

Technologies and Universities

An industry viewpoint on business-university relationships — situation improving

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More than modesty prevents me from declaring my capacity to represent the "industry position" on the subject of this symposium, although that is what I have been asked to do. However, I will give you my views, and I have some reason to believe that the research-oriented segments of "industry" would be comfortable with them.

I take it as a reasonably unassailable premise that the primary aims of academic research programs are (1) to advance the frontiers of knowledge and (2) to educate students in the component technologies. I suggest it is an equally unassailable premise that the main purposes of industry are (1) to supply products and services that the public needs and wants and (2) to earn a profit for its investors. These are bottom-line concepts and, of course, have many ramifications; but are they mutually exclusive, or even basically antagonistic? Twenty years ago the answer might have been "yes."

In the December 1963 issue of *Science*, the flagship publication of the American Association for the Advancement of Science, there appeared a two-page ad designed to attract new members to the association. With apparent sanction, it quoted the president of AAAS in 1849 by saying:

I have sought . . . no patent for inventions and solicited no remuneration for my labors, but have freely given their results to the world . . . The only reward I ever expected was the consciousness of advancing science and the pleasure of discovering new truths.

Elsewhere in the ad appears the statement that AAAS is "an instrument for securing the benefits of science for human welfare."

I have never quite forgiven AAAS for this portrayal: the scientist, hungry only for knowledge, proudly avoiding any semblance of crass commercialism, such as patenting, all for fun. And yet the ad in its totality parlays this passive attitude into one that is supposed to benefit "human welfare."

Fortunately, times and attitudes have changed. Largely in the last 20 years we have seen a remarkable

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departure from this parochialism and a transformation in the relationships between the academic and industrial communities. We are learning how to convert those passive storehouses of knowledge into active cafeterias of progress.

Let's look at my "unassailable premises." To advance the frontiers of knowledge and to educate students in the sciences, the university needs a teaching cadre of highly trained and dedicated scientists. Although "publication" is a coin of the academic realm, it takes harder money to attract, hold and equip the scientist in the university laboratory and classroom. The competent scientist who is interested in teaching—and has an aptitude for it—is a precious commodity in our societal structure. He needs the proper tools, a nourishing atmosphere for exchange with other scientists and the facilities and time for sharing his intellect and experiences with students to prepare them for a life in the sciences.

Industry Role

Industry, on the other hand, is engaged in developing and supplying the purchasing public with useful goods and services for a profit. Industry is, therefore, mission-oriented and concerned with efficiency, cost effectiveness and competitive advantages in its products. Industry expects, generally, to pay for what it gets and to own what it pays for. Industrial research is seldom directed to acquiring basic knowledge but to *ad valorem* research—applied research.

With these seemingly fundamental differences in mind, what has happened in the last 20 years? I believe that each has begun to appreciate the synergism it can realize in its own pursuits from working relationships with the other.

A company might look to a relationship with a university for a number of reasons. For example, it might be interested in a technology in which the university has expertise and the company has little or none. It might look to university research as complementing its own research or for conducting specific tests and making interpretations the university scientists are uniquely qualified to provide. A company might look to a cooperative interchange in the nature of but different from a consultantship, by which company researchers could meet with various university researchers on a number of subjects during the period of the relationship. Or the company might wish to sponsor research of general interest even though not directly related to existing corporate plans, programs or products.

A company might look upon university efforts which it sponsored as giving it an early and possibly an ex-

clusive position in new technologies (and the opportunity for broad patent coverage), as well as access to deeper expertise than is available in house. The company might also benefit from the credence of objective work done in a reputable academic institution. Or the relationship might provide a window into an area of university research that would lead to further commitments from industry.

Universities recognize that it takes more than a winning and photogenic football team to sustain a vital and productive research program and its attending faculty and facilities. Today, more than ever, universities are looking to relationships with industry for financial support. Research agreements with industry can dilute the overhead burden, provide opportunities for teaching experience for students and faculty, offer chances to develop expertise which can be leveraged into other relationships with industry or with government and, within university policy, open avenues to its faculty for consultantships. They also give participating students a glimpse into industrial research—its life and problems—and keep the university in better tune with current technological needs.

