The Role of the Inventor in the Technology Transfer Process

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ABSTRACT

Without inventors, there would be no technology to transfer. But without technology transfer professionals, there would be limited transfer of technology. Good relations between inventors and technology transfer professionals are therefore essential for the commercialization enterprise to succeed. Relationships should be established long before the transfer services of the technology transfer office (TTO) are required. A healthy relationship will allow technology managers to negotiate both faculty and business concerns about licensing agreements. Making sure that the inventor is sympathetic to the aims of the TTO will also make it much easier for everyone to understand how a technology may meet market needs, recognize potential licenses, and determine whether a licensee is fulfilling its obligations. For all of these reasons and more, a TTO should always go the extra mile to educate, develop, and maintain good working relationships with inventors.

1. INTRODUCTION

The skills of the technology transfer professional are specific and unique to the profession and are crucial for the management and licensing of intellectual property (IP). The successful transfer of a technology, however, cannot be accomplished without the inventor. The challenge for the technology transfer professional is to obtain full support for his or her efforts from the inventor, an individual over whom the technology transfer manager has no real control. In addition to gaining inventor support, the technology transfer professional must expertly handle inventor relations, both with the technology transfer office (TTO) and within the university. The technology transfer professional must also make sure that the inventor has realistic expectations about marketability. This chapter will describe both the various roles the inventor plays in the technology transfer process and the technology transfer professional's many responsibilities with respect to the inventor.

2. INVENTOR AS CREATOR OF TECHNOLOGY

The essential role played by the inventor is to create and develop the technology that will be transferred. No one else will understand the technology as well as the inventor, so the inventor's full cooperation in disclosure and participation in the technology transfer process is necessary. To develop the best working relationship possible with the inventor, the reputation of the TTO and of the technology transfer manager are important. Public relations within the institution are critical for sustaining these relationships and forging new ones.

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The technology professional should strive to ensure that the inventor hears of the TTO before coming up with a great invention. For many reasons,[1] the technology transfer professional needs to learn earlier, rather than later, about the invention. Academic faculty are now significantly more aware of the technology transfer process than they were a decade ago, but a manager should not assume that this is enough to motivate faculty to file invention disclosures. The inventor must be fully aware of the importance of making timely disclosure of an invention to the technology transfer office. However, educating faculty on the *hazards* of premature disclosure (including in publications) may mean more calls to the office about technology not prime for licensing. It is easier to respond *not yet* than to explain that the big one got away.

The technology transfer professional is challenged to develop systems that promote early information delivery, while remaining conscious of the specific academic environment of the university and the pressures on faculty. The procedures developed for information delivery must be relatively easy to access and use, since it is critical that the TTO receive not just timely but full disclosure of the invention. The technology manager may also be faced with a faculty member's concern about confidentiality. For example, the inventor may be willing to disclose to academic peers, even at another institutions, but may view the staff in the TTO as outsiders or as administrative bureaucracy. The technology transfer manager will need to ease these concerns to solicit complete participation of the inventor in the technology transfer process.

3. ROLE IN THE PROTECTION PROCESS

Once the decision to file a patent application has been made, the most frequent question a technology transfer professional will hear is: *"How much of my time will this take?"* While one may be tempted to minimize the efforts needed, it is important to provide realistic estimates in order to prevent unrealistic expectations. Depending on the technology and the detail in the invention disclosure document, inventor input at the drafting and filing stages varies from minimal to substantial.

The inventor and patent counsel should interact early in order to form the critical relationship necessary for a solid patent application. The inventor must be assured of confidentiality and convinced of the value of providing a full disclosure of the technology to patent counsel. In addition to assisting in the drafting process, the inventor is needed for inventorship determinations. For example, many faculty equate inventorship with authorship, so they will list collaborating inventors using the same criteria for naming authors on scientific manuscripts. Fortunately, patent counsel can assume the role of adjudicator for inventorship matters, although the TTO may be required to enlist the assistance of department chairs and other university administrators for difficult cases.[2]

The inventor must be a willing partner during the actual prosecution of the patent application, as well. While the concept of nonobviousness can be difficult to grasp,[3] a skilled patent attorney will work closely with the inventor to develop the responses necessary to overcome this type of rejection. The inventor should be encouraged to read the materials and provide answers to the attorney's questions; after all, the inventor knows the field better than anyone else. Most faculty respond well to patent counsel's translation of the rejection from "patentese" to plain English. Direct questions are easier for the inventor to address than a general "*please read and give me your thoughts on this*" request. While it will cost more in attorney time to have patent counsel read, analyze, and develop questions to address an office action, the investment will prove worthwhile if needed responses are shared from the start.

