

Technology Review

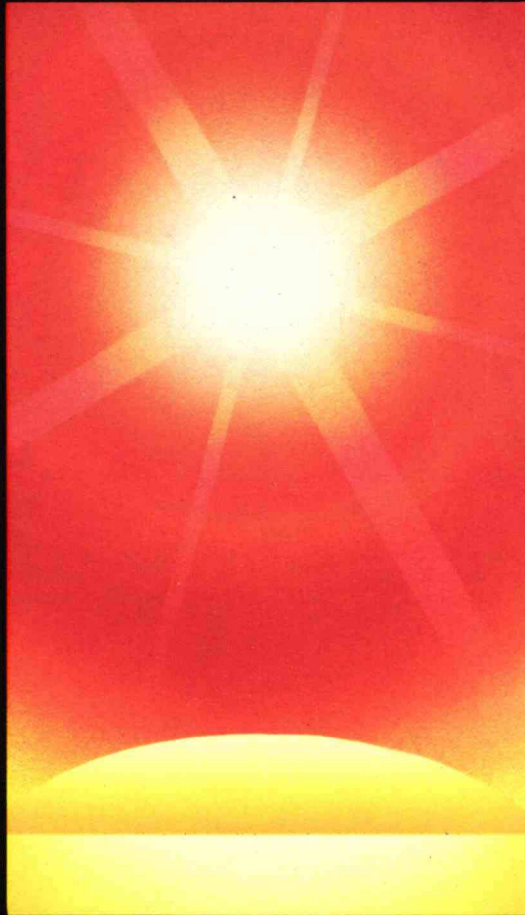
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- ◇ *CROSSING THE BORDER
TO EVADE ENVIRONMENTAL LAWS*
- ◇ *WHY TECHNOLOGY PREDICTIONS
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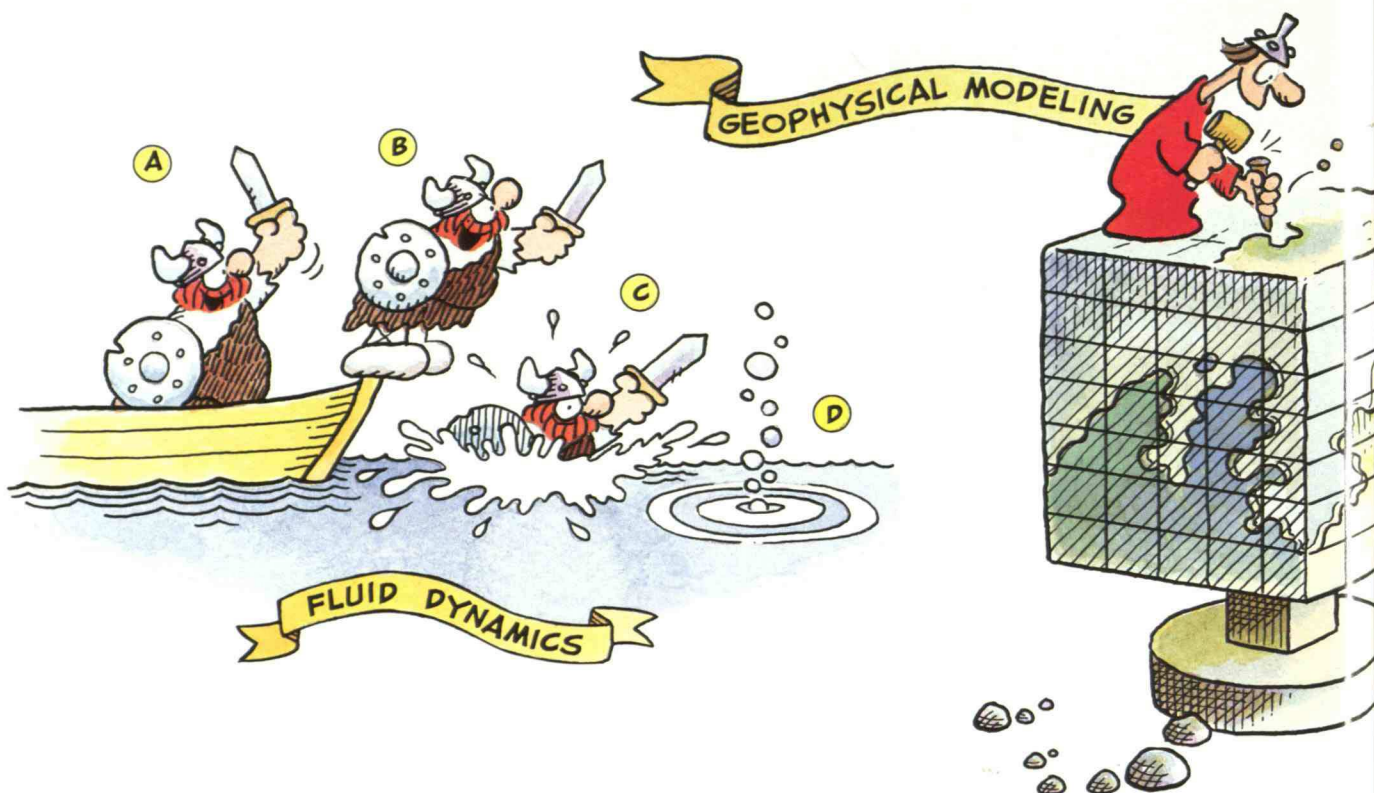


