

# Technology Review

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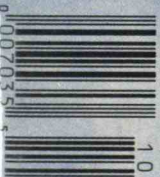
## VIRTUAL REALITY

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### ALSO IN THIS ISSUE:




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- ◆ A NEW ENERGY PATH FOR DEVELOPING NATIONS ◆









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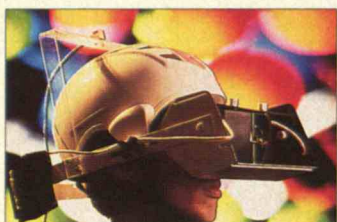
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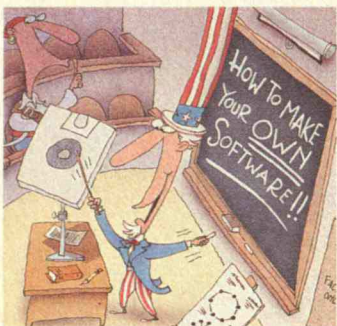


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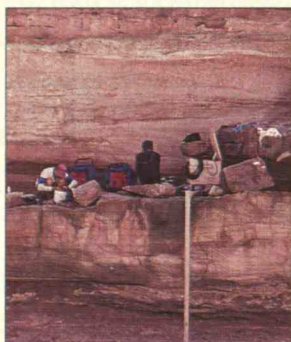
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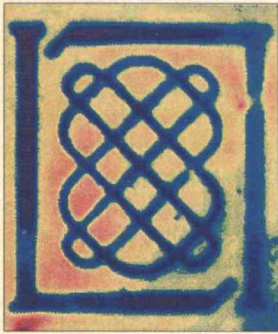
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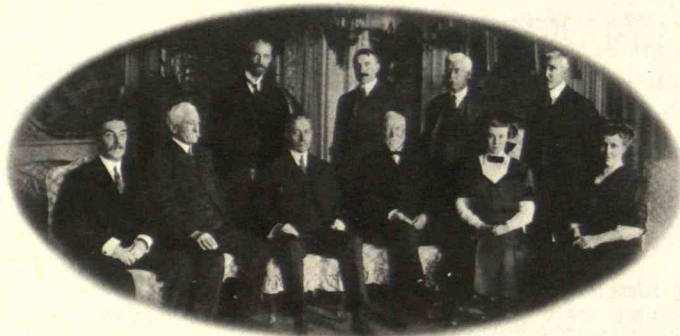




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# First Line

## Our Place in Time

IT's important in journalism to be timely—to explore for the public “what’s new.” But to a magazine like *Technology Review*, which dates its issues by the month rather than the week or the day, what’s new and what’s news are two different things.

Our beat embraces stories that are timely but usually nonperishable—the country’s manufacturing, environmental, and health-care problems, for example, will not disappear overnight. Yet because fast-breaking world events can make an article instantly obsolete, we sometimes have to do a pretty quick shuffle when circumstances so dictate.

Take the previous (August/September) issue. I found myself praying that the space station would survive its ordeal in Congress even though I personally think the country would be better off without it. I also wanted the deal makers in the phone, cable, computer, and entertainment industries to postpone their imaginative, economy-stimulating partnerships for just a few weeks more. And I wished that *TR*’s colleagues elsewhere in the media would temporarily fail to discover the “information highway,” despite its interest and importance to the public.

In the first case, the reason was that the centerpiece of David Callahan’s feature article, “A Fork in the Road to Space,” was a systematic and detailed argument for abandoning the space station. But during June, while we were editorially finishing the issue, a series of legislative debates made it appear that the space station could well be voted down. Wouldn’t we look silly coming out a month later with an author-analyst’s recommendations to kill something already killed?

I was tempted to write my congressional person. Meanwhile, we kept updating the article, even though it was nominally “in the can.” And to avoid the worst-case scenario, we prepared another article of the same length to substi-

tute at the eleventh hour if the space station was indeed terminated. As things turned out, it survived by one vote.

