

A Philosophy of Licensing and Technology Transfer for Academic and Nonprofit Research Institutions

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I am grateful to have been asked, as 2005 AUTM president, to author an introductory chapter in this edition of the *Technology Transfer Practice Manual*. The *TTP Manual* is one of association's most important and most utilized publications in technology transfer offices, and organizations literally throughout the world have embraced the manual in major ways. As an example, AUTM was pleased to partner with Taiwan's Association of Science and Technology Professionals (ASTP) pursuant to ASTP's interest in translating the *TTP Manual* into Chinese. Similar discussions are under way in other technology transfer organizations outside the United States and with at least one group heavily involved in technology transfer for least developed countries. It is, thus, an honor and a challenge to discuss a philosophy of licensing with esteemed colleagues in the U.S. and abroad who I know make constant use of the *TTP Manual* and who are already partnering with AUTM in so many ways.

I have been a technology transfer director for eighteen years at three *very* different universities (a large private university dominated by life sciences, a large public land grant university with strong engineering and agriculture and no medical school, and a large public flagship university with multiple strengths, especially the life sciences.) This background is offered *not* as a case study of one person's career development—but rather to establish a contextual basis of how my background and experience have shaped my philosophy of licensing.

In the eighteen years in which I have been involved in academic technology transfer, I have seen the emergence of a very different philosophy of academic licensing. When I began my technology transfer career, technology transfer offices at most universities were almost

viewed as an oddity. There was little evidence that such offices were created with a strategic view as to how they should support the universities' missions—traditionally enunciated by most universities as teaching, research, and service (or, at land grants, teaching, research, and extension/engagement). Universities typically started their technology transfer operations as a result of one or more of the following objectives:

- To respond to specific pressure from an insistent faculty member, a corporate research sponsor interested in intellectual property rights, or some other pressing urgency
- To generate revenue to supplement decreasing federal research dollars
- To comply with federal-funding regulations issued by various funding agencies pursuant to the passage of Bayh-Dole

In other words, with notable exceptions, most universities historically launched their technology transfer operations in a reactive manner rather than from a proactive or strategic perspective. As a result, licensing activity tended to be somewhat reactive, very rules-and-compliance-focused, extremely risk averse, and driven much more from the licensee partner's perspective rather than from the goals and objectives of the academic licensor.

Over the last five to eight years, I have witnessed a sea change in the practice and philosophy of academic technology transfer. Universities have openly embraced an expansion of their traditional mission of teaching, research, and service to include a fourth leg—economic development and knowledge transfer. Technology transfer offices are shifting from rules-driven, reactive, risk-avoidance bureaucracies to sophisticated transaction-focused intellectual property IP management firms within the academy. Our offices eighteen years ago tended to be staffed by managers, lawyers, and bureaucrats originating in university grants offices, business affairs offices, or legal offices. Today, the profile of technology transfer managers working within universities includes individuals with significant scientific training (including many with doctorates), experience and/or training in business and finance, and, more and more often, specific academic training in areas related directly to academic technology transfer (e.g., IP management, technology evaluation, business plan development, and others). Special courses and even graduate degree programs focusing on technology transfer are beginning to emerge; many practicing academic technology transfer professionals now have adjunct faculty appointments and teach courses related to the profession in business schools, engineering schools, and elsewhere within their institutions.

The institutions we work for have shifted dramatically as well. As noted, many have acknowledged the addition of a fourth leg (economic development) to the traditional three-legged stool (teaching, research, and service) often used to describe the mission of the university. More and more universities have developed a strategic focus for their technology transfer activities—and many no longer articulate or prioritize licensing revenue as one of the top priorities for their efforts (e.g., many now give higher priority to objectives such as company creation, supporting faculty recruitment and retention, enhancing research funding, creating an entrepreneurial culture, attracting venture investment to their regions, and related objectives). The university for which I currently work—the University of North Carolina (UNC)—does not include revenue generation as a specific goal for the office. Instead, the priorities focus on maximizing the development and utilization of the institution's knowledge assets and creating new venture-backed companies that can develop the technology, generate investment and jobs locally, sponsor research, and become resident on a planned research campus. In my role as AUTM president, I have traveled extensively over the last six months throughout the U.S., Canada, the Pacific Rim and Australia, and Europe, and my sense is that UNC is far from unique among major research universities through the U.S., and, in fact, throughout the world.

