STEP AHEAD

Newsletter of the Science, Technology, and Environmental Policy Section
American Political Science Association
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Contents

Notes from Editor

The first order of business is to welcome our new book review editors. Pamela Stricker from California State University, San Marcos is organizing the environmental policy book reviews. Dr. Stricker received her Ph.D. from UC Riverside, and teaches in the political science department at San Marcos. She is currently writing a book on the role of scientists and environmental interests groups in the policy-making process—a topic that should clearly resonate with most STEP members.

John Hardin will be organizing the science and technology book reviews. Dr. Hardin is the chief policy analyst for the North Carolina Board of Science and Technology, which advises North Carolina policy makers on the role of science and technology in the economic growth and development of the state. He holds an adjunct assistant professor position in the department of political science at UNC-Chapel Hill and is also a visiting lecturer in the department of public policy.

The second order of business is to thank the current to contributors, and remind the STEP community that the success of this newsletter depends on you. The current issue is a bit late due to promised contributions that never materialized. The next edition will be published prior to the APSA meetings, which are just around the corner. Please contribute your news, opinions, and research summaries early and often.

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FORUM OPINION

Political Control of Science & Technology

Helen Roland, California State University Sacramento

Many are aware of the political litmus tests the George W. Bush administration uses to make science appointments but few realize the extent that two riders on omnibus budget bills has permitted this administration to expand its ideological control of science to any research funded through grants or agreements with the federal government. As a result, this administration and its allies are restructuring science policy in this country.

Recently, the Union of Concerned Scientists issued *Scientific Integrity in Policymaking: An Investigation into the Bush Administration's Misuse of Science*, which documents a pattern of suppression and distortion of scientific findings by high-ranking Bush administration political appointees across numerous federal agencies. The report concludes that, in furthering its political agenda, the Bush administration has undermined the integrity of science in the federal policymaking process (http://www.ucsusa.org/global_environment/rsi/page.cfm?pageID=1322).

In April the President's science advisor, Dr. John Marburger, responded: "The UCS accusations are wrong and misleading.…are inaccurate, and certainly do not justify the sweeping document or the accompanying statement." (http://www.ostp.gov/html/ucs.html) The UCS issued the following in response to Dr. Marburger's comments:

> We have great respect for Dr. Marburger, and we will, of course, examine his report carefully. We would, however, point out that the cases that trouble us have all been reported before in respected scientific journals and newspapers, and have been further corroborated in the UCS report by interviews with scientists who were directly involved. Furthermore, since our statement was released on February 18, we have seen the administration handle science inappropriately in regard to mercury pollution from power plants and stem cell research. (http://www.ucsusa.org/news/press_release.cfm?newsID=385)

As serious as these charges are, the potential consequences of the administration's behavior is even more disconcerting when coupled with the Data Access or Shelby Amendment and the Data Quality Amendment.

The Data Access Amendment requires that OMB revise Circular A-110 to broaden the ability of the public to obtain primary data from the recipient of a federal award under Freedom of Information Act (FOIA), even if the data are not in the files of the a Federal agency but *only in the files of the recipient* (emphasis added).

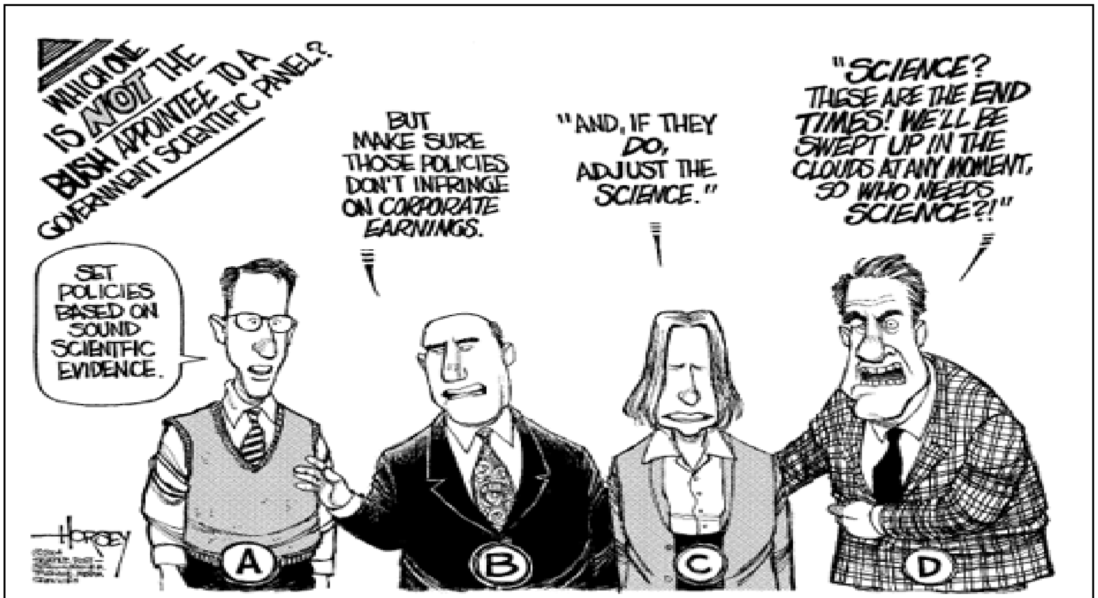
The proposed revision stated that in addition to the federal government's existing right to original research data—a right seldom invoked—the government could also authorize others to receive the data and that under the FOIA any person could request and receive original data. Moreover these others were authorized to receive the data and to "reproduce, publish, or otherwise use the data." The potential for the political manipulation of science here is obvious, not to mention the gate keeping ensuring that only politically correct data are available in a timely manner.

The Data Quality Amendment requires the OMB to develop guidelines for the sharing and access to information disseminated by the federal government and for "ensuring and maximizing the quality, objectivity, utility and integrity of information disseminated" by agencies. The amendment mandated that each agency develops procedures allowing "affected persons to seek and obtain correction of information maintained by the agency that does not comply with guidelines."

In June 2001, the Bush OMB proposed guidelines implementing the Data Quality Act [66 FR 34489]. Comments from the university community submitted to OMB with respect to the proposed guidelines reflect skepticism about the actual intent of the guidelines. A combined letter from the presidents of the Association of American Universities and the National Association of State Universities and Land Grant Colleges stated:

> We believe the imposition of new redundant tests and checklists that must be satisfied before information is released may be contradictory to the goal of transparency in government. Furthermore, we are concerned that this may provide still another avenue for interested parties to impede release of the government of material to which they object on political or economic grounds.” (Hornstein, n7)

The final guidelines were published in February 2002 [67 FR 8452]. The guidelines stated that the more influential the scientific work was likely to be, the higher standard of “quality” required. In some cases even studies published in respected peer-reviewed journals could be subject to reanalysis to confirm the reproducibility of findings.



Source: David Horsey, Seattle-P.I., February 26th, 2004.

In September 2003 the OMB proposed as supplementary to its February 22, 2002 Data Quality Guidelines, a bulletin on Peer Review Science. The national science organizations and individual researchers responded with extensive comments pointing out problems with the proposed bulletin. For example, in detailed comments on the proposal Stuart Shapiro and David Guston (December 12, 2003) concluded:

> The proposed bulletin raises many troubling questions. …As discussed above, the idea of requiring regulatory peer review at all is likely to cause greater harm than good. Requiring it in the manner proposed by OMB increases the costs while decreasing it benefits.