My other prayers were in support of Herb Brody’s incisive article, “Information Highway: The Home Front,” which addressed the new interactive medium soon to be available at your local TV set. No sooner had we “finished” the story than a rapid series of joint-venture announcements by the industries’ giants kept requiring changes in the score card—not unlike our vigil on the space station.

*Long after  
the newspaper disappears  
into the bird cage, the  
monthly magazine  
(usually) stays  
fresh.*

Another annoying wrinkle was the avalanche of media attention. As our fully dressed star player, so to speak, was taking the short walk from the locker room, a flock of heavy hitters—*Newsweek*, *Time*, and *Business Week*, among others—were already on the field.

Some years ago, I left *Technology Review* and joined the *New York Times*. I was sad to leave my colleagues at MIT, but not so sad, at the time, to part with the interminable delays that go along with producing monthly magazines. “Articles just never got out of my hair,” I told an ex-newspaperman friend as my transition began. That won’t be the case at the *Times*, he assured me. “One of the great pleasures of daily journalism is filing your story in the evening and seeing it again the next day—in the paper.”

He was right. The quick turnaround of a newspaper was often ecstasy. Unfortunately, it was just as often agony: articles frequently “got out of my hair” too fast. By newspaper standards, we at the *Times* may have done a thorough job. But I was too often left with the impres-

sion that we had only scratched the surface of a story. There were so many leads left unexamined, so many implications ignored or never identified in the first place for lack of time.

But remember the essential word in newspaper and news weekly and the nightly news. Readers or viewers mainly want to learn the basics of today’s news on television this evening or in tomorrow morning’s paper. By contrast, it is up to magazines like *TR*, as a business editor once put it, to “add value” to the news—to take the time to follow up those unpursued leads, integrate them with information from other events present and past, and provide an analysis of the implications. The result will likely be relevant for a long while to come.

I left the newspaper world and came back to magazines with a renewed respect for all those “interminable delays.” It takes time, after all, to establish depth and durability—to “add value”—and magazine people usually have that time. Their occasional vulnerability to sudden events is simply an acceptable cost of doing business.

Thus Callahan’s article on the space station transcended the daily ups and downs—though it certainly couldn’t ignore them—to analyze the project’s history, the detailed arguments of its advocates and opponents, the political/economic context, and the technological alternatives. And Brody’s article on the information highway added value to the news by exploring the technological foundations of the new medium, the business forces arraying to build it, and the likely reactions both among service providers and consumers.

Ironically, magazines are usually better equipped than the nation’s daily media to present “what’s new”—as opposed to “what’s news”—in a fresh, interesting, and in-depth way. Still, we must ask your forgiveness if one of these days the ground shifts on a particular story while your copy is in the mail. ■

—STEVEN J. MARCUS



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# Letters

## THE FIGHT AGAINST BREAST CANCER

I do not share Susan Love's enthusiasm about being "on the verge of identifying the gene that causes hereditary breast cancer" (*"Confronting Breast Cancer," Interview, TR May/June 1993*). For one thing, such a statement misrepresents how genes function. If a certain gene "caused" breast cancer, we would expect

any woman who has it to develop the condition. In fact, while women who carry this gene are at increased risk, not all of them get breast cancer. No single cellular component or activity is responsible for the growth of a cancer. It always involves multiple factors.

Love also misleads the reader when she says that "genes seem to be at the root of all breast cancer." It is true that the most popular model of how cancers develop holds that mutations in genes are always involved. But these changes are usually not inherited; they are brought about by exposure to radiation or toxic substances, including hormones. Scientists think that when a number of genes in the nucleus of one cell undergo specific mutations, that cell may escape the usual controls on random proliferation, and cancer could result. The fact that such mutations must accumulate is believed to be the reason the incidence of cancer increases with age.

Love holds out the promise that "extremely early" detection of aberrant genes could lead to "gene therapy." Yet there is a great distance between identifying the genetic alterations implicated in breast cancer and knowing how to repair them. At present, it is difficult even to conceptualize the kinds of manipulations that would be needed.

