



# The Academic and Business Marriage

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..... There is no formula for a successful relationship, but a partnership of convenience negotiated by others tends not to work very well for either participant.

I know of such a relationship, and nobody calls it quits. The relationship renews itself again and again. This arrangement does not involve any civil ceremony, wedding, or ring.

I am talking about the marriage between business and academics.

Many participants in high technology take this relationship for granted, and some live in denial of its presence. The general partnership is worth a deeper look. It shapes many of the key cornerstones of high-technology economics.

### The superficial relations

Let's first focus on the visible aspects of the relationship.

Universities provide degrees and training for many participants in high-technology business. That matters. Technology businesses are a magnet for the educated. It is no accident, for example, that Silicon Valley has one of the highest fractions of college-educated workers of any economic cluster in the world.

That said, does the presence of a first-rate university help a local high-tech industry grow? Lots of economic research suggests the official answer is "yes, probably."

The answer starts with the mission statements. Most state public universities

are required to favor applications from students in the state. Rarely remarked upon, those mandates help keep many talented state citizens from moving away at one of the most mobile time in their lives.

The mandate is usually broader. Some of the great engineering institutions of the United States arose at land-grant public universities—for example, Michigan, Illinois, Purdue, California, and Cornell. Those state governments (with a nudge from the federal government) opened engineering schools, agricultural extensions, and various other pragmatic programs. Any history of technology developments in those states finds that those public institutions did, in fact, play such a crucial role in economic development.

Private universities can play a similar role even though they have no mandate to serve their local communities. For example, Stanford and MIT today play an important role in their local technology industries, and Carnegie Mellon and Pitt have helped Pittsburgh in that city's recent renewal, and so on.

Most civic leaders recognize this relationship. The recently retired Mayor Bloomberg was so deeply unsatisfied with the situation in New York City that he made the establishment of a new and local engineering and technically oriented university one of his major projects.

While there is plenty of evidence to suggest a link between local economic

growth and an educated populace, many states don't invest much in their universities.

Let me explain part of that in a provocative way. In the last half-century, California's economy got more benefit from the US university system than any other state because more inventive people moved there. For example, outside of Massachusetts, the highest concentration of MIT alumni lives in California, and I would bet every single engineering school in the United States, public or private, finds the largest fraction of its alumni in the golden state.

That has been noticed, and state governments have reacted in multiple ways. Some have started campaigns to keep their graduates local, taking a variety of initiatives. Other state legislators have simply given up, and calculated that the state subsidy is not yielding a benefit of much value to the local taxpayers. That reasoning rationalizes treating a student's experience like a private investment. When budgets got tight, many states raised tuition and fees, or cut funding and subsidies, and, for a variety of additional political reasons, other expenditure became the priority for state budgets.

### More subtle interplay

Other more subtle issues arise when inventions move between the academic and business realms. Although the two spheres share some overlapping

research interests, occasionally their different missions come into conflict.

Most pointedly, does money from business corrupt independent research at universities? From time to time, stories make the news where this seems to have happened. For example, we hear of medical experiments paid by pharmaceutical companies that yielded suspiciously favorable results.

Though I have no general data to back up the following assertion, I suspect that these stories are more the aberration than the rule. The majority of the time business managers recognize the importance of academic independence. Most of time, the business merely wants an efficient experiment.

Think of it this way. There is nothing wrong with an integrated circuit firm making a donation to the department in material science at the local university. That department might end up creating an invention that makes its way to local industry, where the graduate students go to work. That looks like enlightened self-interest.

Don't misinterpret the conclusion. Any business seeking to make a direct calculation on the return on investment is unlikely to be able to precisely quantify the benefits. The movement of inventions and inventors muddies any picture, as noted.

More to the point, there is no deterministic chain of connection between funding of research, invention, and local economic growth. Lots of examples can illustrate why and how benefits arise, but each step involves risks, a distribution of returns, and inherent unpredictability. Any specific example might go well or poorly.

In my experience, businesses do get their money's worth overall because their funding changes the direction of attention. Nobody should ever underestimate the capacity of a very smart scientist to toil away the hours on seemingly useless puzzles, even when the businesses next door could benefit from a short bit of their problem-solving skills. A little money goes a long way in redirecting attention.

There are days when I wish these connections were easier to trace. For example, not too long ago I attended a conference organized by a Silicon Valley venture capital firm for some of their institutional and limited partners (of which I am a minor one). At one of the lunches, a pugnacious older member of the table launched into vigorous platitudes about the federal budget, calling for major cuts, including funding of R&D.

He seemed to have no appreciation that such R&D funds had led to invention that had set the table for several investment opportunities for these VCs, and that had made all the investors rich. Maybe such fools never listen to anybody, but at that moment I wished I had had a quick sound bite to shut him up.

## Two-way relationship

A person's relationship with his or her university does not end with graduation. Some alumni retain their ties, spend time with other alumni, and define their social existence around their experience.

Universities know about this behavior in other ways. Some alumni with disposable income and wealth make major donations to universities. Those funds contribute to buildings (to which the donors attach their names), as well as research institutes inside buildings (which also display eponymous labels). Those funds can make an enormous difference to researchers, freeing their time for experiments.

Private universities have much longer track records of success tapping into their alumni base for donations than public schools, but savvy public schools have adopted similar practices more recently. Think of the public institutions with large, loyal, and financially successful alumni—such as the great state institutions in Berkeley, Los Angeles, Ann Arbor, Champaign, or Austin.

Not that this is easy to actually pull off. Business can have a hard time buying friends in academics, and both sides can easily mess up the relationship. The two partners seem not to have the same perception of the universe.

I recently found myself taking part in a discussion with a major high-tech firm that made a small donation to a national academic organization whose board I sit on. The manager at the firm wanted to shape the message at the organization, which had remained independent over its entire existence. It involved small financial stakes, so both parties found it cheap to be righteous and indignant. The conversation got everyone into a huff, and destroyed some goodwill.

Even when the importance of independence is acknowledged and accounted for, big money at both the public and private institutions changes their priorities in subtle and overt ways. For example, professional schools—engineering, medicine, business, and law—tend to be far better at getting donations. Their buildings grow, their student populations do too, and so do their faculty. When resources are scarce, the growth comes at the expense of humanities.

Poets have rarely made out materially well in any society in human history, so you might reasonably ask why this time is any different. Call me an economist with a guilty conscience, but it just seemed easier to accept shorting the artists when it could be blamed on society's bullies—its arrogant aristocrats and disconnected elites. It seems almost perverse to see the modern universities cooperate in a similar conspiracy for the indulgence of its technical nerds and geeks.

The relationship between business and academics is one of those institutions, such as marriage, that rarely changes its character in the short run. In the long run, however, a bad partnership sours many aspects of economic life, whereas a good partnership can make enormous differences to happiness and welfare. It seems worthwhile to invest in getting it right.

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