These relationships can be established in a number of forms:

1. *Single sponsor research*—short term, limited-purpose agreements with reports and possibly briefings by the university, possibly directed to individual scientists having highly specialized expertise.

2. *Single sponsor joint research*—cooperative arrangements involving exchanges of ideas and information between the university and the sponsoring company.

3. *Multiple-sponsor or consortium-sponsored research*—several sponsors having common interests in the research. The disposition of rights among the sponsors can raise antitrust problems, although recent legislation minimizes this risk and, in fact, may produce an increased interest in this type of research. Generally, the work would be beyond the capabilities or feasibility of any single company but would be of value to all.

4. *Unrestricted grants for research*—usually for conducting research but specified by the sponsor, except as to a general field, and usually intended as a general contribution in support of basic research.

5. *Long-term institution agreement*—an arrangement for a period of years in which projects are selected by mutual decision, usually with interaction between corporate and university research staffs. The broad agreement may anticipate a series of subordinate agreements with separate funding and disposition of the results.

University Objectives

While normal business and legal considerations are present in crafting these arrangements, the status, objectives and policies of the university may give a different twist to conventional approaches with which the company is familiar. Provisions deserving of special attention include the following:

1. *Parties to the agreement*—Only those having a right to do what the agreement obligates them to do.

2. *Recitals*—Rationale and broad purposes of the agreement, as well as other threshold information against which such legal issues as tax treatment and an-

titrust concerns can be favorably viewed.

3. *Definitions*—Meanings of significant terms that will be used in establishing relationships and obligations, such as "costs," "investigators," "inventions," "net sales price."

4. *Supervision of performance*—Degree of control in the contracting company for direction, emphasis and conduct of the work.

5. *Best efforts*—The amount of effort, time frames and assurances as to performance.

6. *Warranties and representations*—Rights of the parties to contract, and any relevant litigation or conflicts of interest of which the university is aware.

7. *Reporting*—Conveying results of the work by written reports or consultations, including statement of their frequency.

8. *Rights to patents and technology*—Whether the company gets ownership or exclusive or nonexclusive rights.

9. *Payments*—Identification of costs to be reimbursed, royalties or fees and method of payment.

10. *Publications*—Freedom to publish, review by the company, delay for patenting.

11. *Patenting*—What will be patented, who will be responsible for patenting, who decides where to patent and who pays for it, as well as provisions for handling joint inventions and access to background patents.

12. *Infringement*—Responsibilities and options of the parties with respect to reporting infringers and cooperating in and paying for litigation.

13. *Confidentiality*—Handling of company confidential information transmitted to the university and confidential treatment accorded information developed under the contract.

14. *Indemnification*—Responsibility of the university for liability from use by the company of developed information.

15. *Use of university name*—Extent university name may be publicly associated with work under the contract.

16. *Termination*—Events that will entitle parties to unilaterally terminate the agreement.

Typical Provisions

Among the provisions of a typical university-company agreement are six that I believe most vividly reflect the traditional difference between these societal entities. The design of these provisions requires a "win-win" philosophy that can evolve only from a careful understanding of what is important to whom. They also require a willingness to depart from conventional concepts of technology licensing. Of special concern are such matters as patenting, nature of the rights conferred, publication, confidentiality, conflicts and control of the funded project. These are worth considering in greater detail:

1. *Patenting*—Often an imperative for industry. Patenting of patentable results from university research, regardless of the origin of the financial support, gives the university a chance to prevent misuse of its results. It also enables the university to take positive steps to see that the results are used in ways compatible with the university's desires and in the public interest.

The university has complete control. It can treat its

patents as merely additional publications or it can put them to use, in the right hands and at a price that brings returns to the university to do further research. It's as simple as that, despite earlier notions that the virginal qualities assigned to university research would be violated by contacts with capitalism. Quite the contrary.

