Nano Express

The Travesty of Universities as Job Creators

Commercialization and greed achieved a strong and commending influence on our society in culture, health care, media, public schools, politics, religion and even in higher education. In the last ten years universities have initiated aggressive patent licensing programs and are encouraging their lead scientists to become entrepreneurial. All these activities do not have anything to do with the main purpose of universities – to teach and educate, but have to do with for profit ventures.

Why do the universities need this profit or this money? Is this money needed for improving education, creating the future manpower that the society and economy need? Many believe this is not the case. The new flood of money is used for buying world renowned scholars, dazzling new buildings and attracting the best of the best of the pool of students available.

Indeed, recently we are witnessing that everything at the universities is for sale if the price is right. More and more “products” are sold by the universities at a profit. The marketplace is changing the behavior of professors, educators and of universities’ officials for the worse. Today opportunities to make money from intellectual work became the main focus of many universities’ professors, in particular from the departments of computer sciences, bio-chemistry, finance, marketing, engineering and other departments that are “lucrative” for in campus growth. Entrepreneurship is no longer a term used to identify wealth and job creation outside the universities’ walls; it is becoming deeply rooted in the universities’ culture.

What happened? Is the desire of money-making activities on campus reflecting a well thought universities’ policies? Are these policies emanating from the board of trusties and the universities’ presidents for their glorification? It probably started as such, but, in my opinion, the university officials that surely initiated this entrepreneurial programs lost control. Today these university official have little or nothing to do with the efforts of “entrepreneurial” professors to fund their own companies, sell their services as teachers and inventors to corporations, or even allow private companies to incubate in their laboratories and offices paid for by the taxpayers.

To understand the depth of the problem it is enough to look at the websites and published literature of many universities. Faculties and departments of many universities are quite clear and open about their commercialization purposes. For example, the schools of business and medicine, the departments of science and engineering are deeply involved in profitable entrepreneurial activities.

The commercialization greed heavily contributed to confusion between the intellectual goals of the academic institutions and their desire to commercialize themselves. The academic values and the scope of these universities became blurred. Instead of focusing on the education of our future workforce and providing

the latest in science and technology to job creators entrepreneurs outside the campus these institutions run after money. Furthermore, the influence of commerce and industry on the academic institutions affects the curriculum and creates substantial disparity situations with respect to undergraduate studies selections and also compensation offered to professors from different departments at the same college.

As Sheldon Krimsky (Professor at Tuffs University who studied the role of corporations in biomedical research) recognized, corporations, large and small, are attempting to influence academia. These attempts are not isolated and they are increasing. They are a threat to academic freedom.

A good example is the behavior of the big oil companies: although, the scientific consensus that climate changes is serious, the oil, gas and coal industries have reluctantly recognized the inevitability of political action to reduce green house gas emission. Now these companies are changing their strategy by funding university research aimed at developing technologies and exploring policies that address the global warming crisis.

Some universities agreed to host these efforts by accepting extensive industry controls over the research process, controls that violate academic independence. Also, industry funding for energy research is coming with many strings attached that threaten the academic freedom and has the potential to compromise the integrity of the research.

Universities that allow energy firms to exert inappropriate controls over the use of their grants have sold their academic birth right and all this at an extremely low price. Since 1991 the major oil companies committed to invest more than $792M in at least 9 major universities such as MIT, Cambridge, Stanford, Princeton, Berkeley, etc. The industry is using all this participation as public relations and spins their academic alliance as proof of their commitment to common good. The reality is that for example the major oil and gas companies spend less than 1% of their sales on R&D. Indeed, industry investment in R&D fell from $4B in 1985 to $1B in 2004.

In 1980 Congress passed the Bayh-Dole Act which facilitated universities to commercialize their discoveries made through research paid for with public funds. Instead of creating jobs outside the university walls, federal and state legislators offer subsidies to the universities to engage in commercialization and business in order to ease on their budgetary constraints. A new era commenced whereby universities are allowed to translate the fruits of academic science paid for by public funds into new money and new jobs mainly inside the campus walls. Recently thousands of academic scientists have been collaborating in lucrative business arrangements with small and large companies. The growth of money making from commercialization and entrepreneurship at the universities extends well beyond the university as an

institution. Professors, in particular at the best universities, found new ways to supplement their income with entrepreneurship activities on the side using their laboratories and their students as private property. Many professors today are not satisfied anymore with academic and consulting work. They receive shares of stock of new companies, even own new companies based on their own discoveries. Suddenly university officials, enterprising professors and even administrative staff are all busy exploiting the new wave of entrepreneurship on the campus. These commercially oriented activities may dilute the intellectual values and university programs. Subjects of commercial relevance will be strongly supported and attract greater funds neglecting other important fields of study.