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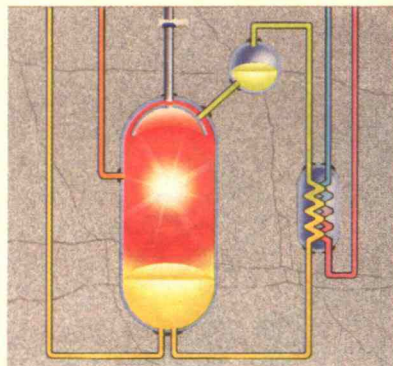
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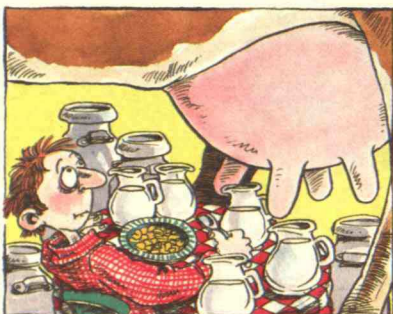


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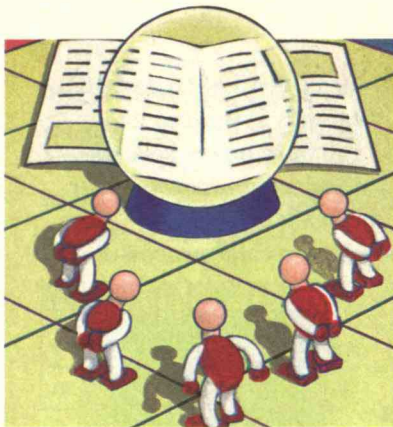
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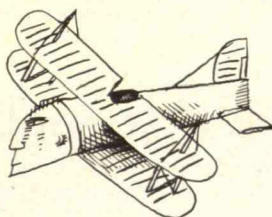
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Nuclear-generated electricity saves more oil each day than we used to import from Iraq and Kuwait.

With more than 100 operating nuclear plants in this country, nuclear electricity cuts U.S. oil imports by 740,000 barrels every day. That's more than the oil we imported from Iraq and Kuwait before hostilities broke out last August.

Nuclear energy is a major reason why electric utilities here burn much less oil than

they used to. In 1973, 17% of America's electricity came from oil, while only 4% came from nuclear. Today, oil provides 4%; nuclear energy generates over 20%.

But America still imports about half the oil it consumes—the equivalent of four huge supertankers of foreign oil every day.

We need more nuclear plants—to meet America's growing electricity demand, and to bolster our independence from dangerously unstable energy sources.

For more information, write to the U.S. Council for Energy Awareness, P.O. Box 66080, Dept. ST19, Washington, D.C. 20035.

Nuclear energy means more energy independence.

FirstLine

Editor's Queries

WITH this issue I am leaving *Technology Review* to do some research and writing. One of the many things I will miss is the craft of editing, so I wanted to take the occasion to reflect on what editors contribute and what we learn through our work.

We of course have our role as guardians of the proper application of the parenthetical comma (both before and after the phrase), defenders against the misuse of "hopefully" (not a substitute for "I hope"), and arbiters of when to split an infinitive (whenever it sounds okay). More serious than the mechanics of grammar is the difficulty E. B. White aptly described: "When you say something, make sure you have said it. The chances of your having said it are only fair." Achieving clarity is much harder than most people realize, but doing so makes reading immensely easier, even when it occasionally requires what some writers consider a dogged repetition. (Note how White repeated the phrase "said it.") What White failed to mention is that when writers don't say what they mean, editors help them find the right words.

