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NEW MODELS OF MANAGEMENT AND SHIFTING MODES AND COSTS OF PRODUCTION: EUROPE AND THE UNITED STATES

ABSTRACT. Discussions of strategic management and productivity generally overlook fundamental factors of production that are on the rise with new models of management and new modes of production by which instruction and research is created. This paper draws on national, institutional and professional association data from universities and emergent professions in Austria, Germany and the US to track the shifting allocation of human resources and to determine whether academic managers are considering these patterns in establishing strategic management practices. Findings show that, in some countries, professors represent a declining proportion of the personnel in higher education, although the models of management and the allocations of personnel vary among the US, Austria and Germany. Noting that current strategic management practices are not incorporating consideration of these developments, this paper offers questions and concepts for universities to address in order to enhance strategic management.

INTRODUCTION

European higher education systems and institutions are changing their models of management and modes of production for conducting instruction and research. In the 1990s, national systems increasingly devolved responsibilities to universities (Dill & Sporn 1995; Neave & van Vught 1991; Kogan & Hanney 2000), allowing for more independence even as ministries strengthened efforts to assure quality, 'steering from a distance' (Marginson 1997). Many universities increasingly generated their own external revenues, becoming more adaptive and entrepreneurial (Clark 1998; Sporn 1999) as they intensified involvement with external markets to diversify their funding. Moreover, enrolments continued to grow, bringing greater numbers and new types of students into higher education. We are interested in the relationship of these developments to patterns of professional power and the structure of professional labour.

In light of the above changes – devolution, entrepreneurialism and massification – there has been growing interest in Europe in more 'professionalised' models of management, with permanent, full-time managers with increased powers. To the extent that is realised, such a model will shift human resource allocation in European higher education, which in

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turn will lead to shifting costs of production. We draw on case study data from Austria, Italy and Switzerland, and on national data from Austria and Germany, to illustrate different models of management and different patterns of human resource allocation within Europe.

Devolution and quality assurance have their analogues in the United States. A prevalent trend dating back to the 1970s is a push from state (not national) boards and legislatures for increased accountability. Sometimes, it has taken the form of performance-based funding, whereby institutions' achievements on outcome measures serve as criteria for determining their state funding (Burke & Modarresi 2000). Sometimes, accountability pressure has led to campus-level performance-based funding mechanisms, and to increased measurement of units and employees' quality and productivity. To some, this represents devolution, at the campus level.

Entrepreneurial activity has also been on the rise in US colleges and universities. It has long been characteristic for institutions to have diversified funding bases, but efforts to generate revenues through entrepreneurial initiatives have expanded since the early 1980s. In the mid-1980s, public universities became more aggressive in fundraising, with many universities undertaking 'capital campaigns' in the hundreds of millions of dollars. With changes in federal and state legislation enabling universities to own patents (Slaughter & Rhoades 1993, 1996), institutions have established technology transfer mechanisms to commercialise intellectual products. Finally, with technological developments more institutions have sought to tap into new student markets and generate revenues from instructional programmes delivered at a distance.

Finally, enrolments continue to grow in US higher education, which experienced massification in the 1960s. The terminology regarding students has incorporated changes not simply in the numbers but the types of students entering colleges and universities. Scholars and practitioners alike refer to non-traditional and 'new traditional' students (those older than 18–24 years).

In light of accountability, entrepreneurialism and massification, the US model of management is changing. That change has been associated with a shifting mode of producing instruction, research and revenue, which in turn has been associated with shifting factors and costs of production.

Our Europe/US comparison is not intended to pose the US model as a benchmark for European systems and universities. If anything, we regard the US as more of a buoy, a marker that warns of unseen problems, and that may help us better understand the currents and obstacles that higher education systems and institutions must navigate. We are struck by the possibilities of European paths by which institutions may pursue devolu-

tion and quality assurance, entrepreneurialism and massification in a more collegial model of management.

In undertaking exploratory analysis of management models and costs of production, we draw on archival and documentary data regarding personnel. Sources include national statistics, and case studies of institutions, as well as of a professional association. We track changes over recent decades. Our data have limitations. Nationally, they are not sufficiently disaggregated. For academics, we can track changes over time for different types and ranks of academics; but for non-faculty staff, we cannot go beyond simple gradations in employee categories. At the university level, variations among institutions in categories and categorising of non-academic employees make comparisons difficult. At all levels it would have been ideal to get salary and cost data, but it does not exist in systematic form. Finally, most academics perform some administrative tasks, and many non-faculty employees perform some academic tasks: a clean separation between them is somewhat artificial.

As scholars who have pursued extensive fieldwork, and have mined many archives, we are cognisant of the above and other limitations. Nevertheless, we believe that our data is suggestive about significant general patterns. It raises important considerations for those interested in higher education. And it can serve as a heuristic, stimulating us to think differently about models of management, and perhaps improve our understanding of higher education developments by improving our data. In our closing discussion, then, we offer several metrics that we hope will enhance strategic management in European and US universities.

Having mapped general trends in Europe and the US regarding devolution, entrepreneurialism and massification, we now discuss new management models in Europe and the US associated with them. That involves addressing new patterns of human resource allocation and related modes and costs of production.

New Models of Management in Europe

In Europe, higher education organisations have been confronted with new models of management to improve accountability and efficiency. Devolution, massification and entrepreneurialism have triggered this development. Historically, most countries have been characterised by a collegial model of authority and management, with strong top (the state) and bottom (academic units) layers (Clark 1983). However, the recent push has been to strengthen the middle level, institutional management. New Public Management has emerged as a theory and a basis for government

practice. Relatedly, universities have experienced the investment of more power in institutional leaders and more resources in institutional capacity to address quality, entrepreneurialism and student needs. After briefly describing these trends, we provide data on human resource allocation in Europe, through institutional cases and national statistics.

In the 1980s, the management of public services changed in Europe. This general trend affected higher education, a public good highly regulated by state laws and ministries. New Public Management (NPM) emphasises efficiency, downsizing and decentralisation, excellence and service orientation (Ferlie, Ashburner, Fitzgerald & Pettigrew 1996). It develops 'quasi-markets' in the public sector, and moves power from professionals to managers.

In NPM, efficiency is oriented towards private sector practices, adopted in the public arena. There is increased attention to financial control, a shift of power to senior management, an extension of audits, a stronger consumer orientation, new work contracts, less self-regulation for professions, more entrepreneurialism and new forms of governance through executive boards.

Downsizing and decentralisation aim to develop new organisational forms promoting flexibility and unbundling vertically integrated organisations through outsourcing or forming autonomous units. Trends include quasi-markets for resource allocation, management by contract, a split between strategic core and operational units, networks and strategic alliances as a form of coordination, and flexible customised services.

The NPM conception of excellence focuses on organisational culture. Coming out of the human relations school of management, it stresses the importance of values, norms and symbols for organisational performance. This corporate model sees culture as manageable; leadership manages cultural change. Associated with this view are charismatic leaders, intensive training programmes, corporate logos, mission statements and human resource management strategies. Performance is measured by results. Service-orientation focuses on accountability for service quality and total quality management.

