

Understanding Bayh-Dole's impact and potential

Despite the many plaudits it has received, the Bayh-Dole Act has become the subject of growing criticism. Participating in the fight back against what he considers to be unwarranted attacks is current AUTM president John Fraser

By **Joff Wild**, editor, *IAM* magazine

Just before Christmas 2006, the US Congress passed a resolution that praised the Bayh-Dole Act and what it has done in the US. The vote came as the Congressional Research Service (CRS) issued a detailed report – *The Bayh-Dole Act: Selected Issues in Patent Policy and the Commercialisation of Technology* – which concluded that the legislation had “largely benefited the public by encouraging technological advances and their commercialisation”.

Given the CRS's status – it is the public policy research arm of the US Congress and works exclusively and directly for members of Congress, their committees and staff on a confidential, non-partisan basis to provide objective analysis and research on all legislative issues – the language used in its reports will always be restrained and measured. But back in 2002, the *Economist* had no such qualms when it reported: “Possibly the most inspired piece of legislation to be enacted in America over the past half-century was the Bayh-Dole Act of 1980. Together with amendments in 1984 and augmentation in 1986, this unlocked all the inventions and discoveries that had been made in laboratories throughout the United States with the help of taxpayers' money. More than anything, this single policy measure helped to reverse America's precipitous slide into industrial irrelevance.”

Reversing decline

Conceived during the late 1970s and signed into law during the dying days of the Carter presidency, Bayh-Dole set out uniform rules on the ownership of intellectual property created as a result of publicly funded

academic research. In doing so, the legislation helped to encourage widespread technology transfer, partnerships between private investors and universities, and the creation of thousands of spin-out companies. The Act has been credited with kick-starting the biotechnology industry and securing American leadership in a wide range of technological areas.

Joseph Allen is now the vice president and general manager for the intellectual property management group of the West Virginia High Technology Consortium Foundation. But back in 1980, he was a young attorney on Senator Birch Bayh's staff. In 2005 he gave an interview to *IAM* magazine explaining how and why the Act came into being.

The 1970s had been hard years for the American economy, he explained, with increasing competition from Asia and Europe, combined with an energy crisis caused by the Arab oil embargo. “It was pretty bleak,” Allen recalled. “For the first time for my generation, it seemed as if America wasn't number one.”

At the time, the federal government was funding 50% of all research in the country, but very little was being commercialised. Almost everything the US government funded went directly to the public domain, where it remained, overlooked and uncommercialised. “Because the private sector couldn't get IP rights, they would typically leave government-funded technology alone,” Allen stated.

Universities complained about this but seldom found listeners who could make any changes, until they encountered Senator Birch Bayh from Indiana. He received a delegation from his home state's Purdue University outraged that it was taking them two years to get rights to a government-funded invention created on their campus.

“We thought that wasn’t a very good use of taxpayer funding,” Allen recalled. So the senator’s office asked the federal General Accounting Office to look at government-owned patents. The study found that only around 5% of 28,000 patented technologies were licensed to anyone.

“People were frustrated and angry with the study’s conclusions. They were saying the government was putting US\$80 billion into research and development, none of it was being commercialised, the Japanese were eating our lunch and people had to wait years for a bunch of bureaucrats to give the rights back.” So Bayh-Dole was drafted as a bi-partisan experiment. The co-sponsors, with Bayh and Kansas Republican Senator Bob Dole, were liberal Democratic Senator Ted Kennedy from Massachusetts and arch-conservative Republican Strom Thurmond from South Carolina.

Opposition came mainly from two key figures, US Senator Russell Long, R-Louisiana, who said it was one of “the most far-reaching giveaways” he had seen in his years in Congress, and Admiral Hyman Rickover, who predicted Bayh-Dole would result in “greater concentration of economic power in the hands of large corporations”.

After lengthy and bitter debate, the measure finally passed on the very last day of a lame-duck session following the election that denied President Carter a second term. Carter gave Bayh-Dole the green light on the final day he could sign bills into law. Waiting to see if the measure would ever pass “was like the Perils of Pauline”, Allen said. “But the whole idea was to let a thousand flowers bloom, and they did.”

Under attack

All of which is worth remembering in light of recent criticisms not only of Bayh-Dole itself, but also of the job that university technology licensing offices (TLOs) are doing.

For example, in its January 2007 issue, *The Scientist* magazine ran an article entitled “The Trouble with Technology Transfer”. It quoted some examples of bad experiences that academic faculty, business and investors have had in dealing with the offices whose job it is to commercialise university-created intellectual property. In the article, TLOs stood accused of overweening bureaucracy, incompetence and greed. Current AUTM President John Fraser answers the article’s criticisms in a statement to be found on the organisation’s website: www.autm.net.