While authors often imagine that editors exist to clean up their prose, in fact editors' main job is to help with more serious writing problems, namely problems in thinking. Montaigne had the last word on these: "I hear some people apologize for their inability to express themselves, and pretend to have their heads full of good things which they cannot bring out through lack of eloquence. This is a delusion. Do you know what I think? These are shadows cast upon their minds by some half-shaped ideas which they cannot disentangle and clear up inwardly, and therefore are unable to express outwardly; they do not yet understand themselves."

Society invented therapists to help us all understand ourselves better, and publishers have long recognized a need for editors to help authors give co-

herence to those thoughts that are still partly shaped. Editors bring a disinterested but sympathetic perspective to authors' endeavors, raising questions that loom large but that authors may stubbornly avoid, pointing up contradictions (it is amazingly hard to be consistent), and helping craft arguments to meet the world's scrutiny.

Therapists may discuss patients if they change the names, but writers' identities cannot be hidden, so editors practice discretion. My experience as a writer allows me to suggest the sorts of scenes that pass across the editing table.

The questions that editors pose define a magazine.

For example, when I went to discuss the draft of my May/June "First Line" with Sandra Hackman, the managing editor, I found it covered with scribbles. She said she had spent a lot of time on it because she thought I had some really interesting ideas. Then she asked a few questions. I got the gist. I scurried back into my office, completely rewrote what I then perceived to be a horrible mess, and, I hope, acquitted myself honorably. Inexperienced writers can sometimes be less gracious about rewriting because it means rethinking, not just pushing words around on the page.

While writers must develop reasonably coherent opinions into which their current work should fit, editors' view of the world consists mainly of a set of questions. This is not at all the same thing as a blank slate. The questions posed by the editors define a magazine. Those asked by the editors at *Technology Review* under my guidance do not, I think, differ essentially from the ones asked under the previous editor, John Mattill. The overriding question is: Can human beings prosper in the technological world of the late twentieth century?

What about this world is good, what is bad, and how can we improve it?

One of the pleasures of being an editor is the surprising answers authors provide to such questions. (If an article is so predictable as not to surprise the editor at all, why publish it?) Our current cover story looks at one perennial question that *Technology Review* examines: Can nuclear power provide a beneficial source of energy? Imagine my astonishment a year and a half ago when Abraham Szöke, an intense physicist from Lawrence Livermore Laboratory, sat down in my office and half-jokingly proposed generating power by dropping H-bombs in holes. Actually, the idea wasn't exactly that, he said—and wasn't as preposterous as it sounded—but he couldn't explain much more until his paper got security clearance. Would we be interested in looking at it?

The longer I live, the better I get at keeping an open mind, and the authors have good credentials, so I said yes. We worked with Szöke and Ralph H. Moir through several drafts, and, yes, I was pleasantly surprised by the outcome. At first they focused on the technique of producing power from small, contained fusion explosions. We asked sharp questions about the safety of the plants and their potential to spread nuclear weapons. I believe they answered these questions in a direct, straightforward manner, shedding light not only on their own proposal but on the major outlines of nuclear power itself.

The broad questions we have raised during my tenure at *Technology Review* will not be unequivocally answered but will be revisited for years to come. A search committee is deliberating but has not at this writing settled on a replacement for my position. For the time being, I leave the questions and the magazine in the able hands of Sandra Hackman and the rest of the editors. I now look forward with some trepidation to the questions that editors will ask me.

JONATHAN SCHLEFER

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Letters

JAPANESE EXPERTISE

"How Japanese Industry Is Rebuilding the Rust Belt" by Martin Kenney and Richard Florida (*TR February/March 1991*) is replete with the usual claims of Japanese expertise. The body of accepted statements about Pacific Rim business supremacy is now so large that academia no longer bothers to examine their validity or historical basis.

Nowhere in the article do we read about the closed markets that have confronted U.S. manufacturers who have attempted to sell products in competitive overseas markets. Some 15 years ago, when TVs in Japan cost some two to three times what they did in the United States, Zenith sought to export TVs to that country. They tried for years, but there was always just one more permit or trade license to obtain. So cleverly were these rejections worded that Zenith always kept its expectations up. In one burst of enthusiasm, the company went as far as to actually ship a load of TVs, but needless to say, they never got off the dock in Japan.

