Ogmius

NEWSLETTER OF THE CENTER FOR SCIENCE AND TECHNOLOGY POLICY RESEARCH

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CENTER FOR SCIENCE AND TECHNOLOGY POLICY RESEARCH
COOPERATIVE INSTITUTE FOR RESEARCH IN ENVIRONMENTAL SCIENCES
UNIVERSITY OF COLORADO AT BOULDER

Inside this issue:

Introducing Ogmius and the Center for Science and Technology Policy Research

Ogmius, the Gallic god of eloquence, is also the name of the new newsletter of the Center for Science and Technology Policy Research at the University of Colorado. Each issue of Ogmius will include an exchange among leading voices in science and technology policy, news about Center projects and publications, web and media resources, job and educational opportunities in science and technology policy, and other items of interest to the community. To subscribe , go to http://sciencepolicy/ogmius/subscriptions.html.

The Center for Science and Technology Policy Research is in the Cooperative Institute for Research in Environmental Sciences (CIRES) at the University of Colorado-Boulder. The Center is part of the CIRES plan to promote science in service to society as an integrating theme. The Center will provide a unique capability and opportunity for research, education, and outreach at the interface of science and society. The Center's areas of emphasis are science policy, technology policy, and technology assessment, described below:

- Science policy. The traditional scholarly interest in science policy has for many years been captured by the phrases "science for policy" and "policy for science." The Center will explore how scientific information is linked to decision making and will also examine governance of the scientific enterprise with topics that range from broad federal government resource allocation issues to the practice of peer review.

- Technology policy. Technology policy refers to the interrelationship of government, academia, and the private sector, and their shared goal of enhancing economic vitality through the transfer of knowledge to useful products and processes. Technology policy research seeks to understand these relationships and to develop, evaluate, and critique them.

- Technology assessment. Technology assessment seeks to integrate knowledge of technological systems with their broader social and policy context as a contribution to the governance of science and technology. Decisions about how to allocate finite (and frequently scarce) resources can be made more effectively when decision makers consider integrated understandings of technology in society.

For students, the University's Environmental Studies graduate program provides an opportunity to emphasize science/technology policy in their degree program. The Center also will emphasize outreach to the academic community and private and public decision makers using tools such as the Internet, newsletters, and multi-disciplinary workshops.

Introduction to the Ogmius Exchange

In each issue of the Ogmius newsletter we plan to include an "exchange" among leaders in the science and technology policy community. We welcome your suggestions for topics or participants for future exchanges.

This month we present an exchange between Radford Byerly (http://sciencepolicy.colorado.edu/meet_us.html) of the CIRES Center for Science and Technology Policy Research and formerly Chief of Staff for the U.S. House of Representatives Science Committee, and M. Granger Morgan

Introduction to the Ogmius Exchange Continued

(http://www.ece.cmu.edu/people/faculty/gm5d.shtml), Head of the Department of Engineering and Public Policy at Carnegie Mellon University. The subject of the exchange is science and technology advice for Congress, and specifically a proposal made by Professor Morgan and colleagues for the reestablishment of the U.S. Congress Office of Technology Assessment, which was terminated in 1995. The proposal of Morgan et al. was made in *Science* magazine and can be found online at

http://www.sciencemag.org/cgi/content/full/293/5537/1999?ijkey=jn1JDpsOKfJNI&keytype=ref&siteid=sci. Their proposal was based on a workshop, details about which can be found at
http://www.epp.cmu.edu/other/cmu_report_congress.pdf

For additional background see:

The OTA Legacy Site http://www.wws.princeton.edu/~ota/

Lepkowski, W. 2001. The restless mummy (April 14) and The Mummy blinks (June 26), Center for Science, Policy and Outcomes http://www.cspo.org/s&pp/041001.html and http://www.cspo.org/s&pp/062501.html

The IPTS Report, Special issue on the provision of Scientific Advice, December 2001
http://www.jrc.es/pages/iptsreport/vol60/english/INDX1E606.htm