It looks that when the Congress passed the Bayh-Dole Act in 1980s, a chasm was created between how universities behaved before 1980 and after 1980. Before 1980 universities were using tax payers' money to finance discoveries that some day in the future would lead to useful new products, successful medical treatments, etc., but universities could not protect the IP and as a result they were not making much effort to review the work in their laboratories to identify advances that can be put to practical use. After 1980, when Congress expanded the universities' rights to seek patents and collect royalties for their discoveries, the administrations started to take more serious measures to help themselves and their professors in the name of helping the public gain a greater return on the billions of tax dollars invested in academic research.

Before 1980 Bayh-Dole Act commercialization was not a term of approval in most academic circuits. Real scholars, in particular in the traditional disciplines, have chosen academic life and preference to business and commerce life because they are looking for the purity of truth and knowledge. In their eyes this academic life is more valuable than the quest for material wealth. These true academics will try to resist commercial influences on the university system. They fear that money will corrupt the ways of making academic decisions. Furthermore, it will corrupt the judgment of scholars in their academic pursuit. Finally, they worry that business methods may encroach upon the academic personal freedom.

After 1980, despite the suspicion of the academics, majority of the universities today are very little else than business. But what is the purpose of this business? Many critics claim that business of the universities is ill suited for any purpose other than securing the comfort and convenience of the tenured professors. Basically these professors have a license to do as they chose thanks to the security of the tenure position, which was supposed to safeguard the academic freedom. In front of the situation like this, the university administrations are powerless. Due to commercialization majority of the professors, instead of focusing systematically on studying their own teaching, assessing how much their students learned, experimenting with new methods of instructions, focus on small internal entrepreneurial endeavors for their own personal benefit.

Although the Congress succeeded to reduce the government support for higher education by approving the Bayh-Dole Act in 1980, many critics were not pleased with the growing role of industry/commercialization in supporting academic science. They warned that involvement with industry would aim academic research at private hands; universities would impose secrecy and sensor research findings to please industrial sponsors and may corrupt appointments and promotion procedures for commercial gain. Many critics (for example Martin Kenney, Professor of Human and Community Development at the University of California, Davis Center for Entrepreneurship) warned that commercialization may destroy the foundation of scientific progress and weaken the education role of universities by diverting professors from basic research to more lucrative applied work with high market potential. The experience in the last years shows that basic science in the universities increasingly suffers from lack of funds, while “lucrative” areas such as computers, software, biotech, etc., are striving creating a financial imbalance between scholars in the same institutions. For example, in many cases companies that work with the universities insist on safeguards to keep the materials used for their investigation out of hand of researchers under contracts form rival firms. The net result is that idyllic idea of community of scholars and freely sharing ideas and resources is becoming utopic. Furthermore, strong relationships between companies and universities’ researchers provide reasons to favor the specific company and hence create conflict of interest that threaten the objectivity of the scientific results and the objectivity of advice that these universities’ scientists may give to other institutions or publishing houses on matters of financial significance to their corporate sponsors.

Harvard was one of the institutions that recognized the growing separation between academia and the public and decided to disseminate scholarly articles more broadly including faculty research from art and sciences. One may observe that the rule does not apply to the rest of the university including its business, medical and public health schools. At the heart of the debate there is a core duty of the university professors – to perform research and disseminate their findings to the widest audience possible, says Harvard Provost Steven Hyman. He says that “the goal of the university research is the creation, dissemination and preservation of knowledge”. Universities have the responsibility to distribute the fruits of their scholarship as widely as possible.

Obviously the rule is exercised on the art and sciences where the money influence is very small, while the “rich” schools like medical and business are not committed to the same rule. Much more must be done in this direction.