If the university is committed to safeguarding its work from misuse and to put it to good use, patenting is the first step. Licensing is the second step.

2. *Rights in technology*—What the contractor gets for his investment. The rights conveyed may be in the nature of transfer of title or exclusive or nonexclusive licenses, depending primarily on the circumstances, such as the nature of the research, the remaining R&D to be done by the company, the marketed product to evolve and the company's competitive position. It should not be predetermined by university policy.

If the company has financed expensive research it is not anxious to fund competition with the same money, which a nonexclusive licensing program might do. But the added expense of applied research and development—*ad valorem* costs—could be so great and the time to a marketable product so long as to diminish the feasibility of the entire effort without the opportunity for a lead time offered by exclusive rights to a patent.

Circumstances may indicate that an exclusive license but for a limited period, perhaps extendible, is sufficient. This might be true, for example, where the university appreciates the need for a lead time in the company but wants to make sure the company in fact proceeds with its part of commercial development. If it doesn't, the university understandably wants to move on to another licensee.

Research funded by a consortium of companies is usually for the purpose of exploring a new technology or addressing certain common technological problems faced by a segment of industry. Results here are usually made available to all members of the consortium and sometimes, on adjusted terms, to nonparticipants as well. Antitrust considerations may enter into these decisions.

3. *Publication*—A composition of interests. Insistence by companies on delays in publishing until patent applications have been filed is often a major point of disagreement. University researchers understandably want to be first in print, for their arena of competition is sometimes as intense as in the commercial area. However, the entire benefit to a sponsoring company from a research effort may be lost if patents are not timely sought, and the short delay in publishing by the researchers should be due the corporate investor for his investment. An inflexible university policy against publication review and delay is inconsistent with a university patenting and licensing program.

4. *Confidentiality*—Restriction of access to research results. The need for confidentiality is a natural incident

of the competitive interests of the corporate investor. On the other hand, confidentiality within the university laboratory runs counter to the openness that contributes to the university's basic role in teaching and disseminating knowledge. But if the university is committed to a program of patenting and licensing, confidentiality is essential until patent applications have been filed.

It is true that in the U.S. a patent applicant has a year after "public disclosure" of an invention (as by a publication or talk at a scientific meeting) in which to file. But, today, patents in foreign markets are, in the aggregate, sometimes more important than in the U.S. Or the product may be designed for foreign markets. A public disclosure will immediately defeat chances of patenting in most other significant countries of the world.

5. *Conflicts*—Sponsored work of different sponsors in the same technology. Industry takes a dim view of conflicts, as do the statements of ethics for most professions. The seeds and deeds of actual conflict are in many cases liminal or subliminal but seldom obvious. So the appearances or prospects of conflict, being more easily discernible, become the standard for concern.

Particularly in the newer technologies, such as biotechnology, researchers are glimpsing opportunities for fame and fortune through entrepreneurship. This sometimes leads them unintentionally into the minefields of potential conflict. Picture a researcher, for example, with a laboratory in the university, a commercial office or laboratory down the street, dealing in both with technologies funded partly by an industrial investor and possibly also by the government, and working under an agreement with his university which he may not have read. This is not a hypothetical being.

There are many of them today with at least combinations of these seeds for conflict. Such conflicts will become evident in the years ahead in the biotechnology and other lively research areas as they ripen into disputes between the researchers, companies, universities and possibly the government about who owns what and who owes what to whom.

The answer is complicated by uncertainties in the law—in fact, the lack of precedents on which to rely. It will take years to generate judicial guidance in some technological areas. The contracting parties are well advised now to consider and deal with the question up front in creating new relationships with universities and, in particular, with individual researchers affiliated with a university.

The old tensions and prejudices between academia and industry are disappearing—not because one is yielding to the other, but because both are appreciating the mutual benefits of working together. The alliances are not always easy to achieve, but from them are being forged some healthy partnerships. We are beginning to broach the breach.