D. Guston, 2001. Science and Technology Advice for the Congress: Insights from the OTA Experience, Center for Science, Policy and Outcomes.
http://www.cspo.org/products/articles/TAworkshoppaper.pdf

Physics Today, October 2001
http://www.physicstoday.org/pt/vol-54/iss-10/p24.html

The Hill news, Lawmakers see need for experts on science, technology, 2 January 2002
http://www.hillnews.com/010202/experts.shtm

Guest Editorial
Comments on Improving Science and Technology Advice for Congress

In a September 14, 2001, Policy Forum in *Science* magazine titled "Improving Science and Technology Advice for Congress" Morgan et al. present a solid case for the reestablishment of an Office of Technology Assessment (OTA) within Congress to offer advice on scientific and technological issues. Since Congress terminated OTA in 1995 it has had no internal resource for such advice. But providing advice to Congress is complicated. Morgan et al. know the complications, but all readers of their Policy Forum may not.

Morgan et al.'s most comprehensive statement of what Congress needs is "balanced analysis and synthesis that sorts, integrates, and analyzes information to frame the issues and extract knowledge and insight." They also characterize Congress' need as "systematic analysis by experts", "objective guidance", "analytical capability", "balanced technical advice", "to have experts frame and explain the choices it faces", and "balanced, nonpartisan advice". Synthesis is mentioned but not emphasized.

Initially a recreated OTA must fix real problems. Despite offering valuable advice, OTA was terminated by an ideological Congress that considered technical advice irrelevant. To justify killing OTA the terminators cited a need to cut costs, along with some real weaknesses of OTA such as late reports. Thoughtful reports take time so solving this problem is not trivial. The need to cut costs was, however, a red herring: As Morgan et al. indicate OTA's budget was and would be small compared to the full cost of funding Congress. As they also correctly state, OTA provided useful "quiet, informal" advice to Congress, which to some degree compensated for late final reports.

More importantly, an OTA must distinguish technical advice from policy advice. Even for issues centered on science and technology, the most important questions may be neither scientific nor technical. My point of departure is epitomized by Renn et al's statement that "Value free evaluation is an oxymoron." There may be a presumption that purely technical issues are value-free. But very few purely technical issues come before Congress.

Consider the authors' first example of an issue needing systematic analysis by experts: "what is the best way to manage the transition of telephone service from highly regulated conventional switched-line systems to the essentially unregulated packet-switched Internet?" This example illustrates the difficulties of providing technical advice to legislators. First, the notion of "best" encompasses many considerations beyond science and technology. Most efficient? Least costly? Fairest (and who defines "fair")? Is regulation evil? or necessary? Best protect sunk capital costs (or ignore them)? Best for urban or rural areas? Narrow or widen the digital divide? Increase or

Guest Editorial Continued

decrease income inequality? If answers to these value-laden questions are predetermined by policy decisions, the science and technology questions may become much narrower -- perhaps trivial and best left to technicians. Conversely, if these policy questions are not answered, S&T advice may be irrelevant to the policy decisions legislators face. Another way of looking at this is to ask, "Who are the experts on 'best'?"

This brings us back to "synthesis" and to a practical difficulty an OTA will always face. Science and technology issues exist in a policy context rich with values. Synthesis that brings these values into consideration will lead far beyond technical advice. Morgan et al. recognize that "Congress does not need to be told what to do by experts", but some members of Congress may see a dispassionate analysis of their passionately held views as just that. For example, some politicians who do not want to acknowledge global greenhouse warming oppose even research on mitigation or adaptation to global change because such research seems to endorse warming.

Of course there are value-laden issues with science and technology content for which useful technical advice can and should be given to Congress. As stated above, I want to point out the complications.

