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Computing Research Association

Best Practices Memo

Commercialization Oversight for Computer Research Departments

Summary

The relentless pressure to innovate in the information technology (IT) industry has drawn university researchers and graduate students into entrepreneurial situations to an increasing degree. The trend affects the academic enterprise in diverse ways, both favorable and unfavorable. The risks and rewards are outlined, and the concept of a Commercialization Oversight Committee is described as a mechanism that can facilitate the best outcomes when interests conflict.

Background

The dramatic proliferation of information technologies and the rapid rate at which IT research is being commercialized have recently put pressures on computer science and allied departments, as their faculties and graduate students ponder the opportunities presented by entrepreneurship. Commercialization is an outcome of research that society values and is one of the justifications for research funding; hence, it is important to facilitate it. But it is clear that the traditional standards of collegiality, scholarly respect, and peer governance that are typical of academic departments can be jeopardized by commercialization opportunities.

The problem is not new. Commercialization opportunities have been available since the invention of ENIAC. And, as observed in the ENIAC experience, commercial potential can engender conflicts and disputes. The current problem, however, differs in magnitude and appears to have been precipitated by two recent departures from past experience. First, the scale and speed of the startup opportunities seem to be greater than in the past. These changes seem to be propelled by the recent business concepts of “time to market” and “winner take all” that are critical to IT commercialization.

Second, federal legislation, known as the Bayh-Dole Act, requires universities to assess the commercialization potential of any intellectual property (IP) created with federal funding. Obligated by statute to set up technology transfer offices and motivated by the possibility of helping the institution in the event of a commercialization success, universities, like faculty and students, are torn between the altruism of a scholarly paradise and the essentials of a business incubator.

Some issues to be considered include:

- Should a faculty member starting a company take a leave of absence, or is starting a company compatible with a full-time faculty position? How long can a leave be? How often can a leave be taken?
- Can a graduate student work for a company founded by a faculty member and also be advised by that person? Who decides what is best for the student’s academic career vs. what is best for the university?
- If a company is started, will everyone who participated in the ideas at the university feel that they have received a fair reward for their contributions?
- If a project at the university is related to the company, how does information flow between the two?
- Will the number or content of publications or the distribution of software be restricted to preserve commercial advantage?

Some of these issues should be discussed within the department and guidelines should be established for faculty. Other issues are complex and situation-specific, eliminating any possibility of simple or universal solutions.

One component of a solution that can address a few critical aspects of commercialization and is widely applicable is the concept of a departmental Commercialization Oversight (CO) Committee. This memo describes the CO concept and a typical charter.

Principles of Commercialization Oversight

A commercialization oversight activity is founded on two basic principles. Although these principles have been adopted at a number of universities, they are perhaps articulated best in the University of California’s documentation.

1. *Primacy of the University.* The University of California states this principle clearly in its *Guidelines on University-Industry Relations*: “First consideration must be given to the University’s mission of teaching, research and public service. In pursuing relationships with industry, the University must keep the public trust and maintain institutional independence and integrity to permit faculty and students to pursue learning and research freely.”

2. *Responsible Behavior.* The academic participants in a commercialization activity are typically the creators of the IP, the faculty and graduate student *inventors*, and the administrators of the institution, the *university*. They are governed by guidelines, policies, and laws designed to circumscribe and define acceptable behavior. The burden of acting legally, ethically, and responsibly relative to these constraints falls to the inventors and the university. Integrity is essential to the process if the institution is to preserve academic freedom. As the University of California’s *Statement On Conflicts of Interest* points out, “A codification of the complex ethical questions involved, even if possible, would be unduly restrictive.”

In addition to these two principles, the commercial oversight concept is founded on the premise that it is an internal—that is, a departmental—responsibility. The inventors are members of the department, and any ill effects of commercialization will have an impact on the students and faculty. Further, situations in which a graduate student is exploited or a faculty member carries the load for a moonlighting colleague are evident at the departmental level. They are invisible at the school, college, or university levels. So oversight is a departmental responsibility.

Role of Commercialization Oversight

From the two principles outlined above, it is evident that the role of the CO Committee is not to enforce regulations, but to facilitate high standards in order to preserve collegiality. Although there are many ways to do this, the CO activity will likely fulfill four basic functions:

1. Serving as a focal point for commercialization information.
2. Vigilance on behalf of the student-faculty relationship.
3. Vigilance on behalf of the faculty-faculty relationship.
4. Periodic review of commercialization activity.

These functions can be fulfilled by groups of one to several people, but a committee of two neutral senior faculty offers the advantage of providing multiple points of view and, possibly, some wisdom. In this case, ‘neutral’ means that the faculty are not themselves involved in commercialization activities that would be of concern to the committee. (Consulting is not typically an issue for this committee.) It is appropriate, and possibly advantageous, if the members have had previous commercialization experience. The goal is to ensure independent judgment, both in appearance and in fact.

