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Public research universities and the private sector:

# Engine of Economic Growth... Or Captive of Special Interests?

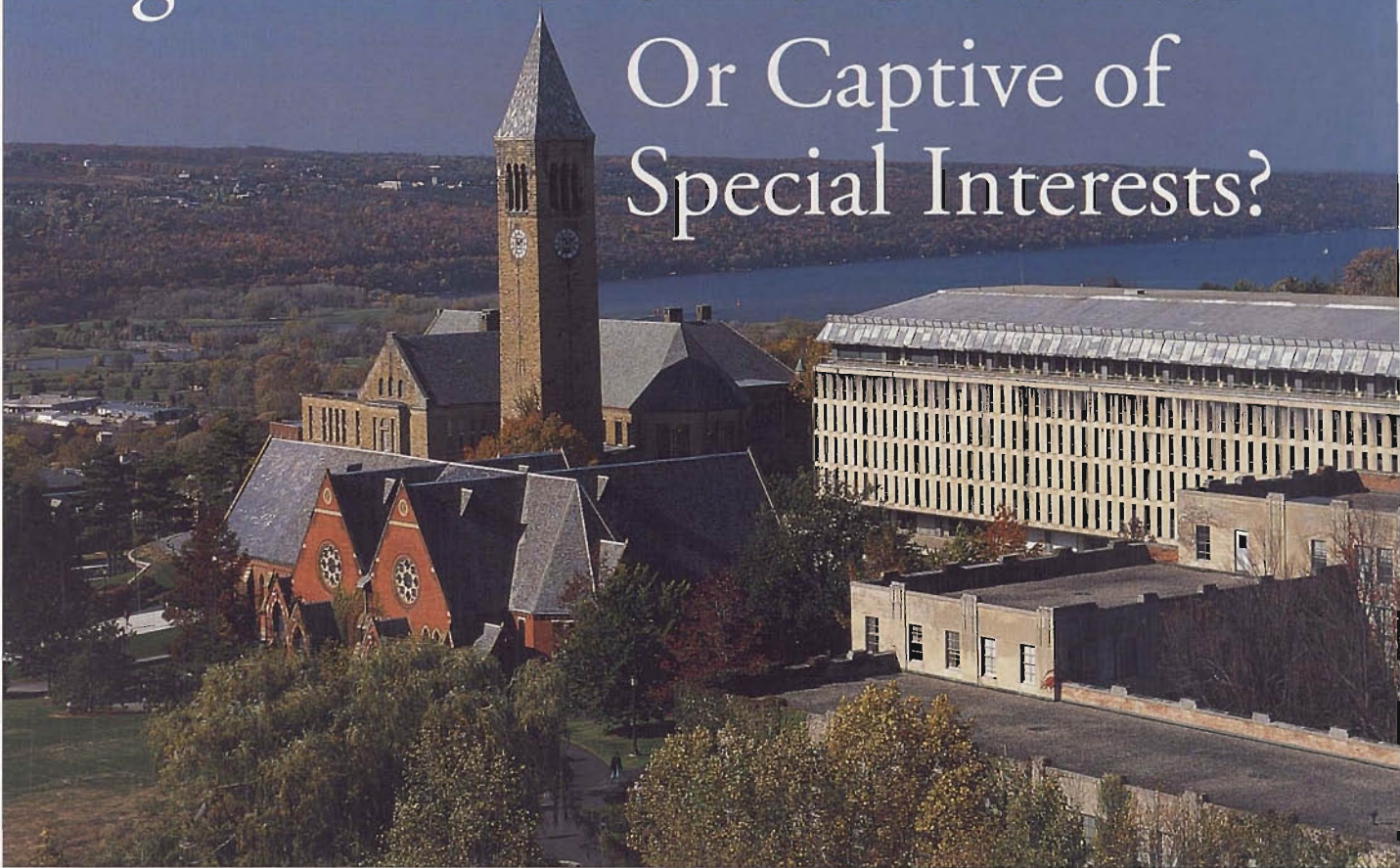


photo courtesy Cornell University

BY WILLIAM A. KNUDSON

The relationship between public universities, taxpayer-supported research, and the private sector is undergoing profound change. Universities are entering into agreements with private firms. Examples include the UC-Berkeley/Novartis agreement and the Kansas State/Farmland Industries Research Alliance.

Other universities are assisting their faculties in creating university-related firms, sometimes called Small and Medium University Related Firms (SMURFs). The trend toward faculty members becoming involved in consulting and other entrepreneurial activities continues unabated. Despite these trends, policy makers still have several options to impact the nature and role of the research universities.





