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Professor Maurice Kogan: In Memoriam

10 April 1930-6 January 2007

Professor Maurice Kogan was Editor of Higher Education Management, as this journal was then known, from 1985 to 2000. He was both a colleague and a friend and it was an honour to be asked to succeed him. Maurice died of cancer on 6 January 2007, professionally active to the last. We print below the obituary which was published in The Times on 12 January 2007.

Michael Shattock

Wideranging scholar who made a particular mark in the study of higher education

Professor Maurice Kogan made valuable contributions to scholarship in several fields, notably higher education. He was Professor of Government and Social Administration at Brunel University for more than 25 years, was a distinguished contributor to the Organisation for Economic Co-operation and Development (OECD) and was editor of its journal, Higher Education Management.

Maurice Kogan was born in April 1930 to Russian and Polish immigrants and grew up in the East End of London. His father died when he was 4 and his mother, left with six children to bring up, ran a sweetshop.

He went to Stratford Grammar School from where he won an exhibition to Christ’s College, Cambridge. He achieved a first in the historical tripos in 1953 and, turning down a research scholarship, was placed first in the Home Civil Service administrative-grade examination in the same year.

For the next 14 years, including a year as a Harkness Fellow, he worked in the Ministry of Education, later the Department of Education and Science, where he rose to the rank of assistant secretary, having been secretary to the Central Advisory Council for Education (the Plowden committee) and from 1956 to 1958, private secretary to Sir Edward (later Lord) Boyle, then an immensely influential parliamentary secretary.

In 1967, in the aftermath of the Robbins recommendations for an expansion of higher education, Kogan decided to move to Brunel University, a college of advanced technology that had just been granted university status, as director of its hospital reorganisation research unit. A key consideration was the distinguished group of applied social scientists whom Brunel had managed to
attract to foundation chairs – Elliott Jacques, Keith Hopkins, John Vaizey and Dan Miller. These were all strong, rather abrasive personalities, but people who gave the new university a good reputation.

Kogan had no difficulty in fitting in. By 1969 he was Professor of Government and Social Administration, a year later head of department, a post he held for 20 years, and in 1971 dean of the faculty. In 1989, on the sudden death of the vice-chancellor, Kogan became acting vice-chancellor for nine months. He could well have become a vice-chancellor elsewhere if he had chosen to make himself available.

He chose, however, to stay at Brunel. He was a prolific scholar and wrote nearly 40 books and more than 70 journal articles and book chapters. He had an unusual gift of being able to collaborate creatively and the names of Tony Becher, Ivar Bleiklie, John Brennan, Steve Hanney and Mary Henkel appear frequently in his bibliography.

He researched and wrote in three separate academic areas: the management of the health and social services; education policy (closely linked with an interest in local government); and higher education policy, both UK and international. These interests often led him to wider fields but throughout there were certain common threads.

As a political scientist he was consistently interested in processes and institutions, how issues emerged and conflicts were presented, how policies were created and implemented and what their impacts were.

At another level he wanted to tease out how values were realised in organisations, and what connections existed between values, forms of knowledge and organisational structures. He was sceptical, unwilling to accept overtidy definitions, and anxious to represent ambiguity and multidimensional perspectives; he did not favour simple conclusions.

In the health field his two most important contributions were The Working of the NHS (1978), whose conclusions were heavily drawn on by the Merrison Commission, and Government and Research: The Rothschild Experiment in a Government Department (1983), written with Mary Henkel. The latter arose from an invitation from the DHSS [UK Department of Health and Social Security] in 1974 to act as consultant on the operation of the post-Rothschild customer/contractor research management system in one government department.

Kogan and his research team enjoyed exceptional access to internal papers and attended more than 200 departmental meetings and conducted more than 200 interviews with DHSS staff. [The 1983 edition of Government and Research] is now being revised for re-issue.*

In education policy Kogan ranged very widely, with studies of the role of directors of education, school governing bodies, and of local government. The two books for which he is best known are *The Politics of Education* (1971), based on extended interviews with Edward Boyle and Anthony Crosland, and *The Politics of Educational Change* (1978), which described how education threw up prominent political issues and how in “one field of social policy, fundamental value conflicts and institutional pressures work out within the political and administrative system”.

Perhaps his most lasting work was in higher education policy. Among many books were the widely acclaimed *Process and Structure in Higher Education* (1980, revised 1992), written with Tony Becher, and *Reforming Higher Education* (2000), written with Stephen Hanney. The latter was part of the kind of comparative study, this time with Sweden and Norway, which Kogan loved. The project produced four companion volumes that, taken together, represent landmark studies in higher education in these northern European countries.

For the OECD Kogan undertook national reviews of educational or higher educational policy in the US, Finland, Greece, Sweden and Norway. He was one of the founders of the Consortium of Higher Education Researchers, who have met annually for more than 20 years. Through this he exercised a significant influence on how higher education research has been pursued around the world. A real testimony to this can be seen from the three festschriften that were presented to him with chapters by scholars of ten nationalities.

Kogan was generous, hospitable and stimulating as a colleague but acerbic as a critic of sloppy work or political posturing, and with a wide international circle of friends, he flourished as a discussant of the interplay of politics and public policy on social occasions, preferably over dinner in a restaurant of his choice.

He acquired legendary status for identifying in the vicinity of OECD’s offices in Paris eating places that offered a combination of good cuisine and ambience. In London his informal dinners after meetings of the Higher Education Study Group, which he helped to found, did more to create a policy dialogue than any number of seminars and research papers.

He is survived by his wife, Ulla, and two sons.

© The Times, 12 January 2007
The Relationship between Branding and Organisational Change*

by

Bjørn Stensaker
NIFU STEP, Norway

Increased national and international competition within higher education has triggered an interest in branding within the sector. Higher education institutions are, as a consequence, currently re-examining their profile and image. This article addresses the problems higher education institutions face in this process, and points to the benefits and dangers of branding as a strategy for survival in the higher education market. The aim of the article is to investigate the potential relationship between branding and organisational change. Drawing on recent insight into organisational theory, we discuss how branding, a process of linking organisational identity and the external image of a given organisation, can enhance institutional development and stimulate organisational change. We conclude that while a branding process with these characteristics is necessarily incremental and on-going, it can also maintain the social responsibility of higher education even in a period when the sector is becoming an industry.

* An earlier version of this article was presented in a lecture in the City Higher Education Seminar Series (CHESS) at City University, London, 7 December 2005. The author is indebted to Professor Vaneeta D’Andrea for comments helping to improve the article.
Introduction

The increased competition in higher education – both at the national and international level – has led to an emerging interest in how higher education institutions profile themselves. The image or brand a given higher education institution has in its surrounding seems to be considered as more important than before, and, to an increasing extent, a strategic and managerial issue. The reason is the possible impact a positive image or brand is expected to have concerning recruitment of students and academic staff, for attracting resources and to create goodwill (Belanger et al., 2002, p. 217). As a consequence, new images have been proposed for higher education institutions. The service-university (Cummings, 1996), the corporate university (Bleiklie, 1998) and the entrepreneurial university (Clark, 1998) are only some of the new organisational ideals stimulating new and dynamic branding efforts.

Image and branding issues are interesting phenomena that we need to better understand, not only due to the money being spent on branding efforts, but also as a development that may shed some light on the future of higher education. An obvious question is, for example, whether the interest in branding is yet another sign that higher education institutions are being transformed from social institutions to a standardised industry (Gumport, 2000). One may argue that this is perhaps the most dangerous effect of engaging in the branding game. If universities become more similar in their attributes and characteristics, they remove themselves from the one element that it is most difficult to copy: their uniqueness and distinctiveness. Sceptics may, on the other hand, argue that the tendency towards emphasising image and branding is merely an indication of higher education’s ability to create convincing symbolic responses to new demands in its surroundings while protecting the core values of the sector (Mintzberg, 1983). The decoupling, or at least, loose coupling between structure and action, has been a major factor characterising higher education in the past (Weick, 1976), and is perhaps one of the keys for understanding the long-term adaptability and survival of higher education (Clark, 1983).

However, success in the past is not a guarantee for success in the future, and the stronger emphasis given to image and branding may create new challenges for higher education institutions. A fundamental problem is, of course, that images and brands nowadays are increasingly tested and contested (Power, 1997). The audit society also influences higher education, and various
forms of national and/or independent evaluations and media investigations may to an increasing degree hold institutions accountable for images not rooted in reality. The effects of being “caught” may be damaging, not only concerning the ethical and legal dimensions (Belanger et al., 2002), but also concerning student drop-out (Levitz et al., 1999). One may therefore argue that it is strategically important to create images that match the organisational identity of a given institution, and that the challenge for higher education institutions is to balance the need for adjusting to a changing world while maintaining their organisational identities and the inherent characteristics of higher education.

Given that branding can be an important process when trying to link the institutional identity and the external image of higher education institutions, this article first addresses how recent contributions from the field of organisational theory may assist institutions in positioning themselves in a more competitive higher education market. Second, we discuss in detail the pros and cons of branding as a strategy for survival of and change in higher education institutions.

Organisational identity and image as drivers for organisational change

If branding is understood as a process that aims to link organisational identity and image, one can still question whether this has any relationship with organisational change. The answer is found in recent studies within the field of organisational theory which indicate that organisational identity is a more dynamic concept than traditionally perceived, and that organisations often change when trying to preserve their identity. However, to better understand how this process actually takes place, we should first understand how organisational identity and image are usually portrayed.

Traditional concepts of organisational identity and image

Organisational identity can be regarded as one of several possible cultural artefacts in an organisation (Hatch and Schultz, 1997), and has in recent years attracted renewed interest both within organisational studies in general (Weick, 1995; Whetten and Godfrey, 1998; Gioia et al., 2000) and in higher education studies more particularly (Välimaa, 1998; Henkel, 2000).

To say that organisational identity is one of several possible cultural artefacts in an organisation suggests that it is a narrower concept than, for example, organisational culture. While conventional definitions of the latter often highlight that organisational culture can be managed and manipulated, resulting in changes in the collective behaviour of the members of the organisation (Alvesson and Berg, 1992), a provisional definition of organisational
identity would emphasise the symbolic, mythological and cognitive sides of the organisation. Important here is the construction of organisational reality through the use of symbols and myths that blur the distinction between truth and lies (Strati, 1998, p. 1380). In other words, organisational identity should be understood as a socially constructed concept of what the organisation is. Hence, organisational identity may be a social construction, but one that people inside the institutions recognise as meaningful and real (Bauman, 1996).

But if organisational identity describes what the organisation is, then it should be understood as something “real” and “deep” and as an expression of the true “self” of a given organisation. This tradition can be said to belong to a Durkheimian perspective where individual behaviour aggregates into a holistic and institutionalised organisational entity. As such it links the organisational identity concept to more conventional understandings of organisational culture emphasising values, norms and behaviour. In higher education, Burton Clark can be regarded as a consistent representative of this perspective (Clark, 1972, 1998).

In a similar line of thinking, Albert and Whetten (1985) have suggested that this uniqueness consisted of three aspects: a) central character, b) temporal continuity and c) distinctiveness. The first notion, central character, distinguishes the organisation on the basis of something important and essential. Temporal continuity means that the identification includes features that exhibit some degree of sameness or continuity over time, and distinctiveness implies a classification that identifies the organisation as recognisably different from others.

This characterisation of organisational identity rings familiar for students in organisational theory. One of the founders of the institutional school in sociology, Philip Selznick (1957) used the identity concept in the same way – as a label to describe how organisations over time become transformed into institutions with distinctive characteristics (an identity). In this “old” institutional perspective, organisational identity was perceived to be a “real” stabilising element in organisational life, and a holistic expression of the organisation.

This holistic view on organisations can also be found in later versions of organisational theory, not least within the new institutional school of thought (DiMaggio and Powell, 1991). A “new” element in the new institutionalism is, however, the way in which organisational identity is interpreted and defined. Organisational identity is a social institution the organisation adapts to. The organisation then becomes a metaphor – a “super-person” who “exposes” an identity (Czarniawska and Sevón, 1996). Thus, in order to obtain legitimacy from the environment, organisations compose themselves into a whole (Czarniawska, 2000, p. 273). Thus, in the new institutionalism, organisational identity is subordinated to popular ideas in the environment of how the
organisation should look. Instead of a conception of identity emerging from deep inside the organisation, identity is located in the formal structure and becomes a “chameleon-like imitation of images prevailing in the post-modern marketplace” (Gioia et al., 2000, p. 72). The assumption is that organisational identity is transformed from a stable, distinct and enduring characteristic to a fluent entity and an easily changeable organisational fashion.

Even if these interpretations provide some clarity regarding the properties of the organisational identity concept, there still appears to be a gap between an understanding of organisational identity as “real”, “deep” and distinctive, and one that emphasises organisational identity as a metaphor, a symbolic and more fluent entity, an interpretation that relates more to how organisational image usually is conceived.

The emergence of a dynamic organisational identity

The ambiguity over whether organisational identity is real, deep and enduring or whether it is a fluent and easily exchangeable construct can also be found in studies of organisational identity (Gioia et al., 2000). However, recent research on organisational identity suggests that this ambiguity may stem from a failure to distinguish between identity labels on one side and the on-going interpretation of these labels on the other (Gioia et al., 2000). The argument rests on the assumption that organisational identity is found in the labels we use when we talk about, describe and analyse an organisation, and that it is the labels that usually are institutionalised and communicated to the outside.

However, research suggests that not every identity label is perceived as valid and carries the right legitimacy in its environment (Schultz et al., 2000). Not least is it usually emphasised that images should be trustworthy. If this is the case, then a close relationship exists between organisational identity and the organisational image (cf. Gioia et al., 2000, p. 67) – a relationship that may lead to various outcomes: An organisational image that provides a “good match” with the organisational identity will result in stability and only incremental change (cf. March and Olsen, 1989). However, it is possible to claim that due to increasingly complex environments, and more rapidly shifting external demands, such situations are becoming more exceptional in higher education. Thus, not only are there reasons to believe that many higher education institutions experience a gap between image and identity, but this gap could also represent a potential threat to the survival of the organisation. Specifically, a given identity may be problematic when the organisational environment signals a change in the relationship between the organisation and the outside world. When too huge a gap emerges between the identity of an organisation and its environment, an identity crisis may occur. A huge gap between image and identity could indicate an organisation that is “faking its
identity” or one that is unable to respond to the expectations of its environment (Schultz et al., 2000, p. 1). On the other hand a constant shift in identity labels would not be judged as trustworthy in the environments (Gioia et al. 2000, p. 73).

So how does identity change occur? Traditionally organisational identity change has been portrayed as the outcome of intra-organisational dynamics (Clark, 1972). Influence, coalitions and competing values were seen as ingredients in a power struggle that could, dependent on active institutional leadership, lead to radical organisational change. More recently, change has been conceived as passive, involving constant reproduction and a reinforcement of existing modes of thought. In this perspective change is convergent – leading to more similar organisations through processes of imitation (Greenwood and Hinings, 1996, p. 1022, p. 1027).

However, it can be argued that imitation is an important concept also for developing a more distinguishable organisational identity (Røvik, 1998). The argument launched to support this statement is that imitation should not be seen only as a passive process. Imitation should rather be perceived as an active process (Czarniawska and Joerges, 1996; Sahlin-Andersson, 1996; Sevón, 1996). Since organisational identity is a relational phenomenon, it must always be defined according to something or someone. However, copying is not necessarily the result. There will always be organisations or organisational identities that a given university does not want to be associated with. Thus, imitation may include both adaptation and differentiation processes (Røvik, 1998, p. 139). In some instances, adaptation and differentiation may also occur in an integrated process as when one organisation imitates a specific aspect of another. For example a university may “imitate” the computer science programme of another institution, while choosing to distance itself from other elements of that institution (Labianca et al., 2001, p. 314). Such decisions indicate a rather reflective and thoughtful process of adaptation, and not unconscious and passive imitation.

Thus, imitation is perhaps not the best term when trying to describe adaptation processes in more realistic terms. Czarniawska and Joerges (1996) have suggested that transformation is a better description, suggesting that imitation is not necessarily the opposite of innovation. Imitation could be viewed as a process in which something is also created (Sevón, 1996, p. 51). Furthermore, recent research suggests that the mechanisms through which transformation takes place involve matching not only structures, as suggested in the new institutionalism, but also organisational identities. In a study of university emulation in the United States, Labianca et al. (2001, p. 325) found that universities considered other institutions’ identity-attributes as crucial for their own emulation choices. For example, a university may carry the label “entrepreneurial” without attaching a specific organisational structure to that
label, and without pretending to be entrepreneurial. Organisational change occurs due to different and on-going interpretations, by organisational members and stakeholders, of what the labels mean or signal but without questioning the labels as such (Gioia et al., 2000, p. 54). The result is that stability is found in the labels, but the meanings attached to the labels change over time creating more dynamic and adapting organisations.

This line of thinking is supported by studies of organisational identity change in universities established during the 1960s and 1970s in Scandinavia and the Netherlands (Stensaker and Norgård, 2001; Huisman et al., 2002). These studies show that all these universities had quite unique organisational identities at the time of their establishment, and that they, over the years, have been forced to adjust to a changing environment. This has in some instances led to quite dramatic internal structural changes, reallocations of resources and even extensive academic reorientations. But regardless of such changes, these universities did manage to preserve a number of their unique characteristics (Huisman et al., 2002, p. 329). It can be argued that they have managed to do so by constantly “editing” and translating their identity labels to attach meaning to and providing coherence when facing external pressure for change (Stensaker and Norgard, 2001, p. 489). Even if these universities may seem far from taking part in the branding game currently found in the United Kingdom and in the United States, the knowledge of how change has taken place at these institutions is also relevant in this setting. These studies indeed show that a given university may have room to manoeuvre even when experiencing external pressure for change. A recent study on how a number of higher education institutions in Norway have adapted to policies concerning the quality of teaching and learning illustrates that, even in the age of New Public Management, there are a number of organisational images to choose from and adapt to, and that institutions can maintain their profile and identity even when adjusting to new demands in their environment (Stensaker, 2006).

The benefits and dangers of branding, and a new understanding

Traditionally, branding is not understood as a process closely related to organisational change, but rather as a (unwanted) consequence of system level policies in the sector. During the last 20 years governments throughout the world, influenced by New Public Management philosophies, have built their governing strategies around keywords such as transparency, comparability and consumerism (cf. Pollitt, 1993). The effects are recognisable in a number of countries. The massive build-up of various forms of evaluation of higher education, performance indicators and report cards have created a sector that in many ways is more transparent than ever before (Stensaker, 2003).
By looking into the sheer number of reports, statistics and evidence available, we now know more about higher education. This massive amount of information is in turn systematised, and used as input for comparisons between higher education institutions. Ranking systems have emerged in a number of countries intended to guide student choice as to which institution and study programme they should attend, or as background information for funding decisions (Dill and Soo 2003). Treating students as customers may, however, have the effect that they actually start to behave as such, which probably is one of the major factors behind the tendency to look upon higher education as an industry (Gumport, 2000), and to transform stakeholders more and more into consumers of higher education. Hence, there is a close relationship between the emergence of what we might term the “branding game” and the emergence of market or quasi-market strategies for governing the sector.

However, attempts to create market behaviour do not imply that the emerging market will function accordingly. As Dill and Soo (Dill, 2003; Dill and Soo, 2003, 2004) have shown in a number of studies, there are some serious side-effects that should be considered carefully when arguing for more “market” in higher education.

**The benefits of branding**

The problem is that while branding may be a relevant strategy for survival for the individual institution, evidence shows that branding may yield unwanted effects at the system level (Dill and Soo, 2003, 2004). Most relevant for the current study are indications that the major vehicle triggering university branding efforts – ranking lists provided by newspapers and other third party actors to higher education – produces institutional behaviour that provides little added value for the society at large. Even though there are indications that rankings may produce a more mobile student population, data still suggest that most students are affected by factors other than reputation and image when making university choices. Hence, even the US data suggest that approximately two-thirds of the students at the baccalaureate level study in their home state (Hoxby, 1997). The fact that it is high ability students or students from high income families who most often use rankings to inform their choices is still a strong indication that such rankings have an important signalling function for the most attractive segment of the student market (Dill, 2003). For the individual institution, attracting such students through various branding efforts is therefore a rather obvious and potentially benefiting strategy.

Branding is also a phenomenon that allows the individual institution to provide information and images that combine neutral information with information intended to create emotional ties with various stakeholders. The long-term success of developing good alumni relations is more than anything
an emotional process intended to build a personal relationship between the individual and the institution. Studies have shown that emotional satisfaction is far more important than cognitive satisfaction (Clarke, 2005), and that focusing on the former may be very beneficial for universities. For example, if we look at the amount of private money being given to universities in the United States, evidence suggests that this is a quite effective strategy. In the United States in 2004, private donors including alumni gave USD 24.4 billion to universities (Wooldridge, 2005).

Branding may also be a promising strategy for improving institutional co-operation. As institutions are exposed to an increasing competition, one institutional response may be to join other institutions in some co-operative effort (Huisman and van der Wende, 2004). The number of new university networks created in the last decade is just one of the effects of such considerations. Hence, while most student behaviour is more or less unaffected by rankings, evidence suggests that rankings and similar efforts affect higher education institutions to a much larger extent. In the race for prestige, selecting the right institutional partner must be done carefully, and studies show that finding a “peer” institution through benchmark information provided by ranking lists is a rather common solution (Labianca et al., 2001).

Branding efforts may also be a promising way to instigate internal change at a given institution. The strong disciplinary focus held by many academics and the emergence of more matrix structures inside higher education institutions are factors that do not necessarily support strategies and objectives at the institutional level (Belanger et al., 2002). Providing internal support and interest for institutional strategies and the institutional mission may therefore appear as a rational reason to engage in branding efforts in higher education. This may be of special interest in situations where institutions are experiencing a rising level of tension internally as a result of the reallocation of resources or the closing down of certain study programmes or units (cf. Dill, 1997).

Last but not least, branding efforts may help higher education institutions to rediscover what they are, and their basic purposes. In an age with new stakeholders entering higher education, new demands being directed at universities, and an increasing amount of tasks to handle, higher education institutions may face a situation of capacity overload (Clark, 1998). Branding may assist in the process of prioritising all the tasks and objectives on the agenda, and help remind institutions of their core activities.

The dangers of branding

However, the potential advantages of branding cannot hide the fact that branding is also a risky business for higher education institutions. Dill (2003), by referring to a US study by Brewer et al. (2002), has shown, for example, that
prestige-seeking higher education institutions tend to invest in areas such as admission selectivity, student consumption benefits (dormitories, eating facilities, etc.) or other measures intended to improve their positions in the publicised rankings (see also Twitchell, 2002). These are relatively costly investments, especially since it is not known how much such investments actually matter for student choice. A study from Norway re-analysing data on student satisfaction indicates that for Norwegian students, it is factors relating to teaching and learning that cause high student satisfaction, not buildings, computer facilities, etc. (Wiers-Jenssen et al., 2002). Since institutions involved in the branding game tend to spend money in the same areas, and since competing for prestige is a zero-sum game (Brewer et al., 2002), this means that the investments are high-risk and have potentially little impact on student choice.

Investing in dormitories and similar things is also a sign that branding efforts may easily put students in the role of the customer. As noted in the introduction, a risk is involved if reality is perceived as different from the image sought and created. Trust may take a long time to build but a short time to destroy. Students who are turned into customers may also be a demanding and unstable group, there is the danger that these “students are leaving universities almost as fast as new students are enrolled” (Schertzer and Schertzer, 2004, p. 79). A related issue is, of course, that higher education institutions may change their own values and norms during this process even if that was not an intended outcome.

Another potential risk involved in creating a strong university brand is related to the massification of higher education and its increasingly diverse student population. This diverse student population means that student objectives, study ambitions and involvement may vary considerably. In line with this, a recent study shows that the criteria students and parents use when selecting a higher education institution differ significantly (Warwick and Mansfield, 2003). Establishing a strong brand consequently may attract some students while it may not appeal to others. A university may want such selectivity, but this can also turn away potentially interested students.

Those studying branding efforts in higher education can also note the tendency of institutions to highlight standard elements in this process. Profiling themselves as “the best”, “world-class”, “leading”, or similar attempts is rather common (Belanger et al., 2002). The paradox that might appear as a consequence of this strategy is that while trying to be unique and distinguishable from the rest, a university risks becoming more similar, removing the true unique characteristics it might have. Twitchell (2002), a professor of advertising at the University of Florida argues, for example, that in the branding game, universities behave like sheep trying to emulate those perceived as successful. One explanation for this result is that higher
education institutions engaged in the branding game may look more at what their competitors are doing than what students, parents or other stakeholders consider important. Hence, the branding game itself carries the potential of becoming more important than the purpose of the game.

Towards a new understanding of branding

So what is the purpose of the game? Is it just to create an attractive image of the organisation in the age of “marketisation”, or is it to develop and deliver the educational services students and the society require? On the one hand, it is easy to find those that argue that branding is only about “reputation management” indicating that the concept is all about self presentation (Temple 2006, p. 18). On the other hand, one can also identify those that see branding as an integrated part of the marketing of and the strategic decisions in a given institution (Litten, 1980, p. 43). This understanding implies that branding may be a deeper process, closely linked to institutional development and the deliverance of high quality educational services. As Spais (2005, p. 62) has pointed out, the word “marketing” actually stems from the Greek word meaning “deliver”, indicating an intention to put action behind promotion.

Empirically, we have seen evidence supporting both views. Still, in a long-term perspective evidence suggests that it is the deeper approach that pays off. As Temple (2006) argues, a central factor contributing to institutional development is the strategic choices institutions manage to take over a longer period, and the consistency of the actions taken. According to Temple (2006, p. 18), the reason why some universities succeed is that they have a “realizable strategic vision for the institution, and [are] managing it as a totality to achieve that vision...”.

One can interpret from this statement that organisational change is more or less solely determined by and dependent on the organisation itself, and a result of tough decisions taken by the institutional leadership. While evidence supports the importance of strategic visions and visionary leadership (Shattock, 2003), an outside observer would still wonder how these strategies actually are developed, and how they emerge as strategies? Are they just visions suddenly appearing in the mind of the extraordinary and gifted leader?

In line with the recent insights into how organisational change might occur (see section “Organisational identity and image as drivers for organisational change”), Weick (1995) has argued that a central factor involved in the process of developing ideas is the concept of enactment. For Weick (1995, p. 30), enactment is the process of constructing the organisation through interpretations of how others think of us, and how we see ourselves. The key point here is not that external and internal information is important to arrive
at certain ideas, which are commonplace in standard books about developing organisational strategies, but that developing ideas involves a process of “construction” and “selection of ideas”. The ideas stem from past achievements and future aspirations, the blurring of organisational boundaries, and both soft and hard information. “Other’s” perceptions, how we think about others and how we think others think of us are also of vital importance.

The latter insight is of importance if we define branding, not as a process starting from scratch, but as an on-going and quite fundamental process, not only determined by the institution itself, but strongly conditioned by established beliefs and perceptions “others” may have of the institution. Hence, if the “brand” associated with a certain institution is conditioned by the image and experiences already established in the surroundings, the consequence is that branding then becomes a process of “negotiation”, deliberation, translation and creation of a room to maneuver between external limitations and institutional ambitions.

**Towards a more sustainable branding process**

When reviewing the prospects for change in higher education, one is often struck by the tendency to embrace rather deterministic perspectives. One such perspective is to portray universities as ivory towers with organisational identities almost unchangeable – and that as a consequence they will not survive (Drucker, 1997). Another perspective, equally deterministic, is to portray the current marketisation of the higher education sector as something every institution must adapt to, and that the university as we know it will be radically changed (Wooldridge, 2005). The position of this paper is that there is plenty of room to manoeuvre between these two extremes. Research in higher education has shown for decades that universities were never the ivory towers they have been accused of, and that change in the sector is the normal situation rather than the exception (Clark, 1972, 1998; Henkel, 2000; Huisman et al., 2002; Stensaker, 2006) – even though not in the tempo governments and other stakeholders would perhaps always appreciate.

