

RETHINKING OWNERSHIP OF THE PATENTS GENERATED FROM A FEDERALLY-FUNDED RESEARCH

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ABSTRACT

The governmentally-funded research has a long history in the United States. The major change in the federal level is the passage of the Bayh-Dole Act of 1980 which authorizes the federal agencies to apply for and hold patents generated from federally-sponsored researches and further to grant an exclusive or non-exclusive license of such patents to private sectors. Under the Bayh-Dole Act, universities may retain titles to inventions from federally-sponsored researches. But, there may be a question of whether a university or inventor may own the patent right. This article will discuss the patent ownership issue, and particularly focus on the management aspect. A model of four stages is proposed for resolving the patent ownership issues. The first stage is default assignment. A university may rely on a professor's intent of taking over a licensing job to decide whether to retain the ownership itself or to have a professor retain the ownership. The second stage is adjustment. A university may adjust the allocation by estimating a professor's ability to handling licensing, the nature of the patent, the potential private licensees or funding resources, and the resources of the UTT office. The third stage is continuous monitoring. A UTT office should regularly review the licensing project of a patent. The fixed-term approach is proper because it can give a trend of the marketability of a patent. The last stage is reconsideration of ownership. At this stage, the information collected during the third stage will help a UTT office reconsider the proper allocation of the patent ownership.

Keywords: Bayh-Dole Act, university technology transfer, patent, ownership

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I. Introduction

The governmentally-funded research has a long history in the United States.¹ The major change in the federal level is the passage of the Bayh-Dole Act of 1980 which authorizes the federal agencies to apply for and hold patents generated from federally-sponsored researches and further to grant an exclusive or non-exclusive license of such patents to private sectors.² Under the Bayh-Dole Act, universities may retain titles to inventions from federally-sponsored researches.³ Then, universities can transfer the federally-funded research outcome to the industries.⁴ That is called “university technology transfer” (“UTT”). The distinctive contribution of the Bayh-Dole Act is to create many companies and jobs.⁵ For example, in 1999, UTT contributed 40 billion US dollars to the American economy, creating 270,000 jobs and 417 new products.⁶

While universities are developing their technology, private companies also look for the cooperation opportunities with universities.⁷ As a result, the ownership issues regarding intellectual properties start to get involved during the due diligence process before the negotiations are finished.⁸ This is because private companies want to make sure that the licensed right is lawfully retained by the university.⁹ Assume that universities comply with the Bayh-Dole Act to report the patentable inventions to the federal agencies and finally retain the relevant rights. The following question would be whether a university or inventor may own the patent right. Thus, this article will discuss the patent ownership issue, and particularly focus on the management aspect.

In this article, Part II discusses the default rules about patent ownership in university technology development. Part III gives a framework for how to

¹ See DAVID C. MOWERY, RICHARD R. NELSON, BEHAVEN N. SAMPAT, & ARVIDS A. ZIEDONIS, *IVORY TOWER AND INDUSTRIAL INNOVATION: UNIVERSITY-INDUSTRY TECHNOLOGY TRANSFER BEFORE AND AFTER THE BAYH-DOLE ACT IN THE UNITED STATES* 9-34 (Stanford University Press 2004); see also Wei-Lin Wang, *Review of the Legal Scheme and Practice of Technology Transfer in Taiwan*, 1 NTUT J. OF INTELL. PROP. L. & MGMT. 200, 201-02 (2012).

² See Rebecca S. Eisenberg, *Public Research and Private Development: Patents and Technology Transfer in Government-Sponsored Research*, 82 VA. L. REV. 1663, 1665 (1996).

³ See *id.*

⁴ See MOWERY ET AL., *supra* note 1, at 2.

⁵ See Mary Margaret Styer, Jack Kerrigan, & Andy Lustig, *A Guide through the Labyrinth: Evaluating and Negotiating a University Technology Transfer Deal*, 11 B.U. J. SCI. & TECH. L. 221, 223 (2005).

⁶ See *id.*

⁷ See *id.*

⁸ See *Id.* at 224.

⁹ See *Id.* at 235-36.



consider patent ownership issues arising from the federally-funded research conducted by a university. Last, Part IV provides a patent ownership management model which would provide more incentives for either the university or professor to promote the patented technology.

