society, and we suspect something fundamental has changed within American society as a consequence. Those of us involved in the study are grateful to the Academy for the extraordinary forum that it provides to examine this issue.

The Independence of the Judiciary

Jesse H. Choper

Earl Warren Professor of Public Law at UC Berkeley School of Law

This project, now called The Independence of the Judiciary, originated in 2002 as a study of Congress and the Court. In the early 1990s, the U.S. Supreme Court had begun invalidating a series of federal statutes on the ground that Congress lacked the constitutional authority to enact them. The Violence against Women Act was one; another concerned the application of several federal statutes – including the Americans with Disabilities Act and the Age Discrimination in Employment Act – to state officials, such as state university faculty. This was the first time since the end of the New Deal that the Court had actively rejected the work of one of its coordinate branches.

At the same time, the relationship between the Court and Congress became very contentious because of the politicization of the judiciary attributable to the growing controversy over abortion and the judicial confirmation process in the Senate. A group of scholars from political science and law, the Supreme Court correspondent of the *New York Times*, and several judges, including one who also served as a five-term member of Congress and as White House counsel, thought

This project contributes to our understanding of the concept and practice of judicial independence, which is so vital in our democracy.

it important to have a neutral arbiter, such as the Academy, convene several off-the-record, closed door sessions to assess the deteriorating relationship. A number of Supreme Court justices – as many as five at one of our meetings in Washington – as well as several lower court federal judges and Capitol Hill leaders, such as Charles Schumer of New York, Christopher Shays of Connecticut, and Howard Berman of California, participated in these meetings. We supplemented the sessions with a series of lectures and panel discussions on broader topics affecting judicial independence: the career paths of judges, their compensation and benefits, and the confirmation process.

When we initiated this project, the Court was thwarting Congress, but as our study evolved,

Congress sought to exert its power over the judicial branch by considering measures such as prohibiting federal judges from traveling to meetings at government expense and from citing foreign law, for example. At one point, a group called “JAIL for Judges” sponsored referenda in several states that would have imposed criminal liability on judges for rendering “wrong decisions.” None of them, at least as yet, has passed.

It was apparent that our project would benefit from a wider-ranging discussion that would reach the public. We focused on many of these issues at a joint meeting of the American Academy and the American Philosophical Society held in April 2007 in Washington, DC. Retired Supreme Court Justice Sandra Day O’Connor and Chief Judge of the State of New York Judith Kaye participated in the panel on the Independence of the Courts. In fall 2008, the Academy published an issue of *Daedalus* on the theme of judicial independence. The volume contains an impressive array of essays by such eminent jurists as Supreme Court Justices O’Connor and Breyer, Chief Justice of the Supreme Court of California Ronald George, Chief Justice of the Massachusetts Supreme Judicial Court Margaret Marshall, Chief Justice of the Arizona Supreme Court Ruth McGregor, and Chief Judge J. Harvie Wilkinson of the U.S. Court of Appeals for the Fourth Circuit. Linda Greenhouse, formerly of the *New York Times*, congressional leaders such as Senator Charles Schumer, and several prominent legal scholars and political scientists also wrote for the issue. The collection is a compilation of essays drawn from meetings organized by our project and papers prepared for conferences sponsored by the Sandra Day O’Connor

Project on the State of the Judiciary at Georgetown University Law Center. These perspectives contribute to our understanding of the concept and practice of judicial independence, which is so vital in our democracy.

The Humanities Indicators Project

Francis Oakley

Edward Dorr Griffin Professor of the History of Ideas and President Emeritus at Williams College

