

## **THE U.S. FEDERAL BAYH-DOLE ACT AND THE STATE OF UNIVERSITY TECHNOLOGY TRANSFER IN 2003**

1. Passed by Congress and signed into law by President Carter in 1980.
2. Beforehand, federal agencies owned patent rights. Tended to retain them, and not license them to the private sector.<sup>1</sup>
3. Prevailing view in the Academy prior to the advent of the Bayh-Dole Act: A researcher that accepted corporate support was diverted from his basic research to serve corporate interests. Because the researcher had accepted corporate money his research would no longer be directed to the seeking of new knowledge but by the money-driven need to solve current problems in the real world, even to the development of products and processes to a market-ready condition.
4. The generation of inventions is almost never the main objective of basic research. If inventions do flow from that research activity, it is a largely fortuitous happening that takes place because the researcher, or perhaps, an associate, has the ability to see some special relationship between his scholarly work product and the public need. It is from the recognition of this connection, which can convert a discovery or invention into a patentable invention, that innovation arises.
5. The U.S. government got involved in funding university research heavily during WWII. A consensus developed after the war ended that the U.S. should maintain technological leadership in order to continue to enhance its military capabilities. As more and more technology was developed with government money by private companies, universities and nonprofit organizations, more and more of it began to be locked up in government patents.
6. Each government agency providing research funding developed its own disparate technology transfer policy. For example, by 1978, NASA had waived title to the private contractor to less than 4% of the more than 30K inventions that had been reported to it by its contractors.
7. The Bayh-Dole Act represented the recognition by Congress that:
  - 7.1. Imagination and creativity are a national resource;
  - 7.2. The patent system is the vehicle which permits the delivery of that resource to the public;
  - 7.3. Placing the stewardship of the results of basic research in the hands of universities and small business is in the public interest; and, significantly,
  - 7.4. The existing federal patent policy was placing the nation in peril during a time when intellectual property rights and innovation were becoming the preferred currency in foreign affairs.
8. Most Significant Feature of The Bayh-Dole Act: Changed the presumption of title in and to any invention made in whole or in part with the use of government-supplied funds from the government to the universities.

9. Thomas Edison: "The value of an idea lies in the using of it."

10. The Bayh-Dole Act, and "March-In' Rights.

10.1. "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; ...; to promote the commercialization and public availability of inventions made in the United States by United States industry and labor...." <sup>2</sup>

10.2. "Each nonprofit organization or small business firm may, within a reasonable time after disclosure as required by paragraph (c)(1) of this section, elect to retain title to any subject invention..." <sup>3</sup>

"Each funding agreement ... shall contain appropriate provisions to effectuate the following:"

....

"(3) That a contractor electing rights in a subject invention agrees to file a patent application prior to any statutory bar date that may occur under this title due to publication, on sale, or public use, and shall thereafter file corresponding patent applications in other countries in which it wishes to retain title within reasonable times, and that the Federal Government may receive title to any subject inventions in the United States or other countries in which the contractor has not filed patent applications on the subject invention within such times." <sup>4</sup>

10.3. "With respect to any subject invention in which a small business firm or nonprofit organization has acquired title under this chapter, the Federal agency under whose funding agreement the subject invention was made shall have the right, ... to require the contractor, an assignee or exclusive licensee of a subject invention to grant a nonexclusive, partially exclusive, or exclusive license in any field of use to a responsible applicant or applicants, upon terms that are reasonable under the circumstances ...." <sup>5</sup>

11. For the first 10 years under the Act, universities and other institutions receiving federal research funds did little to fully implement the purposes of the Act. This attitude changed dramatically within the last 10 years, however, as universities began to recognize their technology transfer offices as legitimate sources of revenue. Staffing was increased accordingly, and tech transfer staffers now play an ever more active role in encouraging professors and graduate students to file patents for and subsequently license university-generated technology.

12. For example, from its inception in 1984 through fiscal year 2001, the Columbia University Licensing Office generated \$1 billion of cumulative revenue through the licensing of university developed technology (much of this was from a single drug patent).<sup>6</sup>

13. While of the bulk of licensing now takes place to established companies, some university technology transfer offices maintain licensing officers on staff whose explicit mission is to instigate and license core technology to start-up companies

14. AUTM – The Association of University Technology Managers – now has greater than 3200 members.<sup>7</sup> AUTM’s members represent over 300 universities, research institutions, teaching hospitals and a similar number of companies and government organizations. As reported by an AUTM study, in the 1991-1999 period:

- New U.S. patent applications filed by academic institutions increased more than threefold to 5,545.
- The number of licenses that academic institutions entered into grew threefold to more than 3,900.

AUTM estimated that in 1999

- 344 new companies were formed with technologies licensed from academic institutions.
- Sixty-two percent of the licenses and options completed by academic institutions were with small entities, consistent with the intent of Bayh-Dole to encourage investment in product development by small companies.
- Academic technology transfer resulted in \$40.9 billion in economic activity, supporting 270,900 jobs.

15. The business activity associated with sales of products in fiscal year 1999 is estimated to generate about \$5 billion in U.S. tax revenues at the federal, state, and local levels.