Advocates of public-private partnership in land-grant university research believe that the influx of industry money will speed solutions to real-world problems such as cotton insect pests.

photo courtesy USDA/ARS

Research plays an important part in a modern society. It has been suggested that up to 50 percent of all U.S. economic growth over the past 50 years is due to investment in research and development. A conservative estimate on agricultural research alone yields an annual rate of return of 35 percent. Despite these impressive figures, federal spending on research and development remains stagnant (Rausser, 1999; Press and Washburn, 2000). The first Bush budget continues this trend. In addition to the static or declining nature of federal research expenditures, two other developments have accelerated the universities' move toward private funding arrangements.

The first of these was the Bayh-Dole Act in 1980, which allowed universities to patent the results of federally funded research. The primary rationale for Bayh-Dole was to encourage researchers to become more engaged in problem-solving research that had commercial applications (Press and Washburn, 2000). The act was an attempt to make research more relevant. Since the passage of Bayh-Dole, universities have created over 2,500 new SMURFs designed to commercialize

research discoveries (Weatherspoon, Oehmke and Raper, 2000).

The second critical event was the Supreme Court's *Diamond v. Chakrabarty* decision, also in 1980. This decision held that plant-related inventions based on genes or cells from nature or which applied to living organisms could be patented. In other words, new or genetically modified life forms could be patented and sold (Rausser, 1999). This has obvious implications for agricultural and other sciences. The Bayh-Dole Act and *Diamond v. Chakrabarty* make it possible for private firms and universities to create or modify and potentially patent life forms. In fact, they create incentives to manipulate life through various genetic techniques, provided there is a market for these life forms.

Relationships between the private sector and public universities encourage researchers to become more responsive to actual problems, which can increase the rate of return to research. However, some see several reasons to be concerned about the close relationship between the private sector and public universities. The relationship increases the potential for conflict between objective analysis and the goals of the sponsor. In extreme cases, research results can also be suppressed or delayed until approved by the underwriter. This slows the rate of research discovery and, in turn, may ultimately slow the rate of economic growth. Furthermore, some believe that allowing an individual firm to capture the benefits of taxpayer-supported research in effect diverts public funds to private purposes.

#### **Private Involvement In Public Research Universities: What's the Upside?**

From the university's perspective, a major benefit of private sector involvement is the funding the university receives. While the federal government remains a major source of research funding, the rate of growth has declined over the past several years. At the same time, the cost of research has increased dramatically. Given this



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cost-revenue squeeze, universities have pursued other funding sources. On a related note, universities can also enhance revenue flow by licensing patents generated by researchers.

University research that is relevant to current needs also improves the perception of universities with state policy makers. Bud Webb, of the South Carolina General Assembly and former vice president of research at Clemson University, noted: "Many of my colleagues in the Legislature do not appreciate scholarship; they do not understand why [faculty and their] counterparts need to be involved in research and dealing with graduate students" (Webb, p. 21).

One of the reasons why U.S. universities are generally considered the best in the world is their ability to meet the practical needs of society. The Morrill Act, passed in 1862, established the land grant system whose primary goal was "...to teach such branches of learning as are related to agriculture and the mechanic arts... in order to promote the liberal and practical education of the industrial classes..." (Press and Washburn, 2000). The development of these universities was furthered by the passage of the Hatch Act (1887), which established agricultural experiment stations, and the Smith-Lever Act (1914), which established the Extension service. The Hatch Act

and the Smith-Lever Act placed an emphasis on applied problem-solving research and the dissemination of research results. Although geared primarily towards agriculture and engineering, the land grant system is an example of using public funds to enhance the performance of the private sector, and has been effective in increasing the production of goods and services.

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The land grant system's original mandate helps explain why the returns to agricultural research are so high. The results of research activity have traditionally been available to everyone at little or no cost, so technological breakthroughs were quickly adopted. Furthermore, much of the benefit of agricultural research has accrued to consumers and others in the food system.