The above mentioned characteristics of NPM have affected European higher education (Sporn 1999). Universities have been challenged by a growing emphasis on efficiency, downsizing, excellence and service. Two effects have increasing importance for institutional leadership and growth of university administration as a bridge between the environment, government and the institution. The academic/administrative interface has changed. Kogan (1999) argues that reforms have reinforced administration, shifting power away from the profession, particularly with the rise of

strategic planning. Others, too, have argued that universities have become more 'bureaucratised' (Gornitzka, Kyvik & Larson 1998); in Norway, administrative numbers are rising, while faculty numbers remain much the same.

Now we turn to case study and national data from Europe on patterns of personnel allocation among academic and administrative positions. Variations within Europe should be underscored. If European nations face similar pressures to strengthen management, the particular configuration of the challenges, and the distinctive, historically-laid material and ideological foundations that exist can lead to different responses.

New Patterns of Human Resource Allocation in Europe

European countries in this paper have seen reforms triggered by devolution, entrepreneurialism and massification. Nationally, Austria and Germany are moving towards privatisation, financial autonomy, performance contracts and budgeting, as well as enhanced leadership and governance structures. These trends point to sharper distinctions between professors and administrators and to increasing power of university managers.

Our case data come from Sporn's (1999) study of adaptive universities. The European cases, Universita Bocconi, Universität St. Gallen (HSG) and Wirtschaftsuniversität Wien (WU), are small, business-oriented universities unrepresentative of Italian, Swiss and Austrian universities. Yet they are suggestive of variations among institutions and systems in Europe.

In providing national data from two German-speaking countries, we do not generalise to a European model. There are important differences between and within Austria and Germany. We simply offer a few European examples to highlight diversity within the European Union.

Institutional examples: Bocconi, HSG, WU

Universita Bocconi is one of Italy's few private universities, located in Milan. It focuses on economics and business administration, offering undergraduate, graduate and postgraduate degrees, and continuing education. It stresses internationalisation in its strategic plan, 'Bocconi 2000', and looks to change its student body and faculty.

As Figure 1 shows, Bocconi's personnel profile has changed. Academic positions increased by more than 50%; administrative ones grew by 11%. The increase in faculty reflects the emphasis on research and teaching in Bocconi 2000.

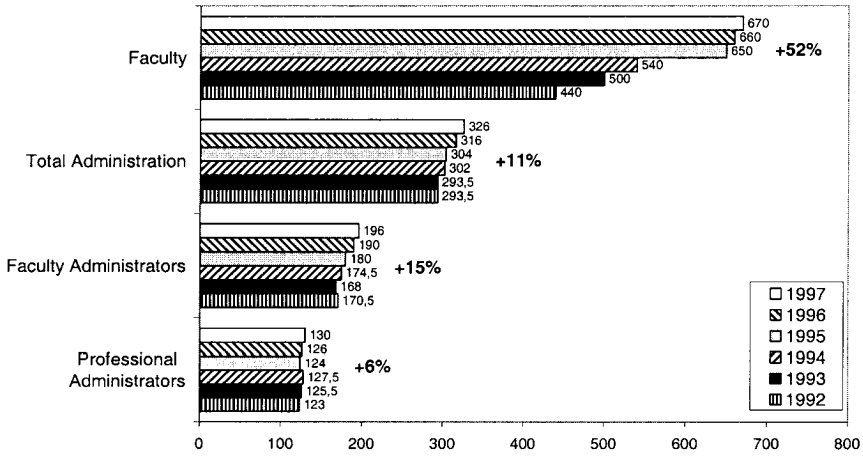


Figure 1. Personnel at Universita Bocconi from 1992 to 1997.

Bocconi's personnel structure also reveals its belief in shared governance. More administrative positions are held by professors than by full-time, permanent administrators. Senior professors commonly take administrative roles, taking leaves from academic posts and returning to their departments after their administrative tenure ends.

Yet, for a small institution, Bocconi has many administrative positions. Almost one-third of the nearly 1,000 employees are in administration. If Bocconi is committed to shared governance, it is also committed to a sizable administrative staff to run the university.

Universität St. Gallen is also small (approximately 4000 students). Although public, it has autonomous status guaranteed by legal regulations, with its own policies for student access and tuition/fees. The university is one of the highest ranking business schools in Europe. Faculty are very entrepreneurial, running their institutes as profit centres, giving the university a diverse funding base. The main strategic focus of HSG is to maintain and enhance its reputation.

Only minor changes have occurred in HSG personnel (see Figure 2). Numbers have decreased slightly: academic numbers have declined somewhat more than administrative positions. For such a small institution (335 staff) HSG has a relatively large administration: more than one-third of personnel are administrators. Many top level administrative positions are taken on a temporary basis by academics, who rotate back to their academic units. Unfortunately, HSG data do not enable us to differentiate between administrative positions occupied by academics and those occupied by permanent administrators.

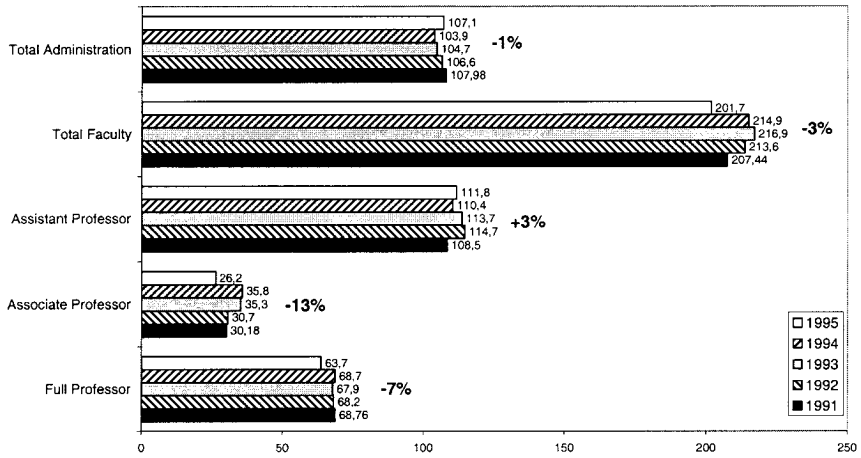
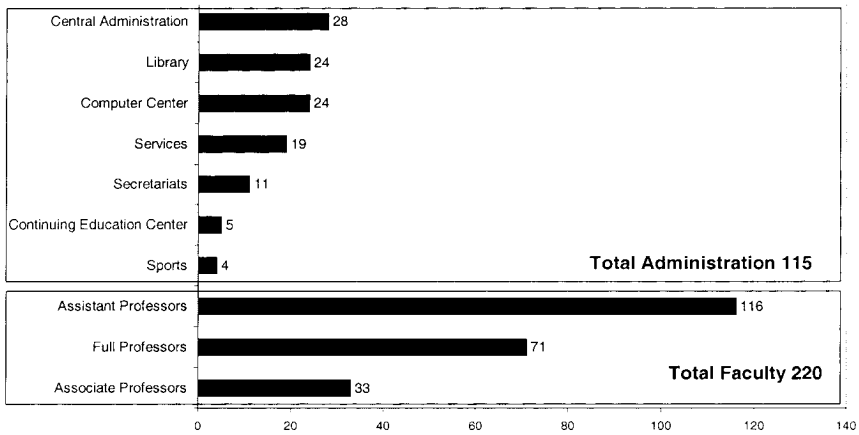


Figure 2. Personnel at the University of St. Gallen (HSG) from 1991 to 1995 (full time equivalent).



