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EDITED AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

FEBRUARY/MARCH 1995

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Steve Archuleta
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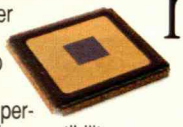

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FEBRUARY/MARCH 1995

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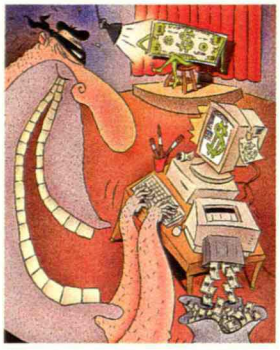
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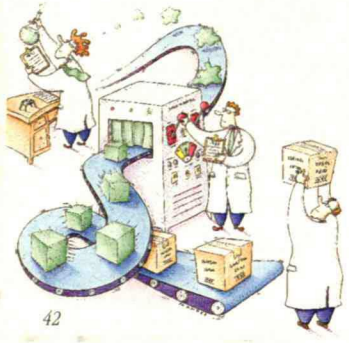
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COVER: LIZ MURPHY DESIGN

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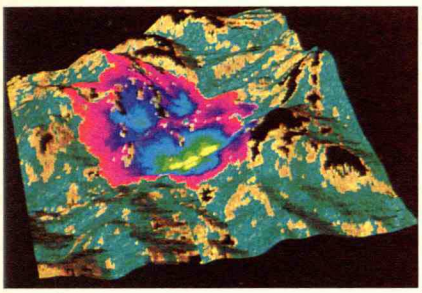

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Technology Review (ISSN 0040-1692), Reg. U.S. Patent Office, is published eight times each year (January, February/March, April, May/June, July, August/September, October, and November/December) by the Association of Alumni and Alumnae of the Massachusetts Institute of Technology. The editors seek diverse views, and authors' opinions do not represent the official policies of their institutions or those of MIT. We welcome letters to the editor. Please address them to Letters Editor, c/o address below or by e-mail to: <technology-review-letters@mit.edu>.

Editorial, circulation, and advertising offices: *Technology Review*, Building W59, MIT, Cambridge, MA 02139, (617) 253-8250; FAX (617) 258-7264. Printed by Lane Press, S. Burlington, VT. Second-class postage paid at Boston, MA and additional mailing offices. Postmaster: send address changes to *Technology Review*, MIT, Building W59, Cambridge, MA 02139, or e-mail to <traddress@mit.edu>.

Subscriptions: $30 per year. Canada add $6, other foreign countries add $12. Contact *Technology Review*, P.O. Box 489, Mount Morris, IL 61054, (800) 877-5230 or (815) 734-1116; FAX (815) 734-1127, or e-mail to <trsubscriptions@mit.edu>.

Advertising representatives: Mark E. Lynch, Eastern Sales Manager, 9 Salem Drive, Saratoga Springs, NY 12866, (518) 583-6086; William R. Cook, National Accounts Manager, P.O. Box 973, Duxbury, MA 02331, (617) 934-9714; The Leadership Network: Kiki Paris, 200 Madison Ave., New York, NY 10016, (212) 686-1734; Albaum, Maiorana & Associates, 418 W. 5th St., Royal Oak, MI 48067, (313) 546-2222. *Technology Review*'s e-mail address: <tradvertising@mit.edu>.

Printed in U.S.A.

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First Line

Powerful Partners

THE early 1980s were a pivotal time for the major players of the U.S. steel industry. Threatened by competition from overseas producers who had invested in innovative technology for making steel more cheaply, as well as from minimills recycling scrap steel at home, steelmakers had to retool on a massive scale. Giant firms such as U.S. Steel not only slashed their capacity by a quarter and their workforces by more than half but also faced the need to reorganize remaining employees to produce high-quality, high-value-added goods.