The current branding game in higher education can be seen as a process where higher education institutions try to re-invent themselves as organisations. This article has shown that there may be benefits but also dangers associated with this process. The argument launched is that institutions can take part in branding efforts without necessarily losing their organisational identity or inherent characteristics, while they also continue to change. The reasons are twofold: First, the process of imitation, a rather common element in a branding exercise, can be interpreted as an active process, closer to that of innovation than of imitation. Second, stable organisational identities expressed in well-known and agreed upon identity labels are a good starting point for instigating change.
through reinterpretations of the labels, and consequently provide new meaning to activities conducted.

What does this mean in practice? A starting point is the rather obvious fact that a brand is not built through creative logos or other symbolic features, it is built through the experience people have with a certain product (Belanger et al., 2002) and the way the individual institution deals with external perceptions. This means that building a brand is a process of translation between external constituencies and internal ambitions, and not a process managed only by marketing or advertising experts. It also means that branding is very much a strategic process with a potentially deep impact on culture and identity, and a process in which fundamental questions, such as “Who are we?” or “Who do we want to be?”, are addressed. Thus, building a brand involves far broader processes than developing a good marketing plan (Hatch et al., 2000).

Branding should be viewed as a process of mobilising the best marketers there are – the staff and students of the institution – not least because they represent central links between the outside and the inside, sometimes associated with the organisational identity, while at other times visualising the image of the institution. For them to buy into the branding process, the image sought must be rooted in the distinctive institutional characteristics staff and students think are important, and that they feel comfortable exposing to others outside the institution. If they do not feel part of this process, even the most creative branding effort will not be trustworthy (Dutton et al., 1994; Albert et al., 2000). Studies in the field of organisation theory tell us that this process will not be a reproduction of the past organisational identity, but a process where identity labels people may have taken for granted are brought to life, discussed, and often transformed as new meanings and interpretations are attached to them (cf. also Dill, 1982; Gioia and Chittipeddi, 1991; Gioia and Thomas, 1996; Stensaker, 2006). This is an incremental and on-going process, but also one in which the university as a social institution may be maintained, even in an age where higher education is becoming an industry.

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Globalisation, the “Idea of a University” and its Ethical Regimes

by
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This paper sketches the impact of globalisation and internationalisation on the terrain of values and ethics in higher education. The first part of the paper discusses values and ethics in higher education in relation to the “Idea of a University”, and identifies the ethical regimes essential to the functioning of higher education institutions as knowledge-forming organisations. The second part draws out implications of globalisation. Globalisation together with the strengthening of executive steering are associated with the partial “disembedding” of higher education institutions from their national governments, along with a pluralisation both of their spheres of operation and the range of private goods and public goods they produce and of the public they serve. This raises new questions about the governance and management of the values and ethical regimes associated with global goods, e.g. the obligations of communicability, mutuality, academic freedom, the protection of persons in higher education suggested by cross-border relationships, and the modes whereby these values and ethics are promoted.
Values and ethics in higher education

What makes higher education institutions (HEIs) socially distinctive is that they are self-reproducing, knowledge-forming organisations. Because of (and despite) this definition they have multiple and diverse activities, connections, obligations and stakeholders. Under various conditions of academic freedom, university personnel practice an enormous range of values and ethical regimes subject to continuous change, and a range almost as broad as those of the societies in which HEIs are located and which interact with them. However the values practised by individuals, or by units, for teaching, research or institutional marketing, which are sometimes mutually contradictory, do not necessarily embody the values of the institution qua institution.

This suggests that the agreement required between all of the different parties that comprise the university is limited to those values and ethical regimes that sustain HEIs as self-reproducing, knowledge-forming organisations. If HEIs sought to be “communities of the good” in which all staff and students were committed to a universal set of values spanning the full range of human activities, they would be inhibited in the pursuit of edgy, critical, innovative thought, and internal discussion and debate would be constrained, so that they would be unable to fully function as knowledge-forming organisations; or alternatively, amid the tensions engendered by different and competing claims about what constitutes the “good” they would fracture and fly apart, so that they would no longer be self-reproducing.

These values and ethical regimes, which might be called the meta-institutional values and ethical regimes, constitute the “Idea of a University” in our era. These meta-institutional values and ethical regimes must support (and ideally, encourage) a plurality of values and ethical regimes, except that they will exclude values and ethical regimes that undermine or are otherwise inconsistent with HEIs as knowledge-forming organisations.

This suggests that the scope of HEIs as institutions, in relation to a common approach to values and ethics, is limited to two domains of meta-institutional practice that are consistent and produce the distinctive social character of those HEIs:¹

● The domain of communicative association. This notion owes something to long-standing notions of liberal conduct and something to the insights of Jurgen Habermas into communicability and the public sphere. It includes the right
to speak; the conduct of dialogue on the basis of honesty and of mutual respect; and intra-institutional and inter-institutional relationships grounded in justice, solidarity, compassion, cosmopolitan tolerance and empathy for the other.

- The domain of secular intellectual practices. This includes support for, and freedom for and of, the practices integral to productive intellectual activity, including curiosity, inquiry, observation, reasoning, explanation, criticising and imagining.

The domain of communicative association provides conditions necessary for the domain of secular intellectual practices. Arguably, it is in this second domain, in which new knowledge is formed, that we find the essence of the contemporary “Idea of a University”. In forming knowledge we remember what we know, and we think of something new. Then we systematise that something new. This “something new”, which is the thing that scholars and researchers seek, emerges in a zone vectored by criticism and imagining. In the absence of this zone, HEIs are no different to other educational institutions, such as schools.

This suggests that within universities, the core organisational objective should be to protect and enhance the domain of intellectual practices, located as it is in the different fields of inquiry. And from the broader viewpoint of policy, it suggests that research universities will maximise their social, economic and cultural contribution 1) to the extent that human association within and between them is free, open, inclusive and able to accommodate difference, not just on the national scale but the worldwide scale; and 2) to the extent to which academic practices are free, independent and robust. Once first mover advantage has expired, knowledge becomes non-rivalrous and non-exclusive, a classical public good. As we know, commercially controlled research, to the extent that it constrains the flow of knowledge or distorts the truth, inhibits the university. This does not mean that there should be no commercial funding or no hiring out of university facilities to commercial research, but such commercial activities should be firmly separated from the terrain of academic freedom and basic research. For the optimum functioning of secular intellectual practices, first mover advantage should be confined to the status benefits accruing to the discoverer. The overwhelming bulk of global research and scholarship is found in this public domain and this will continue.

So where do ethics fit in? The core ethical components of the research university are the ethical regimes necessary to advance and protect two essential domains of practice: the ethical regimes – the codes of conduct and their governance and regulation – guaranteeing civilised communicative association, and academic (intellectual) freedom. The more rigorous the
practice of these two ethical regimes, the more these essential domains will be advanced, and the better the “Ide a of the University” and its many contributions are served.

The governance of these ethical regimes

Value-based determinations in the above two domains are played out in three different spheres:

1. The sphere of individual human conduct.
2. The sphere of bounded democracy, that of communicative relationships within the institution, and between its agents and other agents in the locality, the region, and the relevant administered territories (state/province, country).
3. The sphere of open global relations, encompassing on one hand universal human rights, on the other hand the protocols for managing cross-border relations based on self-determining identities, including heterogeneity and diversity.

In relation to the first sphere, we can expect that all individuals and organisational units work within a common set of rules that secures the domain of communicative association and the domain of intellectual practices. In fact in all three spheres these ethical regimes can only work successfully when they are normally practised on the basis of self-responsibility as reflexive conduct. But there is potential for conduct to fall short of requirements, and potential for tensions within and between the domains. So how are these regimes of conduct to be governed and regulated? Which agent or agents in HEIs do/should carry responsibility for forming and reproducing the necessary values and ethical regimes?

While all agents in HEIs, individual and organisational, should have the freedom to associate and communicate within the spheres of democracy and global relations – indeed, that freedom is a necessary aspect of secular intellectual practices – the question of who operates on behalf of the institution qua institution in these spheres is a different question. Here there are four principal candidates: the national government, the governing body of the HEI, the professoriate and the executive leadership. All have a hand on the problem.

In his important 2003 book Universities in the Marketplace, Derek Bok wrestles with this problem. After a discussion of the dilemmas of commercialisation in research, with several examples of the co-option of faculty by drug companies and the perversion of intellectual integrity and intellectual exchange, he asserts that the academic mission of doctoral universities in the United States is now fundamentally in jeopardy. He sees university presidents as caught between two conflicting responsibilities: the
need to augment economic relevance and revenues, and the need to safeguard the academic mission and free inquiry. He finally concludes that only the faculty can effectively defend the domain of secular intellectual practice. But by then, Bok’s book has already shown that the faculty is not robust enough to play this role in the face of powerful corporate interests. In conditions of economic and institutional weakness, unaided individual faculty will continue to be bought. Bok’s outline of the dilemmas is lucid but his final conclusion is unconvincing. This is not the way out.

We can note here that this question of responsibility or guarantor for these two necessary ethical regimes does not in itself go to core values. It is historically variable, it is a policy question, and in day-to-day operations it is an empirical and practical matter. The situation varies from country to country and from HEI to HEI. However there are elements in common across the world. The underlying dynamics shaping the problem in all countries to a greater or lesser extent are academic traditions, commercialisation and the knowledge economy, the changing role of government, and the changing personality of institutions qua institutions.

Higher education is undergoing a number of distinguishable transformations that vary in form and intensity around the world: globalisation and internationalisation, mass participation and vocational credentialing; more diverse institutions with mixed funding; more business-like administration and internal product and performance regimes; quasi-market competition between institutions; the part marketisation of teaching, research and services. Disciplinary cultures continue as knowledge-forming communities, but the student experience has become more regularised (and in some cases shorter) and degree programmes have been rendered homogenous, or at least more congruent, across systems and between countries through reform, imitation and quality assurance. Generalising, we can say that the main line in government/HEI relations is for government to step back a pace, devolving responsibility and initiative, and sometimes devolving institutional identity (if this was formerly determined by government) and mission. Often, governments now prefer to manipulate the outcomes of higher education from the middle distance via accountability, audit and formula-driven incentives. They are lightening their policy/political load, but without vacating the field, or even necessarily withdrawing from micro management. But they have a different agenda to universities themselves.

Meanwhile, institutions, particularly research universities, are becoming quasi-corporations in their own right (Marginson and Considine, 2000). This continues the longer process of evolution of HEIs’ institutional personality. Through much of the 20th century, the material basis of that institutional personality derived from government funding and policy, at least in the public sector which has constituted the research universities in most countries.
first these fostered a professional bureaucracy and later, they foregrounded the institutional executive as the point of accountability, which suited everyone because state sanctions exercised directly over the disciplines had the potential to violate academic freedom. Later, as the volume and range of functions and activities continued to expand, the central offices and services of HEIs assumed more tasks. The outcome is that the institution qua institution has probably never been stronger vis-à-vis the disciplines and professions, and it has changed.

Perhaps HEIs are no more independent than before – it seems they are accountable to more stakeholders than ever, and often accountable in greater detail to government – but they are certainly more autonomous. In this respect, universities outside the United States are moving closer to the US model. The process of “autonomisation” has been guided by national governments and is consistent with a larger set of changes in public administration and modes of government, but has also been fostered by the more plural activities and associations of HEIs. They have greater responsibilities in self-organisation and self-financing and in some countries more scope to define their mission and chart their strategic course. In the outcome both the growth of government funding and administration and then the semi-privatisation of funding and the growing weight of activities conducted autonomously of government have been associated with the evolution of HEIs qua institutions and of their executive arms and administrative machinery. Though institutions have more multiple and varied connections than at any previous time, they coalesce at the point of executive steering – necessarily so, because otherwise, deprived of an organisational bottom line, these often immensely complex institutions would start to fragment and fly apart amid the heterogeneous networks and drivers. It is true that some leading universities are so successful as status engines that they reproduce themselves more or less naturally without much executive steering: Cambridge in the United Kingdom is one cited, but this is not typical of the sector. The executive is now the main practical arbiter of institution-wide organisation. It also provides the framework in which external connections are practised, though its role here is less comprehensive.

Again generalising freely across a highly varied field, the executive is on the whole the leader vis-à-vis the governing body, and has strengthened itself vis-à-vis the professoriate. The trend everywhere is to professionalised administration. The professoriate, less coherent than the executive and absorbed in the on-going work of research and teaching, finds itself at an increasing disadvantage in relation to professional managers and leaders especially where the latter exert financial control. Though faculty remains a player in academic governance, particularly at unit level, the days of overall governance by faculty are gone except in relation to bounded academic
matters. Faculty support for academic freedom and honesty in research remains crucial but by itself this is not strong enough to uphold the two ethical regimes. A further limitation of reliance on faculty-based regulation of these two overarching ethical regimes, as Bok would suggest, is that faculty members are at least as motivated by the different ethical regimes within the disciplines and professions as by the general principles of communicative association and intellectual freedom. The ethics of a business school are different to a physics department. They have some common conditions but will not always acknowledge it.

The inescapable implication is that whether for better or worse (and both arguments are made, particularly the latter), the full-time executive leadership – rather than governing bodies or senior professors – is the only body competent to regulate the meta-institutional practices of values and ethics in this era. The executive has to be the body that guarantees the domain of communicative association and the domain of secular intellectual practices. By the same token, and executive that itself operates in breach of one or both of these ethical regimes is guilty of a particular abrogation of trust and responsibility. The executive, above all, must uphold the contemporary “Idea of a University”. With power comes responsibility.

Disciplinary communities and single researchers continue to dominate within their own intellectual and organisational bounds, and have considerable freedom to operate, especially internationally; though more in some systems than others. But they do not speak for or organise institutions qua institutions. Governing bodies are guardians of core values and provide a point of reference and appeal, but they are too remote from the day-to-day circumstances of HEIs to regulate ethical conduct. Government also continues to matter in that its practices and requirements can affect communicative association and intellectual practices. However government is optimised in the sphere of bounded democracy, and is less effective in either the sphere of self-responsibility or the sphere of global relations. Government should support the university in its self-regulation of inner conduct, but government cannot and will not guarantee communicative association and academic freedom. It is too remote and clumsy, it has too many other agendas and interests to serve, and too often it has breached these same principles (Marginson, in press B). We can demand that government support university autonomy but should not make it the final arbiter.

Globalisation and higher education

Now let us bring globalisation into the picture. By “globalisation” I mean “the widening, deepening and speeding up of world wide interconnectedness” (Held et al., 1999, p. 2). Globalisation is a geo-spatial process of growing inter-dependence...
and convergence, in which worldwide or pan-regional (e.g. European) spheres of action are enhanced. In contrast, “internationalisation” is best understood simply as relations across national borders, or institutions situated within national systems: i.e. inter-national relations. Note the potentially transformative impacts of globalisation as compared to internationalisation. Globalisation is a dynamic process that draws the local, national and global dimensions more closely together (Marginson and Rhoades, 2002) and in often unexpected ways. The effects of globalisation may be retarded by national governments, with some having more power to do this than others, but cannot be completely abolished or evaded. In a networked environment in which every HEI is visible to every other, and the weight of the global dimension is increasing, it is no longer possible for countries or for individual HEIs to seal themselves off from global effects. Those that attempt to retreat from the global dimension pay a price in diminished effectiveness. In contrast internationalisation is a more modest process and national governments can take it or leave it.

Globalisation in this era is a symbiosis of economic and cultural changes. It rests on one hand in the formation of worldwide markets operating in real time, underpinned by the first worldwide system of financial capital and exchange and by growth rates in foreign direct investment far exceeding the growth rate of industrial production. On the other hand it rests on the creation of the first worldwide systems of communications, information, knowledge and culture (which partly take the form not of market goods but of public goods underpinned by state investments), whereby the world tends towards a single cultural community as McLuhan (1964) predicted. Guy Neave describes globalisation as “quickening exchange”, which is suggestive of both economic and cultural aspects (Neave, 2002, p. 332). Communications and information are at the heart of global economic and global cultural change, and the junctions between them. It is this element above all which constitutes what is new about globalisation (Castells, 2000). Higher education and research are not far behind. They are foundational to the sophisticated use of technologies and to culturally complex communities, and share with information and communications technology and media the formation of the global communicative environment. “Although many universities still seem to perceive themselves rather as objects of processes of globalisation, they are at the same time also key agents” (Enders and de Weert, 2004, p. 27). Research universities are intensively linked within and between the major global cities that constitute the nodes of a globally networked world (Castells, 2001, p. 225).

Deeply implicated in global transformations, higher education is itself being transformed on both sides of the economy/culture symbiosis. It is swept up in global marketisation: it trains and resources the executives and technicians of global businesses; the main areas of student growth are in business and computing, the most globally mobile degrees; and it is shaped by economic
policies that are undergoing global convergence. In higher education itself the first global market has emerged (Marginson, 2006). Arguably, even larger changes are happening on the cultural side, in communications, research and knowledge. In a networked higher education world, every extension of the network adds a larger number of possible connections (Castells, 2000) and there is an almost infinite potential for the formation of intellectual communities across every border. Internet 2 is being developed by a consortium of US universities and companies. Communications and information are revolutionising both science and publishing. Teichler remarks that it is surprising how much of the debate on global phenomena in higher education is focused on marketisation, competition and management. “Other terms, such as knowledge society, global village, global understanding or global learning, are hardly taken into consideration” (Teichler, 2004, p. 23). This is ironic. While higher education is a second level player in the circuits of capital and direct creation of economic wealth, it is pivotal to knowledge, standardised language and information systems.

Of the many implications of globalisation for higher education, two are pertinent to this paper. The first implication is that globalisation is associated with the partial “disembedding” of HEIs from their national and national governmental contexts (Marginson and van der Wende, forthcoming). Beerkens (2004) defines globalisation as “a process in which basic social arrangements within and around the university become disembedded from their national context due to the intensification of transnational flows of people, information and resources”. This process of partial “disembedding” is happening in several ways. One example relates to funding. In many countries, HEIs increasingly draw on not just domestic students but foreign students as a source of income. In Australia 15% of university revenues are provided in this manner, and in the UK 10%. This pluralises mission and lines of accountability. Likewise many HEIs also seek research funding from extra-national sources. A second example of partial “disembedding” is offshore operations, in both face-to-face and virtual modes. Here HEIs are operating in the jurisdiction of another nation, which has limited control over their activities. A third example of partial “disembedding” is accreditation. An increasing number of HEIs are seeking accreditation to operate on the terrain of other countries. In all these examples HEIs’ space of operation is no longer congruent with the regulatory space of national government.

“Disembedding” reinforces the trend towards the autonomy of HEIs vis-à-vis government, a trend also associated with the growing weight of executive steering and of the institution qua institution vis-à-vis the faculties. The more the growth of activities in the global sphere, the more the potential for “disembedding”, and the more the accumulation of corporate weight and autonomy, creating more space for global activities. The tendencies are self-reinforcing.
The other implication of globalisation is the significant expansion in the potential for universities to produce global private and global public goods. The global private goods produced and purchased in higher education include degrees obtained when students cross national borders – the volume of worldwide trade is estimated at about USD 40 billion per annum – and the outcomes of commercial research traded across borders prior to their entry into the public domain. Global public goods are goods that have a significant element of non-rivalry and/or non-excludability and are available across populations on a global scale. They affect more than one group of countries, and are broadly available within countries (Kaul et al., 1999, pp. 2-3). Global public goods in higher education (Marginson, in press A) include collective global goods and also positive global externalities, or negative global externalities (“global public bads”). In their positive form, like other public goods, global public goods are under-provided in markets.

Collective global goods are obtained by countries and/or institutions from cross-border systems common to the world or a meta-national region, for example regulation, systems and protocols that improve cross-border recognition and mobility. Global externalities arise when education in one country affects significant numbers of people in other countries; for better, for example the positive contribution of research flowing across national borders; or for worse, for example the net “brain drain” of national faculty. Cross-border externalities are difficult to regulate. There is no agreed basis for identifying, measuring, costing and financing downstream effects between one country and another in the sphere of the environment where such effects are acknowledged. In higher education, though brain drain is an acknowledged issue, for the most part cross-border brain circulation and research flows are yet to become the subject of national decision making or costing, or of multilateral consideration. Like national public goods, global public goods tend to be under-recognised. An additional difficulty is that there is no global state or “global public”. While the regulation of private trading goods in education is the subject of negotiations for the World Trade Organisation’s General Agreement on Trade in Services (WTO/GATS), there is no equivalent policy space in which to consider global public goods.

In sum, globalisation is associated with a remarkable enhancement of the contribution of communicative human association and intellectual freedom to public knowledge goods, via growth in research collaboration and worldwide publication, in cross-border collaboration, and in the mobility of faculty and students between national systems. Ideas move at lightening speed to every part of the world. Global knowledge transfers are at the heart of social and economic innovation and a more diverse set of cultural encounters. The benefits of those core ethical regimes that uphold the university are enhanced. The free movement and exchange of ideas, knowledge and people on the basis
of openness and access, and the intellectual processes of curiosity, inquiry, observation, reasoning, explanation, criticising and imagining, are at the same time essential global public goods in their own right, collective goods that we all hold in common; and they are also conditions for the creation of a range of many more situated public and private goods in the different parts of the world.

In this way globalisation has entrenched the ethical constituents of the research university. This is furthered by those actions of individual universities and their staff, those policies and regulations of national government, and those programmes of international organisations, that enhance cross-border mobility. This includes systems and protocols that improve cross-border recognition and mobility such as the Washington Accords in Engineering, the Bologna Declaration’s higher education space, and the cross-border movement of doctoral students, postdoctoral researchers and scholars, and others and of joint research projects. Likewise globalisation highlights the need for reforms in and between national systems that will better facilitate communicative association and intellectual freedoms on a worldwide scale.

At the same time, it is important to recognise that globalisation in higher education is less rosy for people based in universities in developing and non-English-speaking countries. Global exchange is by no means symmetrical between universities in the different countries. It tends to be dominated by the stronger national systems, and particularly by the English-speaking countries, above all by institutions from the United States. Net brain drain is an issue in most countries and a serious difficulty for poorer developing countries. Research and scholarship that originates in languages other than English is largely excluded from the common global conversation in English. The exclusion is compounded by the fact that approximately ten times as many books are translated from English to other languages, as are translated from other languages into English and so made broadly accessible (Held et al., 1999). These limitations place in question the values of mutuality and equality of respect integral both to communicative association in general and to secular intellectuality in particular.

**Conclusions**

Globalisation above all is embodied in the explosive growth of communicative association on a world scale, and magnifies the potential for secular intellectual practices. Inevitably it raises new questions about the governance and management of the values and ethical regimes associated with higher education. The longstanding regimes and protocols that have governed liberal association and knowledge formation in the local and national contexts by no means translate into the sphere of global exchange. The conventional values and ethical regimes sit within the governing frameworks of national
governments; and where those frameworks are no longer operative there is potential for destabilisation. More importantly those conventional values and ethical regimes may differ, country by country. This creates the need to reconcile the different national practices, while also devising an additional set of practices for managing communicative association across national, cultural and linguistic divides – practices which both constitute global public good in their own right and provide favourable conditions for other global public goods. Global communicative association generates its own set of specific requirements as to values and ethics, for example cosmopolitan tolerance becomes more important, as do practices that sustain the cross-border mobility of ideas and people.

Globalisation and partial “disembedding” from the national context enhance the role of the executive which manages much of the global strategy. University autonomy and identity are enhanced on one hand in relation to government, on the other hand in relation to faculties and disciplines. This argument should not be pushed too far. All universities are affected by official funding, some remain tethered to government and in most the disciplines operate across borders with a good deal of autonomy. But the trend is unmistakable.

Further, in the global environment there are new issues that turn on cultural diversity. Issues of cultural identity are mostly on the margins of national policy, but they are the building blocks of global relations that are designed to enhance communicative association and the broad, inclusive organisation of intellectual work and publishing. The weakening of cultural diversity in intellectual life subtracts from the common global good and the potential for more such good in future. This suggests the need to enhance multilingual publishing and translation and for English-language countries in particular to fund the sending of many more students and faculty into non-English-speaking environments.

In summary, among the many other challenges extended by expanding global relations in higher education are the following:

- Protection of the social and economic security of the staff and students of HEIs that cross borders and forgo the practical rights of citizens on their own terrain, without benefiting from the rights of citizenship in the foreign nation. One difficulty here is variations between countries in notions of compassion and justice, and of the respective responsibilities of individuals/families, social and cultural groups, and national governments.

- Variations between countries in the understandings of, extent of and protections for academic freedom and other secular intellectual practices; for example the politeness regimes that govern the extent of curiosity; the modes, registers and targets of intellectual criticism; and the boundaries (if
any) of the expressed imagination. This suggests the need to highlight and where necessary campaign across borders against infringements of freedom of association and intellectual creation, at the hands of both governments and commercial companies, and likewise the need to highlight the negative effects of national government interference with the free flow of the Internet with its plethora of free knowledge goods.

- By the same token, the need for foreign aid that will facilitate not just higher education capacity but the extension of Internet infrastructure in developing countries.

- Questions of the plurality of mobile knowledge. Should we understand the production of knowledge in the United States and its transmission around the world as part of the US contribution to the global public good? And/or does the global public good lie in sustaining and protecting the plurality of knowledge, e.g. by foregrounding the contributions of non-English-speaking countries (or even by compensating them for knowledge workers lost to the “world graduate school” in the research intensive universities of the United States)? How might the costs of providing for a more cosmopolitan set of global knowledge flows be identified and financed? Who would pay? Who would decide?

- Key unresolved questions about the scale of policy consideration and the agents who should be at the table. Should negotiations be unilateral? bilateral? multi-lateral? Via national governments? Separate from them? Multilateral forums can directly create collective global goods that advance communicative association and secular intellectual practices, such as worldwide recognition systems and academic freedom protocols. Establishing a framework for negotiation of externalities is a more complex matter. For example, should countries share the downstream costs of social protections for mobile students? Should all these costs be met by the country of citizenship? Or should they all be met by the education exporter, that is often securing a financial benefit from their presence in the national education system?

I suggest there are fruitful prospects for a global organisation dedicated to enhancing academic association, exchange and freedom within and between countries in higher education and scientific research. The essential premise of such an organisation is that we all gain from the enhancement of these freedoms. Here it is easy to demonstrate that academic freedom is a more clear-cut common global good than is the freedom to trade, which has been considered worthy of its own multilateral organisation, the WTO. However in higher education a multilateral approach based on governments seems less appropriate. After all, national governments are the agents most likely to infringe the core conditions. This, together with the tendency towards
“disembedding”, suggests it would be better if such a global organisation was based primarily on institutional and individual members, including associations. Here the OECD Programme on Institutional Management in Higher Education, which is based on a globally “flat” structure in which individual institutions and government agencies are members, provides a pointer to the appropriate kind of approach.

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Notes
1. In thinking about these two domains of meta-institutional practice, and the arenas of practice, papers by Gould (2004) and Marga (2004) were helpful. See also Marginson, in press B.
2. For example see Shattock, 2003.