In April 2004, the OMB issued a revised bulletin and requested comments [69 FR 23230]. These substantial revisions provided, among other things, more discretion to agencies in determining the appropriate level of peer review and required the most rigorous form of peer review—potentially requiring peer review of work already published in juried journals—only for highly influential scientific assessments. The Presidents of the National Academies of Science, Engineering, and the Institute of Medicine announced their tentative pleasure with the new bulletin, noting that if adopted they could improve the quality of government’s science assessments. The revision still states that work previously reviewed in juried journals can be called into question under the guidelines. Comments on the revised bulletin were due May 28, 2004.

The national scientific societies and others deserve applause for their vigilance. Without their vociferous and detailed comments, the consequences of the program to implement the Data Amendments might have stopped any government action not in line with the Bush administration’s agenda. We cannot however assume the attack of the anti-science, anti-regulatory groups is routed. Consider these facts: While all research supported with *any* federal funds still is open to what Professor Hornstein calls the “Hyper search for ‘good science,’” these data laws omit oversight of research funded solely with corporate monies even when the work is performed on campuses. Several Congressional attempts to repeal or revise the data amendments have been defeated primarily along party lines. Regulations are always open to interpretation in a given situation. I believe that combined with the Bush administration's documented disregard for science these data amendments can change the role of science in policy for years to come.

FEATURE ARTICLE

Evaluating International Environmental Agreements

Tatiana Kostadinova, University of Minnesota – Duluth
Evan J. Ringquist, Indiana University

Over the last two decades, scholars and policy makers have come to recognize that the transboundary character of many environmental problems requires joint action by nation-states. Dozens of international environmental agreements (IEA) have been negotiated to establish rules and norms aimed at changing human behavior to protect the environment. When thinking about how successful international treaties have been in improving the global environment, three important questions come to mind: what features would make a treaty effective?; do existing IEAs embody such features?; and has participation of nations in IEAs really made a difference? To address these questions, we developed a research program that focuses on the performance of IEAs. The first phase of the project, sponsored by the German Marshall Fund of the United States, started in 2003.

We think that answering questions regarding the success of IEAs is important for several reasons. Since unilateral solutions to transboundary problems are not possible, identifying the characteristics shared by effective multilateral institutions will have clear implications for policy practitioners. The ongoing theoretical debate on the potential effectiveness of international institutions will also benefit from the study of the design and the effects of institutions created to protect the global environment. Evidence revealing the conditions under which IEAs can be effective may be of use to foreign policy makers in their attempts to reduce tensions among nations and regions in the world.

To understand whether and how international institutions can meet the challenge of protecting the world's environment, it seems important to recognize that policy compliance is hard to maintain in the absence of world government. Difficulties exist at both the international and the state level. Internationally, this is the well-known inclination of states to free ride and take advantage of others' compliance with norms and regulations. Being self-interested and egoistic, nations are tempted to go on with industrial production generating pollution and increase their relative gains from inter-state trade. Domestically, states may face capacity problems that make it difficult to implement policies required by IEAs. Nations vary in material, institutional, and technological capacity to comply with international commitments, as well as in the level of support their ruling elites receive from the public. Whether it is possible for IEAs to address these concerns becomes crucial for their success.

The scientific community has been divided in its evaluation of the role played by international institutions. Two competing schools assess their possible success quite differently: the "realists" maintain that cooperation among self-interested states is unlikely and institutions only reflect the distribution of power in the world, while the "institutionalists" believe that institutions facilitate cooperation in which nations benefit from collective behavior. Following the insights of the latter perspective, some researchers -- including Arild Underdal and Scott Barrett -- have started developing more sophisticated frameworks for predicting what makes some IEAs more effective than others. They specifically point at the importance of the malignant nature of some environmental problems and the setting of institutions as mechanisms that restructure incentives and foster participation. This pioneering theoretical work needs further development to incorporate insights from the central debate on international institutions and to integrate insights from studies of domestic policy effectiveness. The most important remaining gaps in our understanding of IEAs, however, are empirical, particularly cross-national evaluations of the effects of global environmental governance.

Recognizing these gaps in the study of IEAs, we started work on a research program aimed at identifying the sources of regime success and at testing hypotheses stemming from these sources. A pilot study on the effectiveness of the 1985 Helsinki Protocol for reduction of sulfur dioxide emissions in Europe not only inspired our interest, but also helped to outline major theoretical and technical challenges and the ways to handle them. That study confirmed the importance of cross-national IEA evaluation and showed that non-policy factors and the voluntary character of participation in international regimes dramatically influence the effectiveness of these regimes.

The present phase of our research includes three parts. We first develop a more comprehensive theory of IEA effectiveness and build a categorization scheme for predicting the performance of international environmental regimes. At the system level, our framework recognizes two groups of factors as important: (1) problem characteristics, particularly malignancy, uncertainty and complexity, and (2) institutional characteristics, particularly IEA mechanisms for changing incentives towards cooperation and building necessary capacities. Since the start of the program, we have worked extensively on the framework and the typology. Preliminary results were presented at the MPSA annual meeting in Chicago last April. The second part involves obtaining of documentation on all European environmental agreements, coding them, and placing them within the categorization scheme. We have compiled a comprehensive list of over 150 European IEAs, gathered the texts of those agreements, and developed a data protocol template and coding system. Currently, we are in a process of coding European IEAs on our indicators of regime characteristics. The third phase of the project involves estimating a series of models assessing the effectiveness of the Sofia and the Geneva protocols for reducing emissions of NOx and VOCs in Europe. These models employ modern techniques for dealing with missing data and the non-random ratification of protocols by states.

While coding and evaluating the effectiveness of European IEAs is important, the lessons drawn from a regional analysis are obviously limited. Our long-term goal is to extend this research, categorizing and evaluating the success of a larger inventory of global IEAs. “Going global” will increase the variation in problem and institutional characteristics, enhancing our leverage when trying to explain IEA effectiveness. In addition, going beyond Europe will inevitably bring in to the analysis nations from diverse stages in development and with different priorities and capacities. Our ultimate hope is that this research can produce critical test of IEA design that will deepen our understanding of effective responses to global environmental threats.

FEATURE ARTICLE

The Policy Legacies of the *Exxon Valdez* Oil Spill

George J. Busenberg, Graduate School of Public Affairs, University of Colorado at Denver

In March 1989 the oil tanker Exxon Valdez struck a reef in the Prince William Sound region of Alaska, and subsequently spilled an estimated 11 million gallons of oil into the waters of that region. Since 1989, policy reforms enacted in response to the Exxon Valdez spill have greatly strengthened the safeguards against oil pollution in Prince William Sound. This essay examines the evolution of those environmental safeguards before and after the Exxon Valdez disaster, based on field research conducted by Busenberg (1999).