Conventional wisdom may have had it that the most compliant locals of the United Steelworkers of America would fare better under these circumstances than their brothers and sisters who were seemingly more confrontational. Yet according to a comparison of two steelmaking plants by Richard M. Locke and Ann C. Frost of MIT's Sloan School of Management, the local with a history of standing up to, as well as working with, both plant management and the national union has been highly successful in hammering out the complexities of workplace restructuring.

At Inland Steel's Indiana Harbor Works in East Chicago, Ind., Local 1010 participates in a steering committee that draws on the input of both rank-and-file workers and managers to determine the content of new jobs. In this capacity, the local can both cancel the game and play ball: although 1010 withdrew its support from a purported total quality management program that simply pursued layoffs, effectively ending the effort, the overall number of unionized employees as well as supervisory staff has been cut.

At Gary Works, the flagship facility for U.S. Steel that produces some 60 percent of its output, in contrast, management has begun an "employee-involvement program" over which it has sole control, and has combined formerly distinct jobs without consulting local 1066.

Locke and Frost say Indiana's 1010 is able to work as a cooperative but uncoopted partner because it has long posted elected representatives throughout the plant who must respond to the demands of employees as well as resolve disputes with management. Locke and Frost see the seeds of a reborn labor movement in locals that take back negotiations formerly assumed by the national union.

According to the Dunlop commission, which recently reported its findings on the future of U.S. labor-management relations, the kind of energetic representation 1010 provides is urgently needed as American workplaces not only attempt to tap employees' know-how to improve productivity but wrestle with expanding federal mandates on disability, safety and health, and education and training. The commission finds that employees want more say over the conditions under which they work, while managers want more flexibility in conforming to regulations. The commission encourages workplaces to experiment with innovative forms of self-governance that give employees an active role in resolving disputes and establishing policies.

It's better to play together than to prey together.

In "Bringing New Materials to Market" in this issue, Thomas W. Eagar (a professor of materials engineering at MIT) sees the need for similar cooperation between complementary companies that have too often taken each other for granted. In an industry that suffers from a 20-year delay between invention and widespread use of a novel substance, collaborative ventures between suppliers of new materials and potential users such as automakers—in which, for example, they might share proprietary information and perform joint research—will give both parties the security to invest in new products and processes. As columnist Bennett Harrison pointed out in "Global Winners and Losers" *(TR July 1990)*, cooperation between strong complementary partners is not a common strategy in American business: auto companies often play off suppliers against each other while demanding quality that those companies are ill-equipped to deliver without a long-term commitment.

Far from dismissing the federal government as irrelevant to local concerns, the Dunlop commission sees a role for national agencies in analyzing which innovations in labor-management relations are most effective and ensuring that workplace committees meet strong standards for fair representation. Eagar, too, views the government as a key figure in facilitating cooperation among diverse parties, as it has done by organizing and partially funding the Sematech consortium to improve the manufacture of semiconductors. Meanwhile, Locke and Frost envision a corresponding role for national unions as information clearinghouses rather than as central directors of top-down strategies.

Yet global forces threaten to swamp even the national economy, as evidenced by recent debate over the nascent World Trade Organization. Maintaining living wages and tough environmental standards in the face of international competition will require action from that very institution, Jonathan Schlefer points out in his review of *America: Who Really Pays the Taxes?*, also in this issue.

The prospect of ensuring that the WTO will fulfill such a role is daunting. But as the steelworkers' experience shows, the knowledge and drive required to create effective institutions spring from cooperation for mutual gain among powerful players. Rather than reacting to deep uncertainty about their economic future by electing representatives intent on the wholesale dismantling of agencies and programs, voters energized through participation in workplace governance might instead choose leaders resolved to strengthen established institutions and set up new ones.■

