Ethics, Science & Society

Taming the Beast

A Report on Industry-University Research Ethics

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March 15, 2010

1 Introduction

In the red corner we have the *University*. Its role in society is to be a place of unbiased inquiry, basic research, and critical thinking [Jen01], advancing and improving the quality of life through dissemination of knowledge. In the blue corner we have the *Industry*. All its activity is driven by a single purpose: Profit [Eli08]. What is at stake is the integrity of the university. And the university is loosing.

How does the conflict arise? To stay competitive, the industry wants new ideas to the market. To that end, the industry channels funds to university research. By introducing innovation into everyday life in society, and by financing research, the industry is thus contributing to advancement and life improvement. However, while the industry sometimes gives grant money to individuals and projects with few or "no strings" attached, there usually is "a catch" set by the industry to protect their interests [Eli08]. These include [Eli08, Jen01, Dav03]: i) giving intellectual property (IP) rights of discoveries[1] to the industy ii) delaying publication by months or even years[2], iii) right to review a publication for confidential or patentable data, iv) forbidding or limiting the scientist from sharing his discoveries or extending on his work, v) requiring seats on university board, and vi) influencing education curriculum. There are also examples of industry blatantly disregarding ethics and academic conduct for profit reasons, including i) doctoring an experiment or its result to yield results more profitable for the company, ii) silencing results which are bad for the company's business[3], and iii) sueing and otherwise sabortage the carreers of scientists who act in society's best interest[4].

[1] Sometimes discoveries not even funded by the company in question [Jen01]

[2] Steven Rosenberg, a cancer researcher, is often asked to sign agreements to keep results of his research secret for up to 10 years, just to get access to reagents for his work.[Jen01]

[3] Example: Morris silences two scientists who discover that i) Nicotine is addictive but bad for bloodvessels, and ii) there is a different substance that is more addivtive and less harmful to bloodvessels.

[4] Example: Boots sues and discredits the work of one of its drug researchers who discovers and publishes that a Boots drug is less effective than mainstream drugs. USA would save millions by only using

While universities could simply refuse these lucrative offers from industry, in times of need when public funding is low, the deep pockets of the private sector become alluring.

2 Lessons Learned

The industry desires innovations from the university, and the university is attracted to the industry's money. But as we have seen, *if the reins are let go*, the beastly behaviour of the industry will compromise the integrity of the university, which plays a vital role in society.

The general problem is that i) industry adds more "catch"es if it can get away with it, and ii) there is no globally-accepted standard for industry-university cooperation. [Jen01] has details on i) and ii) *on which we will extend and elaborate.*

As mentioned in [Eli08], one of the most quarrelsome issues in Industry-University cooperation is IP. In fact, it alone is usually the reason behind pt. i)-iv) of "the catch"es in receiving funding from industry[5]. While the purpose of IP law is supposedly to promote development of knowledge [Jon01], IP seems to be having the opposite effect. In particular, if industry owns the IP of work done by scientists, given the lengths the industry is willing to go to protect its IP (we will see an example of this in the next section), scientists do not feel they can talk freely to colleagues, in fear that one will expose a corporate secret [Jen01].

We personally feel IP is a bad idea as it is so prone to abuse by industry[6]. However, we do not see a substitute for it, and since it seems to be here to stay, we propose

1. Industry can only demand a *patent*[7] on discoveries (strictly) within the scope of the funded project, only for the duration of the project, and only if the industry promises to profit from the discovery.

This allows researchers to discuss discoveries openly and with coworkers, thus not hampering dissemination of knowledge, while still giving the industry a competitive edge. The patents must be very specific, though, as not to give the industry more ammunition for "patent-trolling"[8]. The last part is necessary to ensure that the industry does not "sit on" the discovery (if the funding company is uninterested in profiting from the discovery, another company might push the idea to market, thus benefiting society).

It should be noted that a) the patent duration should vary from field to field, and b) patenting does not make sense in all fields. In a), a 10 year patent may be reasonable in

the mainstream drug [Dav03].

[5] While the fact that universities optain IP of their researchers' discoveries opens up a world of problems on its own, those are beyond the scope of this report. We do note, though, that in the USA, all but 12 schools are in fact not profiting from obtaining IP of their researchers' ideas [Unk06]

[6] There exist companies which do nothing but obtain IP rights and sue supposed infringers; see [Com10b]

[7] A patent is a type of IP: A set of exclusive rights granted by a state to an inventor or their assignee for a limited period of time in exchange for a public disclosure of an invention.

[8] Patent troll is a person/company enforcing its patents against one or more alleged infringers in a manner considered unduly aggressive or opportunistic, often with no intention to manufacture or market the patented invention.

structural engineering, but is nearly an eternity in computation science (that discipline is only 70 years old). In b), assuming mathematical truths cannot be patented, then since programs are proofs (by the Curry-Howard Isomorphism [Com10a]), which are mathematical truths, programs are inherently unpatentable. Yet, like most of our DNA, and even some numbers, they are copyrighted.

Industry, while mostly motivated by profit, often get good ideas of research directions. It can therefore be in the university's, and society's, best interest to allow the industry to take some active part in what goes on in the university. However, great care must be taken here to control the beast. To make sure that a university does not become the tool of a single industry or company, we propose:

2. Research should always be independent of individual company needs.
   - 2a. Academic division and project funding, if received from industry, should come from multiple independent industries,
   - 2b. Industry representatives, if present in the university board, should be in minority, and from multiple independent industries.

