SCIENCE

24 JANUARY 1986
VOLUME 231
NUMBER. 4736



# Evolving State-University-Industry Relations

The scientific community faces a combination of uncertainties and irreversible change the like of which has not been experienced in several decades. Passage of the Gramm-Rudman legislation, which is aimed at a balanced budget, makes the level of federal support for academic research a chancy business. Already pressures had developed and were increasing for expanded university interaction with industry. This will continue.

Federal appropriations fluctuate, and some unforeseen event could change the picture. But the emphasis on applications has deep roots and will endure. Faltering ability to compete in international trade and attendant industrial unemployment will not be alleviated soon. An earlier confidence that support of basic research would inevitably guarantee applications and prosperity has faded. Governor Bruce Babbitt of Arizona voiced the opinion of many governors and other politicians when he said, " . . . the application of scientific knowledge is the basis for economic expansion and diversification, the key to formation of new businesses and the competitive survival of old ones." Babbitt further stated that there is a "new awareness that the fruits of university research and development activity have little economic value unless they are systematically harvested in the marketplace."

When the history of this era of science and technology is written, the role of the National Governors' Association will have special attention. This organization was ahead of the federal government in recognizing and indoctrinating in its members the need for greater academic-industrial interactions. Another key element was a study by David Birch of the Massachusetts Institute of Technology. He found that small companies—that is, those with fewer than 20 employees—generated two-thirds of all new jobs. Many of the governors concluded that state and local policies could lead to new companies and new jobs through the use of science and technology.

In an effort to create new companies and new jobs, many states have begun to provide funds for a variety of programs to foster application of research. In a 1983 report, the U.S. Office of Technology Assessment estimated that states and localities had formulated about 150 programs. Today there are perhaps as many as 500 programs, and virtually all the states are involved. No two states are fostering identical programs, although some common features have emerged. These include research parks located close to universities, incubator facilities on campus or close by, various kinds of financial support for start-up companies, encouragement of faculty to initiate commercial enterprises, cofunding with industry of academic-industrial research centers, and extension services to companies in the state.

Incubators create favorable environments for small companies. They usually involve low-cost space, services, and technical, business, and marketing advice. Interactions among the fledgling entrepreneurs are helpful as is access to university facilities and personnel.

In attempting to foster R&D in their states and create jobs, state governments are faced with questions of where to allocate limited funds. One approach is to depend on the judgment of private enterprise. If a group of companies is willing to provide funds to enter into collaborative efforts with a university or group of universities, the state administrators feel relatively comfortable about furnishing funds that match or partially match.

For public universities and particularly land-grant schools, agricultural extension services have a long history. A natural counterpart is technical and business services to small companies. Only a few states have adopted such programs, but in Ohio and Pennsylvania they have proven to be effective. Though relatively low in cost, they bring the expertise of the state universities closer to their publics and have a substantial potential for increased political clout.

In their efforts to involve their campuses in job creation and entrepreneurial activities, state administrators are likely to make mistakes. Some will raise unrealistic expectations while interfering with educational processes. However, a great many experiments are being conducted. Some will turn out well, and their successful procedures may serve as models. In any event, a significant change in state-university-industry relations is in progress. The strong campus bias of the 1960's and 1970's against applications and industry has diminished and will not be reestablished soon.—PHILIP H. ABELSON