To further illustrate how values permeate policy advice, consider the role of scientific and technological experts advocating a greater role for science and technology in policy. Morgan et al. perhaps unwittingly approach the oxymoronic trap of "value-free evaluation" when they recommend that "the science and technology communities [should] become actively engaged in supporting" legislation to reestablish OTA. The message is: "we believe Congress needs technical advice, and therefore we, the purveyors of technical advice, are going to lobby Congress to accept our advice." To the extent that technical advice is presumed to be value-free, this amounts to saying "we will press on Congress our [value-based] view that they need to listen to our [value-free] views." This is not a theoretical consideration. The National Academy of Sciences' advice to policy makers virtually always includes a recommendation for more research. Is it mere coincidence that this advice supports the NAS mission to advance science and technology? Does this coincidence taint the advice? If the Academy's "more-research" advice can be questioned, what about its other recommendations?

In conclusion, the science and technology community should take care that the "help" being offered Congress does not relate more to the interests of the offerors than to what Congress needs to make better decisions. Scientists lobbying for a greater role for science and technology look pretty much like other lobbyists. Efforts to reestablish an OTA must begin with a searching examination of motives, of what is really needed, and, in light of what is needed, what realistically can be provided.

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References:

Morgan, M.G., A. Houghton, and J.H. Gibbons, 2001: Improving science and technology advice for Congress. *Science* **293:** 1999-2000 (http://www.sciencemag.org/cgi/content/full/293/5537/1999?ijkey=jn1JDpsOKfJNI).

Renn, O., T. Webler, and P. Wiedemann, 1995: A Need for Discourse on Citizen Participation: Objectives and Structure of the Book, in Renn, O., T. Webler, and P. Wiedemann, eds, *Fairness and Competence in Citizen Participation; Evaluating Models for Environmental Discourse* (Kluwer Academic, Dordrecht, Boston), p 4.

Granger Morgan Responds:

Nobody brings more practical experience to the issue of providing science and technology advice to the Congress than Rad Byerly. During the many years that he ran the staff of the House Science Committee, under the able leadership of Congressman George Brown, he saw it all! Thus, both his words of support and his words of caution deserve serious consideration.

On June 14 we ran a workshop in Washington on creating institutional structures to provide better science and technology advice to the U.S. Congress (see: http://www.epp.cmu.edu/other/STadvice_toC.html). Our objective was not to advance any specific solution, but rather to start a national conversation about this basic need. In that, we seem to have succeeded. Since June there has been active, ongoing, discussion and debate. Perhaps more importantly, there have also been several legislative initiatives. The final version of the legislative branch appropriations bill contains half a million dollars for a pilot project to support a study through the General Accounting Office (GAO) of how technology might be used to enhance the mission of U.S. border control. HR

Granger Morgan Responds: Continued

2148, a bill to again fund the OTA, has collected several dozen co-sponsors from both parties. And, a bill recently introduced by Senators Kerry, Stevens, Hollings, Inouye and Akaka calls for the creation of a National Science and Technology Assessment Service in the Legislative Branch.

The concerns that Byerly raises deserve careful attention. He argues that there is no such thing as "value-free analysis." He's right. There is also no such thing as living a life without sin…but peoples of the world have long seen this as an admirable objective toward which to strive. Policy analysts should do the same with respect to values. Values can be identified explicitly and treated parametrically. In the case of analysis done for the Congress, there are at least two strategies that can help. First, the use of broadly representative expert and stakeholder advisory panels can help assure that all relevant views are captured and implicit value assumptions ferreted out and identified. While analysis generally can't identify what's "best", it can identify a range of social objectives that are worth thinking about, and then spell out the extent to which different policy choices advance those objectives. A strategy of reporting findings as a list of policy options in the form "if Congress wants to achieve so-and-so then it should do such-and-such" can help assure that the important value choices get made by elected representatives, not analytical staff.