Back in September 2005, meanwhile, *Fortune* Executive Editor Clifton Leaf wrote in

the magazine that the Bayh-Dole Act itself was a “nervous mother for a science that never needed one”, which had led US universities to evolve from “public trusts into something closer to venture capital firms”.

Although largely based on anecdote rather than detailed research, the two articles reflect a feeling held by some in the US and elsewhere that Bayh-Dole has created a situation in which research dollars are being allocated in ways designed to enrich universities, members of faculty and business at the expense of the American public, who provided the money in the first place.

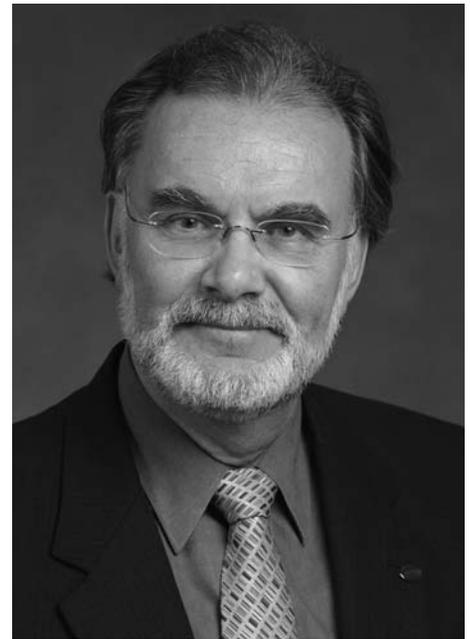
Such attacks clearly frustrate Birch Bayh. Speaking on a visit to the University of Wisconsin-Madison campus in the spring of 2006, Bayh was clear that just because the federal government funds research does not mean it should own the IP that results. “The idea isn’t worth anything unless somebody develops it and brings it into your household or your business ... and that’s not going to happen unless the university or a small business is able to gain ownership and license it out to the industry.” The major task facing Bayh-Dole’s advocates, the Senator said, was to ensure that the Act’s critics were not able to set the agenda. “I don’t think a relatively small group of ideologues, no matter how passionate they are, are going to get anyplace unless they are right, and they are not right ... I think our challenge is to convince more people to stand up and take on the critics so that they won’t be speaking and criticising in a vacuum.”

Making the case

One of those facing the challenge is John Fraser, who, as well as being the current AUTM President, is the Executive Director in the Office of IP Development & Commercialisation at Florida State University.

He is confident that he and his colleagues have a positive tale to tell. “There is an increasing recognition that academic technology transfer has a major impact,” he says. “It saves lives and improves quality of life, it increases competition and productivity. These are important benefits not only in North America but also in the rest of the world.”

Certainly the statistics that Fraser cites to back up his case are impressive. “The US numbers from our 2005 Licensing Survey show that reporting universities concluded 4,932 new licences during that year alone, meaning there are a total of 28,349 currently active licences in the country,” he reports. “Each licence represents a



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relationship between one university and one company working to bring a new, useful product or service into the marketplace, based on an idea from the university.” On top of that, according to the latest AUTM data, 527 new products derived from these licences came onto the market during 2005, bringing the overall number since 1998 up to 3,641. “Each one of those products was based on a university invention or discovery and the total equates to 1.25 new products every single day for a period of eight years. And that’s only in the US. There is also data for other countries, such as the UK, Australia and Canada, indicating similar things are happening in those countries.”

But it’s not only about licences to existing companies. There are also start-ups to throw into the equation, Fraser explains. “During 2005, 628 brand-new start-up (or spin-out) companies were formed, based on a university licence – that’s 1.7 every day of that year. Each is a platform for academic technology that addresses market needs, has attracted investment money and will have a positive impact on the community where the company is located.” There have been more than 5,000 of these since 1980, he says. “I think that all of this shows that in the US we are part of a huge and complex engine that is assisting the economy, while at the same time we are maximising academic research impact by providing general benefits for society.”

The scale of technology transfer from government-supported research in the US is impressive. It involves not only nearly 200 universities across all states, but also 700 government-financed research centres and laboratories of federal departments and agencies conducting more than US\$100 billion in R&D annually. Then there are the thousands of small and medium-sized companies innovating with these institutions. All of which means that when Fraser says, “you see a significant part of the innovation-driven US economy impacted by the Bayh-Dole Act and counterpart federal legislation”, it is hard to disagree with him.

But that does not mean to say that everything is perfect. Fraser is the first to admit that there will be problems. “Would you expect to see conflicting points of view in such a vast enterprise? Of course you would. It is to be expected in something involving so many clever, driven people working across disparate organisations over vast distances,” he concedes. But that is not the same thing as saying that there is something wrong with the system itself,

Fraser points out. “The system works. And it is playing a demonstrable, important role in saving lives, improving the quality of life and increasing productivity and competitiveness. But remember, in this area of the economy, universities are supporting players, not the main drivers; we don’t create jobs, we assist the private sector.”