Source: University St. Gallen, Jahrbuch 1999/2000

Figure 3. Types of personnel at the Universität of St. Gallen (HSG), academic year 1999/2000.

However, there are differentiated data for academic staff. Variations in the growth/decline among types of professors are substantial (see Figure 2). Full professors' numbers declined 7%; assistant professors' numbers increased slightly. Associate professors (have received tenure and can qualify as chairs) declined by 13%. This reshaping of the academic staff may be an effort to promote efficiency by hiring 'cheaper' assistant rather than more 'expensive' full professors.

We can track an important dimension of administrative personnel patterns in HSG with available institutional data. Figure 3 breaks down

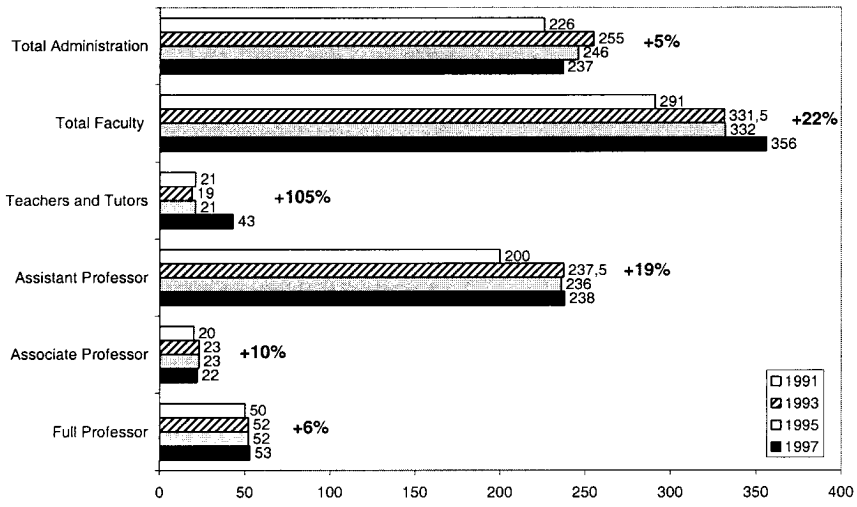


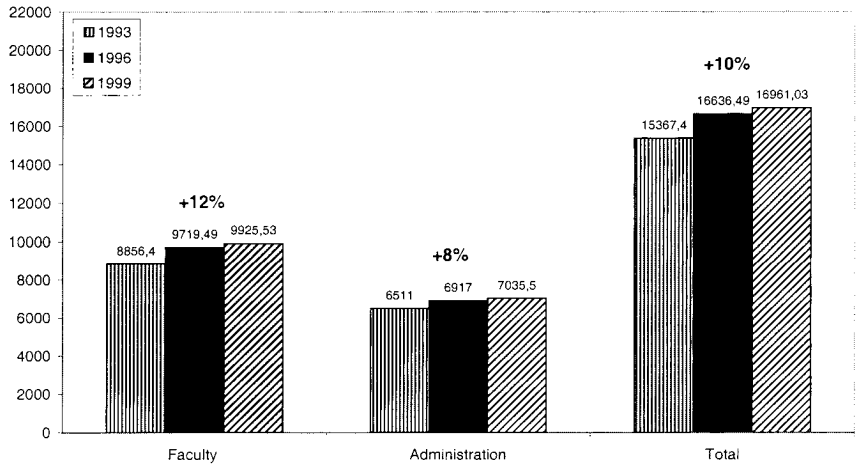
Figure 4. Personnel at Wirtschaftsuniversität Wien (WU) from 1991 to 1997.

HSG's administrative personnel for the academic year 1999/2000. Most administrators work in central administration, which includes student services and registration. Library and computer services also rank high. Unfortunately, functional areas like technology transfer are not separated out, preventing us from tracking the relationship between strategic priorities (entrepreneurial activity) and administrative positions.

Wirtschaftsuniversität Wien is the largest business school in Europe. A public institution enroling about 25,000 students, WU has faced a state-mandated reform calling for reorganised structures and processes and harmonised degrees. Historically, WU's administrators were state bureaucrats; after the reform, they became members of the institution. Still, most leadership positions are held by professors, who return to academic units after their administrative tenure. Only support function positions are held by non-academics. However, ongoing reforms in Austria promise to give more power to rectors, vice-rectors, deans and board members.

WU's personnel structure shows an overall increase of 15% in six years, but it is still understaffed. WU enrolls more than 10% of all Austrian students but has only 4% of all Austrian university employees. About 40% of WU employees are administrators (see Figure 4). In recent years, the numbers of academics have increased faster than those of administrators, especially teachers and tutors, who increased by over 100%. Assistant professors grew at a faster rate (19%) than did full professors (6%).

The case examples show that professor-run institutions and shared governance are still important concepts at European universities. Senior professors often take on 'hybrid' roles as administrators and faculty.



Source: Federal of Education Science and Culture, Hochschulbericht 1993, 1996, 1999

Figure 5. Personnel at Austrian Universities (1993–1999).

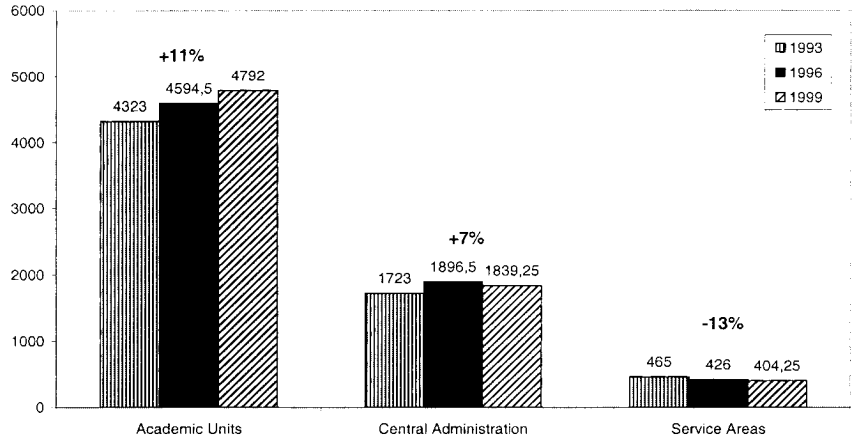
With reforms underway in many European countries, this collegial pattern may change. Leadership positions within institutions will become more important, boards with external members will audit the institution, and the perceived needs to increase efficiency and effectiveness may encourage the hiring of more permanent administrators.