References


Internationalisation of Higher Education in the Era of Globalisation: What have been its Implications in China and Japan?

by

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Hiroshima University, Japan

This article describes the internationalisation of higher education in the era of globalisation in China and Japan. It presents the following issues: the relationship between internationalisation and globalisation; major characteristics of the internationalisation of higher education; a comparison between China and Japan; and the results of globalisation based on case studies from the two countries. The article concludes that globalisation has led to changes in the internationalisation of higher education in China and Japan, but not changed the most essential part of internationalisation of higher education in either country.
Introduction

This article is concerned with the internationalisation of higher education in this era of globalisation. The meaning of internationalisation can be interpreted in many ways: often it is used interchangeably with globalisation, however it is regarded here as differing. In particular, internationalisation is not seen as an outcome of globalisation, or as a way in which a country responds to the impact of globalisation. By differentiating between the concepts of internationalisation and globalisation, the article addresses two major questions. First, what are the most important characteristics and dimensions of the internationalisation of higher education in the era of globalisation? Second, what does the internationalisation of higher education mean for both China and Japan today?

The article consists of the following sections: the differences and the relationship between internationalisation and globalisation; major characteristics of the internationalisation of higher education in the era of globalisation from a historical and comparative standpoint; a comparison of China and Japan focusing on the major forms, aspects and dimensions of the internationalisation of higher education especially since the 1990s; and an analysis and discussion of the meaning and outcomes resulting from globalisation based on case studies from China and Japan. The article concludes by arguing that while globalisation has led to changes in the internationalisation of higher education in the two countries, it has not changed the essential structure of the internationalisation of higher education in either.

Internationalisation and globalisation

Internationalisation and globalisation can be described in a vast number of ways. In the case of higher education, some scholars suggest that “internationalisation at the national, sector, and institutional levels is defined as the process of integrating an international, intercultural, or global dimension into the purpose, functions or delivery of postsecondary education” (Knight, 2002). This definition suggests that there are many dimensions of internationalisation and that it is a dynamic process of institutional change. As for globalisation, it can be defined as “the process and consequences of instantaneous world-wide communication made possible by new technology. The consequences include an explosive growth in the
quantity and accessibility of knowledge and continually increasing integration and interdependence or world financial and economic systems” (Grunzweig and Rinehart, 2002). With regard to the link between internationalisation and globalisation, according to Jane Knight, “globalisation is a phenomenon of a process which is affecting many sectors and disciplines and education is no exception. Internationalisation of higher education is both a response to globalisation as well as an agent of globalisation. Internationalisation is changing the world of higher education and globalisation is changing the process of internationalisation” (Knight, 2003). Peter Scott affirmed that there is a dialectical relationship between internationalisation and globalisation. Internationalisation reflected – and may still reflect – a world order dominated by national governments. However, globalisation is a different phenomenon. It reflects not only the processes of global competitiveness between the great market blocs of the United States, the European Union and the East-Asian countries. It also involves intensified collaboration as a global division of labour between low-cost mass manufacture and services provision of labour, and high-value technology and innovation, or sometimes their co-location, most notably in the ex-Communist bloc (Scott, 2000).

This article differentiates between the concepts of internationalisation and globalisation in three ways. First, internationalisation has been widely discussed since at least the 1960s, whereas globalisation came into consideration mainly during the later part the 1980s. Second, globalisation aims principally at establishing a single or universally-acknowledged model, beyond countries and cultures, while internationalisation emphasises an exchange or communication between different countries and cultures. Third, internationalisation occurs with the precondition that different countries and cultures exist, whereas globalisation proceeds on the assumption that countries and cultures are of decreasing significance. There is, however, a close relationship between the two terms. With the rapid progress of economic globalisation, advancement of new technology and increasingly frequent exchanges between countries and cultures, some activities that once were conducted between countries or cultures (i.e. at an international level) are likely to reach a global level, possibly resulting in universally accepted standards or values.

In addition, this article emphasises both aspects of the internationalisation of higher education. On the one hand, it refers to the internationalisation of higher education in the home country, such as accepting incoming international students, developing internationalised curricula, and integrating international dimensions into teaching, learning and research activities into home institutions. On the other hand, it denotes dimensions of sending abroad students, faculty members, and researchers, and of transnational or cross-border higher education activities, including
curricula that are exported and provided in higher education institutions in foreign countries.

As the term “globalisation” often refers to economic globalisation, this paper examines recent changes in the internationalisation of higher education in the two countries mainly from that perspective.

**Internationalisation of higher education in the era of globalisation**

From a historical perspective, the internationalisation of higher education occurred as early as the 12th century when, in Europe, medieval universities emerged. As indicated in Table 1, its development can be divided into three phases. In each phase, the internationalisation adopted different forms and its aims varied due to differing contexts or rationales. Table 1 divides the characteristics of the internationalisation of higher education into five categories that can be used to describe it in each phase. The first category is context, or background, identifying the different social contexts in which changes occurred in the internationalisation of higher education, from serving Christendom in Europe, through industrialisation and colonisation, to the Cold War. The second category records the major driving forces – religious, academic, economic and political factors – that affected changes in the internationalisation of higher education in each phase. The third category notes the aims and objectives of internationalizing higher education, from the needs of the Christian Church, to educational development and colonisation, and finally to political and economic development and technical assistance. The fourth category is concerned with the forms and dimensions of the internationalisation of higher education. Before the 17th century, the major form of internationalisation of higher education lay in the mobility of people, including both students and scholars moving mostly between different areas and countries of Europe. The Modern era includes movement to new areas of religious institutions, such as church universities in colonised countries. The years from 1945 to the 1980s are again mainly characterised by the mobility of people but within national programmes of cooperation, development and technical assistance. The fifth category, major areas, refers to the areas or regions in which the internationalisation of higher education took place. Initiated in Western Europe, it spread to North America and other European countries, especially in the 19th century. Since 1945, it has expanded from a limited number of countries or areas to be promoted at regional and worldwide levels.

With the rapid progress of economic globalisation, the internationalisation of higher education has entered a new phase with new characteristics, especially since the 1980s. As for driving forces, policy and practice concerning the internationalisation of higher education in individual
countries are not only affected by their national policy, character and identity, but are also influenced by calls and pressures from international, regional or global organisations. Various factors, especially the rapidity of economic globalisation, the advancement of information technology, and the introduction of market-oriented mechanisms, exert an increasingly significant influence in individual countries. Thus, compared with what had happened prior to the 1990s, the current internationalisation of higher education is much more strongly driven by economic factors in a more competitive environment at a global level.

However, the situation in developed countries differs greatly from that in developing countries. In many developed countries, particularly English-speaking countries in Europe and the United States, the internationalisation of higher education is more commercially-driven by an entrepreneurial spirit, for example in adopting full-cost tuition fees for international students and undertaking profit-oriented transnational programmes in Australia and the United Kingdom. In the majority of developing countries, internationalisation is more affected by academic factors, for example in dispatching students and faculty members abroad for advanced studies or research, as part of efforts to enhance the quality of education and research activities and to establish world-class universities in China. With regard to the content of the

Table 1. **Internationalisation of higher education from a historical perspective**

<table>
<thead>
<tr>
<th></th>
<th>Medieval (12th-17th century)</th>
<th>Modern (18th century-1945)</th>
<th>Contemporary (1945-1980s)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Context</strong></td>
<td>Christendom in Western Europe</td>
<td>National development, industrialisation and colonisation</td>
<td>The Cold War</td>
</tr>
<tr>
<td><strong>Drivers</strong></td>
<td>Religious and cultural</td>
<td>Economic and political</td>
<td>Political and ideological</td>
</tr>
<tr>
<td><strong>Aims</strong></td>
<td>Expansion of Christianity and spread of Christian culture</td>
<td>Establishment of modern higher education systems and also a means of colonisation</td>
<td>Importation and exportation of political ideologies, as well as technical assistance for developing countries</td>
</tr>
<tr>
<td><strong>Forms and dimensions</strong></td>
<td>Personal mobility and movement of university campuses into other areas, occurring at an institutional and individual level</td>
<td>Export or import of higher education models at a national level and founding of regional organisations</td>
<td>Internal educational programmes, development of co-operation with developing countries at national levels, more organised and systematic</td>
</tr>
<tr>
<td><strong>Major areas</strong></td>
<td>Europe, especially Western and Southern Europe</td>
<td>Between European countries, between Europe and North America, and between Europe/North America and other countries in Asia and Africa, etc.</td>
<td>Change from particular countries or areas to regional and global levels</td>
</tr>
</tbody>
</table>
internationalisation of higher education, it is characterised by a transition from technical assistance for developing countries by developed countries, to a growing global competition; and from personal mobility and the transplantation of national higher education models or systems within particular countries or areas, to the internationalisation or standardisation of programmes, degrees, diplomas, transnational education and quality assurance at a global level. Regarding its forms and dimensions, nationally-orientated or -organised programmes have basically been replaced by institution-based projects in most countries and by exchange programmes initiated by regional or international organisations. Further, the private sector is participating increasingly. However, in most non-Western countries, government-oriented policies and links or co-operation between governments and institutions are still strongly emphasised.

Based on the characteristics of the internationalisation of higher education in today's era of globalisation, three distinguishing types can be identified: an import-oriented type, an import and export type, and an export-oriented type. Table 2 shows that differences in the internationalisation are not only influenced by the economic level and the stage of development of higher education, but they are also affected by the usage of the English language, i.e. whether or not English is used as a national or major language. As Altbach pointed out, “The role of English affects higher education policy and the work of individual students and scholars [...] English-language products of all kinds dominate the international academic marketplace” (Altbach, 2004).

Table 2. **Three types of internationalisation of higher education**

<table>
<thead>
<tr>
<th></th>
<th>Import-oriented</th>
<th>Import- and export-oriented</th>
<th>Export-oriented</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Country</strong></td>
<td>Most developing countries, or countries with colonial experiences</td>
<td>Most non-English-speaking developed countries and some developing countries with their unique cultures or traditions</td>
<td>Especially English-speaking developed countries</td>
</tr>
<tr>
<td><strong>Characteristics</strong></td>
<td>Seeking competent professional personnel but having a weak modern higher education system</td>
<td>Importing English-language products to enhance the quality of learning and research, and exporting educational programmes with distinctive characteristics</td>
<td>Attracting foreign students from developing countries and non-English-speaking countries; and exporting transnational education services as trade</td>
</tr>
<tr>
<td><strong>Issues and challenges</strong></td>
<td>Brain drain and loss of national identity</td>
<td>Conflicts between foreign imports and national characteristics</td>
<td>Quality assurance and negative effects resulting from commercialisation of higher education</td>
</tr>
</tbody>
</table>

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In sum, since the 1990s, aspects of the internationalisation of higher education have gone beyond simple mobility of international students and faculty members. They have come to include activities such as internationalisation of curricula, transnational higher education, establishment of international organisations, and consortia of universities at both regional and global levels. The international perspective has been integrated into almost every dimension of higher education, including educational programmes, administrative structures and campus life. What is more important, because of the increasing number of co-operative higher education activities occurring at regional and especially at global levels, it is becoming more difficult to differentiate between the meaning and practice of internationalisation and globalisation of higher education. In a major sense, the internationalisation of higher education is now preceding towards a phase of globalisation, though its pace, content and means of implementation vary greatly among countries.

**A perspective from China and Japan**

The internationalisation of higher education is not a completely new phenomenon in either China or Japan. As early as the latter part of the 19th century, both countries had already made various endeavours to establish modern higher education systems by sending students and faculty members abroad for advanced studies or research. Both countries made great efforts to adopt foreign academic patterns, notably from Western models such as France, Germany, the United Kingdom and the United States. This section deals with the key research question “What changes have taken place and taking place in this era of globalisation in regard to the internationalisation of higher education in these two non-English-speaking, Asian countries?”.

**China**

Prior to the later 1990s, the internationalisation of higher education in China had been fundamentally characterised by growth in the number of students and faculty members sent abroad for further studies or research. Initially, almost all were sent with public funding and their numbers were quite limited. Most were selected from the leading universities. Since 1981 when the Chinese government issued a document permitting students to go to abroad at their own expense, the number of Chinese students studying in foreign countries has risen dramatically. To illustrate this, in 1990, only 7,647 students and faculty were sent abroad, and nearly all of them were funded by central and local governments (*China Education Yearbook Editorial Board*, 1991). By 2003, the number of scholars and students who went to foreign countries for study or research had risen to 117,300, 93% of whom were private students (*China Education Yearbook Editorial Board*, 2004). Along with
this, the Chinese government also instituted various measures to attract foreign students to China. From the establishment of the People’s Republic of China in 1949 to the 1980s, only 50,000 foreign students came to China and the majority of them pursued merely short-term language studies. In contrast, in 2003 alone, the number of foreign students in China totalled 77,715, from 175 countries (China Education Yearbook Editorial Board, 2004, p. 337). It can thus be said that, during these years, sending students abroad constituted the most important part of the internationalisation of higher education in China.

The meaning of internationalisation of higher education has changed significantly in China since the latter part of the 1990s, through activities involving the university curriculum and the importation of foreign educational programmes. The internationalisation of the curriculum in China has three general aspects: introducing English-language products into Chinese campuses; implementing instruction in English or bilingually (Chinese and English); and integrating an international dimension into university teaching and learning. As an example of the first aspect, the most recent, original English-language textbooks have been translated into Chinese, and China’s universities have adopted almost all the textbooks now used in the leading universities in the United States, such as at Harvard and Stanford universities and MIT, in the fields of science, engineering, medicine, law, trade, management and some humanities. Concerning the second aspect, in 2001, the Ministry of Education (MOE) issued a document requiring that 5% to 10% of all curricula in the leading universities be taught in English within the following three years, especially in such areas as biology, information science, material sciences, international trade and law. The third aspect, integrating an international dimension, refers to a dramatic expansion in the number of programmes for foreign languages/cross-cultural studies, mostly taught in English at undergraduate level and leading to international professional qualifications at graduate level.

Special mention should be of the rapid increase in the number of joint or transnational programmes in partnership with foreign institutions since 1995. These include programmes leading to degrees from foreign universities or universities in Hong Kong. By 2004, the number of joint programmes provided by Chinese higher education institutions in collaboration with foreign partners had reached 745, and 169 joint programmes were qualified to award degrees from foreign or Hong Kong universities (MOE, 2005).

In addition, much effort has been made by the government to provide a Chinese higher education service for local students outside China. Although the number of degree-conferring programmes offered outside the country is much smaller than the number provided on Chinese campuses, rapid progress has recently been made. For example, Fudan University of China and Singapore National University have agreed to establish branch campuses at
each other's university, to co-operate in recruiting students, and to mutually recognise some of their curricula, credits, diplomas and degrees. Such transnational education activities continue to take place, as they did prior to the 1990s, in Japan, Korea and other South-east Asian countries that used to be greatly influenced by Chinese culture, but they can now be found in some Western European countries as well, including Germany, Spain and the United Kingdom. Further, compared with prior to the 1990s, transnational programmes exported by Chinese universities are no longer confined to studies in the Chinese language, but now also include some professional programmes such as international trade, management, science and engineering (Huang, 2003).

Another important strategy for promoting the internationalisation of higher education in China is to establish several huge universities and support them with enlarged budgets with the aim of them becoming world-class or world-renowned institutions. Since 2000, the number of universities that have been specially funded by the MOE, together with other central ministries and local authorities, has continued to grow. By 2003 they amounted to 34. It is likely that in the next few years the number of selected universities encouraged to become world-famous will increase to 38 (Huang, 2005a). The goal of establishing world-renowned universities indicates that the internationalisation of higher education in China is no longer confined to personal mobility and joint programmes in co-operation with foreign partners. Rather, it shows that China is trying to build up its own centres of excellence and to participate in global competition.

Japan

In 1983, the Japanese government launched the “100 000 Plan”, intending to accept 100 000 international students to study in Japan by the year 2000. Prior to 2001, when the target was attained, bringing in more international students had constituted a key component of the internationalisation of Japanese higher education. The first ten years of this plan were said to be successful (Umakoshi, 1997; Horie, 2002). The number of international students in Japan increased from 10 428 in 1983 to 52 405 in 1993. However, this growth was not in itself evidence that university education in Japan had developed an international reputation (Yonezawa, 2003).

In parallel with the increase in international students coming to Japan, after the economic growth of the 1970s and 1980s, the number of Japanese who went abroad for advanced studies also expanded rapidly. This corresponds to a similar trend in China during the same period, as student mobility was the predominant form in the internationalisation of higher education at that time. But, in contrast to a large number of incoming international students from Asian countries, the vast majority of outgoing
students from both Japan and China chose English-speaking countries, especially European countries and the United States, as their host for advanced studies.

A great deal has been done to develop and implement programmes designed for international students on Japanese campuses. Among these, increasing numbers of English-language programmes, specifically provided for international students, have been introduced in many institutions. They include both non-degree and degree-conferring programmes, ranging from six months to three years. Since the 1980s, many Japanese private universities have established branch campuses in foreign countries, mostly in English-speaking countries such as the Australia, Canada, New Zealand, the United Kingdom and the United States and some in European countries such as Denmark and the Netherlands. These campuses were intended for Japanese students who travel abroad for foreign language training programmes, particularly in an English-language learning environment.

In the early 1980s, US institutions began providing cross-border programmes in branch schools or institutions in Japan, entirely for Japanese students (Sukigara, 1993). The number of branch campuses founded by the United States rose rapidly each year from only 1 in 1982 to 18 in 1990. By 1990 the total founded in Japan by all foreign institutions had risen to 36. But prior to February 2005, none of these branches of foreign institutions had been accredited by the Japanese government as higher education institutions in accord with the Standards of Establishment of Universities and Colleges. Consequently, credits gained at these branch campuses were not transferable to other Japanese institutions, nor could students graduating from these branch campuses be accepted into higher-level Japanese educational programmes. Hence, with a steady decline in Japan’s 18-year-old population, many of these US institutions recognised that they could not expect to increase their revenues by enrolling Japanese students; since the early 1990s, the number of these branches has decreased, now to less than 10 (Huang, 2005b). Although by the 1990s their numbers had grown quickly, the branch campuses by foreign institutions were neither officially approved nor supported by the central government, nor were they regarded as part of the Japanese higher education system. It is thus safe to state that Japan chose to stimulate its internationalisation of higher education through its focus on attracting incoming international students.

With the increased impact from globalisation, several major changes have recently taken place in the internationalisation of higher education in Japan. First, more and more private institutions have attempted to export their educational activities by providing transnational programmes in other countries. These all differ from the preparatory Japanese-language programmes that were offered abroad in the 1980s in that they confer
graduate level degrees, covering professional programmes such as engineering, management and literature. Moreover, these double or joint degree-conferring programmes are provided not only in co-operation with English-speaking countries, but also in partnership with non-English-speaking countries such as China, Singapore and other South-Asian countries. For example, Waseda University, one of the top private universities in Japan, announced that in 2006 it would initiate a graduate school in co-operation with Nanyang Technological University in Singapore and offer a double Master of Business Administration (MBA) graduate programme in technology management for students mostly coming from South-Asian countries. Upon successful completion of this programme, students are awarded two master's degrees – an MBA from Nanyang Technological University and an MBA in technology management from Waseda University (Huang, 2005c). Second, the Japanese government has begun to consider revising the legislation concerning approval of foreign institutions in Japan and to adopt new strategies for recognising transnational branches and programmes. For example, in February 2005, Japan's Ministry of Education, Culture, Sports, Science and Technology (MEXT) officially recognised Temple University Japan (TUJ), which is the oldest and largest American university in Japan. This approval makes it possible for Japanese universities to recognise TUJ credits and allows TUJ graduates to apply to the graduate schools of Japanese public universities. Third, there has been a marked increase in the number of double or joint degree programmes based on numerous bilateral and multilateral co-operation agreements between Japanese and foreign institutions. These occur not only in the private sector but also in some national and public universities. A clear example is the joint two-year master's programmes provided by Tokyo Institute of Technology (TIT) and Tsinghua University in China for both Japanese and Chinese students on their respective campuses. After graduation, students from both universities are entitled to receive double master's degrees from the two universities. Fourth, facing pressure from globalisation in recent years, Japan has also launched national plans to enhance the quality of higher education. In June 2001, the Japanese government issued a guideline for reconstructing Japanese universities, especially national universities. The guideline identified the goal of encouraging the “top 30” universities to attain the highest global standards. Later, the programme was changed into a scheme of cultivating “Centres of Excellence in the 21st Century”. As in China, the central government is supporting the selected units with an expanded budget. By focusing on nine key disciplines, exemplified as life sciences, medical sciences, chemistry, material sciences, mathematics, physics, earth sciences, information science, and electrical and electronic engineering, Japan hopes to considerably
enhance the quality of its research activities in higher education and to increasingly integrate the international dimensions into research.

Analysis and discussion

In the current era of globalisation, the internationalisation of higher education has been affected by more diverse driving forces than previously and has combined worldwide trends with China’s and Japan’s domestic socio-economic backgrounds. Internationalisation is no longer solely affected by economic reforms and the open-door policy in China as it was prior to the 1990s; nor is it stimulated uniquely to enhance mutual understanding and promote Japan’s intellectual contribution to the international community through a strong presence of international students, as occurred in the 1980s. Compared with previous decades, since the later 1990s, the role of central governments in the two countries has become more limited in regulating the internationalisation of higher education. Accordingly, individual institutions are taking initiatives for their own involvement. Globalisation has given rise to new forms and wider dimensions of internationalisation of higher education in the two countries. Examples include importing foreign higher education services and exporting educational programmes abroad. Facing the challenges of a competitive environment at a global level, both countries have realised the importance of building several world-renowned universities, pursuing world-class quality of teaching and research, and enhancing the quality of their higher education in the light of universally accepted standards.

However, based on the concepts of internationalisation and globalisation of higher education as defined here, this does not necessarily mean that the inherent character of the internationalisation in China and Japan has fundamentally changed. As globalisation has not affected the daily life of Japanese people to the extent it has affected the United States and European countries (Kurimoto, 1997, pp. 83-104), neither has it impacted dramatically on local universities and regional societies in China (Yang, 2002). Globalisation has not changed the essence of the internationalisation of higher education in the two countries. A clear indicator is that both countries still export more students abroad than they accept from abroad, especially from Europe and the United States; and both countries import more foreign educational programmes and services than they export. In this sense, it is appropriate to classify both China and Japan as the import and export type identified earlier. To be more precise, it is Western models and institutions that provide the foreign imports, a pattern that has continued from the colonial into the contemporary period (Altbach and Selvaratnam, 1989). China and Japan are still influenced by the English-language products that they use, though to differing degrees. The internationalisation of higher education in both countries still maintains its basic character as a process of catching up with
advanced countries and approaching the current centres of learning, mostly identified with the English-speaking countries in Europe and even more so the United States. This phenomenon does not seem to have a significant link with the level of national economic development, the political system or the stage of higher education development, but rather is due to the fact that neither of the two countries has established the universally-recognised excellence of its own academic system or maintains a quality of higher learning that can exert academic influence at an international or global level.

Undoubtedly, globalisation does not affect the internationalisation of higher education in China and Japan in the same way or to the same extent. Compared with Japan, China’s central government still exercises strong regulation of and authority over the internationalisation of the country’s higher education as a matter of policy. Moreover, as noted earlier, its policy of internationalisation is normally advocated for a few leading universities only – and all of them belong to the national sector. In China, there is no stimulation of mass internationalisation, but rather of internationalisation that is restricted to several select institutions with the intent to train the elite. Currently the major form of internationalisation of higher education in China is the provision of incoming foreign educational activities, especially joint programmes leading to foreign degrees or degrees of universities in Hong Kong. These have now been recognised as an integral part of Chinese higher education and are regarded as one of the most effective ways to facilitate the internationalisation of higher education. In Japan, however, individual private institutions, aided and regulated by the central government but also strongly competing for enrolments, play a more crucial part in the internationalisation of Japanese higher education both by accepting incoming international students and by exporting educational programmes abroad. Furthermore, as stated by Kurimoto Kazuhiro, because different sectors in Japan are expected to play different roles in the higher education system, the meaning and forms of internationalisation vary according to the different sectors and institutional types. So, while the major concern of internationalisation for the prestigious universities is closely related to their research activities, in other institutions, internationalisation simply means organised visits by Japanese students to foreign countries as part of their course requirement (Kurimoto, 1997, pp. 100-101).

Conclusion

Globalisation has resulted in and will continue to give a rise to new forms or wider dimensions of the internationalisation of higher education in both China and Japan. However, at this stage it has not changed the most essential and intrinsic parts of the internationalisation in the two countries, largely because China and Japan have not been centres of learning. As globalisation
continues to exert a strong influence on aspects of the internationalisation of higher education, more diverse dimensions will probably continue to be integrated into the internationalisation processes. Activities related to the internationalisation of higher education will continue to expand at regional as well as global levels. Inevitably, the internationalisation of higher education will see more values in common between both China and Japan and other countries, but it is extremely difficult or impossible for globalisation to give rise to a single, globally-accepted model of internationalisation of higher education so long as sovereign countries and strong national identities exist.

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Market Competition, Public Good and Institutional Governance: Analyses of Portugal’s Experience

by
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The emergence of the market as a regulatory tool for the public sector and the promotion of competition among institutions are based upon the idea that they promote institutions’ responsiveness to society and a more efficient use of public funds. However, autonomous institutions forced to compete under market-like conditions may follow strategies aiming at “their own good”, especially when facing stringent financial conditions. This does not guarantee that the institutions’ strategic objectives will coincide or converge with the “public good” or with the government’s objectives. This opens the way for state intervention.

In Portugal, the combined effect of the rapid expansion of the higher education system and the country’s decreasing birth rate has resulted in a situation where institutions compete strongly to attract students. This paper analyses the effect of this competition on the behaviour of both public and private institutions. It focuses on institutional policies for offering new study programmes and promoting the access of new students. It compares the behaviour of the public and private sectors to assess how far strong competition promotes similar attitudes from both sub-sectors, thus resulting in relaxing or even ignoring the pursuit of public good.
Introduction

Over the last few decades, in some countries, the use of market regulation as an instrument of public policy has become increasingly popular. The “active experimentation with market-oriented policies by states intent on maximising the social benefits of national higher education systems” (Dill et al., 2004, p. 327) has reshaped the nature and conditions of academic work and also the relationship between higher education institutions and the state.

Under the neo-liberal zeitgeist, a new political philosophy has developed which promotes the perspective that the state should reduce its activity as a service provider, that state regulation should retreat in favour of market regulation and that competition among institutions is necessary to ensure that they will become more responsive to society and more efficient in the use of public funds.

The new market-based regulatory framework was expected to reduce state intervention in higher education institutions. However, this new model creates difficulties to state steering, as autonomous institutions forced to compete under market-like conditions may pursue strategies aiming at increasing “their own good”. This does not guarantee that their strategic objectives will coincide or converge with the “public good” or with the government’s objectives.

Data from the Portuguese higher education system is used to illustrate how both public and private institutions may, under conditions of strong competition, deviate from the concept of public good or ignore the government’s objectives. This may open the way to intrusive behaviour by the government to force institutions to comply with the government’s policy objectives.

The rise of market regulation as an instrument of public policy and the changing relationship between higher education institutions and the state

Over the last two decades, markets have assumed an increasing importance in the regulation of the public sector. This is partly the consequence of the assumption by some governments that market-like competition will force public services to become more responsive to the demands of their “clients”. Market competition is the new instrument of
public policy that will awake sclerotic public services from their state of comfortably sheltered and slow routines towards the “fast, adventurous, carefree, gung-ho, open-plan, computerised, individualism of choice, autonomous enterprises and sudden opportunity” (Ball, 1998, p. 124). Therefore governments are, more and more, testing the introduction of market-like mechanisms as instruments of public regulation. In Europe, the Bologna Declaration by “… redefining the nature and content of academic programmes is transforming what were once state monopolies over academic degrees into competitive international markets …” (Dill et al., 2004, p. 330).