**Focal Point.** It is likely that many faculty members proceed through their careers, oblivious to university policies on commercialization and unaware of their obligations under federal laws such as the Bayh-Dole Act. Graduate students are even less well informed. Then one day they realize their research efforts have produced IP of commercial value. The CO Committee can serve as a neutral source of information or, more typically, can direct inventors to campus resources related to technology transfer.

The existence of the CO Committee is perhaps most critical to graduate students whose closest academic confidant may be their advisor, a person who will have a conflict of interest if the IP has been developed jointly. (See Vigilance.) By making the committee visible within the unit and emphasizing its role as an unbiased facilitator, students can be confident of receiving independent and unbiased advice about commercialization. Note that the student doesn’t have to have commercial interests to meet with the committee. A student whose advisor is too busy with a commercialization activity to fulfill his or her role as advisor might seek input from the committee as well.

Another focal-point aspect of the CO Committee, especially if it maintains some continuity from year to year, is its role as the repository of corporate knowledge regarding past commercialization activities. Although commercialization situations are generally very different from one another—which is why the process cannot be so easily codified—experience always teaches lessons. Mistakes should not be repeated, and successes should be.

**Vigilance on Behalf of the Student-Faculty Relationship.** There are several aspects of the student-faculty relationship<sup>1</sup> with which the CO Committee should be concerned:

1. The advisor/advisee role.
2. The faculty/student economic standing.
3. The faculty/student job performance.

*Advisor/Advisee.* Although faculty and graduate students may be equals in the creation of IP and in their roles as “economic individuals,” they are not equals in their academic relationships. The graduate student is typically subordinate in the following contexts:

- As a research assistant on a grant, which is likely the source of the student’s livelihood.
- As a thesis student, who needs the approval and signature of the faculty advisor to receive his or her degree.
- As a candidate for employment, grants, awards, etc., after graduation when the advisor may be asked to provide letters of recommendation.

In addition, the faculty member may have considerable stature and influence in the scholarly community into which the student is likely to enter,

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which constitutes additional, if less direct, authority over the student’s future.

The existence of the above relationships affects other faculty-graduate student interactions that, under different circumstances, would be equalized. For example, suppose a faculty advisor starts a company and later asks a graduate student to work for the company, perhaps for the summer or on a consulting basis. The student’s willingness to agree or to accept the proffered terms of employment may be tempered by the knowledge that the advisor could exploit his or her advantage in the academic relationships.

The CO Committee must advise faculty to avoid such situations. (In the cited example, the faculty member should delegate the negotiations to another principal of the company, or to an intermediary.) Students should be notified that faculty have been so advised, and that they should not enter into such situations. Although this protocol does not fully equalize the negotiation, it strengthens the student’s position. Since eliminating such contact is impossible because of the strong economic incentives, both sides may have to cooperate, perhaps making the “intermediary” solution the best that can be achieved.

This crucial role of alerting all participants to the potential risks of the type just outlined is obviously most successful when accomplished early in the commercialization activity.

*Economic Standing.* Because the Bayh-Dole Act requires institutions that receive grants to pursue commercialization where appropriate, the investigators must disclose IP to the university if it was developed with federal funding. After evaluating the IP, if the university decides it has commercial potential it will proceed to secure its commercial interest (a patent, for example) and seek companies to license the IP. It is at this point that a faculty member might found a company to license the IP from the university.

Because the faculty-student relationship is often collaborative—while conducting research or writing papers, for example—it is possible for both students and faculty to misunderstand the change in their relationship, relative to the formation of a company. For example, students often assume that, if a faculty member founds a company based on IP to which they have both substantially contributed, they will also both be founders.

But the decision to found a company is an economic decision open to both the faculty member and the student equally, and others for that matter. Whether a faculty-initiated company includes the student as a founder, or vice versa, is a business decision. If the inventors receive a portion of the revenue derived by the university from the license, as is typical in most universities, then they will both share in the rewards of their IP despite the business activity of others.<sup>2</sup>

*Job Performance.* Faculty members or graduate students involved in a commercialization activity may neglect their academic responsibilities.

When a faculty member is distracted by commercialization activity to the detriment of graduate-student advising (typically advising students not involved in the commercialization), the CO Committee may receive complaints. But the committee should be alert to this possibility and inquire—some students may be reticent to complain, fearing retaliation from the advisor. One obvious remedy is for the student to switch advisors, but this is often not easy for students who are heavily invested in a particular research topic. And advisors may not be eager to lose the student despite the problems. It is a delicate situation where the CO Committee may have to play the role of mediator.

The case of a graduate student, but not the advisor, being distracted by involvement in commercialization usually takes care of itself. The advisor keeps after the student to make progress. However, before an advisor issues a “progress or leave” ultimatum, options such as a leave of absence should be considered. If graduate students are tempted to quit school and join the business, they should be counseled to consider the long-term career implications of that decision.