If scientists and engineers promote the need for better analysis by the Congress, does that mean they are advancing their own narrow interests? I don't think so, but I also don't think it likely that scientists and engineers alone will succeed in persuading the Congress that it needs better technical analysis and synthesis. Congress is a representative body. It responds to the inputs of constituents. If we are going to succeed in the effort to create one or a number of new institutions to provide balanced analytical advice to the Congress, the message of need is going to have to come widely from many constituents - from industry, from professional societies, from NGOs, from individual citizens. In the long run, better informed decision making serves the interests of us all.

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Center Projects

The following projects are under development in the Center for Science and Technology Policy Research. We will be adding additional projects in the future. See our website at http://sciencepolicy.colorado.edu/ for updates on Center projects.

ASPEN (http://sciencepolicy.colorado.edu/aspen/index.html)

The Atmospheric Sciences Policy Education and Network (ASPEN) Program is sponsored by the U.S. Weather Research Program and focuses on weather policy research, education, and outreach. It includes the following components:

- The Societal Aspects of Weather (http://sciencepolicy.colorado.edu/socasp/index.html) WWW portal, an online resource to facilitate, encourage, and support the formation of a researcher-user partnership and community of people involved in the societal aspects of weather;
- The WeatherZine (http://sciencepolicy.colorado.edu/zine/), a bimonthly online and email newsletter on the societal aspects of weather;
- Weather and Climate Forecast Use and Value Bibliography (http://sciencepolicy.colorado.edu/biblio/index.html), an online resource for peer-reviewed studies of the use and value of weather and climate forecasts;
- The weather-policy listserv (http://sciencepolicy.colorado.edu/mailman/listinfo/weatherpolicy), an email group to discuss the educational and research aspects of atmospheric sciences policy; and
- The Extreme Weather Sourcebook (http://sciencepolicy.colorado.edu/sourcebook/index.html), an online report summarizing economic damage suffered from hurricanes, floods, tornadoes, lightning and other weather events in the United States and its territories.

Predictioncentral.org (Coming Soon)

Predictioncentral.org is a joint project of the Center for Science and Technology Policy Research and the Center for Science, Policy, and Outcomes at Columbia University. It is a follow-on project to work that led to Prediction: Science, decision making, and the future of nature (Island Press).

Decision makers in the public and private sectors solicit and use predictions with little understanding of their accuracy or utility and, often, without systematic evaluation of performance or mechanisms of accountability. Moreover, there are few, if any,

Center Projects Continued

institutional mechanisms for rewarding and highlighting good, policy-relevant predictions, or for comparing the outcomes of decisions made with competing predictive assumptions.

Predictioncentral.org will document predictions as they are made in a diverse set of policy-relevant settings, evaluate the accuracy of predictions, grade predictive performance, and assess the role of the predictions in the decision making process. The program will also develop "baselines of uncertainty" for various predictive methods and applications, to highlight those that are improving with time, as well as those that are not. Predictioncentral.org will seek to make predictions more transparent to decision makers who depend on them to better understand strengths and weaknesses, make decisions commensurate with this understanding, and, when appropriate, consider alternatives to prediction.

Global Climate Change and Society (http://sciencepolicy.colorado.edu/gccs)

Global Climate Change and Society (GCCS) is a Research Experience for Undergraduates (REU) program of the National Science Foundation that places scientific research within its larger social context. It is a cooperative program between the University of Colorado and the National Center for Atmospheric Research, directed by a philosopher, a planetary physicist, and a policy scientist. Its goal is to introduce a group of undergraduates in the physical sciences, humanities, and social sciences to the constellation of perspectives surrounding the use of numerical climate models.

Twelve undergraduates come to Boulder, Colorado, each year for eight weeks. The program consists of three parts: an intensive introduction to atmospheric science, internships at NCAR and CU, and a short essay by the students in which they draw their own conclusions concerning the relevance of global climate change research to societal needs. Program outcomes include papers published in scientific, public policy, and philosophic journals and presentations at national conferences.

