

FAS Public Interest Report

Why Battles Are Won

Below we excerpt with permission Military Power: Explaining Victory and Defeat in Modern Battle by Stephen Biddle. This well-received book asks: What determines the outcomes of battles? Are high technology weapons as decisive as most people now believe? Biddle says no, arguing that the advantages of modern weapons are reduced in the face of tactical countermeasures. Victory is not due to weapons primarily, but to the training, skill, and discipline needed to operate on the battlefield. Dr. Biddle is associate professor of national security studies at the U.S. Army War College Strategic Studies Institute.—Ivan Oelrich*

Projections of future warfare are now dominated by the claim that technology is creating a “revolution in military affairs” (RMA) in which the nature of military power is being transformed. In the future, it is held, long-range precision air and missile strikes will dominate warfare, ground forces will be reduced mostly to

scouts, and the struggle for information supremacy will replace the breakthrough battle as the decisive issue for success. These views misunderstand the relationship between technology and force employment, however. Because RMA advocates misunderstand warfare prior to the 1990s, they misread the 1991 Gulf War as a radical departure; by projecting this mistake forward into the 21st century, they derive a case for a radical restructuring of U.S. defense policy that is neither necessary nor desirable....

Change, of course, is inevitable. But so is continuity. And today’s political debate systematically exaggerates the former and slights the latter. In this book, I argue that major warfare since 1900 has actually seen much less real change than most now suppose and that the future, too, should bring far more continuity than many now expect. In fact, the real causes of battlefield success have been surprisingly stable since 1917-18 and are likely to remain so for at least the first decades of the twenty-first

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Major Grants Expand FAS Contribution to Learning Science

Four major grants announced this fall will help the FAS Learning Federation develop some of the new approaches to learning called for in its national vision or Roadmap.

Four sponsors announced grant awards totaling \$2.4 million over three years: the **National Science Foundation**, the **Department of Commerce**, the **Centers for Disease Control**, and the **Institute of Museum and Library Services**. The funds will support development of three educational games that will engage learners in a series of challenges in a virtual environment and adapt instruction to the learner’s individual needs. Each game project aims at different learners: elementary school students, adolescents, and the professional workforce. Each will use different types

of subject matter—from mass casualty incident response, to immunology, to ancient Mesopotamia.

“These projects will jumpstart the Learning Federation’s implementation of the research plan we developed with our partners over the past two years,” says Kay Howell, who manages the FAS Learning Federation project.

Together these grants represent recognition by competitive granting agencies that FAS is highly qualified to test the approaches outlined in the learning science and technology research Roadmap developed under FAS leadership. These three projects will demonstrate many of the activities planned for DO IT, the Digital Opportunity Investment Trust which FAS and its partners are working to get established (see page 7). The projects

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Journal of the Federation of American Scientists

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About FAS

The Federation of American Scientists (FAS), founded October 31, 1945 as the Federation of Atomic Scientists by Manhattan Project scientists, works to ensure that advances in science are used to build a secure, rewarding, environmentally sustainable future for all people by conducting research and advocacy on science public policy issues. Current weapons nonproliferation issues range from nuclear disarmament to biological and chemical weapons control to monitoring conventional arms sales and space policy. FAS also promotes learning technologies and limits on government secrecy. FAS is a tax-exempt, tax-deductible 501(c)3 organization.

FAS PUBLIC INTEREST REPORT

Fall 2004, Volume 57, Number 4

ADDRESS SERVICE REQUESTED

FAS Public Interest Report

FAS Public Interest Report,
USPS No. 188-100
is published quarterly at:

1717 K St, NW, Suite 209
Washington DC 20036.

Periodicals postage paid at
Washington, DC

POSTMASTER:
SEND ADDRESS CHANGES TO

Public Interest Report
1717 K Street NW, Suite 209
Washington, DC 20036

Annual subscription is \$25/year.
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Archived FAS Public Interest Reports
are available online at www.fas.org
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FAS in the News

August 4 A feature by technology correspondent Clark Boyd on "The World," a **BBC World Service** radio program, explained the potential of the FAS-researched earthquake resistant housing system to help Afghanistan. In the days following, other British media interviewed FAS President Henry Kelly on the topic.

August 29 The **Decatur Daily** (Alabama) quoted FAS Housing Technology Project Manager Rachel Jagoda in a feature story on this housing technology. H.H. "Hoot" Haddock of Florence, Alabama, developed the polystyrene foam construction that FAS has selected for research and demonstration.

September 5 In a feature on the economic effects of a dirty bomb explosion in a major city, the **San Francisco Chronicle** quoted FAS's Jaime Yassif on the challenge of cleaning up afterwards.

September Henry Kelly on British radio, the "Bannister Program," discussed the implications of US policy on stem cell research.

September 15 **Wired News** quoted FAS Learning Federation Director Kay Howell, speaking to the "Games for Health" conference in Madison, Wisconsin. Because of growing investment in instructional games in the health field, said Howell, "we need a vision or plan as to how to make progress."

October 7 **Inside Defense** was among the media covering the release of *Ensuring America's Space Security*, the report of the FAS Panel on Weapons in Space (see page 8).

October 8 The **Washington Times** quoted FAS President Henry Kelly about the strength of U.S. science when the Nobel prize winners were announced.

October 18 Chair of the FAS Panel on Weapons in Space, Leonard Weiss was interviewed for one hour on **Wisconsin Public Radio**.

October 19 *All Spun Up*, FAS's online "tutorial" on gas centrifuge technology and its alleged role in Iraq's attempts to gain nuclear weapons, was republished on FirstWatch, by the Foreign Military Studies Office (FMSO) at Ft. Leavenworth, Kansas.

October The big Japanese daily paper, **The Ashai Shimbun**, quoted FAS President Henry Kelly on the aftermath of a dirty bomb attack.

October 14 **USA Today** broke an investigative story on security lapses at the U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID) biodefense laboratory

at Ft. Detrick, Maryland. FAS Biology Issues Director Stephanie Loranger was quoted.

October 25 During the furor over whether the United States had allowed 377 tons of HMX, RDX, and PETN high explosives to go missing in the Iraq war's aftermath, **CNN** quoted Ivan Oelrich and the FAS Small Arms Monitoring Project.

November 11 "Controlling the Most Dangerous Weapons," an op ed by Matthew Schroeder and Rachel Stohl, ran in the **San Diego Tribune** and **Copley newswire**. It argued "explosives and AK-47s, not anthrax... are sending Americans home in body bags."

November 22 **USA Today** ran an op ed by FAS Biology Issues Director Stephanie Loranger, arguing that the government's Project Bioshield "invests in technical solutions to detect known agents and known threats," but lacks "equivalent investment" measures to "prevent the spread of new, potentially devastating, biological weapons." (See page 3.)