At its core, however, technology transfer remains a profession whose basic focus is the management of knowledge assets and related IP in concert with the institution's objectives. The basic tool or method by which we accomplish this task is through licensing our knowledge assets. In carrying out a licensing operation within an academic or nonprofit institution, the following basic functions and principles are among those considered essential by this author.

- **IP management:** Assessment of innovations for proper IP protection is a basic function required of a technology transfer office. Ideally, the technology transfer office should have personnel skilled in both the basics of IP law and IP protection and in the development of IP strategies to maximize the commercialization and research utilization of innovations. Because universities are concerned with commercialization of important discoveries and widespread dissemination of discoveries that are research tools, the IP management and strategy philosophy required in an academic institution will differ to some degree from that required in licensing offices within for-profit companies.

- **Bayh-Dole compliance:** As stewards of IP often developed with the use of government research funds, university technology transfer offices have a duty to ensure that their technology assets in the U.S. are managed in compliance with the provisions of the Bayh-Dole Act. Initial reporting, election of title, patent-filing decisions, and licensing practices should be pursued in good-faith compliance with Bayh-Dole. And technology transfer officers should be well-versed with the specifics of Bayh-Dole and able to explain these provisions accurately to faculty inventors and prospective commercial partners. (The Bayh-Dole example is offered simply as a frame of reference; clearly, technology transfer professionals from other countries will have legal or policy frameworks in which to operate other than Bayh-Dole.)
- **Valuation:** University technology transfer offices should approach valuation of their technology assets from several different perspectives. Universities should never apologize for seeking a fair business deal. Financial terms should reflect the stage of development of the invention, its relative value as part of a product that might include other royalty-bearing IP, its stage of development in terms of proof of concept and additional investment required to obtain regulatory approval, and related factors. At the same time, university technology transfer officers should be on guard against overvaluing and taking an overly rigid approach to financial terms in a license agreement. Given that we have many major nonfinancial terms that we consider essential in a licensing transaction, we need to be willing to include the financial terms among those we trade off in the course of negotiating an agreement. In negotiating a license—and especially in considering the financial terms—university technology transfer officers should remember that the licensee must have a deal that provides proper financial incentive to get the product into the marketplace as quickly as possible.
- **Publication:** No university that I know of will agree to allow a licensee to prevent or edit proposed publications by faculty or student researchers. However, it is typically appropriate for academic institutions to allow a licensee to review manuscripts about to be published—but the grounds for this review should be specified as identification of patentable subject matter or of the company's proprietary information.

- **Field-of-use licensing:** One of the indicators of the increasing sophistication and maturity of the academic technology transfer profession is the skill of university licensing officers in pursuing field-of-use licensing of IP assets. Fifteen years ago, it seemed standard practice for most university licensees to grant exclusive rights in all fields. In some cases, this practice may still be appropriate. But more and more often, academic licensing officers are attempting to license their broad or platform discoveries by field of use. This is a useful mechanism for ensuring maximum possible technology development and utilization—and is a key strategy for ensuring that platform discoveries are properly and widely developed and deployed. Another related technique often pursued is licensing discoveries by geographic territories. This is an excellent way by which the university technology transfer office can assure its various constituencies that each technology asset will be developed and commercialized in as many markets as feasible.
- **Technology development milestones:** As noted, a fundamental philosophical underpinning of academic technology transfer is to ensure that each technology asset is licensed to a partner best able to diligently pursue the development and commercialization of the invention. This mandate comes not only from a regulatory sense (via Bayh-Dole), it actually is most fundamentally a component of our missions as research institutions to broadly disseminate the results of our research activities, as well as an excellent mechanism by which we achieve our mission of serving the public. Thus, university technology transfer officers often work and negotiate just as hard on the diligence terms in a license agreement as they do in negotiating financial terms. Milestones may include dates or timeframes for securing regulatory approval, dates by which certain amounts of investment capital must have been raised, dates for initial product introduction or for achieving certain levels of sales, and many other variations of such terms.
- **Research use of inventions:** It is incumbent in managing IP assets that universities take affirmative steps to ensure that inventions that are research tools, or which have the potential to facilitate the advancement of fundamental research, are made available to the widest extent possible to researchers in academic and nonprofit institutions. Some criticism of university technology transfer has emerged because universities are perceived to have done less than an ideal job of reserving the right to grant research use

