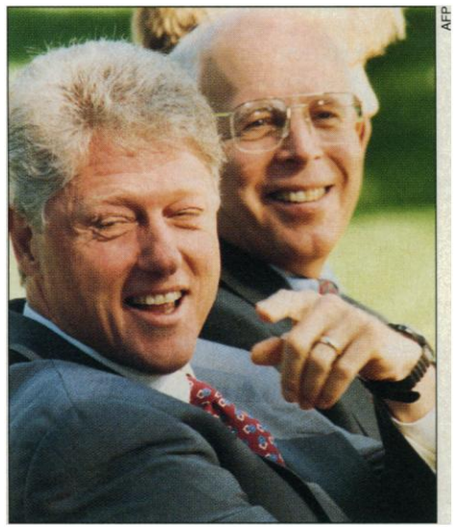
Reinventing the Automobile—And Government R&D

When President Bill Clinton and Vice President Al Gore met with the chiefs of the Big Three U.S. auto makers last week to announce a partnership to design cars for the 21st century, they sent out a broad message: The Administration is trying to reinvent not just the automobile but the way government and industry work together to develop critical technologies.

According to John Gibbons, the president's science adviser, this deal represents a "sea change" in the way Washington and Detroit see each other. In the past, the government has set regulations governing safety, fuel efficiency, and pollution—usually over industry's objections—and the car makers have developed the technology to meet them. Under the new deal, Gibbons says, one optimistic auto executive told him, "We're going to trade lawyer money for engineer money." It's a good deal from the government's perspective, as well, Gibbons says, because it should give U.S. companies a technical edge on the competition and ensure continued employment for U.S. auto workers. This strategy is modeled on Japan's system of industry-government partnerships, characterized as "Japan, Inc." If it succeeds, says John McTague, Ford's vice president for technical affairs, "it could create a kind of 'U.S. Inc.' " in automobile manufacturing.

This new initiative—the most ambitious government-industry joint venture ever attempted—calls for company engineers to work hand-in-hand with federal researchers to come up with a vehicle within a decade that uses only one-third as much fuel as cars on the road now. This vehicle may be powered by something other than a gasoline engine, and White House documents on the project refer often to the possibility of using electric fuel cells as a power source. But this option would be a truly radical innovation, one the industry may not be ready to support. For that reason, perhaps, the auto companies insisted that the White House describe the new technology goal in tentative terms: It "could lead to production prototypes of vehicles capable of up to three times greater fuel efficiency," the partnership papers say. Meanwhile, the documents allow for somewhat more modest objectives in the short run. Both sides pledge to develop advanced manufacturing methods and new automotive hardware that will improve efficiency and reduce pollution from the old combustion engine.

The government intends to spend "several hundred million" dollars a year on this research, says Gibbons—all of it money that has already been earmarked for projects ranging from advanced battery development to computerized design software. Ford, Chrysler, and General Motors have formed a joint company in Detroit—USCAR Inc.—to manage their side of the partnership. They expect to match the government's expenditures on a 50-50 basis, says Larry Weis, a former Ford executive, now USCAR's director.



Partnership. Clinton and John Gibbons, pushing government and industry to cooperate.

For scientists and engineers not in the auto manufacturing R&D community, the pact is important because it serves as a model of the strategy the Clinton Administration intends to use in other areas as it puts into effect the "technology policy" it laid out last February (*Science*, 26 March, p. 1816). The Clinton-Gore strategy, as interpreted by Gibbons, asks company executives and federal bureaucrats to identify goals for R&D based on broad social needs. Next, it asks them to form collaborative teams and share information freely. Most important, it requires industrial and federal research managers to give joint approval of major new investments in R&D. The automobile project, for example, will be run by a joint council that will include Mary Good, undersecretary of Commerce for technology, who will lead the government's part of the effort, industry representatives, and officials from several government agencies.

Not everyone is as enthusiastic as Gibbons and the auto executives. Murray Weidenbaum, former chairman of Ronald Reagan's Council of Economic Advisers, now at Washington University in St. Louis, sees a large "boondoggle potential" in the partnership. Joint ventures diffuse responsibility, Weidenbaum says, so that each investor tends to think that "the other guy's money" is being spent. As an example of what can happen, he cites the Synfuels Corp.—a government-industry venture in the 1980s that cost hundreds of millions of dollars but accomplished relatively little.

Gibbons is aware of the boondoggle factor, but claims the automobile program will avoid it by creating a management system that's "self-correcting." Industry members of the governing council, Gibbons says, will tug the project toward practical objectives while researchers in the federal labs will keep their sights trained on long-term, radical innovations. By getting both types of researchers to collaborate, Gibbons believes, it should be possible to keep technology projects "on track." If something does go awry, Gibbons says, "we're going to move it back on track or get rid of it." He expects to call upon the National Academy of Sciences or the National Academy of Engineering to provide some critical oversight. "Maybe every year or two we should have a kind of a review by peers of the technical progress," says Gibbons, a public forum that would allow critics, including environmental groups, to engage in a "dialogue" with the managers.

Gibbons says it took about 7 months of negotiating with auto company vice presidents for technology just to nail down the goals and the text of this agreement. Vice President Gore and the company CEOs stepped in for the last month, "pulling it all together" and "precipitating a decision," says Gibbons. That process ended on 23 September; on 29 September, Clinton and Gore went public with the agreement in principle. Now the technical experts must decide who will run which project, and how the partners will reach decisions jointly.

But the first task—establishing trust among the partners—is over, says McTague. And that's a huge achievement, for "the cultural change will transcend the automotive industry," McTague thinks. "This may be the first of many such kinds of interactions with the government." It's "probably the biggest change that has occurred in government technology interactions since Vannevar Bush," the champion of government support for scientific research after the Second World War.

Will the Administration seek to create similar partnerships in other areas of the economy? Gibbons says maybe: "You sure don't want to go around picking every industry" for this kind of treatment. But "if it works as a good model, I see no reason why we should stop" with automobiles.

–Eliot Marshall