The cases also point to a restructuring of academe. Ministries and states may be managing costs in part by replacing full professor positions with more junior, cheaper academic positions. This does not bode well for the European model of collegial management – of extensive senior faculty involvement in administration.

National examples: Austria

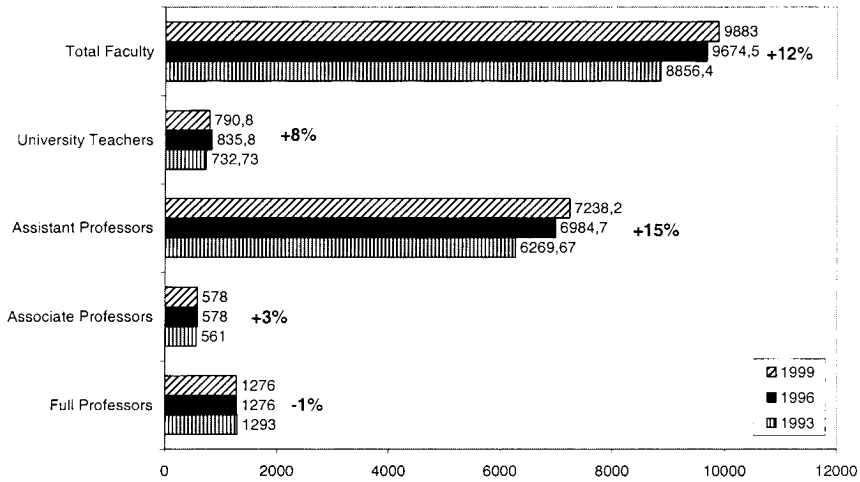
Austria has experienced extensive reform since the 1990s. Higher education budgets have been cut. Organisational reforms have been implemented. Yet university personnel grew by 10% (see Figure 5). Academic numbers grew slightly more (12%) than those of administrators (8%). Administrative growth has been in academic units (11%) and central administration (7%); positions in service areas such as libraries and study abroad centres declined 13% (see Figure 6). Cuts in some service positions, then, has counterbalanced administrative growth elsewhere.

Academic positions also experienced a differentiated pattern of growth and decline in the 1990s (see Figure 7). Total academic positions increased by 12%. However, the major increases were among assistant professors (15%) and university teachers (8%). More 'expensive' associate professors increased only by 3%. Full professors declined by 1%.



Source: Federal of Education Science and Culture, Hochschulbericht 1993, 1996, 1999

Figure 6. Administrative positions at Austrian Universities (1993–1999).

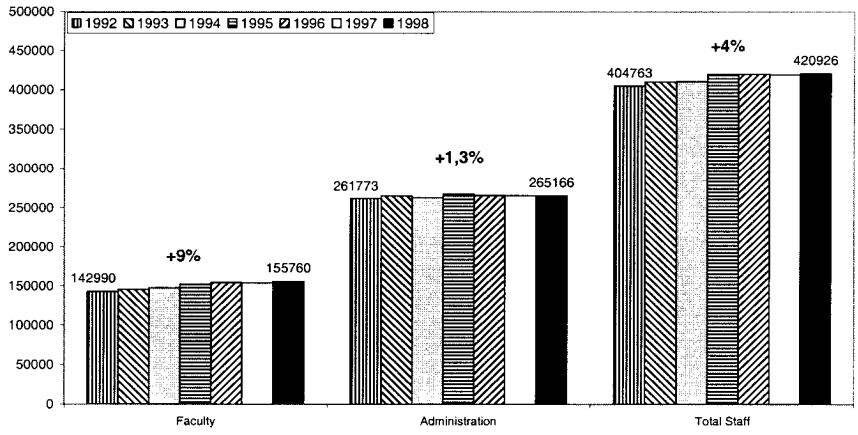


Source: Federal of Education Science and Culture, Hochschulbericht 1993, 1996, 1999

Figure 7. Faculty positions at Austrian Universities (1993–1999).

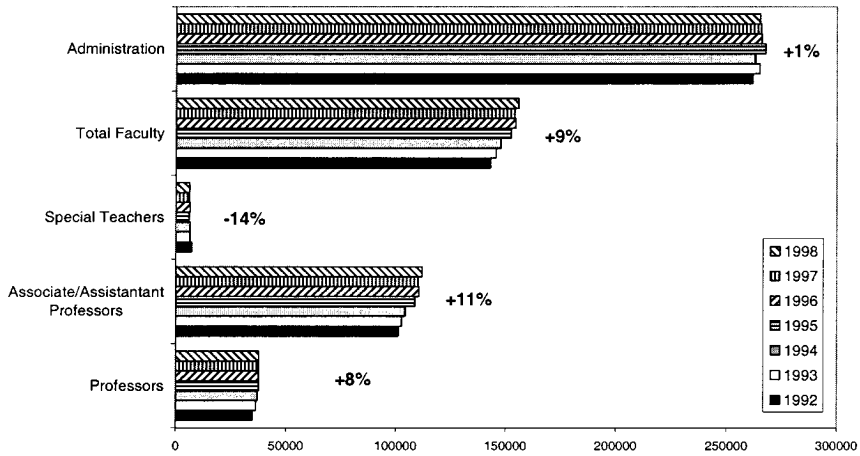
National examples: Germany

Compared to Austria, the German higher education system has historically been more decentralised, with more autonomy from states and more decision-making power for institutions. For example, German universities can design their curriculum without formal accreditation by the state bureaucracy. Still, many university processes are regulated by state laws. Recent reforms have aimed at increasing institutional autonomy in finan-



Source: bmb+f, Federal Ministry of Education and Research, Basic and Structural Data 1999/2000

Figure 8. Personnel at German Higher Education Institutions (1992–1998).

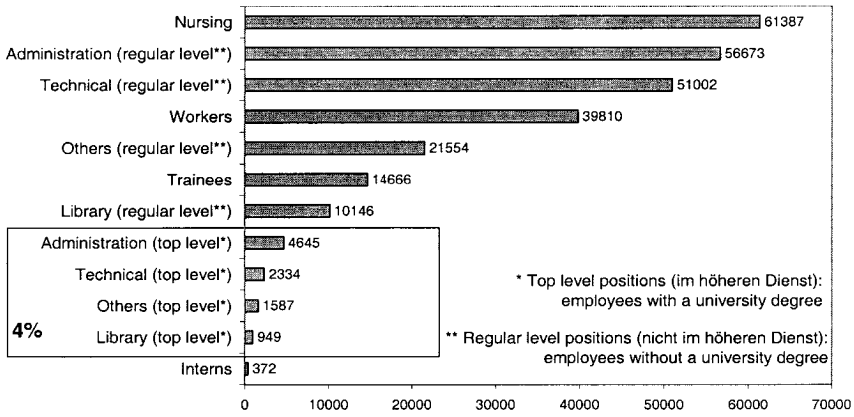


Source: bmb+f, Federal Ministry of Education and Research, Basic and Structural Data 1999/2000

Figure 9. Faculty and administration at German Higher Education Institutions (1992–1998).

cial, organisational and procedural terms, and at diversifying the overall system of *Fachhochschulen* and universities.