November 26 A **CNN** story on teleportation quoted Ivan Oelrich, director of the FAS Strategic Security Project. Many media carried stories on the Air Force study of teleportation after it was highlighted in the October 28 issue of the FAS newsletter *Secrecy News*.

November 29 "Unfiltered," a morning call-in program on **Air America**, featured Ivan Oelrich describing the storage and disposal of U.S. chemical weapons stocks.

December 3 The **Chronicle of Higher Education**, **Chemical and Engineering News**, and **Science** were among the publications that ran stories on *Flying Blind: The Rise, Fall and Possible Resurrection of Science Advice in the United States*. The **Chronicle** quoted former science adviser Neal F. Lane, saying the report's recommendations could "significantly improve" the process through which government leaders get advice. (See page 4.)

December 13 **ABC** and others picked up a **Reuters** story about the Russian defense minister's visit to China to discuss arms deals. The story quoted FAS as saying that China is the linchpin of Russia's arms exports.

December 28 Two back-to-back episodes of *Modern Marvels* aired on **The History Channel**, featuring FAS experts. Henry Kelly and Ivan Oelrich appeared in "Doomsday Machine Part I," and Stephanie Loranger appeared in "Doomsday Machine Part II."

A Good Defense Won't Win the Bioterrorism War

Stephanie Loranger

Excerpts from an op ed in USA Today, November 22, 2004.

The 2001 anthrax attacks proved that biotechnology can be abused to disseminate a lethal pathogen. In fact, any terrorist can find on E-Bay the materials needed to create a biological weapon. Because this is possible, what can be done to prevent another bioterrorist attack? The U.S. government is depending on defense.

This past summer, President Bush signed into law Project BioShield, a laudable \$5.6 billion program to bolster the nation's defenses against biological terrorism. This month, the government awarded its first contract: \$877 million to a California company that will produce 75 million doses of a new anthrax vaccine. In theory, this funding sounds great. The problem, though,

is that biodefense alone will not win the bioterrorism game.

To be prepared for threats that do not exist yet—such as genetically engineered pathogens—we need an adaptable strategy. In researching such threats, the scientific community must identify and manage the data in a way that does not lower the barrier to illicit bioweapons development.

The trouble with Project BioShield is it invests in technical solutions to detect known agents and to treat known threats. But it offers no equivalent investment in planning, analysis, and research for stronger surveillance, international collaboration, and other approaches that are needed to prevent the spread of new, potentially devastating biological weapons. Its game has no offense—and certainly not enough to win the bioterrorism game.

FAS Receives \$2.5 Million from MacArthur Foundation

The John D. and Catherine T. MacArthur Foundation of Chicago announced in December a grant of \$2.5 million to FAS for policy research and activities to provide scientific expertise to policy makers in areas of critical national importance.

Jonathan F. Fanton, president of the MacArthur Foundation, said in making the award: "Now more than ever, it is critical that America's policy makers have access to clear, accurate, and objective scientific information in order to make decisions about our national security." The grant will help FAS "provide policy makers the knowledge they need, bringing the best research to bear on issues such as nuclear, biological, and chemical weapons-materials, and other critical science-related issues," he said.

"We are grateful for the MacArthur Foundation's confidence in our organization," said FAS President Henry Kelly.

Advocates Likely to Try for New Nuclear Weapons Funds—Again

Ivan Oelrich

Last November, in a move that surprised many people, Congress zeroed out funding for new nuclear weapons, including new small nuclear weapons and the so-called bunker buster. The Department of Energy funds nuclear weapons research and development; so in the House, new nuclear weapons work must be approved by the Energy and Water Development Subcommittee of the powerful Appropriations Committee. But the subcommittee chair Rep. David Hobson, a Republican from Ohio, opposed the programs and blocked the funding.

In an editorial in *The Washington Times* (4 January 2005), Frank Gaffney, a strong advocate of the new weapons, painted Rep. Hobson as a reckless loner opposing the will of the president and the majority in Congress. In fact, support for new nuclear weapons even among Republicans has been weakening for years, despite intense lobbying by the administration. (Public Interest Report, Summer 2004, Vol. 57 No. 3, page 3.) Previous votes of the entire House and Senate approved funding for these weapons, but the majorities have been smaller with each vote. Committee chairmen have great influence, and they often can steer policy. But if they stray too far, their decisions can be overruled. It is noteworthy that this time, after Rep. Hobson took an independent stand,

Congress as a whole had opportunities to reverse his decision and did not. So, though a majority in Congress still seem to support new nuclear weapons when given a chance to vote on them, that support is weakening.

The administration and congressional advocates of new nuclear weapons are expected to try to reinstate funding for FY 2006. They could take one of two approaches to get around Rep. Hobson. The requests could be slipped into a supplemental funding bill to continue the war in Iraq. Or they could be in the FY 2006 Defense Department budget request.

The president is expected to submit to Congress a huge supplemental spending request for U.S. operations in Iraq and Afghanistan. Funding for some of the new nuclear weapons could be in this bill. Jurisdictionally, it would not pass through the Energy and Water Development Subcommittee, which Rep. Hobson chairs but be marked up only by the full Appropriations Committee. As of this writing, the new appropriations chair candidates include Rep. Jerry Lewis (R-Calif.), Rep. Ralph Regula (R-Ohio), and Rep. Hal Rogers (R-Ky.). On the Senate side, the incoming Chair of the Appropriations Committee is Thad Cochran (R-Mo.). All of these voted for new nuclear weapons.

The chairman of each appropriations committee may keep the markup secret until the last minute before it goes to the floor, so time for amendments will be short. Lobby efforts are best directed toward keeping an amendment from being inserted in the first place.

Conceivably some new nuclear weapons programs could be requested in the Defense Department budget. This could move jurisdiction to the defense appropriations subcommittee, chaired by Bill Young (R-Fla.), who supports these weapons.

The FAS believes it is vital to block attempts to restore funding for nuclear weapons that we do not need and that fuel proliferation pressures around the world. Letters to members of the appropriations committees make a difference when they come from constituents. Members of the Senate Appropriations Committee are listed at <http://appropriations.senate.gov/>. Click on Committee Assignments. The members of the House Appropriations Committee are at <http://appropriations.house.gov/>. Click on Full Committee and then Membership List. The most effective way to "write" to your members is to email or send a fax. You can fax members through the excellent Web site of the Friends' Committee on National Legislation, <http://capwiz.com/fconl/dbq/officials/>.

How To Fix a “Dangerously Broken” System of Science Advice

In December 2004, FAS released the second in its new Occasional Papers series: Flying Blind: The Rise, Fall and Possible Resurrection of Science Policy Advice in the United States. It reported the results of a study by Henry Kelly, Ivan Oelrich, Steven Aftergood, and Benn H. Tannenbaum. They reviewed how the institutions for science advice to Congress and the White House have worked in recent decades and concluded that the system was “dangerously broken.” In a spirit of bipartisanship, and to help both ends of Pennsylvania Avenue solve the problem, Flying Blind outlined specific steps. (To order and for more information on other FAS Occasional Papers and reports, see page 5). Excerpts from the analysis and recommendations follow.

