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UNBOXED

When Academia Puts Profit Ahead of Wonder

By JANET RAE-DUPREE

“It is the policy and objective of the Congress to use the patent system to promote the utilization of inventions arising from federally supported research or development” and “to promote collaboration between commercial concerns and nonprofit organizations, including universities.”

— The Bayh-Dole Act, aka the University Small Business Patent Procedures Act

THE law of unintended consequences is perhaps less a “law” than a simple statement of fact: We cannot accurately predict all the results of our actions. We may do something with the best of intentions, and sometimes even accomplish the good toward which we aim. Yet, at the same time, we are all too often surprised by results that didn’t occur to us beforehand.

The Bayh-Dole Act of 1980 started out with the best of intentions. By clearing away the thicket of conflicting rules and regulations at various federal agencies, it set out to encourage universities to patent and license results of federally financed research. For the first time, academicians were able to profit personally from the market transfer of their work. For the first time, academia could be powered as much by a profit motive as by the psychic reward of new discovery.

University “tech transfer” offices have boomed from a couple dozen before the law’s passage to nearly 300 today. University patents have leapt a hundredfold. Professors are stepping away from the lab and lecture hall to navigate the thicket of venture capital, business regulations and commercial competition.

None of these are necessarily negative outcomes. But more than a quarter-century after President [Jimmy Carter](#) signed it into law, the Bayh-Dole Act, sponsored by the former Senators Birch Bayh, Democrat of Indiana, and Robert Dole, Republican of Kansas, is under increasing scrutiny by swelling ranks of critics. The primary concern is that its original intent — to infuse the American marketplace with the fruits of academic innovation — has also distorted the fundamental mission of universities.

In the past, discovery for its own sake provided academic motivation, but today’s universities function more like corporate research laboratories. Rather than freely sharing techniques and results, researchers increasingly keep new findings under wraps to maintain a competitive edge. What used to be peer-reviewed is now proprietary. “Share and share alike” has devolved into “every laboratory for itself.”

In trying to power the innovation economy, we have turned America’s universities into cutthroat business competitors, zealously guarding the very innovations we so desperately want behind a hopelessly tangled web of patents and royalty licenses.

Of course, there is precedent for scientific secrecy, notes Daniel S. Greenberg, author of “Science for Sale:

The Perils, Rewards and Delusions of Campus Capitalism” (University of Chicago Press, 2007). When [James Watson](#) and [Francis Crick](#) were homing in on DNA’s double-helix structure in the 1950s, they zealously guarded their work from prying eyes until they could publish their findings, to be certain that they would get the credit for making the discovery.

“They didn’t try to patent it,” Mr. Greenberg notes, “but somebody doing the same work today would certainly take a crack at patenting the double helix.”

In fact, it was the life sciences — in particular, biotechnology — that started universities down the slippery commercial slope in the first place. Even before the Bayh-Dole Act, pharmaceutical companies were eagerly trolling campuses, looking for projects to finance. After the law was passed, they stepped up their efforts, but now with renewed zeal for keeping potential trade secrets from competitors.

While patients have benefited from the growing supply of new medications, the universities have obtained patents not only for the actual substances but also for the processes and methods used to make them, potentially hampering discovery of even more beneficial treatments.

“Bayh-Dole tore down the taboos that existed against universities engaging in overtly commercial activity. Universities really thought that they were going to make it rich,” said Jennifer Washburn, author of “University Inc.: The Corporate Corruption of Higher Education” (Basic Books, 2005). “Each school was convinced that if they came up with that one blockbuster invention, they could solve all their financial problems.”

Ms. Washburn says that was “extremely wrong-headed.” Initially reacting to the law by slapping patents on every possible innovation, universities quickly discovered that patents were an expensive proposition. The fees and legal costs involved in obtaining a single patent can run upward of \$15,000, and that doesn’t count the salaries of administrative staff members. Instead of bringing home the bacon, university tech transfer offices were throwing money into the void with little hope of returns.

To date, Ms. Washburn says, data gathered by the Association of University Technology Managers, a trade group, show that fewer than half of the 300 research universities actively seeking patents have managed to break even from technology transfer efforts. Instead, two-thirds of the revenue tracked by the association has gone to only 13 institutions.

Part of the problem has been a lingering misunderstanding about where the value lies in innovation. Patenting a new basic science technique, or platform technology, puts it out of the reach of graduate students who might have made tremendous progress using it.

Similarly, exclusive licensing of a discovery to a single company thwarts that innovation’s use in any number of other fields. R. Stanley Williams, a nanotechnologist from [Hewlett-Packard](#), testified to Congress in 2002 that much of the academic research to which H.P. has had difficulty gaining access could be licensed to several companies without eroding its intellectual property value.

“Severe disagreements have arisen over conflicting interpretations of the Bayh-Dole Act,” he said. “Large U.S.-based corporations have become so disheartened and disgusted with the situation, they are now working with foreign universities, especially the elite institutions in France, Russia and China.”

THE issue is further clouded by “reach through” licenses, complex arrangements used by many tech transfer offices. A reach-through lets the patent holder claim a share of any profits that result from using, say, an enabling technology, even if those profits come several steps down the market transfer line. Several universities are already embroiled in messy lawsuits trying to sort out who is entitled to what.

Perhaps the most troublesome aspect of campus commercialization is that research decisions are now being based on possible profits, not on the inherent value of knowledge. “Blue sky” research — the kind of basic experimentation that leads to a greater understanding of how the world works — has largely been set aside in favor of projects considered to have more immediate market potential.

In academia's continuing pursuit of profit, the wonder of simple serendipitous discovery has been left on the curb.

Janet Rae-Dupree writes about science and emerging technology in Silicon Valley.

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