Also, the gene variation(s) associated with so-called hereditary breast cancer may or may not be relevant to the development of breast cancer among women who have no known risk factors. Answering that question will require long-term epidemiological studies, and

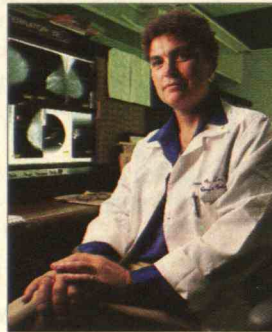
in the meantime cancer researchers and physicians, proceeding on the unwarranted assumption that a particular gene variation always constitutes a predictive or early diagnosis of breast cancer, could single out women who have such a variation and intervene with "preventive" measures, all of which carry risks of their own.

The observed increase in the incidence of breast cancer has social causes, which Love and other cancer specialists often interpret in biological terms. Just one example: As increasing numbers of women have entered the paid work force, they have delayed childbearing. This more lengthy interval between the onset of men-

struation and a first completed pregnancy is thought to increase susceptibility to breast cancer. Clearly, a way to reduce the risk would be to make it easier for employed women to have children—by providing good, affordable childcare and extended, paid parental leave. Another worthwhile step in fighting breast cancer would be to reduce or eliminate exposures to radiation, environmental toxins, and stressors that affect large numbers of women.

RUTH HUBBARD  
Professor of Biology Emerita  
Harvard University

From a human standpoint, Susan Love's advocacy of increased sensitivity and compassion is right on the mark. But from a technical standpoint, her insights about breast cancer seem distressingly establishmentarian, emphasizing diagnosis and treatment while dancing politician-like around the issue of prevention. It is enormously disturbing that despite six decades of improvements—mammography, lumpectomy, radiation, chemotherapy—the mortality rate for breast cancer in 1990 is unchanged from that in 1930. Given this dismal record, Love's hope that her daughter will have no cases of breast





cancer to treat seems mere fantasy.

Love emphasizes the importance of genes in breast cancer, and here she touches the heart of the matter. Human genes have changed only 0.005 percent in the past 10,000 years; from the genetic standpoint, we're still Stone Agers. The problem is that our genetically determined Stone Age physiology now interacts with Space Age circumstances.

One important difference is that for Americans, the onset of menstruation is earlier and first birth later than for our Stone Age ancestors. Also, the total number of births is lower, the duration and intensity of nursing is less, and menopause is later. That is, each parameter has deviated from the pattern for which human physiology was adapted through eons of evolutionary selection. The reproductive experience of American women today appears to increase the average cell turnover rate in breast tissue, and carcinogenic mutations are more likely under such conditions. The epidemiologically best-established risk factors for breast cancer have to do with reproductive experience.

Social changes that restore the original pattern of human reproductive experience—including the six births per woman that was the norm during 99 percent of the time humans have existed—are highly unlikely. Accordingly, effective preventive efforts must likely be directed toward recreating the hormonal milieu for which human physiology has been designed.

Animal research has shown that hormonal therapy can delay the onset of menstruation and induce pseudo-pregnancy; birth control pills that can lower serum estrogen to levels found in hunter-gatherer women are being developed. Investigation along these lines needs to proceed. But more important, we need to begin a debate about the desirability of such measures. Interventions of this nature seem foreign and somehow repugnant, yet they really differ little from oral contraception.

The evolutionary paradigm suggests that a preventive approach including interventional endocrinology might

reduce the incidence of breast cancer from 1 in 8 to 1 in 800. The experience of the past 60 years provides little reason to believe that future advances in diagnosis or treatment, welcome as they will be, can have nearly as beneficial an effect on overall breast cancer mortality.

S. BOYD EATON

Adjunct Associate Professor of Anthropology  
Clinical Associate Professor of Radiology  
Emory University

Susan Love manages to respond to so many of the concerns that women have as they try to work through their fright at the word cancer. For all those women who have struggled to maintain a sense of calm and dignity, her words regarding the importance of support groups should have been printed in bold letters. Such groups, which offer true sisterhood, help women to leave animosity, greed, status, and prejudice behind.