II. The Default Rules for Patent Ownership in University Technology Development

A. “Hired to Invent” or “Hired to Do General Research”

It is unquestionable that a university itself cannot invent technology but its employees, such as professors, develop all intellectual properties.¹⁰ Professors are a major inventor group in a university.¹¹ They have a contractual relationship with the university, and such contractual relationship may regulate the patent ownership issue.¹²

An inventor has a default right to the ownership of the patent covering his invention.¹³ After a professor invented a new invention, the professor acquires the ownership of his invention first. Then, if his university has a patent assignment contract with professors, the ownership issue is of no dispute and the right belongs to the university. However, if there is no patent assignment contract, the ownership issue becomes whether such professor is “hired to invent.”¹⁴ If the professor is considered “hired to invent,” rights in the invention will go to the university.¹⁵

Sunil R. Kulkarni once stated, “Since professors are usually hired to teach and do general research in areas substantially of their own choosing, not to create particular products, they have not been ... hired to invent.”¹⁶ But, maybe doing research is equivalent to inventing. Since a professor does research for his publication and since many academic journals require that the submissions should be novel,¹⁷ part of the professor’s job is to create

¹⁰ See Sandip H. Patel, Note, *Graduate Students’ Ownership and Attribution Rights in Intellectual Property*, 71 IND. L.J. 481, 482 (Spring 1996).

¹¹ See Sunil R. Kulkarni, Note, *All Professors Create Equally: Why Faculty Should Have Complete Control over the Intellectual Property Rights in their Creations*, 47 HASTINGS L.J. 221, 221-22 (November 1995).

¹² See *id.* at 225.

¹³ See *Beech Aircraft Corp. v. EDO Corp.*, 990 F.2d 1237, 1248 (Fed. Cir. 1993) (“At the heart of any ownership analysis lies the question of who first invented the subject matter at issue, because the patent right initially vests in the inventor who may then, barring any restrictions to the contrary, transfer that right to another, and so forth. However, who ultimately possesses ownership rights in that subject matter has no bearing whatsoever on the question of who actually invented that subject matter.”).

¹⁴ See Kulkarni, *supra* note 11, at 232-33.

¹⁵ See *id.* at 232.

¹⁶ See *id.*

¹⁷ For example, the American Institute of Chemical Engineers Journal (AIChE J)



something new to the world. Although the degree of novelty may not pass the bar of patentability, the work made by a professor is still a potential patentable subject matter. Thus, “hired to do general research” may be an alternative way to say “hired to invent.”

Since whether a professor is hired to do research or “hired to invent” is still controversy and that issue is resolved by state law,¹⁸ it is necessary for a university to implant an employment contract to define the patent ownership.

B. University Patent Policy

Many universities use written agreements to require hired professors to assign all IP rights to the university in exchange of some percentage of the royalties the universities may receive through the exploitation of the IP rights.¹⁹ But, some universities treat ownership issues differently based on different types of IP right.²⁰ For example, a professor may retain copyright to his academic publications.²¹

The university patent policy can set up the default rules of patent ownership in university technology development if a professor uses the facilities or resources of the university to invent technology.²² A simple rule is to assign all patent rights to the university. Several reasons supports this idea. For example, the university can use patent royalties as a potential cash flow.²³ Besides, a university can take over the position of a busy professor to commercialize his invention, which will result in profits from selling the products and benefits for the society from using the patented product.²⁴

However, one situation cannot be ignored where a professor may have his own network to promote his invention. For example, a professor may have a graduate student who later becomes some important person in a

provides manuscript preparation stating “Full-length research articles describe important new experimental or theoretical research findings, which represent significant, not incremental, advances in chemical engineering research.” See AICHE Journal, <http://www3.interscience.wiley.com/journal/107061889/home/ForAuthors.html> (last visited April 5, 2008).

¹⁸ See, e.g., *Speck v. North Carolina Dairy Foundation, Inc.*, 311 N.C. 679, 686, 319 S.E.2d 139, 143 (N.C. 1984) (“The respective rights of employer and employee in an invention or discovery by the latter arise from the contract of employment. *United States v. Dubilier Condenser Corp.*, 289 U.S. 178, 187, 53 S. Ct. 554, 557 (1933). The fruit of the labor of one who is hired to invent, accomplish a prescribed result, or aid in the development of products belongs to the employer absent a written contract to assign.”).

