The Commercialization of Academic Culture and the Future of the University

Daniel Lee Kleinman

In this chapter, I will examine and critique two prominent examples of this type of investigation and then consider two matters that I believe deserve more of our attention than they seem to receive and explain why I will argue that we must be attentive to the processes of change in the character of the American university and that we should focus not primarily on direct university-industry relations and egregious violations of academic norms, but instead on subtle and pervasive changes underway in the culture of the academy.

1. A Threatened Ivory Tower?

With the development of the U.S. biotechnology industry in the late 1970s and 1980s, scholars, policy analysts, and activists directed their concern toward the university-industry research relationships fostered by this dynamic economic sector (e.g., American Association of University Professors 1983; Blumenthal et al. 1986a, 1986b; Kenney 1985; Shenk 1999). Sometimes implicitly and other times explicitly contrasting these arrangements with an insulated ivory tower, this work expressed concern about corporate influence on academic research agendas as well as marked increases in conflicts of interest, secrecy, and focus on research as proprietary. While much work since this early writing has posed different questions in exploring the place of the university in the new knowledge economy (e.g., Brint 2005; Owen-Smith and Powell 2003; Slaughter and Leslie 1997; Slaughter and Rhoades 2004), concerns about conflict of interest, secrecy, and the like retain a pivotal place in critical debate.

Indeed, these types of issues figured centrally in press coverage of the Berkeley-Novartis relationship in the late 1990s (see Rudy et al. 2007), and constitute the predominant focus of two important books: Jennifer Washburn’s University, Inc. (2005) and Sheldon Krinsky’s Science in the Private Interest (2003).

Troubled by what they see as the transformation of the university from an entity distinct from industry to a virtual arm of the private sector, authors like Washburn and Krinsky make their case, to a considerable extent, by highlighting egregious violations of academic norms—dramatic instances.

These authors and others consider many of the same cases. Thus, the Berkeley-Novartis deal I have mentioned figures prominently in the stories they tell (Krinsky 2003, 35, 36; Washburn 2005, 3–7, 9–23). The authors note that this deal meant Novartis supplied a third of a single department’s budget and gave the company the right of first refusal to negotiate licenses for a third of the department’s dis-
Another case Washburn and Krimsky highlight is that of Betty Dong, a University of California–San Francisco researcher studying the efficacy of a thyroid medicine (Washburn 2005, 19; Krimsky 2003, 14–18). In this episode, Boots Pharmaceutical, the funder of Dong's work and the manufacturer of Synthroid, engaged in a sustained campaign to prevent Dong from publishing results that showed that Boots's drug was no more effective than three cheaper, competing drugs.

Yet another instance reported by both authors concerns David Kern (Washburn 2005, 76; Krimsky 2003, 44, 45). Kern was an occupational health researcher at a Brown University–affiliated hospital, who was fired after finding that one of his institution's patrons was endangering its workers. In this case, Washburn and Krimsky suggest that corporate influence stifled Kern's research and ended his career at Memorial Hospital.

But how common are such cases? It isn't entirely clear, but as I noted at the outset of this chapter, industry funding certainly does not overwhelm the amount of research support universities receive from the federal government and other sources. I do not want to understate the problem reflected by these episodes; the concerns raised by authors like Krimsky and Washburn are real. There are surely cases of intellectual suppression, and there are, indeed, sectors of the academy where corporate sponsorship does directly shape the direction of research and research practices. However, I would suggest that focusing on dramatic cases of violations of academic norms draws attention away from understanding the deeper and more complicated issues of commercialization of academic culture.

Many analysts point to a move among academic scientists away from Merton-type norms of science (e.g., Shenk 1999 and Lewis and Anderson 1998). Indeed, both Krimsky (2003, 6, 7, 73ff) and Washburn (2005, 73ff) talk explicitly about three of the norms—communism, universalism, organized skepticism—highlighted by Robert K. Merton (1973/1942) and accept at face value that the world of science operated according to these norms before the biotechnology and associated commercialization revolution that began in the early 1980s.