When the Academy launched its Initiative for the Humanities and Culture in 1998, one of the first questions those involved had to face was this: Why it is that those of us involved in the humanities seem to find it so very hard to convey to others the significance of what we do, or its importance for the national well-being, or even the status and current condition of the various fields of humanistic endeavor to which we severally bring so passionate a commitment. Not an issue, of course, or set of issues, susceptible in all its formidable complexity to resolution via any single or simple mode of approach. Part of the problem may well be that we ourselves do not fully understand what it is that we do, why we do it, or why it might be as important as we instinctively take it to be. And part of the reason for that particular failure of understanding, or so those of us involved in the Initiative came quickly to conclude, was that the humanities, whether in the primary and secondary school sector, or at the undergraduate and graduate levels, or, for that matter, in American life at large, have long suffered from a debilitating and protracted case of

data deprivation. That is to say, even when those of us concerned with the humanities try to understand the significance of what we do by placing it in some larger context or seeing it from some broader perspective, we find, alas, that we lack the supportive interpretative tools provided by the systematic gathering, assem-

The Humanities Indicators Prototype, a comprehensive portfolio of statistics in the humanities based on existing data, is intended to inform decision-making by educators and national policymakers alike.

bly, organization, analysis, and dissemination of the type of pertinent empirical data long since made available to our colleagues in the natural sciences.

For the humanities, perhaps surprisingly, such data – concerning matters as fundamental as the number of students enrolled nationally in courses devoted to the humanities – we found were either altogether lacking, or were inconsistently assembled, hard to access, poorly disseminated, unwittingly ignored, and routinely underutilized. As a result, generalizations made about the humanities, whether critical or supportive, have tended to be characterized by a genial species of disheveled anecdotalism, punctuated unhelpfully from time to time by moments of cranky but attention-catching dyspepsia.

It was in the hope of dispelling the fog of confusion and misinformation that seemed to shroud humanistic endeavor, whether in relation to what was going on in higher education, or in our schools, or in American society at large, that the Academy, under the aegis of its Initiative for the Humanities and Culture, launched an ambitious effort to build a humanities data infrastructure paralleling the 30-year-old series of *Science and Engineering Indicators* published by the National Science Foundation. The first fruit of this complex and demanding undertaking, which has been prosecuted by a fine team ably led by Norman Bradburn of the National Opinion Research Center, is scheduled soon for release to educational leaders, policymakers, and the American public at large. It is the *Humanities Indicators Prototype*, a comprehensive portfolio of statistics in the humanities based on existing data, intended to inform decision-making by educators and national policymakers alike.

The Prototype, which encompasses some 74 indicators and over 200 accompanying tables and charts, focuses on five subject areas: 1) primary and secondary education in the humanities; 2) undergraduate and graduate education in the humanities; 3) humanities workforce; 4) humanities funding and research; and 5) humanities in American life. Interpretative essays by such scholars as Alan Brinkley of Columbia University have been commissioned for each subject area, and they will provide commentary on the data collected, as well as on data not currently available but of potential value to users. In relation to this last point, and in addition to compiling existing data, the Academy, in collaboration with such hu-

manities organizations as the American Council of Learned Societies and the National Humanities Alliance, has launched a Humanities Departmental Survey in order to gather new data. The results of that survey will also become available before the end of this calendar year and will be incorporated into the Humanities Indicators Project.

As I describe this great effort, I have a sinking feeling that it may come across as dull old stuff, the enervating rattle of some very dry bones indeed. Maybe so. But I would wager that no one who has had the experience, while trying to assess the health of humanistic studies nationwide, of finding himself or herself caught in a crossfire of sweepingly negative attack and outraged by undisciplined response and bereft of any easy access to the array of factual data needed if one is to make what I believe tends now to be called (sometimes disparagingly) a “reality-based” assessment – I would wager that no one who has been in that position is likely to feel anything other than gratitude for the assistance that the Indicators will serve to make so readily available.

Let me give but one illustration. It comes from the “Humanities in American Life” section of the Indicators. So far as the possession of those literacy skills necessary for successful high school completion goes, it seems that the United States at 54 percent comes in near the middle of the international rankings behind such countries as Sweden, Canada, and Australia, but ahead of such other industrialized countries as Britain and Germany. But for those Americans prone to a species of cultural pessimism or, perhaps more accurately, cultural masochism, it may come as something of a surprise to learn

that the nation’s book-reading rates are well above those of many European nations, among them Italy, France, and Germany, though they still fall below those for Britain and Sweden. Similarly, that at 21 percent the United States has one of the world’s highest percentages of highly literate adults. Unfortunately, that is balanced by the fact that a higher percentage of Americans (again 21 percent) demonstrate very poor literacy skills than do people in *any* other Western industrialized nation. In effect, our literacy profile turns out to be alarmingly bipolar.