In contrast, the United States has flung open its immense consumer markets to all competitors without any quid pro quo. Therefore, while foreign competitors have been able to produce beyond what their home markets could absorb, U.S. companies have seen their business contract. Even today, foreign competitors are permitted to charge less for their products in the United States than at home. Any attempt on the part of the U.S. government to level the playing field or apply temporary quotas on imports is immediately branded as protectionism by American academics, who, after all, are largely immune to competitive forces. (What is tenure if not a protectionist wall?)

Now, after decades of unfair competition have driven U.S. manufacturers either out of business or into mere niche markets, Kenney and Florida would have us be thankful for Japan's takeover of U.S. industry. What obtuse intellectual gall! I dare say we will live to regret the day that we sacrificed U.S.-owned businesses on the ideological altar of one-way free trade. Our stagnant per

capita income over the past 20 years is just one regretful but predictable outcome.

A. DANIEL ELIASON
Santa Barbara, Calif.

The authors respond:

Blaming others for our own shortcomings will never result in the deep changes required to reverse our industrial slide. Our real problem is not foul play by other countries but a badly outmoded model of industrial organization and management that we use in heavy and high-tech industries alike. This old-style approach, associated with Frederick W. Taylor and Henry Ford, views workers as mere cogs in the machine. Our competitors, in contrast, see workers as a source of ideas on how to improve product performance, product quality, and the manufacturing process itself. This is why they are beating us in industry after industry, even though we started out with an overwhelming lead in science, technology, and manufacturing.

In the Japanese transplants that have sprung up in our industrial heartland, wages are similar to those of U.S. heavy industry, and in some cases so are the workers. The main thing that has changed is the system of industrial organization and management, and that has made all the difference.

Also, Eliason is simply wrong about televisions. Although Japan did protect its home market, Japanese corporations beat U.S. television producers right here in the American market. Superior televisions by Sony, Matsushita, Mitsubishi, and Toshiba were and are the underlying reason for this. And while Japanese companies were developing their ability to make world-class televisions, U.S. companies—RCA, GE, Westinghouse, and others—chose to abandon this field. Now Japanese corporations are bringing state-of-the-art television production to this country. Sony is setting up a new factory in the Pittsburgh area, on the site of the abandoned Volkswagen automobile assembly plant, where they will make large-screen color televisions.

GLOBAL-WARMING DISPUTES

The cover of the November/December *Technology Review* advertises José Goldemberg's article "How to Stop Global Warming." The cover picture—a red sky with a blinding white sun—as well as the title of the article itself imply that global warming is a fact, when in truth scientists disagree on this subject and the empirical data do not substantiate any such warming.

MIT meteorologists Reginald Newell and Richard Lindzen both dispute that a warming trend exists. Newell has been quoted as saying that "there is no evidence at all" for "catastrophic change in our climate at the present time."

W.S. WHITE, JR.
Columbus, Ohio

The editors respond:

We are well aware of both Lindzen's and Newell's views. It was an MIT Reporter article in our November/December 1989 issue that brought wide public attention to Newell's valuable research. However, as suggested by the very quote White uses, Newell focuses on the historical record and does not even study what could happen in the future. A broad consensus, though disputed in some respects by Lindzen, holds that catastrophic warming is a serious possibility. That is Goldemberg's view and was accordingly represented on our cover.

POPULATION WOES

"Population Politics" by Werner Fornos (*TR February/March 1991*) is a most frightening, fair, and well-researched article. For many years I've felt that the population explosion has received far too little attention from environmentalists and the powers that be—not to mention the general public.

Instead of continuing to build megacities with their traffic and pollution problems and their endless urban sprawl, perhaps we could build "new towns"—towns of a limited size that would provide a wide range of work opportunities and residences as well as all the amenities for old and young. These

towns would be surrounded by a "green belt" so that they would not infringe on farms, wetlands, and all the other areas that need to be saved instead of turned over by the bulldozer. I've visited such towns both here and abroad and am deeply impressed with the idea.

MARTHA MUNZER
Lauderdale-by-the-Sea, Fla.

Rev. Malthus has been dead for many years, and his ideas had little merit in his time. So why are they being propagated today in *Technology Review*?