The need for effective science and technology advice continues to increase while the infrastructure for providing such help is in a state of crisis.... While technical analysis is almost never sufficient to make wise choices, absent competent, timely, targeted scientific and technical analysis, these decisions will depend on unchallenged assertions by special interests and ideologues. Programs are likely to be poorly designed and subject to costly mistakes. Even worse, lacking competent advice, the nation may fail to act on problems until they are costly and difficult to solve, or fail to seize important opportunities to achieve public objectives in security, health care, education, the environment, or other critical areas.

This report develops options for improving the fundamental structures of science and technology advice based on examination of two cases where science and technology advice did not serve the nation well, interviews with many of the key figures in science and technology advice for Congress and the administration, and a review of recent literature.

Is Anyone Listening?

The strongest and most consistent statement emerging from these sources is that if the Congress or the president doesn't want objective scientific advice, no institutional solution can fix the problem. There is no way to force the president to meet with science advisers or to force Congress to base legislation on careful scientific analysis. This report is designed to help a new administration or a new Congress interested in strengthening science and technology support to craft effective institutions....

The proposals all assume that one goal of the reforms will be to create institutions that can endure and be effective through radical changes in national political priorities. Many of the options are designed to contribute to

public debate and public understanding of technical issues, making it more difficult for political leaders to ignore the issues.

The White House

Strengthen the private advice provided to the President... by amending the OSTP statute... to establish a permanent National Science and Technology Council (NSTC). The NSTC would be managed by a science adviser who works directly for the president inside the Executive Office of the President. In this formulation, the director would not be Senate confirmed (and thus clearly covered by executive privilege) and would have a small staff similar to other White House offices such as the NEC [National Economic Council] and the DPC [Domestic Policy Council].... A smaller staff has the simple logistical advantage of more easily fitting into the Executive Office Building, nearer to the president and the rest of his closest advisers.... [The science advisor's office should be] a formal part of the National Security Council and other White House offices.

“We’re proposing common-sense solutions that sensible people from both parties can agree would be a step toward good government,” said Henry Kelly when Flying Blind was released. “We expect our leaders to be debating values and priorities, but they shouldn’t have to debate the facts.”

[At the same time or alternatively, OSTP or a new entity could be authorized as a more independent public agency within the executive branch. This agency would] secure independent advice through independent advisory boards, conduct timely assessments of science and technology policy issues using both internal staff and sponsoring studies.... At least one advisory board should have terms of six years to ensure continuity between administrations. To distinguish this office from the current model, we name it the Science and Technology Policy Agency (STPA). To strengthen the STPA...[filling the four associate director positions would be required rather than allowed [as under the present OSTP legislation].

The Congress

Start a significant (>\$20 million/year effort with OTA's [the Office of Technology Assessment*] ability to assemble external expertise and conduct detailed analysis of complex technical subjects as a distinct organization within GAO [the Government Accountability Office]. At least 25 percent

of topics should be selected by the director. [Presently] GAO is... involved in an ongoing experiment to perform technology evaluations... The first technology assessment [examined] biometric technologies for support of border control... was actually delivered to Congress November 15, 2002... [A] report on cybersecurity was released in mid-2004.... At its current staffing level, GAO can only complete one to three technology assessment studies per year.

Cross-Cutting R&D Budget Reviews

By the Executive

The existing structure makes it extremely difficult for the president or the budget directors to correct any perceived imbalance in the research portfolio or to take a broad view across disciplines. For instance, recent progress in the biological sciences has been dramatically aided by diagnostic tools invented in the physical sciences. With the current budget process, this kind of cross-discipline support is hard to even see, let alone foster. An effective collaboration would need to involve close collaboration between the OMB and the Science and Technology adviser directed by the president.

The NSTC should work with OMB to undertake a coherent review of the national science and technology budget. OSTP should prepare an independent review of S&T budgets on an annual basis that can be used as the basis for budget planning.

By the Congress

The Appropriations Committees of the House and Senate should conduct a regular, government-wide review of federal research and development expenditures inviting administration and public witnesses to comment.... [A] standing task force... [could] ask for administration witnesses to justify the size, balance, and direction of the effort. This would not force committees to coordinate, but at least a coherent case could be presented.

How Scientific Societies, Individuals Can Help

Increase Participation by Scientific Societies

Perhaps the single most common complaint heard during the interviews we conducted on Capitol Hill was lack of outreach from the various professional societies.... With so much funding from the federal government, scientific societies are accustomed to lobbying for support. But they could also work harder to get science into the policy debate. For example, the American Physical Society released a report on President

Bush's Hydrogen Initiative written by a group with experience [in relevant areas]. Careful management of this paper led to hearings in the House Committee on Science that led Chairman Sherwood Boehlert (R-NY) to call for changes in the hydrogen program.... Professional societies should become more involved in assuring that the science in the public debate is credible.

Increase Participation of Individual Scientists [I]t is also useful to have ongoing relationships between scientists and their representatives. Scientists, perhaps with the help of their universities, can actively pursue meetings with their representatives in their district offices and arrange visits to campus research facilities. Congressmen have much more time flexibility in their districts and respond well to constituents. Legislators could develop long-term relationships with recognized experts who could later be called on to provide advice on a variety of science-related topics.

Quarterly Congressional Seminar Series [There is] an opportunity for early member and staff education through a series of quarterly one-day seminars on upcoming science-related topics.... Ideally material would be provided from several different sources to staff from both bodies and of both parties simultaneously and would allow substantial time for interaction with expert presenters.

* Congress closed the Office of Technology Assessment in 1995.

Poliovirus Synthesis: Case Study of Dual-Use Research

Stephanie Loranger

The FAS Biosecurity Project is developing course materials to teach graduate students in life sciences about their responsibility to mitigate the risks that their research could be misappropriated for biological weapons.

Because there are often no right answers when dealing with the dual-use science, we decided that case studies would be an effective teaching tool.

The first case study we are developing is that of a poliovirus synthesis experiment that sparked alarming news headlines in 2002: "Deadly Polio Recipe Ready for Download" and "Man Creates Life in Deadly Virus."

In the early 1990s Dr. Eckard Wimmer and his colleagues at the State University of New York (SUNY) at Stony Brook began the process of synthesizing poliovirus from scratch. By 2001 they had succeeded in fusing together small bits of mail-ordered DNA to create the entire poliovirus genome. The experiment was the first major demonstration synthesis of a virus from basic chemical building blocks. The work was published in *Science* in July 2002.*

The possibilities of dual-use applications of this work, that it could show terrorists how to build the virus, were not obvious to Wimmer's team in the 1990s. He said the purpose was to prove that a virus is a chemical and can be

explained in purely physical and chemical terms. "To synthesize virus for evil intentions seemed to be ludicrous because all viruses that could be used as bioterrorist agents were available either through mail order or you could isolate them yourself, with the exception [of] smallpox. To think about bioterrorism as a threat for the security of the U.S. if we synthesized poliovirus was not a prominent thought."

