



APLU Task Force on Tenure, Promotion, and Technology Transfer

Final Report and Recommendations

Consideration of Technology Transfer in Tenure and Promotion

Nov. 17, 2015

Executive Summary

Universities are increasingly expected by the public and elected officials to contribute to the economic development of their respective states, geographical regions, and the country. Nevertheless, while consistency of promotion and tenure expectations generally exists across universities for faculty responsibilities in teaching, research, professional service, and extension and outreach, the academic community has not yet come together with a consistent framework for evaluating faculty activities in technology transfer. The Task Force surveyed U.S. and Canadian universities to ascertain current approaches for defining technology transfer activities and recognizing them in assessing faculty performance, and makes five recommendations:

- Policy statements should acknowledge the merit of technology transfer as part of the university's work, with safeguards against conflicts of interest or commitment.
- Technology transfer activities should be explicitly included among the criteria relevant for promotion and tenure, at the university, college, and department levels, as appropriate to the disciplines.
- Technology transfer activities should be an optional component of the review process, one that will be rewarded when present, but not seen as a requirement for everyone.
- Recognizing the unique character of technology transfer, the criteria should be flexible to encompass high-quality work in many forms of creative expression.
- Technology transfer activities should be evaluated for intellectual contribution and expected social benefit consistent with the accepted process of peer review and without reliance on artificial metrics.

Background

Over the past several decades, the historical tri-partite mission of a public research university in teaching, research, and service has often been expanded to include economic development and various forms of engagement. This highlights the contributions of the university to economic vitality and societal well-being. Many campuses have placed even greater emphasis on the critical economic-development dimension of their mission since 2008.

In that light, faculty activities in technology transfer and commercialization of ideas growing out of research can be very much the proper work of the university and a contribution to its mission. The questions are whether that awareness has been incorporated into the language governing faculty reward and recognition and whether technology transfer activities are duly considered in the processes of faculty reviews for tenure and promotion, and if so, how.

Prompted by a suggestion from APLU's Research Intensive Public University Committee, the APLU Task Force on Tenure, Promotion, and Technology Transfer (TFTPTT) was constituted in August, 2014, and charged with surveying current practices at universities and making recommendations for APLU institutions [attached]. This report is intended to be useful to universities considering broadening criteria for faculty advancement and changing practices to include technology transfer explicitly as one form of contribution for those faculty to whom it pertains.

There is no iron-clad definition of "technology transfer" that fits the full rich panoply of university research with potential economic benefits, immediately or in the future. The Association of University Technology Managers (AUTM) offers a definition largely encompassing the work of technology licensing offices: "the process of transferring scientific findings from one organization to another for the purpose of further development and commercialization."ⁱ We note, however, that some insights from creative research with a potential economic value may not be considered "scientific findings." The APLU Promotion, Tenure, and Tech Transfer Survey, reviewed by the Task Force, used the phrase "entrepreneurship, innovation, and technology-based economic development activities."

This examination of practice in tenure and promotion takes place in the context of proposed reforms in patent law aimed at curtailing abusive behaviors by patent assertion entities. The APLU Task Force on Managing University Intellectual Property and the AAU Working Group on Technology Transfer and Intellectual Property have studied best practices for university management of intellectual property. Recommendations from both reaffirm the societal benefits of technology transfer. The APLU Task Force emphasizes the importance of managing university intellectual property at public institutions manifestly for the sake of public good. Consistent with the intent of the Bayh-Dole Act, careful university patenting, licensing, and when necessary, patent enforcement, are essential to promoting dissemination of innovations and realizing social benefit.

The first step of the TFTPTT was to conduct a survey of the present practices among APLU members, to clarify to what extent APLU institutions have faculty appointment and review guidelines already in place that address technology transfer. This brings up to date the understanding of the national picture illuminated by Sanberg et al. in a 2014 PNAS article, which used Web searches to find the language concerning technology transfer in place at 39 institutions [see References].