Western Water Assessment (http://sciencepolicy.colorado.edu/wwa)

The Western Water Assessment (WWA) works within an evolving social context to increase the relevance and value of scientific information to improve decision-making strategies. WWA research focuses on the decision-making processes of those individuals and groups in the Interior West who manage water resources, use the water, and are responsible for its treatment and the protection of the aquatic environment. By understanding the decision making processes of this community, researchers can develop hydro-climate products that allow the user community to make more informed decisions. The objectives of the WWA project are to: 1) understand the sensitivity of the user community to multiple stresses, the feasibility and environmental implications of various coping strategies, and the residual vulnerability of different groups when coping strategies fail; 2) develop issue-specific partnerships with climate-sensitive groups to examine the needs and barriers to the use of hydro-climate information and products; and 3) share findings on regional information needs with the federal and state agencies responsible for the operational development and delivery of hydro-climate information and products, and develop partnerships with these agencies to improve the quality, relevance, use, and, ultimately, the value of operational hydro-climate products.

Guide to Center Websites

Our home page at http://sciencepolicy.colorado.edu provides information about Center activities as well as links to other science and technology policy-related resources. Links on the left side of this page describe the Center's research areas of science policy, technology assessment, and technology policy. Other links include information about the Center, a downloadable pdf version of the Center brochure, information about Center staff and how to contact us, a downloadable pdf version of Ogmius, access to staff publications (most of which are available online), listings of educational, media, and web resources, and a compilation of recent news items mentioning the Center or its staff. On the right side of the home page, one can access Center project sites (currently the ASPEN program, Global Climate Change and Society, and the Western Water Assessment). These links will continue to expand as new projects are developed. Finally, the "quick click" links along the bottom of the page take you directly to the ASPEN program projects (SOCASP, Weatherzine, Use and Value Bibliography, and Extreme Weather Sourcebook), as well as our science and technology jobs page. Our websites are continually "under development" in an effort to provide the most valuable and accessible information about the Center, so please don't hesitate to contact us with suggestions for improvements!

Director: Roger Pielke - pielke@cires.colorado.edu

Managing Director: Bobbie Klein – bklein@colorado.edu

Webmaster: Mark Lohaus – lmark@cires.colorado.edu

Recent Publications

Recent or forthcoming publications of Center staff:

Robert Frodeman

The Search for Balance in the Public Support for Science (with Carl Mitcham), Technology in Society, 23(4) forthcoming 2002 ("Science and Technology Policy" volume).

What is it Like to be a Geologist? (with Thomas Raab), Philosophy and Geography, forthcoming Spring, 2002.

Roger Pielke Jr.

Downton, M. and R. Pielke, Jr., 2001: Discretion Without Accountability: Climate, Flood Damage and Presidential Politics, Natural Hazards Review, 2(4):157-166. (http://sciencepolicy.colorado.edu/pielke/hp_roger/pdf/downtonpielke2001.pdf)

Pielke, Jr., R. A., 2002 (in press): The role of models in prediction for decision. Book chapter prepared for Cary Conference IX: Understanding Ecosystems: The Role of Quantitative Models in Observations, Synthesis, and Prediction.

Bobbie Klein

"Wolf recovery in the Northern Rockies," in Brunner, R.D. (ed.), 2002 (in press): Finding common ground: Governance and natural resources in the American West. Yale University Press.

Martyn Clark

Clark, M.P., L.E. Hay, G.J. McCabe, G.H. Leavesley, M.C. Serreze, and R.L. Wilby, 2002 (in press). The use of weather and climate information in forecasting water supply in the western United States. Chapter, Managing Western Water Resources in an Uncertain Climate, University of Colorado Press.

For a complete listing of center publications, visit http://sciencepolicy.colorado.edu/staffpubs.html. For copies of articles, please contact the author or Ami Nacu-Schmidt at ami@cires.colorado.edu.

Center Staff

The Center is under the direction of Dr. Roger A. Pielke, Jr. Roger joined the University of Colorado in the summer of 2001 to develop and lead the Center. In addition, he has a faculty appointment in Environmental Studies.