The efficient use of market regulation presents a number of problems. For the allocation of goods and services to be optimally efficient for the larger society (Leslie and Johnson, 1974), the market needs to be perfectly competitive, implying a number of conditions that are difficult to fulfil. Market efficiency depends upon the clients’ rational economic decisions, which implies a good knowledge of the price and characteristics of the goods and services to be purchased, as well as the market conditions. However, in many cases, the relevant information is not available (imperfect information) or the producer has much more detailed knowledge than the consumer (asymmetric information).

The lack of “perfect information” is acute in the case of higher education, which has three simultaneous characteristics: it is an experience good; it is a rare purchase; and it has high opting-out costs. Higher education is an experience good because its relevant characteristics can only be effectively assessed by consumption. It is only by attending a study programme that the student gets a real idea of what he has purchased in terms of quality, professors and educational experience. Being a rare purchase – in general a student enrols in only one graduate programme – the student cannot derive market experience from frequent purchases. And it is in general rather expensive to change to a different study programme or institution, which means that opting out may not be an easy option. The simultaneous presence of these three characteristics in education legitimises the taking of action by governments to guarantee consumer protection. This can include different forms of information, such as licensing, accreditation and the provision of information on the quality of goods and services (Smith, 2000).

Dill considers that “students lack sufficient information about the quality of academic institutions or programs to make discriminating choices” (1997, p. 180), noting that what they need is the measure of prospective future earnings provided by alternative academic programmes and not “… peer review evaluation of teaching processes, nor subjective judgements of the quality of a curriculum” (ibid.).
Quasi-markets and immature clients

However, even if the relevant data for a rational economic choice were available, many students (or their families) would not use it. The idea that each human acts as a kind of robot that will make all its choices only to maximise economic profit is too simple-minded to be true, which questions the validity of the rational economic choices hypothesis. For Vossensteyn and de Jong:

Because (potential) students are uncertain about the actual contents of the study, getting a degree and finding a proper job after graduation, the decision to attend higher education and to select a particular program is surrounded with a lot of uncertainty. [...] Psychological phenomena form a “filter” or a mental framework through which students judge financial incentives in relation to their study choices. (2005)

This raises what David Dill calls the problem of immature students, which is the rationale for “the implementation of quasi-markets, rather than consumer-oriented markets, for the distribution of academic programs” (Dill, 1997, p. 181). Cave and Kogan (1990, p. 183) consider that a quasi-market is in operation when goods or services, instead of being bought by their final users, are bought by an agent (in general a public agent) on behalf of clients to whom these goods and services are then allocated directly. This creates a quasi-market in which the state becomes a purchaser of services from independent providers, which compete with each other in an internal market (Le Grand and Bartlett, 1993).

The rationale behind the implementation of quasi-markets is that the state, through a government agency, is more capable of protecting the interests of immature consumers than consumers themselves. As the government agency has more knowledge about the product being purchased than do individual consumers, it is more capable of making sound economic choices and it has far more bargaining power because it purchases large amounts of goods and services. Therefore the state is no longer a provider of higher education, but assumes a principal role, representing the interests of consumers by making contracts with competing institutions.

The emergence of the market in higher education has gone hand in hand with increased institutional autonomy, as producers must have decision-making freedom to compete in a market. This shift of decision-making responsibility to producers has had “substantial implications for institutional governance and management” (Dill et al., 2004, p. 340) as well as for the relationship between governments and institutions. Indeed, the government agencies making the purchases face the classical principal-agent dilemma: “how the principal [government] can best motivate the agent [university] to perform as the principal would prefer, taking into account the difficulties in monitoring the agent’s activities” (Sappington, 1991, p. 45). This is why
governments introduced an increasing number of control and steering mechanisms, such as performance indicators and measures of academic quality.

**Steering, market competition and public good**

Will public higher education institutions and/or non-profit private institutions always act to further the public good even under conditions of market-like competition, or will they act to protect their own interest?

Public higher education institutions receive most of their budget, or at least a significant part of it, from the state, under the argument that they further the public good by producing externalities, i.e. by producing not only individual private benefits for those acquiring a degree, but also public benefits. As non-profit organisations they are forced by law to reinvest any surplus in the organisation itself, rather than providing additional private benefits for their members. This, in principle, offers the state some guarantee that the organisations will not digress from their obligation to uphold the public good.

Many private higher education institutions in Portugal are either foundations or co-operative associations that the state recognises as being “public interest institutions”. This, combined with their non-profit character, grants them substantial fiscal benefits. Even if they are not directly funded by the state, their non-profit character should guarantee that they would aim at furthering the public good, which is a fundamental component of their mission.

Massy (2004a, 2004b), in two very interesting papers, argues that “… the way institutions currently respond to markets and seek internal efficiencies, left unchecked, is unlikely to serve the public good” (2004b, p. 28), a danger that is exacerbated by excessive competition or by retrenchment operations. Massy (ibid.) argues that when competition is excessive or when the state cuts public subsidies, thus curtailing the institutional capacity for discretionary spending, non-profit institutions behave like for-profit ones, ignoring the promotion of the public good inherent in their missions.

In Portugal, demand for higher education increased rapidly in the 1980s (Correia et al., 2002), creating the conditions for the development of a private sector of higher education that absorbed the additional demand that could not be met by public institutions. Until the late 1990s the demand so clearly exceeded the available offers that many students were willing to enrol in any available programme or institution, irrespective of its quality or future employment prospects.

Today, however, institutions are competing strongly for students. Following the period of fast expansion – a period that had no parallel in any other European country – the number of candidates for higher education declined steadily over the last few years, due to falling birth rates. Public institutions are forced to compete because their budget is allocated by a
funding formula that is strongly dependent on student enrolments. Private institutions are also forced to compete because their budget depends directly on the tuition fees paid by students.

In this context, we will analyse the development trends of the Portuguese higher education system to show that public and private institutions, forced to compete under market-like conditions, have used their room for manoeuvre to design their own (survival) strategies, which sometimes have not been consistent with the public good or the government’s objectives.

The Portuguese case: a balanced network of higher education or institutional self-interest?

Introduction

In Portugal, the 1974 revolution was followed by a period of fast expansion of the higher education system, which included both public and private institutions. Over approximately one decade, from the mid 1980s to the mid 1990s, the government had three main policy objectives: increase the participation rate in higher education, promote a more even distribution of higher education across the country and increase the offer of study programmes in areas relevant to the country’s economic development.

In 1988, the government decided that students would no longer be required to obtain a minimum grade in the national examinations to enter higher education, the grades being used only to rank the students in the national placement system. A student could enter higher education, even with zero grades, provided that there were unfilled vacancies. This increased the number of candidates by 75% from 1988 to 1989, thus creating exceptional conditions for the development of the private sector.

On the other hand, the government has used the network of public polytechnics created by Decree-Law 513-T/79 as a policy tool to diversify the system for training intermediate level manpower, capable of more concrete and practical work, instead of more qualified manpower, more fit for top management or conceptual activities, and probably already produced in excess by the universities.

The third objective promoted access equity both by increasing the recruitment among vocational secondary education students and by using regional preference mechanisms to satisfy regional demand – polytechnics were allowed to establish regional quotas in favour of students native from the area of influence of each polytechnic institution.

Throughout the expansion period, there was no competition among institutions. Demand for higher education clearly exceeded the available offers, and market mechanisms could not play an effective regulation role.
The government was so concerned with student participation that it neither raised difficulties when the private sector increased its offers in areas that did not correspond to the stated public priorities, nor did it exercise any credible control over the quality of education provision.

Since the mid 1990s, there has been a dramatic change, as a number of factors – including the accumulated effects of years of lower birth rates and the government’s decision to pay more attention to quality, namely by reintroducing minimum grades in the access to higher education – has progressively decreased the number of candidates for higher education. This has led to a situation of strong competition for students, initially only in the private sector, but, more recently, also in the public sector.

In the following section the developments during the fast expansion period, without competition for students, are first analysed. Next, the period of decreasing demand and the effect of the competition for students on the behaviour of institutions are analysed. In this second part the attention is focused on institutional policies for offering new study programmes and promoting the access of new students. The behaviour of the public and private sub-sectors is compared in order to verify how far strong competition will promote converging attitudes from both sub-sectors, thus resulting in a relaxing of or even ignoring of the pursuit of public good.

**The fast expansion period**

The development of the higher education system during the fast expansion period had a strong influence in shaping its present structure. In the absence of competition mechanisms and of state regulation, the private sector has developed by concentrating its offers in the main urban areas around Lisbon and Porto, leading to an uneven regional distribution. Table 1 shows that in 1997/98 (at the end of the expansion period) almost 83% of private enrolments were concentrated in Lisbon/Setubal and Porto, with only 17% of enrolments outside these major towns. In contrast, the public sector had almost 50% of enrolments outside those major towns.

**Table 1. Enrolments in Portuguese higher education, 1997/98**

<table>
<thead>
<tr>
<th>Location</th>
<th>Private</th>
<th>Public</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>%</td>
<td>Number</td>
</tr>
<tr>
<td>Lisbon/Setubal (1)</td>
<td>64 328</td>
<td>52.24</td>
<td>78 009</td>
</tr>
<tr>
<td>Porto (2)</td>
<td>35 891</td>
<td>29.70</td>
<td>36 044</td>
</tr>
<tr>
<td>Main towns (1) + (2)</td>
<td>100 219</td>
<td>82.94</td>
<td>114 053</td>
</tr>
<tr>
<td>Others</td>
<td>20 612</td>
<td>17.06</td>
<td>112 589</td>
</tr>
<tr>
<td>Total</td>
<td>120 831</td>
<td>100.00</td>
<td>226 642</td>
</tr>
</tbody>
</table>

Table 2 presents the 1997/98 enrolments per 1 000 inhabitants for the different regions of mainland Portugal. The private sector presents an unbalanced regional distribution, with a strong concentration in the Lisbon region (where Lisbon and Setubal are located), followed by the North Region (where Porto is located), its offers being much lower in the other regions; the university sector, as opposed to the polytechnic sector, is mainly responsible for this unbalanced situation. By contrast, the public sector presents a much more balanced distribution and one can see that the polytechnic sector’s contribution to this result is important. The government policy of giving priority to developing the polytechnic public sector over the public university sector for almost one decade has been effective in terms of more balanced regional diversity.

<table>
<thead>
<tr>
<th>Region</th>
<th>Private Polytechnics</th>
<th>Private Universities</th>
<th>Private Total</th>
<th>Public Polytechnics</th>
<th>Public Universities</th>
<th>Public Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alentejo</td>
<td>0.4</td>
<td>4.0</td>
<td>4.4</td>
<td>9.3</td>
<td>8.9</td>
<td>18.2</td>
</tr>
<tr>
<td>Algarve</td>
<td>0.3</td>
<td>1.3</td>
<td>1.6</td>
<td>10.7</td>
<td>9.7</td>
<td>20.4</td>
</tr>
<tr>
<td>Centre</td>
<td>1.0</td>
<td>2.9</td>
<td>3.9</td>
<td>10.6</td>
<td>14.0</td>
<td>24.6</td>
</tr>
<tr>
<td>Lisbon</td>
<td>4.1</td>
<td>19.9</td>
<td>24.0</td>
<td>6.5</td>
<td>22.8</td>
<td>29.3</td>
</tr>
<tr>
<td>North</td>
<td>3.4</td>
<td>8.2</td>
<td>11.6</td>
<td>5.1</td>
<td>12.2</td>
<td>17.2</td>
</tr>
</tbody>
</table>


When one examines the enrolments by disciplinary area a similar picture emerges (Table 3). In the case of private universities, there is an extraordinary concentration of study programmes in the area of Social Sciences, Commerce and Law, representing 65.5% of the total, while every other area represents less than 10%. Private universities have concentrated their programme offers in Law, Management and Business Administration, which have low investment costs and low running costs, without paying attention to eventual labour market saturation. Private polytechnics have concentrated their offers in the areas of Education/Teacher Training (35.7%) and Management and Business Administration (35.6%), the third area being Health and Social Protection (essentially nursing schools), which represents only 9.8%.

Public polytechnics have concentrated their enrolments in Engineering (32.4%), Management and Business Administration – within the area of Social Sciences (30.7%) –, Education/Teacher Training (14.1%), Health and Social Protection (9.0%) and Agriculture (4.6%), which corresponds roughly to the recommendations of the World Bank (Teixeira, Amaral and Rosa, 2003). The 1978 World Bank Report no. 1807-PO suggested that, as regards manpower provision, Portugal needed to train high level technicians, but also middle
level personnel (technicians with short cycle post-secondary education: engineering and health technologies, middle level managers and some 500 agricultural technicians on a yearly basis), while professors for basic education should complete shorter degrees than those traditionally offered by universities. The health sector again includes nursing schools.

Public universities offered a diversified provision across the different disciplines and the area with the most enrolments represents less than 23% of the total.

Table 3. **Enrolments in Portuguese public and private institutions by disciplinary area, 1997/98**

<table>
<thead>
<tr>
<th>Area</th>
<th>Private</th>
<th>Public</th>
<th>Private</th>
<th>Public</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Polytechnics</td>
<td>Universities</td>
<td>Polytechnics</td>
<td>Universities</td>
</tr>
<tr>
<td></td>
<td>Number</td>
<td>%</td>
<td>Number</td>
<td>%</td>
</tr>
<tr>
<td>Education/Teacher Training</td>
<td>9 614</td>
<td>35.7</td>
<td>280</td>
<td>0.3</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td>1 766</td>
<td>6.6</td>
<td>7 599</td>
<td>8.1</td>
</tr>
<tr>
<td>Social Sciences, Commerce, Law</td>
<td>9 570</td>
<td>35.6</td>
<td>61 523</td>
<td>65.5</td>
</tr>
<tr>
<td>Sciences, Mathematics, Informatics</td>
<td>1 089</td>
<td>4.0</td>
<td>5 925</td>
<td>6.3</td>
</tr>
<tr>
<td>Engineering, Manufacturing and Building Industries</td>
<td>1 162</td>
<td>4.3</td>
<td>9 324</td>
<td>9.9</td>
</tr>
<tr>
<td>Agriculture</td>
<td>0</td>
<td>0.0</td>
<td>59</td>
<td>0.1</td>
</tr>
<tr>
<td>Health and Social Protection</td>
<td>2 651</td>
<td>9.8</td>
<td>5 864</td>
<td>6.2</td>
</tr>
<tr>
<td>Services</td>
<td>1 065</td>
<td>4.0</td>
<td>3 340</td>
<td>3.6</td>
</tr>
<tr>
<td>Total</td>
<td>26 917</td>
<td>100.0</td>
<td>93 914</td>
<td>100.0</td>
</tr>
</tbody>
</table>


Public universities had a high degree of autonomy and they were allowed to initiate new degree programmes without previous approval by the Ministry of Education. One can observe over the expansion period that public universities, being relatively well insulated from market demands, addressed the issues of differentiation and diversification primarily on the basis of the knowledge base that they could command. Public polytechnics had less autonomy than public universities as they could not start new degree programmes without the Ministry’s previous authorisation. Therefore they developed following roughly the government’s general objectives and goals.

On the other hand, private higher education institutions have tuition fees as their main source of funding and in principle they must be careful to offer programmes that can attract enough students to ensure their survival. However, during the expansion period resources were not scarce because demand had largely exceeded the available provision and the private sector’s strategy had more to do with maximising short-term profits than aiming at a
better product which, in the long run, would offer them better prospects of survival (Teixeira and Amaral, 2001). Therefore the private sector concentrated its offers in areas of low-cost and low-risk activities, without paying much attention to labour market needs. As recognised by Teixeira and Amaral, “… private institutions typically responded to strong demand by duplicating the existing public provision, or by a rapid expansion (but not its launching), of low-cost disciplines” (2001).

**The retrenchment period**

It was from the mid 1990s that the development context of Portuguese higher education started to change dramatically as the combined result of declining birth rates and a policy move towards quality. Table 4 presents the evolution of enrolments between 1997/98 and 2004/05. It can be seen that the private university sector was seriously hit, as its enrolments had decreased by more than 26 500 students over the seven-year period, which represents a 28.5% decrease. The private polytechnic sector was far more stable, with enrolments increasing until 2002/03, before they also started to decline. The public sector was also more stable and the declining enrolments trend only began in 2003/04.

### Table 4. Enrolments in Portuguese higher education, retrenchment period, 1997/98-2004/05

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Public</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Universities</td>
<td>153,951</td>
<td>158,850</td>
<td>164,722</td>
<td>171,735</td>
<td>176,303</td>
<td>178,000</td>
<td>176,827</td>
<td>173,897</td>
</tr>
<tr>
<td>Polytechnics</td>
<td>72,691</td>
<td>80,007</td>
<td>90,286</td>
<td>101,795</td>
<td>108,486</td>
<td>112,532</td>
<td>111,482</td>
<td>108,376</td>
</tr>
<tr>
<td><strong>Total public</strong></td>
<td>226,642</td>
<td>238,857</td>
<td>255,008</td>
<td>273,530</td>
<td>284,789</td>
<td>290,532</td>
<td>288,309</td>
<td>282,273</td>
</tr>
<tr>
<td><strong>Private</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Universities</td>
<td>93,914</td>
<td>89,361</td>
<td>88,190</td>
<td>82,979</td>
<td>79,908</td>
<td>77,109</td>
<td>73,708</td>
<td>67,157</td>
</tr>
<tr>
<td>Polytechnics</td>
<td>26,917</td>
<td>28,572</td>
<td>30,547</td>
<td>31,194</td>
<td>31,904</td>
<td>33,190</td>
<td>33,046</td>
<td>31,507</td>
</tr>
<tr>
<td><strong>Total private</strong></td>
<td>120,831</td>
<td>117,933</td>
<td>118,737</td>
<td>114,173</td>
<td>111,812</td>
<td>110,299</td>
<td>106,754</td>
<td>98,664</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>347,473</td>
<td>356,790</td>
<td>373,745</td>
<td>387,703</td>
<td>396,601</td>
<td>400,831</td>
<td>395,063</td>
<td>380,937</td>
</tr>
</tbody>
</table>


When the data are analysed in more detail, some interesting patterns emerge. Table 5 presents the decline in the number of new students entering private university education. The total decrease equals 25.4%, but while the area of Social Sciences, Commerce and Law presents a 35.3% decrease, all the other areas show only a 10.6% decrease. Therefore the present dramatic situation of many private universities is the result of their initial strategy of concentrating the programme offers in a low-cost area with declining employment prospects. For instance, first year total enrolments in Law declined from 1,705 in 1997/98 to only 674 in 2004/05, which corresponds to a 60.5% decline.
It was already observed that the private polytechnic sector has remained far more stable than the private university sector. The number of first year enrolled students changed from a total of 8,875 in 1997/98 to a maximum of 10,669 in 2001/02, to a decrease to 8,453 in 2004/05, which represents a decline of only 4.8% relative to 1997/98. Table 6 explains this apparently anomalous behaviour.

There was also a decline of enrolments in the two traditional major areas, Education (from 36.9% to 24.4%) and Social Sciences, Commerce and Law (from 31.6% to 14.0%), while the area of Health and Social Protection shows a dramatic increase from 13.7% to 52.1%.

### Table 5. First year enrolments in the Portuguese private university sector, 1997/98-2004/05

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>16,823</td>
<td>17,141</td>
<td>16,575</td>
<td>16,942</td>
<td>16,333</td>
<td>16,137</td>
<td>14,528</td>
<td>12,545</td>
</tr>
<tr>
<td>Social Sciences, Commerce, Law</td>
<td>10,107</td>
<td>9,501</td>
<td>8,729</td>
<td>9,099</td>
<td>8,477</td>
<td>8,682</td>
<td>7,721</td>
<td>6,538</td>
</tr>
<tr>
<td>Others</td>
<td>6,716</td>
<td>7,640</td>
<td>7,846</td>
<td>7,843</td>
<td>7,856</td>
<td>7,455</td>
<td>6,807</td>
<td>6,007</td>
</tr>
</tbody>
</table>


### Table 6. Evolution of first year enrolments in the Portuguese private polytechnic sector (% per area), 1997/98-2004/05

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>36.9</td>
<td>38.3</td>
<td>53.3</td>
<td>48.5</td>
<td>44.4</td>
<td>39.3</td>
<td>33.0</td>
<td>24.4</td>
</tr>
<tr>
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The increase in enrolments in the area of Health and Social Protection was due to the transfer of the Nursing Schools and Health Technician Schools from the Ministry of Health to the Ministry of Education, which has created a new area with strong student attraction. The behaviour of the institutions has strong isomorphic characteristics. When an institution starts a new programme that attracts students, it creates a phenomenon similar to that in the New World when someone struck gold: many institutions jump at this
new opportunity for a short-term escape from bankruptcy and propose new programmes irrespective of the absence of consolidated academic staff, facilities or libraries. There has been the “management” race, the “environment” race and more recently the “health” race.

Private universities also tried to move into the promising new health sector by shedding their traditional “low-risk” behaviour and offering new Medicine programmes. However the Medicine area is quite strictly regulated and although the private sector has proposed eight new programmes, none of them has so far been authorised.

In the public sector the phenomenon is not yet so clear, one of the reasons being the fact that decreasing enrolment trends are more recent. However, one may refer to the case of the health sector in the public polytechnics, with an increase in the first year enrolments from 2 543 in 1997/98 to 5 680 in 2004/05, or the case of Architecture in the universities, with an increase in the first year enrolments from 1 864 in 1997/98 to 2 458 in 2004/05.

The area of environmental studies offers an interesting example for the whole system as there was a time when it was considered promising. When this “new area” was discovered, the number of programmes and enrolments increased until the labour market became saturated and its attractiveness started to decline (Table 7).

Table 7. First year enrolments in Environment degrees in Portugal, 1997/98-2004/05

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Conclusions

There is a widespread conviction that the market will be more effective than state regulation in promoting diversity of higher education systems, both in terms of institutional types, programmes and activities. Geiger formulates the hypothesis that “… when resources are tight, the market is a much more powerful force for the differentiation of higher education institutions and functions than centralized policy and control (1996, p. 200)”. Geiger considers that at times of prosperity academic forms of co-ordination will prevail, leading to academic drift as efforts to raise institutional status result in imitation of the more prestigious institutions. When resources are scarce, the fight for survival takes place under market co-ordination, and institutions will diversify in search of market niches and new
clientele. As Geiger says, “When institutions cannot do what they like, they do what they must.”

In Portugal, during the period of fast expansion, weak state regulation and the absence of market competition allowed the private sector to develop in directions contrary to the government’s policy objectives, and even against the long-term survival interests of its own institutions. In the retrenchment period, when strong competition for students emerged, private institutions were forced to abandon their initial strategy of low-cost/low-risk offers and to move into areas that would attract students. However, institutions seem to pursue short-term survival strategies rather than long-term strategies or the government’s objectives. Institutions jump at new opportunities until the labour market sends clear signs of saturation and students move away, a behaviour that is similar in public and private institutions.

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References


Redefining Competition Constructively: The Challenges of Privatisation, Competition and Market-based State Policy in the United States

by

Peter D. Eckel
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In the United States, the relationship between state governments and public colleges and universities is being redefined with new notions of autonomy and accountability, and with funding policies that are highly market-driven (often referred to as “privatisation”) as the centrepieces. Situations and institutional strategies unthinkable only a few years ago are becoming increasingly commonplace. For instance, a few business and law schools at public institutions are moving toward privatisation, distancing themselves from both the states and their parent universities.

While American higher education has traditionally been competitive and market driven, emerging state market-based policies, which will clearly benefit some types of institutions over others, are further intensifying the competition with a variety of effects at the institutional and sector levels. Entrepreneurial or commercial activities may provide the additional resources individual institutions need to fulfil their public purpose. However, when all institutions pursue the same set of competitive strategies, no one gains an advantage. Institutions run harder to stay in place. The cumulative effect of competition may also work against important social objectives such as affordability and access. This paper explores the challenges that the current competitive environment creates for institutional leaders in the United States. It acknowledges that the competitive environment will not abate and suggests that by competing in different ways, over different objectives, with different purposes, US higher education might better meet its social objectives of increased access, lower cost and enhanced quality.
While American higher education has traditionally been competitive and market driven, numerous challenges are further intensifying competition among similar and dissimilar colleges and universities, with a variety of effects on individual institutions and on higher education as a whole. Fiscal constraints, public policies that foster a greater role for market forces, changing levels of demand, and the increase in direct and indirect competitors exacerbate competition and push institutions to pursue strategies they believe will best position them in the competitive marketplace, such as using merit-based aid to recruit highly desirable students, hiring faculty “stars” and investing in high-cost amenities, such as residence halls, improved information technology infrastructure, wired classrooms and recreational facilities. Each of these investments has the potential for positive returns – better-prepared students, improved institutional quality, or the ability to leverage additional resources or opportunities. However, when institutions pursue the same set of strategies, no one gains a competitive advantage; institutions continue to invest, but since most are doing the same thing, they negate their investments. The cumulative effect is, in many ways, working against important social objectives, such as affordability and access.

This paper explores the challenges that the current competitive environment creates for institutional leaders in the United States. It is grounded in the assumption that the competitive environment will not abate and may in fact become more intense, and argues that by competing in different ways, over different objectives, with different purposes, US higher education might better meet its traditional public policy objectives of increased access, lower cost and enhanced quality. First, it explores environmental changes that are enhancing competition. Second, it looks at the competitive dynamics of US higher education. Third, it explores the notion of competing differently to minimise the potential pitfalls of the increasingly competitive environment.

The US higher education landscape

Comparatively, US higher education is an enormous sector. The US Department of Education counts approximately 6,500 postsecondary institutions in its federal student financial aid programme, including 4,200 colleges and universities that award degrees (US Department of Education, 2003). Those 6,500 institutions enrol 14 million students in...
undergraduate degrees programmes, with the remaining 2 million students enrolled in graduate programmes. Approximately 1,100 of these institutions are public two-year colleges, enrolling the largest share of undergraduates (6 million). There are 630 public four-year colleges and universities that enrol 6.2 million undergraduate and graduate students. Slightly more than 1,900 private, non-profit (or independent) colleges and universities enrol 3.2 million students. The remaining 2,400 institutions are for-profit, private, enrolling approximately 750,000 students.

These colleges and universities are funded by a variety of means, although tuition and fees (which include individual, family or employer money, but also government-backed financial aid that students use to pay tuition), and state government appropriations for the public institutions are most important. These two sources – along with local government appropriations for community colleges and federal research grants and contracts at research universities – provide the majority of funding for institutional general operating expenses. However, other sources of funding are important and increasingly so, including private gifts, returns from endowment investments, and revenue from various enterprises, licensing agreements and services. For the most part, US colleges and universities pursue an intentionally diversified set of revenue streams (Hearn, 2003).

Competition throughout higher education for students and their tuition dollars can be fierce in this market underwritten by more than USD 105 billion (2002/03) in available financial aid (including USD 71 billion in federal grants, loans and tax credits; USD 6 billion in state grants, and USD 20 billion in grants provided by colleges and universities, as well as private organisations) (College Board, 2003). Most students have multiple choices when selecting a college or university in which to enrol. While competition for students can spur improvements and innovation and keep institutions focused on meeting student needs, it can also have negative effects. Institutions may make academic and financial choices that may improve the recruitment of certain types of students (e.g. highly talented, wealthy or athletic), but impede their ability to do other things, such as serve low-income but qualified students or adult students.

To further complicate the competition over students, 20 states will see a decline in the number of projected high school graduates by 2017/18 (Western Interstate Commission for Higher Education, 2003). States such as Louisiana, Montana, North Dakota, South Dakota and Wyoming are predicted to see steep drops on the order of between 10 and 35%. That said, other states such as Nevada and Arizona have projected tremendous growth (103% in Nevada for example and 55% in Arizona), and other Western and Southern states will see increases of between 25 and 50%. These demographic trends mean that in some instances, institutions will be starved for prospective students, yet in
other states capacity may be taxed to such an extent that students less prepared and less able to pay their way may be closed out of postsecondary education entirely, relegated to institutions of marginal quality, or concentrated in institutions where they will not receive the attention they will need to succeed.