APLU Tenure, Promotion, and Technology Transfer Survey

The APLU survey was sent to the chief academic officers at 204 U.S. and Canadian universities in November and December of 2014, and responses were received from 51 university officials at 45 institutions. A summary of the responses, which includes the substantive questions posed, is attached [see References].

In brief, it appears there is gradually increasing recognition of technology transfer as a valued form of faculty work, with language enabling its inclusion in faculty reviews, especially in certain areas (notably biology and biomedical sciences, medicine, engineering, computer and information sciences, and physical sciences). In roughly a third of the responding research institutions, consideration of technology transfer is limited to some areas or units, whereas the majority allow it to be considered in any area where it is appropriate.

The high-research and very-high-research APLU members were somewhat over-represented among the respondents relative to the APLU as a whole (87 percent of survey respondents vs. 75 percent of APLU Canadian and U.S. institutional membership), and perhaps those where technology transfer has been most active were more likely to respond to a survey on practices in this area. About 80% rated entrepreneurship, innovation, and technology-based economic development activities as “important” or “somewhat important” in promotion and tenure. Given that the actual respondents were in the office of the chief academic officers, the central site of adjudication of personnel cases, it speaks to how influential the activities are in observed institutional practices. It is not necessarily a statement concerning the views of any one decision-maker, such as the provost or president, who may be more supportive of entrepreneurship than the faculty in general.

The perceived importance suggests that technology transfer consideration may still be lagging and not yet culturally fully accepted in many instances. If there is ambiguity as to the institution’s values and methods of recognition and reward for faculty, early-career faculty particularly could shy away from entrepreneurial engagement to concentrate on the time-tested criteria of research and publications, teaching, and service. Even if the body of evidence on which each department will judge a candidate for promotion is explicit, how it weighs those dimensions comparatively may still be murky. In contrast, the empirical evidence from past tenure and promotion decisions conveys a powerful message. If technology transfer has been given little or no consideration in the past, an institution must assert a new position very clearly if it wants to shift expectations.

Recommendations

Engagement of universities with their communities and with private sector businesses in innovation, creating new processes, and generating beneficial economic activity from university research is now generally deemed an important dimension of a university’s mission. Technology transfer activities can be vital for universities to apply for many Federal, State and private grants and contracts that make the research possible. Faculty who successfully foster high-quality technology transfer should be explicitly recognized for this work in the tenure and promotion processes. The TFTPPT offers five

recommendations to promote due consideration of technology transfer in fields where it is applicable.

A. ***Policy statements should acknowledge the merit of technology transfer as part of the university's work, with safeguards against conflicts of interest or commitment.***

While faculty in applied areas may understand the character of the contribution and the creativity and energy required for meaningful technology transfer, faculty in other areas may view it with suspicion. It is not enough just to allow the faculty in one department to assert their own sense of value in votes on personnel actions. Others outside that department may tacitly dismiss technology transfer, and this can create a climate that inhibits growth of entrepreneurial activities and their spread to other pertinent areas. The topic of technology transfer should be put on the table by the university, so a widespread understanding of its proper place in the university can be cultivated, even among those who may never engage in it themselves. Campus-wide policy statements can validate and embrace technology transfer, to dispel any notion that it is aberrant behavior by faculty on the margins of the university.

In addition to the inspiration and reward of seeing university research turned into products and processes with societal benefits, technology transfer often offers the prospect of individual financial gain, which can lead to conflicts of commitment or interest. Conflicts of commitment occur when a university researcher lets other university commitments suffer without acknowledging and balancing them with the technology transfer work. Conflicts of interest occur, for example, when graduate students or post-doctoral researchers are guided to work on projects of benefit to a start-up activity but not to the students' or post-docs' own career development. In a similar vein, a researcher's use of university facilities for the purposes of a private business can constitute an unacceptable diversion of university resources for a private benefit unless it is explicitly governed and held to account by a carefully crafted contract.