The poliovirus synthesis case is instructive for three reasons: (1) how the benefits and risks were weighed by the researchers at the time they performed the experiment; (2) how the publication of the results was handled, because the paper was published without editorial explanation; and (3) retrospectively how emerging national guidelines and regulatory legislation would have affected the process.

The case study will include primary literature, news articles, and a first person account from Dr. Wimmer. It will end with a series of questions for discussion.

* Cello, Jeronimo, A.V. Paul, and E. Wimmer. "Chemical Synthesis of Poliovirus cDNA: Generation of Infectious Virus in the Absence of Natural Template." *Science* 2002 297: 1016-1018. <http://www.sciencemag.org/cgi/reprint/297/5583/1016.pdf>

FAS Plans to Follow Up on *Flying Blind*

- Advance legislation in Congress that would achieve steps outlined. Legislation was introduced in the 108th Congress to expand the science and technology policy advice available to the Congress. (HR 4670 and S. 2556, are reprinted as appendices in *Flying Blind*.) FAS expects similar legislation to be introduced in the 109th Congress.
- Work with other scientific societies to advance recommendations.
- Call attention to cross-cutting federal R&D issues and the need for systematic review of the federal R&D budget as a whole.
- Publicize important or striking cases of withholding of scientific information.

New FAS Occasional Paper Series

In keeping with the FAS mission to provide the public, media, and policy makers with high-quality information to inform decisions on science-related issues, the FAS has launched a new Occasional Paper series. The FAS also issues reports such as that of the Panel on Weapons in Space (see page 8). These are available in their entirety on our Web site, on the "publications" page in PDF format. FAS members may receive a free print copy of each by calling 202.454.4660 or emailing publications@fas.org. Media are also entitled to complimentary print copies. All others may receive print copies at \$15 each, using the contact information above.



NEW in January
Occasional Paper No. 3.
"Missions for Nuclear Weapons After the Cold War," by Ivan Oelrich. The Director of the FAS Strategic Studies Project analyzes 15 missions currently proposed for U.S. nuclear weapons and finds that, for almost all, conventional weapons are preferable. The United States

can justify its vast arsenal only if it intends to make a first strike on the vast Soviet nuclear arsenal. This report argues for early reductions by the United States and Russia and against starting a new generation of small nuclear weapons.



FAS Occasional Paper No. 2
"Flying Blind: The Rise, Fall, and Possible Resurrection of Science Policy Advice in the United States," by Henry Kelly, Ivan Oelrich, Steven Aftergood, and Benn H. Tannenbaum (see page 4).



"Ensuring America's Space Security." Report of the FAS Panel on Weapons in Space, by Leonard Weiss et al.



FAS Occasional Paper No. 1
"Small Arms, Terrorism and the OAS Firearms Convention," by Matthew Schroeder.

will show the public and education communities how new technologies can bring abstract concepts alive and keep students motivated, asking questions and eager to acquire better skills.

Another validation of the FAS Learning Federation work came in the fall of 2004 with an invitation from the White House's National Science and Technology Council's Intergovernmental Working Group on Advanced Technologies for Education and Training. The IWG asked Howell to work with Paul Jesukiewicz to develop the learning technologies R&D framework for future federal support in this field. Based on the learning science and technology research Roadmap, this framework will guide the working group's cross-agency inventory of federal investment in learning technologies. Jesukiewicz is director of the Alexandria Advanced Distributed Learning Co-Laboratory and a research staff member at the Institute for Defense Analyses.

Pathbreaking Educational Games

Teaching Immunology to Adolescents and Young Adults

Immune Attack© won a grant of more than \$1 million over three years from the National Science Foundation. Students playing the game will “play” at defending the human body against invading antigens. In order to play successfully, they will have to learn firsthand how the immune system defends itself against viruses and bacteria. Because infectious agents use a variety of cunning strategies, the players—adolescents and young adults—will need to learn which “weapons” to pick to defeat them. We hope that such battles, in the labyrinthine channels of a simulated human body, will be gripping and motivating, even for players who don't think they're interested in science.

FAS will be helped by storyboard artist Peter Chan who created artwork for *Harry Potter and the Sorcerer's Stone*. Our research partner, Andries van Dam, vice president for research at Brown University, will be principal investigator on a related NSF-funded grant to assist in developing the visualizations for the game. David Scott, immunology chair at George Washington University, will co-chair a learning content advisory board.

The game will test several learning technology concepts laid out in the Roadmap:

- Conferencing and auto-tutoring technology that individualize the player's experience and permit content-rich debriefing sessions
- Question answering and dialogue that is tailored to the learner's level of understanding of the subject

- Continuous assessment generated automatically by the game to determine when the learner is ready to move to a new level of challenges

In addition to teaching biology, the project aims to help players to choose behaviors that will better protect themselves from infection. Because it aims at a critical age group of young adults, when they are choosing colleges and careers, perhaps the game will help draw students to careers in bioscience research, medicine and other health care professions.

Mass Casualty Training for First Responders Wins Two Awards

The Department of Commerce made a very competitive award of \$600,000 to continue development of *Mass Casualty Incident Response*©, a training system that will use advanced gaming technology to teach teams of firefighters. The system will help them rehearse better responses to terrorist attacks, environmental disasters, and other mass casualty incidents—without incurring the tremendous costs of actual exercises in the field. FAS was honored to be chosen for this research through the department's Technology Opportunities Program (TOP).



These New York City Fire Department battalion chiefs helped Michelle Roper lay out objectives for the FAS's computer-based training system for mass casualty incidents response.

Photo: Michelle Roper

FAS has begun working with the New York City Fire Department (FDNY) to select training objectives and develop content. The training system developed in this project is to be used at the FDNY's main training facility at Randall's Island in New York City.

Customizing training to local needs is another goal of the project. The FAS Learning Federation will work with the Wisconsin Technical College System, which trains a large number of rural firefighters, on this dimension of the project. Scenarios developed for FDNY will be vetted for use in other settings. The University of Wisconsin Academic Advanced Distributed Learning Co-Lab will make technical changes to make the visual settings appropriate to Wisconsin.

When the interactive training system prototype is deemed effective, the Learning Federation will work for wider national adoption,

ultimately to firehouses and other group training facilities across the country.

Merit-based TOP grants go for projects that bring the “benefits of digital network technologies to communities throughout the United States” and that involve creative application of advanced information technologies. Earlier grants supported interactive modules for rural nursing students, for example. Howell said “The TOP award's level of support will be essential for helping us achieve the challenging goals we have set for the projects. We are also very grateful to the Centers for Disease Control and Prevention for helping start the work.” The CDC awarded an earlier grant for the project of \$93,000.