—SANDRA HACKMAN

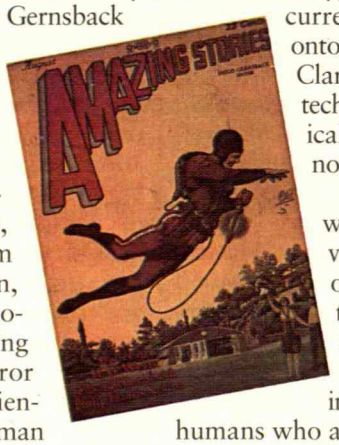
Letters

LITERARY FALLOUT

In Frederik Pohl's "Science Fiction: Stepchild of Science" (*TR October 1994*), it was good to be reminded that for many readers outside English departments, it's the (speculative) science in science fiction that has made it stimulating and fun, not just the style. As I was myself stimulated to pursue a career in science by the "juvenile" novels of Robert A. Heinlein, Poul Anderson, and, yes, Frederick Pohl, I was heartened to read his account of science fiction's role in inspiring so many great scientists. One can only hope that it still has such power.

DAVID MEAD
Science Fiction Research Association
Texas A&M University
Corpus Christi, Tex.

Frederik Pohl summarizes well the history of science fiction as I've lived it, since Hugo Gernsback, editor of *Amazing Stories*, printed my first short story in 1928. Early editors like Gernsback and John W. Campbell were optimists, dreaming of new technologies that could build a better world and take us to the stars. Those dreams were shattered by the atomic bomb, which left a mushroom cloud over science fiction, raising a flood of post-holocaust stories and inspiring numerous grade "B" horror films about misguided scientists seeking knowledge "man was not meant to know." I wonder if these dark visions feed the distrust of science and technology prevailing today.



JACK WILLIAMSON
Portales, N.M.

Frederik Pohl's notions about the predictive and educational value of science fiction apply well to the work of Verne and Wells. However, three problems degrade the value of today's science fiction, all of which apply especially to the assorted *Star Trek* programs and films.

The first *Star Trek* pilot program centered around telepathy, the second around ESP. These themes set the tone for many stories in which plausible futuristic science (space flight, high-power computers, beam weapons, genetic engineering) combines with genetically compatible humans and aliens, who exhibit various exotic mental powers. This mix of pseudo and real science confuses people, legitimizes fantasies, and contributes to the high level of superstition running through our postmodern society.

The second problem is science fiction's general failure to accurately project the accelerating pace of change. Much of the seemingly distant technology of the original *Star Trek* series is already in use, including portable communicators, remote medical imaging, and voice-activated computers. More recent *Star Trek* programs portray people centuries from now clicking away at computers not much different from the one this was typed upon, projecting the current pace of technology onto the future. As Arthur C. Clarke has explained, future technology will appear magical to the point that it will not be recognizable.

The third and perhaps worst problem is what I view as the mishandling of the human-robot question. Almost all future fiction has humans competing with robots indefinitely. (Pohl writes about humans who are scanned and beamed to a distant star, which begs the question of why a transferable mind would want to remain stuck with the form of a derived ape.) If robots become conscious in a manner analogous to humans, there will be no robot-human interaction or competition. The former will swiftly boost mental and physical powers to levels far beyond mere mortals. Human minds will have two choices—go fishing or go robotic.

Science fiction is in a quandary that has forced it into stagnation. People want to write and read about people.

Even works portraying the coming cyberspace are anthropocentric. And we humans want to feel superior or at least equal to everything else, so robots (and aliens) are portrayed as flawed. But the future is not likely to be anthropocentric. The result is a genre that has become more escapist than predictive.

GREGORY S. PAUL
Baltimore, Md.

FIERY DEFINITIONS

In "The Coolest Sound" (*TR October 1994*) by Simson Garfinkel, I read that chlorofluorocarbons "have been used in [refrigeration] because they're cheap, nontoxic, and inflammable." I doubt very much that these products would be so common if they ignited readily. The addition of "in" to "flammable" doesn't change the meaning to "not flammable." Some decades back, in recognition of this general misunderstanding, a few new usages came into play: nonflammable is now used for noninflammable and flammable for inflammable.

REYNOLD GREENSTONE
Brookeville, Md.