Overall, personnel at German institutions of higher education increased by 4% from 1992 to 1998 (see Figure 8). Academic numbers grew faster (9%) than did those of administration (1.3%). However, there are far larger numbers of administrators (63%) than of faculty (37%).



Source: bmb+f, Federal Ministry of Education and Research, Basic and Structural Data 1999/2000

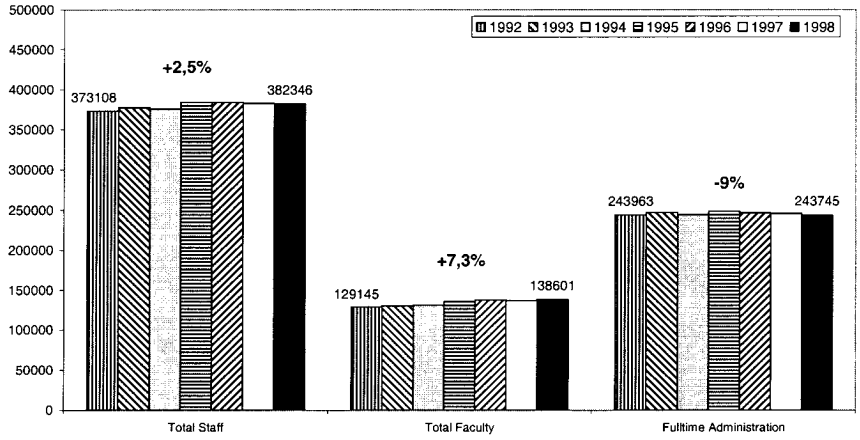
Figure 10. Administration at German Universities in 1998.

There is differential growth in academic positions (see Figure 9). The largest growth (11%) is among assistant and associate professors. Yet, in contrast to Austria, the numbers of full professors are also increasing, by 8%.

Unfortunately, no time series data were available that differentiated among administrative positions. However, Figure 10 provides 1998 data on administrative positions that separates top-level administrators ('*im höheren Dienst*', *i.e.* those with a university degree) from those regular level positions filled by personnel without a university degree ('*nicht im höheren Dienst*'). Central administration, technical positions, library, and other positions, all university educated administrators, represent about 4% of all positions classified under administration. Nevertheless, administrative costs and positions are significant in German higher education.

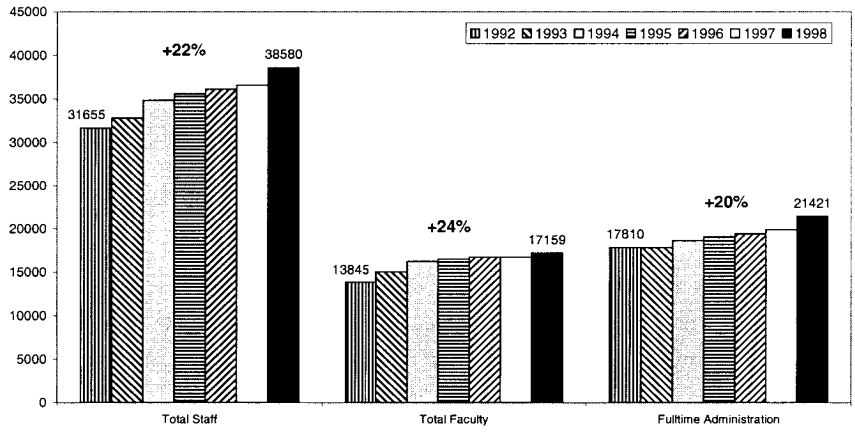
Another point of differentiation is among different types of institutions. In universities (see Figure 11), academic personnel grew by 7.3% and administrative personnel declined slightly, by 0.1%. A quite different picture is evident for *Fachhochschulen*, where faculty positions increased by 24%, but administrative positions also grew, by 20% (see Figure 12).

Germany presents another European example of a higher education system in which a collegial model of management has prevailed. However, given the more decentralised nature of the German system, administration is a larger component of personnel. Recent reforms in Germany, as in other parts of Europe, call for more permanent managers of institutions.



Source: bmb+f, Federal Ministry of Education and Research, Basic and Structural Data 1999/2000

Figure 11. Personnel at German Universities (1992–1998).



Source: bmb+f, Federal Ministry of Education and Research, Basic and Structural Data 1999/2000

Figure 12. Personnel at German *Fachhochschulen* (1992–1998).

THE US MODEL OF MANAGERIAL PROFESSIONALS: NEW MATRIX MODES AND COSTS OF PRODUCTION

US colleges and universities were built at the institutional level, from above, by managers; they were not constructed from below by faculty guilds (Neave & Rhoades 1987). The model is of a strong middle level of institutional leadership. Part of the 'market model' that scholars argue defines US higher education was a combination of a weak state and

strong institutional management that fostered institutional responsiveness to various external markets.

The principal institutional players were campus administrators and professors. Absent national higher education bureaucracies, observers focused on campus bureaucracies of full-time permanent administrators. As institutions grew, so did their bureaucracies. Yet, academic administrators were not 'professionalised' managers. They lacked training or expertise in management; they were largely academics, 'amateurs' who learned on the job and lacked essential attributes of what Anglo-Americans refer to as a profession. Thus, scholars have studied ongoing tensions between professionals (professors) and bureaucrats (administrators), with the latter's authority being a function of position, not expertise.

If this dichotomous characterisation was ever accurate, it no longer captures essential features of managerial activity in American higher education. The conventional view is that academics are the only 'professionals' on campus. Non-faculty employees are bureaucrats, an 'administrative cost'. By contrast, we see institutional management as increasingly relying upon the activities of '*managerial professionals*' (Rhoades 1996, 1998a). Neither professors nor administrators, these personnel have professional associations, conferences, journals and bodies of knowledge that inform their practice, but they lack the independence of faculty. They are closely subordinated to managerial power and closely linked to its purposes. Managers hire and fire them, and they work the schedule of managers, not professors. Increasingly, they engage in activities related to producing quality education, entrepreneurial revenues, research and students. Once peripheral to universities' core activities, they are no longer. They are increasingly central to academically capitalist (Slaughter & Leslie 1997) universities. The American model of management has come to involve the increased use and influence of managerial professionals, relative to professors, who are increasingly managed professionals (Rhoades 1998b).

