
The Exchange University



*Edited by Adrienne S. Chan and
Donald Fisher*

The Exchange University
Corporatization of Academic Culture



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Abbreviations

ATOP	Access to Opportunities
AUCC	Association of Universities and Colleges of Canada
AUTM	Association of University Technology Managers
CAPS	Coalition to Advance the Protection of Sports Logos
CASAE	Canadian Association for the Study of Adult Education
CAUBO	Canadian Association of University Business Officers
CFI	Canada Foundation for Innovation
CIHR	Canadian Institutes of Health Research
CIO	chief information officer
COU	Council of Ontario Universities
CRC	Canada Research Chair
CSSE	Canadian Society for the Study of Education
CSSHE	Canadian Society for the Study of Higher Education
CUA	Committee on University Affairs
CURA	Community-University Research Alliance
DOC	Department of Commerce
FCAR	Formation des chercheurs et l'aide à la recherche
FFRDC	Federally Funded Research and Development Centers
GATT	General Agreement on Tariffs and Trade
GNP	gross national product
IECA	Independent Educational Consultants Association
IHETS	Indiana Higher Education Telecommunication System
ILO	industry liaison office
INE	Initiatives for the New Economy
IP	intellectual property
IPO	initial public offering

IPR	intellectual property regime
IT	information technology
MCNC	Media Center North Carolina
MCRI	Major Collaborative Research Initiative
NAFTA	North American Free Trade Agreement
NCE	Networks of Centres of Excellence
NCES	National Center for Education Statistics
NDP	New Democratic Party
NIH	National Institutes of Health
NRC	National Research Council
NSB	National Science Board
NSERC	Natural Sciences and Engineering Research Council
NSF	National Science Foundation
OCE	Ontario Centres of Excellence
OCUA	Ontario Council on University Affairs
OECD	Organization for Economic Co-operation and Development
OFSTED	Office for Standards in Education, Children's Service, and Care
PEQAB	Post-Secondary Education Quality Assessment Board
PI	performance indicators
RAE	Research Assessment Exercise
R&D	research and development
SRG	Standard Research Grant
SSHRC	Social Sciences and Humanities Research Council of Canada
URIF	University Research Incentive Fund

Preface

In May 2003, academics gathered at the Dalhousie University in Halifax, Nova Scotia, for the annual meeting of the Congress of Humanities and Social Sciences/Canadian Federation for the Humanities and Social Sciences, with various educational societies meeting over a period of days. An all-day symposium was organized by the Centre for Policy Studies in Higher Education and Training, University of British Columbia. With the support of the congress and the federation, we were able to draw national attention to our symposium. The day also had the co-sponsorship of the Canadian Society for the Study of Education (CSSE), the Canadian Association for the Study of Adult Education (CASAE), and the Canadian Society for the Study of Higher Education (CSSHE).

The session we organized began with a keynote address delivered by Dr. Sheila Slaughter, University of Arizona, co-author with Gary Rhoades of *Academic Capitalism and the New Economy: Markets, State, and Higher Education* (2004). The address was followed by a series of paper presentations from scholars across Canada, the United Kingdom, and Argentina.

Approximately fifty people attended the whole day, with interested scholars attending during various portions of the day. Attendees at the colloquium overwhelmingly indicated the importance and timeliness of the dialogue that was generated through the paper presentations. Animated discussion occurred throughout the day. Some of the discussion focused on questions such as the following:

- What can be done to stem the tide of academic capitalism and increasing commercialization in universities?
- How are the relationships between universities and the government changing, given the tendencies for government to be more directive and “interventionist”?
- How has academic culture changed given the pressures of marketization and commercialization?

- How has the emphasis on hiring more contingent faculty affected issues related to governance and equality of opportunity for women and minorities?

Although the authors of this volume make no claims to “answer” these questions, it is our intention to pursue them further. An outcome of the colloquium was the expressed interest of all presenters to pursue the possibility of producing an edited volume of the paper presentations. This book is a result of this interest and collaboration. The editors wish to thank all the contributors for their willingness to edit and revise portions of their original papers.

The Exchange University



Introduction: The Exchange University

Adrienne S. Chan and Donald Fisher

Historically, higher education in Canada has been a public enterprise. While this is still the case, the boundary separating public and private sectors in provincial systems of higher education has become more complex and more porous since the 1990s. The boundary changes documented in this book have occurred primarily as a response to declining federal transfers, the dominance of market ideology, and the emergence of the knowledge economy. Furthermore, given that the constitutional responsibility for education has been assigned to the provinces, it is not surprising that changes in the ideological perspectives of provincial governments have had a substantial impact on higher education policy (Fisher et al., 2006). In succession, we have seen the election of free-market, neoliberal governments in Ontario (1995-2003), British Columbia (2001-), and Quebec (2003-).

Through legislation and other policy instruments, governments have created quasi-markets that encourage institutional competition within the public sector and between the public and private sectors. By the same means, universities have been encouraged to become centres for capital accumulation through the commercialization of research, an increase in technology transfer and the production of intellectual property, and a weakening of the boundary between the academy and industry. The relationships between the academy and industry now constitute a new academic culture for universities.

Academic culture has been described as the interconnection between teaching, learning, and research and the beliefs associated with these three forms of academic practice (Ringer, 1992). The culture of the academy is highly influenced by external influences, internal directives, and social, political, and educational agendas (Becher and Trowler, 2001; Clark, 1987; Elzinga, 1985; Neave and van Vught, 1991; Shils, 1997; Tierney, 1991). An elaboration of these specific influences will be presented within the chapters of this book. It provides examples of research and investigation into university practice and life and into what the university has become in the twenty-first century. The changes in the academy as outlined are informed by four

structural trends that served as sensitizing concepts: globalization, commodification of knowledge and the knowledge economy, science policy, and federal funding and linkages across the boundaries separating the academy, industry, and the state. Through these examples, this book provides a view of changes within the university and the emergence of the “exchange university” – where exchange is linked to commodity production and capitalist production in the education system.

Background

Universities are clearly expected to perform within an environment of globalization and within the relationship of higher education to the knowledge economy (AUCC, 1999; Currie and Newson, 1998; Slaughter and Leslie, 1997). Slaughter and Leslie (1997) make a direct link between globalization, the marketplace, and the development of academic capitalism. In their study of four countries (Australia, Canada, the United Kingdom, and the United States), they found that “tertiary education policies in all countries moved toward science and technology policies that emphasized academic capitalism at the expense of basic or fundamental research, toward curricula policy that concentrated moneys in science and technology and fields close to the market” (p. 55).

A specific example in Canada was the Science Council of Canada (1988), an advisory body to the federal government. The council stated that priority should be placed on knowledge as part of the world economy and that the prosperity of Canada depends on an integrated relationship between the university and the marketplace. The council thus set the stage for a series of statements by federal and provincial governments that were part of a growing emphasis on science, technology, innovation, relationships with industry, and their place in the global economy. Canadian universities have been compelled to come to grips with the world economy and globalization. Globalization manifests itself in universities through the interrelationships of economic and political agendas, which influence both educational reform and policy responses and reactions (Morrow and Torres, 2000).

Commodification of knowledge production also evokes the question of whether universities, particularly in science disciplines, are subservient to the economy. The place of science in the knowledge economy is evidenced by research funding in the science disciplines, funding that has increased even during periods when research funding was reduced overall (Parizeau, 2001). The distinction between “pure” and “applied” research breaks down, as research can be both useful and fundamental (Fisher, Atkinson-Grosjean, and House, 2001). Pure basic research, pure applied research, research directed toward particular phenomena, or user-inspired basic research may co-exist within a model of scientific research (Stokes, 1997).

In 1999, a report on the commercialization of university research (Advisory Council on Science and Technology, 1999) was released. It emphasized innovation, intellectual property, and commercialization of knowledge as priorities for Canadian universities. Relationships with industry were emphasized – universities and industry have had a long-standing relationship, particularly in the natural and applied sciences. Since the late 1980s, the provision of matching grants for research support provided by the private sector has been one of a number of policy instruments designed to shift universities toward conducting more “industrially relevant” research activities such as intellectual property and technology transfer policies.

The federal government has explicitly expressed the importance of Canada’s role in the knowledge economy through the Networks of Centres of Excellence (NCE) program; the Canada Research Chair program (CRC); the transformation of the Medical Research Council into the Canadian Institutes of Health Research (CIHR), which entailed a massive increase in the research budget; the creation of the Canada Foundation for Innovation (CFI); and the increase in funding to the other two research councils, the Natural Sciences and Engineering Research Council (NSERC) and the Social Sciences and Humanities Research Council of Canada (SSHRC). The CFI received an additional \$500 million in 2003 for a total of \$3.15 billion to strengthen the capacity (infrastructure) of universities and research institutions. CIHR received \$562 million in 2002-3, an increase of \$75 million over the previous year. Together with federal and provincial policies, the Canadian funding councils have played a direct role in shaping the research priorities of institutions and influencing the professoriate’s research agendas.

The NCE was established in 1989 as part of a program of initiatives in science and technology. This has been one of the most significant changes in Canada’s science policy since the National Research Council (NRC) was established in 1916 (Fisher, Atkinson-Grosjean, and House, 2001). The federal government established the CRC in 1999 to provide funding for 2,000 chairs between 2000 and 2005. The program was established to increase research activity in the universities through the creation of specific chair positions at two levels: senior faculty/scholars and promising new scholars. The criteria for choosing recipients for chairs have meant that 80 percent will be in disciplines and fields under the umbrellas of natural, applied, and medical sciences. Furthermore, the current distribution map of these chairs shows a dramatic trend in favour of men. Polster (2002) suggests that the CFI and CRC are part of a wider perspective that influences academic research in a trend toward innovation in a globalized knowledge economy. All these programs and initiatives indicate the government’s increased interest in knowledge production and the potential for the government to influence university research priorities.

Theoretical Framework

This book presents some common theoretical viewpoints. Contributors acknowledge that there are alternatives suggesting that globalization, capitalism, and corporatization make an important contribution to university life. Concurrently, accountability has become a watchword for university administrators in a time of reduced public resources. We suggest that the social demand that once directed growth of the postsecondary education system is gradually giving way to a new, economically driven imperative that places importance on highly developed human capital, science, and technology to support Canada's needs for economic restructuring and greater international competitiveness. This economic imperative has been amplified by limitations on public expenditures and emergence of the accountability movement. While institutions must be accountable to the public, there are growing doubts regarding public institutions and an increasing value placed on the efficiency of free-market forces.

If privatization was the symbol of the tension between the public and the private sectors during the 1980s, then marketization and the corollary of commodification took over that role in the 1990s. In particular, the university has been described as the centre of the drive toward the "commodification" of higher education (Rooney and Hearn, 2000), while Etzkowitz, Webster, and Healey (1998) invoke the image of the "triple helix" to describe the revolution that has occurred with intertwining of the interests of the state, the market, and higher education. Bok (2003) draws attention to the "commercialization" of higher education, while Noble (1976, 2001), looking at an extended period of time, pushes us to think about education as a mode of production. For Clark (1998), the new model for our universities is characterized by "entrepreneurship," while Marginson and Considine (2000) use the label "enterprise" university. At the heart of the changes is "marketization" of liberal democratic societies and necessarily of higher education (Slaughter and Leslie, 1997). We have begun to label the change as one that produces the "exchange university."

Simon Marginson and Sheila Slaughter are two authors who have led the way in helping us to understand and explain the impact of capital and market ideology on our higher education systems. In *Markets in Education* (1997), Marginson places the changes we observe in a larger political-economic context. Drawing on the work of Marx and Braudel, we are reminded of the power of capital to universalize commodity production and market forms. For Marginson, "market relations are a normalizing system in which everything and everyone has a price, and all difference, all the heterogeneous kinds of value are reworked as standardized exchange values, strung out on a standard grid according to the different quantities of money they represent" (1997, p. 30). The knowledge society is then understood as an extension of

capitalist production, consumption, and exchange into education. Knowledge, and by extension education, become commodities valued for their “exchange” value rather than their “use” value. For Marginson, all markets in education are “quasi-markets” involving a mix of use and exchange values and a mix of both public and private interests. He divides production in education markets into two types of goods: student goods (e.g., credentials) and knowledge goods (e.g., patents). Furthermore, he divides production in education markets into simple commodity production and fully capitalist production. In the latter, exchange values dominate; the examples Marginson gives are full-fee courses, commercial research, and much private training – again leading to the notion of the exchange university.