Filing a patent application and having a patent issue are not the only goals of the TTO. Nearly 100% of the time, the technology transfer professional will also need the inventor to actually transfer the technology to the licensee later in the process. In addition, once the patent is issued and the technology licensed, the inventor may take on the unofficial role of "infringement police officer" by recognizing when a product is sold that may infringe the patent. An inventor should be encouraged to report suspected infringement to the TTO, which can then assign responsibility for pursuing infringers.

Developers of software and multimedia should be well educated about the use of copyright notices; it should be second nature for the appropriate notice to be placed in a new program. Of course, this depends on the specific copyright policy in effect at the institution.

Biological materials with commercial potential are another form of IP not always associated with patent protection. The inventor must understand the difference between transfer to nonprofit research institutions and transfer to forprofit institutions that may use the technology as a product development tool. It is important for the inventor to understand that the value of the material will be maintained if the release of the material is controlled. This control does not prevent the inventor from fulfilling the obligation to provide samples of the materials to those who wish to repeat experiments, as required by many scientific journals, or from meeting federal guidelines on the dissemination of research tools. In the management of biological materials, it is essential for the technology transfer professional and the inventor to design and agree upon a distribution plan that maximizes commercial potential without negatively affecting scientific research.[4]

4. ROLE IN THE TECHNOLOGY TRANSFER PROCESS

The technology transfer process involves many steps, some occurring concurrently. An inventor participates at various levels in each step, although the degree to which the inventor is involved will depend on many factors, including university corporate culture and the players involved.

4.1 *Marketing*

The technology transfer professional cannot expect to understand every industrial sector, market, or niche into which technologies may fit. Most often, it is the inventor who will know both the academic and industrial players in the field. Additionally, the inventor may have a clearer understanding of unmet market need and whether the technology addresses this need. This information may allow the technology transfer professional to perform a general SWOT analysis (strengths, weaknesses, opportunities, threats) with relatively minor market research. An inventor can also prove to be a good source of other marketing information, such as market size, market location, and competitive technology, both in academia and industry. While any numbers should be verified with an outside source, an inventor can be a one-stop source of market information with which to get marketing efforts started.

4.2 *Identification of potential licensees*

A manager can expect an inventor to be contacted by potential licensees because of the inventor's publications, meeting presentations, and industrial contacts. Many inventors call friends in the industry to discuss their research. It is important to encourage the inventor to direct commercial inquiries to the TTO. The referral of these calls to the technology manager will help accomplish many objectives. First, it allows the technology transfer professional to manage the commercialization of the technology by keeping tabs on commercial interest, allowing consideration of all potential licensees when making final decisions. Second, it establishes early in the process who will be the key licensee contact in making the licensing decision. Third, it keeps the inventor from *selling the well* twice. Fourth, by moving the inventor to a secondary role in negotiations, the inventor becomes insulated from licensing decisions, thus allowing the inventor and the industrial scientist to develop and maintain a relationship based on the interests of science—not business. Indeed, the industrial scientist hopefully will become the internal champion within the licensee for the innovation, with the first step in this process involving the inventor.

4.3 *Information to the potential licensee*

Who provides what information to a potential licensee is partly intuitive. For example, the technology transfer professional generally addresses issues regarding the patent application, IP policies, and licensing, while technical questions, prototypes, demonstrations, and materials for evaluation will most likely come from the inventor. With regard

to the latter, the inventor knows the technology best—what it can and cannot do—and thus is in the best position to share such information. The technology transfer manager may wish to encourage the inventor to brainstorm with his/her industrial counterpart on issues that may come up during scale-up. An inventor may become nervous about providing a full disclosure of the technology to industry. The technology transfer professional should work with the inventor to ensure that the time is right in the review process to provide full disclosure, and that the disclosure can be documented in some manner.

4.4 *Licensing negotiations*

An inventor's level of participation in licensing negotiations truly depends on the individual. The decision about how far to involve an inventor rests on the shoulders of the technology transfer professional. The manager must weigh the inventor's personality, interpersonal skills, and knowledge of business negotiations, as well as the inventor's understanding of office policy, knowledge of the licensee, and ability to function as part of a negotiation team. The technology transfer professional should be on guard for signs that the inventor is starting to sway to the side of the licensee during negotiations, which sometimes occurs. Often, the manager can resolve this by investing in discussions with the inventor to identify the underlying reason(s) for the inventor's sympathy towards the licensee's point of view. It is important for the inventor to agree to the deal breakers and to be prepared to walk away from the deal. If the inventor is apprehensive of business negotiations, he/she should remain on the sidelines. If this should be necessary, the technology transfer professional still should keep the inventor updated on the status of license negotiations in order to manage expectations and to preserve a good relationship with the inventor. The inventor, in turn, should be encouraged to keep the technology transfer manager updated on what he/she may have heard from contacts within the company. The technology transfer professional should be notified of any technical updates that occur, especially during the negotiation period, since it may be important to promptly disclose this information to the company. It may be advantageous to routinely schedule discussions with the inventor during negotiations. Such discussions can serve the dual purpose of a negotiation update and a technical update. Prior to signing the agreement, the inventor should identify exactly what materials, know-how, and so on, must be transferred to the licensee. The inventor should also discuss with the licensee how this transfer is best accomplished. The licensee may wish to have access to the inventor once the agreement is in place, for example, by hiring the inventor as a consultant. The technology transfer professional must stay informed of these activities and verify that any obligations of the university under the agreement are fulfilled, and that any new relationships between the licensee and the inventor work within the framework of the license and institutional policies.