Computer-based training can provide first responders with practical, hands-on experience in situations that cannot be practiced easily using real scenarios. Computer training simulations also can be used more often.

The following principles are among those to be explored in the Roadmap:

- Interoperability for integration of simulations and synthetic environments into learning environments
- Reuse, certification, and maintenance of simulation components

Libraries and Museums to Enter the Digital Age—by Way of Ancient Babylon

The third educational game will demonstrate how learning technologies can make ancient collections of unique archeological and artistic objects available to a wider audience.

The Institute of Museum and Library Services awarded \$500,000 to develop *Discover Babylon*,© a learning tool to help teach Babylonian culture. Set in ancient Mesopotamia, the tool asks players to solve puzzles and challenges by exploring a historically accurate virtual world.

The virtual environment will be composed of digitized images of objects, principally the remarkable collection of cuneiform



This clay tablet from ca. 3,100 BC shows how Babylonian landowners kept accounts.

The face of the tablet (top view) is divided into five horizontal “fields.” Each refers to a single parcel of agricultural land.

OPINION

There is a groundswell of interest among veteran game developers and many learning scientists who believe the future of learning may be well served by video games. Games will soon teach biology, math, and surgical procedures, as well as help first responders update their skills.

Games offer two strong pluses for educators. First the young generation is growing up playing them. The game environment is a comfortable medium for today's and tomorrow's youth. Because children are already at home with it, we should embrace the medium to teach real material.

Research shows another positive aspect: Children stay absorbed, not only because games are entertaining but because they are challenging. For a game to succeed, players must find the next game in a series more challenging than the last. Otherwise, players won't buy it, and the company suffers.

Why are we sure that games and simulations can be effective in teaching real material?

- The U.S. military, which pioneered simulated learning environments, found that training for 60 minutes on an F-16 flight simulator equates to 30 minutes of training in an actual airplane. Because the operating costs of an F-16 simulator run about \$300/hour compared to \$3,000/hour for a real F-16, there is a significant cost savings in using simulators.
- The U.S. Navy changed its training for sonar operators to computer-based training modules, instead of a year-long traditional class. Trainees moved at their own pace through the modules, learning Boolean algebra, among other subjects. On average, the trainees completed the training in half the year allowed, saving millions in training costs.
- The Food and Drug Administration has approved computer-based training component

for surgeons to be certified for a new carteroid stent procedure. Other medical boards have allowed certification for other procedures learned in online environments—boosting the skills of practitioners in small hospitals, among others.

- A therapeutic game “Bronkie the Bronchiasaurus,” helps children learn about asthma as they pretend to be a dinosaur with asthma. Players make decisions about their health and see how their decisions affect Bronkie. If players make smart choices and keep the breath blasts coming, they win. Studies have shown that children who have practiced on “Bronkie” handle their asthma better.

Critics cite two objections to the potential of games for learning. One is the problem of training teachers advanced technology tools, including learning simulations. Another objection is that school systems will need lots of money and IT experts to install them. Given the schools' track record with the first wave of internet-technology and the resulting let-down, skepticism is understandable.

But I am correcting this column on a train using the handwriting recognition tools on my PC tablet. And, yes, such systems required a technical specialist and lots of computational capability to run...a decade ago. Earlier, I drafted this column in my office using speech recognition software that didn't run reliably just a few years ago. Anyone who thinks today's IT systems used in learning environments can't evolve to layperson-friendly systems—once we know what works and what is needed—has been asleep during the past 30 years of computer evolution.

The FAS Learning Federation research plan looks ahead another decade, with 3-, 5- and 10-year benchmarks. With the right investments in software tool development in less than a decade, we will provide learning software tools to teachers and instructors that will be as familiar as Office or as simple as a textbook.

tablets at the University of California at Los Angeles. The UCLA collection has some 500,000 objects from the entire span of ancient history in the Near East. Robert K. Englund, co-principal investigator at the Cuneiform Digital Library Initiative at UCLA, helped to put some 100,000 in digital form. Another partner is the Walters Art Museum in Baltimore, which will be digitizing some of

its particularly rare and beautiful objects from the period. These will help create the ancient world for players to experience. To win, they must perform transactions as the ancients did, thereby motivating them to master some math. The prototype will bring players ages 8 to 16 into contact with one-of-a-kind objects hitherto mostly accessible by physical visits to museums and libraries.

Congress Funds Steps Toward DO IT Learning Technology Entity

The Federation of American Scientists congratulates its partner Digital Promise on a second round of congressional funding for activities leading to creation of the Digital Opportunity Investment Trust or DO IT. The new entity would fund research and applications of information technology for U.S. schools, colleges, workplaces, and cultural institutions. The FY 2005 Consolidated Appropriations Act that Congress passed in late November provides \$500,000 to FAS to further plan DO IT management and programs.

DO IT would advance the skills that Americans need to acquire in 21st century schools and workplaces through the innovative use of digital technology and learning science. Supporters liken the transformation that DO IT could effect nationwide to the land-grant colleges set up by the 1862 Morrill Act. The land grant colleges transformed the U.S. economy in the late 19th century and made America competitive. The Morrill Act funded the new colleges from sales of public lands; similarly, DO IT would be funded as a self-sustaining trust from the FCC auctions of the publicly owned airwaves.

Advocates hope that Congress will establish the nongovernmental, nonprofit DO IT when it is due to reauthorize the 1996 Telecommunications Act this year. “Our goal is to advance DO IT ahead of the telecom debate as a public service imperative for future generations that must be included in any legislative package,” said Anne Murphy, DO IT project director. Organizers plan regional forums in Florida, Mississippi, and Michigan and additional corporate endorsements.

Funds will also support two studies, one of the economic costs and benefits of DO IT to be undertaken by Thomas Stratmann, professor of economics at George Mason University. A second study by Eamon Kelly, president emeritus of Tulane University, will analyze the proposed structure of the agency. Kelly was formerly chairman of the National Science Board, which oversees the National Science Foundation. The NSF is a model for DO IT because it would sponsor basic research and innovation.

The FAS Learning Federation's Learning Science and Technology Roadmap provided the framework for DO IT's R&D activities. Three education technology prototypes now under development by FAS will show DO IT's potential for creating innovative educational tools.

More on the Digital Promise can be found at www.digitalpromise.org

This year could finally see a public debate about whether the United States should weaponize space. Concern has been growing about the wisdom of—or need for—breaking the long-standing U.S. and world tradition that space be used for peaceful uses only. In the president's first term, controversy over missile defense took the limelight from the drive toward weaponization—by vehicles aimed to hit other vehicles in space, in-orbit explosions, space-based directed energy beams, and other means. Now the issue may come into its own. Less well known programs like these may receive sharper scrutiny as the \$5 billion monthly cost of our military operations in Iraq and Afghanistan puts more pressure for cuts in the overall \$400 million defense budget.