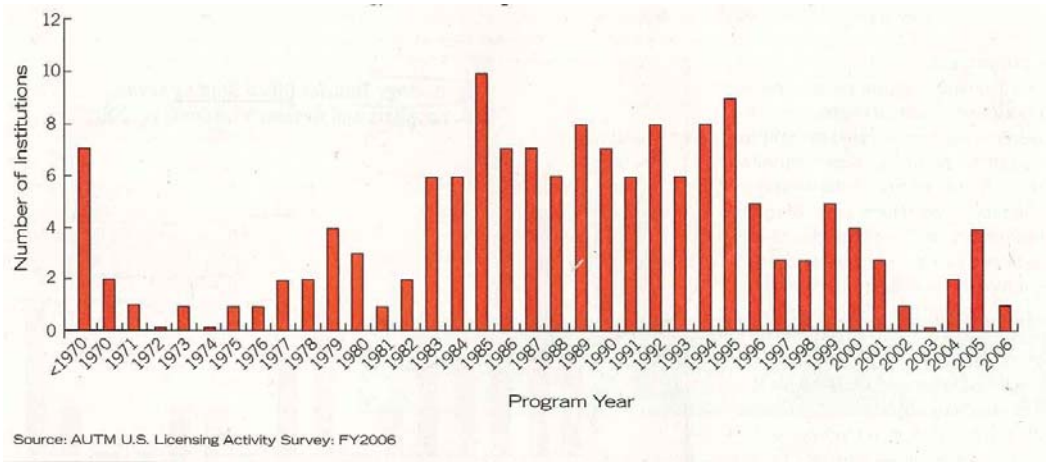
As Tim Studt summarized, the academia is in a volatile situation. Industrial interests are attempting to influence academia’s independence with large investment and research funding and academic freedom is threatened by big time players like

Chevron, GE, Toyota, BP, Schlumberger (report from the Center for Science in the Public Interest).

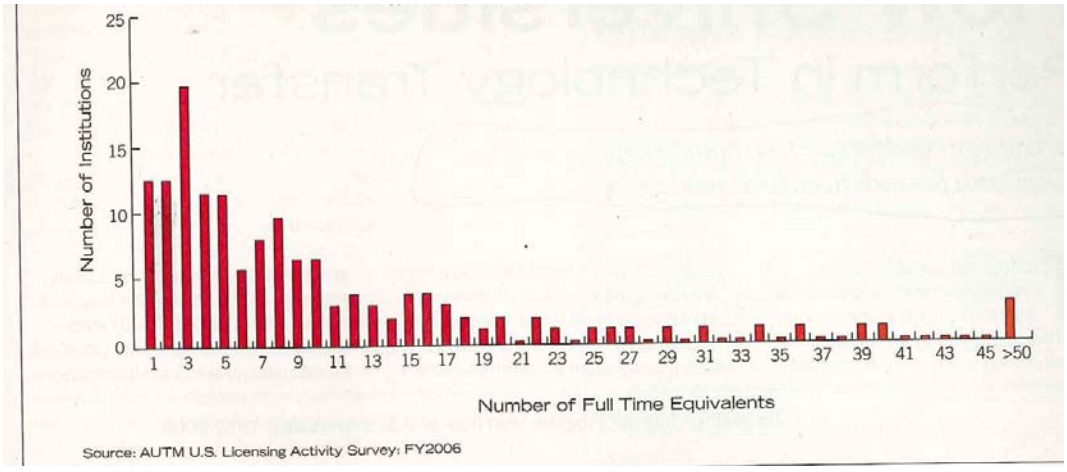
A recent practice raising problems for academic science if the investment by the universities in companies started by their own faculty members. This is a dangerous development that did not exist twenty years ago. This type of endeavors create a number of serious problems: possibility of conflict between the university administration and its professors; puts the institutions in an awkward position if having to pick winners and losers among its own scientists; encourages professors to spend more time on entrepreneurial activity instead of academic activity; may expose the university to liabilities; worst of all universities that have a financial stake in the work of their professors may be influenced by commercial consideration rather than academic merit when decisions are made as related to promotion, salaries, etc. Furthermore, this type of behavior that creates jobs inside the campus has a totally negative effect on job creation outside the campus where the jobs are, indeed, needed. Funds from both government and the private sector are funneled to the ivory towers' entrepreneurs that do not worry about additional costs such as rent, energy, administration and secretarial work and can use high quality cheap labor (their students). These entrepreneurs who I call "entrepreneurs Deluxe" are basically stealing jobs from the real job creators entrepreneurs that day to day are struggling with the real world.