4.5 *Licensee diligence and license compliance*

Following execution of the license, the inventor is a major source of information. It is extremely important for the TTO to develop systems to follow license compliance and diligence.[5] In a perfect world, the technology transfer professional would maintain close ties with his or her counterpart at the licensee. Frequently, however, the inventor will have more information than anyone else about technology development by the licensee. In most cases, contact with the scientific counterpart at the licensee is key for good information flow. Indeed, the relationship between the inventor and the scientific counterpart may provide the insight that will help the technology manager determine whether the licensee is diligently pursuing the technology's development. The technology transfer professional should encourage the inventor to inform the TTO of concerns about the voracity of the licensee's efforts (or lack thereof). Specific information about the likelihood of meeting technical milestones is also helpful. Encourage the licensee to involve the inventor (as an observer) in product development discussions. That way, the inventor will stay informed and may be able to help with any technical glitches that might arise when the licensee scales up the technology.

4.6 *When things go well*

When there is an unqualified success in a technology transfer effort, the inventor, licensee, university (including the TTO), and the public all benefit. The inventor might also experience fame and fortune, depending on the discovery. Positive feedback has the potential to reach other faculty and may encourage those who have not yet *tested the waters* of the TTO to disclose an invention. Conversely, success can also bring unwanted attention, often related to the anticipated revenue stream. Disputes may arise about royalty distributions among the inventor, his or her department head, or dean. The university's royalty distribution policy may be challenged. If significant revenue is expected, funds traditionally earmarked for one purpose might be considered for reallocation. A wise technology transfer professional will remain in touch with the inventor to ward off these occurrences and/or to be available for assistance, if needed. When challenges are raised, the TTO may be called upon for suggestions and may be engaged in the discussions, even if its preference would have been to remain neutral.

4.7 *When things go badly*

The earliest signs that a license agreement is not proceeding as planned are usually given (intentionally or not) to the inventor. The technology transfer professional, therefore, should counsel the inventor to recognize trouble spots. It is a good idea to provide pointers to the inventor about what to look for and when to contact the office to relate issues of concern. Better yet, the technology transfer professional should routinely stay in touch with the inventor in order to stay aware of the licensee's R&D efforts. If a license is terminated (for whatever reason), the inventor can help ensure that the institution retrieves from the licensee what is due. Should the technology manager find himself or herself in the unenviable position of terminating a license, the inventor may be instrumental in establishing breach of diligence obligations. Managers should be cautious, however, of the overzealous phone call from the inventor calling for the termination of a license. For example, an inventor who has difficulty moving past the point of research to product development may perceive progression from *research* to *development* as a sign of an incompetent licensee.

If litigation is a possibility, the technology transfer professional may wish to enlist the help of the university's Office of the General Counsel to make sure that the inventor understands the process. Specifically, the inventor needs to know what is expected of him or her as inventor, and what is involved in such a proceeding. Litigation is complex and requires coordination and cooperation. Indeed, should the TTO need to litigate on a matter related to a license, the technology transfer professional and the inventor will both benefit from having previously established a long-lasting, supportive relationship.

5. INVENTOR AS ENTREPRENEUR

With the increased emphasis on the role of technology transfer in economic development activity, managers can expect a change in the relationship when the inventor moves into the role of entrepreneur. Many factors will influence the evolving relationship, including whether it is the inventor or the TTO pushing the entrepreneurial activity. Regardless, it is important for the inventor to recognize that the technology transfer professional's fiduciary duty is to the university. In past cases of third-party licensing, the inventor's interests and the university's were closely aligned. But now the situation is different. Be diligent in notifying the entrepreneur about the university's expectations for him or her to provide appropriate business and legal support. To prevent problems down the road from which it may be difficult to recover, the inventor-entrepreneur must understand the university's conflict-of-interest and conflict-of- commitment policies. The technology transfer professional should encourage the inventor to provide a frequent flow of information to his or her department chair and dean. Concurrently, the technology transfer professional should also provide the appropriate information to the administration, department chair, and dean. The inventor-entrepreneur must recognize that license negotiations with the company must be arm's-length negotiations and that they often require high-level approval, which may delay the execution of the

agreement for weeks. The inventor-entrepreneur has the potential to become a spokesperson for the university's technology transfer efforts. Conversely, the inventor-entrepreneur could become the strongest critic of such activity, depending on how these relationships are managed and balanced.