Beyond tuition and fees, the other primary source of funding, particularly for the public institutions, is state appropriations. Depending upon the mission and complexity of the institution, this can range tremendously from well over 60% to less than 10% of the institution's revenue. However, public moneys are playing a smaller and smaller part in institutions' financial portfolios. According to Kane, Orzag and Gunter (2003), funding for higher education has dropped from 7.2% of overall state expenditures in 1977 to 5.3% of state expenditures in 2000. They argue that if funding had remained constant at 1977 levels, higher education would have gained an additional USD 21 billion. As a percentage of institutional revenue, state funding has also declined, from 46.5% in 1977 to 35.9% in 1996 (Kane, Orzag and Gunter, 2003). Furthermore, the future financial outlook for all 50 states looks bleak. Recent data suggest that no state will have a surplus in baseline revenues, and 29 states will face a gap of 5% or more (Jones, 2006). These predicted shortfalls are due to insufficient tax revenue as economic growth and sales and excise taxes do not keep pace with demand for governmental programmes and services; increased spending, mostly due to Medicaid growth; and reduction in federal grants to states.

Changing state relationships

Many states are changing not only the way they fund public higher education, but some are developing (and many others are considering) new policies that affect their broader relationships with public colleges and universities. Charter colleges, tuition deregulation, state enterprise status, public corporations and restructuring are all terms that describe various policies being implemented in a range of states including Colorado, Maryland, Massachusetts, Ohio, Texas and Virginia. Each reflects a combination of changing fiscal and regulatory policies and practices, with particular attention given to autonomy, accountability and funding. The specifics of each vary, as does the language, and to complicate matters the terminology is not readily transparent or used consistently. In some instances, different language refers to different packages of policies. However, in other situations, similar language has different meaning in practice. (Charter colleges in Maryland are not exactly the same as the chartered university proposal advanced by a number of universities in Virginia, even though the states are neighbours.) And different labels can further describe similar policies.
As a whole, these approaches share some common elements. First, they reflect a greater market orientation. The effect is a greater reliance on private dollars and typically the ability to set, keep and invest one’s own tuition and fees. They encourage more entrepreneurial behaviour and the commercialisation of knowledge. They often provide increased procedural autonomy and less excessive regulation. The result is enhanced institutional ability to respond to a changing environment more quickly, to forgo expensive and burdensome state procedures (such as on capital projects and lease agreements), and to develop and manage their own operational policies (such as those regarding human resource issues or procurement). However, these policies are sometimes accompanied by decreased or flat public funding. Even so, some institutions find it appealing to forgo more resources for less volatility in year-to-year allocations so they may better plan and prepare for the long term. Finally, these policies typically include additional accountability requirements that often result in state-set performance measures. For example, in Virginia, the state outlined a set of 11 goals, referred to as the “state ask” (Couturier, in press).

The impact of these changing policies most likely will vary by institutional mission. Some institutions will benefit from and thus welcome these policy shifts, particularly those with the reputation and capability to be entrepreneurial and hold a steady position (or even gain) in the competitive marketplace. This is not to suggest that the previous environment did not favour some institutions over others; however, public policy often helped address the inequities across institutions. Those likely to benefit the most may be the large, diversified (typically, research) universities that offer a range of undergraduate, graduate, professional and lifelong learning programmes; have sizable auxiliary services that offer products desirable in the marketplace; can commercialise research or other products and services; and are able to create and draw upon diverse revenue streams. The majority of public institutions do not have such capacities, so that the new rules effectively favour those already most able to compete. Smaller institutions, community colleges and those that focus predominately on undergraduate education must often live under the same market-based policies as their larger counterparts, but have fewer strategies to pursue and fewer resources to tap. Neither will they be exempted from the heightened standards and reporting requirements of accountability. At the same time, some independent (private, non-profit) colleges and universities may welcome some (but surely not all) of these policy changes, as they might mean easier access to public dollars and a more level playing field with public institutions.
Increasingly competitive playing field

Not only are the rules of the game evolving for many US colleges and universities, but the providers appearing on the competitive playing field are changing as well. For instance, between 1990 and 2000 the number of private, for-profit institutions increased by 112% to approximately 750 institutions (albeit another 200 went out of business) (Hentschke, 2004). And although they continue to serve a relatively small per cent of students (approximately 5%) (Kinser, 2006), their growth between 1995 and 2000 increased by 52%, far outpacing growth in other segments of US higher education (Hentschke, 2004). They were often touted as the new darlings by Wall Street and even public policy makers, until recent scandals began to tarnish that image.

Competition from abroad may soon further challenge US higher education on many levels. For instance regarding research universities, the Chinese government has set a goal to develop (and fund) 100 world class universities through its China 211 effort (Zhong, 2006). Another Chinese government initiative, 985 Project, is providing substantial grants to select universities the government believes have the greatest potential to compete in the global academic marketplace (Mohrman, 2005). Peking and Tsinghua Universities both received CNY 1.8 billion (USD 225 million) in the first round of that project's funding. Substantial investment like that is bound to have an impact. Elsewhere, Singapore's minister of education stated his country's intention to create a “Boston of the East” through its investment in world class higher education (Altbach, 2000). More recently, the European Union has expressed plans to create a transnational technological institute on par with those in the United States, and a primary objective of the Bologna Process is to create a competitive European higher education sector.

Countries additionally have stepped up their efforts to recruit and educate international students and the United States has not kept pace proportionately. For example, Australia has tripled its number of foreign students since 1990, which is an increase of more than 13-fold since 1980. United Kingdom institutions have increased the number of foreign students three-fold since 1990 and four-fold since 1980 (OECD, 2004). Early in this decade, the US share of the world market stood at 32%, down from a previous 40% (Schneider, 2000). Australian universities have responded by engaging in multiple strategies (predominately in Asia), one of which is “offshore education”, where students enrol at Australian institutions, but study outside the country at a foreign partner's campus. In 2000, approximately one-third of the estimated 100 000 international students enrolled in Australian higher education were outside of Australia (Davis et al., 2000).

Online education has further affected competition, adding to the mix not only for-profit institutions or distance learning providers from abroad, but
traditional institutions that are now located no more than a “click” away. Geographic locations are less important thanks to technology. A student can easily choose a math course offered online by another geographically distant institution over the one at her home institution if the student believes the competitor’s version is better suited to her needs or of higher quality (Newman et al., 2004).

Finally, public institutions in a single state not only compete with one another for public dollars, but also must compete with increasingly organised, independent higher education for public subsidy (Hebel, 2004). For example, in 2005, independent colleges and universities in New York State received access to public dollars for capital building projects, much to the chagrin of their public institution counterparts. However, as an inverse example, private institutions are seeing their historic domain of private fundraising and gifts challenged by public institutions. The Chronicle of Higher Education has been tracking 22 US universities engaged in campaigns to raise USD 1 billion. Of those 15 institutions are public (see http://chronicle.com/).

Winner-take-all environment

The above tensions, dynamics, pressures and actors all play themselves out in the higher education competitive environment described by two economists as “winner-take-all”. Frank and Cook (1995) argue that higher education operates as a particular type of competitive system in which those at the top get a disproportional share of rewards. This type of environment places particular constraints on institutions and creates dynamics that narrow their options and dictate their strategies. A primary characteristic of this environment is that small differences in performance translate into large differences in rewards. In many instances only the “winners” reap the benefits. Others walk away with nothing to show for their efforts. As an illustration, the authors describe an auction in which, unlike a traditional auction, not only the winner placing the highest bid pays, but others who make serious bids (investments) for the item do as well. However, only one winner (or a few winners) takes the stakes, disproportionate to the number of those who enter the game. Furthermore, success is more likely to come to those already successful or adept at the game, creating even more incentives to reach the top.

The complexities of succeeding in this type of environment are compounded by the fact that success is determined by relative standing, not functional or discrete results. For example, institutions strive to be “top ten” institutions. Not all can be a top ten university, and when demand is dictated in relative terms only a limited number of institutions can ever succeed. Because this competitive environment has a limited set of concrete determinants, institutions invest in surrogates. For example, indicators of
prestige and status, that might but are not guaranteed to prove beneficial, become the coins of the realm. Institutions seek the best researchers, try to field the best athletic teams, recruit the best students and build the most elaborate research facilities; not in absolute terms, but in relative ones. They make those investments hoping for the scarce payoff at the end, but risk gaining little for their efforts if they do not attain one of the few coveted spots at the top.

The rewards accumulated by those at the top are highly visible and thus encourage newcomers to get in the game and try to compete on the already established terms, which they usually do from inferior positions. Frank and Cook argue that most newcomers overestimate their chances of winning, thus too many competitors become easily attracted to a situation that will only pay off for those at the top. When too many contestants participate, they engage in unproductive patterns of consumption and spending as each tries to “one-up” the others to gain a competitive advantage. For example, research funding by the National Institutes of Health (NIH) has increased significantly in the last decade, leading many universities to see biomedical sciences as a potential source of support. To succeed, institutions that have not competed successfully in this arena recruit star faculty who have strong track records obtaining NIH funding. They each invest in laboratories and programmes to increase their health-related research. However, the number of such faculty is limited and competitor institutions often try to recruit the same small group of stellar faculty, creating bidding wars over salary and laboratories, each requiring an investment. To gain an advantage, institutions end up outspending each other. By doing so, they cancel out each other’s investments, and are often unable to recoup dollars spent.

Such behaviour creates an “arms race” among contestants. The stakes are simply raised and to outpace competitors requires outspending them. The result is that all contestants run harder to stay in place and those that choose not to play the game quickly slip behind. Frank and Cook argue that ending an arms race is difficult without externally mandated agreements. However, when some universities did attempt to agree upfront on financial aid packages so that they would not compete for students using financial aid, the US Justice Department intervened, filing an anti-trust suit (Frank and Cook, 1995).

The above dynamics help illuminate why US colleges and universities seem obsessed with media rankings as they strive for prestige and position near the top of the relative standings. To increase their rankings, institutions shape and re-shape institutional behaviour and priorities to improve their placement (Ehrenberg, 2002). Several scholars (Slaughter and Leslie, 1997; Marginson and Considine, 2000) argue that, in higher education, status is an even more important goal in institutional decision making than money. Enhancing prestige in the “winner-take-all environment” opens possibilities.
Reputation and prestige bring with them public awareness and recognition, and opportunities and associations that otherwise might not be available to lower-status institutions (Ehrenberg, 2002).

**Tensions between public interest and the competitive marketplace**

Fiscal situations, demographic swings, new state policies, and the rules and dynamics of the winner-take-all competitive environment create difficult and competing pressures for college and university leaders. On the one hand, they work to position their institution in the competitive environment, but on the other hand they are trying to meet public purposes that may not have much value in the marketplace, but which are essential to a functioning democracy. To be sure, competition in higher education is not always a negative force. As in other knowledge sectors, such as information technology, health care and consulting, competition has the potential to drive down costs, increase innovation and access, and improve quality (Porter and Teisberg, 2004). However, competition in higher education seems to be creating as many problems as it solves. The cumulative effect of competition may work against important social objectives, particularly access and affordability. Examples include offering institutional aid to highly sought-after students who could afford tuition rather than to students in need, building new state-of-the-art athletic facilities rather than revitalising the campus library, and investing in one set of academic programmes that have strong ties to the market place (e.g. executive Master of Business Administration programmes) while allowing a different set to starve on the vine (e.g. geography or hearing and audiology).

In the United States, historically, public policy objectives have included the trilogy of affordability, access and quality. Given economic trends in various states, many university leaders and policy makers are adding economic development as a fourth policy priority. However, the demands of the competitive marketplace push leaders to pursue strategies that generate revenue, maximise prestige to generate future opportunities, increase the attractiveness of their institution, enhance research capacities and promote quality. All the while, students and families, potential corporate partners and faculty become savvy consumers and exploit choices.

Although both sets of objectives include “quality”, that concept has different meanings depending on which side of the ledger one is looking at. Quality in the public purpose domain typically concerns itself with outputs and addresses issues related to undergraduate programmes, such as the ability of graduates to find meaningful employment and function well as citizens, and the production of well-prepared graduates to address state-wide needs (e.g. nursing shortages). Quality in the competitive arena is often heavily focused on input measures and may be concerned as much with
graduate and professional education as undergraduate education. In the competitive arena, quality often encompasses the abilities of researchers to attract federal and private grants and contracts, or the status and star credentials of faculty. In some ways these two types of quality overlap, but they also contain some incongruities.

**Competing differently**

Competition among colleges and universities is not going to diminish; and, if anything, indicators suggest it will continue to intensify. Thus, might it be shaped to advance more positive ends, particularly the public policy objectives of affordability, access and quality?

Competition can be viewed as multi-dimensional. What organisations compete over and the ways they compete are various elements that might be altered to improve practice, reason Michael Porter and Elizabeth Teisberg in the *Harvard Business Review* (2004). Focusing on health care, they argue that that sector might compete differently and by doing so would make marked improvements in public concerns of health care cost, accessibility and quality. They suggest that if health care competition focused on driving down costs, raising productivity and improving service quality with the intention of creating a healthy society – patient by patient and disease by disease – it would not be in its current troubled state. They suggest that instead health care’s current form of competition makes it more expensive, limits access and patient choice, and hampers innovation and quality. Comparisons between health care and higher education are not uncommon, and they share the same policy concerns of affordability, quality and access. Following Porter and Teisberg’s argument for health care, are colleges and universities competing over the wrong things that bring about undesirable effects? How might a different approach to competition work to improve higher education, particularly to lower costs, improve quality and expand access, while addressing the realities of the winner-take-all environment?

**Improving health care via competition**

Porter and Teisberg say that, currently, competition in health care takes place at the wrong level, with the wrong objectives, in the wrong forms and geographic markets, with the wrong strategies and structures, marked by the wrong information, and with the wrong incentives for the participants. Many of these ideas might be relevant to higher education.

- **The Wrong Level:** Competition takes place at the level of health plans and hospitals, not at the prevention, diagnosis and treatment of individual health concerns. The authors cite studies that show that when teams of physicians treat a high volume of patients with a particular condition, they
create better outcomes and lower costs. They further suggest that costs and quality can be improved when organisations prevent errors, boost efficiency and develop expertise, which occurs through specialisation and focus.

- **The Wrong Objective:** The primary objective of health care competition is to reduce costs – not the overall costs of care, but predominately those borne by health plans and employers. The objective instead should be to improve the quality of health outcome per dollar spent at the disease and treatment level.

- **The Wrong Forms of Competition:** Instead of competing on the individual condition level, Porter and Teisberg suggest that health care has four unhealthy kinds of competition:
  
  ❖ Competition each year for health plans to sign up subscribers, which limits competition at the disease level because of network restrictions and creates a short-term mindset.
  
  ❖ Providers compete to be included in particular networks by giving deep discounts to large plans. It does not cost less to treat someone employed by a large company than someone who is self-employed.
  
  ❖ Providers compete to be the largest, most powerful group offering the largest array of services to develop their bargaining clout. Hospital mergers create redundancies, not synergies.
  
  ❖ Providers and payers shift costs to each other rather than work to lower costs or improve services. Payers raise rates on those who become ill; patients seek coverage for procedures not included (such as cosmetic surgery); and employers allow plans to deny coverage to employees.

- **The Wrong Geographic Market:** Because health care competition is local, providers are insulated from successes of others and the spread of best practices is impeded. Because most health care plans have high out-of-network costs, people are deterred further from seeking the best care elsewhere. Although people will still predominately visit their local doctors, those with complex or uncommon conditions may benefit from service available elsewhere.

- **The Wrong Strategies and Structures:** Although value is increased by deep expertise and tailored facilities, write Porter and Teisberg, health care instead pursues strategies that broaden services and expand capacities. Mergers and consolidations create conglomerations that stifle competition. (The authors do not mention if these larger structures facilitate communication and the transfer of best practices, something they argue elsewhere in the article is important.)

- **The Wrong Information:** Information allows people to shop for the best value and forces providers to compare themselves. The information in health care is about plan coverage and participant satisfaction, not about providers’
expertise and outcomes for treatments. Little information exists about how many patients with a particular diagnosis a provider has treated. Although difficult to collect, the authors note that some small-scale experiments in which a preponderance of information is readily available have lowered costs and improved performance.

- **The Wrong Incentives:** Finally, Porter and Teisberg suggest that the wrong incentives exist for both payers and providers. Insurers, they argue, should be rewarded for helping their customers learn about and obtain the best health care; for simplifying administrative processes; and for making participants’ lives easier. Currently, payers benefit by enrolling healthy people and raising costs (or denying coverage) for those who are sick. They complicate billing and dispute payments, shifting costs to providers and/or patients. They restrict access to expensive treatments and out-of-network care, as providers have incentives to make referrals in their own network. Reimbursement practices encourage physicians to spend less time with patients and then readmit them if there is a continuing problem.

**Redefining competition in higher education**

The ideas put forth by Porter and Teisberg raise interesting questions regarding competition in US higher education. By redefining the particular dynamics of competition, it might be possible to reduce some tensions regarding higher education’s rising costs and challenges of access, particularly for low-income students.

First, is it possible for institutions to compete over costs that are transparent? Students and their families, like all consumers, are cost-conscious. They look to maximise the investment of their tuition dollars, while maximising their returns. However, the actual cost to attend college for students often is different from the posted tuition and fees (i.e. true costs versus “sticker price”). Institutions offer many students discounts on tuition (sometimes deep discounts) as enticements to enrol, and use financial aid packages to recruit particularly desired students.

Second, how do current operationalised definitions of quality affect competition? Students and their families seek the highest quality institution. Yet, quality is often defined with little attention to how much students learn or the impact of the students’ education on their personal, professional and civic lives. Instead, quality is represented by surrogates that may not be illustrative of a student’s experience, such as the student-faculty ratio, per student expenditures, reputation among peer institutions or the number of internship experiences available. What other indicators of quality might better help students make wise choices in where they enrol at either the institution or academic programme level?
Third, is the right information available to help students make wise choices? The difficulty in addressing the first two points above is that students and their families lack relevant information to make meaningful comparisons. Finances are opaque at best and are moving targets, and quality is unclear. Regarding quality, prospective students often rely on rankings in the popular media, such as the US News & World Report, that may reveal little of the quality of education a student receives. However, because these rankings influence student choice, institutions continue to participate in them, and engage in strategies that may move them up in the rankings but do little to affect the actual experiences of students (Ehernberg, 2002). The National Survey of Student Engagement is a relatively new yardstick that may eventually supplant popular press rankings; however, as of yet its information about each specific institution typically is controlled by that institution, not allowing for comparisons between institutions. Furthermore, the likelihood of a single source or standard of information adequately capturing the quality of a student's experience at the diversity of institutions is slim at best. Too many variables – including, but not limited to the student's background and objectives, institutional mission, and differences in majors and academic programmes – are involved to take on this matter lightly. And comparisons between unlike institutions may downplay the strengths of some that might add tremendous value to a particular student's experience. Not all students seek the same thing from a higher education, nor should all institutions provide the same thing.

Fourth, how might institutions, and in turn students, benefit from specialisation and not breadth? Porter and Teisberg suggest that value is increased by expertise and tailored facilities, and costs go down and quality increases through specialisation and practice. While certain colleges or universities may offer niche programmes or pursue niche missions, the current environment encourages institutions to compete on breadth of programmes. Most end up having a broad array of academic majors that are the same if not similar to those offered by their competitors. In many ways, expectations of what is essential to a university demand this. Can a research university really be an outstanding research university without an undergraduate history programme or a physics department? What happens if other such programmes of higher “quality” (however defined) exist locally? (Of course the realities of closing academic programmes are a completely different and difficult challenge [see Eckel, 2003].)

On a related point, what might be the implications if colleges and universities competed at the individual course level instead of competing on the whole academic programme or undergraduate experience? With distance learning and refined transfer and articulation agreements, students can now make decisions to enrol in an institution on almost a course-by-course basis.
Institutions might pursue increased specialisation and expertise in certain majors or even at the course level. On one level, institutions would find this level of competition troublesome, as institutions try to steal away their students on a course-by-course basis. However, from another perspective, such expertise might allow institutions to make investments in particular areas, as others would provide the broader course coverage.

Competition for the most part is taking place on a local level, but how might distance learning alter the geographic landscape? Today’s students, unless highly mobile, typically choose between institutions in a particular region, although the size of their region may vary (i.e. all institutions in a particular city or all liberal arts colleges in two neighbouring states). However, distance learning creates the possibility of making geographic location in some cases irrelevant.

Finally, what would be the implications of alternative incentives for institutions that placed a high value on educational outcomes, student learning, serving low-income students or preparing graduates for pressing state needs? Current incentives encourage institutions to invest in amenities (among other things) that appeal to talented and often wealthier students, such as new residence halls or recreational facilities, which may increase costs and do little for quality. Scathing critiques such as the article in the New York Times titled, “Jacuzzi U?” (Winter, 2003), or efforts by four Texas universities to build climbing walls higher than one another (McCormick, 2005) are symptomatic of the situations institutions find themselves facing. The difficulty of changing incentives in the winner-take-all market is that no single competitor (or even small group of competitors) has the ability to alter incentives without risking becoming irrelevant given the current rules of the game (Frank and Cook, 1995). Instead, an outside agency must create and enforce an “arms reduction agreement”, as is the case in professional sports and other similar competitive environments.

Conclusion

Competition in US higher education is much more complex than discussed here (see for example, Ehernberg, 2002; Frank and Cook, 1995; Winston, 2003). This paper does not attempt to be comprehensive. Instead, it simply seeks to approach the issue through a different perspective and provoke higher education leaders and observers to think in other ways about competition and how tensions between being successful in the winner-take-all higher education arena and meeting public purpose objectives might be mediated before we create a situation too difficult to alter constructively.

At a recent conversation on competition, market pressures and public purposes, college and university presidents got no further in broaching
solutions. They readily acknowledged the changing environment and the challenges of meeting public purposes at a time of declining public resources and increased competition that often reward priorities and choices inconsistent with public objectives. Some of the presidents believed that competition can and should be altered to be more constructive, but others did not agree. As one president said, “If students want climbing walls, let them have the damn climbing walls.”, only to be countered by another president who said, “I get concerned when competition takes resources away from something important, when the climbing wall takes resources away from class size”. The conversation remains unfinished.

Finally, meaningful change will require challenging changes throughout the sector to occur. And given the current dynamics in US higher education, those best positioned to lead such change are the very same institutions that are benefiting the most from the current system of competition.

Acknowledgement

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The Entrepreneurial State and Research Universities in the United States: Policy and New State-based Initiatives

by

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The convergence of United States federal science and economic policy that began in earnest under the Reagan administration formed the First Stage in an emerging post-Cold War drive toward technological innovation. A frenzy of new state-based initiatives now forms the Second Stage, further promoting universities as decisive tools for economic competitiveness. This paper outlines the characteristics of this Second Stage. Among the author’s conclusions are the following: high tech (HT) economic activity is already relatively widespread among the various states; leading HT states rely heavily on their university sectors and a highly educated workforce, yet are increasingly importing talent and neglecting investment in the education and skills of their native population; the long-term commitment of states to financially support the frenzy of HT initiatives is unclear; and state initiatives are rationalised by lawmakers as filling a need not currently met by the private sector or universities and, in part, by a sense of competition between states, with only a minor concern with global competition, thus far. As this paper explores, the politics of HT, including the focus on university-industry collaboration and neo-conservative religious/moral controversies over stem cell research, are a significant factor for understanding how and why most states are pursuing the Second Stage.
The discourse over the role and future of national and supranational systems of higher education is tied increasingly to the perceived and real economic benefits of state sponsored tertiary education. Governments and policy makers ubiquitously frame science policy and the productivity and interrelationships of universities with industry and innovation as the essential means for maintaining or advancing economic competitiveness within a globalising economy. Even issues of access and degree production are increasingly discussed largely in terms of national or regional competitiveness.

In the United States and with significant influence internationally, one can trace the beginnings of this shift in government policy to the Reagan administration. Although universities in the United States have a long tradition of being vehicles for regional and national economic development, the Reagan era introduced important policy shifts that influenced the behaviour, and perceptions of the usefulness, of the academy. For the first time, federal science and technology policy in the United States shifted from being a primary means for military technological superiority to becoming a key component in national economic policy as well, with an increasing focus on university-industry relations and mechanisms for promoting innovation.

For some two decades after 1980, much of the policy debate centred on federal initiatives and funding, including changes in intellectual property laws, research and development (R&D) tax credits, federally funded science centres, and increased investment in basic research conducted by America's research universities. A fundamental assumption was that the nation depended on a class of high-quality research universities as a key driver for supporting high tech (HT) innovation.

The Bayh-Dole Act of 1980 opened the doors for universities and their faculty and researchers to own patents and issue licenses developed through federally funded research. That important legislation and subsequent federal policy regime constitutes a First Stage in an aggressive effort to further university-business collaboration – part of an emerging post-Cold War drive toward technological innovation.

Yet beyond general increases in funding for basic research over the past decade, the federal policy regime remains largely unchanged – indeed, at times regressive in light of increased restrictions on visas for foreign students and talented faculty, historically important contributors to the scientific and technological prowess of the United States.
A wave of new state-based initiatives now form the Second Stage in this process of convergence, with the further elevation of universities as decisive tools for economic competitiveness. State governments have become the political environment in which new policy ideas emerge, marked by a sense of increased competition among states and with other developed and emerging economies of the world for economic growth.

The following discussion outlines the characteristics of the Second Stage and the critical role of universities before providing an assessment of the pattern of other state initiatives and current concentration of HT businesses. The essay concludes with an initial analysis of this nascent movement and its political saliency.

This analysis indicates that HT economic activity is already relatively widespread among the various states (more so than perhaps thought previously); that leading HT states rely heavily on their university sectors and a highly educated workforce, yet are increasingly importing talent and neglecting investment in the education and skills of their native populations; that the long-term commitment of states to provide financial support for the frenzy of HT initiatives is unclear; and that state initiatives are rationalised by lawmakers as filling a need not currently met by the private sector or universities and, in part, as a response to a sense of competition between states.

It remains to be seen whether such initiatives are growth-enhancing, and whether they will benefit very specific sectors of the economy and labour force or a state's population as a whole.

The politics and rhetoric of HT, including the focus on university-industry collaboration, is a significant factor for understanding how and why most states are pursuing the Second Stage. The actions of individual states, particularly important HT states such as California, are influencing policy making in other states. In short, there is a frenzy of state-based initiatives. Policy making is, in part, driven by the rhetoric and realities related to the idea of postmodern economies, and, at least in the initial stages of many state initiatives, often by individual advocates – politicians, sometimes HT industry leaders or, as in the case of California’s stem cell initiative, patient advocates, though seemingly marginally by those in the academy itself.

In one form or another, other nations with developed economies are all pursuing similar initiatives, convinced that fostering greater links between their universities and industry is a primary means of promoting innovation. The intent is to bolster their HT sectors and, in turn, partially transform their economies. A main theme of this essay is the emerging politics of HT in which policy making is shaped in part by political culture and the perceptions and agendas of lawmakers. The United States provides a large-scale case example with which to begin exploring the dynamics of this
postmodern phenomenon that is prevalent in one form or another in all major economies (Geiger and Sa, 2005).1

The evolving influence of the Bayh-Dole Act

Passage of the Bayh-Dole Act in 1980 is often cited as a critical juncture in the shift of federal policy that created an improved environment for promoting university and industry links, and for bolstering technological innovation and the tech sector of the US economy. By allowing universities and research staff to jointly own discoveries supported by federal research grants, Bayh-Dole is credited with providing an important market force for creating the entrepreneurial university and for boosting activity in a key economic sector.