Investing in startup companies or even supporting internal startup companies of their professors in any way is not a business in which universities have special expertise or a mandate for. It is doubtful that these universities with their non-professional technology transfer officers can do a better job than experienced venture capital firms. John Learner recently concluded that rather than entering into these unfamiliar waters university technology transfer officials and administrators may be better served by working hand in hand with organization outside the campus walls such as proper venture capital firms, existing startups, support external entrepreneurs and keep the university and its professors only in an advisory role.

Technology transfer programs start date at the US universities between 1970 and 2006 are shown in the diagram below. A big decline is observed from 1996 until 2006.



The majority of US universities employ in these technology transfer offices between two and three employees (full time equivalents) and many of them don't have a technology transfer office at all (see diagram below).



Where do we draw the line? Can we achieve a neat division between industrial and academic research? As Rikhard Stankevich observed, "modern technology has reached a degree of intellectual sophistication which makes its institutional separation from science counterproductive for both". We need to find and define a fine line how public money can support both sectors and even collaboration between

the two sectors. On the other hand, we already know that too close ties between the university science and industry create all sorts of risks compromising the openness, objectivity and independency of academic research. Universities cannot have their cake and eat it too. This course of action is dangerous because the rules are unclear. When decisions are subject to negotiations, money will prevail over principle much of the time. Universities and their professors must stop playing entrepreneurs; they need to allow a vigorous non-biased and professional technology transfer program for the benefit of the public outside the university's walls and, indeed, for creating good jobs for this public while preserving the openness, independence and objectivity that good science requires. Universities are exposing themselves to very high liabilities with respect to the public that funds them with their tax money. Unhealthy behavior of these universities will compromise their integrity as a result of reports of exclusive secrecy, conflicts of interests and corporate influence to manipulate and suppress research.

Academic freedom requires that university researcher be free to follow their research wherever it leads. Although at the beginning universities and corporations may have similar goals, the fact is that with the time their interests diverge for obviously one important reason: university research is supposed to work toward the common good, while corporate research is primarily aimed at maximizing corporate profits (Sheldon Krimsky).

Inappropriate industry demands can cause universities to lose some control on their research agendas and become more business enterprises than generators of knowledge and the next workforce.

As universities become more commercialized, there is less space to perform research that is critical to the country needs and for sure for local regional needs. In the field of energy and research, for example, this is particularly important since the energy industry has a major stake in continuing the reliance on fossil fuels.

The identified limitations to the academic freedom must be recognized and eliminated:

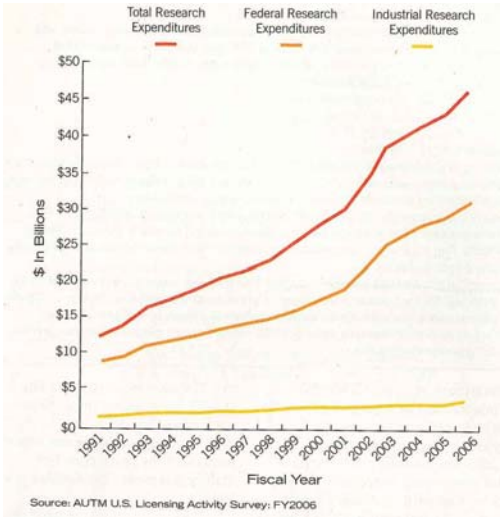
a. allowing company representatives on governing boards;
b. giving the sponsors first right to IP;
c. allowing sponsors a role to decide which research products are funded;
d. permitting industry review before the research is published;
e. allowing companies to delay publication of research results.

New policies are required in order to reduce industry influence on university research:

a. Prohibit corporate donors sitting on research programs or governing boards.

b. Prohibit industry donors from controlling the content and directions of research;
c. Eliminate first right to IP from donor agreements;
d. Barring industry scientists from utilizing campus resources as they please;
e. Eliminate the right of company representatives to suppress research or delay its publication.

Despite the publicity that industry works with universities the figure below showing the research expenditures for US universities and research institutions between 1991 and 2006 points out the fact that the majority of the research expenditure growth and in absolute value is coming from the government, not from the industry. Basically the universities became a vacuum cleaner for all the government money for research that originally was supposed to go to entrepreneurs that form new companies and increase the employment, but instead they are starving today being unemployed.



References

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3. Skip Derra, Arizona State University, Tempe in the article “Sustainability on Campus” in reference 2.

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7. Tim Studt (Editor in Chief, Advantage Business Media) in his editorial entitled “The Volatile World of Academia” in reference 2.