"Population Politics" is typical of articles that center on modern population-control mythology—it includes the usual call for more abortions and even a gratuitous reference to the defense budget. All such articles require photographs of a Cambodian or Ethiopian refugee camp or Tokyo at rush hour. (Why not a shot of a Superbowl audience?) Packed together the way the people are in these photos, the entire population of the world would fit in Jacksonville, Fla.

OK, who could live like that? No one. So divide the world population into families of four and give each a lot measuring 50 by 100 feet. Now everyone could fit into Texas. But the Texans wouldn't like that, and no one could grow crops, so we could give all the people an acre per family. Now everyone could live in Australia. Projecting forward to the year 2010, you could put everyone in Africa and still leave room for the animals. As for feeding people, that wouldn't be difficult, either: everyone in the world could eat better than the average American for what we pay U.S. farmers not to farm.

This isn't a serious proposal, of course. It just puts the "problem" in perspective. What we truly need is not social planning but more social freedom. Look around. All that population control has brought to Western Europe has been a severe worker shortage. Also, socio-governmental structures tend to suppress the entrepreneurial spirit. Would you yourself want to move to any of the planned societies of the world?

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MIT Reporter

REBUILDING THE MIDDLE EAST

 Just hours after Saddam Hussein's army started to withdraw from Kuwait, American companies were lining up reconstruction bids. And within weeks, states such as cash-poor Massachusetts had compiled brochures on how to position businesses for work.

A group of MIT faculty see a different kind of opportunity in postwar Kuwait. They say that rebuilding the country offers a chance to introduce such things as cleaner technology, better education, and more efficient government. They are concerned, however, that the time to reflect and plan effectively may be lost.

"You can't worry so much about how buildings are constructed when there is an immediate need for housing," explains Philip Khoury, acting dean of humanities. "One worries," therefore, that "you reconstruct only to have it deconstructed again."

Khoury is one of a group of faculty working on reconstruction under the aegis of MIT's Center for International Studies. In the past few years, he and his colleagues have been studying the Middle East's war-torn areas such as Lebanon and Afghanistan. They've decided that focusing on physical and socioeconomic rebuilding can do more for peace than concentrating on conflict, says Myron Weiner, the center's director.

Many of the projects have concerned Lebanon. Under a \$4.5 million five-year grant, several faculty have combined forces with American University of Beirut to figure out ways to restore electric and water supply systems and housing in that country. After almost 20 years of civil strife, services in Beirut have deteriorated to the point where water is available for just three hours once every four days, and only those people with access to private generators have electricity.

For his part, Weiner is studying refugees, migration, and labor issues, primarily in Afghanistan. In August he plans to lead a team of faculty to Pakistan to help the Agency for Interna-



tional Development create independent organizations that could rebuild rural Afghanistan even before the civil war ends. In countries with weak governments, he says, it is critical to develop non-government reconstruction agencies run by local people.

Fred Moavenzadeh, director of the Center for Construction Research and Education, is concerned about how to pay for the rebuilding of the Middle East as a whole. The region has the resources for such an effort, he says, but it needs a guiding force to direct that money to development. He calls for a regional bank designed along the lines of the redevelopment bank recently created to aid Eastern Europe.

Looking Anew at Kuwait

The Gulf war made the work of the faculty group all the more pertinent. Three years ago, the government of Kuwait asked Moavenzadeh to develop a plan for revamping that country's economy for the twenty-first century. Working with a number of MIT and Harvard University faculty, he explored everything from industrial development and population issues to environmental

Shortly after the end of the Gulf war, a damaged desalination plant caught the attention of two Kuwaitis.

concerns and government restructuring. Now Kuwait is asking the faculty to take another look at the plan in light of the war's destruction.

For example, instead of simply reassembling inefficient ministries and changing them later, perhaps officials could reorganize them at this time to work more effectively, explains Fauzi Al Sultan, a World Bank executive director who heads a task force that's planning Kuwait's reconstruction. But, he adds, it's not clear whether the upheaval of war has provided enough force to convince Kuwaitis to change their ways. In some recent cases, ministries have temporarily held up international relief packages containing food, blankets, and first-aid supplies.

The group says damage in Kuwait may not be as extensive as originally reported. They also point out that the country's wealth, political alliances, skilled workforce, and cheap labor put it in a better position to rebuild itself than any other war-torn country in his-