But analysis of episodes before 1980 by such scholars as Mitroff (1974) and Mulkay (1980) suggests that science, even absent corporate pressures, often does not straightforwardly follow these norms (see also Radder, this volume, chap. 10). Mulkay argues that scientists have always engaged in interpreting norms, since norms do not have a single literal meaning. In his work on moon researchers, Mitroff found that for every Mertonian norm there was a counternorm. These

existed in a state of dynamic tension, shaping scientific practice. Of course, these cases say nothing about the present moment.²

Krimsky, Washburn, and others suggest we face an epidemic of anti-Mertonian secrecy in academic science—secrecy induced by commercial pressures. They are right: secrecy in science is a problem. But a study by Campbell and his colleagues should lead us to question the idea that there is a simple and straightforward relationship between commercial pressures and secrecy in university science. Campbell and his colleagues surveyed geneticists in the United States. They found that 27 percent of respondents said they withheld information, data, or materials to honor the requirements of an industrial sponsor, and 21 percent explained their unwillingness to provide materials and/or data as stemming from the need to protect the commercial value of research results (Campbell et al. 2002).

But those percentages are low compared with some of the other explanations these geneticists gave for withholding information or materials. Eighty percent cited the efforts required to produce materials or information, 64 percent pointed to the need to protect a student's or colleague's ability to publish, 53 percent said they needed to protect their own ability to publish, and 45 percent cited cost as the reason they withheld data or materials (Campbell et al. 2002). Washburn explicitly acknowledges these kinds of reasons for secrecy in academic life, but downplays their importance in the political economy of academic science (2005, 75). Neither Washburn, Krimsky, nor any other author with whom I am familiar provides data on changes in secrecy practices over time. Consequently, we don't know whether academia is more secretive than it was in the past and if so why.

Again, I don't want to suggest that the university isn't in the midst of a transformation, that secrecy isn't a problem, or that corporate-university linkages do not inhibit the free flow of information in academia.³ The question is whether the kind of approach Krimsky, Washburn, and others take best captures what is really going on.

Finally, another thing analysts of the neoliberal university worry about is the loss of "disinterested researchers." Thus, Washburn asserts, "it would be hard to overstate the importance of preserving a space in our culture where the ideal of disinterested inquiry is preserved" (2005, xvi). She is looking for independent and impartial scholars (2005, 5). Broadly, however, I would say that scientists are always interested (see Bourdieu 1975). If the cases highlighted by Krimsky and Washburn are relatively exceptional, we still face the problem that disciplinary orientations, colleagues' reactions, and a host of other factors affect how scholars will speak to the public and what they (we) will say.
2. The Transformation of the American University

Reluctantly, Krinsky argues that the growth of URIs is associated with a decline in the public orientation of scientific research. By the mid-1970s, the university-industry relations were becoming more formalized and structured. The 1970s saw the rise of the National Science Foundation (NSF), which began to fund basic research. This shift was due in part to the lobbying efforts of the Research Universities' Association (RUA), which had established a network of relationships with Congress and the federal government.

In 1975, the RUA successfully lobbied Congress to pass the National Science Foundation Amendments of 1975, which provided for increased funding for basic research. This act signaled a shift in the federal government's approach to scientific research, away from the prior emphasis on defense-related research and towards basic research in science and engineering. The increase in funding for basic research had a profound impact on the university-industry relationship, as universities were now able to pursue research that was not directly tied to military applications.

The transformation of the American university was marked by a shift towards more commercialization. The university-industry relationships were now seen as a source of funding, and universities began to see themselves as competitors in the market for research funding. This led to an increased focus on research that had commercial potential, and away from pure, fundamental research.

The shift towards commercialization was also facilitated by the development of new technologies, such as computing and biotechnology, which offered new opportunities for commercial application. The rise of these technologies created a new class of companies, known as biotech and tech companies, which were able to develop new products and services based on university research.

The Transformation of the American University

The transformation of the American university was marked by a shift towards more commercialization. The university-industry relationships were now seen as a source of funding, and universities began to see themselves as competitors in the market for research funding. This led to an increased focus on research that had commercial potential, and away from pure, fundamental research.

The shift towards commercialization was also facilitated by the development of new technologies, such as computing and biotechnology, which offered new opportunities for commercial application. The rise of these technologies created a new class of companies, known as biotech and tech companies, which were able to develop new products and services based on university research.

The Transformation of the American University

The transformation of the American university was marked by a shift towards more commercialization. The university-industry relationships were now seen as a source of funding, and universities began to see themselves as competitors in the market for research funding. This led to an increased focus on research that had commercial potential, and away from pure, fundamental research.