6. MANAGEMENT ISSUES

6.1 *Other technology transfer roles for the inventor*

The inventor participates in many other technology transfer activities throughout his or her academic career that occur without the involvement of the technology transfer professional. These activities, such as consulting, educating/graduating students, publishing manuscripts, giving conference presentations, distributing posters, participating in a consortium, and becoming involved in sponsored research agreements, may be described as know-how transfer without a license.

While the technology transfer professional may not be involved in any of these activities at the start, some (if not all, at some time) will affect the technology manager's efforts. In these instances, it is best to take the education approach. When possible, educate faculty about the effects of publication or of signing away rights in consulting agreements, and so on. Raising awareness about those effects means more inquiries to the TTO, but early input may prevent impossible situations later.

6.2 *Management of relationships*

It is imperative for the technology transfer professional to keep in mind the numerous groups the inventor needs to deal with in academia: patent attorneys, TTO staff, grants and contracts officers, department chairs, deans, sponsors, academic collaborators, licensees, and students, to name only a few. Remember, both the inventor and the technology transfer professional function within the organization's corporate culture. In addition, the university's corporate culture may be an island in the local culture, subject to frequent analysis and possibly criticism.

It is important for the technology transfer professional to stay high on the inventor's priority list of individuals with whom to nurture a relationship. Faculty, however, are not universally evaluated by the number of disclosures submitted or patents awarded; publications and grants remain the priority. Remember this, and be assured that if the technology transfer professional unconditionally accepts the academic environment, an open, trusting relationship with the inventor will develop over time.

The TTO may be enlisted to function as a go-between, negotiator, or advocate for the inventor with any of the above groups. This is a challenging responsibility, since the TTO needs to maintain its own relationship with each of these groups as well. All potential outcomes and ramifications for both the inventor and the TTO (when assuming this role) need to be considered.

6.3 *Management of expectations*

A significant part of managing the relationship between the TTO and the inventor is making sure the inventor maintains realistic expectations. A former colleague coined this hypothetical disclosure-form question: "*Please indicate the value of this technology: Is it worth millions, billions, or priceless?*" And while this was suggested tongue in cheek, the sentiment does ring true. There is frequently a big disconnect between the inventor and the TTO when it comes to an invention's marketability. The challenge faced by the technology transfer professional is how to tactfully keep inventor's expectations in line with realistic expectations. Soliciting an opinion from another party may help. For example, the technology transfer manager may wish to enlist a trusted faculty member who has experience with transfer technology. A patent attorney or an outside consultant can help deliver the news. Evaluations from industrial representatives may be the only validation an inventor will accept. A manager may wish to identify to whom the inventor best relates and enlist them to help. It is in the best interests of everyone to be realistic from the start. If the inventor's value perception is skewed, his or her chair may also have skewed expectations, and the inventor's dean may be overanticipating, as well.

In these situations, the technology transfer office spends a great deal of time (and political capital) explaining away unrealistic expectations and redefining what is reasonable to expect. Recovery from disappointed expectations may take years, and the gap between expectations and what was actually achieved could possibly end in an office reorganization.

7. CONCLUSIONS

While the technology transfer professional is constantly challenged to manage diverse technology, he or she is further challenged to effectively interact with a diverse group of inventors. While these complex relationships and interpersonal dynamics may be overwhelming at times—both for the inventor and the technology transfer manager—working together can be extremely rewarding. These interactions add an unanticipated dimension to the job of the technology transfer professional that is often enjoyable. ■

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1 See also in this *Handbook*, chapter 8.4 by D McGee.

2 Gates ER and MN Rader. 2001. Disentangling Inventorship. *The Journal of the Association of University Technology Managers*. vol. XIII. www.autm.net/pubs/journal/01/disentangling.html.

3 Terry KR and JE Embretson. 2001. Patent Application Filing in the United States. *AUTM Technology Transfer Practice Manual*, AUTM: Northbrook, Ill.

4 See also in this Handbook, chapter 7.3 by AB Bennett, WD Streitz and RA Gacel.

5 Tretheway JA and H Bremer. Monitoring the License Agreement, *AUTM Technology Transfer Practice Manual*, AUTM: Northbrook, Ill.