The Center's Managing Director, Bobbie Klein, received a law degree in 1981 from the University of Wisconsin and worked as an attorney for fifteen years. She returned to school at the University of Colorado to pursue a Masters in public policy with a focus on environmental policy. After receiving her M.A. in 1998, she worked with Roger Pielke at the National Center for Atmospheric Research as an associate scientist. She joined the Center as its Managing Director in the summer of 2001.

Mark Lohaus, the Center's Webmaster, received a double degree in Chemistry and Internet Database Applications from Metropolitan State College of Denver in 2000. He was employed as a Web programmer in the private sector for two years before joining the Center. Mark's position as the Center's Webmaster allows him to integrate his interests in science and web design/programming. His technical expertise will allow the Center to continue expanding its web presence.

Ami Nacu-Schmidt, the Center's Office Manager, received her B.A. in Psychology from the University of Colorado in 1998. She worked for six years as a Customer Service Manager for a computer company before deciding to return to the university environment by joining the Center staff. Ami's creativity and attention to detail keep the Center running smoothly and looking great.

Visiting Fellow Rad Byerly received his Ph.D. in experimental atomic and molecular physics at Rice University in 1967. After a postdoctoral fellowship at JILA, Rad moved to science management and policy at the National Institute of Standards and Technology. He joined the staff of the U.S. House of Representatives Committee on Science and Technology in 1975 with responsibility for environmental research programs. He became staff director of the House Space Subcommittee in 1985. In 1987 Rad became director of the University of Colorado's Center for Space and Geosciences Policy. Rad was appointed chief of staff of the House Science and Technology Committee in 1991. He retired in 1993, and now writes about science policy and serves on various committees.

Robert Frodeman specializes in environmental philosophy and the philosophy of science policy. He has held positions at the University of Texas and the University of Tennessee, and has

Center Staff Continued

consulted for the U.S. Geological Survey for the last eight years. He is currently the 2001-2002 Hennebach Professor of the Humanities at the Colorado School of Mines. Bob is Co-Director of the New Directions Initiative, editor of Earth Matters: the Earth Sciences, Philosophy, and the Claims of Community, and author of Geo-Logic. Bob directs the Global Climate Change and Society Program, where students explore the nature of scientific knowledge and the contribution that social scientific and humanistic perspectives play in public policy debates.

Martyn Clark received a Ph.D. from the University of Colorado in 1998, and has worked for the past three years as a research scientist at the University of Colorado's Cooperative Institute for Research in Environmental Sciences (CIRES) on a variety of topics including large-scale climate dynamics, land-atmosphere interactions, and applied hydro-climatology. He joins the Center for Science Technology and Policy Research in January 2002 to lead the CIRES NOAA Western Water Assessment (WWA) program.

Science and Technology Policy Educational Opportunities

New Environmental Studies Graduate Program at the University of Colorado

In the fall of 2002 the University of Colorado will admit its first class of graduate students to its Environmental Studies Program. The graduate program is designed to educate students at the professional level to address complex environmental issues. The emergence of humans over the past few decades as major agents of change in nearly all aspects of earth systems from local to global scales (for example, water, nutrients, climate, land use, etc.) necessitates a new paradigm in graduate education in the environmental field. To be effective problem solvers in this field, physical scientists must understand human behavior (policy, law, economics, etc.). In turn, social scientists must understand how the physical earth systems function in order to make reasonable policy and achieve a sustainable and robust economy. In addition, all scientists need to be more effective at working in cross-disciplinary teams, as well as at communicating their ideas and findings to the public. To maintain focus and employability for the graduates, the Environmental Studies graduate degree program has a number of different tracks, several of which have relevance to science and technology policy:

- Climate and Atmospheric Chemistry
- Water Sciences
- Environmental Policy and Sustainability
- Waste Management and Environmental Remediation
- Biogeochemical Cycles