The shift towards commercialization was also facilitated by the development of new technologies, such as computing and biotechnology, which offered new opportunities for commercial application. The rise of these technologies created a new class of companies, known as biotech and tech companies, which were able to develop new products and services based on university research.

The Transformation of the American University

The transformation of the American university was marked by a shift towards more commercialization. The university-industry relationships were now seen as a source of funding, and universities began to see themselves as competitors in the market for research funding. This led to an increased focus on research that had commercial potential, and away from pure, fundamental research.

The shift towards commercialization was also facilitated by the development of new technologies, such as computing and biotechnology, which offered new opportunities for commercial application. The rise of these technologies created a new class of companies, known as biotech and tech companies, which were able to develop new products and services based on university research.

The Transformation of the American University

The transformation of the American university was marked by a shift towards more commercialization. The university-industry relationships were now seen as a source of funding, and universities began to see themselves as competitors in the market for research funding. This led to an increased focus on research that had commercial potential, and away from pure, fundamental research.

The shift towards commercialization was also facilitated by the development of new technologies, such as computing and biotechnology, which offered new opportunities for commercial application. The rise of these technologies created a new class of companies, known as biotech and tech companies, which were able to develop new products and services based on university research.

The Transformation of the American University

The transformation of the American university was marked by a shift towards more commercialization. The university-industry relationships were now seen as a source of funding, and universities began to see themselves as competitors in the market for research funding. This led to an increased focus on research that had commercial potential, and away from pure, fundamental research.

The shift towards commercialization was also facilitated by the development of new technologies, such as computing and biotechnology, which offered new opportunities for commercial application. The rise of these technologies created a new class of companies, known as biotech and tech companies, which were able to develop new products and services based on university research.

The Transformation of the American University

The transformation of the American university was marked by a shift towards more commercialization. The university-industry relationships were now seen as a source of funding, and universities began to see themselves as competitors in the market for research funding. This led to an increased focus on research that had commercial potential, and away from pure, fundamental research.

The shift towards commercialization was also facilitated by the development of new technologies, such as computing and biotechnology, which offered new opportunities for commercial application. The rise of these technologies created a new class of companies, known as biotech and tech companies, which were able to develop new products and services based on university research.

The Transformation of the American University

The transformation of the American university was marked by a shift towards more commercialization. The university-industry relationships were now seen as a source of funding, and universities began to see themselves as competitors in the market for research funding. This led to an increased focus on research that had commercial potential, and away from pure, fundamental research.

The shift towards commercialization was also facilitated by the development of new technologies, such as computing and biotechnology, which offered new opportunities for commercial application. The rise of these technologies created a new class of companies, known as biotech and tech companies, which were able to develop new products and services based on university research.

The Transformation of the American University

The transformation of the American university was marked by a shift towards more commercialization. The university-industry relationships were now seen as a source of funding, and universities began to see themselves as competitors in the market for research funding. This led to an increased focus on research that had commercial potential, and away from pure, fundamental research.

The shift towards commercialization was also facilitated by the development of new technologies, such as computing and biotechnology, which offered new opportunities for commercial application. The rise of these technologies created a new class of companies, known as biotech and tech companies, which were able to develop new products and services based on university research.

The Transformation of the American University

The transformation of the American university was marked by a shift towards more commercialization. The university-industry relationships were now seen as a source of funding, and universities began to see themselves as competitors in the market for research funding. This led to an increased focus on research that had commercial potential, and away from pure, fundamental research.

The shift towards commercialization was also facilitated by the development of new technologies, such as computing and biotechnology, which offered new opportunities for commercial application. The rise of these technologies created a new class of companies, known as biotech and tech companies, which were able to develop new products and services based on university research.

The Transformation of the American University

The transformation of the American university was marked by a shift towards more commercialization. The university-industry relationships were now seen as a source of funding, and universities began to see themselves as competitors in the market for research funding. This led to an increased focus on research that had commercial potential, and away from pure, fundamental research.

The shift towards commercialization was also facilitated by the development of new technologies, such as computing and biotechnology, which offered new opportunities for commercial application. The rise of these technologies created a new class of companies, known as biotech and tech companies, which were able to develop new products and services based on university research.

The Transformation of the American University

The transformation of the American university was marked by a shift towards more commercialization. The university-industry relationships were now seen as a source of funding, and universities began to see themselves as competitors in the market for research funding. This led to an increased focus on research that had commercial potential, and away from pure, fundamental research.

