PERCEPTIONS OF SCIENCE

Tap into Science 24-7

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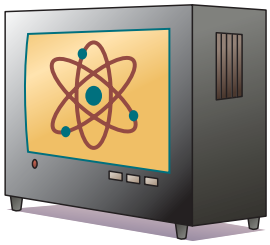
The general public, administrators, and legislators in the United States need a cable science network (CSN) providing timely, unbiased scientific information on issues such as bioterrorism and SARS.

On 24 January 2003, I appeared on *Good Morning America*, broadcast from San Diego in anticipation of Superbowl Sunday. The theme of the program was what San Diego was doing to prevent an expected terrorist attack aimed to disrupt the game. With Paul Ekman at the University of California at San Francisco, I and my co-workers have developed a computer system that automatically recognizes facial expressions and can identify emotional states of fear, anger, surprise, sadness, disgust, and happiness (*1*). Although it is still a research project, the interview explored the potential use of this technology to screen passengers at San Diego airport for terrorist threats.

The interview raised issues of how automated recognition of facial expressions could be used to uncover inappropriate emotions and whether it would be an invasion of privacy. But there was not time to examine these issues or the underlying science. Without proper context, such announcements can be highly misleading. This is of particular concern because decisions on public policy depend increasingly on science.

The importance of timely scientific information was apparent in the debates in the United States last year on stem cell research: Speeches were given, positions taken, and decisions made based on simplistic and sensational interpretations of the underlying biology. The press failed to provide the scientific background, and the scientific community failed to provide forums to clarify the different types of stem cell research and the consequences of restricting research options.

The situation in Britain was quite different. Baroness Susan Greenfield and others with scientific training in the House of Lords provided the scientific background needed to make informed decisions on stem cells (*2*). In contrast to the Byzantine regulations on stem cell research in the United States, scientists in Britain can now follow promising research directions with human embryonic stem cells that are out of bounds for U.S. scientists.



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Although the impact of science on society is increasing, U.S. public officials do not have the scientific training needed to understand these critical issues. Only 7 of the 535 U.S. legislators who commenced the 108th congress were former scientists (*3*). Where do legislators and other public officials learn about science? The president's science adviser rarely, if ever, gets to speak with the president. Legislators and staffers receive much of their advice from lobbyists. Hence, much of the science advice that legislators receive is biased. They—as well as the general public—need readily accessible sources of unbiased scientific information about current issues. How can this be achieved?

As I write, the Cable-Satellite Public Affairs Network (C-SPAN) is covering the 2004 Defense budget. Paul Wolfowitz is making the case for how data mining will help homeland security. On C-SPAN2, a NASA administrator is grilled about electronic-mail messages exchanged between NASA engineers that predicted the Columbia breakup over Texas. Both topics require more than a superficial knowledge of the issues for sound judgment. An evaluation of homeland security should be based on extensive knowledge about infectious agents and "dirty" radioactive bombs. To know what can or cannot be achieved with data mining requires expertise in computer science and machine learning. The engineering issues underlying the loss of the Columbia should have been discussed in addition to the management failure.

C-SPAN reaches 80 million U.S. households, providing information on policy and politics 24 hours a day. It provides complete, unedited coverage of speeches and proceedings that affect public policy, without filtering by commentators and pundits. In Washington, D.C., C-SPAN is an ever-present part of the background buzz.

What we need is a C-SPAN for science: a cable science network (CSN). This network would carry live lectures by knowledgeable scientists on topics ranging from climate change to biological warfare, as well as debates on issues from the biological basis of aggression to missile defense. A wide range of programs is available from events such as the AAAS meetings, public conferences (*4*), and annual lectures (*5*). It is time for science to join the background buzz.

At times of crisis, such as the anthrax attacks in America in 2001, CSN would provide accurate, timely scientific information. Instead of hearing on a U.S. national TV broadcast that anthrax is a virus, concerned citizens could have had the world's leading experts on infectious disease available 24 hours a day. CSN would be more reliable than government sources: during the anthrax crisis, NIH scientists who had accurate information were not allowed to make public statements, even about the effects of stress on health. The recent outbreak of severe acute respiratory syndrome (SARS) is another example where timely expert advice was needed.

The key ingredients for such a network are an individual with a scientific and television background who could shepherd the enterprise into existence—and financial resources to get it off the ground. Brian Lamb started C-SPAN in 1979 with financial support from the cable networks (*6*). In the case of CSN, Roger Bingham, a researcher at the Center for Brain and Cognition at the University of California, San Diego (and award-winning creator of science documentaries) (*7*) has begun to explore the development of a network.

Carl Sagan once warned: "It is suicidal to create a society dependent on science and technology in which hardly anybody knows anything about science and technology." CSN could give everyone in our society a window onto the best advice science has to offer and help prepare us for what lies ahead. Science ought to be available on demand 24 hours a day, 7 days a week—like water from a tap.

References and Notes

1. G. Donato, M. Stewart-Bartlett, J. C. Hager, P. Ekman, T. J. Sejnowski, *IEEE* (*Inst. Electr. Electron. Eng.*) *Trans. Pattern Anal. Machine Intell.* **21**, 974 (1999).
2. See www.publications.parliament.uk/pa/ld200102/ldselect/ldstem/83/8301.htm. About 10% of the peers in the House of Lords have experience in science.
3. See http://capwiz.com/c-span/dbq/officials/
4. See www.nyas.org/scitech/conf/self.cfm
5. See www.hhmi.org/lectures/index.html
6. S. Frantzich, J. J. Sullivan, *The C-SPAN Revolution* (Univ. of Oklahoma Press, Tulsa, OK, 1996).
7. R. Bingham can be reached at rsbingham@psy.ucsd.edu