Emerging and proliferating managerial professionals can be found in the realms implicated by quality assurance, entrepreneurialism and massification. Universities have established structures to address criticisms of undergraduate education's quality. Most now have teaching centres and professional development centres staffed by full-time managerial professionals who directly and indirectly impact instructional delivery – for example, encouraging the use of instructional technology in classrooms. Moreover, most universities have developed organisational mechanisms to solicit and generate external revenues. Virtually all now have central development offices and foundations for fundraising, as do units within

TABLE I

Total numbers (full and part-time) of professional staff

	1976	1987	1989	1991	1993	1995
	# (%)	# (%)	# (%)	# (%)	# (%)	# (%)
Executive/administrative/managerial	101263 (11.1)	133719 (10.5)	144670 (10.6)	144755 (10.4)	143675 (9.7)	147445 (9.6)
Faculty (instruction & research)	633210 (69.3)	793070 (62.1)	824220 (60.2)	826252 (59.1)	915474 (61.7)	931706 (61.0)
Non-faculty professionals	178560 (19.6)	349722 (27.4)	398883 (29.2)	426702 (30.5)	425319 (28.6)	449807 (29.4)
Totals	**913033 (100)**	**1276511 (100)**	**1367773 (100)**	**1397709 (100)**	**1484468 (100)**	**1528958 (100)**

Source: National Center for Education Statistics.

the institution. In technology transfer, units and research parks, staffed by managerial professionals, are growing in numbers, generating revenues and involving themselves in academics' production activities. Finally, universities generally have units delivering various services to student populations, from advising activities to placement. Staffed by managerial professionals, these units are sometimes directly involved in instruction, in 'co-curricular' areas such as leadership development.

With this model of management has come a *matrix mode of production* in which production is less a function of isolated professors' activities than of the interrelated activities of professors and various managerial professionals. With this matrix mode of production comes new factors and costs of production, managerial professionals. Their numbers and costs are growing. Here, we follow people, tracking personnel rather than monies. Expenditures data are not available by profession. At the national and institutional levels, such data are more problematic than personnel data in enabling us to disentangle administrators and support professionals from all those categories of non-professional employees (*e.g.*, clerical, maintenance) that are generally included in 'administrative costs'. Besides, it is important to understand the personnel involved to understand the changing structure of professional labor.

Consider the national data on categories of employees. The shift from 1976 to 1995 in faculty relative to other professional employees is marked (see Table I). As a percentage of all professional employees on campus, professors represented over two-thirds (69%) in 1976; by 1995, that had fallen to 61%. The category of executive/administrators represented 11%

TABLE II

Association of university technology managers membership information

	Member type					
	Regular	Affiliate	Student	Emeritus	Pending	Total
1990	486	219	0	4	0	709
1991	486	280	0	5	0	771
1992	526	367	0	10	0	903
1993	537	467	0	11	0	1015
1994	592	547	0	11	0	1150
1995	706	729	11	14	0	1460
1996	766	774	13	13	0	1566
1997	878	776	7	15	32	1708
1998	970	858	8	17	93	1946
1999	1071	932	7	17	98	2125
2000	1120	930	10	19	38	2117

Source: AUTM Membership Records.

Regular Member – full- or part-time employee with intellectual property management responsibilities at an institution of higher education or employed for another organization that manages inventions for an institution of higher education.

Affiliate Member – employee responsible for managing intellectual property belonging to or under control of an organization other than a higher education institution.

Student Member – full-time student or fellow or a resident in a teaching hospital whose experiences involve direct or indirect responsibilities connected to the administration of intellectual property for an institution of higher education.

of all professional employees in 1976, compared to 10% in 1995. The area of growth was support professionals (*i.e.*, managerial professionals), accounting for 20% of all professional employees in 1976, compared to over 29% in 1995.

The above numbers are for full- and part-time positions. Yet the percentage of part-time faculty nationally increased from around 22% in the 1970s to 43% in the 1990s. Looking only at full-time employees in 1997, faculty account for barely more than half (51.5%), as compared to administrators (13.1%) and support professionals (35.4%).

Another way of tracking growth in managerial professionals is to focus on a particular profession. The number of managerial professions in the US makes analysing all such groups prohibitive. We focus on technology transfer professionals, whose national association is the Association of University Technology Managers (AUTM). Founded in 1974, AUTM's total membership was 133 in the year federal legislation passed enabling universities to own patents. By 1990 it was 709, of which 486 were

TABLE III

Quality assurance professionals at the University of Arizona

1999 – 2000, University College
– Assoc. Dean
– Dir., Freshman Year Center
– Dir., Advising Center for Exploratory Students
– Dir., University Learning Center
– Dir., Office of Academic Services
– PreHealth Professions Advising
– PreLaw Program Advising
– Academic Advising for Athletes

university employees (*i.e.*, regular members: affiliate members work in other settings, including hospitals and the private sector). By 2000, the membership was 2,117, of which 1,120 were university employees (see Table II).

To get an idea of what the national growth of managed professionals means at the campus level, we tracked support professionals on one campus, the University of Arizona (UA). We present the appearance and growth of selected offices at the UA, for 1981–1982, 1991–1992, and 1999–2000. In the realm of quality assurance, managerial professionals signal to the external world that the institution cares about quality and to the internal world that it is serious about strategic action. One example at the UA is the recent creation of the University College, part of a major resource commitment to undergraduate education (see Table III).

The Freshmen Year Center is a 10 million dollar building under construction, aimed at integrating freshpersons into the institution to increase graduation rates.

In the realm of entrepreneurialism, two sorts of offices generate revenues through fundraising: development and the foundation. Table IV shows the proliferation of development officers between 1981–1982 and 1999–2000, in central offices and in academic and non-academic units. Relatedly, public universities such as the UA started undertaking 'capital campaigns', fundraising drives. Many created foundations, which have increased in size (see Table V).

Two additional offices emerged in recent decades. The UA, like many universities, created a technology transfer office between 1981–1982 and 1991–1992; it then doubled in size. So, too, as with many research univer-