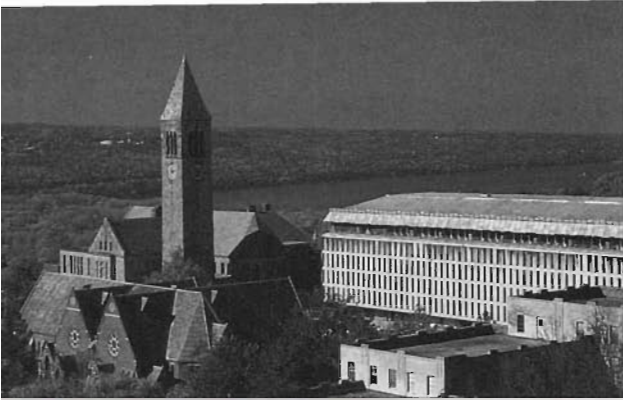
According to some, the passage of the Bayh-Dole Act encourages private sector involvement in public universities. Rausser asserts that "supporters of this legislation successfully argued that unless universities have the right to license patentable inventions, many discoveries from federally funded research would never become commercialized" (Rausser, 1999). The ability of universities to earn royalties from patents generated by researchers provides incentives to carry out the type of research that has commercial application and likely is attractive to private firms that lack the resources to do their own research.

There are definite advantages to universities working closely with the private sector. The union has the potential to raise revenues for the universities, and it encourages relevant research that is geared toward problem solving and acting as an engine of economic growth.

#### **And Now For the Downside**

However, there are serious shortcomings to the ever-tightening relationship between the private sector and public research universities. Perhaps the biggest drawback is that it presents a firm or group of firms the opportunity to "capture" the rewards of research. Some also fear that private sector interest may





THE CLOSE RELATIONSHIP BETWEEN THE PRIVATE SECTOR AND PUBLIC UNIVERSITIES INCREASES THE POTENTIAL FOR CONFLICT BETWEEN OBJECTIVE ANALYSIS AND THE GOALS OF THE SPONSOR.

redirect taxpayer dollars to the pursuit of private interests (Huffman and Just, 1998). As one researcher commented, "We no longer do things for the good of society, we do it to survive as researchers or to pad our own labs and pocket-books." If this is the future of academic research, the incentive for financial support from those rare policy makers that understand research may be reduced.

Researchers in pursuit of their own self-interest may use state and federal funds to augment private sector funds to generate patents which would benefit the few as opposed to society as a whole. A patent creates a limited monopoly for the patent holder. While patents can foster economic growth by encouraging innovation, they can also retard competition and keep prices artificially high. If universities are allowed to sell patents to the highest bidder, or to anyone else with a vested interest, the benefits are not distributed as widely as they would be if the universities made their research discoveries available to all.

The problem is most severe when "information" is the research product. Information has many of the characteristics of a "public good." Information, unlike goods such as corn or wheat, is not used up or depleted the more it is used. In fact, the opposite occurs. The

more information is used and disseminated, the greater the return and the faster it can be used to leverage further research discoveries—more information or otherwise. Furthermore, the cost of distributing information to users is extremely low.

The commercialization of the university is a serious threat. It presents a conflict of values between the private sponsor and the university. Universities and private firms play crucial roles in society. Nonetheless, they are fundamentally different institutions with different values. Private firms have an incentive to keep their research confidential. Patents and opportunities for profit are dependent on secrecy.

This is opposite of the way universities usually operate. University research has traditionally been transparent. Research results are published, and university researchers are expected to share ideas and information. The fear of revealing trade secrets hinders this flow of information and could, in the worst case, slow the rate of technological advance.

#### **Toward A New Partnership**

The understanding that encouraged making resources and research results available to all interested parties in exchange for broadly based taxpayer support appears to be crumbling despite the fact that it

was very effective in encouraging economic growth and development. A new understanding or partnership between the private sector and public universities seems to be evolving. The relationship between the private sector and public universities has been strengthened, but there has been little public discussion on this development.

Such discussion is necessary, because it speaks to the very role of the public university in society. Why should the taxpayer support the university if it is little more than a research arm of private firms, a business incubator, or a consulting service for hire? These activities can further alienate those who already believe that faculty spends too much time on research and not enough time in the classroom.

If taxpayer resources are being used to further the research agenda of the private sector, perhaps the taxpayer should receive some remuneration from the patents and licenses the research develops, beyond the indirect benefits of economic development. This revenue could be used to fund further research projects, or to develop other resources for oversight or revenue enhancement. How the public research university addresses the growing ties between itself and the private sector is the number one issue facing the research university in the twenty-first century.





While privately funded research at public universities raises the specter of undue influence accruing to those providing the funds, it may be possible that private investment may enhance the university's educational mission by freeing up funds from other sources. Here, a professor and several students conduct an alfalfa nutrition experiment.

photo courtesy USDA/ARS

#### For More Information

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