A Time to Speak Up

Knowing is not enough; we must apply. Being willing is not enough; we must do.

Leonardo da Vinci

In 1978, Senator Bob Dole and I introduced the Bayh-Dole Act at a press conference where several universities spoke movingly about potentially promising therapies that would never benefit the American public which sponsored the research. The reason? They lacked clear ownership rights needed for moving their concepts to the marketplace.

Prior to passage of the Act, promising discoveries withered away because previous policies emphasized that results of federally funded R&D should be freely disseminated without regard to the commercial consequences. Thus, 28,000 government funded patents quietly gathered dust on the shelves of federal agencies.

The steady erosion in the 1970's of American competitiveness was an unintended consequence of this policy as we fell further behind our high technology competitors. Pressure increased to show a greater return for the billions of dollars invested by our hardworking men and women in public sector research.

Congress overwhelmingly felt we needed a new policy providing incentives to our universities and small businesses encouraging practical solutions to problems such as the tragedy of illness, as well as finding technologies to make the U.S. economy competitive again.

The result was the passage of the Bayh-Dole Act of 1980. The past 25 years of Bayh-Dole illustrate that unleashing our unparalleled universities and non-profit institutions was a significant factor in the rebirth of the U.S. economy.

Bayh-Dole's success would not have surprised our most successful President. Here's what Abraham Lincoln said in his Second Lecture on Discoveries and Inventions:

> Next came the Patent laws... Before then, any man might instantly use what another had invented; so that the inventor had no special advantage from his own invention. The patent system changed this; secured to the inventor, for a limited time, the exclusive use of his invention; and thereby added the fuel of interest to the fire of genius, in the discovery and production of new and useful things.

It is exactly this fire of interest that was missing in the previous patent policy. Based upon a misguided, even arrogant, belief that taking inventions away from their creators would better serve the public, federal agencies took inventions from universities and gave them away freely through non-exclusive licenses. Predictably, this system failed miserably.

Ironically, this appears to be where our critics want to return us. From their perspective, innovation looks simple. They believe that companies easily find hidden treasures in our non-profit sector, negotiate exclusive licenses and bottle up science while they make killings in the marketplace.

The reality is quite different. First, university research is a long way from a commercial product. Because the vast majority of non-profit R&D is basic research, any resulting patent is much more an idea than a product. The companies most likely to develop such inventions are small businesses which must have strong intellectual property protection to justify their investments.

It's a rule of thumb in industry that for every $1 dollar spent in discovery, at least $10 dollars will be spent in development. These larger costs are borne by the private sector. And even then, the likelihood of success is small. This is not an exercise for the timid. Yet, once we cut the fetters of bureaucratic red-tape, Lincoln's faith in the American innovative spirit was justified once again.

And what drives our public sector scientists? The great motivating factor in their lives is expanding the field of human knowledge, coupled with a passion that their research find practical applications.

I well remember the testimony of Dr. Leland Clark with the Children's Hospital Research Foundation. Dr. Clark's obsession was finding practical solutions to improve the lives of the children and adults facing cancer and serious burns. Here's what he told the Senate Judiciary Committee during the hearings on the Bayh-Dole bill:

> The point is, as part of the mental process which leads to an invention, the inventor often envisions possibilities for application which are not immediately evident to others. The inventor's personal persistence and confidence is often the deciding factor which carries the idea forward and prevents the invention from being set aside or ignored.

Abraham Lincoln would have understand Dr. Clark!

There is ample evidence from AUTM and others that universities are integral parts of the U.S. economy. Less mentioned is that the Bayh-Dole Act has strengthened science as well .

A few years ago, the National Science Foundation in its **Science and Engineering Indicators** lauded the growth in jointly authored university/industry research papers as a significant step forward for American science. Before Bayh-Dole companies were rightly leery of having their best and brightest perform research with their public sector counterparts for fear of losing patent rights to the federal government. Bayh-Dole removed this unhealthy barrier.

The 2004 edition of **Science and Engineering Indicators** shows that U.S. patents frequently cite academic articles particularly in the life sciences, physics, engineering and technology arenas. "This growth in citations of S&E (note: science and engineering) literature, referenced by scientific field, technology class of the patent, and nationality of the inventor and cited literature, provide an indicator of the link between research and practical application."

We are blessed to be so wealthy that we can afford the luxury of having world class centers of learning. We are further blessed that many of the brightest minds in the world come to the United States for their education, and stay to work in our research institutions.

Those paying for public sector institutions through their tax dollars support the advancement of science, but even more, they want a better life for themselves and their children through continued economic growth.. Bayh-Dole is making this dream possible. We should be rightly proud of our achievements of the past 25 years. We should also be willing to honestly examine our behavior to insure that we are true to the mission set before us—to increase knowledge while bringing practical solutions to the world community.

I am honored to have been able to play a role in this effort. The illustrations that the Association of University Technology Managers included in this booklet aptly show that we have come a long way. Yet, I must close with a warning that the critics must be answered. When I opened the hearings on the Bayh-Dole bill, I said:

> The United States has built its prosperity on innovation. That tradition of unsurpassed innovation remains our heritage, but without continued effort it is not necessarily our destiny. There is no engraving in stone from on high that we shall remain No. 1 in international economic competition. In a number of industries we are no longer even No. 2. New incentives and polices are needed to reverse this trend.

It is no accident the rest of the world is copying the Bayh-Dole model. China and India hope to combine cutting edge university research with low cost manufacturing. We cannot afford to rest on our laurels.

The Bayh-Dole Act more than fulfilled our hopes and dreams. Many, many lives are the better for the success our universities and non-profit organizations have had under it. We should never forget this lesson.

Otherwise, as the great philosopher Yogi Berra once said, it will be deja vu all over again.