The shipping of oil through Prince William Sound (referred to here as the Sound) began in 1977. In the period 1977-1988, the management of this marine oil transportation system was guided by a policy network consisting of the U.S. Coast Guard, Alaska state regulators, and a coalition of oil corporations active in the region. During that period, policy in this system reflected the prevailing view that a major oil spill was unlikely. As a result, the safeguards against oil pollution in the system were relatively weak in this period. These safeguards included (1) a vessel tracking system to detect navigational errors and hazards, (2) tug escort vessels to assist tankers with course corrections, and (3) response equipment to contain and recover spilled oil. During this period, the passage of each laden oil tanker in the Sound occurred largely without the protection of vessel tracking and tug escorts. Furthermore, the response equipment positioned in the Sound was not adequate to meet the demands of a major oil spill. Finally, some of these safeguards were weakened over time (for example, the oil industry disbanded its dedicated oil spill response team in the Sound).

This period of complacency was brought to an abrupt end by the Exxon Valdez oil spill. In March 1989 the single-hull oil tanker Exxon Valdez struck a reef in the Sound due to a navigational error. The vessel tracking system in the Sound did not detect this navigational error, and there were no tug escorts ready to assist the tanker in a course correction. The response equipment then available in the Sound was not ready for swift deployment to contain the spill, and did not have the capacity to recover and store the volume of oil spilled. The oil spilled from the Exxon Valdez subsequently spread over more than one thousand miles of Alaskan coastline, causing enormous wildlife casualties in the affected areas. The spill also caused major social and economic disruptions for local communities.

The Exxon Valdez disaster focused public and political attention on the environmental hazards of marine oil spills (and the weaknesses of existing safeguards against such spills). In response, new federal and state laws concerning marine oil pollution were enacted in America. Congress passed the Oil Pollution Act of 1990 (Public Law 101-380, referred to here as OPA 90), which greatly strengthened the regulation of the marine oil trade in U.S. waters. OPA 90 increased the federal penalties for marine oil spills, and required the use of protective double hulls on all oil tankers operating in U.S. waters by the year 2015. OPA 90 also mandated a series of major safety improvements in the marine oil trade of the Sound, and allowed each state to enact its own laws setting liabilities and requirements concerning marine oil discharges and removal. In addition, OPA 90 introduced a new institutional arrangement into the policy network managing the oil transportation system in the Sound: a Regional Citizens' Advisory Council (RCAC) designed to provide local oversight over the environmental management of the system. The members of the Prince William Sound RCAC were appointed by local communities and interest groups from the region affected by the Exxon Valdez spill, and the RCAC was given major funding with which to pursue its mission. Finally, the state of Alaska reformed its oil pollution laws in response to the Exxon Valdez spill. The period following the Exxon Valdez disaster was therefore marked by major institutional reforms at the national, state, and local levels.

The institutional reforms triggered by the Exxon Valdez disaster led to a remarkable enhancement of safeguards against oil pollution in the Sound. One set of enhanced safeguards was mandated by OPA 90 and new state laws in Alaska. This first set of enhanced safeguards included a massively reinforced oil spill response system in the Sound, a comprehensive vessel tracking system covering the entire Sound, and the use of tug vessels to escort every laden single-hull oil tanker for its entire passage in the Sound. A second set of enhanced safeguards resulted from collaborative learning efforts established by the RCAC and the other members of the policy network. These collaborative learning efforts applied a progression of new ideas and information to the management of system safeguards. The result was a second set of enhanced safeguards that included a new fleet of tug escort vessels with advanced capabilities for tanker assistance, and new weather reporting stations to warn tankers of hazardous weather conditions.

The patterns of policy evolution observed in this case are consistent with the predictions of the punctuated equilibrium theory of policy change. The punctuated equilibrium theory predicts that equilibrium periods in a given policy domain (marked by incremental policy change) will be punctuated by critical periods (marked by major policy reforms). Critical periods can establish new issue definitions and institutional arrangements that endure in subsequent equilibrium periods (Baumgartner and Jones 1993). The evolution of environmental safeguards in the marine oil transportation system of the Sound shows evidence of two equilibrium periods punctuated by one critical period (Busenberg 1999). The first equilibrium period (1977-1988) was marked by complacency within the responsible policy network and a policy that did not support strong environmental safeguards in the system. The result was a pattern of weakness and decay in these system safeguards. The Exxon Valdez disaster acted as a major focusing event that triggered a critical period (1989-1990). This critical period established a series of new institutional arrangements, including new laws governing the system and a new citizens' organization that was incorporated into the responsible policy network. The second equilibrium (1991 to the present) was marked by a new policy focused on the improvement of system safety, and by a series of major enhancements to system safeguards. In conclusion, the political response to the Exxon Valdez disaster created enduring policy reforms that fundamentally reshaped the regulation of this environmentally hazardous system.

FEATURE ARTICLE

Assessing Risk Information Regarding Coastal Runoff

William Blomquist, Indiana University-Purdue
Harvey Collins, Consulting Environmental Engineer
David Friedman, Consulting Economist
(Full copies of the report available from National Water Research Institute, www.nwri-usa.org)

In coastal urban watersheds, runoff from the landscape eventually reaches the ocean. If beaches along the ocean are used for recreation, three vital and interrelated questions arise. First, whether and to what extent urban runoff degrades the quality of ocean water that is used for recreation. Second, if so, whether and to what extent this runoff-related ocean pollution poses a risk to the health of recreational water users. Third, what sort(s) of policy response may be in order to address runoff-related ocean water pollution and/or the health risks it poses.

It is commonplace at the beginning of the 21st century to say that such decisions "should be based on science." But other factors are at play. One factor that may affect the development of policy responses to coastal runoff is the portrayal in the public domain of the connections between coastal urban runoff, ocean water quality, and health risks associated with recreational water contact.

The news media and other organizations have paid a great deal of attention to coastal water quality and human health risks lately, especially in California, in connection with the sudden increase in health advisories posted at public beaches, and the number of beach closures. That increase coincided with the implementation of California's recently enacted law (commonly referred to as AB 411) and regulations establishing statewide protocols for coastal water quality testing and bacteriological water quality standards. The rationale for AB 411's passage, and for the regulations promulgated to implement the law's purpose, was to put in place a set of risk-based coastal water quality standards for recreational contact (swimming, surfing, etc).

As implementation of the new law and regulations prompted more health warnings and beach closures, public concern about coastal water quality (as measured by public opinion surveys) also showed a sudden increase. Beach closures and frequent advisories also appear to have reduced attendance at public beaches and have harmed the economies of coastal communities that depend in part of beach-related tourism. The combination of public concern and economic impacts has prompted local public officials to respond to the issue of coastal water quality. A particular focus of attention has been coastal runoff—the water that reaches the coast from inland, from streams and storm channels, carrying residue from streets, landscaping, commercial activities, farms, and even pets.

In the coastal urban watersheds of Southern California, a remarkable number of regulatory and remedial actions have been undertaken concerning coastal runoff from mid-1998 through mid-2001. Millions of dollars of public funds have been devoted to a variety of efforts to reduce, intercept, divert, or treat urban runoff before it reaches the ocean, and millions more have been spent on efforts to improve ocean water quality monitoring.

An interesting question is whether these actions represent policy responses "based on science" or a reaction to perceptions in the public domain of the risks associated with coastal runoff. This report presents the results of a 10-month research project to address that question.