16. Result: Universities, and other institutions performing federal government-sponsored research now measure academic and scientific prowess on the basis of the quality of their patent portfolios:

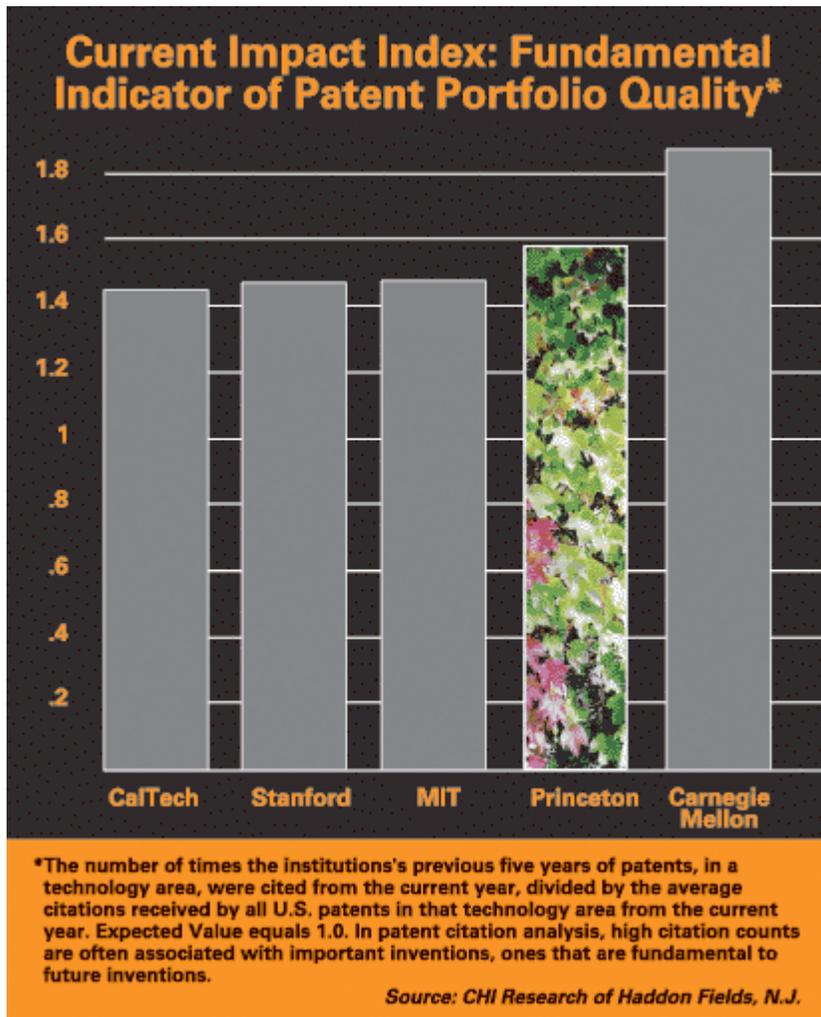


Illustration by Ann Haver-Allen

17. Further result. The technology licensing offices of universities now dangle descriptions of technologies publicly on their Web sites, e.g.:<sup>9</sup>

## Ceramics & Materials Science Technologies

DOCKET NO.	TECHNOLOGY TITLE
<a href="#">97-1407-1</a>	Formation of a Silicate Sponge (L3) Phase
<a href="#">98-1470-1</a>	Method for the Preparation of Ceramic Articles
<a href="#">98-1474-1</a>	Materials Design by Correlated Composition and Process Identification
<a href="#">98-1500-1</a>	Controlled Microarchitecture Ceramic Composites by Stereolithography
<a href="#">00-1659-1</a>	Electrohydrodynamic Patterning of Colloidal Crystals
<a href="#">00-1688-1</a>	Segmented Arc Furnace Cathode
<a href="#">01-1818-1</a>	Method for Prevention of Damage to Stone and Masonry from the Crystallization of Salt
<a href="#">01-1821-1</a>	New Process for Diamond Wire Saw Cutting of Complex Metal and Concrete Structures
<a href="#">01-1843-1</a>	A Colloidal Pen for Producing Colloidal Crystals

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20 years ago, these, and many other inventions might have lain buried in the pages of academic journals.

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<sup>1</sup> §§ 1-9 herein based on speech by Howard W. Bremer delivered November 11, 2001, reprinted at [http://www.autm.net/index\\_ie.html](http://www.autm.net/index_ie.html).

<sup>2</sup> 35 U.S.C. 200.

<sup>3</sup> 35 U.S.C. 202 (a).

<sup>4</sup> Id. at (c).

<sup>5</sup> 35 U.S.C. 203.

<sup>6</sup> From presentation (unpublished) by Frank Carrigan, Columbia University Science and Technology Ventures, at May 30, 2002 PrincetonEN.org National Conference.

<sup>7</sup> See [www.autm.net](http://www.autm.net).

<sup>8</sup> From S. Peters "The State of Technology Transfer at Princeton: Academia, Industry Perfect Together, EQuad News: Winter '01-'02.

<sup>9</sup> [http://www.princeton.edu/patents/otl\\_ceramics\\_dockets.htm](http://www.princeton.edu/patents/otl_ceramics_dockets.htm) See also <http://www.ctt.upenn.edu/oasis/org/U.aspx?M=M031007-1624170073&U=030415-1421210446&UT=030415-1418010755>.