The shift towards commercialization was also facilitated by the development of new technologies, such as computing and biotechnology, which offered new opportunities for commercial application. The rise of these technologies created a new class of companies, known as biotech and tech companies, which were able to develop new products and services based on university research.

The Transformation of the American University

The transformation of the American university was marked by a shift towards more commercialization. The university-industry relationships were now seen as a source of funding, and universities began to see themselves as competitors in the market for research funding. This led to an increased focus on research that had commercial potential, and away from pure, fundamental research.

The shift towards commercialization was also facilitated by the development of new technologies, such as computing and biotechnology, which offered new opportunities for commercial application. The rise of these technologies created a new class of companies, known as biotech and tech companies, which were able to develop new products and services based on university research.

The Transformation of the American University

The transformation of the American university was marked by a shift towards more commercialization. The university-industry relationships were now seen as a source of funding, and universities began to see themselves as competitors in the market for research funding. This led to an increased focus on research that had commercial potential, and away from pure, fundamental research.

The shift towards commercialization was also facilitated by the development of new technologies, such as computing and biotechnology, which offered new opportunities for commercial application. The rise of these technologies created a new class of companies, known as biotech and tech companies, which were able to develop new products and services based on university research.

The Transformation of the American University

The transformation of the American university was marked by a shift towards more commercialization. The university-industry relationships were now seen as a source of funding, and universities began to see themselves as competitors in the market for research funding. This led to an increased focus on research that had commercial potential, and away from pure, fundamental research.

The shift towards commercialization was also facilitated by the development of new technologies, such as computing and biotechnology, which offered new opportunities for commercial application. The rise of these technologies created a new class of companies, known as biotech and tech companies, which were able to develop new products and services based on university research.

The Transformation of the American University

The transformation of the American university was marked by a shift towards more commercialization. The university-industry relationships were now seen as a source of funding, and universities began to see themselves as competitors in the market for research funding. This led to an increased focus on research that had commercial potential, and away from pure, fundamental research.

The shift towards commercialization was also facilitated by the development of new technologies, such as computing and biotechnology, which offered new opportunities for commercial application. The rise of these technologies created a new class of companies, known as biotech and tech companies, which were able to develop new products and services based on university research.

The Transformation of the American University

The transformation of the American university was marked by a shift towards more commercialization. The university-industry relationships were now seen as a source of funding, and universities began to see themselves as competitors in the market for research funding. This led to an increased focus on research that had commercial potential, and away from pure, fundamental research.

The shift towards commercialization was also facilitated by the development of new technologies, such as computing and biotechnology, which offered new opportunities for commercial application. The rise of these technologies created a new class of companies, known as biotech and tech companies, which were able to develop new products and services based on university research.

The Transformation of the American University

The transformation of the American university was marked by a shift towards more commercialization. The university-industry relationships were now seen as a source of funding, and universities began to see themselves as competitors in the market for research funding. This led to an increased focus on research that had commercial potential, and away from pure, fundamental research.

The shift towards commercialization was also facilitated by the development of new technologies, such as computing and biotechnology, which offered new opportunities for commercial application. The rise of these technologies created a new class of companies, known as biotech and tech companies, which were able to develop new products and services based on university research.

The Transformation of the American University

The transformation of the American university was marked by a shift towards more commercialization. The university-industry relationships were now seen as a source of funding, and universities began to see themselves as competitors in the market for research funding. This led to an increased focus on research that had commercial potential, and away from pure, fundamental research.

The shift towards commercialization was also facilitated by the development of new technologies, such as computing and biotechnology, which offered new opportunities for commercial application. The rise of these technologies created a new class of companies, known as biotech and tech companies, which were able to develop new products and services based on university research.
direction was shaped by its inclusion as part of Bush’s American Competitiveness Initiative. My own campus, the University of Wisconsin–Madison, is home to one of the foundation’s Nanoscale Science and Engineering Centers, a multimillion-dollar effort to advance nanotechnology research and ultimately push it onto the market. Indeed, an early review of the university’s program was criticized by external assessors for its failure to more fully and more quickly establish links with firms that might be interested in its NSF-funded research.