And so on. It will take a while to assess the measure of understanding we can expect to squeeze out of this first round of Indicators and the degree to which they can provide the needed foundation for a national humanities policy that treats the academic and the public and nonprofit domains as part of a single whole. But the promise, I firmly believe, is great.

All praise, then, to the Academy not simply for taking the initiative on this project but also for demonstrating the tenacity needed to bring it to this preliminary conclusion. In order to do that it had to succeed in generating unparalleled cooperation between humanities organizations and social scientists. And its success in so doing speaks to its unique convening power and its demonstrated track record of commitment to the humanities. All praise, too, to the broad group of donors and foundations who were far-sighted enough to support the initiative, not least among them the William and Flora Hewlett Foundation, the Andrew W. Mellon Foundation, the National Endowment for the Humanities, and our distinguished Fellow John P. Birkelund.

The Evolution of the Humanities

Patricia Meyer Spacks

Edgar F. Shannon Professor of English Emerita at the University of Virginia

Frank Oakley has just told you about one of the important ongoing projects in the humanities, and I want to tell you about another. The Academy has supported humanistic activity for a long time, through one alleged crisis after another. We helped to found the National Humanities Center in North Carolina. Fellows of the Academy testified in support of the establishment of the National Endowment for the Humanities. And, more recently, our Visiting Scholars Program has helped to support young academics in the humanities.

But the enterprise I am most actively involved with at the moment, and the one I want to discuss, is a collection of essays on the humanities that will be published in the Winter 2009 issue of *Daedalus*. It is part of a series of Academy writings about the complex situation of the humanities. In 2006, David Hollinger edited a volume called *The Humanities and the Dynamics of Inclusion since World War II*, a collection of essays about the influence of previously excluded demographic groups on the structure and values of academic institutions. Subsequently I edited an issue of *Daedalus* consisting of essays on the histories of humanistic academic disciplines. A piece by Steven Marcus on the humanities collectively went back to classic times. Gerald Early, writing about African American studies, started just after the Civil War. The essay on philosophy

dwelt heavily on the late nineteenth and early twentieth centuries. In other words, individual writers selected different pieces of history. All, however, demonstrated how disciplines had changed and continue to change in outline and in substance.

When I was President of the Academy, I did a good deal of traveling around the country, meeting with groups of Fellows in various places. More than once a scientist asked me one or another version of the same question: Exactly what do the humanistic disciplines do? They seemed to have the impression that what we mainly did was argue over meaningless subjects.

Exactly what do the humanistic disciplines do? A new collection, entitled “Reflecting on the Humanities,” concerns larger issues about the functioning of the humanities in society.

The essays that we are editing now focus quite directly on what the humanities do. Only two of the contributions concentrate on specific academic disciplines. Most of them concern larger issues about the functioning of the humanities in society. The new collection, entitled *Reflecting on the Humanities*, which Leslie Berlowitz and I are coediting, is intended to provide a kind of sequel to the volume published un-

der the auspices of the Mellon Foundation in 1997: *What's Happened to the Humanities?* That provocative group of statements took a largely negative view of the condition of the humanities at its historical moment. Our *Dædalus* issue is rather more cheerful, although it too calls attention to immediate problems. It considers a broad range of perplexities in essays and in shorter notes. The contributors to the volume include the head of a major foundation, a nonacademic philanthropist who has generously supported the humanities, a university president, a former college president who is sitting next to me right now, a provost, and the director of a humanities center. They write about matters ranging from the digital humanities to recent trends in funding. Several of them make productive use of information emerging from the Indicators that Frank told you about. They consider the humanities and social change, the future of the so-called public humanities, and the role of the humanities in liberal arts colleges as well as some disciplinary questions. Caroline Bynum, writing about what's happening in history now, offers a bold proposal for confronting two kinds of crises: that in academic publishing and the more amorphous one that pressures academics to accomplish ever more in ever less time. In one of the notes, Kay Shelemay argues for understanding certain kinds of performances as acts of humanistic interpretation.

