edited by KAREN HOPKIN

Improving the Public Understanding of Science and Technology

Could science sitcoms be the wave of the future? Imagine tuning in your television to this scene:

Kim: You know those bacteria I was growing last night?
Bob: The ones for the cloning experiment?
Kim: Yeah. I think I let them grow a little too much.
Bob: Why do you say that?
Kim: When I got to the lab this morning they were gone. They left a note on the incubator: "Clone yourself. We are *outta* here." (laughter)

Though it might seem absurd, going commercial is one way to broaden the public's appreciation of science. Calling for "a massive program" of public science education, Leon Lederman, chairman of the AAAS Board of Directors, is prepared to deploy all forms of media—from television, movies, and full-page ads to *Reader's Digest*, cereal boxes, and skywriting.

Why the urgency to go ballistic in science education? "Research in America is under stress, and the morale in the scientific community is low," says Lederman. The public's trust is being eroded by the publicity surrounding research fraud and university overhead abuses and by the activity of anti-science creationists and animal rights extremists.

How can we reverse this trend? Lederman says that the scientific community must implement "a long-term, sustained effort to significantly impact on the public's awareness of the role of science and engineering in shaping our society and its obligations for the future well-being of the nation."

To organize such an assault on science illiteracy, Lederman gathered the leaders of many science and engineering societies, media experts, and advertising consultants for a weekend planning retreat in June of 1992.

William Hillsman, president of North Woods Advertising in Minneapolis, Minnesota, attended the retreat. He agrees that "There has been a decline in the image of science and technology in the public eye." Like Lederman, he also prescribes a large-scale mass media campaign to refurbish the public's view of science. And, because it can powerfully combine elements of sight and sound, Hillsman says that "TV is the best weapon in any advertiser's arsenal."

"We need to communicate the values and benefits of science to the general public."
–Leon Lederman
Chairman, AAAS
Board of Directors

According to Lederman, successful penetration of the American consciousness will require exploiting American culture. And with Americans spending several hours in front of the television each day, what better place to reach them?

But must we stoop to sitcoms or 90-second spots on MTV? "If science will ever emerge from the strange aura of mystery and superstition that surrounds it, then real scientific thinking has to be integrated into mass communication," says John Angier, president of Chedd-Angier Production Company in Watertown, Massachusetts.

Angier produces popular science programs and is a member of the AAAS Committee on the Public Understanding of Science and Technology (CoPUST). One of the problems he encounters in popularizing science is avoiding trivialization. Says Angier, it is important to strike a "balance between simplification and accuracy."

For example, a scientist would argue that the opening sitcom scene is misleading because a bacterial culture can't just leave the lab, much less write humorous memos. But television script writers might be tempted to take such liberties. "When you become involved with commercial media," says Angier, "their objectives are different. Science and scientists will no longer be in control."

For the sage advice of the media-savvy, Lederman will likely rely on CoPUST. "We could be [Lederman's] think tank, act as an advisory group, and help him understand the limits, options, and opportunities," says Shirley Malcom, AAAS Education and Human Resources director and a CoPUST member. She views the project as a learning experience for both the scientific community and the public. While scientists learn how to exploit media opportunities, the public will benefit from increased exposure to things scientific.

This initiative is technically not a AAAS project, but Malcom envisions Lederman creating "an umbrella organization that will move forward with discussion and help focus efforts and activities." And Hillsman agrees that Lederman has the vision it takes to move such an initiative forward.

The first phase of the project will involve getting the societies to design a plan of action—to formulate discrete goals and consider the media options. Malcom reports that the General Electric Foundation has provided $25,000 in start-up funds to launch this planning stage.

AAAS and other organizations have already devoted a great deal of effort toward enhancing the public understanding of science. But this project differs from previous public education efforts, says Lederman, because it will be massive and long-lasting and it comes from the science community itself.

"This wide-ranging sustained collaborative program would be unique in history," says Lederman. "It may well produce a change in the culture and public attitudes."

Within the next several months, Lederman's ad hoc planning group will convene to discuss how to implement and evaluate the program. If you would like to share your comments with Leon Lederman, please forward them to the AAAS Executive Office, 1333 H Street NW, Washington, DC 20005.

AAAS Fellow Nominations

Groups of three AAAS Fellows may nominate other AAAS members for election as Fellows. A Fellow is "a member whose efforts on behalf of the advancement of science or its applications are scientifically or socially distinguished." At least one of the three sponsors must be unaffiliated with the nominee's institution.

Nomination forms are available from the AAAS Executive Office, 1333 H Street, NW, Washington, DC 20005; 202-326-6635. The deadline for receipt of nominations is 4 June 1993.

The *Directory of AAAS Fellows* is available from AAAS Books, P.O. Box 753, Waldorf, MD 20604 (member price: $9.95, prepaid).

R&D Funding Falls in 1993

Hold on to your test tubes, because research and development funding prospects for fiscal year 1993 have taken a turn for the worse.

According to the AAAS report *Congressional Action on Research and Development in the FY 1993 Budget*, Congress has appropriated $73 billion for 1993 R&D, 3.2% less than requested by President Bush. When adjusted for inflation, this represents a 1.5% decline from 1992 levels.

"The other shoe has finally dropped," says Science and Policy Programs director Albert Teich. He coauthored the report along with Stephen Nelson, Kathleen Gramp, and Paul Gehman, Jr.

Teich says that these cuts in federal R&D spending were not entirely unexpected. In fact, he says, "We wondered how science had escaped relatively unscathed through the budget wars of previous years."