There are several observations to make from this brief historical discussion. First, formal connections between firms and universities are not new in the United States, at least. Second, these connections and, importantly and more broadly, the commercial orientation of American universities is not simply or only a reflection of changes that occurred in the 1970s and 1980s. Instead, they reflect several long-term trends. Significantly, in this context, the federal government since at least the late 1960s has promoted a commercial orientation among academic researchers. Finally, insofar as U.S. scientists’ research takes on a commercial orientation or their practices reflect private sector values, this does not only echo financial support for university research from industry, it is also a sign of government policies that call on academic scientists to engage in practices traditionally associated with the commercial world in exchange for government patronage.

If we cannot see a sharp transformation as a result of the blurring of basic and applied science reflected in the biotechnology revolution, what about the transformative pressure of federal legislative initiatives? Again, the measure most often highlighted as the guiding light in facilitating university-industry relationships and a more commercial orientation on U.S. campuses is Bayh-Dole. However, as David Mowery and his collaborators have shown, university patenting was increasing many years before the passage of Bayh-Dole. These scholars have suggested, furthermore, that this piece of legislation cannot, by itself, explain the rise in academic patenting after 1980 (Mowery and Sampat 2001; Mowery et al. 2002; Mowery and Ziedonis 2000, 2002). University patenting was infrequent during the 1950s and 1960s. But between the 1960s and early 1970s, university patenting increased from around a hundred per year to more than double that (Mowery and Sampat 2001, 798; Berman 2008). In this context, Elizabeth Popp Berman elegantly shows that efforts by “federal bureaucrats [led by Norman Latker] and their interaction with an emerging community of university patent administrators helped increase and routinize patenting prior to 1980 as well as leading to the Bayh-Dole Act” (2008, 842).

For my argument, the implications of the work of Mowery and colleagues and Berman are clear. First, increased university patenting, as an indicator of a growing commercial orientation, predates the 1980s and is thus not a simple reflection of the biotechnology revolution or even the desire of university administrators to make up for budget shortfalls. The work of federal officials and university patent agents was changing the intellectual property landscape in U.S. academia well before 1980. Second, even without Bayh-Dole, the movement toward increased academic patenting would very likely have continued—it reflected an ongoing trend, not an abrupt change in environment and thus in policy. Finally, while the so-called crisis of U.S. competitiveness provided a propitious time for changing federal patent rules for academia, without the efforts of a coalition of federal and university officials, it is not clear that Bayh-Dole would have become law.

To say that the transformation of the American university—the increasing commercial orientation—was not abrupt and does not reflect some of the central causes authors use to explain the change is not to suggest that a transformation has not occurred, is not occurring, or is unimportant. Indeed, I agree that such an alteration has occurred and is happening. That change has taken place over a long time (for more on this, see below), and while it almost certainly has been accelerated by the so-called crisis of competitiveness of the late twentieth century and the scramble of academic leaders for research support, even these factors must be understood in a larger context. The U.S. academy, after all, exists within perhaps the most unabashedly capitalist economy in the world, and that socioeconomic orientation obviously predates the 1980s.

3. The Indirect Effects of Industry on Academic Science

One problem with focusing on direct formal university-industry relations is that attention is drawn away from more indirect but pervasive effects of industry on university science (Kleinman 1998). These indirect effects are harder than clear normative violations to measure and to regulate.

Many scholars have focused on how industry funding can alter the direction of research, shaping the agenda of researchers (Nelkin and Nelson 1987). But the ways in which direct funding from industry affects research practice really only captures a small piece of what is happening to academic science. A 2006 study by Rich Welsh and Leland Glenna (2006) vividly highlights the manner in which university research in one area has come to mirror private sector industry research. The Animal, Plant, and Inspection Service of the U.S. Department of Agriculture requires all organizations performing field research using transgenic crops to file notices of their intent. Welsh and Glenna used this information to explore the plants and traits studied in academic transgenic crop research. They were interested in assessing the extent to which the traits and plants field-tested by university sci-
scientists were the same as those studied by firms and whether there was a change
time (1993-2002) in the extent to which university research in this area mim-
icked industry investigations. Broadly speaking, industry has focused its trans-
genic crop research on a limited number of major crops, especially soybean, corn,
and cotton, and on two traits, herbicide tolerance and insect resistance. Welsh and
Glenna found that 57.6 percent—a quite substantial number—of notices filed by
universities were also for these traits, while a larger 78.8 percent of industry not-
ices of field tests were for these traits. Thus, although less than industry itself
does, the majority of university transgenic research, by this indicator, focuses on
research of concern to industry. As for crops studied, 73 percent of industry filings
were for major crops, while only 32.6 percent of filings by universities were. More
important, I would argue, however, is that over time the focus of the university
research profile on transgenic crops, according to the indicators used by Welsh
and Glenna, has come to look increasingly like that of industry. In their last time
period (1999-2002), work by universities on major traits had increased to 73 per-
cent from just 37 percent in the period between 1993 and 1995. Major crop work
in universities had risen too, but much less substantially. To complicate this pic-
ture, Welsh and Glenna developed a commercial index, a composite measure that
included both crop and trait types. Using this index, Welsh and Glenna found an
increasing identity between corporate and university transgenic research over time.

