

CREATING WAVES OF CHANGE:

HOW IS THE BAYH-DOLE ACT SHAPING THE LANDSCAPE OF GRADUATE EDUCATION?

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The Bayh-Dole Act of 1980 legislated that universities could (and should) own and license intellectual property generated from federal research funds. Few will argue that this has not transformed university life. Licensing intellectual property can generate revenue. This newfound ability allows universities to play a bigger and more clear-cut role in the economic development of their regions. The success stories—such as Silicon Valley and the Route 128 corridor—have piqued the interest of the communities where universities reside. Local and regional partners now encourage their universities to focus energy and programs on creating economic wealth in the region.

These opportunities and expectations have generated a variety of changes within the academic community. As research administrators, we must ask ourselves: Is graduate education becoming a different entity altogether, or are we experiencing a short-term change? Have these new opportunities changed our values in fundamental ways? Do university policies reflect and support the changes we desire? This paper is an attempt to outline a number of questions worth considering as we near the 25-year anniversary of the Bayh-Dole Act.

Academic-driven Economic Development: Have We Oversold the Story?

Obviously, university research has the potential to play a critical role in the economy, and in fact does. But, two questions concern me. First, has the focus placed on research growth and research expenditures overshadowed the central role of discovery, creation, innovation and scholarship in the academy? Second, if state legislators tie support for state universities to “economic outcomes,” what happens to the sustainability of graduate education if we don’t deliver in clearly measurable ways?

There is no question that universities are telling their stories about economic development to anyone and everyone who will listen. One rarely sees research being justified in the context of scholarship—what was once considered the central role of a university in the education of its students. The story almost always tries to put research into economic terms. All academic chief research

officers are now skilled in pointing out: the “economic multiplier” of their research operation; the number of jobs that each new dollar of research creates; and the potential for research to spawn new high-tech companies that will transform their region. The new focus on the economic benefit of research has permeated almost every aspect of research on a campus. For example, even ecologists are now trying to justify their research in terms of the economic services that ecosystems provide.

Yet, there are really only a few true success stories. In Silicon Valley, the universities were drivers of major economic change. The economic multipliers are real, but now Governors (in some states) are asking universities to identify the “jobs,” “companies,” and economic outputs that were truly generated by research. At some point, if more “success stories” do not arise (and most universities do not have the potential of the Silicon Valley, Research Triangle, or Boston), will our legislative branches and our communities consider our “economic analyses” academic hyperbole? If they do, where will we be?

Has a New Focus on Owning Intellectual Property Changed Graduate Education?

The Bayh-Dole Act has brought about a fundamental shift in philosophy regarding the dissemination of research results. Prior to 1980, almost every faculty member and administrator prided themselves on the role of academe in the free-flow of information. At the institutions where I went to school, I never heard a discussion about restricting publications in order to protect intellectual property rights, let alone the idea of keeping doctoral theses confidential so as not to disclose intellectual property. Chief research officers are now having these discussions on a daily basis.

This has led to other issues. When I left graduate school, the university was not concerned if I could take with me or continue to access freely the data I generated as a graduate student. In other fields of research this was often a concern of major advisors, but generally not of university lawyers. Now, we are all trying to develop data policies that make it clear where ownership of data resides, including graduate-student data—and these policies need to hold up to legal scrutiny. How does this change affect graduate education? Are we adequately addressing expectations about access to data once a student leaves, so problems don't arise later?

Not all aspects of academe have caught up with the changes caused by the Bayh-Dole Act. One example is the promotion and tenure process. From my experience, most promotion and tenure (P&T) committees still look at accomplishments in traditional ways. They look at publications, particularly single-authored publications: How many are there and what journals are they published in? They look at competitive grant funds. From my limited experience, few P&T committees have adapted to handle the new focus on protecting

intellectual property. The patent process is extremely rigorous, but I have found that patents are rarely valued to the same degree as peer-reviewed publications. Licensing income is not viewed on a par with competitive grant funding. Yet, researchers understand the high value placed on making one's research available for driving economic growth—this is a primary goal at the university-level. Although I know that some institutions have managed to develop policies and procedures to address this change, I would argue that few have truly changed the promotion and tenure culture in a systematic way. Do we need to?

Chief research officers expound the value of interdisciplinary research and collaborations. Yet, interested graduate students must navigate a minefield of technical issues in intellectual property ownership before they can begin such collaborations. Are we sending mixed messages? If we are, how can we help the next generation get through the conflicting aims we all have?

The “Porsche in the parking lot” story is not uncommon. Once someone on campus gets a big intellectual property deal, he buys a Porsche with the income, parks it in the parking lot for all to see, and the other faculty jump on the band wagon to try and license every idea they have ever had. Those of us who are trying to develop more active technology transfer operations want to promote this sort of drive in our faculty. But, the widely known financial success of some university inventors has led to inflated expectations among new graduate students. Some students now want to become university researchers so they can “get rich” with the intellectual property they will generate. These are fundamental changes in attitudes for our traditional programs. How well have we become acclimated to this change, or should we?

How has the Institutional Emphasis on Economic Development and Private Sector Partnerships Affected Academe?

At my institution economic development is being clearly articulated as a 4th mission—joining education, research and service as the defining goals. Does this create confusion about our core mission? For example, is a business incubator a higher priority than a performing arts center, investment in research collections, or a new humanities building? Priorities have not yet been thoroughly sorted out by most academic communities.

Partnering with the private sector means on-time, within budget, deliverables that we have not traditionally known in academe. Hiring research faculty, technical staff and postdoctoral fellows is often more attractive than training graduate students when the ability to “deliver” is emphasized. Furthermore, it puts more pressure on directing, or even micro-managing the research projects of graduate students. Does this change the nature of graduate education in the research university?

Strategic planning to identify key areas of research investment is a process each university has underway. I have noticed the tendency to focus on research strengths with ties to economic development. At the University of Missouri-Columbia, our focus is the life sciences. This has the potential to alienate some areas of academic excellence; my institution has several world-class humanities research programs. Are we in danger of reshaping and refocusing inalterably? Will this change diminish the full range of graduate programs in lieu of strengthening the ones driven by technology?

Now that we have identified a clear role for universities in driving the economy and developing partnerships with the private sector, we must recognize that the private sector can more easily influence the university. Influential members of a community can use their access to legislators and institutional leaders to steer the focus of a university toward meeting their desired economic goal. State-supported universities welcome the support of business leaders. They are valuable allies. But, are we prepared for the potential costs?

Summary

This short muse is my attempt to point out some fundamental ways that the Bayh-Dole Act has changed the nature of universities, and hence some aspects of graduate education. The intellectual property housed in universities is perhaps the most valuable asset a university has. In state-supported institutions, it may be the most valuable asset owned by the state. Bayh-Dole's directive to universities to own and financially benefit from intellectual property has been a boon. Some universities have prospered from the new source of revenue. Others have not seen the financial gains, but now have supporters in the business community with a vision for the university's role in economic development. These are positive changes. Yet, some of the changes conflict with the traditional core values of academe, and many sectors of the academy are still adjusting.

For every question I have raised in this paper, I have the same answer—"I don't know." At this point, I am unable to do more than ask questions and point out dilemmas. The rate of change is fast, and the effects of owning intellectual property are far reaching. I can only hope that by reflecting on the vast repercussions to the whole fabric of academe in this instance, we are better prepared to avert the consequences of another legislative act that may be right around the corner.

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