Focus on communication

And it is those benefits that AUTM is now working hard to make public. For too long, perhaps, the general focus of the association and its members has been on how much money technology transfer generates, but there is so much more to it than that, Fraser says. “Academic institutions worldwide are all about the transfer of knowledge to improve lives and this has always been something that we do, although we have only had modest success in communicating it. This is beginning to change, though.”

One significant development is the Better World Project, a series of initiatives designed to showcase specific cases where technology transfer has benefited people’s lives. An AUTM publication entitled *The Better World Report Technology Transfer Stories: 25 Innovations That Changed the World* pretty much does what it says on the cover, by detailing a number of university inventions that have had a major impact on the world in which we live today. These range from the creation of the Google search engine through major environmental achievements to vital breakthroughs in healthcare. “Academic institutions are all about the transfer of knowledge to improve lives. While this has always been something that we do, we may not have been very good at communicating the value to general society. This is a major effort to change that,” Fraser says. So far, the indications are that this information is proving to be of great interest to a wide variety of people, he adds.

More than just advocacy

But as important as AUTM’s advocacy role is, Fraser points out, it is not the only AUTM priority. Equally as important is the dissemination of knowledge and information among members – professional development. This is done through a range of publications and events, including the annual conference, which these days attracts close to 2,000 delegates (a far cry from the 75 who attended the inaugural meeting of AUTM’s predecessor, the Society of University Patent Administrators, back in 1974).

More informally, as an AUTM member

you quickly become part of a global network of people only too happy to give you access to their knowledge and experiences. "This is an organisation that is just incredible about sharing information," says Fraser. "If you have issues or problems it seems like everyone is willing to give you their perspective and insight." Indeed, it is support that Fraser himself has had cause to call on. "During my early days at FSU I was faced with negotiating a deal revolving around a university publication with a big publishing house. The trouble was that I had no idea of what kind of royalty rate I should be asking for. However, I spoke to some people at AUTM meetings who had done similar deals and they very quickly filled me in. It gave me the confidence to know that what I was presenting was realistic from the publishing company's perspective."

This in-depth knowledge is something that people from outside North America are increasingly keen to share and *vice versa*. The organisation has a growing overseas membership, drawn from all corners of the world, and also works closely with sister organisations in Europe, Australasia and Asia. "We will attend events others organise and invite them to ours, and we will also host joint meetings if that is appropriate," Fraser explains. In addition, AUTM provides tools such as directors' kits, as well as access to a wide range of the literature it and others produce on academic technology transfer. "For the long-term benefit of everyone in our community, it is important that we all approach issues from similar data as a starting point. We need to be well briefed and well prepared, whether we are in the US, Japan or China," Fraser says. "For this reason, over the past several years we have been building working partnerships with academic scholars who study this field. A lot of people are very interested in how to use our activity to enhance productivity and competitiveness," he explains.

Objective scholarly publications provide critical insights, Fraser continues. "I believe that one of the key purposes of the TLOs is to enhance the reputation of our academic institutions by assisting them to reach their education, research and community service goals. This is done by working with faculty and students to form long-term research relationships with the private sector to create benefits for all."

Looking forward

Helping in the creation of standards in academic technology transfer is one of the

major tasks AUTM faces as it moves forward, says Fraser. "With standards you can scale up technology transfer activity and begin to reach the high expectations that seem to exist," he explains. At present, he continues, to scale up you need to add people and budget dollars on a one-to-one basis; in other words, scaling is linear. But to really have the necessary impact, you want to look at changing the tools TLOs and their partners use, and the approach they take. "The western economy has changed over the centuries from the feudal guilds of small separate cottage industries to the industrial revolution and now to the knowledge-based economy. Nowadays, in many ways we are back to the cottage industry environment, in which the creative individual really matters. The real difference between then and now is that such individuals can access so many resources to scale up the impact of their creative work. To scale up significantly, new business-like methods need to be part of our activities."

To maximise the impact such individuals can have, Fraser says, it is important to develop new structures that allow for the smooth transfer not only of patented technology, but also of the creative material protected by copyright. "There is a difference in licensing to the pharmaceutical and to the IT industries and one of the challenges we face is to recognise the breadth of knowledge transfer in copyrights, as well as in patents," Fraser explains. In addition, he says, university research is being accessed to have a major impact on global health issues using innovative business and financial structures. Such developments are allowing research to tackle more problems.

And, of course, being able to make the case for what its members do is also going to remain a priority. "Policy makers in the US and elsewhere are looking for a globally competitive knowledge-based economy. It is our task to help them understand that a sizeable portion of this knowledge is already being created in universities," Fraser says. It is something he is confident that AUTM can do. "I am very optimistic and very enthused about what we are doing, where we are going and the impact we will have," he says. "This is just such a wonderful career. It allows all of us in our community to show how the results of academic research improve everybody's lives."