This diversity would hopefully ensure that i) research in universities stays basic, and won't lean towards the practical requirements of a particular industrial partner, ii) industry can give its input in board meetings, and become aware of what occurs in the university, without controlling it. At last,

3. Universities should not tailor student curriculum to industry needs.

Again, the university's duty is to society, not to the industry. While the industry can discover topics that should be introduced into student curriculum, it should be kept in mind that the goal of scientists is to serve society; not generate profit for industry.

We need to plant our foot down. It is ultimately the industry that comes to us for creative aid. We must standardise how universities interact with industry to maintain the integrity of the university, lest the beast runs amok and demolishes our ivory towers.

3 Case Study

Here we analyse the case of Petr Taborsky, master student at the University of South Florida, who was imprisoned for "stealing his own ideas" from his university and the company which funded a project he once worked on. See [Leo97] for details.

Stakeholders: Petr Taborsky, versus beast: University/Professor and Florida Progress.

Facts: mostly in chronologial order:

1. Taborsky was a student.
2. Taborsky was also an employee.
3. Taborsky was funded by project grant from "Florida Progress" to professor.
4. During which time no results turned up.

5. Professor told Taborsky he could do with his ideas as he pleased.
6. Taborsky was then funded by other budgets.
7. During which time Taborsky made a discovery, *in his spare time*.
8. Taborsky informs beast about discovery at meeting.
9. Florida Progress lays claim (Discovery worth millions).
10. Taborsky refuses, takes his notes home.
11. Beast sues and wins; obtains notes.
12. Taborsky files and obtains patent.
13. Beast threatens to sue if Taborsky does not relinquish patent.
14. Taborsky refuses.
15. Beast sues and wins; Taborsky imprisoned.
16. Media becomes aware.
17. Governor offers Taborsky clemency.
18. Taborsky refuses.

Uncertainties: key ones listed as follows:

- In 5, how did Taborsky obtain permission? (on paper, word-of-mouth, etc).
- In 2, the working contract (grounds for beast's claims) is dubious.
- In 3, the relation of professor to company and the university's patent policy is not clear.
- In 15, did the beast obtain the patent?

Missing Information: we noted the following:

- Witnesses in 5,
- Novelty of Taborsky's idea,
- Case made by accuser and defendant in trial.

Points of Conflict: Taborsky's profit & search for truth vs. Beast's profit.

Ethical Issues: These two came to mind:

- Trust-based word-of-mouth contract is insufficient in the university environment. One would think it was enough.
- University more intested in profit than scientific progress, or wellfare of its student.
- Taborsky's obligations to the beast: Taborsky did use the beast's facilities to make his discoveries. Beast has grounds for *some* claim.

Options and Consequences:

Unfortunately there are many uncertainties and much missing information, which, if left variable, create an explosion of options and consequences. Also, the options depend on where in the sequence of events the choice is made. And just to add even more variance: [Jon01] explains who has the IP rights of a discovery you make while working some someone (work-for-hire doctrine):

> Employers own the intellectual property rights to works created by the employees acting within the scope of their employment.

We observe, however, that there is "a gray area" here: What is the scope of employment? How close is the idea to what the employee is paid to do? Also, the "work-for-hire" doctrine only applies if you did the work as an employee. A student who is also an employee can thus argue that he did the patentable work as a student, and perhaps dodge the "work-for-hire" doctrine altogether.

We start with an option 0:

- **Option 0:** Before 8, Taborsky could get the professor's promise that he can do what he wishes with his work on paper. *Consequence:* If Taborsky succeeds, he might own his idea (unless something about the employment contract makes the professor's written promise void). However, this is likely to arouse suspicion in the professor.

While an interesting option, we feel that the most interesting decision point is 10. This is where Taborsky learns about the value of his discovery, and where the decision Taborsky makes will dramatically affect his future (as we have seen).

We will pick three options due to space constraints. These are:

- **Option 1:** Taborsky could optain his contract and IP obligations from the university (without talking to his professor, to avoid arousing suspicion), and when threatened by the beast, present the case to a lawyer, or the "ethics police". Taborsky will likely end up in a web of lengthy trials and court hearings, but if he manages to build a strong case (depends on his contract; if the beast "owns Taborsky's brains", there is not much Taborsky can do), he should win, despite how much money the beast throws into the trial.

- **Option 2:** Taborsky could flee to his home country, The Czech Republic, make his government aware that he might become an outlaw in USA, and market his idea from home.

- **Option 3:** Taborsky could negotiate with the beast. They did offer him a staff job. If he informs them that the discovery was made outside his contract, yet within their lab, and as a follow-up of contracted work, he could accept a staff job and a profit percentage.

Assessment & Action

- **Option 2:** While Taborsky would prosper in the Czech Republic, he would never be able to visit USA again. His wife might not even be able to follow. This decision is a little unfair to the beast, as this discovery was made using their facilities. Finally, this decision will only allow the beast to oppress other students in the future.
- **Option 3:** Knowing what industry is capable of, this is also a fairly safe option, which the beast would indeed be happy with as well. However, he would be working for a company that just cheated him out of millions. Who knows what kind of working environment he will be in.
- **Option 1:** Perhaps a dangerous option, Taborsky could offer a fraction of his earnings to the beast for the use of his facilities. The beast will not be very pleased, but it did had little claim to the discovery in the first place. It would be good if any scientist made this decision, as the industry should not be allowed to get away with this kind of "theft/bullying".

We choose: Option 1.

References

[Com10a] Wikipedia Community. Curry-Howard Correspondence, 2010. Available from World Wide Web: `http://en.wikipedia.org/wiki/Curry_Howard_isomorphism`. There are much better references for this result. However, they are quite technical, and really beyond the scope of this report.

[Com10b] Wikipedia Community. The SCO Group, 2010. Available from World Wide Web: `http://en.wikipedia.org/wiki/SCO_Group`. Contains an extensive reference section.

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