My twin sister and I have both had double mastectomies for breast cancer that seems to be related to a family history. I hope that research in genetics will provide answers before my children and grandchildren become additional statistics.

BONNIE J. ALLISON  
Denver, Colo.

### HONESTY IN TV JOURNALISM

In "Hype and False Hope" (*TR Letters*, May/June 1993), Fred Jerome indulges himself in a heavy dose of misinformation. Reviewing the case of a paraplegic named Nan Davis, he suggests that *60 Minutes* provided less-than-honest coverage of her walk to receive a graduation diploma. He writes that "what the audience could not see was the men at her sides who were supporting her."

But if Ms. Davis has a problem with her legs, Mr. Jerome has one with his eyes. He might have been the only one in the *60 Minutes* audience of 30 million viewers who could not see the men supporting Ms. Davis.

DON HEWITT  
Executive Producer  
*60 Minutes*

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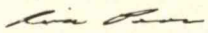
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### Fred Jerome responds:

When Mr. Hewitt called me to complain about my letter in *TR*, he said he had the videotape and transcript of the *60 Minutes* report right in front of him. At my request, he read a key passage: "Nan Davis walked to receive her diploma, directed by computer with Dr. Petrofsky and Dr. Chandler Phillips there only as insurance."

"What do you think 'only as insurance' means?" I asked him. There was an uncharacteristic silence at the other end of the line.

I will accept one correction. Instead of "what the audience could not see were the men at her sides who were supporting her," the wording in my letter should have been "the audience could not see that the men at her sides were supporting her—and *60 Minutes* reported otherwise." I would like to believe Mr. Hewitt will be as meticulous in correcting the false record *60 Minutes* helped establish. And of course, there's a second issue here—that of whether *60 Minutes* knew they were participating in hype—but we'll leave that for another time.

### SAFER OIL TRANSPORT

"Keeping the Oceans Oil-Free" by Judith Tegger Kildow (*TR* April 1993) should have more strongly emphasized accident prevention. Because the United States imports over 50 percent of its oil supply by sea, ports along the entire coastal margin are exposed to risks of a catastrophic spill. While such accidents are fortunately rare, damage can be enormous because tankers are so huge. Also, experience shows that less than 15 percent of spills can be contained and recaptured. Although many safeguards have been proposed over the last 20 years, most continue to be ignored. The entire system lacks a vigorous commitment to safety.

Still, Kildow's article does raise some key safety issues that federal authorities have neglected. In fact, this neglect has been so pronounced that the states of Alaska, California, and Washington have addressed the issues themselves, enacting their own risk-reduction measures for oil transport.

In its first annual report on marine safety, released last March, the Marine Oversight Board of Washington State found little to cheer. The board had asked the parties responsible for transport safety to identify which criteria they used to assess system functioning; none were forthcoming, so the board adopted its own. The board also discovered that a credible database was lacking. And although human error had been a factor in over 70 percent of accidents, corrective action had been directed at long-term research rather than at prompt adoption of proposals to strengthen mariner qualifications, licensing, testing, and retesting. Classification societies and insurance underwriters still overlook incentives to foster self-policing in the shipping industry. Only 7 of 56 risk-reduction measures in the 1990 federal legislation responding to the *Exxon Valdez* spill have been implemented.



I agree with Kildow that regulation of oil transport is fragmented. Creating a new federal agency, however, may not be necessary, much less feasible. The Coast Guard should integrate existing functions that deal piecemeal with spill prevention. It should also follow its mandated initiative to respond to spills vigorously through on-scene leadership and clear lines of authority. At the same time, individual coastal states should execute their own tough initiatives. To head off any confusion this might cause, the states should generate a compact among themselves that would transform collective actions into unified federal law.

EDWARD WENK, JR.  
Seattle, Wash.

*The writer, who served on the commission investigating the Exxon Valdez oil spill, is a member of the Marine Oversight Board of Washington State.*

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