Slaughter and Leslie (1997) build on the earlier work done by Slaughter and Rhoades (1996) to map the rise of what they call “academic capitalism.” This concept defines “the reality of the nascent environment of public research universities, an environment full of contradictions, in which faculty and professional staff expend their human capital stocks increasingly in competitive situations ... University employees are employed simultaneously by the public sector and are increasingly autonomous from it. They are academics who act as capitalists from within the public sector; they are state-subsidized entrepreneurs” (1997, p. 9). The concept is useful because it captures how commercialization and marketization overlap to change the power relations within universities. It provides a basis for understanding how academic culture is changing as these entrepreneurs move their institutions closer to the market.

Slaughter and Rhoades (2004 and Chapter 1 in this volume) take us further in describing the “academic capitalist knowledge/learning regime.” In documenting the dominance of this regime, the authors provide us with a way to understand changes in the territory that connects the public and the private sectors in higher education, between the state, higher education, and the market. For Slaughter and Rhoades, academic capitalism is not privatization but a redefinition of public space and of appropriate activity in that space. As the configuration of state resources changes and public universities and colleges are pushed to seek alternative sources of funding, our conception of “public” is blurred and altered. As the boundaries between state, higher education, and the market change (Fisher, Atkinson-Grosjean, and House, 2001), our attention is drawn to the boundary workers (Fisher and Atkinson-Grosjean, 2002) who create new “circuits of knowledge” as they promote market behaviours. The focus is on both the restratification of institutions and the restructuring of faculty work. We see, rather than the removal of public subsidies, a shift in particular toward students, who are faced with higher fees. To understand the rise of academic capitalist knowledge learning regimes, we must focus on policies that concern patents,

copyright, expansion of distance education, and the concentration of student markets, both domestic and international (see Chapter 3 in this volume).

The dominant policy paradigm in Canada over our period of study has been accountability. This movement has rejected the idea that the state is primarily responsible for the public good function of education. Critics have called for less taxation, less government interference, more public choice, more deregulation and privatization, and more accountability to taxpayers by the government and its subsidiaries (Dale, 1997; and Chapter 4 in this volume): "This new state abandons its role as direct economic agent (producer of goods and services) and as a regulator of economic life (minimum wages, maximum prices, protectionism, subsidies, etc.), becoming instead a subsidiary agent whose main function is to guarantee a social and economic environment propitious for capital accumulation ... It also implies the withdrawal of state from the commitment to universal provision of public services such as education, health, housing and social security, which are now becoming increasingly regulated by market dynamics" (Schugurensky, 1999, p. 285).

In a neoliberal framework, public choice, marketization, and privatization of education are prevalent themes, emphasizing stronger links between industry training needs and the postsecondary sector. These changes manifest themselves in education and other public services in two major ways. First, there is reluctance to use public funds to fund public services; second, public institutions are to engage in market behaviour in order to fund more of their services. This shift creates changes to organizational forms, managerial practices, and institutional cultures (Deem, 2001). Policy changes are accompanied by downloading more financial responsibility onto postsecondary institutions and are characterized by less state funding and an increased emphasis on business practices (Currie, 1998). Clark (1998) states that themes of efficiency, effectiveness, excellence, and continuous quality improvement are examples of thinking that prevail within the entrepreneurial university.

Governments strategically promote increased efficiency and innovation using education markets (Dill, 1997a; Slaughter and Leslie, 1997): "Long perceived as a unique characteristic of the US system of higher education, experiments with market competition in academic labor markets, institutional finance, student support, and the allocation of research funds are now evident in the higher education policy of many different nations" (Dill, 1997b, p. 167). In a neoliberal environment, institutions are often granted more autonomy from central government but are then forced to go into the market, where they must seek sponsorship. In order to gain sponsorship, they must adapt to new methods and systems. Under resource dependency, the rules are subject to change according to the interdependency established.

The social controls that accompany government funding differ from the social controls established in a market environment. In the latter, the behaviours that result include academic capitalism and institutional entrepreneurship (Clark, 1998; Marginson, 1997; Slaughter and Leslie, 1997; and Chapter 6 in this volume).

On the supply side, if the public sector is unable to respond and adapt its curriculum accordingly, other providers of higher education are poised to do so. The private sector views the provision of educational services as a viable business opportunity, in both the international and the domestic student markets, and shows a competitive presence in the education industry. This is evident in the prominent role that private education companies are playing on the stock exchange and the proliferation of new publicly traded companies. If the public system responds with market-oriented behaviour, there will still be increased competition from the private sector for students due to the profit potential. Examples include international student programs in English as a second language, business, and computer studies, which are attractive to the private sector. These programs have the highest probability of returning a profit due to low capitalization costs (Cantor, 2000). The private sector can selectively pick programs to deliver based on areas projected to provide the best profit margins (Cantor, 2000; Collis, 2001). But the public system is expected to provide a broad range of programs, regardless of profit, to their communities; if an entrepreneurial approach is what is required in order to meet budget demands, the question is at what cost?

Marginson (1997) and Slaughter and Leslie (1997) believe that globalization creates conditions where nation-state educational policies converge in areas including access, curricula, research, and autonomy for faculty and institutions. Existing institutional structures, values, and beliefs erode as higher education develops to meet a specific economic agenda, such as emphasis on international activity (Currie, 1998; Dudley, 1998; Frost and Taylor, 2001; Slaughter, 1998). For example, Knight (1999) points out that the purpose of international education has already shifted in the academy. It began as a way of providing aid to developing nations, then evolved to a position of mutual benefit, and is now a commodity to trade in a globalized world. In contrast, Clark (1998) states that, while a shift in organizational structures, values, and attitudes may occur, there can be a positive outcome that is evident through institutional renewal and an enhanced funding base. Cantor (2000) believes that it is necessary for the public system to become more entrepreneurial given increased competition for the provision of educational services and diminished government funding. He insists that the system needs to explore alternative options given the political and economic climate.

Educational markets affect institutional governance models, and the main model has become increasingly corporatized and managerial (Currie, 1998;

Fisher and Rubenson, 1998; Marginson, 2000; Pietrykowski, 2001; Schugurensky, 2000; Slaughter, 1998). Faculty have less input into the decision-making process of the institution because decisions are made by an executive core of administrators who increasingly depend on directors and managers of non-academic units for advice and guidance on institutional matters. Financial systems are more complex in quasi-market and entrepreneurial-based environments, with increased accountability requirements, reporting obligations, and budgeting processes. Determining what makes business sense, in assessing various projects and their potential to make a financial contribution to the institution, requires business knowledge. Under these conditions, it is likely that senior administrators will continue to seek business expertise in dealing with institutional matters (Evans, 2005).

Research and Academic Culture

The business ethos in universities is influencing their culture, so that the focus is on a particular type of research and research intensity. In order to understand how universities are responding to the market economy, we examined the top twelve research-intensive Canadian universities' rankings from 1999 to 2004. Some important trends in research were revealed. Universities were examined for sponsored research income by source; level of participation in the Canada Research Chairs program; and level of participation in the Networks of Centres of Excellence program.

The twelve (English-speaking) universities identified showed a marked increase in sponsored research income from 1999 to 2000 and from 2003 to 2004. The rank indicated is based on research intensity.¹ Sponsored research income included grants from federal sources (e.g., funding councils, specific funding envelopes), provincial sources, municipal sources, industry, and private contributions. The presence of an industry liaison office (ILO) and a technology transfer office, revenue from royalties, and licensed income were indicators of the investment climate arising out of universities and research organizations established within universities. Table I.1 shows the increase by dollars (in US funds and in constant dollars) and by percentage.

The twelve universities examined participate in the Canada Research Chairs program and the Networks of Centres of Excellence. Announced in 2000 by the government of Canada, a fund of \$900 million was established to support the CRC program in Canadian universities between 2000 and 2005. This program enables universities and affiliated research institutes and hospitals to work toward achieving the highest levels of research excellence and *"to become world-class research centres in the global, knowledge-based economy"* (Canada Research Chairs, 2001, www.chairs.gc.ca). The NCE is part of a federal program of initiatives in science and technology. There are twenty-one networks (2004-5) and partnerships with seventy-nine universities. Of the twelve universities considered, there was a participation rate of anywhere

Table I.1

Sponsored research income comparison

Institution	Rank		(\$000s)		%	(\$000s)		%
	2004	2003	1999	2000		2003	2004	
Toronto	1	1	306,519	371,119	21.4	534,356	623,995	16.8
McGill	2	4	198,899	234,340	17.8	342,690	543,497	58.6
Montreal	3	2	253,099	206,224	22.7	394,426	446,247	13.1
UBC	4	3	139,102	165,992	19.3	349,101	363,337	4.1
Alberta	5	6	174,296	206,667	18.6	272,853	360,009	31.9
Calgary	7	9	107,843	134,507	24.7	165,622	251,379	51.8
McMaster	8	7	85,899	106,892	24.4	218,183	246,173	12.8
Ottawa	10	8	89,373	114,612	28.2	186,174	190,343	2.2
Queen's	11	10	68,854	83,217	20.9	159,136	174,762	9.8
Manitoba	12	12	67,717	76,016	12.3	130,029	126,493	-2.7
Saskatchewan	15	13	51,068	71,849	40.7	116,789	107,598	-7.9
Dalhousie	16	16	45,107	77,130	71.3	79,479	92,898	16.9
Memorial	23	22	27,872	33,896	21.9	42,780	50,300	17.6

^a The University of Montreal is not English speaking but included here because it ranked number two and three in years 2003 and 2004 respectively.

^b Saskatchewan, Dalhousie, and Memorial were included for a broader geographic comparison. Quebec is not represented except for McGill, but note that the University of Montreal and Laval University are consistently within the top ten research universities.

Source: ReSearch Infosource (2001).

Table I.2

Networks of Centres of Excellence and Canada Research Chairs

Institution	Participation in NCEs (2001)	CRCs: Actuals for years 1-3 (2000-3)
Toronto	17	148
McGill	18	98
Alberta	18	71
UBC	21	87
Calgary	12	39
Ottawa	13	32
McMaster	16	41
Queen's	13	32
Dalhousie	14	32
Manitoba	14	31
Saskatchewan	10	24
Memorial	7	16

Sources: Networks of Centres of Excellence website (www.nce.gc.ca) and Canada Research Chairs website (www.chairs.gc.ca).

from seven to twenty-one of the networks. Table I.2 indicates the level of participation for the universities in the NCE as partners and the number of chairs through the CRC program.

*Table I.3***Federal contributions to total sponsored research expenditures in Canadian universities (1981-82 to 2001-2) in constant dollars (2002-3)**

Year	Federal source	Sponsored research total	Percent
1981-82	722,410,815	1,151,117,912	63
1991-92	1,006,450,151	1,960,081,015	51
2001-2	1,734,089,175	3,854,750,438	45

Note: Income by fund and by type. All universities for various years.

Source: Canadian Association of University Business Officers (CAUBO).

With the exception of the University of Saskatchewan, all universities have been the headquarters for at least one NCE. Participation in both of these programs indicates a commitment by universities to enhance and build research capacity and research strength.

Table I.3 provides a comparison of federal contributions to total sponsored research expenditures in Canadian universities. In constant dollars (2002-3), the federal contribution to the total sponsored research expenditure decreased from 63 percent (\$722 million) in 1981-82 to 51 percent (\$1,006 million) in 1991-92 and to 45 percent (\$1,734 million) in 2001-2. This is a drop of almost 20 percent in twenty years. Even though the federal proportion is decreasing, real funding increase (after discounting inflation) from the 1971-72 level is 28 percent in 1981-82, 39 percent in 1991-92, and 71 percent in 2001-2. The apparent proportional federal decrease is due to federal funding not keeping up with the real increase in the overall sponsored research revenue of universities.