Using a specific time frame (June 1, 1999-December 1, 1999) and two highly developed coastal urban regions for comparison (Southern California and Florida), we have compiled and analyzed a database of news media accounts of health risks associated with recreational ocean water contact. We found that runoff was the most frequently identified source of coastal water pollution in news media reporting, and that urban runoff in particular was the most frequently mentioned type of runoff. Runoff was connected in news media reports to the presence of high bacterial indicator levels in coastal water, although the bacterial indicators used for coastal water monitoring are intended primarily to signal the presence of intestinal waste (sewage). We also found that most news reports from the period in question drew cause-and-effect connections between the presence of high bacterial indicator counts in recreational waters and human illnesses.

We have compared these public portrayals of coastal water quality and health risks with "the science." We have summarized and synthesized the published research on (a) the advantages and disadvantages of the various indicators that are and have been used to measure and assess ocean water quality, and (b) the epidemiological studies of the relationships between (i) exposure to ocean water of various levels of quality based on those indicators and (ii) the likelihood of developing illness symptoms.

The published scientific literature we reviewed, on bacterial indicators of ocean water pollution and on the health risks associated with recreational water quality contact, has accumulated over more than 50 years. We found that while advances were made in water quality monitoring during the 20th century, there remain important sources of error that can produce either "false positives" or "false negatives."

Sampling and measurement errors, and even the delay between the time when a water quality sample is taken and the time when lab results are returned, can result in beaches being posted as unsafe when they are not or going unposted when they should be. These error factors would exist even if water quality was monitored directly for each pathogenic organism that might be present in a water body. Instead, because monitoring for each potential pathogen would be unreasonably expensive and time-consuming even if it were possible, bacteriological water quality indicators (specifically coliform bacteria and/or enterococcus bacteria) are relied on instead. Research on, and the use of, water quality indicators dates back 100 years, and there are sound bases for using them. But the use of water quality indicators does introduce yet another error factor into water quality monitoring: these bacteriological indicators are only correlated with the presence of actual pathogens, so indicator concentrations in a water sample may be high even when pathogen concentrations are low, or vice versa.

One noteworthy feature of the AB 411 regulations in California was the addition of enterococci as a bacteriological water quality indicator in the coastal water monitoring program. Enterococci concentrations exceeding the regulatory standards are have accounted for the great majority of the increased number of posted beach warnings and beach closures since the regulations took effect in 1999. Yet it appears from our review of the scientific research literature on water quality testing in ocean water that the addition of enterococci to California's coastal water monitoring program was based on sound considerations. Enterococci share some of the desirable properties of coliform bacteria (specifically, being comparatively easy to colonize and count), but have other properties that make them preferable to coliforms as water quality indicators in salt water. Thus, AB 411's inclusion of enterococci as an indicator may have triggered more beach warnings and closures, but may also have represented an improvement in the water quality monitoring program.

Still, both coliforms and enterococci have substantial weaknesses in identifying the risk of illness from recreational water contact. First, these indicators were identified and originally used to detect fecal contamination of drinking water, and therefore the risk of gastrointestinal illness from direct ingestion of water. While swimmers and surfers undoubtedly do ingest some water during recreation, the quantities of ocean water swallowed by a swimmer or surfer are likely to be small compared with direct ingestion of drinking water. Second, most of the illness symptoms reported by recreational water users are *not* gastrointestinal. The most common complaints of recreational water users are respiratory illness, eye or ear irritation or infection, and skin rashes. It is not clear that indicators of fecal contamination related to gastrointestinal illness correlate well with pathogens in recreational water that may be causing these non-gastrointestinal symptoms. Third, the coliform and enterococci indicators do not directly detect the presence of viruses in recreational waters, and do not appear to correlate very well with virus presence either. Fourth, the coliform and enterococci indicators do not detect the presence of non-organic contaminants (e.g., metals, petroleum products, chemical fertilizers and pesticides, etc.), which may be especially likely to be present in coastal urban runoff and may also pose as-yet undetermined health risks to recreational water users.

Despite these weaknesses, bacteriological water quality indicators have been associated with illness symptoms experienced by recreational water users. Epidemiological studies of recreational water quality and illness among swimmers have been conducted for more than 50 years, in several countries, using a variety of study designs. As might be expected from such a body of studies, there have been a few that found no relationship between bacteriological indicators and illness symptoms reported by swimmers compared with non-swimmers. But a review of 22 epidemiological studies published from 1948 through 1996 found that 19 of the 22 found statistically significant relationships between indicator concentrations and illness symptoms. Of course, these relationships are correlations only—epidemiological studies can find associations, but do not generate the cause-and-effect evidence of the etiology of illness generation.

Our report pays particular attention to the Santa Monica Bay epidemiological study conducted in reported by Haile et al. (1999). The Santa Monica Bay study stands out for at least three reasons. First, it focused upon recreational waters receiving storm drain discharges, as opposed to sewage discharges that were the focus of other epidemiological studies. Thus, the Santa Monica Bay study is arguably more relevant to the question of health risks associated with runoff-impaired coastal water quality. Second, the Santa Monica Bay study is the most recent large-scale epidemiological study of swimming-associated health risk. Third, having been conducted in coastal Southern California, the Santa Monica Bay study is understood to have strongly affected the California Legislature's adoption of AB 411 in 1997 and the California Department of Health Services' promulgation of regulations in 1999.

The Santa Monica Bay epidemiological study is often cited in news reports as "proving" that contaminated runoff or storm drain discharge "causes" increased illnesses among recreational water users. It is also often described as showing that swimming "near" storm drains raises the risk of illness for beachgoers. And its findings are presented as if they were applicable to the entire Southern California coast. In these respects, the treatment of the study's findings in news reports has gone far beyond the study researchers' own reporting of, or claims about, their findings.

In fact, the findings of the Santa Monica Bay epidemiological study are more tentative and mixed than commonly reported. For example, rather than experiencing the highest risk of illness, those swimming "near" the storm drains in the study (i.e., within 50 or 100 yards of a drain) had the *lowest* rates of illness of any group in the study, including the control group. The greatest frequencies of illness symptoms appeared among two groups of subjects in the study—first, the 7% of study subjects who were observed swimming *directly in front of* a flowing storm drain, and second, the control group of subjects who swam *400 yards or more away from* the drains. Finally, the beach conditions that were the focus of the Santa Monica Bay study—i.e., locations within 100 yards of a perennially flowing storm drain—do not characterize the entire Southern California coast or even most of it. Less than four percent of the entire Southern California coast shares the conditions of the locations included in the Santa Monica Bay study.

Overall, relying upon the current bacteriological water quality indicators creates substantial dilemmas for local officials attempting to respond to demands for water quality improvements. On the one hand, there is a substantial body of research showing relationships between indicator concentrations and (at least gastrointestinal) illness symptoms among recreational water users. And high indicator counts trigger beach warnings and closures, stimulating public pressure for actions (even very expensive actions) to improve water quality. On the other hand, there is considerable uncertainty about the connections between these water quality indicators and the particular types of illness symptoms most commonly reported by recreational water users, and the connections between these water quality indicators and viral or non-organic contaminants. Therefore, it is possible that actions taken to drive down the concentrations of these bacterial indicators may not reduce the health risks most often experienced by recreational water users.