Clearly, Welsh and Glenna’s research shows that the practices of at least one
variety of university research is increasingly isomorphic with corporate research.
This is evidence of a university culture that bears traits of commercial culture. I
would like to be able to argue that this transformation is entirely independent of
the funding of university research by corporations. Welsh and Glenna’s data do not,
however, allow such conclusions, since they lack information on funding source.
That said, if transgenic research in university settings is typical of university sci-
ence research in general, then only perhaps 7 percent of this transgenic university
research is funded by industry, and still much of it mimics industry research in
focus. This figure is almost certainly too low, since we know that university bio-
technology research receives more corporate support than other areas (around 25
percent) and funding for agricultural research at land-grant universities receives
lavish corporate support. That said, it still seems fair to say that a significant
amount of university transgenic agricultural research on major traits and crops is
not funded by industry, but nevertheless reflects the push of corporate norms and
practices into university settings.

Welsh and Glenna do not document the mechanisms at work in pushing in-
dustry values into academia through the selection of research foci, but we can
speculate on how corporate influence works here. Most obviously, academic sci-
entists, especially in public universities, are increasingly pressured by university
administrators, alumni, and taxpayers to undertake research with obvious eco-
nomic development potential. Clearly aware of commercial trends in biotechnology,
these scientists presumably believe, probably rightly, that the products currently
pursued by industry are likely to be further developed in the future and that by
undertaking research related to the products industry is currently promoting, their
work is likely to have commercial relevance. More directly, university scientists may
be encouraged to pursue this work by government officials and university leaders
who learn of the work’s importance to industry directly through their interactions
with corporate representatives.

The indirect influence of the culture of commerce on research practice is less
ambiguous in data from my ethnographic study of Professor Jo Handelsman’s
laboratory at the University of Wisconsin-Madison (2003). When I studied in the
Handelsman lab in the mid-1990s, the central focus of researchers’ work was biol-
ogical control, in this case the use of microorganisms to control plant disease.
More specifically, workers in the lab were doing research on a strain of Bacillus
subtilis that they called UW85, which their work showed was effective in controlling
soil-borne diseases caused by a microorganism called Phytophthora. As it turns
out, “effective” is a relative term, and, in the case of UW85, it must be defined in
relationship to the chemical fungicide—metalaxyl—commonly recommended for
treatment of the same diseases UW85 combats.

Here, the private sector indirectly shaped the research of work in the Handsel-
man lab. Since at least World War II, industry has dominated, and thus defined,
agricultural disease control strategies. Much of the research on plant diseases was
undertaken in industry, and thus the work on agrichemicals—the area of interest
to industry—is considerably more advanced than the work on biocontrol agents,
and the foundational research of agrichemical firms defines what counts as an ef-
effective fungus control agent and what tools are used to assess this efficacy.

To say that efficacy standards are defined by industry is to suggest that they
are determined, in this case, by the disease control agents farmers will purchase.
All else equal, farmers will select the disease control agent that most helps them
to maximize their yields. As agrichemical industry analyst John Perkins notes in
this context,

To the farmer, of course, it matters little whether his yields are reduced in
quantity or quality. In either case, his revenue is reduced and he is economically
worse off. Moreover, no single farmer can decide unilaterally to abandon either
quantitative or qualitative criteria in judging production methods. Competition in capital-intensive agriculture encourages each individual grower to strive for maximum returns; those who don’t risk losing their businesses. (1982, 268)

The “discipline of the market” first shapes the practices of industry and subsequently those of academic scientists conducting research on agricultural disease control strategies that might compete with the existing approaches marketed by industry.