of key discoveries. Whether the criticism is deserved or not, it is essential that we stay diligent on this issue and that we seek to incorporate such terms as a major component of our licensing philosophy and practice.

- **Global health/public health/orphan applications:** Related to the previous issue of research use, this issue is listed separately because of its increasing importance in terms of ensuring the highest and best use of our technology assets—and in terms of meeting a number of important university objectives in the way that we manage these assets. Technology transfer professionals are increasingly aware that many important discoveries—licensing exclusively for commercialization in the major market of the world—may also have important applications in other markets. Examples include orphan drug applications, agricultural discoveries that increase yield or improve disease resistance, therapeutic discoveries that have application in treating diseases found only in least developed countries, and so forth. These types of applications may be difficult or impossible to pursue via traditional market-based approaches and may require new and creative approaches by university technology transfer offices to find, for example, nonprofit organizations, government agencies, or other nontraditional licensing partners to develop and disseminate products for such markets. Many research sponsors, university constituents, international technology transfer colleagues, technology transfer critics, and others are becoming increasingly interested in the development of strategies within academic institutions for managing our IP assets in a way that seeks such applications—and it is incumbent on technology transfer professionals to manage technology assets with such uses in mind.

In outlining these key functions and principles, it is important to note that one such function that is not mentioned is that of revenue maximization. Obviously, the degree of importance or focus on revenue is going to vary from institution to institution, and some institutions do, in fact, articulate revenue generation as one specific objective for their office. There is nothing inherently antithetical about managing technology for revenue generation while, at the same time, pursuing technology transfer management for the public good. In fact, even in environments where revenue maximization is not a critical objective, I have noted above that universities have a right (and perhaps an obligation) to seek a fair deal, which includes fair financial value. For all institutions, and particularly for

those where revenue enhancement is not a major objective, it is especially important to align the metrics used to evaluate technology transfer effectiveness in a way that reflects the objectives and values enunciated for the function. We all have heard the story of the many technology transfer offices where revenue is deemed unimportant, but when such offices request increases in budget to allow for growth, the first response is, What were your revenues last year?

As an eighteen-year practitioner of university technology transfer, I am amazed at the increased sophistication of our profession—and at the increased potential we have to manage the IP assets developed in our institutions for the public good. We work in different institutions and in different regions; we have different objectives, different resources, and different institutional histories and cultures. What we have in common is that we have been entrusted with responsibility for managing the IP assets generated within our institutions for the public good. The record is replete with evidence that we have risen to the challenge presented by Bayh-Dole—and expanded by our institutions, our regions, our states, and our countries—to capture and protect IP assets and partner with companies and other organizations to transfer these discoveries to the marketplace for public use and for economic development.

In December 2002, *The Economist* referred to Bayh-Dole as “possibly the most inspired piece of legislation to be enacted” in the past half-century. That assessment clearly reflects the development of a successful technology transfer profession within the institutions affected by Bayh-Dole—U.S. academic and nonprofit research institutions. As we continue to adapt our philosophy and our objectives for academic technology transfer, and as we respond to the newly emerging mandate around economic development, the stage is set for continued contributions to societal well-being, to public and global health, to regional economic development, and to research enhancement within our institutions.