One thing that is fairly certain is that the news media reporting about the risks associated with bacterial indicators of coastal water quality simplified and overstates the case, compared with what may be found in the published scientific literature. As noted above, a majority of the news reports we analyzed drew cause-and-effect connections between the presence of indicator bacteria and illnesses experienced by recreational water users. Such claims go beyond what the established science can support.

Finally, our report analyzes the financial and public policy consequences of basing policy responses on one set of portrayals compared with the other.

We have extrapolated from the Santa Monica Bay study the potential number of excess illnesses associated with impaired recreational water quality for the entire Los Angeles County coastline. In doing so, we made very conservative assumptions that would tend to increase the estimate of illnesses rather than diminish them. Drawing upon other published literature on the estimated direct and indirect costs of illnesses, we have estimated the financial consequences associated those anticipated excess illnesses. Our estimates are that, if water quality improvements could eliminate *all* excess illnesses, the benefits (in terms of avoided costs of those illnesses) could reach a maximum of $35 million per year. The expected costs of water quality improvement measures currently planned or underway exceed those estimated benefits –e.g., the estimated cost of the Los Angeles Regional Water Quality Control Board's plan to eliminate trash from the Los Angeles River over the next ten years is approximately $1.75 billion, or $175 million per year. Thus, the estimated costs of that one measure alone would far exceed our highest estimate of the benefits in terms of reduced health risks from recreational water contact.

By estimating the costs associated with reducing coastal runoff in Southern California relative to the health benefits achieved, our report attempts to contribute an alternative perspective to the policy debate on what to do about coastal runoff in Southern California and, presumably, other coastal urban watersheds. We recognize, of course, that factors other than expected costs and benefits, are probably driving the decision making processes regarding runoff reduction and coastal water quality improvement. Those factors are probably attributable to the public perception of the health risks, which may have been shaped by the risk information that has been communicated to them.

FEATURE ARTICLE

Project Summary: The Global Governance of Technological Revolutions

Michael E. Smith, Department of Political Science, Georgia State University

This project explores how the international community copes with revolutionary technological change. Technology plays a fundamental role in human history, and the development, dispersion, and regulation of technology are defining features of modern capitalist economies. Many technologies also have the capacity to transcend state borders and thus undermine national autonomy. However, states balance the risks and benefits of new technologies in different ways, which often leads to international conflict. In this sense technology is so ubiquitous today that it may represent a new sub-field of international political economy. To help facilitate more research in this area and generate testable hypotheses, my goal is to develop and test a general analytical framework for investigating the global governance of high technology. More specifically, I examine: 1) the extent to which major technological achievements contribute to political conflicts among states; 2) the various ways these conflicts are resolved; and 3) how solutions to common problems impact relevant stakeholders of high technology.

In this study, the term "technological revolutions" is used to describe currently available technologies that are highly complex; multidisciplinary; involve the intensive use of scientific expertise; often generate both commercial and military applications; create entirely new industries, products/services, and occupational roles; and produce a variety of uncertainties and unintended consequences. Revolutionary change is by definition quick and dramatic; it provides a new focal point for social and political behaviors. Such revolutions often create large sources of wealth and thus contribute to national power; in this way they have an inherent capacity to remake or even destroy previous ways of thinking, living, and working, which often provokes domestic and international pressures for placing greater controls on technology. In addition, the social behaviors inspired by technological revolutions cross national borders in a variety of ways, both positive and negative. To the extent that governments prefer to control these behaviors, broader flows of goods/services/ideas, and their own borders, they will be concerned with new technological developments that facilitate such movements. Finally, such revolutions can also empower or weaken various stakeholders in different ways, which encourages them to engage in political action. And when all of this activity provokes international political conflict, the response of governments in turn creates a new global public space for managing the costs and benefits of each technology.

Based on these criteria, the project primarily focuses on five modern technological revolutions: nuclear technology, commercial aviation, information technology, biotechnology, and commercial space technologies. This choice of cases also covers the topics or issues that tend to dominate the literature on international political economy: weapons, energy, communications, transportation, and agriculture. How the international system – consisting of states, international institutions, non-governmental organizations, and private firms and citizens – responds to the political conflicts generated by the development and diffusion of major new technologies is a major focus of the project. In particular, it examines three sets of related questions: 1) the specific types of collective action problems have been generated by modern technological revolutions; 2) the ways the international community has responded to those problems; and 3) the overall effectiveness of the response in terms of solving or mitigating the collective action problems. These activities, among others, represent global governance in its broadest sense: the capacities to make, enforce, and revise common rules for managing specific technologies.

I should note that I do not intend to examine all potential collective action problems related to these technologies, only the most prominent or theoretically interesting as determined by current trends in the literatures on each. I am most concerned with so-called “mixed motive” situations, where governments and firms have incentives to cooperate and to defect vis-à-vis new rules. In addition, the analysis pays most attention to a fairly limited set of key states: the U.S., the more technologically-advanced members of the European Union (EU), and to a lesser extent, Japan. In today’s international economy, these actors represent the largest and richest markets for technological innovation, and U.S./EU/Japanese disputes over technology-related issues are a major focal point in the literature on international political economy. Some states (chiefly the U.S.) prefer a reactive approach to regulation, which assumes that technology is benign. Controls are imposed only after threats have been scientifically proven. Others (such as certain European and less developed states) favor a more pro-active approach, which assumes technology to have inherent risks and imposes controls at the outset. Japan is often a key actor in determining which view (that of the U.S. or the EU) prevails during many of these disputes, and several less-developed countries (such as India, Brazil, and China) have also emerged as supporting players. The analysis therefore varies its attention to these different states depending on the issue at hand.

The specific collective action problems of interest to this project can be grouped under two general headings. The first set involves problems generated by the development or use of the technologies themselves, such as research and development practices, standard-setting, and property rights (including patterns of ownership). The second set involves the reduction or elimination of negative externalities created by the use of the technology, such as environmental protection, accidents, criminal activity, and conflicts over broader ethical concerns such as privacy or free speech. The specific international responses can be ranged along a matrix that comprises a choice between states (public authority) and markets (private choices) on the one hand, and between domestic and international levels of governance on the other hand. We can further determine the extent to which the governance solution has been institutionalized, measured in terms of the clarity, formality, and bindingness of the rules for each problem. This framework allows for the inclusion of international responses ranging from pure market-generated domestic common standards to maximize the efficiency of new technologies to the creation (by cooperation among national governments) of authoritative global regulations implemented by permanent international organizations. Finally, the question of policy effectiveness is determined by the degree of state and/or firm compliance with those rules and several other measures, such as environmental protection, patents, lawsuits, criminal statistics, and so on, based on the case at hand.

Given the wide scope of this project, I would be eager to hear from those of you who may be working on similar topics, especially in terms of the specific case studies or collective action problems of interest to this study. I would also be happy to provide some preliminary papers of mine on this topic that are now being revised into a book manuscript. I may be reached at <mesmith@gsu.edu>.

BOOK REVIEWS

Jamison, Andrew. 2001. *The Making of Green Knowledge: Environmental Politics and Cultural Transformation*. Cambridge University Press

Andrew Jamison is an American who is also a Professor of Technology and Society at Aalborg University in Denmark. This background allows him to offer comparisons among environmental movements in Denmark, Sweden, Germany, and the U.S.-- but the primary problem with Professor Jamison's ambitious book is that it tries to do much more than that. He offers a comparative analysis of environmentalism, plus an historic overview of Western science, plus a review of environmental literature that references scores of books-- all in the span of 202 pages.