TABLE IV

Development officers at the University of Arizona

1981–1982	1991–1992	1999–2000
– Director of Development	– Acting Director	– Agriculture, Dvlp. Officer
– VP Emeritus	– Agriculture, Dvlp. Officer	– AHSC, Assoc. Dir. of Dvlp.
– Assoc Dir. Dvlp.	– AHSC, Arthritis Center, Dvlp. Officer	– AHSC, Arthritis Center, Dvlp. Officer
– Bus. Mmgr.	– AHSC, Cancer Center, Dvlp. Officer	– AHSC, Cancer Center, Dvlp. Officer
– Editor	– AHSC, Children's Res. Ctr., Dvlp. Officer	– AHSC, Children's Res. Ctr., Dvlp. Officer
– Coord. for Research	– AHSC, Heart Center, Dvlp. Officer	– AHSC, Emergency Program, Dvlp. Officer
	– AHSC, Nursing, Dvlp. Officer	– AHSC, Heart Center, Dvlp. Officer
	– AHSC, Pharmacy, Dvlp. Officer	– AHSC, Nursing, Dvlp. Officer
	– Architecture, Dvlp. Officer	– AHSC, Pharmacy, Dvlp. Officer
	– Art Museum, Dvlp. Officer	– AHSC, Prevention Center, Dvlp. Officer
	– Business and Public Admin, Dvlp. Officer	– Architecture, Asst. Dir. of Dvlp.
	– Cultural Affairs, Dvlp. Officer	– Athetic, Regional Dvlp Officer
	– Engineering, Dvlp. Officer	– Athlietic, Annual Giving Dvlp. Officer
	– Fine Arts, Dvlp. Officer	– AZ State Museum, Dvlp. Officer
	– Humanities, Dvlp. Officer	– AZ State Museum, Dvlp. Assoc.
	– Law, Dvlp. Officer	– Business and Public Admin, Dvlp. Officer
	– Library, Dvlp. Officer	– Campus Lfe, Dvlp Officer
	– Life Science, Dvlp. Officer	– Education, Dvlp. Officer
	– Major Gifts, Dvlp. Officer	– Engineering, Dvlp. Officer
	– Minority Programs, Dvlp. Officer	– Extended University, Dvlp. Officer
	– Science, Dvlp. Officer	– Fine Arts, Dvlp. Officer
	– Social and Behavioral Sciences, Dvlp. Officer	– Fine Arts,
	– Udall Center, Dvlp. Officer	– Fdn. and Corp. Relations, Dvlp. Officer
	– University Medical Center, Dvlp. Officer	– Graduate College, Dvlp. Officer
	– Greater Phoenix Area, Dvlp. Officer	
	– California, Dvlp. Officer	
	– Dir., Foundations and Corporate Relations	
	– Dir., School Development	

TABLE IV

Continued

1981–1982	1991–1992	1999–2000
	– Research	– Humanities, Dvlp. Officer
	– Central Gift Receiving	– International Programs, Dvlp. Officer
		– KUAT Communications, Dvlp. Officer
		– Life Science, Dvlp. Officer
		– Maricopa County Dir of Dvlp
		– Minority Programs, Dvlp. Officer
		– Research Office
		– Research Office, Prospect Research Coord (2)
		– Scholarship Dvlp Officer
		– Scholarship Dvlp Prog. Coord
		– Science, Dvlp. Officer
		– Social and Behavioral Sciences, Dvlp. Officer
		– Student Life, Dvlp. Officer
		– UA Presents, Dvlp. Officer
		– University Fundraising Priorities, Dvlp. Officer
		– Applied Systems Analyst and Supervisor
		– Gift Accountant
		– Records Specialist (6)
		– Sr. Data Entry Operations

sities, it established a science and technology park in the 1990s, staffed by an Associate Vice-President of Economic Development, a Park Director and an Accountant.

In the realm of massification, we select one example of offices that have expanded. Most US campuses have a Dean of Students office. Over time, it has expanded greatly, as have units within it, such as student activities and programmes, which are now separate offices (see Table VI).

In the face of massification, managerial professionals have worked not only to increase student services and programmes, but to differentiate among students. For example, the UA has in 1990–2000 a Coordinator of the Arizona Collegiate Institute for Leadership. The institute is partly a push to increase quality, encouraging students to develop communica-

TABLE V

Development of the University of Arizona foundation for fundraising

1991–1992	1999–2000
– Executive Vice President	– President
– Campaign Director	– Special. Assistant. to President
– Chief Financial Officer	– Vice President Community and Public Affairs
– Dir., Planned Giving	– Dir., Publicity
– Dir., Annual Giving	– VP Development Operations
– Asst. Dir., Annual Giving	– VP Finance and Admin.
– Exec. Dir., Pres. Club	– VP Planned Giving and Donor Relations
– Editor	– Asst Dir., Planned Giving and Donor Relations (2)
– Accounting	– Accounting
– Comptroller	– Comptroller
	– Assoc. Comptroller
	– Asst. Comptroller (2)
	– Dir., President Club and Donor Relations
	– Accounting Staff (8)
	– Annual Fund Donor
	– Asst. Dir., Comptroller
	– Prog. Coord., Calling Operations
	– Prog. Coord., Systems Operations
	– Bldg, Supervisor
	– Computer Support
	– Human Resource Manager
	– Real Estate Coord.
	– Special Projects Coord.

tion and leadership skills associated with 'quality'. It is also partly an effort to attract external resources; it is funded largely by grants from foundations and corporations. Finally, it is a mechanism enabling the institution to restratify as it faces growing numbers of non-traditional students: the institute has competitive entry – students are overwhelmingly 'traditional' students, upper-middle class and Anglo. The institute is staffed by managerial professionals, who teach classes for credit.

Finally, at the campus level, Table VII shows the employee headcount for the UA.

Focusing only on administrators, instructional faculty and support professional, the change in the last decade is dramatic. In 1991–1992, administrators accounted for 7.9%, instructional faculty for 48.4% and managerial professionals for 43.7% of professional employees. By 1999–

TABLE VI

Dean of students office at the University of Arizona

1981–1982	1991–1992	1999–2000
– Dean	– Dean	– Assoc. VP and Dean of Student
– Assoc. Dean	– Asst. to the Dean	– Assoc. Dean (3)
– Assoc. Dean, Res. Life	– Assoc. Deans (3)	– Assoc. Dean of Students, Dir. DMPS
– Asst. Deans (6)	– Dir., ASUA Bookstore	– Coord., New Start
– Dir., Student Recruit.	– Dir., Disability Related Research	– Coord., Minority Student Services
– Asst. Dir., Student Recruit.	– Dir., International Student Center	– Coord., Student Enrichment Program
– Dir., Student Activities	– Dir., Center for Off Campus Student and Veteran Affairs	– Coord., Math and Science Learning Center
– Asst. Dir., Student Activities	– Dir., Student Activities and Organizations	– Assoc. Dir. DMPS, Dir. – African American Student Affairs
	– Dir., Student Publications	– Coord., African American Student Affairs
	– Greek Life Coord.	– Assoc. Dir DMPS, Dir. – Asian Pacific Student Affairs
		– Assoc. Dir DMPS, Dir. – Chicano/Hispano Student Affairs
		– Coord. – Chicano/ Hispano Student Affairs
		– Assoc. Dir. DMPS, Dir. – Native American Student Affairs
		– Assoc. Dean, Arizona Student Union Association
		– Dir., Career Services
		– Dir., UA Bookstore
		– Dir., Res. Life
		– Dir., AZ Student Media
		– Dir., AZ Student Unions
		– Asst. Dir., Facilities Mgmt and Operations
		– Assoc. Dir., Financial and Retail Service Operations

TABLE VII

University of Arizona headcount

	1981–1982	1991–1992	1999–2000
Enrolment*, No. of Students	30,916	34,862	33,912
University of Arizona employee count			
Administrators	—**	274	259
Budgeted Instructional Faculty	1,709	1,679	1,525
Professional	1,179	1,519	2,000
Budgeted Grad Assts. & Assoc.	1,048	640	1,327
Other Grad Assts. & Assoc.	1,654	1,947	1,289
Classified Staff	7,724	5,844	5,997
Res., Adjunct, Visiting Faculty	—**	558	795
TOTAL	13,314	12,461	13,192

*Total Undergraduate, Graduate and First-Professional.
**Count is not available.

