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Do We Really Need a National Technology Policy?

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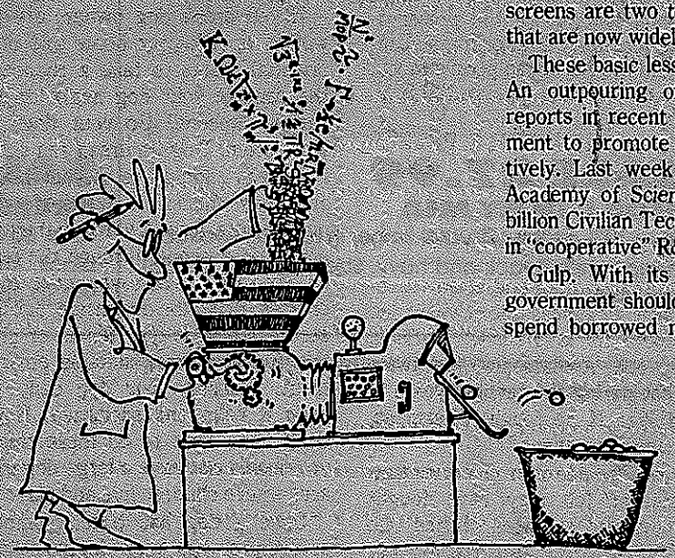
Government support isn't the answer.

Each year the federal government spends about $70 billion on research and development (R&D). Quite probably, the money could be better spent. But it couldn't be spent in a way that would predictably increase U.S. economic growth and improve American global competitiveness. This is the beguiling and false promise behind the rising calls for a national "technology policy."

We're told that the nation that controls certain "critical technologies" will excel economically. Therefore, government should support these technologies, which—at various times—have included computer chips, biotechnology, superconductivity, fiber optics and high-definition television. The theory of critical technologies is bogus. No single technology (or small group of technologies) will guarantee our future. Nor do we have to pioneer new technologies to enjoy their benefits.

You can easily grasp these truths. In the 1980s, we ran an unplanned experiment with a "critical" technology: computers. We bought about 42 million of them. They invaded our homes, offices and factories. As yet, there's been no noticeable improvement in our rate of economic growth or the sluggish rise in living standards. Although no one knows precisely why, the computer boom clearly didn't deliver us into economic paradise.

Just as clearly, a country doesn't have to create new technologies to reap the rewards. After World War II, Europe and Japan lagged in most technologies. But their economic growth exceeded ours for decades (Japan's still does), in part because they adopted U.S. technologies. It's hard to monopolize technology. Scientific information spreads quickly. There are big incentives for companies with new technologies to transplant them abroad, through exports, foreign investment or licensing. We now benefit from this process: VCRs and flat computer screens are two technologies perfected abroad that are now widely used here.



These basic lessons are increasingly ignored. An outpouring of government and business reports in recent years has urged the government to promote civilian technology more actively. Last week a report from the National Academy of Sciences proposed creating a $5 billion Civilian Technology Corporation to invest in "cooperative" R&D projects by industry.

Gulp. With its budget deficits, the federal government shouldn't be devising new ways to spend borrowed money. The great danger of underwriting commercial technologies is that programs will be perpetuated by constituent pressures, not economic or technical merit. That's precisely the history of past federal excursions into commercial technology: synthetic fuels, the breeder reactor and the supersonic transport plane.

Government's role should be the traditional one. It should support basic research—the pursuit of knowledge for its own sake—because private industry won't. It should aid science and engineering education, which benefits the nation as a whole. Otherwise, federal R&D ought to focus on narrow goals: national security (now 60 percent of federal R&D); and solving specific public policy goals, such as curing disease through health research (13 percent of federal R&D).

Within these limits, there's still plenty of room for change and controversy. Should we spend less federal R&D on the strategic defense initiative and more on AIDS? Less on space (11 percent now) and more on the environment (2 percent now)? How much should government R&D support "dual use" industries—aerospace and computers, for instance—that are vital to national security, although they are mainly commercial?

But extending the federal mandate to the broad cultivation of civilian technology is an exercise in futility. Yes, government can, with enough money, create technologies. The former Soviet Union did so in many military areas. Our computer and commercial jet industries were initially helped by defense contracts. But translating new technologies into widespread economic gains is a much larger task that's beyond government's competence.

To be productive, every new technology has to be adapted to thousands of specialized uses. There's a complex interplay of suppliers, customers and technicians. Gains often result from continuous small improvements. Costs have to be held down. The way workers use (or misuse) technology also counts. Cars are built with the same basic technology in Europe, the United States and Japan. But Japan's production is more efficient than America's, and America's is more efficient than Europe's.

The greatest obstacle today to U.S. technological progress is not low R&D spending but the bureaucratic nature of our large companies. This impedes innovation and wastes existing technologies. To think that government—even more bureaucratic than private industry—can fix this failing is a fantasy. Government management of technology is often poor. The space program and nuclear weapons production aren't models to emulate.

Although technology is vital to our future, it is not a panacea for our economic problems. We need to rid ourselves of the delusion that dominating a few new glamorous technologies—or failing to—will seal our fate. A single technology rarely plays such a pivotal role. Consider the late 19th century. U.S. economic growth was powered by many innovations. Railroads cut transportation costs. New manufacturing techniques lowered production costs. New methods of mass merchandising (mail-order houses like Sears) cut selling costs. At century's end, electricity began to play a key role.

What was true then is even truer today. Our living standards will depend on how well we master a host of technologies. In our world, new technologies cross borders rapidly. We are still the global leader, but we won't dominate all new technologies and neither will anyone else. We need to create at home and to absorb advances made abroad. Success or failure will ultimately reflect our very character: our skills, curiosity and capacity—as people and institutions—to change.