He begins with a much-needed, incisive critique of the environmental movement: "Throughout the world, a disparate range of activity is taking place in the name of ecology and sustainable development, and yet there is a gnawing sense that there is little, if any, overall direction to the process." (18)

The study of environmental issues and movements is in no better shape, as Jamison writes, "environmental social science has become a debating, or, even worse, a mutual-indifference society, filled with divergent and fragmented (mis) understandings." (27) His description, brimming with frustration, of competing and conflicting environmental subfields and experts who only write for each other will ring true to most scholars/activists in the field. Jamison argues that for scholars to contribute to global development that is "socially appropriate and ecologically sustainable" (36), we must seek a broader understanding beyond our own disciplines. That is, we need to examine how we arrived at the present counterproductive state by examining the historical background, by also being comparative, and finally, by exploring "cognitive praxis" in various societies, i.e., the deep-seated assumptions and beliefs that societies put into practice. All of this is more than daunting for one book, and the result unfortunately, often reads like an encyclopedia, with hundreds of parenthetical citations and sweeping breadth. In fact, the historical background chapter, which goes back to the Renaissance in its quest for the historical context of environmentalism, was first published in the International Encyclopedia of Social and Behavioral Sciences (Elsevier 2001).

Jamison offers more interesting chapters outlining the social movement phases of environmentalism; briefly comparing national political cultures of Sweden, Denmark, and the U.S.; and analyzing green business through a case study of the Greening of Industry Network. For this reviewer, Chapter 6 "On the Dilemmas of Activism" was the most compelling and useful of the book. He looks at different types of "green knowledge-making" among ecological activists and groups them into categories of community, professional, militant, and personal environmentalists. His assessment of professional organizations is especially telling: "Green experts have little incentive to cooperate, and they also have little reason to develop a more comprehensive program for knowledge production. . . ." (163) The author writes: "[I]t sometimes seems as if academics and activists were living on, and trying to save, two different planets." (162) This is the recurring theme of the book, but in this chapter, he offers two helpful, concrete suggestions: that academics/activists connect with "enlightened civil servants" in the public sphere; and that we conduct regular bridge-building conferences for sharing strategies and knowledge. (171-74)

Jamison concludes with a stab at theory building: identifying three "cognitive regimes of sustainable development": residual, dominant, and emerging. (179) But this model is not applied in a clear-cut way. Despite its ambitions, this book offers one analysis of the dilemmas of current environmentalism, but is nowhere near offering a viable solution.

---Anne Motley Hallum, Stetson University

Dara O'Rourke. 2004. *Community Driven Regulation: Balancing Development and the Environment in Vietnam*. Cambridge: MIT Press.

The great challenge ahead for those who strive for a sustainable future is how to balance the needs of development and economic well being with environmental health and quality of life. The record of the past century and more has been one where community needs and environmental health and safety have suffered in the face of the demand for industrial development, growth, and modernization. Nowhere has this become more serious than in developing countries. How can the balancing act of sustainable communities evolve in the context where resources are weak, communities and nations remain at a competitive disadvantage with powerful states and their enterprises, and the political and economic infrastructure is fragile at best? Environmental regulation in these contexts has been a story of failure and loss.

Dara O'Rourke provides not only a heartening analysis of the prospects for Community Driven Regulation (CDR) as he found it in Vietnam, but he also provides insight into how powerful multinational firms, as well as indigenous industrial enterprises, can be regulated and motivated toward developmental plans that minimize pollution, dislocation, and environmental decay. O'Rourke follows a series of works coming from the MIT Press, like William Shutkin's The Land That Could Be (2000), which substantiates hope that even the weakest communities can influence the course of development in meeting the needs of local communities and neighborhoods. Like Shutkin's study of civic environmentalism in America, O'Rourke finds in Vietnam patterns of promise for sustainable futures based on quality of life.

O'Rourke is an anthropologist teaching in the Department of Environmental Sciences at the University of California at Berkeley. In Community Driven Regulation he analyses six case studies, which surprisingly demonstrate that regulation can take place even where it might be least expected. The author then sets out to analyze the conditions under which this is possible. Vietnam presents a distinctive setting where the ties that have bound communities together for centuries have generated opportunities for dialogue between large polluting commercial enterprises with the residents living nearby. Even in a country where multinational firms, such as NIKE, are being encouraged to set up shop, Vietnam has very active communities where environmental issues are concerned. Even so, the Vietnamese are ambivalent as they see the merits of modernization and development on the one hand, and grieve over the destructive capacity of these projects in their living standards and the land.

Despite being a "communist country," local communities in Vietnam tend to be strong in their willingness to confront multinational firms and government agencies. It is their sense of identity and willingness to engage in local mobilization of people that can often bring pressure to bear on the government, and then by extension to industrial firms. Although the future remains filled with difficulties for Vietnamese communities, O'Rourke's study of Vietnam provides a series of cases that have ramifications not only for developing countries, but also strategies for industrialized nations like the United States. O'Rourke's research and methods present us with a unique account of the possibilities for CDR. The Vietnam cases, which O'Rourke presents not as case studies, but through the model of "key actors" shows the value of the necessary social capital that makes community so powerful. It is a slant of light on "bottom-up" environmental policy, as opposed to the typical "top-down" approach. O'Rourke's study of Vietnam shows that the relationship between the state and communities may lead to effective environmental management and a sustainable future precisely because of the willingness of common people to direct their lives.

---*Anthony R. Brunello, Eckerd College*

Dennis Clark Pirages and Theresa Manley DeGeest. 2003 *Ecological Security: An Evolutionary Perspective on Globalization.* Rowman and Littlefield.

This book sets out an ambitious agenda, no less than the reconceptualization of security in an age of globalization. Such agendas have not been rare in the literature of late, especially those that focus explicitly on how ecological dynamics compel a revision of traditional notions of security. However, what sets this book apart is its depth and clarity. It presents sophisticated ideas clearly and should find a wide audience as an undergraduate text as well as in the general public.

Ecological Security opens with a familiar discussion of a changing world and how globalization is altering multiple aspects of social and ecological life. The implication they draw is also familiar—the need for a new security outlook. The perspective the authors elaborate in advocating a particular security outlook, however, is of particular value in this text. They elucidate four equilibria or balances that human security rests upon (21):

- Human demands balanced with Nature's ability to provide resources
- Demographic Trends in humanity balanced with demographic trends in other species
- Technological innovation/health policy balanced with microbial mobility/adaptation
- Growing resource demands balanced with an ability to manage conflict

The notion of human security resting on these four balances is an interesting one and brings needed clarity to the human security debate.

The next four chapters then outline a series of challenges that globalization (taken to be an overarching trend that encompasses many processes) presents to these four balances. The authors examine demographic change, degradation of global commons, global energy crises, food supply concerns, and biosecurity (extinctions, bioinvasion and microbial movement/adaptation). Too many books stop at this point having outlined the challenges. Pirages and DeGeest take the next step and discuss the socio-political responses to these challenges—bringing politics back into their new security perspective. Chapters Seven through Nine discuss technological responses, development alternatives, and global governance. The final chapter then provides a series of prescriptions for achieving security, given this new perspective.