Points of view as well as focus vary widely within this collection, but all the writing demonstrates and asserts the vitality of the humanities. I hope you will read this issue of *Dædalus* and that it will excite you too about the humanities now.

Universal Basic and Secondary Education

David E. Bloom

Clarence James Gamble Professor of Economics and Demography and Chair of the Department of Global Health and Population at the Harvard School of Public Health

In 1990, delegates from 155 countries met in Jomtien, Thailand, and pledged to achieve universal primary education by the year 2000. In the years following that famous meeting, respectable educational advances were made, but it became absolutely clear by the year 2000 that the goal of universal primary education was nowhere close to being achieved. So the international community took a page out of our academic playbooks and very graciously granted itself a no-cost extension. That extension took the form of the Millennium Development Goals, in which world leaders pledged to achieve universal primary education by 2015. Now we are in striking distance of that 2015 deadline, and we see a picture that appears simultaneously good, bad, and ugly.

The good news is that the world has continued to make progress on the primary school enrollment front.

The bad news is that it is becoming increasingly apparent that the world will not meet the 2015 goal. Even if enrollment rates continue to grow at the pace they did between 1990 and 2000, an estimated 118 million primary-school-age children will not be enrolled in school in 2015. That represents one in six of the world's primary-school-age children. And the shortfall with respect to secondary education is even more striking, despite growing recognition of the economic, social, and political importance of secondary

What we need is a concrete blueprint for achieving universal basic and secondary education. Policymakers and business leaders understand that global education is not what it could be and that the deficit is highly consequential.

school. Two hundred seventeen million children of secondary-school age are projected not to be enrolled in secondary school in 2015. That is nearly one in three of the world's secondary-school-age children.

And then we have the ugly news, which involves educational disparities. I am referring here to disparities in both educational access and educational quality between the wealthy industrial countries at one extreme and countries mainly in sub-Saharan Africa and South Asia at the other. I am also referring to disparities within countries, especially those between female and male children, which tend to be especially pronounced at the secondary level.

In recognition of both the challenge and the promise of providing a quality education to all the world's children, the Academy began the UBASE project in 2001. UBASE is an acronym that stands for Universal Basic and Secondary Education. The aim of this rather ambitious project is to explore the rationale, the means, and the consequences of provid-

ing basic and secondary education of quality to all the world's children.

I have been working on this project with Academy Fellow Joel Cohen, who has a base at both Rockefeller University and Columbia University. Over the years, Joel and I have benefited from the unflagging support and encouragement of Leslie Berlowitz, and we have had outstanding assistance from various Academy staff, especially Martin Malin, Helen Curry, Alice Noble, and Paul Karoff. The project has received financial support from the Academy, the William and Flora Hewlett Foundation, and a number of generous individuals.

From the start, our focus has been not on advocacy but rather on taking careful and critical stock of what we already know and what we still need to know, and blending it with as much fresh and out-of-the-box thinking as possible.

We began by dividing our task into reasonably manageable components, and we recruited experts to lead research efforts in a number of areas. We surrounded these experts with working groups that included people from a wide range of geographic, institutional, and disciplinary backgrounds to review and comment on their work.

The project's components include the nature and information content of education data; the history of efforts to achieve universal education and the likely consequences of achieving it; the meaning and measurement of educational quality; the politics of achieving universal education; and the costs of reaching that goal.

With respect to cost, as just one example of a key project finding, estimates made by Paul Glewwe,

Meng Zhao, and Melissa Binder suggest an upper limit of an additional \$70 billion per year for all children to receive a decent primary and secondary school education. At one level, this seems like a rather modest sum. It is less than one-seventh of the U.S. government's annual military budget, and it is only one-fourth of the foreign aid goal of 0.7 percent of the \$37 trillion of gross national income of the developed countries. On the other hand, it is a formidable amount, since foreign aid is substantially below the 0.7 percent target, especially in the United States where sentiment in favor of international aid seems to be drying up by the hour.