Ensuring America's Space Security, the report of the FAS Panel on Weapons in Space, should be a major contribution to any debate over U.S. military space activities. It is one of the few analyses laying out feasible alternative responses to threats to U.S. space assets, including threats said to require space weapons in response.

The FAS convened the panel in 2002, reacting to stepped-up pressure to fund space weapons. First a blue ribbon group known as the Rumsfeld Commission on Space, in a January 11, 2001 report, laid out the rationales for weapons in space to protect U.S. satellites. Soon after, when its chair Donald Rumsfeld became defense secretary, he echoed these statements as official policy. In February 2001, for example, Rumsfeld announced to Congress that space would be one of “six key transformational goals around which we will focus our defense strategy and develop our force.” The U.S. goal is “to maintain unhindered access to space—and protect U.S. space capabilities from enemy attack,” he said. “Protection” in this and other statements included defending U.S. civilian and military space assets from space.

The door opened further to weaponization when the administration withdrew from the 1972 ABM Treaty. This move freed us from the treaty's ban on testing weapons in space as part of a ballistic missile defense system. Several missile defense (MD) programs touted by the administration planned to test weapons in space and eventually deploy

anti-missile “shooters” there. Four years on, several of these have suffered technical difficulties and overruns, and Congress has cut back even the diminished Pentagon requests for them. Among those that are still controversial is a test from a planned Nfire satellite, which would release a “kill vehicle” that would intercept (or fly close by) a test-fired ballistic missile. Partly due to concerns that the test was tantamount to weaponization, it has been officially put off from 2004 to 2006, although MD and weaponization advocates in Congress are pushing for it, almost as a matter of principle.

Beyond claiming that weapons could be needed in space to *defend* U.S. assets, some Air Force officials now assert an *offensive* role for space weapons. That service's 2004 Flight Transformation Plan listed several possible weapons—such as “hypervelocity rod bundles” dropped from a spacecraft to targets below, which the press quickly dubbed “rods of God.” A new Air Force Counterspace Operations Doctrine issued last August envisions preemptive actions against satellite systems used by others. Meanwhile, the threats to U.S. satellites outlined in 2001 have failed to materialize.

Reviewing each of eight supposed threats to space assets, the FAS panel found alternative responses to be more effective, cheaper, and more technologically certain. As outlined in the report draft (Public Interest Report Summer 2004, Vol. 57 No. 3, page 11), useful steps include hardening of some satellites,

ready quick launch of replacement satellites, and recalibrating models that claim that satellites could be knocked out by nuclear explosions in their orbital path.

Ensuring America's Space Security lays out an alternative course for the United States in space and answers concerns about threats, at least in the near term. Most of our proposed alternatives will add to international and U.S. security (such as data-sharing with some other nations to improve space monitoring). On the other hand, unilateral U.S. weaponization seems not only needless militarily but will destabilize security by daring our adversaries to attack us in space once we have ended the peaceful-uses policy for them.

Given available, more practical alternatives, one must ask why some in the Air Force and Congress insist that the United States weaponize space. Possibly proponents want to add to U.S. military dominance and, by doing so, to increase U.S. geopolitical clout. One could view this determination as similar to unilateral policies followed elsewhere. If there is no public debate soon, this form of U.S. dominance may soon extend from Earth into a newly weaponized space.

* *Ensuring America's Space Security: Report of the FAS Panel on Weapons in Space*, by Leonard Weiss, et al.



Leonard Weiss, chair of the FAS panel on weapons in space, speaking to the press at the release of the report October 7 at a hearing room of the House Science Committee. Weiss said, “in every case” where proponents of space weapons said they were needed, “we identified alternative ways of mitigating vulnerabilities and addressing threats that, in our view, are superior to putting weapons in space.”

“We simply cannot afford to defend against all possible threats. We must know accurately where the threat is coming from and concentrate our resources in that direction. Only by doing so can we survive the Cold War.”

Almost 50 years ago, Edwin Land, then nationally famous for inventing Polaroid instant photography and an adviser to President Eisenhower, spoke these words to Albert D. Whelon, a government analyst.¹ Land’s advice that threats had to be clearly defined for U.S. security to be protected seemed so relevant that the FAS Panel on Weapons in Space used the quote in its report *Ensuring America’s Space Security* (see page 8).

The early 1950s were similar to today in some ways. The U.S. public was still shocked by the Japanese Pearl Harbor attack on the homeland. Instead of postwar peace, the public discovered that our wartime ally the Soviet Union would be our foe. Then our atomic bomb of 1945 was matched by the Soviets’ first fission weapon detonation in 1949. Their thermonuclear weapon development closely tracked ours. Communist forces made war in Korea. Threats from a mysterious, amorphous enemy spurred Americans’ fear of traitors and McCarthyism. In military circles, the 1950 report known as NSC 68 reinforced the view a general war was likely to be set off by a Soviet surprise attack. When the first Soviet bombers capable of carrying nuclear bombs intercontinentally were seen by visitors to Moscow in 1953, U.S. intelligence predicted rapid production of these “Bisons” and “Bears,” as the vehicles of their future dominance.²

In April 1966, Sen. Stuart Symington (D-Mo.) held hearings that publicized the horror of a new surprise attack by Soviet bombers carrying a growing nuclear arsenal. The Air Force presented “evidence” that the Soviet heavy bomber force would be twice the size of SAC’s by 1959. Congress promptly awarded the Air Force almost a billion dollars more than first requested to supply SAC with additional B-52s.

Privately, President Eisenhower doubted these arguments and was reluctant to spend what his generals asked. Behind the scenes, he had put in motion an answer to the unlimited threat scenarios that were scaring so many.

In March 1954 he had tasked James R. Killian, president of MIT, to form a panel of outside

experts to look at how vulnerable to surprise attack the United States could be. Killian’s Technological Capabilities Panel (TCP), which gave its secret report in February 1955, proved to be one of the seminal interventions by outside scientists of the era.

Land was a key member of the TCP and, in his own right, had Eisenhower’s ear. Land’s approach—that “we simply cannot afford to defend against all possible threats”—expressed the panel’s view. After discussions with the Air Force, the scientists determined that bomber-versus-bomber war would be made obsolete by nuclear-armed missiles. Whichever side got these first could launch a faster surprise attack. The panel advised Eisenhower to speed up U.S. ICBM programs, which helped America’s be as far along as they were in 1957, when the Soviets beat us to the punch again with the surprise launch of a missile carrying the Sputnik satellite into space.

The panel also concluded that a working U.S. ICBM force was off in the future; so it also advised Eisenhower to kick U.S. medium-range missile development into high gear; these would give us a leg up in the new missile-on-missile arms race, sooner. Eisenhower agreed; the result was that Thor and Jupiter missiles were being deployed in Europe and offsetting the Soviets’ bomber threat by 1960.