This is a tightly written, meticulously researched attempt at redefining security. The book has ambitious aims and succeeds on many levels. Perhaps most importantly, the authors are able to weave together what are often considered disparate threads into a coherent whole throughout the book. The organizing principle of the four equilibria provides intellectual cement for the author's forays into the wide-ranging challenges that face humanity. Indeed, the biggest contribution of the book may be the provision of an overarching approach to human security that is coherent and captures multiple threats in a single rubric. In this way, the text asks us to reconsider not just security, but approaches to world politics in general.

As much as the book does well, however, it is not without flaws. The initial chapter contains the most important insight (the four equilibria), but it also contains potentially the most troubling aspect of the text. The discussion that leads up to the four balances is an exposition on sociobiology that is not only unnecessary for the development of the perspective, but also has the potential to be misunderstood. The authors present as unproblematic some enormously contentious 'facts' about biological and cultural evolution and how they interact.[1] Students (to say nothing of the general public) will need more context on these debates if they are to avoid misunderstanding evolutionary processes. In addition, the authors seem to struggle with carrying their perspective out to its logical conclusion. This is not so much a critique as a recognition that calling for a new perspective is an enormous challenge. The chapters that describe humanity's response are much more an exposition of the issues and challenges that present obstacles to a response. The authors should not shrink from this problem, but be bold in saying that because their perspective has not yet come to dominate political thinking, these are the social/political challenges to realizing human security. Similarly, the authors find themselves a bit in the same limbo that much of the global governance oriented literature finds itself in. Namely, the authors call for a radical reconception

[1] To be clear, I am not questioning evolution in principle or on religious grounds as creationists do. Rather, the processes of evolution, both biological and cultural, that the authors discuss are highly contentious and may not represent the full spectrum of research on evolution.

of political space, but their prescriptions still focus on the nation state (five of the ten).

These critiques notwithstanding, this book is a valuable addition to the literature on security, environmental politics, and global governance. The depth and range of the research, combined with a coherent vision and clear exposition make this a valuable text for students and the public.

---*Matthew J. Hoffmann, University of Delaware*

M. Granger Morgan and Jon M. Peha, Editors. 2003. *Science and Technology Advice for Congress.* Resources for the Future.

In a climate where the objectivity and relevance of science seems nearly everywhere subjected to political scrutiny, Morgan and Peha's edited volume is refreshing, if not poignant. The latter part of the twentieth century saw episodic and deep currents that elaborated the complex relationships between science, rational decision-making and the political process. The Administrative Procedures Act and the National Environmental Policy Act, to name just two, were hallmarks of our democracy's conversation with itself about transparency, reason, and politics. More recently, a growing literature has examined case after case of institutional innovations and Congressional mandates to bring science to the table. Which table, for what purposes, and at whose behest has been the focus of lively debate in Congress and among a broad range of interests and stakeholders.

Morgan and Peha's slim volume captures a range of perspectives on how science and technology advisory functions might be brought to bear on the kinds of technical issues Congress faces, and will face well into the future. The book's genesis was a single day's workshop, held in the capital in June 2001. However, this is no mere proceeding. It is, rather, an occasion to articulate a series of critical analytical functions that have, in the apparent opinion of most of the various authors, been weakened over the past decade. Perhaps part festschrift and part requiem, the collected essays argue for institutional investment in the kinds of services and functions once provided by the now-defunct Office of Technology Assessment (OTA).

While the OTA serves as a benchmark for many of the authors, it is by no means taken uncritically as the correct model for articulating scientific information into the policy process. Smith and Stine (chapter 2) explore the history of ways in which Congress has attempted to satisfy its need for objective and reliable assessments and policy analyses. Avoiding a commonly flat-footed tendency to wonder whether Congress or the President even want objective information, they take an appropriately nuanced approach to the question: "*i*s there a need for particular kinds of advice on particular issues in the light of present trends and institutional realities and a reasonable expectation that something useful can be done?" (22)

Margolis and Guston (chapter 3) provide a concise account of the twenty-three year rise and demise of the OTA, including a brief analysis of its role in the balance of power between the legislative and executive branches. If knowledge is power, the role of knowledge (not "information", as the framers of the book emphasize) is brought into stark relief in the struggle for balance between the Congressional mandate to make trade-offs and the executive's pursuit of singular agendas.

The remainder of the collection explores and evaluates possible options. Vig (chapter 5) compares several successful European institutional experiments (Parliamentary Technology Assessments, or "little OTA's"), and finds them highly effective even at substantially smaller scales of investment than OTA required. Hill (chapter 7) provides a very useful, if brief, discussion of the obvious alternative institutions, such as the Congressional Budget Office (CBO), the Congressional Research Service (CRS) and the General Accounting Office (GAO). In each case, he concludes that the mandates and institutional norms of each likely preclude or limit their ability to provide OTA-like functions.

What are these OTA-like functions? Smith and Stine find three key criteria in their assessment of scientific advisory functions: relevance, disinterestedness, and credibility. While no one has suggested that CBO, CRS or other similar institutions are irrelevant, too-interested or non-credible, their services are generally more synthetic and immediate than the kinds of analyses provided by scientific expertise with time and resources to explore a full range of impacts and implications of a given policy direction. Morgan and Peha add in their final chapter a fourth important criterion. While the current Congressional services may fill knowledge gaps in the span of hours to weeks, and the National Academy is suited to extensive assessments that take months or even years, the mid-term needs for focused assessment and policy analysis are not addressed. Therefore, timeliness is another critical characteristic emphasized by the authors, as well as by the volume itself.

Three final chapters explore possible institutional models. The range is as follows: First is a "lean and distributed" low-overhead organization, in which a network of experts is tapped to provide analytical services, and whose projects and products are determined by a clearly held set of criteria. Second is a "dedicated" institution that Congress establishes and funds, something like the OTA, receiving its marching orders through close Congressional oversight. Finally, a disinterested non-governmental organization (NGO) would provide a home distant enough from the policy process to be objective, but its success would be measured by the reliability and value of its products.

This collection makes a solid contribution to an important and growing analytical literature. But there is also no mistaking the purpose of its authors. Congress continues to need objective and reliable knowledge, informed by real science, about critical and abiding issues of national and international concern. Advocacy itself will not do the appropriate homework. Basic research institutions, such as universities and government research services, for the most part keep their distance from the policy making process. Yet, at this time, no institution currently fulfills the need that the Office of Technology Assessment once filled. This little volume is positioned to help Congress think carefully about their own knowledge gaps and appropriate ways to close them.

---*Mark Nechodom, USDA Forest Service, Pacific Southwest Research Station*

Bruce Bimber. 2003. *Information and American Democracy: Technology in the Evolution of Political Power*. Cambridge: Cambridge University Press.

Bruce Bimber has written a careful, nuanced study of the relationship between political power and information in the United States. Technology and information do not, in his analysis, lead automatically or directly to increased power. Instead, the availability of certain technologies for obtaining or communicating information has the potential to increase power, but political activists can seek power only within the existing political structure. Technology and information, in Bimber's view, are neither necessary nor sufficient conditions for political influence, but they sometimes make it possible for activists to influence policy in previously impossible ways.