When properly executed, technology transfer activities are synergistic with a faculty member's role at the university. Universities should therefore maintain policies on conflicts of interest and commitment to manage and reduce the risk of situations arising when faculty engage with external entities. Examples include confusion over ownership of intellectual property, or the use or perception of use of university resources for personal or private gain. University conflict management plans lay out explicit arrangements that address potential conflicts, avoid the perception of unresolved conflicts, and strike a necessary balance for the individual, the individual's department, and the university as a whole. Technology transfer activities should be encouraged, with management plans for potential conflicts. At many universities, potential conflicts have been managed well, to the benefit of both the faculty investigator and the university, while a core mission of the university is advanced.

B. ***Technology transfer activities should be explicitly included among the criteria relevant for promotion and tenure at the university, college, and department levels, as appropriate to the disciplines.***

Weighing the university value of technology transfer under the rubrics of research or service does not adequately recognize the unique character of technology transfer work. While

it may involve applied research and is ultimately a service to society, technology transfer does not fit tidily in the categories defined by conventional research and service terms. Imposing them can distort the assessment.

This challenge for technology transfer is very much akin to that encountered in performing and studio arts. Articles in peer-reviewed journals are not the currency of creativity in the arts, and one has to consider other forms of “publication” and find appropriate assessments of their quality and impact. In the arts, assessment can include: exhibitions and performances and the stature of the venues; in-depth reviews of the work by knowledgeable critics and other artists; contracts with recording companies; or the museums that have made acquisitions. When possibilities such as these are explicit in the criteria, university-based artists are not channeled into inappropriate confines, and there is flexibility to consult experts in the field to judge the merits of the creative output. Similarly, the evidence of success in technology transfer comes in other forms, and these must be allowed in the faculty review process. [See D below.]

Technology transfer, innovation, and entrepreneurship should be cited in the campus-level description of work to be included in consideration for promotion and tenure. Where such activity is appropriate to the discipline, the college and department level descriptions of criteria for promotion and tenure should also specify the relevance of technology transfer activities. Colleges or departments should give examples of specific criteria and technology transfer activities pertinent to their domains. Such descriptions and criteria should be developed collaboratively between university administration at all levels and faculty governance bodies. Universities should periodically re-visit the criteria in the spirit of continuous improvement, assess whether the criteria are being applied as intended, and revise as appropriate.

C. ***Technology transfer activities should be an optional component of the review process, one that will be rewarded when present, but not seen as a requirement for everyone.***

With the many expectations placed on faculty already, the addition of another category, “technology transfer,” would encounter needless resistance from those who do not see its relevance. The introduction of “technology transfer” among the criteria should underline that it opens another legitimate avenue to recognize work important for some faculty. It is not another box that everyone must fill in some way.

D. ***Recognizing the unique character of technology transfer, the criteria should be flexible to encompass high-quality work in many forms.***

Technology transfer can take many forms, depending on the domain, and the university should allow evidence pertinent to the domain. Common indicators are markers along the road from innovation to commercialization and commercial success, made visible by patent activity. Other times technology transfer is evident in a sustained relationship with an industry that arises from seminal university research being extended for commercial development, which can lead to enhanced private-public partnerships. Examples of evidence are:

- Patent disclosures submitted
- Patent filings
- Patents issued
- Licenses executed

- License income received
- Awards for technology transfer impact
- Industry grants
- Internships
- Graduate placements
- Faculty founded start-up companies
- Student start-up companies
- Software widely adopted

The criteria must allow probing of substance within each context, and with the view that technology transfer is a form of creative expression.

E. *Technology transfer activities should be evaluated for intellectual contribution and expected social benefit consistent with the accepted process of peer review and without reliance on artificial metrics.*

For universities to recognize and reward faculty who are making substantive contributions of lasting value, the review process must tap a community of pertinent experts to help judge the quality of the work. In research, review committees look at publications and the stature of the journals, which is indirectly relying on the standing of the reviewers, the quality of the reviews, and the insights and judgment of the editorial boards. Acceptance of a paper by a prestigious journal implies a judgment that the research is worthy of dissemination because it will influence the thinking in the field in some important way, whether immediately or in the future.