Graduate students whose dissertation research becomes the intellectual property of a commercialization effort should establish during negotiations that they retain unencumbered publication rights to their dissertation, and/or any related research papers that can help launch their career.

**Vigilance on Behalf of the Faculty/Faculty Relationship.** Faculties de-emphasize power relationships among their members to promote the vitality of intellectual interactions and the free flow of ideas. The term “collegiality” derives from this tradition. The ideal is worth preserving, but commercialization introduces two challenges to collegiality:

- 1. Conflicts of interest connected with the Promotion and Tenure process.
- 2. Workload distribution.

The CO Committee should be alert to both challenges.

*Promotion and Tenure.* Though de-emphasized, there is still a significant power differential within a faculty between the tenured and non-tenured faculty and, to a lesser degree, between ranks. Those with senior rank typically decide the promotion and/or tenure question for those with junior rank. If the person being promoted or tenured is involved in commercial activity with one or more of the faculty deciding the question, including the chair or dean, there is a conflict of interest. Note that the conflict exists even if the senior person has no personal interest in the commercialization, but perhaps is negotiating agreements on behalf of the institution.

It can be argued that the conflict might help or might hurt the candidate’s chances, depending on individual circumstances. But the issue is one of propriety, and the expectation is that the senior person will recuse himself or herself from the deliberations and decision. The CO Committee’s responsibility relative

to such potential conflicts is, first, to bring the matter to the attention of those affected. Second, the committee should promote an environment where conflicts are limited to faculty who are essentially involved with the commercialization activity. That is, only people who are not involved in making Promotion and Tenure decisions should be the negotiators for the institution.

*Workload Distribution.* Founding or working at a startup is extremely difficult to do concurrently with fulfilling academic duties. Although this fact is evident to anyone trying to do both, it is sometimes necessary to remind participants that they must choose the activity to which they will devote their time. This reminder is an appropriate activity for the CO Committee.

The signs that a faculty member is not shouldering his or her load are rarely as flagrant as failing to show up for class. Rather, it will be visible in such things as performance on committee assignments; lack of participation in departmental decisions, governance, or research group leadership; diminished publication record; poor record as (undergraduate) student advisor; an unwillingness to participate in department-wide projects, and so on. Other faculty have an interest in their colleague’s poor performance, of course, because they will have to take up the slack.

When the academic tradition of one-consulting-day-per-week no longer suffices for faculty to meet both their academic and commercialization responsibilities, some remedy must be sought. Leaves of absence for a limited duration are perhaps the most common solution. Reducing one’s commitment to half time is another possibility. A more extreme remedy is for the affected faculty member to resign, possibly assuming an adjunct role that allows for teaching or graduate-student advising at a lower level of commitment.

For faculty involved in a commercialization activity, there are other concerns beyond time allocation. To avoid conflicts of ownership, a faculty member’s university research and research advising should be kept separate from commercial R&D efforts. A faculty member or graduate student wishing to publish should not be restricted because a company claims ownership. The greater the distance between the two, the clearer it is that there is no conflict.

**Periodic Review.** Although the role of the CO Committee is more important when a commercialization activity is just beginning, there is an ongoing role as well because the relationships evolve over time.

Periodically, the committee should meet with faculty and graduate students involved in commercialization activities to review how the situation has changed, and to determine whether further facilitation is necessary. A regular schedule of meeting every six months to a year should suffice.

An additional committee responsibility might be to maintain a Web page that includes university policies and resources relevant to commercialization, a description of the CO Committee’s role, and other information of potential interest to students and faculty.

## Conclusion

Although this memo necessarily raises problems that can occur in the process of commercialization, it is not intended to denigrate the process. Indeed, significant technologies—processors, servers, operating systems, databases, search engines, and so on—that we use every day were invented by students and faculty at universities, and were disseminated through the formation of new companies. Commercialization, despite the potential concerns outlined in this memo, is an effective means of transferring the accomplishments of the research community into practice for the benefit of society.

The conclusion, therefore, is not that commercialization carries with it too many risks for the university to be worth pursuing. The risks, though real, can be managed, as has been described. Rather, the conclusion is that commercialization carries too many opportunities and benefits to let these manageable risks stand in the way of transferring university-produced knowledge into practice.

## End Notes

- 1. The relationship of concern is principally the one between faculty and their graduate students. The relationship with undergraduate students is also important; however, when the intellectual property is created, undergraduates are often tuition payers rather than research assistants who receive stipends. This fact further complicates the problem beyond the scope of this discussion. As the overall guideline emphasizes, all relationships should be conducted in a fair and ethical way.
- 2. This arrangement, where the university licenses to a company formed by anyone, is based on the university’s ownership of the IP stipulated in Bayh-Dole for federally funded research. Other IP may or may not be owned by the university, depending on university policy. If graduate student and faculty inventors own and control the IP themselves, their interactions become even more complex.

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