In field tests of UW85, the biocontrol agent’s effectiveness was measured against various formulations of Ciba-Geigy’s metalaxyl. Furthermore, past research on metalaxyl and the resulting knowledge of its target specificity makes the chemical a useful research tool for scientists trying to understand biocontrol agents like UW85. In sum, long-term domination of a research field has allowed the agrichemical industry to influence university research without directly funding university research.3

Of course, this is just one case, and I cannot say how common it is for the historical dominance of a research field by industry to shape subsequent work in that field in university settings. However, there are examples other than UW85. Thus, in a related research area, as historian Richard Sawyer (1996) shows, the measures of success of insect biocontrol agents studied by citrus researchers in California in the mid-twentieth century were affected by cosmetic standards made possible by industry development and citrus grower adoption of chemical pesticides to meet those standards.

Importantly, while the transgenic crop science investigated by Welsh and Glenn suggests an increase in industry influence in precisely the period that critics of the UIIRs point to, the impact of industry on biocontrol research in the case of the Handelsman lab and in the area of citrus research suggests much earlier influence. All three instances direct attention, at some level, however, to the effect of commercial codes and practices on academic science, independent of direct university-industry relations. In addition, the latter two cases point to the influence of the world of commerce on the American university well before the 1980s.

4. The Culture of Academia

Beyond the indirect effects of industry on university research, we must look at the way the culture of academia (its codes and practices) is being reshaped by industry, again indirectly and independent of formal university-industry relations. To make this case, I draw on earlier ethnographic work of my own (2003) as well as interview data from a study I undertook with Steven Vallas (Vallas and Kleinman 2008), documentary material I gathered recently, and the work of other scholars.

4.1. Promoting a Commercial Orientation among University Scientists

Let me begin with my own institution. The University of Wisconsin–Madison (UW) makes its role in the economy central to its strategic plan. The UW seeks to move “technological advances (ideas, products, and processes) into the private sector where they can be commercialized to produce new products and processes or used to improve existing ones” (University of Wisconsin 2003). This is not new for the University of Wisconsin. Since its establishment in 1925, the Wisconsin Alumni Research Foundation, the UW’s patent agent, has served to administer the university’s patents and licenses (Kleinman 2003, 133). The UW’s Office of University-Industry Relations, recently reorganized and renamed the Office of Corporate Relations, was established in 1963 to promote technology transfer and foster university-industry relations.

These institutions have helped self-consciously transform the local culture. In 2001 and 2002, for example, along with Wisconsin’s Graduate School, the Office of University-Industry Relations offered seminars (Wiley 2003) to at once alert faculty to the commercial potential of their work and provide them with market savvy. Among the courses was a five-session seminar entitled “High Tech Business Planning for Entrepreneurial Scientists and Engineers.” The course taught participants how to write a business plan, market a product, develop financial and implementation plans, and walked “students” through the commercialization process.

Other courses offered through this initiative included “Introduction to Intellectual Property Management at the UW–Madison” and “Intellectual Property Issues in Sponsored Research.” The former seminar provided information on such basic matters as how faculty-inventors should disclose inventions and seek patent protection. The latter taught participants about Bayh-Dole, royalty distribution for intellectual property created at the university, and related matters. In 2001 alone, these seminars were attended by nearly 800 faculty members and university staff (Wiley 2003).

So—the spread of norms and practices from the corporate world have, in recent years, at my university at least, moved into academia through traditional socialization mechanisms. Indeed, the new UW Office of Corporate Relations continues to offer education through an endowed seminar series. In addition, it
forces in discussions with Wisconsin Alumni Research Foundation representatives (see Kleinman 2005).

4.2. Commercialization and Everyday Academic Life

The spread of commercial norms and practices is not seen only in the context of making academic science commercially relevant. They appear to have infiltrated the administration of the university and everyday academic life. Universities are encouraged to use business as a model for their practice and appear to be doing so. Focus groups undertaken for a 2002 UW task force on university-business relations that were expected to report to the chancellor encouraged the UW to adopt a “business model approach” to the commercial role of the university, including developing a business plan, “benchmarking successful departments, schools, and colleges,” and developing a marketing strategy (Wiley 2003). Steven Vallas and I found this kind of language used by some of the academic managers we interviewed. In one instance, an administrator insisted that universities have remained sharply different from corporations, but ironically the model he used to describe university administration—one that likened faculty to a board of directors overseeing university administrators—was itself drawn from the corporate world.