Similarly, to evaluate technology transfer activities for their likely societal benefit over time, universities will need to allow for the solicitation of assessments from knowledgeable and respected reviewers with expertise in the field and credentials in technology transfer. There can be a considerable lag between the initial innovation and its achieving its full impact. Often this means that the faculty review process must weigh the assessments and forecasts of experts whose backgrounds lend credibility to necessarily uncertain projections of the future impact of the work.

As one illustration, looking at U.S. patents issued to a faculty member will be rarely be meaningful in the tenure decision for an early-career faculty member, for a number of reasons. First, the U.S. Patent and Trademark Office (USPTO) is chronically backlogged, and the length of the process of reviewing the patent application for novelty could mean that for even a successful application, the patent will not be issued until after the tenure decision must be made. Indeed, given the delay, patents are sometimes licensed while they are still pending. Second, the criteria of the USPTO patent examiners may be quite different from what a university is looking for in a tenure file. Patents can be granted for humble inventions revealing limited new insights and with little economic value to the market. Third, the patent review itself strives to be thorough but may not be final word. An issued patent can later be challenged in court and found invalid. In sum, a faculty review process must seek independent assessments, under a non-disclosure agreement if necessary, to gather timely and pertinent information on the likely impact of a patentable invention.

Purely quantitative measures of technology transfer should likewise be used with caution, because overreliance on them can be misleading and create potentially counterproductive incentives. For example, if faculty reviews look at the number of patent

disclosures with no consideration of the content, it will invite an increased volume of disclosures, including more of dubious merit, at the university's technology transfer office. Counting the number of patent applications filed will say as much about the technology transfer office as it does about the faculty candidate. Patents may be issued, but many never earn enough licensing fees to cover the initial costs of filing. Licensing income received is a more reliable indicator of impact, surely a statement from "the market," but it can be a long time coming. In short, there are many markers that might be precursors to market impact, but merely counting them can lead to unintended consequences.

In any event, when technology transfer activities are a major component of a promotion and tenure case, an assessment of the impacts of those activities should be obtained from peers in the professional community. The objective is to foresee and assess the magnitude of the public benefit that will flow from a faculty member's technology transfer, innovations, or entrepreneurship and to recognize the contribution. The indicators of future benefit vary from context to context, and this report will not attempt to enumerate them all. Additional work may become available to elaborate on practices of evaluation that have proven effective.ⁱⁱ

Conclusion

A faculty member's accomplishments in technology transfer, innovation, and entrepreneurship are worthy of consideration in the review process for tenure and advancement. High-quality work undertaken to translate university research into new processes and economic benefits is part of realizing an economic development mission appropriate to a research university, and this mission has assumed increased importance in recent years. For many in the public, it is particularly visible and readily understood evidence of the value of research. The Task Force recommends that university policies and criteria for judging merit include technology transfer as one manifestation of meritorious faculty work, as they do for a number of other types of valuable activities that should not be expected to result in refereed publications. As with other forms of faculty work, it is essential that the evaluation of technology transfer activities weigh the likely impact of the work, its quality and its foreseeable societal benefit. When it is successful, technology transfer can invigorate the university and establish relationships with other private and public sectors that affirm the value of a research university.