Recent studies, however, indicate that the influence of Bayh-Dole is generally exaggerated. While American universities since the 1980s have increased substantially their patenting and licensing activities, as well as the number of spin-off businesses and the launch of their own start-ups, other factors help to provide the context for the emergence of a more entrepreneurial university.

For one, American universities, particularly the public universities, have an extensive historical tradition of serving local and regional economies. An academic culture has long existed, particularly in the engineering and agricultural fields, of pursuing research directly relevant to the labour and research needs of local businesses and industry. Second, much of new patent and licensing activity and spin-offs has occurred in biomedical sciences and communications where the required environment for increased tech-transfer rates has been created as a result of discoveries via long-term investment in basic or “blue sky” research. Third, this remarkable acceleration of discoveries in the life sciences, and resulting patents and licenses, has been facilitated by the extension of the definition of “patentable material” by the US Supreme Court and is reflected in new policies within the US Patent and Trademark Office.

It is clear also that patent and licensing activity and the number of spin-offs are not necessarily the most important evidence of the key role of universities in promoting economic development. The flow of information between university and business sectors and, perhaps most importantly, the movement of personnel to and from the academy are often cited as the critical factors for promoting a vibrant business climate (Mowery et al., 2004). The structure and vibrancy of a state’s economy are also important influences on the ability of universities to strategically increase their role in the economy.

A recent study indicates that larger firms with over 1 000 employees are the most likely to collaborate with universities and other public research
institutes (non-profits). Further, most if not all of these firms are already engaged in R&D activity, sometimes via contracting research activity, and have therefore successfully built a capacity to absorb and use public-generated research (Fontana et al., 2005). Another study indicates, not surprisingly, that university-based start-ups are largely concentrated in states with the largest economies and with the largest levels of venture capital (Chukumba and Jensen, 2005).

Despite these important caveats, Bayh-Dole had two extremely important influences. First, it bolstered the interest of a cadre of already highly productive research universities in developing new strategic approaches to tech-transfer and, in turn, influenced the thinking of a second tier of universities (Comprehensive 1 and 2 under the Carnegie Classification) in creating new tech-transfer offices and policies.

Second, Bayh-Dole substantially accelerated (one might say, re-ignited) the interest of state governments, and to lesser extent municipal governments, in harnessing universities in new ways to support and grow their tech-based businesses. This relatively new and important phenomenon is the focus of this paper. With federal policies and funding for promoting university-business collaboration remaining relatively stable over the last two decades (and without the prospect of significant increases in funding for basic research or for new initiatives), states have emerged as extremely active agents.

This new policy and investment role was predicted, and encouraged, by a 1998 House Committee on Science report: “State-based organisations have considerable advantages over the federal government in assisting in the commercial development of new technologies including their proximity to the firms that will actually employ new technologies, their close relationships with local university systems, and their ability to focus on their efforts” (US House of Representatives Science Committee, 1998).

**The focus of the Second Stage**

State initiatives focused on building the HT sector and university-business collaborations reflect a political consensus: technological innovation fuels sustainable economic expansion that, in turn, generates higher wages, provides one of the few viable exports of the US economy, and promises, in short, to increase productivity within a globalising economy.

In 2003, the National Governors Association (NGA) adopted its National Research, Development and Technology Policy position statement. At that time, the NGA focused on six issues for improving federal science policy to meet state economic development goals, including improved technology transfer from universities and federal laboratories and sustained federal funding for the Manufacturing Extension Partnership, the Advanced
Technology Program, and aeronautical technology R&D. By 2005, the NGA called for a “State-Federal Technology Partnership to Encourage Commercialization”, and stated:

Technology and innovation drive the creation of new companies. Studies of company formation consistently show that a vital fraction of start-ups are founded around spun-out university developed technology. Yet, current practices in commercializing technology from public-funded research are not keeping up with the needs of the states and the nation in this critical area. … Since states have more interaction and knowledge of local marketplaces, this new system could be locally managed by a state, independent entity, or locality, while the federal government could provide support and guidance to encourage the implementation of best practices. (National Governors Association, 2005)

The NGA made two major recommendations, both intended to support the efforts of individual states. First, the governors asked that Washington help develop a national network in partnership with the states to accelerate the commercialisation of technology in local marketplaces. And second, they asked the White House to “promote greater coordination and communication among federal agencies in their approaches to encourage innovation as an economic growth strategy”.

Within the 50 states that constitute the United States, there are significant variations in the policies pursued to increase economic activity. There are also huge differences among the states in their economic base and environment, in their rural versus urban populations, in their potential to grow high-tech industries, and in the quality and flexibility of their universities and higher education systems in general. There are important differences as well in the political cultures of the states – a reality reflected in interesting debates over stem cell research prompted in large part by federal policies pursued by the George W. Bush administration. Table 1 provides a number of gauges of the total and relative size of the high-tech sector, both public and private, in six large states, all with productive research universities.

California has the greatest number of high-tech businesses and the fastest growing HT companies, it secures the most research dollars, it has one of the highest concentrations of venture capital and the most HT incubators, and it generates the greatest number of patents. It is a major source of business activity in communications and computing and has the greatest concentration of biotech companies in the nation – indeed the world – most of which are located within 5a mile of a University of California (UC) campus (IFC Consulting, 2003). California hosts the largest and highest-quality system of public research universities, along with Stanford University and Cal Tech, and the University of Southern California, which is emerging as a significant
## Table 1. Gauges of high-tech research and economic activity: sample of 12 large and midsized states, United States

<table>
<thead>
<tr>
<th>SAMPLE OF LARGE STATES</th>
<th>California</th>
<th>Texas</th>
<th>Michigan</th>
<th>New York</th>
<th>Illinois</th>
<th>Florida</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 12.5 million people</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employment in HT businesses in 2000*</td>
<td>1 397 776</td>
<td>703 206</td>
<td>514 017</td>
<td>513 472</td>
<td>491 433</td>
<td>339 093</td>
</tr>
<tr>
<td>% of employment in HT in 2000*</td>
<td>10.8</td>
<td>8.8</td>
<td>12.6</td>
<td>7.0</td>
<td>8.9</td>
<td>5.5</td>
</tr>
<tr>
<td>Net formation of HT businesses in 2000*</td>
<td>2 452</td>
<td>306</td>
<td>196</td>
<td>841</td>
<td>248</td>
<td>596</td>
</tr>
<tr>
<td>Fastest growing tech companies: 2002**</td>
<td>151</td>
<td>21</td>
<td>28</td>
<td>24</td>
<td>11</td>
<td>18</td>
</tr>
<tr>
<td>Total university R&amp;D expenditures</td>
<td>USD 4.422 b</td>
<td>USD 2.244 b</td>
<td>USD 1.107 b</td>
<td>USD 2.476 b</td>
<td>USD 1.280 b</td>
<td>USD 997 b</td>
</tr>
<tr>
<td>Industry R&amp;D/USD 1 000 of GSP</td>
<td>USD 29.74</td>
<td>USD 12.88</td>
<td>USD 44.57</td>
<td>USD 13.17</td>
<td>USD 17.31</td>
<td>USD 7.64</td>
</tr>
<tr>
<td>Federal R&amp;D/USD 1 000 of GSP</td>
<td>USD 1.66</td>
<td>USD 0.69</td>
<td>USD 0.37</td>
<td>USD 0.33</td>
<td>USD 0.17</td>
<td>USD 1.76</td>
</tr>
<tr>
<td>Venture capital invested/USD 1 000 GSP</td>
<td>USD 6.96</td>
<td>USD 1.68</td>
<td>USD 0.23</td>
<td>USD 0.97</td>
<td>USD 0.48</td>
<td>USD 0.73</td>
</tr>
<tr>
<td># HT incubators: 2003</td>
<td>123</td>
<td>43</td>
<td>20</td>
<td>76</td>
<td>26</td>
<td>36</td>
</tr>
<tr>
<td>Total US patents generated in 2000-02</td>
<td>20 647</td>
<td>6 632</td>
<td>4 194</td>
<td>7 097</td>
<td>4 241</td>
<td>3 044</td>
</tr>
<tr>
<td>Patents issued/10 000 businesses: 2000-02</td>
<td>256</td>
<td>140</td>
<td>177</td>
<td>144</td>
<td>138</td>
<td>70</td>
</tr>
</tbody>
</table>
Table 1. Gauges of high-tech research and economic activity: sample of 12 large and midsized states, United States (cont.)

<table>
<thead>
<tr>
<th>SAMPLE OF MIDSZIZED STATES</th>
<th>Ohio</th>
<th>Pennsylvania</th>
<th>Massachusetts</th>
<th>North Carolina</th>
<th>Washington</th>
<th>Wisconsin</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 12.5 million people</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employment in HT businesses in 2000*</td>
<td>484 110</td>
<td>6</td>
<td>394 786</td>
<td>7</td>
<td>388 928</td>
<td>8</td>
</tr>
<tr>
<td>% of employment in HT in 2000</td>
<td>9.7</td>
<td>13</td>
<td>7.8</td>
<td>30</td>
<td>12.6</td>
<td>1</td>
</tr>
<tr>
<td>Net formation of HT businesses in 2000*</td>
<td>129</td>
<td>19</td>
<td>257</td>
<td>10</td>
<td>300</td>
<td>7</td>
</tr>
<tr>
<td>Fastest growing tech companies: 2002 **</td>
<td>1</td>
<td>33</td>
<td>13</td>
<td>12</td>
<td>28</td>
<td>3</td>
</tr>
<tr>
<td>Total university R&amp;D expenditures</td>
<td>USD .995 b</td>
<td>11</td>
<td>USD 1.687</td>
<td>4</td>
<td>USD 1.576 b</td>
<td>6</td>
</tr>
<tr>
<td>University R&amp;D/USD 1 000 of GSP</td>
<td>USD 2.67</td>
<td>36</td>
<td>USD 4.13</td>
<td>10</td>
<td>5.48</td>
<td>2</td>
</tr>
<tr>
<td>Industry R&amp;D/USD 1 000 of GSP</td>
<td>USD 17.91</td>
<td>17</td>
<td>USD 21.96</td>
<td>13</td>
<td>USD 39.05</td>
<td>3</td>
</tr>
<tr>
<td>Federal R&amp;D/USD 1 000 of GSP</td>
<td>USD 2.43</td>
<td>9</td>
<td>USD 0.44</td>
<td>35</td>
<td>USD 1.26</td>
<td>19</td>
</tr>
<tr>
<td>Venture capital invested/USD 1 000 GSP</td>
<td>USD 0.59</td>
<td>25</td>
<td>USD 1.03</td>
<td>19</td>
<td>USD 8.21</td>
<td>1</td>
</tr>
<tr>
<td># HT incubators: 2003</td>
<td>37</td>
<td>5</td>
<td>58</td>
<td>3</td>
<td>36</td>
<td>6</td>
</tr>
<tr>
<td>Total US patents generated in 2000-02</td>
<td>3 999</td>
<td>7</td>
<td>3 829</td>
<td>9</td>
<td>3 883</td>
<td>8</td>
</tr>
<tr>
<td>Patents issued/10 000 businesses: 2000-02</td>
<td>148</td>
<td>14</td>
<td>130</td>
<td>21</td>
<td>219</td>
<td>5</td>
</tr>
</tbody>
</table>

R&D = Research and Development.
GSP = Gross State Product.
HT = High tech.
* HT Businesses as classified by NAICS codes, US Department of Commerce.
** 2002 Ranking of Technology Fast Companies by Deloitte and Touche based on revenue growth; note that some 29 states had two or fewer fast growth HT businesses.
source of science and technology (S&T) discoveries (for a review of California’s advantages and challenges, see DeVol and Koepp, 2004).

UC alone generates more than 320 US patents a year and has a portfolio of some 2,753 US and 2,364 foreign patents (fiscal year 2003). In California, one in three biotechnology firms is created by a UC scientist (and one in six nationwide). A UC scientist founded one in six businesses focused on communications. California biotech garnered 46% of the venture capital invested in biotech between 1992 and 2001 and accounts for 40% of the nation’s biotech jobs (Zhang and Patel, 2005). California is also the most populous state, with over 35 million people. Its overall economy is twice the size of the next-largest state, and it is ranked as the seventh-largest economy in the world. When adjusted for its overall size (as provided in a number of variables in Table 1), the state remains a leader in most gauges of HT activity and start-ups.

Yet other states are also extremely productive and competitive, claiming significant federal funding and generating significant activity that attracts and promotes private-sector investment and businesses. With 10 million people, Michigan, for instance, has a higher concentration of employment in the HT sector relative to its overall economy. Reflecting both the success of a life-science corridor near the University of Michigan’s main campus and businesses related to the auto industry, Michigan has the highest concentration of industry-based R&D relative to its Gross State Product (GSP).

New York, the third largest state with 19 million people and with the second-largest GSP, is also a major centre for HT employment; however, reflecting an economic base influenced in part by financial and commercial enterprises in New York City and the small size of many HT businesses, it has a relatively low ranking in the percentage of employment in HT. In total university R&D spending, New York ranks second to California, in large part because of the S&T productivity of Columbia University (largely in the life sciences), Cornell, parts of the SUNY system and non-profit research centres.

While ranked eighth in total HT employment, Massachusetts has the highest percentage of its labour force in HT businesses. Its concentration of world-class universities within the Boston area leads to the state’s frequent ranking as the most productive region for university-business collaborations, R&D expenditures relative to the overall size of the state’s economy and concentration of venture capital. Harvard, MIT and other institutions in the Boston area attract both graduates and undergraduates from throughout the United States and the world, providing a steady influx of S&T talent.

There are examples of specific state funded and sanctioned programmes related to promoting HT university-business collaborations that date back to the 1980s, such as Pennsylvania’s Ben Franklin Program and Ohio’s Thomas
Edison Program. Most states as well have created state agencies to help promote HT via technological assistance and business incubators. The new wave is now emerging in which states take a more direct involvement in funding research and providing capital. Most of these newer state initiatives are relatively recent (less than six years old), and their full influence on the academy and on economic activity will not be known for many years. In a sense, the states have launched a great experiment shaped by a remarkable faith in science and technology as the primary driver of future economic growth and by a worry that state governments’ lack of investment or enlightened direction would mean a potentially devastating disadvantage in the national and global economy. A widespread belief is that states will set the direction for the US battle for competitiveness (Geiger and Sa, 2005).

While differences among the states exist, there are emerging patterns that reflect, in part, the sense of increased competition among state governments and the replication of certain initiatives originally generated in “leadership” states. Among these patterns are the following:

● State funding and policies are largely focused on promoting or creating new university-business collaborative “clusters” that are co-located in key areas of the state with existing university and private-sector research centres, and targeted to building additional research capabilities in biotechnology, advanced communications and information systems, and the growing sectors of nanotechnology and technologies related to homeland security.

● States are increasingly targeting their efforts in terms of promoting and directly funding (beyond providing general operating funds to public universities) “discovery” research, i.e. basic and applied, but generally not developmental research, that requires long-term investment, reflecting a relatively new political understanding of the nature of technological innovation.

● State initiatives are intended to leverage (and not replace) existing federal science funding and to attract additional industry and venture capital.

● For these targeted initiatives, many states are only marginally dipping into their state operating budgets, and instead are using funding derived from a huge 1998 settlement reached with the US tobacco industry or via bonds.

● Most state initiatives require some form of matching funding from private-sector businesses.

● Many states struggle with issues related to intellectual property rights related to state funded centres and sponsored research – essentially mirroring the debates over the Bayh-Dole Act.

● Policies to promote university-business collaborations and tech transfer are usually part of a larger set of tech-based economic development (TBED)
policies that include tax incentives and building venture capital for start-ups, often focused on attracting existing high-tech businesses from other states or, like federal policies, on supporting and promoting small businesses. ● State initiatives often include financing for consortiums of universities within a state to “spread the wealth” and thus meet political needs of lawmakers and reduce opposition. ● Unprecedented federal restriction on research related to biotechnology (specifically stem cell research) is causing many states to generate their own funding sources once thought largely the role of the national government.

As noted, state initiatives are usually not viewed as a replacement for federal basic research funding – with the anomaly of stem cell research. They are, instead, targeted attempts to improve their competitive position and leverage both federal and industry funding. Collectively, federal funding and these state initiatives mark a relatively new and concerted shift toward greater government funding of R&D in the United States after years of private-sector growth.

An extremely important aspect of this rising tide of new state-based initiatives are their origin and the political value placed on S&T as a driver of economic growth. The vast majority of these Second-Stage initiatives come from government agencies and officials, influenced often by industry, but rarely the net result of proposals or ideas generated by the academy. Often, but not always, a substantial political process affects the structural approach taken by states, with the governor of a state and his or her political views and ambitions major influences.

In the past as well as today, Republicans in Washington have been the key proponents of the importance of university R&D in supporting, either directly or potentially, S&T businesses and, hence, economic growth – a form of corporate welfare. Funding for academic R&D under the Bush administration, for example, has steadily increased, largely rationalised as an investment in economic development.

At the beginning of 2006, President Bush introduced his American Competitiveness Initiative (ACI) outlining a ten-year plan to double federal research funding to three key agencies and focused on basic research and promising areas for technological innovation (White House Office of Science and Technology Policy, 2006). Under the Clinton administration, funding for the National Institutes of Health (NIH) grew steadily, but funds for the physical sciences and engineering remained largely stagnant.

The Bush administration has targeted increases to the National Science Foundation, the National Institute of Standards and Technology, and the Department of Energy's Advanced Technology Program. Of the three, the NSF is by far the largest single source for basic science research – although the
NSF’s total budget is only USD 3.7 billion compared to the National Institute of Health’s over USD 27 billion budget. Congress appears prepared to pass legislation providing an additional USD 6.02 billion, or an 8% increase in funding, to the National Science Foundation. Reflecting aspects of the 1957 National Defense Education Act, a watershed in American science policy, the ACI initiative includes money for expanding science education (H.R. 5672, 2007).

In the past, it has been Republicans, more so than Democrats, who have supported increases in federal funding for basic research conducted largely in US universities. Yet a bipartisan consensus has emerged both in the federal government and in most states that the value of S&T lies in its potential salvation for the US economy. Differences between the two political parties have focused on the relatively new ethical and religious implications of S&T, highlighted by a national debate regarding stem cell research – although a division within Republican ranks makes this a more complex story. In contrast to much of Europe, in the United States the debate regarding genetically modified crops has been relatively quiet.

**Policy trends and the influence of mega-states**

States have pursued three general paths for enhancing their HT economic competitiveness: a) the development of new R&D institutes tied to universities; b) a number of stem cell related legislation, creating funds for research in reaction to the new federal restrictions; and c) expanded use of tax incentives and experiments with supporting venture capital initiatives. Particularly in regard to the first two paths, California has proven an extremely influential state in shaping the Second Stage. California and few other major states have heavily influenced the behaviour of other states caught in a perceived HT race.

**State R&D institutes**

In the late 1990s, California enjoyed a sizable surplus in its state coffers. No state enjoyed the benefits of the dot-com boom more (and no state would later suffer so greatly from its collapse), in part because of the high concentration of already existing HT businesses. The surplus generated ambitious plans by a state legislature controlled by liberal Democrats and particularly by the Democratic Governor Gray Davis.

Richard A. Lerner, a friend and supporter of Davis who served as his science advisor during his campaign for governor, met with John Moores, a member of the University of California’s Board of Regents and a software entrepreneur. Lerner had the notion of the State of California funding a number of major research centres focused on university-industry collaborations in fields that promised significant technological progress
(Atkinson, 2005). They imagined a number of freestanding institutes along the lines of the non-profit Bell Laboratories, linked to both public and private universities and local high-tech industries.

Lerner thought the state government should seek an aggressive policy to harness more fully California S&T research capabilities by subsidising a number of centres focused on promising areas for future HT business growth. After his discussion with Moores, Lerner approached the governor and Richard C. Atkinson, then president of the University of California, about formulating a special initiative under the authority of the governor. Both were receptive. “I propose the creation of the Institutes for Science and Innovation,” stated the governor at a news conference in January 2000 at which Atkinson joined him, “to help California maintain its premier standing in science and technology and to provide the technological underpinnings for the state’s future economic growth” (Office of the Governor, 2000).

The governor’s office provided a preliminary allocation of some USD 300 million in its pending state budget proposal for three centres on various UC campuses – a one-time allocation of USD 100 million for each centre, largely for capital construction and equipment to launch each centre, and requiring private-sector co-investment of twice that amount over a four-year period, largely for operating costs. At the same July 2000 press conference, Governor Davis announced the appointment of an “international panel of distinguished scholars and scientific experts” that would guide the competition.

On 7 December 2000, Governor Davis announced the selection of the three projects to constitute the California Institutes for Science and Innovation (CISI). A fourth institute was added later, based at the Berkeley campus and with the governor agreeing to increase the budget to USD 400 million of state funds for the initiative. The four institutes included:

- The California Institute for Telecommunications and Information Technology (Cal-IT), based at UC San Diego and in collaboration with UC Irvine (both in Southern California), and focused on developing digital wireless communications.
- The California NanoSystems Institute (CNSI), based at UCLA and in collaboration with faculty and researchers at UC Santa Barbara. Its purpose is to support university-industry research and to promote the transfer of nanosystems innovation to the marketplace.
- The Institute for Bioengineering, Biotechnology and Quantitative Biomedical Research (QB3), based at the University of California-San Francisco – UC’s only campus devoted exclusively to health sciences – and in collaboration with the Berkeley and Santa Cruz campuses. Its purpose is to harness the quantitative sciences to integrate the understanding of biological systems...
at all levels of complexity, from atoms and protein molecules to cells, tissues, organs and the entire organism.

- The Center for Information Technology Research in the Interest of Society (CITRIS), based at Berkeley, which sponsors research on problems that have a major impact on the economy, quality of life and future success of California – conserving energy; promoting education; saving lives, property and productivity in the wake of disasters; boosting transportation efficiency; advancing diagnosis and treatment of disease; and expanding business growth through much richer personalised information services.

Shortly after California established the California Institutes for Science and Innovation, a number of key states either created new and similar institutes or bolstered their TBED programmes significantly. In New York, lawmakers devised a plan for a set of some ten centres that would form partnerships between campuses of the State University of New York (SUNY) and the City University of New York (CUNY) – two separate public university systems in the state – and other universities in the state such as Cornell as well as regional HT businesses. Like CISI, the centres will support research funding by the private sector, encourage dialogue and collaboration between academics and private-sector researchers, and, via graduate fellowships, attract and promote the flow of highly skilled labour into local businesses.

Legislators worked with New York Governor Pataki to include in the state’s 2006 budget a provision of USD 340 million for the new public authority, the New York State Foundation for Science, Technology and Innovation (NYSTAR), to be operating by 1 January 2006. NYSTAR will absorb some existing TBED programmes directed by a previous state agency. What is new is that, like California, NYSTAR includes a 13-member board comprised of public and private representatives who will direct all existing NYSTAR programmes and the new regional partnership programmes in areas such as biotech, telecommunications, energy efficiency and homeland security – a relatively new area of research with the promise of funding from the federal government. Out of the total allocated to the foundation, USD 90 million is targeted for capital construction.

NYSTAR now provides grants “to fulfill the public purposes of furthering job creation and economic growth and advances in the fields of science, technology and innovation and to facilitate the commercialization of scientific and other innovations in New York State”. What is different from California is that NYSTAR will have the ability to provide loans and venture capital for commercial enterprises. Further, New York has chosen to pre-determine the geographic dispersion of the various “partnership” centres within ten regions of the state – seemingly a political compromise to spread the investment (SSTI, 2005b). Within each region, proposals will be solicited for university-
business centres – a model arguably less competitive than that which determined California’s institutes.

In May 2005, shortly after the establishment of New York’s new initiative was announced, the state of Washington created a new USD 350 million Life Sciences Discovery Fund. Most states have followed suit with similar initiatives.

**The stem cell anomaly**

In part to placate the religious fundamentalist wing of the Republican Party, in August 2001 President George W. Bush set strict limits on the lines of human embryonic stem cells that could be studied using federal research grants. He also capped federal funding for such research at USD 25 million per year. The intent was to restrict stem cell research known as somatic cell nuclear transfer (SCNT) or “therapeutic cloning”.

By limiting federal funding of stem cell research, the Bush administration created a “wedge” issue useful for solidifying the president’s political base – a political strategy that would help re-elect him as president in November 2004. No previous presidential administration had set such specific restrictions on scientific research. The president sanctioned the use of some 60 genetically diverse stem cell lines already existing, created from “embryos that have already been destroyed, and they have the ability to regenerate themselves indefinitely, creating ongoing opportunities for research”.

While the president’s edict would not halt most private-sector research, it promised a significant impact on university research and important non-profit research centres. One unforeseen consequence of the federal edict has been to bolster further the interest of high-tech states to create new avenues for public funding – a topic we return to later in this paper.

In California, with the largest concentration of biotech research and businesses in the United States, a coalition of the state’s corporate HT sector sought a high-profile route to assure California’s place in the vanguard of the biotech movement. To a degree unmatched by any other state, California has used the process of propositions, directly voted on by the state electorate, to create law and amend the state’s constitution. The “California Stem Cell Research and Cures Initiative”, which became Proposition 71, emerged by early 2004. It proposed a USD 3 billion bond, which would generate USD 350 million a year over a decade. The proposition made nontraditional use of general-obligation bonds – a mechanism usually employed to pay for durable state assets such as highways, schools or bridges – to finance its mission.

The coalition had to gain enough signatures of registered voters to place it on the ballot. Democratic real estate developer Robert Klein contributed
millions of dollars for the campaign personally, buying advertisements and paying workers to stand in front of supermarkets and other large chain stores to gain a sufficient number of signatures. The idea for the proposition came not from a scientist, but from Klein. With a son diagnosed with juvenile diabetes, a mother with Alzheimer’s disease and a father who died of heart disease, Klein sought to lead Proposition 71 in the wake of Bush’s decision.

Timing was important, and the effort was successful – Proposition 71 was placed on the 2004 presidential election ballot. (California was predicted to vote overwhelmingly for Bush’s presidential opponent, John Kerry.) The initiative called for the creation of a new independent agency to regulate and disperse the funds largely to university researchers – what one supporter called the “West Coast version of the National Institutes of Heath”.

Almost immediately after the passage of Proposition 71 and the formation of an oversight committee, a series of controversies erupted. A conservative anti-tax group asked the state Supreme Court to stop the formation of the institute, claiming the terms of the bond – and specifically the independence of the institute to manage bond funds, traditionally the purview of the legislature – were unconstitutional. Klein and others have viewed this challenge to the Stem Cell Initiative as largely the effort of antiabortion and neoconservative groups to block any and all stem cell research.

By the summer of 2006, the legal issues and the policies on intellectual property had not all been resolved. But the legal process has nearly run its course and it appears that the USD 3 billion will soon be fully available to researchers. In Congress, the popularity of the president’s restriction on stem cell research declined among Republicans. The House passed a bill to loosen the restrictions and the Senate followed, presenting a bill for the president’s signature on 18 July (Stolberg, 2006).

But Bush, mindful of his thus far loyal religious conservative base, threatened to veto any measure that erodes his original edict – a restriction on federal research funding offered in his first prime-time television speech as president. A day after the Senate voted to modify the president’s executive order Bush vetoed the bill – the first veto of his administration.