Historically, many forces shaped these U.S. missile programs; the unique historic contribution of Killian’s panel was through its intelligence subcommittee headed by Land. It convinced the president that a high-flying plane design that the Air Force had rejected, which was being tested by a maverick at Lockheed, was the right vehicle to undertake systematic photographic reconnaissance of the vast, blank Soviet landmass. As Land said, “we must know accurately where the threat is coming from.” We needed to know if hundreds of Soviet nuclear-armed bombers would have the goods on us before we could counter with missiles.

Simple historical verdicts are always questionable. Still, the TCP—and Eisenhower’s confidence in members such as Killian and Land—caused the United States to develop the U-2 aircraft and do so in record time. The U-2 launched a new era of hard information for U.S. military threat assessment. By mid-1956 the first U-2s began secretly overflying Soviet territory, photographing

away with a camera system that Land had overseen. By December, the incontrovertible films showed no long rows of Bison heavy bombers lined up on Soviet airfields. And if so few were seen, how could Soviet bomber production whip past SAC’s bomber force in a few years? The new intelligence technology gave a clear answer: There was no bomber gap.

The story of the Killian panel shows that scientists do not have to be public opponents to be effective. Land’s biographer Victor K. McElheny writes: “Most commentators [on the 1950s arms race] see an inability to stuff the genie back in the bottle, or failed attempts at international control and restraint.” But by “helping open up a powerful new channel for intelligence, one that revealed the true size of the Soviet effort in atomic weapons, Land gave a powerful example of rational inquiry imposing restraint on supposedly uncontrollable tendencies to make war.”³

The story is also about intelligence reform. Eisenhower also did not want the agencies that made up target lists for SAC controlling the film or its interpretation of the threat. CIA Director Allen Dulles had balked at getting his agency into the plane-flying business. But once the CIA was given the job of running the U-2 program, Dulles insisted that the CIA analyze the film as well. In these secret debates, Killian, Land, and others pushed for the CIA to adopt this new role, and the arrangement served U.S. intelligence well.

Later the missile programs stepped up by the panel’s intervention were hardly trouble-free. And the revolutionary U-2 program caused an international crisis in 1960 when the Soviets shot one down revealing this new form of espionage. Still, the Killian panel helped the country to follow a sounder military and intelligence path from 1955 than it would have taken otherwise.

¹Albert D. Whelon. Corona: The First Reconnaissance Satellites, *Physics Today*, February 1997, pp. 24-30.

²John Prados. *The Soviet Estimate: US Intelligence Analysis and Russian Military Strength*. The Dial Press, 1982.

³Victor K. McElheny. *Insisting on the Impossible: The Life of Edwin Land, Inventor of Instant Photography*. Reading, Mass.: Perseus Books, 1998.

Why Battles Are Won

Continued from page 1

century. Expectations of a looming revolution in military affairs are both a serious misreading of modern military history and a dangerous prescription for today's defense policy: They could easily lead to an over emphasis on new technology or radical operational concepts that could weaken, not strengthen, the American military and undermine its ability to prevail on future battlefields....

[In particular,] I hold that a particular pattern of force employment—the *modern system*—has been pivotal in the 20th century and is likely to remain so. I argue that since at least 1900, the dominant technological fact of the modern battlefield has been increasing lethality. Even by 1914, firepower had become so lethal that exposed mass movement in the open had become suicidal. Subsequent technological change has only increased the range over which exposure can be fatal. To perform meaningful military missions in the face of this storm of steel requires armies to reduce their exposure, and since 1918 the central means of doing so has been modern system force employment.

The modern system is a tightly interrelated complex of cover, concealment, dispersion, suppression, small-unit independent maneuver, and combined arms at the tactical level, and depth, reserves, and differential concentration at the operational level of war. Taken together, these techniques sharply reduce vulnerability to even 21st century weapons and sensors. Where fully implemented, the modern system damps the effects of technological change and insulates its users from the full lethality of their opponents' weapons.

Not everyone can master it, however. The modern system is extremely complex and poses painful political and social tradeoffs. While some have been able to surmount these challenges and implement the modern system fully, others have not. Militaries that fail to implement the modern system have been fully exposed to the firepower of modern weapons—with increasingly severe consequences as those weapons' reach and lethality have expanded. The net result has thus been a growing gap in the real military power of states that can and cannot implement the modern system, but surprisingly little change over time in outcomes between mutually modern-system opponents....

[This analysis implies some very different directions for defense policy than current mainstream views.] Many RMA advocates call for a radical restructuring of the U.S. military away from direct-fire ground forces

and toward heavier reliance on air and deep strike missile systems. The analysis here, on the other hand, suggests that such a restructuring could be very risky. Sometimes it would be highly effective: Against non-modern-system enemies, a mostly air and deep strike-oriented U.S. military would in fact be the ideal solution. Against an opponent better able to limit its exposure, however, such an imbalanced U.S. force would be at a grave disadvantage. By giving up direct fire ground capability in exchange for more deep strike systems, such a force would be much weaker than today's against opponents able to escape destruction at extreme range and close with American ground forces (as al Qaeda, for example, proved able to do in Afghanistan). Such a restructuring would thus strengthen U.S. capability mostly where it is already so strong as to be nearly beyond challenge (that is, against exposed non-modern-system opponents) by creating weaknesses elsewhere. Unless it is certain America will never again face skilled opposition, this could be a dangerous approach....

The analysis above also implies some different directions for system acquisition, research, and development. In particular, it suggests that pilot programs to explore remote surveillance against targets in wooded and built-up areas merit higher priority and accelerated development relative to other ongoing surveillance initiatives. Similarly, new precision munitions effective against dispersed targets in such terrain also warrant greater relative attention....

Perhaps, most broadly of all, war's conduct and outcomes need to receive the same kind of sustained, explicit, rigorous theoretical analysis that other social phenomena have come to receive—not just because war affects politics or society, but because victory and defeat is an objectively important subject in its own right. War's causes have received intensive study in the hope of finding means of prevention; preventing war is crucial, but not all wars can be prevented. And where they cannot be prevented, winning rather than losing has tremendous importance. The difference between victory and defeat can mean the difference between freedom and oppression, or between life and death itself. America is now engaged in a potentially global war on whose outcome thousands to millions of lives may rest. Explaining success and failure in such struggles is a matter of paramount national importance—it deserves the most penetrating research that modern scholarship can provide simply on the basis of its intrinsic significance alone.

Model Home To Be Built in Houston

Rachel Jagoda

The Housing Technology Project moved ahead this summer with the purchase of a lot for its first model home in a residential neighborhood in Houston, Texas. The FAS will design and build a 2,000 square-foot house using the results of more than a year of research into materials, designs, and appliances that meet high standards for safety, durability, energy efficiency, and low cost. The house will be completed by June.