"It may be a watershed year," says coauthor Kathleen Gramp, a senior program associate of Science, Technology, and Government. Since she began tracking federal R&D funding in the late 1980s, she says, "This is the first year I can remember that nondefense R&D did worse than other domestic discretionary programs," like agriculture or Head Start. Defense R&D fared a bit better, posting a 2.5% gain in budget authority.

When the fiscal juggling was complete, Gramp says that Congress favored R&D programs aimed at increasing economic competitiveness, such as defense conversion programs. "Odds are, this trend will continue," says Gramp. "No big increases in R&D, with available funding targeted toward technology."

The report, prepared in collaboration with the Intersociety Working Group, also included these highlights:

- The National Science Foundation ranked among this year's losers, receiving an increase of less than 2% in its R&D budget (a loss when adjusted for inflation).
- The R&D budgets of the National Institutes of Health and the National Aeronautics and Space Administration increased just enough to keep pace with inflation.
- Congress approved continued funding for the Superconducting Super Collider and the space station.
- A large portion of the meager growth in nondefense R&D funding is earmarked for the construction of facilities at the National Institute of Standards and Technology and the Environmental Protection Agency. This leaves even less funding for actual research.

Teich says that the cuts are likely to be painful, but he declined to predict how the scientific community would react to the news. They might raise the roof, or perhaps, he mused, they would just "take it in stride, because they're used to living with pain."

The report is available from AAAS Books, Department A32, P.O. Box 753, Waldorf, MD 20604; or call 301-645-5643.

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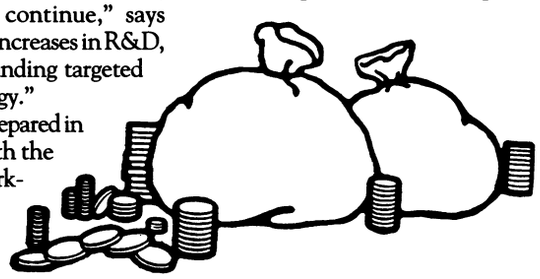
Environmental Funding Facts

- The top three agencies funding environmental research are NASA, the Department of Energy, and the Department of Defense.
- The Environmental Protection Agency ranks seventh in this list.
- The Department of Transportation funds wetlands research.



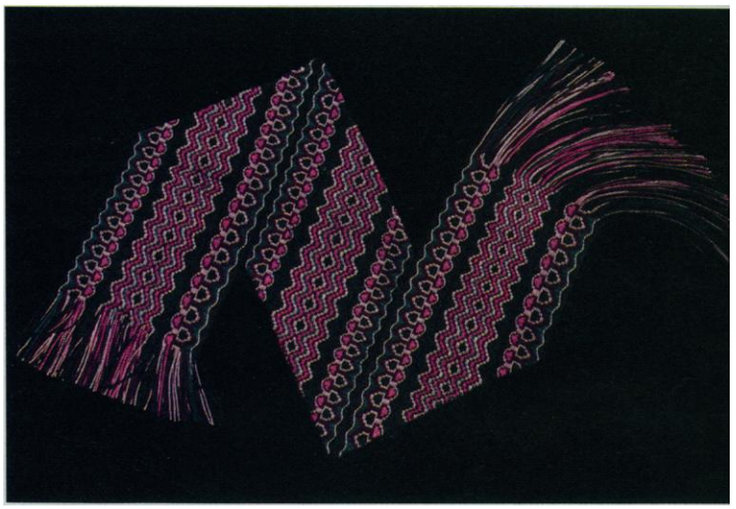
Sound odd? These and other interesting statistics are presented in a AAAS special report on *Federal Funding for Environmental R&D* prepared by Directorate for Science and Policy Programs' Kathleen Gramp, Albert Teich, and Stephen Nelson.

"There is a lot of environmental research being done," says Gramp, "but not by the agencies you might expect."

The report was prepared to assist the National Academy of Sciences' Committee on Environmental Research in assessing environmental research priorities and funding. Gramp predicts that it will be useful for anyone with an interest in environmental research or "in knowing where the money is."

To order, write to AAAS Books, Department A32, P.O. Box 753, Waldorf, MD 20604.

Weaving Together Art and Science



From "Fiber Folding": Alpha I, 21" × 15".

When you study the circular dichroism pattern of a coiled coil, do you envision a tapestry of colored fibers woven into a dizzying semi-symmetric pattern? Marilyn Holtzer does. Inspired by protein structures, this research assistant professor at Washington University weaves wall hangings, rugs, and wearables that represent alpha helices and beta pleated sheets.

How does a protein chemist fall into something like weaving? "I've always been interested in things with structure and definite form," says Holtzer. Like the long chains of amino acids that fold into specific conformations in proteins, she says, "in weaving, one also starts with long chains, or fibers, to make the desired pattern."

Samples of Holtzer's work will be exhibited in the first floor atrium gallery at the AAAS headquarters from 16 February to 16 April 1993. "Fiber Folding: A New Twist on an Old Theme" will be Holtzer's first solo exhibit.

The exhibit coincides with the Biophysical Society Meeting, also in Washington, D.C. Holtzer will be presenting a poster on synthetic peptide structures. Although there will not be an opening reception, she promises to tear herself away from unraveling the secrets of muscle fibers to take in the exhibit on opening day.

The AAAS Art of Science and Technology Program sponsors exhibits that unite science with art. For more information, contact Virginia Stern, 202-326-6672.