References and Related Reports

- Charge to the Committee (attached)

APLU Task Force on Managing University Intellectual Property Recommendations

Statement to APLU Members on Recommendations on Managing University Intellectual Property <http://www.aplu.org/projects-and-initiatives/research-science-and-technology/task-force-intellectual-property/March2015TaskForceManagingUniversityIntellectualProperty.pdf>

- APLU Tenure, Promotion, and Technology Transfer Survey Summary (URL???)
- AAU Working Group on Technology Transfer and Intellectual Property

Statement to the AAU Membership on University Technology Transfer and Managing Intellectual Property in the Public Interest

<https://www.aau.edu/WorkArea/DownloadAsset.aspx?id=16025>

- “Changing the academic culture: Valuing patents and commercialization toward tenure and career advancement,” Sanberg, P. R. et al., Proceedings of the National Academy of Sciences, vol. 111 no. 18, pp. 6542-6547, March 2014 www.pnas.org/cgi/doi/10.1073/pnas.1404094111

Task Force Membership

Presidents/Chancellors:

- Judy Genshaft, President, University of South Florida, Co-Chair
- Bernadette Gray-Little, Chancellor, University of Kansas

Provosts:

- Jonathan Wickert, SVP & Provost, Iowa State University, Co-Chair
- Karen Hanson, SVP & Provost, University of Minnesota

Senior Research Officers:

- Richard Marchase, Vice President for Research & Economic Development, University of Alabama, Birmingham
- Peter E. Schiffer, Vice Chancellor for Research, University of Illinois at Urbana-Champaign

With Special Assistance from:

- Paul R. Sanberg, Senior Vice President for Research, Innovation & Economic Development, University of South Florida

Contacting the Task Force

The APLU Task Force on Tenure, Promotion, and Technology Transfer is being staffed by R. Michael Tanner, APLU Vice President for Academic Affairs. If you have any questions about the Task Force and its work, you may contact Michael at mtanner@aplu.org or 202-478-6083.

Appendix: Samples of Promotion and Tenure Language (excerpted from the Survey Report)

• **Iowa State University**

Research /Creative Activities:

Faculty members who engage in research/creative activities are expected to make original contributions that are appropriate to their chosen area of specialization and that are respected by peers within and outside the university: conceptualizing and theorizing in an original way, innovative collection or analysis

of empirical data, seeking and obtaining competitive grants and contracts, and relating research to the solution of practical problems.

Extension/Professional Practice:

Extension/professional practice distinguishes Iowa State as a land-grant university. Faculty members may engage in extension/professional practice activities by utilizing their professional expertise to disseminate information outside of the traditional classroom to help improve the knowledge and skills of their clientele (i.e., the publics they serve) or the environment in which they live and work. This work should be related to the faculty member's position responsibilities.

Examples of activities that fall within extension/professional practice include the following:

- *engaging in clinical and diagnostic practice*
- *acquiring, organizing, and interpreting information resources*
- *engaging in technology transfer*
- *consulting*
- *serving on agencies or boards because of individual expertise*

Since extension/professional practice activities vary greatly among departments, it is the responsibility of each department to identify faculty activities that fall under this category and the appropriate evaluation methods.

- **Texas A&M**

Guidelines for the granting of tenure should include: Research, Creative Activities, and Other Scholarly Endeavors; Patents or Commercialization of Research, where applicable.

4.4.1 Categories of Performance:

Creation and dissemination of new knowledge or other creative activities: For most disciplines, this category consists of research and publication. For some disciplines, however, it may include other forms of creative activity. Architectural design, engineering technology, veterinary or medical technology, fiction, poetry, painting, music, and sculpture are examples.

- **University of Arizona**

b. Criteria

Promotion and tenure require excellent performance and the promise of continued excellence in 1) teaching, 2) service, and 3) research, creative work, and scholarship. The University values an inclusive view of scholarship in the recognition that knowledge is acquired and advanced through discovery, integration, application, and teaching. Given this perspective, promotion and tenure reviews, as detailed in the criteria of individual departments and colleges, will recognize original research contributions in peer-reviewed publications as well as integrative and applied forms of scholarship that involve cross-

cutting collaborations with business and community partners, including translational research, commercialization activities, and patents.

ⁱ http://autm.net/Tech_Transfer.htm

ⁱⁱ E.g., The University of California Innovation Council, Faculty Recognition and Reward, work in progress.