Since matching funds policies were introduced in Canada, universities have been forced to examine their role in the "knowledge economy" and the weighting they give to science, technology, and "innovation" (de la Mothe and Pacquet, 1999). In some instances, granting councils have been required to earmark funding for university-industry collaborations. Universities and industry have had a long-standing relationship, particularly in the natural and applied sciences. This has led to significant commodification in research areas such as biotechnology (Dickson, 1984). The Canada Foundation for Innovation is an example where emphasis in federal research funding as a whole has been on the natural, applied, and health sciences. Between 1998-99 and 2004-5, the federal government added a total of \$9.13 billion in new research funding. Of this total, only \$1.02 billion or 11.2 percent funded research in the humanities and social sciences (Statistics Canada, 2006). Additionally, Canadian funding councils have encouraged collaboration through joint funding, with some research envelopes requiring partnerships

between the university and industry. This has also resulted in other commercial activities, such as the establishment of “spin-off” companies and use of patents.

One of our interests is examining the relationship between research culture and the diffusion of knowledge within the context of the knowledge economy and how this economy has become more embedded in academic discourses. Gibbons and his colleagues have juxtaposed two ideal types of knowledge production (Gibbons et al., 1994; Nowotny, Scott, and Gibbons, 2001; Scott, 2000). In Mode 1, traditional forms of academic research produced knowledge through hierarchically structured, relatively stable means. This knowledge was furthered by academic interests, evaluated by peer review, and diffused through publications, conferences, and training. Mode 2 is an emergent form of knowledge production that is heterarchically structured, transdisciplinary, project-centred, shaped by various interests, and evaluated in terms of effectiveness by peers, non-peers, and sponsors of projects. Diffusion of knowledge under Mode 2 depends on the commercial value of that knowledge, whereby a business may not wish to diffuse knowledge if that knowledge gives it a competitive advantage. Mode 2 represents a progressive industrial research culture, although it may be present in non-commercial cultures as well. Both Mode 1 and Mode 2 are present in university research, but the latter represents a commercialization of knowledge that was not present fifteen years ago in the academy. Higher education is strongly implicated in the market language of the production, distribution, and utilization of knowledge.

Organization of the Book

The authors contribute to educational theorizing and policy debates in at least three areas: academic capitalism, global competitiveness, and relationships with industry. The chapters in this book provide insight into emerging discourses within the framework of a knowledge economy and increased market-like behaviours in universities. Partnerships between faculty and industry and corporations have been highly valorized by both the state and the university. The question is what the appropriate role for the academy in these partnerships should be. Resistance to such collaboration stems from the fear expressed by many academics that academic capitalism is taking over as private corporations increasingly influence the university. Many of the authors here describe state policy agendas in the context of the historical and current political economies. The policy environment for higher education has changed dramatically to favour not only the market but also the natural, applied, and health sciences. Thus, there is concern regarding the role and influence of the state at both the micro and the macro levels of the university. *The Exchange University* provides an insider view of the tensions

and debates occurring in universities and the changing role of faculty and university administrators in the intellectual life of their universities. Faculty and administrators articulate their concerns with the changing academic culture and the process of knowledge creation. Pressures to perform in a competitive research environment and to meet state and institutional objectives to contribute to the global economy have had a clear impact on research and teaching. In conclusion, we consider the future of the university as an institution of higher learning and the preservation of the goal of broad-based education.

The book has nine chapters and a conclusion. We begin with a chapter by Sheila Slaughter and Gary Rhoades.² Earlier work by Slaughter and Leslie (1997) has provided many academics with a backdrop for considering academic capitalism, commodification of universities, and transnationalism of the knowledge economy. The chapter here, "The Academic Capitalist Knowledge/Learning Regime," expands the theory of academic capitalism by incorporating the key concepts "regime" and "circuits of knowledge." Circuits of knowledge include policy, patenting, and copyrighting. The state and public space are redefined to include an engagement with privatization, commercialization, deregulation, and reregulation. Universities and colleges have become the foundation of the new economy in an "academic capitalist knowledge/learning regime."

Academic capitalist knowledge/learning regimes reconsider knowledge in a number of ways: knowledge as a commodity, knowledge as privately held, income from knowledge, students as consumers, and the balance between public and private sectors. Universities have become far more involved in market behaviours such as for-profit activities, patenting, royalty and licensing agreements, intellectual property, spin-off companies, and university-industry partnerships. This has led to the co-existence of different knowledge regimes within universities, including a tension between disciplines that receive funding and profits and those not engaged in funding and revenue activities.

Chapter 2, "Academic Culture and the Research-Intensive University: The Impact of Commercialism and Scientism" (Chan and Fisher), considers the internal factors, external factors, and internal responses that have shaped changes in academic culture. The chapter highlights the findings of fieldwork and documentary evidence in one of Canada's research intensive universities, the University of Ottawa. Emergent themes reveal concerns regarding the changing nature of research and collegiality and the increasing problematic of the commodification of knowledge and education. Tensions regarding university values, institutional priorities, and a compelling managerial agenda have provoked serious debate among faculty, administrators, and members of university governance structures. The emergence of cultural divisions is evident through the discourses of faculty and administrators

concerning the values of a knowledge economy, the emphasis on science compared to broader learning and educational imperatives, and the place of the academy within an overriding, competitive, global knowledge economy. Changes in academic culture were based on the University of Ottawa's motivation and determination to become a research intensive university.

Chapter 3, "The New Production of Researchers" by Brigitte Gemme and Yves Gingras, examines graduate education and the increasing presence of graduates and graduate students in sectors such as industry and public service, a trend promoted by federal and provincial innovation policies. This trend, and growing pressure to turn professors into "innovators," calls for transformations in graduate education. Most importantly, it is expected that graduate students will spend more time and energy on problems and issues raised by the so-called demands of society, which means mostly demands from industry in the case of the natural, applied, and health sciences and from government and NGOs in the case of the social sciences and humanities.

Involving graduate students with non-university organizations has implications for students themselves, the university, and the future of the new professoriate. Findings suggest that, although variable between sectors and programs of study, new requirements for research are being imposed on students, while other requirements may remain fairly constant.

Paul Axelrod in Chapter 4, "Public Policy in Ontario Higher Education: From Frost to Harris," provides an overview of university-government relations in Ontario from 1945 to the present. He considers what has occurred during this period with the growing incorporation of higher education into provincial and national policy agendas tied largely to economic concerns. From the early 1970s to the mid-1990s, the economic environment in which higher education policy evolved was turbulent and uncertain, though the structure of university-government relations in Ontario changed relatively little, and universities retained much of their historic institutional autonomy.

Following the election of the Mike Harris Conservatives in 1995, the government asserted its authority over universities in increasingly direct ways while simultaneously opening the door to private providers of post-secondary education. Both strategies were designed to integrate higher education into the marketplace and to ensure that universities (and colleges) would be instrumental components of the government's economic action plans. This approach, reinforced by federal government initiatives, had important implications for university governance and for the institutions' curricular and research programs.

Linda Muzzin examines in Chapter 5, "How Fares Equity in an Era of Academic Capitalism? The Role of Contingent Faculty," the emerging trend to have contingent faculty. As part of economic globalization, universities

in Canada in the past twenty years have engaged in significant restructuring, introducing a way of thinking that Broadbent, Dietrich, and Roberts (1997) have called “accounting logic.” One restructuring strategy has involved increased use of contingent faculty, paralleling the trend in health and welfare sectors. Sessional and contractual teaching is undertaken not only by students eventually intending to apply for tenure-stream faculty positions but also by a cadre of last-hired, first-fired academic labourers who maintain work in other sectors in order to earn a living. Using a national study of contingent faculty and current or former administrators in professional education as well as in the social sciences, Muzzin examines how the use of contingent labour in Canadian academia undermines attempts to address issues of gender and racial equity (Muzzin et al., 1999).

In Chapter 6, “Reclaiming Our Centre: Toward a Robust Defence of Academic Autonomy,”³ Jan Newson and Claire Polster show how academic autonomy is being infringed upon. They critique how academics have responded – both individually and collectively – to these infringements. Specifically, they argue that the ways in which academics have defended against erosion of their autonomy actually advances the process. This paradox is attributed to academics’ impoverished conception of professional autonomy. The authors argue for a more robust conception and practice of academic autonomy as a means of remedying the situation.

Jo-Anne Dillabough and Sandra Acker examine in Chapter 7, “‘Gender at Work’ in Teacher Education: History, Society, and Global Reform,”⁴ the “crises of meaning,” “crisis of politics,” and “regulatory state” (Bourdieu, 1999; Hood and Scott, 2000) as well as the links to “work” and “working life” and the impact of global economic, cultural, and political reforms on the ethical consciousness of the university. Of particular concern is the part played by gender in mediating the effects of such regulatory controls and their impact on the construction of female work in professions that “institutionalize women’s labours.”

Dillabough and Acker discuss how such “crises” or forms of state regulation are evident in the daily lives of *women workers* in one professional discipline in the university – teacher education. A particular interest stems from concern about the constitution of cultural fields known as “research culture” and “academic accountability,” how such fields are imbued with masculine inflections in higher education, and the effects of these fields on women teacher educators’ work in times of substantial change and restructuring. Interview data are highlighted from three different studies of women teacher educators in the United Kingdom and Canada.

In Chapter 8, “The Political Economy of Legal Scholarship: A Case Study of the University of British Columbia Law School,” Theresa Shanahan considers the academic discipline of law within the framework of contemporary political economy. Law is an unusual case in the contemporary higher edu-

cation environment because it does not have a strong tradition of academic scholarship in Canadian universities. Emergent themes from this study at UBC suggest that law professors' scholarship is largely unfunded, requiring and generating little money. Legal research is an unprofitable enterprise that has little commercial value and does not bring products to market (i.e., through innovation or technology transfer). Most legal scholarship does not conform to patterns of other disciplines across the university either in the social sciences and humanities or in the natural, applied, or health sciences in how it is conducted or in the nature and extent of funding.

Jennifer Sumner in Chapter 9, "Keeping the Commons in Academic Culture: Protecting the Knowledge Commons from the Enclosure of the Knowledge Economy," focuses on universities as sites of inquiry, examining the commodification of knowledge in the age of corporate globalization. She provides examples of resistance to this enclosure of the commons and explores the commodification of knowledge in higher education, emphasizing how universities, using a deliberate policy of underfunding, are being forced into alliances with corporate "partners." These alliances produce changes that faculty must engage with, such as profit-driven research, selective funding, a highly corporatized campus, and an exponential increase in commodification of knowledge. Sumner suggests that we need to build new relations of knowledge production, both in the academy and in society at large, through a "reaching-out" process. Finally, she suggests that faculty work together to build the knowledge commons by forming knowledge collectives.

In the Conclusion, we consider some thematic issues raised in earlier chapters, focusing on significant questions with regard to the influence of commercialization and marketization. We also return to the theoretical frames that guided the collective efforts of the various contributors to the book, with particular reference to the work of Slaughter and Rhoades (2004 and Chapter 1). We highlight the effects and consequences of the adoption by Canadian universities of the academic capitalist knowledge/learning regime and draw attention to the changing shape of the boundary territory that connects Canadian public universities to the private sector, showing how much academic culture has changed in Canada since the 1990s.

Notes

- 1 Research intensity refers to sponsored research income per full-time faculty position (Re\$earch Infosource, 2001).
- 2 This chapter is a revised version of the Conclusion in Slaughter and Rhoades (2004).
- 3 Originally published in *Science Studies*, 14(1) (2001), 55-75; reprinted with permission.
- 4 Revised version of Dillabough and Acker (2002); permission granted to use in this book.