The political debate over embryonic stem cell research has garnered its own particular set of initiatives that often tie into state TBED strategies, yet remain separate because of ethical concerns and the ban on federal funding. The magnitude of Proposition 71 and the overall competitive position of California’s biotech industry drew national attention and a series of similar state initiatives. Prior to Robert Klein’s effort to push Proposition 71, New Jersey had committed smaller levels of funding for embryonic stem cell research through a new state institute. A number of state legislatures,
including California’s, had also passed legislation “permitting” embryonic stem cell research with state funds, largely a symbolic act in reaction to the Bush administration’s executive order.

Reflecting differing political cultures, lawmakers in some states, on the other hand, called for a complete ban on public support of embryonic stem cell research. Arkansas, Iowa, Michigan, North Dakota and South Dakota banned therapeutic cloning. Louisiana and Nebraska had enacted laws previously that specifically prohibit research on human embryonic stem cells. In Missouri, legislation was proposed that would have made embryonic stem cell research a criminal offence, but this failed to pass. Yet many states have essentially rebelled against the Bush administration’s position and are seeking ways to fund stem cell research.

With the declining political strength of a Bush White House mired in military conflicts in the Middle East, and the defeat of its major policy initiatives in areas such as social security, some relaxation of the federal ban on stem cell research funding seems inevitable. It may in fact be completely reversed by the next presidential administration or by an override of the president’s veto mustered by a new Democratic majority congress following the November 2006 elections. The likely legacy will be that state initiatives in this area will remain and the benefits of state investments may prove beneficial in unexpected ways.

Anecdotal evidence indicates that California’s high profile initiative is drawing new domestic and international talent and companies to the state. They are drawn by the existing infrastructure of a vibrant biotech sector, and by the promise of state funds and, in turn, to even more robust access to venture capital (Pollack, 2006). But there is also an international variable now at play: a small but significant flow of important scientists are gravitating not only to states like California, but also to emerging stem cell centres such as in Singapore where they are support by national governments and biotech firms.

**From venture funds to tax credits**

Over the past year, encouraged by their improved fiscal position, most states have initiated a range of other efforts to bolster the business climate for the HT sector. This includes an increasingly complex array of tax credits and state-established venture capital funds intended to attract and complement private-sector sources – a phenomenon more common in but not exclusive to smaller states with more nascent HT sectors.

While many of these initiatives are not directly tied to promoting university-business collaborations, they affect indirectly the vitality of this relationship and, for instance, the likelihood of university-based start-ups.
Between January and August of 2005, virtually every state launched some type of major new HT initiative (SSTI, 2005a).

In Texas, the state legislature approved USD 100 million in June 2005 for a new Emerging Technologies Fund (ETF) intended to foster emerging technologies, enhance university-industry collaboration and promote technology commercialisation. Another USD 100 million would be added from the state’s rainy-day fund if revenues exceed forecasts. In Utah, in July 2005 the newly elected governor announced his intention to revise the state’s TBED to include a new cluster-based strategy targeting state efforts in seven industry sectors: life sciences, software development and information technology, aerospace, defence and homeland security, financial services, energy and natural resources, and competitive accelerators such as nanotechnology and advanced manufacturing.

Evidence is mixed regarding the effectiveness of tax credits and other incentives, although there are a number of high profile cases where an HT business relocated in part because of such incentives (Buss, 2001). While tax incentives are increasingly a part of state strategies, an Organisation for Economic Co-operation and Development (OECD) study recently compared R&D tax-relief programmes for its member countries, ranking nations in terms of tax relief and style. The United States favours direct funding while Canada, for example, uses primarily tax incentives to promote private-sector R&D. Canada ranked in the top five for both large- and small-company relief, while the United States came in tenth for large and 13th for small companies (OECD, 2003).

The nascent entrepreneurial state – an initial analysis

A recent study on national policies intended to influence and promote concentrations of HT businesses, often including universities as a key component, offers a sobering conclusion. “Countless well intentioned but ineffectual cluster policies from all parts of the world,” argue Peter Maskell and Leïla Kebir, “seem to highlight the limits of the nation state, or any other political authority, in creating economically sustainable competitive advantages by design from above. No kind of vague phrasings or remoulded instrument packages can apparently alter the fact that the role of policy in the development of cluster advantages can only be marginal, indirect, and long term. Results are measured in decades, if measurable at all” (Maskell and Kebir, 2005).

Another study of the biotech industry concludes that, to date, only a handful of metropolitan areas have succeeded on a scale necessary to ensure industry sustainability. San Diego is at the top of that list, followed closely by Boston and the Raleigh-Durham-Chapel Hill metro area. The San Francisco
Bay Area ranks seventh. “Clusters of existing and emerging science-based technologies are crucial factors in shaping the economic winners and losers of the first half of the 21st century”, according to the report. “To create international comparative advantage in a knowledge-based economy, clustering innovative activity is imperative” (DeVol et al., 2004).

As this review of state policies in the United States indicates, most state governments have placed tremendous importance on policies and funding with the assumption – and hope – that Maskell and Kebir are wrong. The rising tide of new state-based initiatives as an investment in S&T to drive economic growth assumes that technological innovation fuels sustainable economic expansion, generating higher wages, exports and productivity in a globalising economy. Further, and as noted, a growing HT sector is viewed as key to economic competitiveness, and, ultimately, to determining quality of life; indeed, there is growing evidence that both public- and private-sector investment in the United States leads to personal income gains, as well as to overall state economic growth.

One study of the US economy states that more than three-fourths of personal income growth can be tied to increases in technology output. Another study indicates that states which do not invest significantly in R&D (less than 1% of GSP from all sources, public and private) have low average incomes. Of the 32 states with R&D investment of over 1% of GSP, all have above average rates of per capita income (Maine State Planning Office, 2001).

The stakes are high, but the true influence of this relatively new wave of state policies on the already growing HT sector will not be known for many years. They are investments in the future. In the case of the United States, what we do know, however, is that the entrepreneurial university has been a productive partner in promoting economic growth, having developed programmes (like CONNECT) and managerial structures and investments to promote patents and licensing, to encourage faculty start-ups, and sometimes to create venture funds out of their own endowments.2

In the United States, states have long been active agents in shaping regional economic activity, beginning in earnest after World War II (Douglass, 2000), but beyond simply funding the enrolment growth of higher education institutions, states have focused, until recently, largely on relatively small and specific programmes and funds to promote HT R&D and university-business partnerships. The Second Stage includes a more broad-based effort, linked to statewide strategies for economic development and with high political stakes. A number of concluding observations on this nascent trend follow.
A process of devolution

In Europe, one sees the rise of the European Research Area (ERA) and an attempt under the so-called 7th Framework Programme to adopt some of the mechanisms that have long characterised US federal policies. The ERA offers a potential watershed in the evolution of European Union (EU) science and technology policy, seeking “a common strategy on science and technology in the service of society” and represents a new construct within the European Union. The ERA had a budget of EUR 17.5 billion for the years 2002-06 and funding represents, so far, only about 4 to 5% of the overall R&D expenditures in EU member states.

The European Commission plans to nearly triple its funding for R&D to member states in coming years and promote policies under the 7th Framework as a catalyst for the EU to spend 3% of GDP on R&D by 2013, both private and public, with a substantial role for universities in helping make the EU the world’s most innovative economic region. How the 7th Framework will mature and actually influence research and innovation in the European Union is uncertain. Separating the rhetoric from the reality will take time to assess. Yet the European Research Area does hold some promise as a tool for bolstering R&D expenditures via a peer review process and, perhaps, an eventual path away from targeted research topics (like nanotechnology) towards broad based funding for science.

In the United States, there is an apparent process of “devolution” – essentially, new policy initiatives are coming from the states as part of the Second Stage and targeted to certain hot research areas. Federal policy remains relatively unchanged with a promise of increased funding in the physical sciences, an actual flattening of funding for the health sciences, the extension of existing federal tax credits, and marginal programmes in funding and potential impact intended to improve the quality and productivity of science education largely in the schools. States are the relatively new arena for policy making and investment, and the majority of state initiatives appear to come from lawmakers and HT entrepreneurs, or from others such as Richard Lerner (a wealthy and savvy patients’ rights advocate) and Robert Klein, and not from university leaders.

Indeed, it is unclear how important the higher education community is in influencing policies that often directly affect their academic programmes and priorities. In part, one can attribute this phenomenon to a long campaign waged by the higher education and scientific community on the importance of public funding of research universities for economic growth, starting with studies in the late 1970s by the National Science Foundation and by organisations such as the American Association for the Advancement of Sciences.
One cause of devolution was a significant decline in federal funding for academic research after the surge in the 1960s and a new sense that research universities ought to mobilise and more fully articulate the importance of science and innovation. This campaign and, of course, the growth of the computing and life sciences, and related HT businesses created a new milieu that popularised and politicised this Second Stage.

Science and technology, in essence, is now too important to leave either to academics or to the business sector alone – a perception shared globally. In the United States, academic leaders generally appear to welcome this trend and certainly are not opposed, for it means additional funding in research areas that universities want to build and it fits into a long cultural history of serving regional economies, accompanied by rather minor concerns over the growing private-sector influence. In an era of declining general funding (on a per-student basis) for public institutions, which enrol about 80% of all students in the United States, state initiatives are one more source of funds to leverage.

**Interstate competition**

An important shift is accompanying the process of devolution, and this is an increased sense among lawmakers of interstate competition. This explains in part the influx of initiatives. While there are important differences among the states in their approaches (stem cell research being a glaring example), there are also many similarities that reflect the agreed-upon tripartite formula of university and business collaboration, combined with benevolent and strategic state government investment. Lawmakers, the HT sector, and political and savvy promoters like Richard Lerner are engaged constantly in surveying the activities of their competitors and seeking useful best practices.

On the other hand, Americans are generally not looking across the Atlantic or Pacific, or across their borders, for ideas on HT policy making. Lawmakers and other policy makers are concerned about being competitive in the global marketplace, but the United States remains largely isolationist in its leanings despite the fact that the HT sector is increasingly an international endeavour. The focus of government and much of the business sector is on protecting or expanding foreign markets, intellectual property rights and tax incentives, buttressing venture capital markets, and reducing restrictions on immigrant/visitor visas.

The United States retains a sense that the country remains the most productive and innovative home for science and technology, and that, for instance, the cure for cancer or the breakthroughs promised by stem cell research will be homegrown. Thus far, this seems to ignore the significant knowledge centres in Europe and emerging S&T centres in China, India and
other parts of the world. As a percentage of gross national product (GNP), federal funding for basic research in the United States in the physical sciences and engineering has been declining for the past 30 years, to less than 0.05% in 2003. Asia’s developing economies are placing increasing percentages of the GNP into science and technology, and they are at the edge of a payoff, with their share of global high-tech exports rising from 7% in 1980 to 25% in 2001. According to National Science Foundation figures, the US percentage fell from 31% to 18%.

The debate over stem cell research is a case in point regarding America’s isolationist perspective. Promoters of state initiatives and of modifications in federal policy have portrayed a failure to generate increased investment in research and have promoted the idea that the world stands to gain innumerable cures if the United States invests – a selling point encouraged by the scientific community.

For the consumption of domestic politics, however, beating foreign competitors has not yet emerged as a major reason for state initiatives. This may soon change. For now, the attention of policy makers in the United States is largely on interstate rivalries, with occasional efforts at multi-state programmes such as the nanotechnology initiative involving the District of Columbia, Maryland and Virginia.

**Signs of overall HT vitality**

There are problems with using states as a unit of analysis to gauge the overall vitality of the United States S&T sector. As noted previously, a number of variables influence the role of HT in the economy, including the geographic and population size of a state (for example, California has over 35 million people, Massachusetts has 6.4 million), urban versus rural population, the concentration of research universities and their quality, the amount of R&D as well as its source (public versus private) and focus, the economic mix of a state (service versus agriculture, versus HT), and the type of HT (“blue sky” versus more applied, purpose-driven research).

Immigration and other demographic factors are also important. In assessing the economic activity of California, one could divide the state into five or more quadrants: the San Diego area; Los Angeles; the Bay Area; the Central Valley, which is dominated by agriculture; and sparsely-populated northern California.

Still, states are an extremely important player in terms of setting laws, funding education and leveraging federal funding. State governments and agencies also regulate and fund public universities. Recent data indicates that increased competition between the states and, most importantly, the long-term investment in science and technology by both the federal and state governments since the 1960s have created a vital HT sector in most states.
While there are only three states where the percentage of employment in HT sectors is above 12% (Massachusetts, Michigan, and Virginia), most states have reached at least 7%. One question is whether there will be greater or less disparity between the states in the future.

While there are regional concentrations of HT, Figure 1, with states listed in alphabetical order, indicates also the widespread geographic nature of the HT sector. There are significant pockets of HT business activity throughout the United States, which was not always the case. In the 1960s, for example, R&D was heavily concentrated in a few major states, correlating with defence and aerospace-related industries.

There is also evidence that some leading HT states, like California, are losing their market share of HT exports as other states become more competitive. A study of US information technology exports notes a general decline in these products since 2001, but the decline was more pronounced in California, in part because of competitor states – in particular Arizona, Colorado, Massachusetts, Oregon, Texas and Tennessee (National Science Foundation, 2006).

Figure 1 also provides the amount of university R&D per USD 1 000 of GSP in each state, an indicator of the relative importance of university-based research – or perhaps more accurately a state’s relative dependence on public universities to help boost their S&T sectors. Large states with a high percentage of HT employment, as in California, also have large and growing private-sector R&D and diverse and robust economies.

**Figure 1.** **US 50 state comparison: high technology (HT) as a percentage of all state employment and relative size of university research and development per USD 1 000 of Gross State Product, 2000**

In the case of Maryland – a state with a relatively small population, federally funded R&D, a number of major non-profit research centres, and a relatively small private HT sector – university R&D is much more significant. This chart deemphasises the amount of total R&D (relative to other states) or its quality and emphasis (such as biotech), but it illustrates that states with sizable university research expertise and capability could, with sustained effort, reposition themselves relative to other state competitors. This is, of course, the focus of much of the discussion and flurry of initiatives by lawmakers.

Another indicator of a general vitality across the various states in developing university-industry collaborations is the increased industry-financed R&D performed by universities and colleges. Figure 2 provides recent data on the percentage change in industry funding between 1998 and 2003, in the order of greatest change, and by the relative size of the funding provided in 2003. This ranges from some USD 251.4 million in California to a mere USD 10 million in Oregon.

Oregon grew the most in terms of percentage, but it started in 1998 with a relatively small funding base of only USD 4.2 million. Yet the chart also illustrates that most states have had healthy growth in industry-based funding for their universities – on average, an increase of 14.51% over a six year period and this, again, even with the downturn in certain sectors of the HT economy (Haveman and Shatz, 2005).

Figure 2. 50 state comparison: change in industry-financed research and development (R&D) expenditures in US universities and colleges and relative size of funding, 1998-2003


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An important and largely unresolved question is how effective the great array of state initiatives – partially described in this article – will be in influencing HT economic growth and, perhaps more importantly, the relative position of each state. The US experience indicates that high quality research and university-industry collaborations can happen almost anywhere.4

**A policy disjunction – depth versus breadth**

While states have focused on creating HT clusters and funding university-business collaborations in specific fields such as biotech and nanotechnology, seeking depth and a market position, many states have not made a similar investment in what might be a more important long-term source of discovery and innovation (breadth): bachelor degrees and graduate programmes in public universities and colleges. Many studies point to the problems in the United States (a problem shared by European counterparts) with production of scientists and engineers. The number of bachelor degrees awarded in engineering, for example, peaked at more than 77 000 in the mid 1980s. During the 1990s, and while the demand for technical positions soared, the number of all engineering degrees awarded dropped to 63 000.

One major problem facing American higher education is that states are in a process of long-term disinvestment in their public universities (relative to the rising costs of a still labour-intensive sector dependent on highly educated professionals), causing rising fees and efforts to find other funding sources – in other words, the process of privatisation. In some ways this relatively new budgetary environment is good, forcing universities to be leaner and meaner and to become more entrepreneurial. But few public institutions are able to recover from steadily declining state funding and the rising cost of operation, particularly in science and technology related programmes.

On the supply side, many major universities and university systems are increasing student-to-faculty ratios, particularly in growing states like California, Florida and Texas. Some are tightening admissions requirements. The declining quality of secondary schools and the further bifurcation between rich and poor school districts are also influencing production rates of bachelor degrees. While private colleges and universities play a vital role in science and innovation and in graduate education, public higher education is the bulwark of most state educational systems.

Of the over 11 million students in colleges and universities in the United States, nearly 9 million are in public institutions (nearly 80%). Public universities produce 75% of all doctoral degrees and 70% of all engineering and technical degrees. They also conduct the majority of the country’s academic R&D. When compared with other industrialised nations within the OECD, the United States now ranks only thirteenth in the per cent of the population that...
enters postsecondary education and then completes a bachelor’s degree or higher (OECD, 2002).

A key strategy for states should be to seek increased efficiencies in their higher education systems. But there is also a general need to provide greater general funding – to focus on the general vitality of the system and key universities by providing adequate levels of support. This is a conclusion that Irwin Feller, Paul M. Romer and other economists have supported. Feller warns, “States that are either unable or unwilling to provide the financial support necessary to maintain competitive higher education systems are likely to fall behind in longer-term efforts to develop nationally competitive knowledge-based production” (Feller, 2004).

Romer comes to a similar conclusion, saying essentially that both the federal and state governments over the past two decades have been too focused on initiatives to expedite the process of developing and commercialising technological innovation, such as increased spending on R&D and R&D tax incentives, and too focused on increased demand without considering the availability of the scientists and engineers required to support that demand (Romer, 2001). In other words, the spectacular promise of HT and the race by states to enact industry- and field-specific initiatives has partially blinded states to what is perhaps the greater need for a holistic approach that includes more aggressive efforts to improve local schools and fund and nurture public higher education institutions.5

**Being left behind**

Does HT growth lift all socioeconomic boats? The US scientific community and academic leaders have engaged in a long campaign to portray science and technological advancement as a salvation for postmodern economies, and policy makers have come to embrace this concept warmly. Strategic and sustained investments in HT clusters and infrastructure will drive economic development, raising wages and benefiting the general standard of living, including a reduction in poverty.

There is evidence that some version of this predicted future is correct, but there are also indicators that the story is complicated. Current patterns of targeted investment by state governments may exacerbate one major problem facing the United States: the growing disparity between a rich and highly skilled sector of the population and a growing pool of unskilled and low-income Americans.

Returning to our sample of six large states, while California, Texas, Michigan, New York and Illinois constitute the top five states in total HT employment in 2000 (before the full effects of the dot-com bust), California
and Michigan also had relatively high rates of HT employment in relation to their total employment (12.6% in Michigan and 10.8% in California).

Yet each of these states had relatively high poverty and unemployment rates when compared to other states (see Table 2). At the same time, the HT sector is a contributor to high average per-capita personal income: Texas and New York are tied at fifth, Illinois ranks eighth, California tenth and Michigan 18th.

Another indicator of economic and social bifurcation in HT-intensive states is the dichotomy between educational attainment levels and skilled HT workers. California is now among the bottom ten in the production of bachelor degrees among 18- to-24-year-olds. This is a dramatic turnaround from earlier patterns. Throughout most of the 20th century, California led the country in college-attendance rates and undergraduate degree production relative to population.

Texas is ranked even lower, and Florida, Illinois and Michigan are ranked 39th, 28th and 22nd, respectively. New York is considerably higher, but this reflects in part a large influx of out-of-state students to the state’s large collection of private institutions. Yet California and most of these other states have a relatively high percentage of their population with bachelor degrees and a high percentage of computer scientists, engineers, and professionals and skilled workers in the life and physical sciences as well.

Most HT-intensive states are importing the skilled professional workers they need from other states and other countries. With the lack of a national policy to expand access aggressively to higher education in general and not just to science and engineering fields, and with the continued lack of general investment by states in public higher education systems, one might imagine that HT-sector growth has certain limits and, further, that under certain conditions HT growth would exacerbate the division of rich and poor.

If this dichotomy of rich versus poor and a highly educated native labour force versus a relatively uneducated one persists, one could imagine international implications. For one, the US economy would be more highly dependent on skilled HT labour from other countries – essentially continuing to benefit from the “brain drain” from countries like India.

This raises the question of what should be the strategy of state governments, and their public universities, for pursuing a competitive edge in S&T and for bolstering their HT economic sectors. Thus far, political interest and money have been heavily invested in the types of initiatives discussed in this paper, and less so in the general infrastructure of an educational system that will produce the talent, native and foreign, and the long-term base for economic competitiveness.
Table 2. **Educational attainment, high technology (HT) labour pool, employment and poverty rates:**

<table>
<thead>
<tr>
<th>SAMPLE OF LARGE STATES</th>
<th>California</th>
<th>Texas</th>
<th>Michigan</th>
<th>New York</th>
<th>Illinois</th>
<th>Florida</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#</td>
<td>Rank</td>
<td>#</td>
<td>Rank</td>
<td>#</td>
<td>Rank</td>
</tr>
<tr>
<td>Employment in HT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>businesses in 2000*</td>
<td>1 397 776</td>
<td>1</td>
<td>703 206</td>
<td>2</td>
<td>514 017</td>
<td>3</td>
</tr>
<tr>
<td>% of employment in HT in 2000</td>
<td>10.8</td>
<td>6</td>
<td>8.8</td>
<td>20</td>
<td>12.6</td>
<td>1</td>
</tr>
<tr>
<td>% of population completing high school</td>
<td>80.20</td>
<td>41</td>
<td>78.10</td>
<td>50</td>
<td>86.50</td>
<td>26</td>
</tr>
<tr>
<td>% of population with bachelor’s degree</td>
<td>27.90</td>
<td>15</td>
<td>26.20</td>
<td>5</td>
<td>22.50</td>
<td>39</td>
</tr>
<tr>
<td>% bachelor’s degrees granted/pop. 18-24</td>
<td>3.56</td>
<td>42</td>
<td>3.37</td>
<td>46</td>
<td>4.82</td>
<td>22</td>
</tr>
<tr>
<td>% S&amp;E BS degrees granted/total BS</td>
<td>18.20</td>
<td>18</td>
<td>17.00</td>
<td>33</td>
<td>19.70</td>
<td>7</td>
</tr>
<tr>
<td>% S&amp;E graduate students/pop. 18-24</td>
<td>1.58</td>
<td>14</td>
<td>1.28</td>
<td>27</td>
<td>1.65</td>
<td>11</td>
</tr>
<tr>
<td>Computer specialists/10 000 workers</td>
<td>205.00</td>
<td>8</td>
<td>188.00</td>
<td>14</td>
<td>130.00</td>
<td>29</td>
</tr>
<tr>
<td>Life and physical scientists/10 000 workers</td>
<td>24.90</td>
<td>16</td>
<td>20.20</td>
<td>25</td>
<td>130.00</td>
<td>35</td>
</tr>
<tr>
<td>Engineers/10 000 workers</td>
<td>101.30</td>
<td>8</td>
<td>96.10</td>
<td>10</td>
<td>94.90</td>
<td>11</td>
</tr>
<tr>
<td>% population above poverty line</td>
<td>86.90</td>
<td>39</td>
<td>85.90</td>
<td>41</td>
<td>90.30</td>
<td>17</td>
</tr>
<tr>
<td>Per capita personal income</td>
<td>32 898</td>
<td>10</td>
<td>35 708</td>
<td>5</td>
<td>30 222</td>
<td>18</td>
</tr>
<tr>
<td>% of workforce employed</td>
<td>93.30</td>
<td>45</td>
<td>93.90</td>
<td>37</td>
<td>93.80</td>
<td>41</td>
</tr>
</tbody>
</table>
Table 2. Educational attainment, high technology (HT) labour pool, employment and poverty rates: sample of 12 states, United States (cont.)

<table>
<thead>
<tr>
<th>SAMPLE OF MIDSIZED STATES</th>
<th>Ohio</th>
<th>Pennsylvania</th>
<th>Massachusetts</th>
<th>North Carolina</th>
<th>Washington</th>
<th>Wisconsin</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 12.5 million people</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employment in HT businesses in 2000*</td>
<td>484 110</td>
<td>394 786</td>
<td>388 928</td>
<td>268 284</td>
<td>258 234</td>
<td>200 932</td>
</tr>
<tr>
<td>% of employment in HT in 2000</td>
<td>9.7 13</td>
<td>7.8 30</td>
<td>12.6 1</td>
<td>6.2 39</td>
<td>11.4 5</td>
<td>9.1 15</td>
</tr>
<tr>
<td>% of population completing high school</td>
<td>87.30 22</td>
<td>86.10 28</td>
<td>86.50 26</td>
<td>80.10 43</td>
<td>90.40 5</td>
<td>86.80 23</td>
</tr>
<tr>
<td>% of population with bachelor’s degree</td>
<td>24.50 31</td>
<td>26.10 24</td>
<td>34.30 4</td>
<td>22.40 40</td>
<td>28.30 14</td>
<td>24.70 30</td>
</tr>
<tr>
<td>% bachelor’s degrees granted/pop. 18-24</td>
<td>4.71 25</td>
<td>5.88 8</td>
<td>7.26 3</td>
<td>4.29 30</td>
<td>4.03 35</td>
<td>5.27 14</td>
</tr>
<tr>
<td>% S&amp;E BS degrees granted/total BS</td>
<td>15.90 40</td>
<td>17.60 24</td>
<td>16.80 36</td>
<td>18.10 19</td>
<td>16.60 38</td>
<td>18.20 17</td>
</tr>
<tr>
<td>% S&amp;E graduate students/pop. 18-24</td>
<td>1.50 16</td>
<td>1.64 13</td>
<td>3.43 1</td>
<td>1.29 25</td>
<td>1.01 42</td>
<td>1.45 19</td>
</tr>
<tr>
<td>Computer specialists/10 000 workers</td>
<td>144.00 26</td>
<td>149.00 24</td>
<td>304.00 3</td>
<td>167.00 19</td>
<td>245.00 6</td>
<td>135.00 28</td>
</tr>
<tr>
<td>Life and physical scientists/10 000 workers</td>
<td>14.40 38</td>
<td>23.00 19</td>
<td>39.10 4</td>
<td>28.00 11</td>
<td>33.00 9</td>
<td>17.30 34</td>
</tr>
<tr>
<td>Engineers/10 000 workers</td>
<td>79.30 16</td>
<td>68.40 25</td>
<td>117.40 2</td>
<td>56.10 34</td>
<td>139.90 1</td>
<td>69.60 23</td>
</tr>
<tr>
<td>% population above poverty line</td>
<td>89.20 29</td>
<td>90.80 16</td>
<td>89.80 22</td>
<td>87.10 37</td>
<td>89.60 27</td>
<td>91.40 12</td>
</tr>
<tr>
<td>Per capita personal income</td>
<td>29 317 25</td>
<td>31 663 15</td>
<td>39 044 3</td>
<td>27 566 34</td>
<td>32 661 12</td>
<td>29 996 21</td>
</tr>
<tr>
<td>% of workforce employed</td>
<td>94.30 30</td>
<td>94.30 30</td>
<td>94.70 22</td>
<td>93.30 45</td>
<td>92.70 48</td>
<td>94.50 25</td>
</tr>
</tbody>
</table>

S&E = Science and engineering.
BS = Bachelor of Science.
* HT Businesses as classified by NAICS codes, US Department of Commerce.
There is growing evidence that tertiary access rates in the United States are flat and possibly declining, particularly among younger age groups and in states with large populations. And while the United States retains relatively high access rates compared to other OECD countries, it now ranks only about 13th in the per cent of the population that enters postsecondary education and then completes a bachelor’s degree or higher. That ranking, it appears, will likely slide in coming years unless there are more concerted efforts by states and the federal government, and largely public universities and colleges, to stem the tide (Douglass, 2006).