The use of corporate or commercial metaphors was common in the data Vallas and I collected. Describing institutional changes at his university, one dean spoke in terms of universities as sources for “the manufacture of capital goods.” He said, “We manufacture minds, ideas, patents in some cases, and these are the capital goods that industries are built around” (quoted in Vallas and Kleinman 2008).

We see this business model approach elsewhere in the commercializing university. At Wisconsin, the university’s strategic plan calls for the “consideration of entrepreneurial activities in tenure decisions” (University of Wisconsin 2001). In the biological sciences, UW tenure guidelines call on faculty members to include patents as part of their dossiers. This position has been advocated beyond Wisconsin, including in a 2004 op-ed in the New York Times by an engineer who is currently a dean at the Stevens Institute of Technology (Kunhardt 2004). Commercial activity in tenure decisions is a matter discussed by several of the administrators Vallas and I interviewed as part of our collaborative research. According to the dean of sciences at one prestigious Massachusetts university,

We are not given the privilege any longer of doing research just because we’re curious about an answer. . . . Because nowadays I think it’s absolutely critical
5. Conclusions

My discussion here does not reflect a systematic historical analysis of the transformation of academic culture. Thus, I cannot be precise about the timing of changes and their ultimate depth. But my preliminary research suggests that the influence of industry on academia is longstanding, and that there is variation across types of institutions, regions, and fields. The commercialization of the humanities is spreading across the globe. As always, more research is needed to flesh out the picture I have sketched.

I believe my arguments merit attention by all who are concerned about the future of the humanities. To reiterate, I made these central claims. First, I suggested that egregious violations of academic norms, documented in popular and scholarly literature about the commercialization of the humanities, are commonplace. Second, explanations for the transformation of the humanities culture are often problematic, narrow, and equally misplaced for why these relationships are either too weak or too strong. This change in the product of the humanities is a complex, uneven, and long-term process. Finally, which is more significant than commercial or industrial relations, are academic culture.

For those who see unambiguous virtue in increasing the role of the academy as part of a larger economic development engine, the emerging reality should be welcome. It means, I would think, that technology transfer and academic entrepreneurship will have a greater impact on our campuses, but that this is for better or worse depends on one's perspective.
The Commercialization of Academic Culture

1. The evidence appears to challenge this view. See Rudy et al. (2007).
2. For a discussion of the value of the normative structure of science, see Rozin, in this volume. On Mertonian norms and scientists' adherence thereto, see Rader's and van den Bell's contributions to this collection.
3. Leonelli, in this volume, helpfully complicates the picture of why the free flow of information in science is important and how commodification affects the movement of information.
4. Disinterestedness is the fourth of Merton's norms of science.
5. We cannot say for certain what pest control agent use would look like had postwar research not been dominated by work on chemicals. However, if the extent of pest control offered by agrochemicals today is lower than it is, the level of control that would make biocontrol agents economically viable would also be lower. We might have a larger range of biocontrol agents in use and conceivably fewer hazardous substances running off from farm fields into watersheds. Of course, equally, with less research on agrochemicals and the way they work, such substances would be less valuable as tools for biocontrol researchers.
6. Sterckx's chapter, in this collection, appropriately points to the dangers of intellectual property protection for the development of science and new technology. In addition, Sterckx shows that, in fact, the profitability of university patenting is far less than the rosy ideology suggests. See also James Robert Brown's chapter in this volume.
7. We (actually, two graduate students working with us at the time, Abby Kinchy and Raul Necochea) interviewed ninety-five scientists and managers, approximately half from biotechnology firms and the other half from universities in the California Bay Area and the Route 128/Cambridge area in Massachusetts. All universities—three in California and three in Massachusetts—fall under the Carnegie designation Research I.
8. In work currently in progress, my collaborators and I find that "codes of commerce" permeate the talk of academic administrators in the United States throughout the postwar period, although these codes are drawn on varies with changes in the political economy of higher education (Kleinman, Habinick, and Vallas forthcoming).

REFERENCES


NOTES

This chapter was initially prepared for presentation at the workshop on the "Commodification of Academic Research," Amsterdam, June 21–23, 2007. In revising it, I benefited from the comments of workshop participants and especially from the reactions of Justin Biddle and Hans Radder. In addition, I received thoughtful comments from Claire Wendland. Research for this essay was supported, in part, by a VHA Associatehip from the University of Wisconsin–Madison and a Buttel–Sewell professorship from the Department of Community and Environmental Sociology at the University of Wisconsin.