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1

The Academic Capitalist Knowledge/ Learning Regime

Sheila Slaughter and Gary Rhoades

In the early years of the twenty-first century, the academic capitalist knowledge/learning regime is ascendant. This regime is displacing but not replacing the public good knowledge regime or the liberal learning regime. Although other knowledge regimes persist, the trend line in emphasis and investment is in academic capitalism in the new economy, as evidenced in public policy, in relations among market, state, and higher education organizations, and in the employment structure and work practices of the academy.

Many scholars acknowledge the changes to which we point, whether they refer to them as the commercialization of higher education (Bok, 2003; Noble, 2001); as entrepreneurial universities (Clark, 1998); as a triple helix that weaves together higher education, state, and market (Etzkowitz, Webster, and Healey, 1998); or as the corporatization of higher education (Soley, 1995). The contribution of our work has been to develop a theory of academic capitalism in the new economy. We track and explain how the change from one regime to another occurs; in contrast to much work in the field, we point to the active, sometimes leading, role that the academy plays in marketizing higher education rather than portray it as the victim of external, encroaching commercial interests. In this way, academics can be seen as active agents working to further marketization. In addition, we demonstrate the degree to which market behaviours have come to permeate almost all of the internal life of universities and colleges, from research to instruction, including administration. By contrast, most other work concentrates on the commercialization of research. Furthermore, we point to how academic capitalism in the new economy restructures work in universities and colleges in ways that mirror and diverge from patterns of professional employment in private enterprise. Finally, we conceptualize how higher education as an institution embodies the changing social understanding of what is “public.” The idea of an academic capitalism knowledge/learning regime captures the many ways and means through which market and market-like behaviours as well

as a market ethos and ideology have been incorporated into postsecondary education.

In this chapter, we offer a theoretical outline that concentrates on how the theory of academic capitalism explains the shift from earlier knowledge regimes to an academic capitalist knowledge/learning regime. Rather than focusing on the macrolevel – the growth of global markets, the rise of neo-liberal states in the world – we concentrate on borders between universities and colleges and external agencies, whether located in states or markets. Attention to the borders among market, state, and institutions of higher education gives us a means to comprehend the complex networks and mechanisms that promote the academic capitalist knowledge/learning regime.

The theory of academic capitalism in the new economy sees groups of actors within universities and colleges – faculty, students, administrators, and managerial professionals – as using a variety of state resources to intersect the new economy. These groups of actors are drawn from different institutional segments and sectors of colleges and universities and do not always act together. However, their organized activity is directed toward the opportunity structures created by the new economy, which channels their efforts in similar directions. They create new circuits of knowledge that link the university to and bring it into the new economy. They form interstitial organizations that bring the corporate sector inside the university. They join organizations that intermediate among public, non-profit, and for-profit public sectors. They build expanded managerial capacity to supervise new flows of external resources, to invest in research infrastructure for the new economy, and to expand programs to market institutions, products, and services to students and other customers in the private marketplace. Their individual decisions to engage in organized activities that promote market and market-like activities consolidate the academic capitalist knowledge/learning regime.

Although market language dominates discourse about entrepreneurial universities and academic capitalism, the state continues to provide the largest share of resources for the shift in knowledge/learning regimes. Indeed, universities and colleges are not seeking to become private enterprises; rather, they wish to maintain the privileges of not-for-profit status while entering the private sector marketplace. Academic capitalism does not involve “privatization”; rather, it entails a redefinition of public space and of appropriate activity in that space. The configuration of state resources in the United States and Canada has changed, providing universities and colleges with fewer unrestricted public revenues and encouraging them to seek out and generate alternative sources of revenue. The shape of the territory that stands between the public and the private sectors is changing. These new configurations and boundaries change our conception of what “public” means.

The new configurations and boundaries also represent new circuits of knowledge, which are the harbinger of knowledge regime change. Following the new circuits of knowledge points out the segments of the economy and the state to which colleges and universities are connecting and with which they are integrated and gives us a diagram of the components of the academic capitalist knowledge/learning regime and how they are wired together.

Interstitial organizations are the leaven for change in established organizations, the means through which actors with mutual interests related to, yet not at the core of, their institution join together to express new goals and purposes for the institution. When interstitial organizations are successful, they often intersect new opportunity structures that the institution comes to see as within its purview, for example opportunities created by the rise of the new economy. The interstitial organizations that figure in the academic capitalist knowledge/learning regime were organized for the most part by professionals who are neither faculty nor administrators but interstitial personnel who possess higher degrees and whose purpose often is to manage the market dimensions of faculty work.

Like interstitial organizations, intermediating organizations (Metcalfe, 2004) intersect new environmental opportunities, in this case opportunities created by the new economy. Unlike interstitial organizations, intermediating organizations do not originate within universities and colleges and connect similar professionals at various universities and colleges. Instead, intermediating organizations are often composed of high-level administrators and span the boundaries between public, non-profit, and for-profit institutions, reshaping the boundaries that divide them, redirecting and revaluing organizational purposes. In working in such intermediating organizations, academic managers enhance the academic capitalist knowledge/learning regime by developing and facilitating market and market-like activities across public, non-profit, and for-profit institutional and sectoral boundaries.

Expanded managerial capacity is a response to the increased market and market-like activity generated by new circuits of knowledge and interstitial and intermediating organizations. The exploitation of intellectual property, the expansion of endowments, and the marketing of educational services all require staff able to compete with other institutions and organizations to capture market shares. The more the market activity, the greater the managerial staff; the more the managerial staff, the greater the institutional effort to expand markets as these professionals become an interest group seeking to expand their domains and career opportunities. In parallel to the state, these bureaucracies take on a life of their own. The rise and expansion of both the phenomenon and the role of industry-liaison offices within our universities are prime examples of this trend.

All of these processes – the creation of new circuits of knowledge, interstitial organizational emergence, intermediating organizational activity among public, non-profit, and for-profit organizations, and expanded managerial capacity – contribute to restratification among and within universities and colleges and often contribute to the restructuring of faculty work. Stratification among institutions is enhanced by their differential capacities to access segmented student markets and external revenue streams related to educational products, processes, and services. Stratification within institutions is increased by colleges' and departments' differential capacities in the same arenas, their perceived potential to intersect and capitalize on new economy student employment, research, and service markets. Restructuring of faculty work is often undertaken to maximize educational efficiencies and to enable some faculty to attend more to research and technology transfer in fields believed to have revenue-generating potential in the new economy. Such restratification of institutions and restructuring of faculty work reshape access for students. More institutional and faculty attention is directed to those student markets that can afford to pay more, and fewer opportunities are available to low-income and historically underserved students, who are less able to pay and less likely to be flowing into new economy fields of employment. Nowhere is this market orientation more obvious than in the competition for international students (Evans, 2005). As universities and colleges shift their orientation toward revenue generation through academic capitalism, they invest less in historic, democratic missions of providing increased access and upward mobility for less historically advantaged populations of students.

In the first part of this chapter, we map academic capitalism in terms of its new circuits of knowledge, interstitial organizational emergence, intermediating organizational activity, and expanded managerial capacity. In the second part of this chapter, we move to a consideration of fault lines in the structure of the new knowledge/learning/consumption regime and of alternatives within and beyond academic capitalism in the new economy. In the current context of apparent reduced public commitment to subsidizing higher education, the need for new revenues and the language of the market make the ascendance and expansion of an academic capitalist knowledge/learning regime seem inexorable. Yet the market logic embedded in academic capitalism is problematic.

Notwithstanding the connotations of academic capitalism, all of the markets we consider, ranging from markets in students to patents and start-up companies, depend heavily on state (provincial) subsidies, whether in the form of federal and state (provincial) student financial aid or federal and state subsidies for research from which university and college intellectual property is derived. Academic capitalism in the new economy involves a shift, not a reduction, in public subsidy. Moreover, despite the implications

of applying market logic to universities and colleges, many, even most, institutions are not particularly successful capitalists. Academic capitalism involves institutions choosing, investing in, and betting on certain winners in the marketplace, in developing interstitial organizations, in expanding managerial capacity, and in restratifying academic fields. Two particular patterns and problems define academic capitalist institutions: they move toward similar opportunities rather than to any niche competitive advantage, and they are not particularly effective as venture capitalists, investment bankers, or investors in the (stock) market. However, their market failures tend to be underwritten by consumers (in the form of higher tuition) or by state subsidy. Furthermore, academic managers and policy makers are selling the appropriateness of market and market-like competition in higher education to the public on the grounds that academic capitalism in the new economy will make universities and colleges more self-sufficient and decrease costs to the public. This argument is prominent among industry liaison managers in Canadian universities (Fisher and Atkinson-Grosjean, 2002). Yet state allocations continue to increase, and tuition continues to escalate dramatically. Finally, making the students consumers was supposed to empower them, but institutional funds are increasingly concentrated less on teaching and more on research, public relations, and revenue-generating activity. We identify some of these fault lines in the academic capitalist knowledge/learning regime and close by exploring alternatives within and beyond academic capitalism in the new economy.

Circuits of Knowledge

Policy

The neoliberal state in the United States and Canada has concentrated funding in state agencies that are oriented to the production of economic growth, revenue generation, and private wealth, for example research funding for corporations and academe. The neoliberal state worked to build the “new” knowledge or information economy and attempted to articulate national economies with global economies. To provide funds to reshape the economy, the neoliberal state instituted processes of deregulation, commercialization, privatization, and reregulation. The benefits of the neoliberal state tended to accrue less to the broad citizenry and more to large corporations, the wealthy, and the upper middle class closely associated with the growth of the new economy.

Government policy creates a climate that encourages new circuits of knowledge that cut across the space dividing public and private territory. New circuits of knowledge, characteristic of the academic capitalist knowledge/learning regime, connect the National Institutes of Health (NIH), the National Science Foundation (NSF), and the Department of Commerce (DOC)

to universities through sponsored research, frequently in partnership with corporations. Similarly, these circuits connect the national Canadian funding councils, the Canada Foundation for Innovation (CFI), to universities through sponsored research in partnership with the private sector (see Chapter 6 in this volume). The exemplar of the new circuits of knowledge in Canada is the Networks of Centres of Excellence program that has as its explicit aim the creation of alliances between universities, industry, and the state (Fisher, Atkinson-Grosjean, and House, 2001).

Federal, state (provincial), and institutional laws and policies interact in complex ways to produce knowledge/learning regimes. They do not so much dictate a new academic capitalist regime as create opportunities for academic capitalism, on which new networks of academic managers, faculty, staff, and students act. States/provinces have an array of initiatives that promote economic development. Many of these initiatives, ranging from workforce preparation of students to fostering industries that contribute to the states' economic base, feature participation of universities and colleges. Yet universities and colleges are not simply acted upon or "corporatized." Actors within participate in creating new knowledge/learning regimes by networking and partnering external actors. Segments of the administration and faculty work to shape the politico-legal climate that fosters an academic capitalist knowledge/learning regime, and they actively and ardently engage in commercialization.

Patenting

The changes in patenting policies and behaviours in universities and colleges dramatically illustrate the theory of academic capitalism. Although such changes occurred largely at research universities and in the sciences and engineering, their influence has extended beyond these realms. Moreover, changes in patenting were the precursor of changes in other forms of intellectual property, for example copyright and trademarks, that were subsequently adapted within all sectors of higher education and across a wide variety of academic fields.

The aggressive institutional pursuit of revenue generation through patents, as evidenced in institutional policies, was matched by faculties' and students' aggressive pursuit of academic capitalism. Appellate court cases and interviews with faculty and students involved in technology transfer revealed a move away from a public good model toward an academic capitalist knowledge/learning regime. Many faculty still held to some values of the public good regime, for example the importance of publishing and the corresponding value of the free flow of information, but they were willing to alter those values, sometimes delaying publication, sometimes "sanitizing" data to preserve opportunities to patent. Professors straddled two different worlds,

retaining a place in the public space of the university but also assuming the role of state-subsidized entrepreneurs in the private marketplace working as consultants, officials, or even presidents of their own companies (see Chapter 2 in this volume). They were constructing new circuits of knowledge.