TRACKING STUDENTS

In "Off the Track" (*TR October 1994*), it's unfortunate that Ellen Ruppel Shell does not use a cause-and-effect analysis in her criticism of tracking in schools. For example, she speculates that lack of tracking is the reason why Japanese and European students perform well in school, but perhaps a longer school year and time-on-task are also important factors. In any case, let's avoid vague statements such as that students "were probably not tracked at all" (with what probability?) or "the very lack of tracking has, arguably, helped" (where is the concrete information?). Perhaps Shell would board an airplane or drive across a bridge designed by students who weren't tracked. I'll stick with those who were designated as members of the top 2 to 3 percent of the class.

CLARENCE J. MADAY
Raleigh, N.C.

Ellen Ruppel Shell makes excellent points regarding the effects of teacher competency, expectations, and philosophy on low-track classes but fails to draw the clear conclusion that these are teacher problems, not tracking problems. Further, while she cites the theoretical advantage of mixed classes to high achievers, she ignores the well-documented ostracism of high achievers in heterogeneous classes. Parents of gifted children know all too well that these students often intentionally underachieve to avoid denigration and verbal abuse by their classmates. Ability grouping creates a sanctuary where it is acceptable to excel and where, indeed, peer pressure encourages it.

Ability grouping is not an educational panacea and does unquestionably have disadvantages, particularly if the grouping system is rigid and inflexible. However, the approach at least makes some attempt to address the individual needs of students. In the real world, "administrators who manage to eliminate tracking in their schools" too often offer nothing to replace it, unreasonably expecting teachers in oversized classes to somehow meet the diverse needs of their students. Even the most dedicated and competent teacher is doomed to failure.

FRANK J. VENUTI
Big Flats, N.Y.

As a German/American family, we have directly experienced a European educational system, and we disagree with Ellen Ruppel Shell. The German school system more rigidly "tracks" younger and older students by nominal ability than is the case in U.S. public schools. In all the older German states, students are segregated by academic level immediately after the fourth or fifth elementary grade. Students then attend separate schools, *Gymnasium* for the university-bound and *Realschule* for more general-ability students. Special education students, rarely mainstreamed, are sent to their own schools.

The only difference we have found is that German schools place more emphasis on oral presentation and less on rote learning. The German system does have one advantage in that schools there don't have to deal with the children of a disadvantaged social underclass to the extent that many American inner-city schools must.

JEAN RENARD WARD
MARIA RUETERS
Arlington, Mass.

STATISTICS MISUSED

In "How Numbers Can Trick You" (*TR October 1994*), Arnold Barnett omits or downplays some important points about the misuse of statistics. First, most important public policy issues are posed or judged in statistical terms. But the statistical underpinnings of the "evidence" used to debate such issues are often weak, decision makers are ill prepared to use or evaluate the "data," and apparently convincing statistical arguments are available on both sides. Examples include whether IQ is inherited or can be altered, whether fish stocks have been permanently ruined in Prince William Sound, and whether Agent Orange or breast implants actually cause disease, and so on. Second, much recent scientific fraud has been cloaked in statistical maneuvering or has featured altered data that create an impression of statistical significance. And third, even honest researchers make inexcusable errors that render their statistics useless. After the EPA disclosed that residents of Love Canal had suffered chromosome damage, it was discovered that we all have similar amounts of damage—a finding that the simple use of a control group would have prevented. If supposedly competent practitioners can disagree with one another and make such errors, how can we blame newspapers and television for misinterpreting statistics?

DANIEL E. WHITNEY
Arlington, Mass.

When we compare statistics on the safety of various forms of travel, I think "passenger-hours" should replace "passenger-miles." On a 600-mile trip, car passengers are at risk for ten hours while airplane passengers are at risk for about one. A 600-mile automobile trip ought to be compared instead with a 6,000-mile airplane trip.

SIDNEY FREIDIN
Laredo, Tex.