¹⁹ See Kulkarni, *supra* note 11, at 234-35.

²⁰ See *id.* at 235-36.

²¹ See *id.* at 236.

²² See *id.* at 237-40.

²³ See *id.* at 237.

²⁴ See *id.*



company. The company wants to acquire a license in some cutting-edge technology, and it knows the professor has some invention it needs through the graduate student working for it. Then, the connection begins. On the other hand, the process can be reversed. For example, a professor may have a list of graduates, and he knows where they work. Once the professor creates novel technology, he will know where to license. Thus, there should be a flexible ownership management so that such professor may act as a patentee to promote patented technology. To further illustrate my idea, I first provide a framework to think of the ownership issues.

III. Two Dimensions of Patent Ownership Issues in University Technology Transfer

I propose two dimensions for thinking of the patent ownership management. One is the nature of funded research projects, and the other is inventors. Both dimensions are for providing the incentives for the inventors to invent and for the funding resources to keep their investments.

A. First Dimension: The Nature of Funded Research Projects

For university research, there are two main funding resources, federal government and private companies; and the federal government provides major funds to universities.²⁵ The governmental fund generally serves the purposes of discovering and spreading knowledge.²⁶ However, the Bayh-Dole Act provides a legal framework for commercializing federally-funded researches.²⁷

Since the purpose of the Bayh-Dole Act is to allow the sponsored entities, such as universities, to retain the titles to the inventions, it may imply that patent ownership should be granted to universities.²⁸ But, intuitively, professors who propose the research projects should know more than university administrators do. They may recognize more the possible implementations of their inventions. Thus, it is not necessary for universities to retain the ownership of every patent. A professor may retain the ownership, or may acquire an exclusive license from the university.

On the other hand, there may be a scenario where a university allocates

²⁵ See Joshua A. Newberg & Richard L. Dunn, *Keeping Secrets in the Campus Lab: Law, Values and Rules of Engagement for Industry-University R&D Partnerships*, 39 AM. BUS. L.J. 187, 192-93 (2002).

²⁶ See James Stuart, Comment, *The Academic-Industrial Complex: A Warning to Universities*, 75 U. COLO. L. REV. 1011, 1013-15 (2004). In this article, I focus on the federally-funded research, so I skip the discussions about my ideas toward to patent ownership management issues for the privately-funded research.

²⁷ See *id.* at 1033.

²⁸ See *id.* at 1036.



the lab resources of different professors to apply for the fund from the federal agencies. In this situation, the university may know better than individual professors about how to promote the research outcomes. Thus, a university may rely on the nature of the research project to consider whether to own a patent.

B. Second Dimension: Inventors

The potential inventors in a university are professors, graduate students, and research staffs. The major concern about giving the patent ownership to a professor is about how to prevent a professor from allocating too many resources on commercial research instead of academic research.²⁹ But, such concern may be overlooked because a university would eliminate such side-effect by promoting a professor based solely on his academic contribution.

If it is accepted that patent ownership may be retained by a professor, there may be a further concern about whether persons other than professors may also retain the patent ownership. Such persons may be a researcher or a graduate student. Perhaps, a researcher should not retain the patent ownership because he or she is generally under the supervision of a professor and has less control over the research project.³⁰ Regarding the graduate students, Sandip H. Patel once suggested that the graduate student should be entitled to patent ownership mainly because of fairness and equity.³¹ But, the graduate student has gotten the reward for his invention by earning an advanced degree. Thus, the university should acquire the patent right assignment from the graduate student on a condition of granting the degree certificate.

IV. Incentive-Driven Ownership Management

A. Basic Concept

Once the university decides to retain the titles to the inventions, and it may further decide whether it or a professor owns the titles. Although a professor usually does not get involved in the marketing and licensing of his patents,³² his ability to doing so should not be presumed to be void. Now, the ownership management is only a question of the ownership allocation between a professors and university. I would like to propose an

²⁹ See Kulkarni, *supra* note 11, at 240-41.

³⁰ This statement is based on my personal observation. For example, a post-doc in a lab basically assists the project leader, usually a full-time faculty, to conduct experiments. She may be an employee of the project leader.

³¹ See Patel, *supra* note 10, at 506-09 (emphasizing the necessity of honoring the creation of the graduate student and sharing the royalties with them).