Patents precipitated new circuits of knowledge by connecting university actors to external actors and organizations intent on building the new/information economy. Not only are different agencies involved, but in recent years they have more directly involved representatives from business in defining research agendas and reviewing grant proposals. Companies themselves have expanded their support of academic research. Like the federal agencies, the corporations in the new circuits of knowledge are different. Rather than defence and aerospace corporations, the corporations in the new circuits of knowledge produce civilian technology: pharmaceuticals, medical substances and devices, biotechnology (NIH); information technology, telecommunications (NSF); and high-technology products for global markets (DOC). Furthermore, faculty and university administrators also create new circuits of knowledge when they start up corporations in which universities hold equity and faculty hold administrative positions. These circuits are usually connected to the broader civilian technology grid that integrates universities and colleges with the new economy.

The new circuits of knowledge affect and are reflected in faculty work. The traditional tripartite faculty role of teaching, research, and service altered during the period from 1980 to 2004. In response to surveys, faculty in the United States indicated that they preferred teaching to research until the mid-1980s, after which an increased preference for research began to emerge (Finkelstein, Seal, and Schuster, 1998). Concentrating on research allows faculty to give more time and attention to work that may result in discoveries that can be patented. In fact, the rate of faculty/university patenting has increased dramatically. Prior to 1980, about 250 patents per year were granted to universities; in 1998, the number was 3,151. "As a result, academic patents now approach 5.0 percent of all new US-owned patents, up from less than 0.5 percent two decades ago" (NSB, 2002, p. 544).¹ In addition, faculty publication patterns are more closely aligned with industry. In 1988, faculty co-authored 20.3 percent of their publications with industry. In 1998, approximately 25 percent were co-authored with industry. As the National Science Board (2002) notes, "the Federal Government has long sought to stimulate ... collaboration across sectors (e.g., industry-university ... activities)" (p. 544). Universities also sought to stimulate such collaboration. Academic institutions were at the heart of cross-sector relationships, linking private non-profits, private for-profits, the federal government, Federally Funded Research and Development Centers (FFRDCs), and institutions of higher learning.

At the same time that faculty patenting has increased and faculty are publishing more often with industry co-authors, the number of scientific and technical articles by US authors has declined. The national output across all research-producing organizations in 1999 was down by 10 percent from 1992. This trend diverged from growth in most other OECD countries during this period and is a reversal from three prior decades of consistent US publication growth. The decrease in articles produced within academia was slightly less pronounced (9 percent), but, because of the sector's high share of total output, it accounted for 64 percent of the overall decline. In academia, almost half of the decrease was in the life sciences, perhaps because they have undergone the most rapid commercialization and are the academic fields in which withholding of research results is most common (NSB, 2002).

As scientific publications declined, the number of patents referencing scientific articles increased dramatically. In the mid-1980s, patents referenced about 22,000 scientific articles, but in 1998 they referenced 310,000 (NSB, 2002). Many explanations can be offered for the rise in patent citations, from the growth of biomedical patents to changes in international patent law. However, patent citation of scientific articles points to the creation of new circuits for academic knowledge. This knowledge no longer flows primarily among scientific communities but frequently through circuits that connect it to knowledge application and the corporate world.

As universities became more involved in patenting, and as federal policy encouraged the development of organizational structures within universities to manage patenting, professionals with law and science degrees were hired in new or expanded technology transfer and/or intellectual property offices. These new professionals became "brokers on the boundary" connecting the university with the external commercial world (Fisher and Atkinson-Grosjean, 2002). Between 1980 and 1984, industry liaison offices in their current form were established at eleven key Canadian universities. By 1998, all except the smallest universities and university colleges had active offices (Fisher and Atkinson-Grosjean, 2002, p. 453). These professionals joined the Association of University Technology Managers (AUTM), an intermediating organization that operates outside universities but brings together technology transfer managers from various public and private sectors. The national association collects data on university patenting and has a journal that provides information on patenting, licensing, royalties, and start-ups. The association and the journal created a normative discourse emphasizing the contribution of intellectual property to university revenues and to the new economy and the welfare of the citizenry. Because the success of their offices depends on increased streams of revenue, technology transfer officers make every effort to expand the numbers of faculty disclosures and to patent the promising ones, linking faculty and administrators directly to corporations in the new

economy. In short, AUTM illustrates how professionals other than faculty within universities and colleges respond to opportunities created by the new economy.

Yet faculty and academic units have also created interstitial organizations. Various sorts of centres and institutes in the sciences and engineering have been designed to facilitate the interaction and intersection of higher education, state, and market organizations. Such centres are in considerable part a response to a push by federal funding agencies to promote closer cooperation and partnerships between universities and business.

In spanning public, non-profit, and for-profit entities, mediating among the sectors and often reshaping their boundaries, intermediating organizations play a significant role in the postsecondary community during regime shifts. In the case of patents, another important intermediating organization (in addition to AUTM) was the Business-Higher Education Forum (Slaughter, 1990). It was made up of CEOs primarily from large corporations and research universities who met on a “principals only” basis. The explicit purpose of the forum was to increase US productivity and ability to compete in global markets for civilian technology. The forum circulated its policy documents widely, and spokespersons met regularly with members of the executive and legislative branches of government to advance their positions. A similar organization, the Corporate-Higher Education Forum (Newson and Buchbinder, 1988), was created in Canada in 1983. The forum brought together the presidents of most of Canada’s universities with the CEOs of Canada’s major corporations in order to promote dialogue between the leading entrepreneurial and intellectual resources in the country.

In order to more aggressively pursue the promise of patents, universities and colleges greatly expanded their internal managerial capacity to participate in external markets. The new functions were generally handled by technology transfer offices and included reviewing and evaluating faculty disclosures; technology licensing; supervision of royalty flows; reinvestment of funds in new market opportunities; litigation to defend intellectual property; evaluation of intellectual property for institutional equity investments; monitoring and occasionally administering corporations in which the institution held equity; overseeing initial public offerings (IPOs); and handling bids for downstream research related to patented technology already in the market. As institutions become more involved in academic capitalism, they hired more managerial professional staff. The growth of such managerial capacity is evident in the growth of membership in AUTM over time. Formed by “seven visionaries” as the Society of University Patent Administrators in 1975, AUTM has dramatically grown in membership and has broadened its focus beyond patents (AUTM, 2003). In 1986, its membership was only 381 but had grown to 771 by 1990 and 3,200 by 2003 (AUTM, 2003). These numbers reflect the

expansion of patenting and other technology transfer activity among a wider range of universities and the increase in size of technology transfer offices within those institutions.

Copyrighting

Like patenting, changes in copyrighting dramatically illustrate the growth of the academic capitalist knowledge/learning regime. Unlike patenting, which deals primarily with intellectual property discovered by faculty during the research process, copyrighting covers the instructional aspect of faculty work. After the advent of digital technologies, the possibilities of generating external revenues from instructional materials transformed the academic capitalist knowledge regime into an academic capitalist knowledge/learning regime. This shift involved transforming education into yet another new economy service and consumption item to be delivered to consumers.

Traditionally, faculty owned copyrights to their scholarly and creative works or traded royalties for copyrights from third-party organizations, in the form of publishing companies. Other than textbooks, these works had relatively small audiences, made little money, and did not figure in revenue generation strategies of universities and colleges. As digital telecommunications technologies became more sophisticated, universities and colleges began to see instructional materials offered via distance education as a source of external revenue from off-site student tuition. Many institutions developed copyright policies from the mid-1980s through the 1990s. These policies often let faculty retain ownership of scholarly and creative work but made institutional claims to instructional materials, particularly when they were produced with the use of university facilities or resources. These instructional materials were often used in distance education. A startling example of a new circuit of knowledge involving research universities around the world, and including both US and Canadian institutions, is Universitas 21. In 2001, a subsidiary of this group formed a joint venture with Thompson Publishing Corporation to produce and market curriculum distance education packages. These packages are targeted at Asian students and lead to a degree.

Prior to the 1990s, most colleges did not have distance education programs other than correspondence, audiotapes, or closed-circuit television. The Internet technology and telecommunications revolution of the 1990s stimulated enhanced distance education. By 2001, 48 percent of all colleges and universities offered distance education courses, and 22 percent offered graduate-level courses (NCES, 2001). In 2000-1, 2,876,000 college-level credit-granting distance education courses were offered, 82 percent at the undergraduate level. Forty-eight percent of public two-year, 31 percent of public four-year, and 19 percent of private four-year college enrolments were via distance education. Public four-year institutions (48 percent) are most likely to offer virtual degrees, taken entirely through distance education, followed

by private four-year (33 percent) and public two-year (20 percent) institutions (NCES, 2001).

Participation in distance education often inducts administrators and faculty into the academic capitalist knowledge/learning regime. Administrators have to purchase or lease and maintain the physical infrastructure that makes distance education possible, construct teams of producers and content providers, and market the product to student consumers. They often work in partnership and consortia with private sector partners. Sixty percent indicated they worked in consortia, most often state wide (NCES, 2001). Unfortunately, national data on how many consortia members are corporations were not available. However, we know from Schiller (1998) that many universities and colleges have corporate partners.

Faculty who develop instructional materials for distance education courses often receive generous royalties for use. However, the nature of their work changes. Rather than being in charge of a classroom where they interact face to face with students, they become content providers on teams of distance education producers in a virtual assembly line. In this process, non-faculty academic professionals who participate in the teams do not receive royalties even if they contribute to course design because their work is considered work for hire.

Distance education courses offer the promise of new student markets, increased tuition revenues, revenues from educational products, and enhanced efficiencies in the delivery of educational services. As in the dot.com debacle in the private sector economy, the for-profit ventures undertaken by universities and colleges often fail to fulfill the new economy promise. However, other strategies and ventures have been more successful in intersecting with the new economy. Whether it is community colleges marketing courses and programs to international students, or science and engineering departments marketing "professional master's degrees" to employed businesspersons, these efforts have succeeded and mark a substantial change in orientation to education, shifting the focus to the efficient delivery of educational services. Distance education has created new circuits of knowledge that commercialize instruction. For a price, circuits of instruction now encompass campus, state, region, or world, encouraging even "community" colleges to direct attention away from local students and employers in an effort to intersect with the global, new economy.

A number of interstitial organizations have emerged to manage, promote, and regulate distance education. As with patenting, AUTM stresses strategies for institutions to capture and exploit faculty copyrights. Among the many associations that deal with distance education are the United States Distance Learning Association, the Canadian Association for Distance Education, and the International Association of Distance Educators. The Distance Education and Training Council is an accrediting agency for distance education that

works with the US Department of Education. Web resources for distance education are too numerous to list.

Many established organizations in higher education have also developed copyright and distance education policies and undertaken conventional interest group activity around these issues. For example, the American Association of University Professors, the American Federation of Teachers, and the National Educational Association have issued statements about copyright and distance education. These organizations generally seek to retain faculty copyright ownership of new, digital forms of intellectual property, including instructional materials used in distance education. Although they articulate some traditional stances concerning professional control of work and professional standards of quality, by endorsing faculty claims to new forms of intellectual property these organizations also promote faculty complicity with and commitment to the academic capitalist knowledge/learning regime.

The emergent and rapidly expanding for-profit postsecondary sector is one of the most important new organizational forms with regard to academic capitalism in the delivery of educational services. The lobbying by these entities of state boards of education and regional accrediting associations has served to legitimate and advance an academic capitalist knowledge/learning regime, relaxing restrictions and creating exceptions to professional quality standards regarding the percentage of classes that are taught on campus, the percentage of staff who are part time, and the involvement of faculty in curricular matters. Their efforts have encouraged a shift away from treating distance education as another form of education, with a focus on key inputs and standards, and toward regarding it more as a new economy delivery of information and services.