Arnold Barnett responds:
The Love Canal case Daniel E. Whitney mentions actually falls within the purview of my article since it involves an "unsound comparison" (statistical sin #5) with the wrong baseline. I did also mention that researchers as well as journalists contribute to statistical lapses in the media. Regarding Sidney Freidin's point: Are we really safer traveling from A to B if the risk per hour drops 50 percent but the trip time grows by a factor of 10?

In the January issue, letter writer Ted Tsomides alleged that I myself chose an extreme case in illustrating how confusion between "likelihood" and "odds" led to exaggerated perceptions of racial bias in Georgia death sentencing. I assumed that the risk that a perpetrator would receive the death penalty if the victim was white was 99 percent. My selection of that number did have a plausible basis. Georgia white-victim murder cases divide into those in which virtually no one is executed (such as barroom brawls) and those that routinely evoke death sentences (such as kidnap-murders). Racial differences in overall death-sentencing rates must therefore, almost by definition, arise from the second group. Thus my choice of a 99 percent death risk was not unreasonable for the situation under discussion.

TORPEDO DISTINCTIONS

The "specialized form of autonomous vehicle" that J. Robert Fricke refers to as Civil War vintage in "Down to the Sea in Robots" (*TR October 1994*) was not born until the 1880s. The torpedo of that war actually took two more basic forms: those that Admiral Farragut damned at the Battle of Mobile Bay, which were actually moored mines, and spar torpedoes, which were attached to the tip of a long pole extending from the bow of a fast power launch. Under cover of darkness, the crew would aim it at a target vessel, strap down the throttle, and often abandon ship, leaving it to ram its torpedo-tipped spar into the enemy. It was the latter type that had modest success in the Civil War.

ROBERT W. PERKINS
Easton, Md.

SCIENCE AND THE PEOPLE

In "Updating the Social Contract for Science" *(TR November/December 1994)*, David H. Guston and Kenneth Keniston portrayed the strains felt by scientists and engineers, and they accurately conveyed many of the frustrations politicians and ordinary citizens feel concerning science and technology. I was especially pleased that the authors referred to a proposal by the Carnegie Commission to establish a National Forum on Science and Technology Goals. The 21st Century Project recently received a $50,000 grant from the National Science Foundation to help develop such a forum to allow citizens to participate in this critical aspect of policymaking.

The article's only shortcoming was its failure to address the subject of national goals more directly. For the public to be persuaded, once again, that science and technology funded with public money can be national assets deserving nearly a hundred billion dollars a year, we need clearly stated goals tied to national needs, and both the goals and the needs should be determined and assessed through democratic debate. We also need goals that are more specific, more measurable, and more relevant to the public mission of government than vague nostrums about "economic competitiveness" or "world leadership in science and technology."

If our goals are vague, pork barrel interests will fill the vacuum. The hard task ahead is to build a political constituency that will fight for the public interest. Scientists and engineers are typically neophytes in this kind of effort. They need alliances with citizens who understand what's at stake, and all of us need new institutions to give the public interest a fighting chance.

GARY CHAPMAN
Coordinator
The 21st Century Project
University of Texas
Austin, Tex.

Guston and Keniston remarked on the lessened need to apply science to defense. But the military threat was not eliminated by the dissolution of the former Soviet empire. History reminds us that military threats have arisen from unexpected sources in relatively short periods of time. Who in 1917 expected Germany and Japan to be serious military threats within 20 years? Similarly, who in 1939 expected the Soviet Union to be so militarily strong within a decade? Any number of countries could threaten us in a few years. We live in a dangerous world and science is no less important now to military preparedness than it was five years ago. As the Roman statesman, Cato, said over 2,000 years ago, "If you would have peace, be prepared for war."

W. VAN SNYDER
La Crescenta, Calif.

CORRECTION:
In "Tapping the Fire Down Below" (*TR January 1995*), by David Tenenbaum, we misidentified the secretary of energy as Helen O'Leary. Ms. O'Leary's first name is Hazel. We regret the error.—*ed.*