One of the most interesting contributions of this book is Bimber's discussion of America's four information revolutions. The first information revolution took place in the 1820s and 1830s. The simultaneous innovation of two information technologies—the nationwide postal service and inexpensive newspapers—allowed for the diffusion of information to a significantly greater number of citizens. These developments, Bimber argues, provided the necessary ingredients for the rise of a majoritarian polity. The second revolution occurred between 1880 and 1920, when industrialization and the growth of the U.S. government resulted in a more complex information landscape. The American political scene became more pluralist with the development of interest groups to address information complexity. The third revolution, marking the dawn of the broadcast era in the 1950s through the 1970s, created opportunities for communicating information to mass audiences. The fourth revolution, still unfolding today, began with the introduction of cable television and continued with the development of the Internet and World Wide Web applications. Its main features are the availability of multiple channels for obtaining information at low cost, the opportunities for elites to acquire information about the audience and therefore to tailor the information it sends out, the ease of citizen to citizen communication, the international reach of news, and the archiving of news and information. Together, these features create unprecedented opportunities for activists to become informed and mobilize for policy advocacy.

Notable in Bimber's discussion of these information revolutions is their evolutionary pattern. Broad changes in access to and use of information have been a feature of the United States since its founding. People respond to change in the environment—change in available technology, change in social relations and political problems—by adapting. This pattern of social evolution and adaptation to change provides two important insights. First, people use information to further their political interests, but only within the context social and technological conditions. An increase in access to information does not automatically translate into more democracy. Some people, because of their place within society, the material resources they have, and their personal attributes, are better suited to benefit from changes in information access than others. The second insight is more basic still: access to information has changed, is changing, and, in all likelihood, will continue to change. Though we often deem the late 20^{th} to 21^{st} Century the "Information Age," the Internet era represents only the most recent information revolution.

The current information revolution is particularly interesting for us because of the innovative uses of information technology by political activists. Bimber details how creative and enterprising interest groups and political parties have marshaled Internet technology for lobbying, attracting new members, and getting their opinions and analyses into public view. He provides case studies of the Libertarian campaign to squelch the proposed "Know Your Customer" rules for banks, the coalition of environmental advocacy groups, the Million Mom March for gun control, and the presidential campaigns of 2000. The cases differ in scope: the campaign against "Know Your Customer" and the Million Mom March were limited to a single focus. The environmental advocacy groups, however, developed strategies for using information and technology for a wide range of environmental issues. The presidential campaigns were also broad in terms of the issues they addressed. The groups also differed in how successful they were. The Million Mom March, for example, was an organizational success, but the policy outcomes were more modest. The anti-"Know Your Customer" campaign was more successful in securing its preferred policy outcomes. The environmental advocacy has had a mixed outcome, and with campaigns there are, of course, some winners and some losers.

The real contributions of this book are the rich case studies and the discussion of early American political philosophy approaches to information. The statistical analysis is interesting but, ultimately, not as compelling as the theoretically informed narratives of cases. The statistics do not detract from the value of this book, and they will be of greater interest to those who look for statistical hypothesis testing and significance. Overall, Bruce Bimber has written an excellent, engaging book that explores the connection between information, political power, and democracy.

---*Renée Marlin-Bennett, American University*

NEWS OF THE DISCIPLINE

Update from the National Science Foundation

NSF submitted its budget request for the next fiscal year (October 1, 2004 – September 30, 2005) in early February. At the February 11 hearing before the House Science Committee, Dr. Rita Colwell, NSF Director since August 1998, told the House Science Committee that she was leaving before the end of the month. Filling her position until a new director is confirmed is Dr. Arden Bement, Director of the National Institute for Standards and Technology.

NSF requested a 3 percent overall increase, but House Science Committee Chairman Sherwood Boehlert (R-NY) and other Committee members would have liked a larger increase. Of particular concern to some on the Hill is the proposed transfer of the Math and Science Partnership Program from NSF to the Department of Education.

The Social and Economic Sciences fared relatively well, however, with a proposed 9 percent increase. The past few years at NSF have seen a growing interest among natural and physical scientists in the valuable contributions of social, economic, behavioral, and cognitive sciences. An example of this can be seen in the new initiative, "Human and Social Dynamics," a program to support breakthroughs in knowledge about human action and development as well as organizational, cultural, and societal adaptation and change. Another program, Science and Technology Studies, encourages proposals from various disciplinary perspectives, including political science, that lead to an understanding of the character and development of science and technology, including their cultural, intellectual, material, and social dimensions. In the political science program there are also new and transformative training opportunities that link formal and empirical analysis, better known as the Empirical Implications of Theoretical Models (EITM). Already there are summer training institutes in EITM where students and junior faculty can apply (see the list of "Related Links" on the Political Science Program's web page, <http://www.nsf.gov/sbe/ses/polisci/start.htm>). The social science program solicitations can be found at <http://www.nsf.gov/home/sbe/>. Other NSF programs in nanotechnology, cyberinfrastructure, environmental research, and arctic sciences offer interdisciplinary opportunities to incorporate ethical, policy, or societal dimensions. For future funding priorities in specific areas, see the budget request at <http://www.nsf.gov/home/budget/start.htm>.

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Upcoming Request for Proposals

National Science Foundation; Political Science
Proposal deadline: August 15, 2004

National Science Foundation; Science and Technological Studies
Proposal deadline: August 15, 2004

National Science Foundation; Societal Dimensions of Engineering, Science, and Tecnology
Proposal deadline: August 1, 2004

National Science Foundation; Innovation and Organizational Change
Proposal deadline: August 15, 2004

Upcoming Conferences

American Political Science Association
Chicago, Illinois: September 1-5, 2004

M*idwest Political Science Association*
Chicago, Illinois: April 7-10, 2005

Western Political Science Association
Oakland, California: March 17-19, 2005
Proposal deadline: September 10, 2004

Association for Public Policy Analysis and Management
Atlanta, Georgia: October 28-30, 2004

Other Annual Meetings can be found at:
http://www.apsanet.org/PS/conferences/index.cfm

STEP Panels at APSA 2004, Chicago

39-3 Revisiting Policy Learning
@ Thursday, Sep 2, 10:15 AM
39-7 Perspectives on Biotechnology
@ Thursday, Sep 2, 2:00 PM
T-13 Theme Panel: The Environment and Global Inequalities
@ Thursday, Sep 2, 4:15 PM
39-9 Explaining Biotechnology Policy: Country and Issue Comparisons
@ Friday, Sep 3, 2:00 PM
25-12 Protecting the Commons: Emerging Strategies in Natural Resource Management
@ Friday, Sep 3, 4:15 PM
43-6 New Fronts in the Struggle for Environmental Justice and Global Equality
@ Saturday, Sep 4, 8:00 AM
39-6 Environment, NGOs and Global Advocacy
@ Saturday, Sep 4, 2:00 PM
39-5 Comparative Dimensions of Environmental Politics @ Saturday, Sep 4, 4:15 PM
25-10 Policy Tools and Styles: What Fosters Environmental Protection?
@ Sunday, Sep 5, 8:00 AM

Source: David Horsey, Seattle-P.I., March 16th, 2004*.

*Send your favorite cartoons related to science, technology, and environmental policy for the next issue to Chris Weible at cmweible@ucdavis.edu