Faculty in the program are drawn from the College of Engineering and Applied Sciences, the College of Arts and Sciences, and the Schools of Law and Journalism. Interdisciplinary research opportunities also exist with the Cooperative Institute for Research in Environmental Sciences (CIRES), the Institute for Arctic and Alpine Research (INSTAAR), the Natural Resources Law Center, the Institute for Behavioral Science, and the Laboratory for Atmospheric and Space Physics (LASP). The presence of leading laboratories in the environmental sciences in Boulder, including the National Center for Atmospheric Research and the NOAA Environmental Research Laboratories, provides additional opportunities for a rich educational experience.

For further information, please contact:

Graduate Secretary
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Web: http://www.colorado.edu/envirostudies/

Other Opportunities

Global Climate Change and Society
2002 Application Deadline

Global Climate Change and Society (GCCS) (http://sciencepolicy.colorado.edu/gccs/) is a cooperative program between academia (the University of Colorado) and a government laboratory (the National Center for Atmospheric Research). Its goal is to introduce a group of undergraduates in the physical sciences, humanities, and social

Global Climate Change and Society
2002 Application Deadline Continued

sciences to the constellation of perspectives surrounding the use of numerical climate models. Students will gather and evaluate scientific data and investigate the social, political, psychological, economic, and philosophical issues surrounding the interpretation and use of these data for addressing contemporary controversies over global climate change.

Applications are being solicited for the 2002 session to be held in Boulder, Colorado, from June 17 to August 9. Prerequisites are one course each in the physical sciences and philosophy, junior or senior standing, and a minimum GPA of 3.2. Send college transcripts, a resume, two letters of recommendation from professors, a 500 word statement explaining your interest in this program, an e-mail address, and a telephone number to:

Global Climate Change and Society
Center for Science and Technology Policy Research
University of Colorado/CIRES
1333 Grandview Ave, Campus Box 488
Boulder, Colorado 80309-0488

Applications must be received by March 15, 2002. Please note that this program is open to U.S. citizens only. Applicants are encouraged to read the Program Description (http://sciencepolicy.colorado.edu/gccs/description.html) before applying. Please send an e-mail message notifying us of the mailing of your application to gccs@colorado.edu.

For additional information please contact: gccs@colorado.edu

Meetings and Conferences
Living With The Genie

On March 5-7, 2002, 300 people will come together at Columbia University's Low Library Rotunda to discuss one of the great challenges facing our increasingly global society: the governance of scientific and technological change.

"Living with the Genie: Governing the Scientific and Technological Transformation of Society in the 21st Century," organized by Columbia's Center for Science, Policy and Outcomes, aims to catalyze a national discourse on how to think about and respond to the increasingly complex interactions between societal aspirations and technical advance. One face of this complexity became horrifically apparent on September 11, when we saw our best-designed and most well-intentioned technologies transformed into instruments of slaughter.

"Living with the Genie" will not be a showcase for ideology or familiar debates. Instead, we will consider, as openly and thoughtfully as possible, the profoundly important dilemmas that confront a society struggling to understand and manage the implications of its own ingenuity. How can the unrestricted pursuit of knowledge and innovation best fulfill basic human needs and advance fundamental goals such as equity, justice, and freedom? Such questions may be deeply discomfiting in an age of technological marvel and global markets, yet we shirk them at our peril.

For more information about Living with the Genie, visit the website at http://www.livingwiththegenie.org/index01.html.

About Us

Ogmius, the Gallic god of Eloquence, is also the name of the newsletter of the Center for Science and Technology Policy Research to be published three times a year. The Center is within the Cooperative Institute for Research in Environmental Science (CIRES) at the University of Colorado-Boulder. The mission of CIRES, which was established in 1967, is to act as a national resource for multidisciplinary research and education in the environmental sciences. CIRES is jointly sponsored by the University of Colorado-Boulder and the National Oceanic and Atmospheric Administration.

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