2000, administrators' share had declined to 6.8%, faculty's had declined to 40.3%, and managerial professionals' share had increased to more than half (52.9%) of the professional workforce.

The above patterns speak to the US model of management, and the implications this has for the costs of production. At the national level, one sees the rise of managerial professionals. Senior administrators remain a relatively small proportion of professional employees. In tracking certain professions, the growth of managerial professionals is even more evident. When the analysis moves to the campus, one sees that the 'periphery' has numerically become the centre.

Discussion: Questions and Concepts for Strategic Management

Discussions of quality assurance, strategic management and productivity generally overlook factors of production that are emerging as new models of management and organisation are adopted in Europe and the US. Most scholars focus on professors and institutional managers. New categories of work and employees that have developed around devolution and quality assurance, entrepreneurialism and massification have been ignored.

When changes surrounding new management models are addressed, it is often in terms of 'administrative costs' (Gumport & Pusser 1995; Leslie & Rhoades 1995) or 'bureaucratisation' (Gornitzka, Kyvik &

Larsen 1998). We offer a different framework, going beyond categories of professors and administrators, and focusing on managerial work, performed sometimes by academics, sometimes by managerial professionals. In the US, managerial professionals are expanding their domain, and we see their activities, like those of professors, as part of the production matrix. This has implications for analysing these employees (and academics' managerial work), and for strategic management.

The concept of managerial professionals is generated from the US experience. This path of proliferating professions is one possible path for new models of management. However, we see our European cases offer the possibility of different models from which the US can learn.

We now raise questions and offer six concepts for framing our thinking about models of management and shifting modes and costs of production. What are the possibilities and benefits of alternative models of management to that of the US reliance on managerial professionals? Can quality assurance be done by professors – seconded for rotating periods, or new professors with expertise in, and responsibility for developing, quality assurance mechanisms? Faculty already play this role in various ways. Similarly, can entrepreneurial activity be conducted by professors? Professors are already central to such initiatives' success. Further, can services to expanding student populations be provided through additional faculty with responsibilities in this realm, along with contracted out and 'virtual' delivery systems?

Gornitzka, Kyvik and Larsen (1998) foreshadow our questions, though from a different perspective. They suggest that academics are spending more time on non-academic activities, and they see this as a burden, not as an opportunity for efficiently conducting the work of more independent, self-regulating, entrepreneurial, massified higher education institutions. Why? Because such responsibilities are often simply added on to professors' workloads. However, academic staff could be given release from some current duties, or new academics could be hired with such managerial work representing a larger proportion of their workload. European higher education institutions should consider using more professors with specific responsibilities in 'support' work, and utilise delivery systems that rely on part-time employees and on technology.

In exploring 'organisational pathways of transformation' in five small European universities, Clark (1998) centred senior professors, much as he did in a study of organisational transformation in three small liberal arts colleges (Clark 1970). For him, the 'steering core' 'must embrace central managerial groups and academic departments' (p. 5). The 'heartland' is an

academic heartland. And the 'expanded developmental periphery' of units that connect with the external world is on the 'periphery'.

As professors, we are sympathetic to Clark's centring of academics. But our data suggests the push is in a quite different direction. In the US, faculty are being *de*centered in numbers and power. The US is moving not simply to a managerial model, but to a model that depends on the growth and activities of full-time managerial professionals, doubling in size as the proportion of academics who are part-time doubles. In Europe, faculty are being decentred in terms of influence or power; the push is to increase the number and powers of full-time managers. Europe is moving away from a collegial model of professors as administrators to a structure with more permanent administrators and fewer full professors.

With changing models of management, we must reframe our thinking about non-faculty professionals and work. These personnel and activities are a growing cost of production. They are also growing factors of production, working with professors to produce higher education's 'output'. Thus, it is important to focus on managerial professionals' productivity. It is also important to consider the productivity of academics' managerial work. To that end, we offer some concepts or metrics for strategic consideration.

In the area of quality assurance, it makes sense to gather data on and calculate a '*quality quotient*', the cost of quality assurance divided by measurable gains in quality. Institutions, or higher education systems, must determine what various gains might be, how they might be measured, and how they could be translated into a scale. They must also ensure the gathering of data on non-faculty personnel and on the work of academic personnel that is disaggregated enough to isolate the costs surrounding quality assurance. At a minimum, these should include personnel costs, time costs (for managerial professionals and for academics), capital costs, maintenance and upgrading costs for information systems used to collect, store and analyse data, and opportunity costs (foregone gains in quality and productivity associated with new faculty).

In the area of entrepreneurial activity, it makes sense to gather data on and calculate an '*entrepreneurial venture net*', the yield of any entrepreneurial activity minus the cost of the investment. Higher education systems and institutions should improve their accounting practices. In addition to tracking and reporting revenues that are generated, they should devote systematic attention to costs that are incurred in attempting to generate that revenue. Again, these should include personnel, time, capital and opportunity costs. Any algorithm should also consider legal costs that accompany some entrepreneurial ventures. For example, in technology transfer universities are often subject to, or themselves pursue patent

infringement lawsuits. Settlements may run to millions of dollars. These are costs attached to entrepreneurial activity. Strategic managers must focus not only on revenues and gains, but on costs.

In relation to massification, it makes sense to gather data on and calculate the '*service productivity ratio*', the measurable gains in units of service outcomes divided by the costs of the service units. Institutions and systems must determine the measures of service they find meaningful. Costs should include personnel, time, capital and opportunity costs. Institutions should also consider developing a '*social investment index*'. The aim of massification, and of services accompanying it, is to increase access and enhance opportunity for underserved populations, particularly the poor and working class, students of colour and immigrants, and women. Institutions and systems should put into place mechanisms that enable them to determine the extent to which service activities are enhancing access.

Finally, we believe that strategic management should incorporate at least two processes in assessing the effectiveness and productivity of non-academic activities and units in quality assurance, entrepreneurialism and massification. First, there should be an '*annual review*' process, in which activities and units are reviewed. Second, there should be a '*sunset review*' at repeated time increments (*e.g.*, five years), to determine whether units and/or activities should be continued. In making these judgments, there should be an explicit sense of how much investment the institution is willing to make in the unit/activity, and at what point in performance and time it would consider bailing out. In these ways, strategic managers, non-academic and academic alike, can more fully and systematically explore, assess and adjust the shifting modes and costs of production that are accompanying the new models and management in Europe and the US.

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