The model home will use structural insulated panels constructed from expanded polystyrene and the newest commercially available cement board. The design is the result of a collaboration between Houston architects Roger Rasbach and Henry Grissom and Houston structural engineer Dr. Joseph Colaco. Dr. Colaco also assisted with structural testing of the design, using computer simulations that confirmed the remarkable strength of these lightweight panels. The results show that they are more than suitable for withstanding typical and extreme stresses, including high winds and earthquakes.

Researchers from the Department of Energy's Building America program and the California Energy Commission are providing expert assistance to the FAS project. Building America specialists are helping determine the best air conditioners, hot water heaters, and duct systems for the home—all at an affordable price for low- and middle-income families to buy and maintain.

Once the house is constructed, the FAS Housing Technology project will continue to improve the technology and spread information about it to builders, local governments, and the public. FAS researchers will monitor the home's performance during occupancy. Data will be collected on indoor air quality, energy, and water use. The data are likely to show builders that a key benefit of this technology is high quality at low cost. The project will disseminate information about the technology to encourage adoption in Houston and around the country. The California Energy Commission is sponsoring another model home in that state, to be completed in mid-2005.

*Excerpted from *Military Power: Explaining Victory and Defeat in Modern Battle*, by Stephen Biddle, Princeton University Press, 2004, with permission. Stephen Biddle may be reached at Stephen.Biddle@us.army.mil.

“Why I Get Up in the Morning...”

Steven Aftergood

Excerpts from a talk by the director of the FAS Project on Government Secrecy to the FAS Board of Directors October 6, 2004.

Why work on secrecy? First because secrecy is a serious limitation to any public engagement with national security policy. Second, it is part of the FAS heritage to challenge the government over access to information. Many basic patterns of secrecy, such as classified budgets and compartmentation of information, date back to the Manhattan Project.

In recent years, secrecy has been growing. This year the numbers of classification actions, or decisions to classify particular items of information, is up 25 percent over the year before. There are 4,000 executive branch officials who have authority to classify information. We're spending more than \$6 billion a year on it. It is as if there were a cabinet level “Department of Government Secrecy” that no one has ever heard of. The high cost comes not from physically stamping a document secret, of course, but from the enormous consequences of that action. You have to undergo an investigation to be cleared to see classified information, and reinvestigated every couple of years. Also information has to be physically secured, whether in hard copy or soft copy. There's an infrastructure of physical security that is summoned into existence whenever you classify information that is extremely expensive.

But classification is just one part of the problem. Increasingly the most important barrier to public access is the expansion of government control of unclassified information. There are a dozen or so categories such as “sensitive but unclassified,” which mean “It's unclassified but you can't have it” because—well, there's no because. As often as not, there's no reason for it.

Unnecessary secrecy is not only a problem for would-be concerned citizens; it is an obstacle to good government. One finding of the 9-11 Commission was that unnecessary barriers to information sharing impeded attempts to anticipate of the attacks. I think of this as “bureaucratic secrecy” in the terms used by German sociologist Max Weber. He said it is a characteristic of bureaucracy, a defining characteristic of bureaucracies, to horde information.

The FAS Secrecy Project tries to catalyze needed change. The word catalyze is important, because the system is too big to take it over and change as a whole. But we can seize on particularly outrageous or alarming cases

and leverage them into needed reform.

For example earlier this year I looked at the Taguba Report about the human rights abuses at Abu Ghraib prison in Iraq. If you look at the leaked copy of the classified report, you can see that one of the things that is secret is the list of specific abuses that were committed [by U.S. personnel]. When I saw that, I filed a complaint with the Information Security Oversight Office (ISOO). I said: Look at the classified pages, and look at the Executive Order on national security classification policy, which specifically states that classification is not to be used to conceal criminal activities. The ISOO went to the Pentagon, and the Pentagon conceded that the classification of this information appeared to be out of order. They instituted a series of classification policy reviews and educational programs to improve training for classifiers. So because we noticed it, and knew how to complain about it, we started a chain of events that I think will be beneficial.

The Secrecy Project also tries to carry out some reform ourselves. I don't feel I've done a good day's work unless I have released into the public domain some government document that otherwise wasn't publicly available [laughter]. I try to do this on a regular basis. There are so many things that are ostensibly withheld yet are accessible if you know who to ask or where to look. Of course, we don't publish anything, classified or unclassified, that we think is properly confidential. But there is an abundance of “secret” material that doesn't meet that criterion.

For example, Congress insists that the reports of the Congressional Research Service may not be made directly available to the public by the CRS. So we publish them on our Web site! As for the Jason defense advisory panel, we do our best to raise their profile. There is no Jason Web site for example—except on the FAS Web site. Jason members value their anonymity, but we value their work product. We think it ought to be in the public sphere.

Quite a few people value the work we do. Yesterday, after a six-month tug of war with the National Counterintelligence Executive, I got a four-volume history of U.S. Counterintelligence (called “A Counterintelligence Reader”) dating back to the Revolutionary War through the present. I posted portions of it and sent out word to the 10,000 subscribers to *Secrecy News*. Within half a day, the document was downloaded 3,000 times. So there is a hunger for this material.

Highlights from Secrecy News

SN is written by Steven Aftergood and published by the FAS.

August 25 Pentagon official Carol A. Haave stated in testimony that perhaps 50 percent of government secrets are improperly or unnecessarily classified.

Sept 7 A proposed exemption from the Freedom of Information Act for commercial satellite imagery will severely restrict public access to unclassified government information. It could be adopted in conference on the 2005 Defense Authorization bill.

September 17 *SN* posted a briefing by Defense Secretary Donald Rumsfeld on defense transformation which had been “locked” from circulating on the Internet.

September 27 The Department of Energy reviewed 1.3 million pages of declassified documents at the National Archives and found just 356 pages of classified nuclear weapons information that should not have been disclosed.

October 5 The Department of Energy has decided to classify its intelligence program and budget “for the first time in decades.”

October 12 The FOIA exemption for satellite imagery disclosed by *SN* September 7 has now been limited by conferees.

November 1 Responding to *SN*, defense official Robert Rogalski outlined a new Pentagon initiative to address overclassification.

November 10 *SN* posted a new Army doctrinal publication on counterinsurgency operations.

A Defense Science Board report on “strategic communication” says “U.S. public diplomacy is in crisis.”

November 18 *The Spoof*, a British publication, wrote that a member of Congress was closing her office because of “a possible cyberterror attack” to her staff's computers. FAS and Steven Aftergood made a cameo appearance in *The Spoof* spoof.

November 21 The National Geospatial-Intelligence Agency will withdraw various mapping products from the public domain, including the Federal Aviation Administration's Operational Navigation Charts.

December 1 The government of Chile released an extraordinary report describing systematic use of torture and imprisonment against some 27,000 victims during military rule from 1973 to 1990.

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