³² See Kulkarni, *supra* note 11, at 235.



incentive-oriented ownership management model.

A four-stage implantation is proposed. The Stage I is to set up a default assignment. The Stage II is to select the factors for adjusting or overruling the default patent ownership. The Stage III is to monitor the licensing market of the patent. Lastly, the Stage IV is to reconsider the ownership issue to see whether the ownership should be retained to the professor or the university. These four stages will keep running until the patent is expired or is out of the market.

B. Stage I: Default Assignment

Relying on a premise that a professor should know the uses of his invention better than the UTT officials do, the default assignment should refer to the intent of the professor. That is, if a professor has a good plan for exploiting his invention and he intends to take a job for licensing his invention, a university may allocate the ownership to him. Besides, sometimes a professor may have more incident chances because he is usually exposed to the field that needs the patent. For example, he may have many chances to attend the conferences where some private companies will demonstrate their technology or look for the resources for research cooperation.

The scheme here is like that a university assigns a job to a professor to license the invention. With the ownership on hand, a professor can fully control the negotiation process without the review of the university. However, in this situation, the university should provide some guidelines or assistance to the professor for how to deal with the royalty rate, the contractual clauses, and other important issues.

C. Stage II: Adjustment

Although a university may retain the patent ownership or reserve it for a professor, the question is not whether the university or professor should have the ownership but rather how to make more profits by allocating the ownership. That is, the patent ownership may be retained by both parties. One possible scenario may be that either university or professor has resources to promote the patent. But due to the priority concern for each party, the UTT office may move further than the professor does. Or, on the other hand, the professor may use the patent to acquire more private funds for the basic research before the UTT office spreads the patent information in certain industry.

Thus, the factors for adjustment may include the working schedule of the UTT office, the potential private funding resources or potential private licensees, the funding incentives arising from the patent, and the necessity of the funding. By evaluating these factors, the ownership may properly be



allocated.

D. Stage III: Continuous Monitoring

Whether a university or the professor takes a job of patent licensing should be kept being reviewed. On one hand, maybe the professor later finds that the licensing job distracts his research work very much. He does not want to handle it any more. On the other hand, the UTT office may find the professor has a better position in promoting the patent. For instance, the reputation of the professor may increase so that the industry may believe they are not only licensed with the patent but also with the solid technology. Thus, there should be a mechanism for monitoring such progress. For example, if a professor retains the ownership, he may have a duty to report the licensing status of the patent to the UTT office. If the university retains the ownership, it may regularly contact the professor to identify his licensing capability. The contacting mechanism may be formal or informal, which depends on the balance of academic activities and administrative stuff.

E. Stage IV: Reconsideration of Ownership

After the continuous monitoring, there should be a mechanism for both sides to reconsider the patent ownership. The factors of consideration may follow what is concerned with in the Stages I and II. Additionally, the time of reconsidering the ownership may be a fixed term, meaning regular review of the ownership with some exceptions. The fixed-term approach may be simple and easy for the management of the UTT office because the schedule for review is fixed. Another advantage is that the information related to the marketability of the patent during a fixed term will show a trend that can help the decision-makers understand the market trend related to the patent. Moreover, the exceptions should exist for immediately considering the ownership change. That is, during the Stage III, there may be a good timing where the allocation of patent ownership should be switched. It is not necessary to wait until the regular review period. However, since the ownership change influences the following business model for licensing the patent. Thus, the review of ownership would occur in a fixed term while some exceptions may be given to irregular review.

V. Conclusion

In this article, I discuss the patent ownership issue of the federally-funded research in view of the Bayh-Dole Act. I further propose an ownership management model for patents that generated from the federally-funded research.

The proposed model has four stages for resolving the patent ownership issues. The first stage is default assignment. A university may rely on a



professor's intent of taking over a licensing job to decide whether to retain the ownership itself or to have a professor retain the ownership. The second stage is adjustment. A university may adjust the allocation by estimating a professor's ability to handling licensing, the nature of the patent, the potential private licensees or funding resources, and the resources of the UTT office. The third stage is continuous monitoring. A UTT office should regularly review the licensing project of a patent. The fixed-term approach is proper because it can give a trend of the marketability of a patent. The last stage is reconsideration of ownership. At this stage, the information collected during the third stage will help a UTT office reconsider the proper allocation of the patent ownership.

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