Many organizations intermediate among public, non-profit, and private entities concerned with copyrighted intellectual property. Members from the educational and corporate sectors in these intermediating organizations are committed to improving education through information technology. Their education goals operate in tandem with commercial objectives. EDUCAUSE and the League for Innovation in the Community College are among the most well known. Such organizations link universities and colleges to corporations that market information technology hardware and software, often in packages that can be sold to campuses as discounted systems.

These intermediating organizations span the boundaries of public, non-profit, and private entities and expand higher education institutions' commitment to information technology. They pursue legislative strategies that increase public monies for information technology, subsidizing tighter connections between universities and colleges and corporations. They support distance and on-campus education delivered through more advanced information technologies, which encourages new economy corporate production and sales. It also encourages universities and colleges to market distance

education and educational materials to new student markets as a new information and educational service intended to generate new revenue streams. Intermediating organizations, then, support the commitment of universities and colleges to an academic capitalist knowledge/learning regime.

Like patents, copyrighted instructional materials must be managed to enhance revenues. Although technology transfer offices often manage copyrighted intellectual property along with patents, college and university commitment to distance education and to copyrighting of instructional materials has also resulted in the creation of offices to manage these initiatives. For example, many institutions have distance or continuing education offices that manage virtual education, including its many physical manifestations, like networking infrastructure, computer labs, one- and two-way video equipment, and marketing. In addition, most institutions now have offices that encourage the use of technology in on-campus education, from teaching centres to professional development centres that develop or help faculty to develop and incorporate information and multimedia technologies into their instruction.

Enhanced managerial capacity also means expanded managerial capacity. The use of information technology generally calls for more support professionals to operate, repair, handle, and conceptualize educational materials and curricula. Part of what is driving the increase in support professionals is the establishment of a new production process for the delivery of information and educational services, which involves a matrix of professionals rather than a single professor in constructing and delivering a course. Faculty are being decentred not only in absolute numbers, and in the increased numbers and percentages of part-time faculty, but also in the educational process itself. Because managerial professionals report to administrators rather than to the faculty as a collectivity, whether in departments or senates, there is a shift toward expanded administrative authority.

In a related development, many universities and colleges established the position of CIO (chief information officer) in the past decade. The CIO manages infrastructure for information technology, ranging from technology-infused classrooms to high-speed computer wiring systems for dormitories. These officials also develop forward planning for the institutional information technology system. Furthermore, they represent a new force promoting the increased use of and investment in information technology.

Departments

We found departments very involved in academic capitalism but in unanticipated ways that speak to the complex and sometimes conflicted nature of academic commitment to entrepreneurial activity. Although most departments we interviewed generated external revenues by competing for grant and contract funding, we were somewhat surprised at the relatively limited

collective initiatives to pursue entrepreneurial research markets as a unit. More common were educational initiatives designed to generate external and internal revenues through new programs. These programs articulate with the new economy.

Several examples of new circuits of knowledge were evident in the activities of academic departments. New master's programs targeting prospective students in business were established. These "professional master's degrees" were terminal and did not require a thesis. The idea was to make them more attractive to employed persons who would not have time to do thesis work and who would be neither interested in nor able to pursue a doctorate in the field. In addition, such programs were cheaper to run since there was no provision for tuition waivers or assistantships for students and since there was little need to hire additional faculty because the courses could be taught by doctoral students. The new programs represent a substantial shift away from past practices, which treated masters degrees as a step on the way to a doctorate, which was largely a step on the way to academic employment. The professional master's degrees can be seen as a new economy form of continuing education, with traditional academic departments reconfiguring their programs to integrate them with new economy employees.

A variety of new organizational forms and arrangements have emerged around academic departments, and these new forms clearly are supporting and facilitating the academic capitalist knowledge/learning regime. Essentially all of the academic colleges in our sample have development officers, and some departments undertook fundraising activities. One of the organizational mechanisms for pursuing such efforts was advisory boards, which included members who represented or were connected to large corporations and potential donors. These boards mediated between the worlds of academe and industry. Although they were largely focused on fundraising, their existence also made possible a more direct flow of feedback from the external world to the department in regard to employment needs. Since the mid-1980s in the United States and the early 1990s in Canada, most public universities have aggressively pursued large capital campaigns. Some years later, colleges and faculties within these universities began to hire their own development officers and to appoint advisory boards. Such initiatives were initially most common in business and engineering colleges but have since expanded. Now we are finding evidence of academic departments within the colleges developing these sorts of links to the private sector market.

A more long-standing organizational form in universities is centres and institutes. In the past two decades, new types have emerged, with more direct partnerships and connections with private enterprises. Indeed, at the initiative of federal funding agencies such as the National Science Foundation and the Canadian Foundation for Innovation, many such centres and institutes require and promote university-industry partnerships. These entities

facilitate the movement of faculty and students between academic and business worlds. Like advisory boards and development offices, they normalize and expand managerial capacity in areas in which faculty have long had networks of relations, as individuals, with the private sector and government and non-profit agencies. We are seeing greater co-ordination and management of such networks with the emergence of various interstitial and intermediate organizations.

Yet for all these developments of the academic capitalist knowledge/learning regime, elements of and some commitment to old (public good) regimes and prestige systems persist. Even those department heads who sought more aggressively to intersect their units collectively with the business world were clear that they had to maintain and, in fact, expand federal grant and contract revenues. Such peer-reviewed grants were considered by almost all heads and faculty as more prestigious than private sector support and as key to the tenure and promotion process of individuals as well as to the collective prestige of the department. Some resistance to the academic capitalist knowledge/learning regime was grounded in a continued commitment to alternative conceptions of the functions of a university.

In this sense, there is clearly a co-existence of academic capitalist and other knowledge regimes. At the same time, it would appear that the prestige system is increasingly being defined in academic capitalist terms. That is, grant revenue rankings are increasingly important relative to National Research Council prestige rankings, and the prestige of the institution as well as the academic unit is increasingly being defined by how much money it can command from external markets. Such developments, in our view, speak to the ascendance of the academic capitalist knowledge/learning regime.

Administrators and Trustees

The networks of administrators and trustees distinct from faculties are senior academic administrators, such as presidents, and trustees of universities and colleges who advance the academic capitalist knowledge/learning regime and intersect the new economy directly – through intermediating and interstitial organizations that foster the development of new circuits of knowledge and involve expanded managerial capacity. We analyzed Internet2 as an intermediating organization that networks public organizations and private corporations. Internet2 was initiated by presidents of research universities but now encompasses postsecondary institutions from across the spectrum. The purpose of Internet2 was to create new Internet infrastructure that was not overly burdened by commercial traffic and that tested and deployed hardware and software for new economy telecommunications corporations.

The network unites its participants around the electronic infrastructure and commercial purpose that play a part in building the new economy. Internet2 enables corporations and public and non-profit entities to adopt the

others' practices, enhancing potential profit/revenue streams and expanding markets. Corporations benefit from the network in that new infrastructure is constructed that may be privatized, allowing corporations to benefit from public and non-profit sector resources. Universities and colleges benefit in that they build infrastructure that expands their telecommunications capacity, furthering research and educational service delivery goals that depend on that capacity. Universities and colleges are able to reduce the costs of Internet2 through corporate contributions. Corporations are able to deduct their contributions as either research tax credits or charitable donations yet are often given contracts to construct components of Internet2. As colleges, universities, and corporations build Internet2, they create intellectual property in which they hold shares according to their agreements, and they profit from the marketing of knowledge economy products that are by-products of Internet2 construction. Universities and colleges serve as test beds for corporate information technology products, often receiving deep discounts. Corporations benefit from the knowledge generated by student use and faculty expertise.

The networks created by intermediating organizations such as Internet2 normalize corporate-university relations around commercial activity. They create new organizational fields across very different sectors (DiMaggio and Powell, 1983), operating through fluid networks rather than stable fields. These new networks create common ground for actors to develop shared values and norms, and the organizations within the network become more similar.

Many of the organizations affiliated with Internet2 have emerged from the interstices of public entities to connect them to for-profit entities, often through intermediating boundary-spanning organizations such as Internet2. For example, Media Center North Carolina (MCNC) was founded by the North Carolina General Assembly in 1980, the Indiana Higher Education Telecommunication System (IHETS, 2003), the LaNet (Louisiana), the NYSERnet (New York State), and the University of Florida System. In other words, Internet2 replicates itself through its affiliates, expanding the networks that experience commercialization as normative in higher education.

As faculty academic capitalist networks are distinct from but related to presidential networks, so presidential networks are related to but distinct from trustee networks. The trustee networks are another form of intermediating organization. Historically, trustees may not have been tightly networked. Currently, private sector trustees at elite research universities directly connect private universities to the new economy. Public university trustees, aware of private trustees' network and resource advantages, may engage more aggressively in commercial endeavours in an effort to compete successfully. Despite not participating directly in the private trustee network, public university trustees may embrace more closely academic capitalism in

the new economy in the hope of generating external revenues to keep the resource gap between private and public universities in the United States from further widening. Although we found that elite public research universities are not directly linked to new economy corporations through their boards, they are indirectly connected through other networks they share with private universities. Moreover, direct connections are very likely evident in various interstitial fundraising entities that have emerged and expanded within public universities since the mid-1980s. Public universities have aggressively taken on development activities that not only are co-ordinated by central offices and foundations separate on paper from the university but directly connected to it, but also are effected through advisory boards of the academic colleges. These boards link colleges directly with the external world, particularly with large companies and potential donors. Although the records of the central offices and the college boards are difficult to access, there is good reason to believe that numerous connections with new economy corporations may be found there, particularly in the boards of professional schools such as agriculture, architecture, business, engineering, and medicine.

Presidents networked in intermediating organizations such as Internet2 create new circuits of knowledge, different from but aligned with those created by faculty, technology transfer officers, and corporate licensees or partners, or faculty, distance education officers, and corporate licensees or partners. The presidents, in organizations like the Business-Higher Education Forum, EDUCAUSE, Internet2, and biotech consortia, create new circuits of knowledge when they engage in forward planning for research, deployment, and testing of infrastructure and developing products, processes, and services for the knowledge economy. In effect, these new circuits of knowledge lay the groundwork for orienting faculty research and teaching in commercial directions. They augment, expand, and enhance opportunities for faculty and staff to become academic capitalists.

New circuits are evident as well in the activities of trustees and development officers in their interstitial and intermediating organizations. At the central level, as well as at the level of colleges and departments, boards and donors open up new economy opportunities that encourage and channel faculty research and educational activity in directions seen as potentially generating new revenues. These new and expanding organizations create new opportunity structures, realized through closer interaction with and direct engagement in the market.

In the case of fundraising and development, we see an expanded managerial capacity that is comparable to the growth of personnel managing patents and copyrights. In the past twenty years, development offices have increased substantially in size and activity and have emerged at the level of academic colleges, expanding the number of personnel there as well. Increasingly, these managerial professionals, focused on generating entrepreneurial revenues

from closer connections to the private sector, have a role in and impact on the strategic directions and initiatives of private and public universities.

Markets in Students and Marketing to Students

The theory of academic capitalism explores new levels of marketing and consumption within the institution by focusing on school logos as brands. It also moves beyond students as consumers to institutions as ever more sophisticated marketers, increasingly able to capture the student markets they target. Student markets are heavily state subsidized, whether through state block grants or state and federal student financial aid funds. Nonetheless, the greater the degree to which tuition dollars constitute a share of universities' and colleges' annual operating budgets, the more aggressive institutions' marketing behaviours. Moreover, as the academic capitalist knowledge/learning regime intensifies, students, once recruited, are transformed into captive markets to which institutions market branded products as well as an array of other revenue-generating products and services.

Branding is a new economy marketing strategy that universities and colleges use to sell goods and services to matriculated students, who are captive audiences. Universities and colleges brand products and services with trademarked college and university logos, which they sell to students and alumni to increase external revenues. Like for-profit and non-profit marketing activities, the stores and websites that sell logoed paraphernalia are virtually indistinguishable from their commercial counterparts.