The American Academy has been an ideal home for this project. It has enhanced our capacity to convene outstanding working groups, with representation from across disciplines and professions. It has provided neutral territory for discussion and an integrity and independence that add to the gravity of what we produce. And it is also, as you can see, a great meeting venue.

Our work to date has come to fruition partly in the form of two books. The first of these is *Educating All Children: A Global Agenda*, which I coedited with Joel Cohen and Martin Malin, and which was published by MIT Press in 2006. The book lays out the justification for universal basic and secondary education: the moral, ethical, and humanitarian justification; the international law justification; the social justification; the political justification; and the economic justification. And the book argues that UBASE is, in general terms, not impossibly out of reach.

The second book is *International Perspectives on the Goals of Univer-*

sal Basic and Secondary Education, edited by Joel Cohen and Martin Malin. It will be published by Routledge in 2009. The book consists of a series of essays that explores the economic, political, civic, and personal goals of education.

Our hope at this point is that this project will lead to more than just publications, as the dominant issue seems to be changing from whether to do something in the UBASE arena to what to do and how to do it.

What we now need, and what we plan to develop in the next phase of the project, is a concrete blueprint for achieving universal basic and secondary education. Policymakers and business leaders understand that global education is not what it could be and that the deficit is highly consequential. What they increasingly want to know is what we need to do to remedy the deficits and disparities. With this in mind, a new phase of UBASE will consider how to meet the challenge of implementation, which is essentially a matter of design, leadership, management, coordination, and funding. We are hoping to rely on many of you for help with the next phase of UBASE.

As a segue to this next phase, we are assembling a small blue-ribbon advisory committee that will produce by early 2009 a white paper containing a highly accessible summary of our conclusions to date, with a key objective to promote a deeper engagement among U.S. policymakers in the idea of UBASE. Tentatively entitled *EDUCATE*, the paper is using the *ARISE* report that Neal Lane described earlier as its model. Please stay tuned for further updates.

Securing the Internet as Public Space

David Clark

Senior Research Scientist at the Computer Science and Artificial Intelligence Laboratory at the Massachusetts Institute of Technology

Our study began with a recommendation by Fellow Tom Leighton that the Academy assess the state of security on the Internet. I knew that a number of studies and presidential advisory committee reports had examined this issue, and they generally took two forms. One sort of study argues, in varying tones of shrillness and almost equal ineffectiveness, that the sky is falling, something bad is about to happen, and someone should do something. The second sort involves developing research agendas that are left under-funded. I did not think that the Academy should repeat either of these approaches.

When I was asked to participate in this study, I proposed that the Academy take a different approach. The Academy, with its broad fellowship, was an ideal setting to examine the security problem not simply as a technical issue but as a sociotechnical problem that arises from the deep embedding of the Internet in society. However, this approach involves a problem of scope. If you define the scope too broadly, you find yourself in the previous panel where we were talking about corruption, Nigerian scammers, and the Russian mafia: you are boiling the ocean. So we struggled in this space and realized we needed to define the project more narrowly. But as we tried to identify people who had thought about the interplay be-

tween the social issues and the technical issues, we found that there had not been much work done. And so in fact it was time to call for a fresh cycle of research.

While we were deciding how to formulate and scope our effort, we learned that the Alfred P. Sloan Foundation had asked the Academy to look at the relationship between the scientist and the citizen, and had posed a question that I would frame as follows. The usual assumption with respect to scientists and citizens is that the citizen does not understand the scientific issues as well as the scientist, so the role of the scientist is to educate the citizen. When science develops something that might have harmful effects, such as genetically modified food or particle accelerators that produce little black holes, scientists should evaluate the risks and the benefits, explain them, and give comfort to the citizen. The Sloan Foundation said that the conversation should be a two-way exchange. Scientists need to listen as well as educate.

The Academy is exploring this point of view through a series of workshops in different areas, including the impact of genetic biology and the threat of dangerous pathogens. We decided to have a workshop on the Internet, and in particular on the relationship between the citizen and the Internet.

