

# From the Lab to the Market Place

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# University – Industry Collaboration, Policy Principles From Around the World

The process of technology transfer from universities to industry was lively debated for a long time, but mainly in the 60ies and 70ies.

However, as a result of the Bayh-Dole act, a process of commercial linking between universities and industries has been growing during the past 20 year. This is true in all the industrialized countries, but very well developed in the US.

Why?

- ❖ Time to market – short
- ❖ Technology life span- short
- ❖ Industries active in searching for university science and know-how
- ❖ Society pressures universities to help national economies

The **Bayh-Dole** legislation provided a reasonable win-win platform for a fruitful collaboration

## The Bayh-Dole Act - 1980

### Procedural Requirements:

- ❖ The University agrees to require, by written agreement, its employees to disclose promptly in writing each subject invention made under contract in order that the university can comply with the disclosure provisions and to execute all papers necessary to file patent applications on subject inventions and to establish the government's rights in the subject inventions.
- ❖ If title is elected by the university, a patent application must be filed
- ❖ If title is not elected by university, the right to take title defaults to the government
- ❖ University may file foreign, but government may file where university does not
- ❖ University must disclose invention to the government within two months after disclosure to university
- ❖ University has two years after disclosure to the government in which to elect title

- ❖ The University may retain the entire right, title and interest throughout the world to each subject invention
- ❖ If the University elects title, must file within one year of election
- ❖ The University shall instruct employees through employee agreements or other suitable educational programs on the importance of reporting inventions in sufficient time to permit the filing of patent applications prior to U.S. or foreign statutory bars.
- ❖ The University may not assign the patent, except to a patent management firm (note: the patent is not assigned to the inventor)
- ❖ The University may exclusively license, but now must add a "substantial manufacture in the US" requirement
- ❖ The University must try to give preferences to small businesses
- ❖ The government retains a "march-in" right: Can require licenses to be granted and can grant licenses itself
- ❖ Institution must share licensing revenues with inventor(s) and use remainder for education and research

# Conflicts

## Conflict of interest

- ❖ Understanding VS know how
- ❖ Fundamental research VS applied research
- ❖ Long range VS short range
- ❖ Publications and openness VS patents and secrecy

## Conflict of commitment

- ❖ Publication based Promotion VS development based promotion
- ❖ Teaching and performing basic research VS consulting and performing applied development type research

# US universities worry about conflicts of interest

- ❖ Universities in general encourage collaboration of researchers with industries. Universities also allow faculty to consult the industry.

At the same time they worry about:

- ❖ Time problems – less time for high quality research and less time for students and teaching duties.
- ❖ Deep involvement such as partnership and the use of students in out of campus activities, that may postpone graduation.

## Universities rules

- ❖ Publications: several US universities forbid delay of publication till a patent is registered. [Columbia, Harvard, MIT and California]. Cornell requests consultation with University authorities.
- ❖ Free access to information by students to industrial research performed in the University [Cornell, Stanford, California and MIT].
- ❖ No funds to researcher who has a stake in the funding company [MIT].
- ❖ Students can work on industrial project only after receiving permission from the University [Harvard].

- ❖ Most American Universities own the rights to discoveries made by faculty [except Harvard, that does not require automatic ownership].
- ❖ The body in charge of dealing with discoveries, developments and patents is OTT [Office of Technology Transfer].
- ❖ Dealing with rights vary from university to university. Several universities require the right to purchase the patent rights. Other universities own all patent rights. Harvard is the most liberal and gives all the ownership rights to the researcher. If the researcher is not interested, the university may apply for a patent. In all cases the university gets its share from the fruits of the invention.

# Industrial - commercial activities in universities.

## Direct knowledge transfer

- ❖ Offices of Technology Transfer (OTT)
- ❖ Patent filings and licensing
- ❖ Start-ups and incubators
- ❖ Less resentment to Professor-industry collaboration
- ❖ University – industry, joint projects
- ❖ Theses supported by industry, and theses guided (partially) by industrial experts
- ❖ Industrial oriented university research

## Indirect knowledge transfer

- ❖ Industrial support for research facilities
- ❖ Usage of industrial laboratories, facilities and equipment by university researchers and vice-versa.
- ❖ Industrial parks adjacent to universities.

## Who gets the royalties in the US

- ❖ The researcher get between 25-35%
- ❖ The university and the department get 65-75% and divide it different ways between them.

## How do US universities see “meaningful Usage” of university facilities for industrial use

- ❖ The attitude varies from free usage after university consent to total forbiddance. Currently there is a shift in these attitudes.

## Attitudes of Israel universities toward researcher – industry contacts

- ❖ Universities encourage researchers to perform industrial research and reluctantly accept consulting to the industry.
- ❖ The rule is “University comes first” but it is hardly enforced .
- ❖ In general, the researcher has a lot of freedom, but has to have university consent in several cases.

## Who gets the royalties in Israel

- ❖ The researcher get between 40-60%
- ❖ The university gets between 40-60%.
- ❖ The department gets nothing

# Israel government programs that encourage academia – industry collaboration in Israel

- ❖ Magnet
- ❖ Magnetron
- ❖ Other programs
- ❖ Technological incubators

## How meaningful are industrial contributions to university research?

- ❖ Israel – (4 universities) 10%-13% of total research budget
- ❖ MIT – 10.1% (in 2000)
- ❖ Stanford – 9.5% (in 2000)
- ❖ Michigan – 7.2% (in 2000)

All these universities were very active in patent registration.

### Revenues from patent licensing – sample

- ❖ The Weizmann institute for Science and Technology – \$80M in 2004 for medications and data encryption.
- ❖ The Hebrew University in Jerusalem- \$36M in 2004 for medications and vegetable brands

## **Examples of government intervention to facilitate university – industry collaboration.**

- ❖ Subsidies for OTT creation (Japan, France, Belgium and Denmark)
- ❖ Legal support network for small universities (VIB – Interuniversity Institute for Biotechnology, Belgium.)
- ❖ No patent registration and renewal fees for certain OTTs (Japan)
- ❖ Fast process for patent applications (USA, since 1995)
- ❖ Proposal for government support for feasibility studies, prototype development and protection of intellectual rights (Australia)

# Teaching technological entrepreneurship

## Technological Entrepreneurship course at the Technion

*The Technion Entrepreneurship class stated 19 years ago*

- ❖ **Is there a desired limit to number of entrepreneurs?**
- ❖ **Can entrepreneurship be taught?**
- ❖ **Why teach entrepreneurship at the Technion?**
- ❖ **Who should teach?**
- ❖ **Who should attend?**
- ❖ **How do we teach entrepreneurship?**