However, colleges and universities have gone beyond marketing to students; they also market their students. Many regard their student bodies as negotiable, to be traded with corporations for external resources through all-sports, test-bed, single-product, and information (names, addresses, telephone numbers) contracts. When students graduate, universities and colleges present them to employers as output/product, a contribution to the new economy, and simultaneously define students as alumni and potential donors. Student identities are flexible, defined, and redefined by institutional market behaviours.

Trademarking groups have their own interstitial organization that emerged in the 1980s, the Association of Collegiate Licensing Administrators, which is more comprehensive than the older, less commercially oriented licensing groups. Their work is augmented by Royalty Management Associates, an organization led by a former Disney auditor, which provides compliance review services to licensors, including colleges and the Collegiate Licensing Group. Sometimes interstitial organizations and intermediating organizations overlap. In 1992, the Collegiate Licensing Company, which licenses logos for a number of universities, joined with professional sports leagues (MLB Properties, NBA Properties, NFL Properties, and NHL Properties) to form the Coalition to Advance the Protection of Sports Logos (CAPS). Since

its establishment, CAPS has developed a network of private investigators and law enforcement officials that brings civil or criminal actions against trademark violators, protecting college and university commercial assets.

In addition, for-profit, non-profit, and public organizations have emerged around postsecondary marketing opportunities. For example, the Independent Educational Consultants Association (IECA) is a national private, fee-for-service organization of counsellors who aid high school students applying to universities and colleges. In 1994, the National Academic Advising Association, the non-profit counterpart of the IECA, emerged to share information about how to help prospective students choose universities and colleges. The University Marketing Professionals Association was established in 1999 and performs functions similar to associations organized by for-profit marketers.

The new circuits of knowledge, interstitial organizations, and intermediating organizations call for enhanced managerial capacity in universities and colleges. If institutions increase their enrolment management capacity, they hire staff, as they do if they develop stores to sell products branded with trademarked logos. When universities and colleges develop facilities and services to recruit students and sell products to them after they arrive, they hire new support professionals. Recreation centres and mini-malls require personnel. Even when business opportunities are outsourced – to Starbucks, McDonald's, or Barnes and Noble – universities and colleges have to manage the licences and external revenues. Enhanced managerial capacity creates a stratum of on-campus professionals who are committed to expanded commercial opportunities.

Inherent Fault Lines in the New Knowledge/Learning Regime

Several fault lines are evident in the academic capitalist knowledge/learning regime. They undercut the market logic and claims of increased efficiency that are embedded in academic capitalism in the new economy. Several themes emerge from our analysis. Academic capitalism blurs the boundaries between public and private sectors, but it sustains a substantial level of public subsidy of higher education. Simultaneously, the public space in the academy is redefined as public monies shift to subsidize different activities, fields of work, and professionals. In many cases, capitalism – academic style – is not very successful in generating net revenues, and it leads to unanticipated, undesirable practices and outcomes. In the context of a conception of institutional purpose that is reduced to revenue enhancement, the academic knowledge/learning regime leads to an expanded range of educational services to a reduced range of traditional-aged students. In perhaps a final irony, we see an increasingly similar pattern of effort to intersect global information, new economy opportunities in ways that reduce distinctive involvement in local communities by various types of universities and colleges.

The redefinition of the public space as part of the academic capitalist knowledge/learning regime is particularly noticeable in Canada. Since 1997, the federal government has used a number of new policy instruments, as well as the three established funding councils, to dramatically increase research funding going to universities. Between 1997-98 and 2004-5, the federal government added a total of approximately \$11 billion in university research spending. Approximately 70 percent of the funding was received in the past four years (see AUCC, 2005, p. 22). The natural, applied, and health sciences were favoured to the extent that, between 1997-98 and 2004-5, only \$1.4 billion or 12 percent of this funding went to the humanities and social sciences. A key development in the academic research enterprise over the past fifteen years has been the emergence of a clear and separable strata of research-intensive universities. The increase in research funding has been concentrated into this relatively small group of universities, between ten and fifteen out of a total of seventy-six to eighty-three.² In 2004, fifteen³ of the eighty-three universities listed by Canadian Association of University Business Officers (CAUBO) accounted for 80.69 percent of the total university research income.⁴ All Canadian university departments in the natural, applied, and health sciences have been favoured, thereby exacerbating the level of internal stratification.

The redefinition of the public space in Canada is illustrated by the increases in federal funding going to support university research and development (R&D). In 2005-6 at \$2.5 billion, for the first time the amount exceeded its own internal R&D expenditures (Council of Canadian Academies, 2006, Figures 4.2 and 4.3, pp. 39-40). In 2004, the federal government intramural spending on R&D was almost \$2.3 billion, a figure that remained fairly constant in the previous six years (Box 6.4, p. 109, and Figure 4.3, pp. 39-40). At the same time, and in spite of the very generous tax credits offered as an incentive to make these investments (p. 104), Canada records a relatively low business expenditure on research compared to other OECD countries (Figure 4.4, p. 41).

The federal policy changes in the United States created new opportunities for public and non-profit entities to engage in commercial activities. In redefining public space in ways that foreground and feature market activity and logic, these federal policies continue a pattern of substantial public subsidy in various forms. When the neoliberal state withdraws broad support for social services and promotes entrepreneurial activity, ironically, non-profits proliferate. US non-profits tripled in the past three decades, growing from about 300,000 in 1970 to approximately one million in 1998. In 1975, their total revenues were less than 6 percent of the gross national product (GNP), while in 1990 they exceeded 10 percent. Between 1980 and 1990, paid employment in non-profits increased by 41 percent, more than double the growth of employment in other sectors.

Perhaps even more ironically, non-profits are turning to commercial activity to expand their operations. The legislation enacted by the competitiveness coalition created commercial opportunities not just for universities and colleges but also for the majority of non-profit organizations (Weisbrod, 1998). Commercial activity increased across non-profits, from gift shops in museums to health clubs in hospitals. Many non-profits are forming for-profit subsidiaries. Public and private universities and colleges have led the non-profits that have engaged creatively in commercial activity.

As commercial activity expands in the not-for-profit sector, it may become an end in its own right. James (1998) suggests that there may come a point when non-profits become “false nonprofits” or, as Weisbrod (1988) calls them, “for-profits in disguise.” That certainly is a possibility in private, not-for-profit higher education as well as in some sectors of public higher education. Public universities and colleges have no interest in becoming for-profits, but many public research universities make the case that they should become “private” entities because state appropriations in some cases provide as little as 15 to 30 percent of institutional revenues. However, they do not want to pay taxes, whether on property, the proceeds of their intellectual property, or their commercial revenue from an array of marketing activities, all of which are currently not taxed so long as they are used for institutional rather than individual purposes. Nor do not-for-profit universities and colleges want to forgo public subvention in the form of state and federal student financial aid and loan programs. In short, they want the best of both worlds – the protections and continued subsidies of the public sector and the flexibility, opportunities, and potential revenue streams of the private sector.

Although universities and colleges usually present their commercial activity as win-win, building the economy, generating external revenues, and expanding educational capacity, the commercial activities of institutions can be problematic in several ways. First, higher education institutions are often not very successful capitalists, and students and the public have to pick up the tab for their failures. For example, while technology transfer brings external revenue to universities and colleges, it also takes funds from them. Universities and colleges or state systems have to pay for legal fees and for technology transfer offices. Nationally, legal fees are in the hundreds of millions of dollars. The magnitude of non-reimbursed legal fees has increased about 250 percent over the eleven years that AUTM has surveyed technology transfer activities. These costs could be substantially higher, since AUTM modified its definition of legal fees in 1999, omitting major litigation to better focus on benchmarking patent prosecution costs. A relatively small number of universities are responsible for the lion’s share of patenting activity and are likely to actually run in the black in their technology transfer efforts. In the 1990s, the 100 largest universities received more than 90 percent of all patents awarded. Income from patents was also concentrated in

the top 100 institutions; the most recent survey indicates that two-thirds of the monies were generated by thirteen institutions. However, most doctoral-granting institutions maintained technology transfer offices, as did a few comprehensive universities. In other words, a number of universities bore the expense of technology transfer offices but reaped relatively few benefits. Similarly, many for-profit ventures in the realm of on-line and distance education have gone bankrupt.

In addition, there are some undesirable, even dysfunctional, outcomes that can attach to the entrepreneurial activities of universities and colleges. For example, those who support patenting argue that it will contribute to economic growth beneficial to the citizenry as a whole. However, the overall pattern of the knowledge/information economy, at least as configured in the United States, has resulted in greater income and wealth stratification within and outside the academy than was the case under the public good knowledge regime. Moreover, actors in patent networks often present commercialization as an activity that benefits taxpayers through new discoveries made through university-industry partnerships, a presentation that obscures the continued contributions made by federal tax revenues to pay for R&D. And patent income does not get used to offset other costs in educational institutions; most institutions dedicate patent income to generating more intellectual property. Despite an elaborated market discourse, the public sector continues to bear the lion's share of the costs of technology transfer.

Patent policies and practices also contribute to some undesirable outcomes in regard to the activities of professors. They increasingly straddle two worlds, retaining a place in the higher education community but also assuming the role of (state-subsidized) entrepreneurs, with several attendant problems. Professors who delay publication or do not publish all of their results make it impossible for other scientists to replicate their work, which makes judgment of science difficult. Professors involved with the market are likely to be "interested," not "disinterested" in the Mertonian sense, in certain results and perhaps less likely to see problems that are unlikely to bring commercial returns. Such professors are less likely to be engaged in undergraduate instruction and frequently involve their graduate students in commercial activities in ways that disrupt the students' graduate work and their freedom to complete and publish their dissertations.

As more students and professors engage in entrepreneurial research markets, more knowledge becomes "commodified" or owned. When information and knowledge are owned, they circulate less freely. Sometimes information is strategically incorporated into companies' growth strategies and removed from markets. In other words, in a perverse inversion of purpose, patents are used to keep information from the market. Granstrand (2000) makes the case that, "if the rate of knowledge growth is consistently larger in the private domain than in the public domain, then at some point in time privately

held knowledge will start to dominate” (p. 24). If private knowledge control dominates, then public science and technology as well as education become more difficult to maintain. The academic capitalist knowledge/learning regime may contribute to this process.

Finally, in regard to patents, it's not that academic capitalism and the commercialization of knowledge is all bad, it's a question of where the line is drawn, who draws the line, and what sorts of products are promoted. What are educational institutions' terms of engagement with the corporate world and the world of commerce? Currently, universities and colleges have no policy about how they select discoveries to patent or exploit commercially. Some are more likely to patent when a corporation will pay the cost. Others are likely to patent when the market for the product looks promising. Academic patent and intellectual property policies and practices do not attend to the issue of selecting patents or copyrights that might have social utility. In other words, universities and colleges are as likely to patent cosmetic properties, for example RetinA, as they are discoveries that might contribute broadly to the social welfare of the citizenry, for example AIDS vaccines. When they license their patents to corporations, higher education institutions tend not to add clauses that contain costs so as to benefit the citizenry, for example prescription drugs (an important point since such a large portion of patent royalties relates to biomedical, pharmaceutical products). Universities and colleges follow a market rather than a social welfare logic. As non-profit and public institutions, they might well increase their public support and legitimacy by commercializing in areas of great public utility and seeking less than the maximum profit the market will bear when selling products.

Copyrights raise many of the same problems as do patents. Commercializing copyrightable materials increases educational costs in terms not only of tuition but also of the costs of educational materials themselves. Whether in the form of courseware packets, CDs, or other technology-enhanced educational materials, academic capitalism has increased the costs of education. As with patents, the more costly educational materials are, the more the free flow of knowledge is constrained. Ironically, the public space of academic publication becomes less a place of the free flow of ideas and information in an information-based new economy.

Academic capitalism in the new economy also restructures work in the academy, with some undesirable and unintended consequences. As in industry, universities and colleges have downsized and essentially outsourced their instructional production workers, replacing full-time faculty with part-time and contingent faculty. The increased use of contingent faculty is related to the underfunding of universities' and colleges' instructional mission relative to the tuition monies and state dollars that come to them as a result of enrolments. Moreover, the percentage of faculty who are part time has

doubled in the past twenty years despite research pointing to the significance of contact with faculty for student learning, satisfaction, and success. Part-time faculty are by definition and by working conditions (e.g., no office space) less available to their students than are full-time faculty.