At that workshop we looked at some specific examples of the relationship between the citizen and the Internet. Let me describe one example, namely, the issue of how the Internet manages identity and privacy. You may have seen a *New Yorker* cartoon with two dogs: one is typing on a keyboard and turns to the other and says, "On the Internet, no one can tell you're a dog." Reality is not quite like that. In some respects I would say that on the

Internet we have issues of identity that are completely backwards, which is to say that whenever you want some signal of identity, you don't have it, but when you want some privacy, you don't have that either.

Attribution of security attacks is a serious problem on the Internet. Your computers are being attacked all the time. Unless your computer is up-to-date with all its patches, it is quite likely that somebody has penetrated it and is using it to send spam in your name or perhaps to attack some other computer in Estonia or Georgia. It is important to realize that if someone tried to figure out who had launched the attack, you would be identified as the attacker. Somebody is pretending to be you when they send spam from your computer or use your computer to attack someone else. And it is not only that they pretend to be you. They pretend to be your bank or the government or your employer, and they send you email – called “phishing” – that says: “It's terribly important that you send us your password.”

On the other hand, while you cannot tell who is pretending to be you, other people are monitoring you closely. Folks want to correlate information about everything you do. They want to build a profile of what you like, and, to get to the point, what sort of advertising you might like to see. I don't know whether any of you bother to read your ISP's privacy policy, which is buried someplace in the fine print of your service contract. But in most cases your ISP or its business partner can track every website you go to in order to profile your interests and desires. Google can track every search that you do.

Right now the Internet in the United States is a creature of the private sector. There is currently a movement in place, driven by the United Nations, to take the Internet away from the United States in order to save it. Which is the right path to build the Internet that we, whoever we are, would want to have?

You should be sure to check if your mail service has the right to read all of your email.

So here is a question for you to ponder. Perhaps your ISP or your mail service has made a commitment not to reveal anything about you in a way that can be traced back to you personally (ignoring such issues as subpoenas that can be filed by the recording industry to find out if you are hosting copyrighted music). If your service has made a commitment not to release any of this information, should you object to the fact that it may be building profiles of you? That is a complicated question, and I think it exemplifies the issues that arise when you look at the complex relationship between the citizen and all the activities and technology that make up the Internet. Who decides if you

have the right to keep others from looking at what you do?

I am an engineer. I build things. The National Science Foundation has challenged the network research community to describe the type of Internet we should have in fifteen years. This involves people building things. But what should we build? And who should have a seat at the table to speak to the design? The question that Sloan has asked applies here. How should the point of view of the citizen (the user) be heard?

Who listens to you if you have opinions about the Internet today? Your elected officials listen if you bother to tell them you are upset about something. The Federal Trade Commission listens, and it also listens to people who advocate for the citizen, such as consumer advocacy groups. There are corporate players that care; companies like Google or your ISP want to produce products that you want. They want to persuade you that they are treating you well with the products they have. The set of “experts” who do (or should) listen to the citizen is much broader than just “scientists.”

Let me conclude by returning to the question I posed earlier. If there was a company that you decided to trust, can you imagine a world in which you would let that company look at everything you do in exchange for showing you ads, but only ads that were so wonderful you wanted to watch them? By the way, you might have to watch them. The remote control on your TiVo might not skip over ads, because your TiVo is inserting those ads. But they might give you the TiVo for free, and it would only be ads you wanted to see. Can you imagine wanting that world? I use this example to

remind you that you as users and we as designers are all active players in this process. There are almost no design decisions we take in this space that are value-neutral. So who should educate? Who should listen? Who should decide?

Right now the Internet in the United States is a creature of the private sector. Different countries have very different answers to my questions. There is currently a movement in place, driven by the United Nations, to take the Internet away from the United States in order to save it. Which is the right path to build the Internet that we, whoever we are, would want to have? The history of the Internet and its impact on society from a variety of perspectives will be among the topics discussed at an Academy conference on *The Public Good: The Impact of Information Technology*, to be held in Mountain View, California, on February 28 – March 1, 2009. If any of you will be in the area, we cordially invite you to join us. ■

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