In contrast to the pattern in industry, where the numbers of middle managers have declined, universities and colleges have greatly expanded middle management, whether to supervise commercial endeavours and engagements with various external communities or to support students and information technology. Thus, in regard to student customers, academic capitalism in the new economy has involved universities and colleges reducing instructional and faculty labour costs and expanding costs in various support, entrepreneurial, marketing, and consumption realms of and professions in the academy. The managerial, non-faculty professionals who manage infrastructure, economic development, endowment, and entrepreneurial activity are less directly focused than are faculty on teaching and research, and they are more closely linked to intermediating networks of senior administrators involved in promoting university-business co-operation and partnership and new economy academic capitalism.

In addition to restructuring professional work, academic capitalism in the new economy brings restratification of and competition among academic fields. This can be a very healthy development, but it can also entail some dysfunctionalities. Among them are a restricted conception of what a college or university education is, a heightened and counterproductive sense of struggle between and within academic units, an orientation to short-term educational markets that prioritizes market share and revenue enhancement over educational quality, and an internal resistance to some of the directions embedded in academic capitalism.

As institutions move more aggressively to intersect with new economy corporate and employment markets, conceptions of a college and university education become more and more constrained by a sense of opportunities in the marketplace. The idea of a college or university as a space for public discussion, debate, commentary, and critique is pushed to the background. Ascendant is the idea that college education is about preparation for employment in the new economy. Thus, for example, at the graduate level, there is an increasing emphasis not on generating knowledge but on what is essentially continuing education that advances employees up career ladders. A dramatic expansion of "professional master's degrees" is a product of academic capitalism in the new economy, as are contract education and certificate programs in community colleges. The focus of these educational innovations is in considerable part on efficiency and revenue generation, in narrow ways that have little to do with a range of educational functions that universities and colleges might be expected to play with regard to employers and employment (e.g., participating in defining the contours and

conditions of work in the new economy, as social scientists did at the turn of the past century with regard to industrial and professional employment).

From the standpoint of academic departments seeking to survive and thrive in academic capitalist universities and colleges, there is similarly an increasingly short-term perspective that focuses on productivity measures in research, grants, and student credit hour production. Increasingly, academic units are conceptualized as cost centres, as production units, seeking to maximize their productivity. That can lead them to compete with each other for students in some counterproductive ways (Rhoades, 2000). It can mean reducing standards for general education students or majors or expanding student numbers beyond those that make sense for local labour markets. It can also inhibit patterns of collaboration and interdisciplinary activity, pitting departments within the same institutions against each other in a cutthroat and cannibalistic competition for internal university resources.

At the departmental level, the ascendance of academic capitalism in the new economy is sometimes met with confusion or resistance. That was clear in our analysis of department heads and faculty in science and engineering. Heads responded unevenly to the possibilities of entrepreneurial activity. In some cases, heads seemed unsure what to do strategically or how their department could possibly fit within the current agenda of their institution. In other cases, heads were resistant to the push from central academic managers for more entrepreneurial activity and engagement with business in the area of research. One of the fault lines within academic capitalism is that there are often disjunctures between where presidents, provosts, and other senior academic administrators want to take an institution and the commitments and interests of significant numbers of faculty within the institution.

Nevertheless, presidents and senior administrators operating in intermediating institutions have greatly enhanced managerial capacity. They direct the forward planning of their institutions by committing resources to projects such as Internet2, shaping future directions for decades to come. However, members of the intermediating organizations often do not consult extensively with their internal institutional constituencies, which may undercut local support and willingness to participate in the projects. Members of intermediating organizations often redraw the boundaries of public, non-profit, and for-profit entities. In cases such as Internet infrastructure (Internet2), distance education (EDUCAUSE), the League for Innovation, and start-up corporations (boards of trustees), the functions of public, non-profit, and for-profit entities are indistinguishable. Public institutions do not serve the citizenry as a whole but provide service to the same students targeted by for-profit and private institutions, as is especially clear in the case of distance education. Non-profit institutions, whether public or private, seek to maximize profits on the market activity, ranging from taking their start-up companies public through initial public offerings (IPOs) to intellectual

property to marketing computers to students in bookstores. For-profit corporations become deeply involved in the business of education, using universities and colleges as test beds for developing and marketing educational products. Only their designation, and the costs and benefits that stem from it, are different. When public, non-profit, and for-profit entities combine in intermediating networks, each seeks to attain as many of the benefits, and as few of the costs, as possible attached to the others. The greatest problem stemming from such intermediation is that public resources are transferred to private networks that underwrite the new economy. This transfer, which is not subject to broad public debate or voted on, may undermine public trust in universities and colleges, manifesting itself in less public support for state and federal resource allocations to postsecondary education.

Densely networked boards of trustees who share information but whose institutions compete with each other may move universities and colleges from non-profits to “disguised for-profits” (Weisbrod, 1988). Presidents of research universities take on the appearance of chief executive officers. Four presidents of private universities earned more than \$800,000 in the 2002 fiscal year, and, if pay for serving on corporate boards is included, the compensation for three went over the million-dollar mark (Basinger, 2003). James (1998) sees this as an indication of non-profits becoming disguised for-profits when “nonprofits maximize profits and distribute them in disguised form (as higher wages and perks), or they may maximize revenues that lead to power and prestige for their managers” (p. 273). The trustees, who intermediate between universities and the corporate sector, normalize presidential salaries that far outstrip the salaries of most other US professionals, making some university presidents’ salaries more like those in the for-profit sector than the non-profit sector. Marketization of student recruitment raises questions of access. When elite public and non-profit universities and colleges compete for students who score well on standardized tests and are able to pay high tuition, low-income and minority students are less likely to attend. The heavy attendance of low-income and minority students at community colleges is in part a reflection of the marketing strategies of elite universities and colleges. Marketing of distance education to non-traditional students, even when such projects are arms of elite schools, contributes to bifurcated access patterns in which increasing numbers of students are educated off-site. Competition for student markets does not reduce tuition; on the contrary, it may have increased tuition as institutions vie with each other to offer students more non-instructional activities.

Marketing to students once they matriculate raises questions about the part universities and colleges play in student identity development. When universities and colleges seek to market non-instructional, commercialized goods on campus, they develop students’ identities as consumers rather than

learners. Students, their families, and alumni respond to the brand through purchasing and giving. However, universities and colleges lose their claim to full development of students in the students' best interests.

Alternatives within and beyond Academic Capitalism in the New Economy

The academic capitalist knowledge/learning regime is ascendant and, as we have argued, embedded in a complex array and network of policies, inter-mediating and emergent interstitial organizations, and actors and practices. Yet this regime is not inevitable, in its current configuration, and it does not stand alone. This chapter maps a general pattern that is in place. However, what academic capitalism in the new economy means concretely for the future direction and work of individual universities and colleges in the United States and by extension Canada is yet to be fully defined.

Just as there are many forms of capitalism, so too there can be many forms of academic capitalism. It does not have to take *laissez-faire* form. Rather than simply seeking to maximize external revenue generation, academic capitalism could seek to enhance the social benefits of intellectual property and educational services. Universities' and colleges' commitment to revenue generation could also encompass commitments to increased access for underserved populations and expansion of opportunities for women and minorities.

For many universities, a current principal target of investment is biotechnology. However, all universities are unlikely to succeed in the biotech arena; competition is too intense. Instead, universities and colleges could try to discover distinctive niches that build on their research strengths or their geographic locations. These niches might well be targeted because they provide opportunities for social benefits. For example, there is enormous potential in the realm of environmental engineering, a sustainable environment, and clean energy alternatives, which are all significant sectors of the new economy. In the case of our own university, there would be great promise in an initiative that focused on environmental issues and enhancing the quality of life in the borderlands. Such an initiative would involve investing not only in the sciences but also in various social sciences, humanities, and fields of education, integrating in interdisciplinary ways that creatively cut across the divide between science fields and the rest of the university. The promise of such an initiative would be to intersect successfully with growth areas in the new economy and to impact positively the region within which the university exists. Such a strategy would play not only to the geographic location of our university in the southern Arizona borderlands but also to our academic strengths in environmental sciences, arid land studies, borderland studies, anthropology, sociology, American Indian studies, bilingual education, and linguistics (and higher education!), among others.

In addition to biotechnology, many higher education institutions are seeking to intersect with the information technology sector of the new economy. Community colleges and comprehensive and urban universities see this general realm as a target for substantial investment. In pursuing such a strategy, universities and colleges are intersecting with a global economy in ways that do not always pay dividends for local economies and regions. They prepare relatively privileged students for computer-related careers or generate revenues through distance education that serves audiences far from their geographic locations.

We see an alternative for such institutions. They could focus on local needs, attending to issues of immigration and integrating immigrant and low-income populations into the middle layers of the new economy. What does that mean concretely? It could mean a community college combining a computer-tech program with an ESL program targeting immigrant populations. It could mean a comprehensive university combining an information technology program with a teacher preparation program, training educators who would contribute to enhancing urban populations' ability to intersect with and work within the new economy. The point is to leaven the new economy focus on technology with the ongoing and emergent human challenges and opportunities that we confront in a globalizing world. We believe that such an approach would yield substantial dividends for the higher education institutions as well as for the communities in which they are located.

Of course, these are not either/or choices. The issue in most universities and colleges is how to balance various alternatives. We are simply suggesting the foregrounding of possibilities that currently are very much in the background and that involve human sciences and services fields that are currently the target of deinvestment in many higher education institutions.

The educational mission of higher education could be reinvested in by judicious use of the proceeds from intellectual property. Alternatives to current patterns of faculty and institutional ownership of and claims to royalties from intellectual property could be explored. A share of revenues generated by the intellectual property could be placed in a public trust that could have as its purpose directly aiding students and communities in a variety of ways, whether through scholarships, research internships, or direct grants toward community development.

Rather than focusing only on the revenue potential of intellectual property, universities and colleges could provide some discount for the sale of products developed by faculty, which, after all, were publicly subsidized in their production. Faculty and university involvement in the production of goods and services could ensure that these goods be treated as generics, with less focus on maximizing revenues than on the wide distribution and availability of

the products. The implications in the field of biomedical products would be enormous.

Each of the above alternatives requires a network of policies, organizations, and actors to become viable, as was the case with the academic capitalist knowledge/learning regime. We must imagine a new university with organizational structures, incentives, and rewards for the kind of society we want and then create the new circuits of knowledge, interstitial organizations, and intermediating networks to achieve it. This is a task that will take time, patience, and commitment and will have to be linked to appropriate organizations and social movements outside the university. Perhaps we could begin by developing networks of citizens, faculty, academic managers, and students to formulate policies that frame the terms of engagement of universities and colleges with corporate partners, that create incentives for developing products that have socially productive purposes, and that work out ways for shares of revenues from intellectual property to be directed to undergraduate instruction. We must imagine a university that emphasizes the “use” value of the knowledge it creates. The “exchange” university (see the Introduction to this volume) will become an institution whose *raison d’être* is to serve the public good.

Notes

- 1 A similar trend developed in Canada. While the responses from Canadian institutions to the AUTM surveys (AUTM, 2003, pp. 66-67) have not been as inclusive as their US counterparts, we do see an increase in the number of US patents issued to Canadian universities, from 52 in 1994 (N=12) to 172 in 2002 (N=22).
- 2 The variance depends on who is counting.
- 3 The fifteen universities in order of the amount of research funds received are Toronto, McGill, Montreal, British Columbia, Alberta, Laval, Calgary, McMaster, Western Ontario, Ottawa, Queen’s, Manitoba, Guelph, Waterloo, and Saskatchewan.
- 4 Calculated from *CAUT Almanac* (2006, Table 5.6, p. 46).

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