**Whither America’s S&T advantage**

While the states and the US national government have shown relatively little concern – beyond rhetorical exclamations – for growing global competition in science and technology, there are major changes occurring in the world. America remains the single largest producer of scientific labour and innovators – of whom nearly one-third are immigrants. The United States employs nearly one-third of the world’s scientific and engineering researchers, spends 44% of all R&D and remains among the most competitive economies (Freeman, 2005).

Arguably, however, America’s hegemony in S&T excellence has ended, if it ever truly existed to the extent imagined by the American public, lawmakers and even much of the scientific community. The new global environment is characterised by a changing market for talent, the rise of greater geographic dispersion of centres of science and technological prowess (similar to that shown in the United States, as discussed previously), and, in turn, the prospect of an altered flow of talent, venture capital and corporate investment to places outside of the United States.

As emerging knowledge centres mature and become more widespread throughout the world, the influx of talent necessary to sustain America’s HT model will likely shrink. Science and technological expertise is becoming more dispersed, subject increasingly to a highly mobile and competitive global market and facilitated by the ubiquitous power of Internet communications – sometimes called the “death of distance” – as a condition for building productive S&T communities (World Bank, 2002, pp. 7-22). While much attention is on the emerging economies of Brazil, Russia, India, and China (dubbed “BRIC” by economists), the developed economies in Europe are arguably a more immediate competitor in advanced HT sectors. In 2005, for example, Europe surpassed the United States for the first time in the number of biotech companies going public: 23 in Europe and 13 in the United States (Pollack, 2006).
The United States will undoubtedly remain a leader in HT and will continue to draw talented graduate students and scientists to its unmatched network of research universities. Already the initial negative influence of the Patriot Act has ebbed and foreign applications to US graduate schools have begun to increase once again, although perhaps the numbers will grow at a slower pace than in previous decades (Council of Graduate Schools, 2006). However, because of other countries' investment in science and technology education programmes at universities and the corresponding growth of S&T sectors, America's once dominant competitive advantage will diminish.

An emerging body of research largely produced by the scientific community and economists describes this prevailing trend. A congressionally requested report by a pre-eminent committee of scientists and S&T leaders chaired by the former chief executive officer of Lockheed Martin Marietta, Norman Augustine, recently argued that “a comprehensive and coordinated federal effort is urgently needed to bolster US competitiveness and pre-eminence in these areas” (Committee on Science, Engineering, and Public Policy, 2006). The political traction of such analysis, however, has proven marginal thus far.

Labour economist Robert Freeman has observed that a diminished comparative advantage in high-tech will “create a long period of adjustment for US workers, of which the off-shoring of IT jobs to India, growth of high-tech production in China, and multinational R&D facilities in developing countries, are harbingers”. The United States will need to adjust by developing "new labour market and R&D policies that build on existing strengths" and that recognize scientific and technological advances in other countries (Freeman, 2005).

As of this writing, America remains a nation mired in a protracted and expensive occupation in Iraq and Afghanistan. Rising deficits, a growing trade imbalance, and Republican control of both houses of Congress and the White House has placed a low priority on increased funding for domestic programmes by the federal government. As noted previously, the American Competitive Initiative recently announced by the Bush administration offers a welcomed increase in funding for the physical sciences, but it is arguably a relatively minor additional investment relative to the problem – a small blip in allocation of federal funds.

The HT sector has long been one of the bright spots for the United States in trade – one of the few sectors with an actual trade surplus. If scientific expertise and talent are a declining strategic advantage for the country, what other structural aspects of the US system give it a leg up in the global economy?

As noted, there is also the prospect of altered flows of corporate investments towards newer centres of research expertise. International corporations such as
IBM and Nokia are placing an increasing percentage of their R&D investment in parts of the world with growing S&T capabilities and that represent emerging markets for their products. Costs are often cheaper than in the United States, but perhaps more importantly there is the prospect of being closer and more knowledgeable with respect to the needs and foibles of the local market. Relationships with these universities are also often more flexible and less bureaucratic than with mature and often demanding universities in the United States.

Yet the United States remains a productive environment for S&T and will remain so in the short run not only because of the excellence of its research universities and the growth of new business sectors like biotechnology. There is also the availability of venture capital, relatively high rates of R&D investment, and tax incentives and legal precedents that, thus far, are not yet matched in other economies.

On average, American companies spend three times as much as those in Europe on R&D; they have access to some ten times as much debt financing. This is one reason why many S&T firms in Europe and other parts of the world set up offices in the United States, not to gain access to scientific expertise, but to its capital markets. Because of the high cost for an initial public offering on the stock market, many international firms are merging with existing, and often fledgling, US firms.

The question is how long this advantage will remain. Individual countries, such as the United Kingdom, are growing significantly in their R&D abilities, in part via government policies and in part because expanding investment by the private sector. The European Research Area and the emerging 7th Framework are intended to boost significantly R&D investment and to help shape tax policies and the availability of capital. What is clear is that national, supranational and regional entities (like state governments in the United States) ought to assess the larger international market changes to inform policy making. Current state policy initiatives may be a good partial answer to this changing global environment, but not adequate unto itself.

**Conclusion: strategy and sustainability**

Reflecting on this cursory review of the Second Stage in US S&T policy, two questions emerge. First, are the various states pursuing productive strategies? And second, what is the sustainability of the myriad of initiatives, some briefly described in this essay?

Regarding the first question, strategies differ between the states. As noted, many states with inadequate access to venture capital have attempted to create their own sources, targeted largely toward university spin-offs and university-industry collaborations; states with relatively small HT sectors seek
tax incentives and seek to form research clusters to lure businesses from other states; and states with more liberal constituencies and higher concentrations of biotech firms are more favourable toward supporting stem cell research. Most states seek expanded or new university-business collaborations in targeted areas related to existing university and business strengths – biotechnology and nanotechnology in a state like California and more emphasis on robotics in mid-west economies linked to the auto industry.

Few if any states seem to focus their strategies on bolstering the development of science and technology talent. Many states have been cutting funding for their public higher education systems, and few if any states have put a priority on expanding their science and engineering graduate programmes. In the wake of the Patriot Act, states remain ambivalent (and sometimes even hostile) to the notion of pursuing policies intended to aggressively attract foreign talent to university graduate programmes or to help fill HT employment needs.

More generally, few states have made a conscious link between the primacy of increasing the educational attainment level of their native population and the long-term health of the HT sector, and their economies in general. No state, it seems, has taken account of the changing global climate for HT or the possible advantages of encouraging stronger ties with emerging science and technology centres in other countries. Addressing these market opportunities may characterise the future evolution of the Second Stage.

Yet there remain questions regarding the sustainability of state sponsored initiatives. Are they now a permanent part of America's HT political and economic environment? Among the factors that may influence the longevity of such initiatives are the following considerations:

- As private-sector investment in such university-business collaborations and in university basic research presumably grows, there appears to be the intention to withdraw state support and to assume that such centres will become self-sustaining and that grant programmes will no longer be necessary.

- Many initiatives have been funded using temporary sources, including dollars received from recent legal settlements with tobacco companies and bonds, and within a relatively improved economic climate. What will happen as the fortunes of state budgets shift and as new political priorities arise?

- What is the actual effectiveness of such initiatives and how will state TBED strategies change? Will priorities shift from, say, field-specific initiatives (e.g. nanotechnology) to human capital development (e.g. broader support for graduate education)?
● What is the relative role of the federal versus state governments in funding both basic research (for example, on stem cells) and fields relevant to S&T?
● What shifts will occur in science and technology research that will open new opportunities for university-business collaborations?
● How will the global market for S&T labour, products and research change?
● Initiatives sponsored by a political party or politician in one era are often not supported in a succeeding era as the political winds shift.

Each of the variables in this incomplete list in some way relates to a much larger question of political economy: what is the short- and long-term role of government in promoting and influencing the private sector? Further, what is the proper role of state governments in providing incentives and programmes to encourage university collaboration with the business sector and, indeed, to encourage universities to act more like private-sector entrepreneurs?

A political consensus has clearly emerged, in part informed by past successes, but also by significant rhetoric about S&T and the nature of the postmodern global economy, a consensus that is reiterated throughout the developed world – and beyond. In the United States, state lawmakers justify current initiatives as a means to fill a gap unfilled by either the HT sector or universities – in the words of the governor's conference, “current practices in commercializing technology from public-funded research are not keeping up with the needs of the states and the nation”. Even if universities and the business sector were to eventually “keep pace”, it seems unlikely that states will desist from their relatively new interventions as national and, perhaps more importantly, global competition intensifies.

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Notes
1. While there is much research on the process of tech transfer and university and business collaborations, as well as on the role of science and technology in economic development, there are thus far few studies on the emerging pattern of state initiatives or on the politics behind these initiatives.
2. The University of Alabama at Birmingham, along with a handful of other universities – often in parts of the country where venture capital is scarce, like the
Midwest and Southeast – have set up their own venture-capital fund to develop campus companies and attract private-sector investors.

3. FP7, the EU’s chief instrument for funding scientific research and technological development over the period 2007 to 2013, is one of the most important elements in pursuing the Lisbon agenda (2002) for growth and competitiveness. Much like the early development of US science policy in the wake of World War II and then Sputnik, the ideal is to promote and further support the science and technology prowess of member states of the EU (European Commission, 2005, 2006).

4. This is an affirmation of the strategy promoted by the World Bank in its report Constructing Knowledge Societies: New Challenges for Tertiary Education (World Bank, 2002).

5. Hence, the building of HT clusters and an entrepreneurial environment may be best achieved by developing and supporting high quality universities that attract both talented undergraduates and graduate students as well as faculty (Huffman and Quigley, 2002).

6. A recent EU report states that Europe’s lagging R&D intensity results from structural characteristics, including tax incentives and an improved environment for entrepreneurship among small firms, not underinvestment in R&D by individual and usually large European firms (Moncada-Paternò-Castello et al., 2006).

7. States that are using tobacco settlement funds as a key component in their TBED’s include Arkansas, Connecticut, Georgia, Michigan, Missouri, North Carolina, Ohio, Oklahoma, Pennsylvania, and Virginia (SSTI, 2005c).

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The Commercialisation of University Research and Economic Productivity

by

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This article focuses on the relationship between university research (in this case science research) and national economic productivity, particularly in the context of the emerging knowledge economy. It addresses the question of whether university research output should be treated as a public good or a private good, in economic terms, and analyses this question using the tool of game theory. The analysis also draws out the implications both for universities and for governments of treating science as one type of good instead of another.
Introduction

The question of whether university research produces public and/or private goods raises fundamental issues concerning the nature and purpose of universities in society. This is especially so given the recent (2006) trailing of announcements by the United Kingdom government of its intention to allocate at least a portion of its research funding using commercial exploitation as a metric, in that this in itself may influence behaviour by leading more universities to consider commercialising the outputs of their research activities on a more systematic basis. In any case, much of the rhetoric of the UK government in setting out its policies for the support of university research is couched in the language of economic utility, which can appear at odds with the wider role universities play in the promulgation of knowledge for its own sake.

The article examines the issues in two parts: Part 1 sets out the economic arguments concerning science as a private or a public good; Part 2 assesses the impact of this analysis on the research strategies of individual institutions.

PART 1

Definition of terms

Public goods are defined as commodities which are non-depletable, non-rivalrous and non-excludable. That is, “a public good is a commodity for which use of a unit of the good by one agent does not preclude its use by other agents” (Mas-Colell et al., 1995, p. 359). A private good is the converse of this: that is, if a private good is consumed by one person, it cannot be consumed by another (Begg, 2003, p. 232). Knowledge is an example of a public good (Mas-Colell et al., 1995, p. 359). Other examples include clean air, national defence and transportation systems.

In economic terms, public goods present a particular set of market circumstances, since they in essence represent a form of externality. That is, they generate an economic side effect (such as a cost or a benefit) from an activity that affects agents other than those directly involved in the activity. These side effects are not reflected in the prices attached to the activity. We shall see later how this applies to the output of scientific research.

A particular complication arises when public goods are generated by private providers, one which leads to market failure. From the point of view of the consumer, if a good is genuinely non-excludable, no one could be prevented from
consuming it. Thus, none of the product would be supplied, and the market would fail (Begg, 2003, p. 232). To put it another way: if one individual provides a unit of a public good, all individuals by definition benefit, due to the non-rivalrous, non-excludable nature of public goods. In an efficient market in public goods, the marginal social benefit would equal the marginal social cost. However, if the good is produced by a private firm, an individual may pay a price $p$ to consume a quantity $q$, but cannot exclude a second individual from also consuming quantity $q$. The second individual therefore has no incentive to increase $p$ in order to produce quantity $q_2$, thereby inducing a second supplier into the market. Thus, the privately produced and consumed quantity $q$ of the good in question may be below the Pareto optimal level where the marginal social benefit equals the marginal social cost.

From the point of view of the producer, a free market in public goods will never emerge without intervention since, if the residual benefits of an asset are theoretically equally available to all, no individual has a financial incentive to bear the costs of maintaining and increasing its value (Milgrom and Roberts, 1992, p. 294). Thus, “where many people have the right to use a single shared resource, there is an incentive for the resource to be overused and, correspondingly, when many people share the obligation to provide some resource, it will be undersupplied” (ibid., p. 294). As will be seen later, in such cases efficiency can be introduced by concentrating ownership rights in some form.

Both of the descriptions above are examples of the free-rider problem, which is critical to the analysis in this article, and to which public goods in particular are subject (especially when supplied by the private sector). As long as one individual consumes quantity $q$ of a public good at price $p$, all others in the market would also be able to consume that good. Since an individual would get the same quantity of a public good as everyone else, whether or not they paid for it, they would never buy it in a private market, and no other competitive suppliers would be induced into the market. Thus the good would be supplied at a level below that which was required to produce an efficient outcome. This is in spite of the fact that all consumers would collectively benefit from its production at a utility-maximising level. As Mas-Colell et al. state: “The failure of each consumer to consider the benefits for others of her public good provision is often referred to as the free-rider problem. Each consumer has an incentive to enjoy the benefits of the public good provided by others while providing it insufficiently herself” (Mas-Colell et al., 1995, p. 362). Since the free-rider cannot by definition be excluded from consuming a good, she has no incentive to buy it herself. There is thus a divergence between the marginal private benefit of the good (i.e. the benefit to the individual), and the marginal social benefit (i.e. the benefit to all individuals collectively).

In terms of scientific output, the problem can be seen in the free publication of research findings in the public domain. If all research findings were so
published, there would be no economic incentive for the private sponsorship of research, since the benefits of the output would be freely available to anyone with access to the relevant journal or website, having borne none of the cost of production. No one can be excluded from exploiting it, but neither does anyone have an incentive to produce it themselves in a private market. Indeed, as Fuller (2000, p. 128) states: “Arguably, in the last quarter-century, Japan and Germany have made better use of the knowledge produced in the USA and UK than the Americans and British have”. Similarly, in a completely private market, not enough science would be produced, and the market would not be efficient, even though it would arguably be to the benefit of the market as a whole for an efficient quantity of scientific output to be produced.

There are a number of implications of this problem for the production of science, as well as a number of possible solutions. One solution is government intervention, through taxes and subsidies, which will be considered later.

Another solution is to create a secondary market in the positive externalities generated by the public good, through the assigning of property rights. These would effectively “internalise” the externality, by establishing the missing market. That is, indirect benefits may arise from the production of knowledge, for example, such as the potential use of that knowledge for purposes other than those originally intended. However, the indirect benefit is not a commodity in itself that can be traded. It is only by assigning property rights that a private market can be created, and standard commercial behaviour restored. In the context of scientific research, patents are an example of a property right (Milgrom and Roberts, 1992, p. 363), since they act as “a mechanism for excluding individuals … from the use of knowledge developed by others” (Mas-Colell et al., 1995, p. 360). However, a cost would be attached to setting up such a market.

In summary, a private market in public goods will never be efficient without intervention of some kind, due to the free rider problem. One solution to this problem is the assigning of property rights to the good, to generate a market.

Science as a private good

The rise of the “knowledge economy” has been accompanied by a re-evaluation of the role of universities. Fuller states that, in the postmodern period, “knowledge has become as central as labour in classical political economy” (Fuller, 2004, p. 2) Within this new condition, less tangible products, such as knowledge, ideas and innovation, become the principal economic factors supplementing physical capital, manufacturing and labour (Leadbeater, 2000). Science and technology assume critical importance (Fuller, 2004, p. 1).
The role of the university also undergoes a change. Sutz (1997, p. 12) states: "Nowadays universities are more and more regarded by ... governments as institutions that are to be devoted to the “national good” of economic competitiveness rather than to the “universal good” of knowledge". According to this view, some economic utility must be attached to the “output” of the university, rather than knowledge being created or consumed for its own good. This view is supported by Gulbrandsen (1997, pp. 123, 131). The function of research in the university is thus subordinated to the greater purpose of driving national prosperity, in a way that is more explicit than in previous eras.

This can be seen in the rhetoric of recent UK government publications on the subject, for example. The HM Treasury Science and Innovation Investment Framework document talks of “an economic imperative to make sure that scientific knowledge is used by business to create wealth” (Treasury, 2004, p. 69). Similarly, the Lambert Review of University-Business Collaboration in the United Kingdom repeatedly stresses the link between university research and national productivity (Lambert, 2003, pp. 15, 23).

The means whereby scientific research is leveraged into economic prosperity are manifold, and beyond the scope of this article to trace. Two examples will suffice: first, the creation of spin-out companies generates increased economic activity and, if done well, can produce significant returns; second, patenting provides leverage in commercial markets, translating research findings into tangible commercial commodities more quickly than traditional routes of dissemination of research findings (Webster and Packer, 1997, p. 47).¹

Universities have also been encouraged down this route in the hope of generating new revenue streams, as pressure on public funds increases, and UK government research funds (in particular) are concentrated ever more selectively (Shattock, 2001, p. 118). This has given rise to the commodification of the research relationship (Robertson, 1999, p. 25), and is a pattern which has reached beyond the United Kingdom, and into Europe.

It is therefore clear that, in recent years, there has been increased tendency to think of university scientific research as a private good. The apparatus of technology transfer (patenting, licensing, spin-out companies and the like) encourages this view, and is now adopted uncritically by governments and universities alike. The expectation on universities to generate economic utility is now explicit, and this requires, in large measure, the commercialisation of university output.

**Science as a public good**

The benefits to society of scientific research described in the previous section are, with the exception of spin-out companies, indirect. However,
some commentators argue that the commercialisation of science can have direct benefits for society, and in this sense the process generates public goods.

Bok (2003, p. 77) states that “commercial incentives have succeeded in encouraging universities to do a much better job of securing the public interest”. This is achieved through translating university research into products which are of direct benefit to society – a process which is sharpened by the commercial imperative. In this benign view of capitalism, market-related incentives are seen to induce professional scientists to focus their efforts on the individual utility of consumers (ibid., 2003, p. 102). Nevertheless, there are dangers in this for the academy, and these will be covered in Part 2.

This positive view is also shared by Etzkowitz (2002). He believes that the capitalisation of knowledge “serves the public interest” by providing alternative and more direct channels to market the fruits of scientific research than existed previously. This process, in order to be realised, requires a careful balancing of public and private interests, which is achieved through the patenting process (Etzkowitz, 2002, p. 55). The patent provides the public access to knowledge, thereby bestowing the conditions of a private good.

Even without having been subjected to the commercialisation process, scientific research can remain a public good while still contributing to economic prosperity. This is achieved through providing a resource of ideas and innovations which may not necessarily have an immediately exploitable benefit, but which may generate significant economic returns in the long run. Paradigm-shifting research results are an example. Robertson (1999, p. 29) states that “the principal knowledge producers such as universities improve the stock of publicly-available and economically exploitable ideas, and can do so indefinitely”.

It is in any government’s interest to ensure this reservoir is well-stocked, and for the economic reasons advanced at the start of this assignment, this can only be done through direct intervention in the market. As Fuller writes, “It would be in everyone’s interest to pay someone [sic] to produce these public goods. That “someone” turns out to be the state” (Fuller, 2004, p. 5). Similarly, the free rider problem described earlier can be more effectively solved by political intervention (in the form of taxes and subsidies), rather than economic intervention (Begg, 2003, p. 235).

The government in question therefore plays a twin role in the commercialisation of scientific research: on the one hand, through creating the conditions whereby commercial exploitation of university science is encouraged and made possible; on the other, through ensuring that research which does not have immediate or obvious commercial potential, but which may produce economic benefits in the long run, is directly subsidised.
Thus it can be said that positing an either/or dichotomy in terms of whether university scientific research produces public or private goods is unnecessary, since the exploitation of science produces both private and public goods, but for different markets, and for different reasons. These will be set out in the next section, using game theory as an analytic tool.

**Using game theory to analyse the issue**

Game theory is a tool developed by economists to analyse settings in which the agents involved have a strategic interdependence. That is, the agents in the situation under scrutiny are concerned with strategy, and with winning (Mas-Colell et al., 2005, p. 217). The application to commercial markets is obvious. A “game” in this sense is “a formal representation of a situation in which ... each individual’s welfare depends not only on her own actions but also on the actions of the other individuals. Moreover, the actions that are best for her to take may depend on what she expects the other players to do” (ibid., p. 219, my emphasis).

The components of a “game” are as follows:

- **Players**: i.e. who is involved?
- **Rules**: i.e. who moves when?
- **Outcomes**: i.e. what is the outcome of each possible set of actions?
- **Payoffs**: i.e. what are the players’ preferences over the possible outcomes?

In a game situation, one of the players moves first from the initial decision-point (i.e. the primary course of action). The second player then makes a decision in response, depending on which route the first player has taken, and so on, until all moves have been completed. At that point, there is a pay-off for each player, which may be either positive or negative. A positive pay-off denotes a preferred outcome, and vice versa.

The problem of whether university research produces public or private goods can thus be represented as a game involving two players, Country A and Country B, with Country A moving first. The pay-off for each player is the opportunity to generate significant commercial benefit through the exploitation of scientific research.

Country A has the choice to privatise its science, or stay public. Country B can observe Country A’s first move, and then make its own choice. The pay-off for each country could be quantified in terms of revenue generated from the commercial exploitation of its scientific base, and the translation of this into consumer utility, for example.

The game can be represented in the diagram shown below, in what is termed the extensive form. In this diagram, the first black dot denotes the initial decision node, and the black branches denote the decisions. At each decision node, a choice must be made. Country A chooses first, with Country B
choosing in response. Thus, from the initial decision node, Country A can choose either to privatise its research base, or keep it public. At the second tier of decision nodes, Country B can also choose to privatise its research base, or keep it public. Its decision will be influenced by the primary decision of Country A. Once these moves have been completed, there will be a pay-off for each country, which for the sake of illustration has been given an arbitrary value (Country A’s pay-off is given first in the bracket at the end-nodes in the diagram). Equilibrium is achieved when both players in the game receive the same pay-off: being able to analyse the consequences of each move in advance means that no player would make a move such that an inefficient outcome would be arrived at.

![Diagram showing the decision nodes for Country A and Country B with pay-offs at the end-nodes.]

It can be seen that equilibrium is only achieved if both countries go private (outcome (5, 5)), or neither do (outcome (0, 0)). In the latter case, the pay-off is zero, but there are no disadvantages.

If one country goes private, it gets the commercial pay-off, since it is able to free-ride using the publicly-available science output of the other country. The non-private country is now bearing a greater proportion of the cost of producing the pay-off, and therefore has a negative outcome.

The pay-off for both countries is diminished if they both go private, even though it is still positive. This is due to the risk of poisoning the well of new ideas if there were no publicly-available scientific research, since the market is not necessarily a reliable guide to the most promising areas of research (Bok, 2003, p. 111). There would thus potentially be fewer positive externalities in the public domain which could be successfully exploited.
Thus, on the basis of this analysis, a given country must privatise its research at least partially in order to remain internationally competitive, if any other country privatises first. If one country starts down this route (as the United States did), then the equilibrium outcome of the game will never involve remaining wholly public. However, as has been seen above, a public dimension needs to be retained in scientific research, in order to enhance the competitive position of each country relative to the others. Thus, science is a private good between countries and a public good within countries, and this important distinction needs to be borne in mind by government policy makers and university managers alike.

The game theory model is of course a simplification of the real-life situation. Nevertheless, it does usefully draw out the national and institutional implications of viewing university research output from the perspective of commercial competitive behaviour.

Some consequences of this position for universities in terms of developing their own research strategies, and the choices they have to make, are dealt with in Part 2, below.

**PART 2**

This section looks at three areas where the analysis of Part 1 impacts on the research strategy of an individual institution. They represent key areas where university strategy needs careful management, and a balance of interests, incentives and rewards needs to be achieved in order to optimise the institution’s exploitation of its scientific research.

**Balance of public and private research**

Each university within the United Kingdom is, in some ways, a microcosm of the national picture regarding the commercialisation of research. Just as a national economy needs to have a balance of public and private research, to ensure that ideas from one flow through to commercial products from the other, so an institution must do the same.

Fuller (2000, p. 141) employs the term “Epistemic Fungibility” to capture this point. This amounts to the substitutability of one form of knowledge for another. High-cost, equipment-intensive research, such as in the physical sciences in particular, scores low on this measure, since it is likely to generate only minimal benefits beyond the narrow boundaries of the particular subject discipline in question.

This increased specialisation could lead to the privatisation of research (Fuller, 2000, p. 144). This would in turn result in a private trade in private knowledge, with a diminished well-spring of new ideas on which to draw, and fewer direct public benefits of the kind envisaged by Etzkowitz. To avoid this
situation, university managers thus need to ensure that their research strategies contain a spread not just of funding sources, but of long- and short-term projects, with and without specific products as the envisaged end point.

**Subsidy**

One corollary of the need to maintain a balance of public and private research is that not all university research needs to be financially self-supporting. Indeed, on the basis of the economic arguments above, it never will be, and to seek this goal is likely to damage the research base of a given institution. Institutions may therefore legitimately choose to subsidise non-commercial science with funds from other sources.

The free rider problem predicts that a private market in public goods will always fail. By drawing on diverse funding sources, and tying themselves to government funding, universities are in a position to redress this problem, and continue to generate significant public good. In relation to this, Fuller (2004, p. 9) states that "we may speak of the role of universities in redressing network failure by reproducing and extending knowledge that might otherwise be lost through network dispersion".

It is the state which largely provides the subsidy for scientific inquiry, and in this case a political solution to the free rider problem is more efficient than an economic one (Begg, 2003, p. 233). Universities need to be aware of this outcome, and ensure that, to a certain degree, a symbiotic relationship exists between their own research priorities and those of the government.

**Balance of incentives and institutional rules**

While there are opportunities for generating significant rewards through the exploitation of science – for the individual, for the institution and for society as a whole – there are also risks. Institutions therefore need to have in place systems which manage these risks, while at the same preserving the incentives for faculty to seek to commercialise their research findings.

A number of these risks are described by Bok (2003, pp. 64 ff.). Three in particular are highlighted: the potential for increased secrecy of findings, inhibiting the free flow of ideas; increased conflicts of interest, where considerations of personal gain affect professional judgements; and corporate efforts to influence research results, potentially leading to the suppression of research findings.²

These risks can be minimised by having in place a clear set of rules and guidelines for academic staff. Such guidelines need to be an integral part of any research strategy, ensuring that academic values can prevail over commercial values wherever these might diverge. Bok is pessimistic about the consequences of not having such rules in place, asserting that without them “money will
prevail over principle most of the time” (2003, p. 156). There is a clear choice for institutions to ensure that they have measures in place to prevent this being the case.

At the same time, faculty need to be faced with an appropriate incentive-structure, so that they are encouraged to consider taking their research to market where this is likely to produce tangible benefits. As Robertson (1999, p. 32) argues, there are considerable “sunk costs” attached to continuing to behave in familiar ways, investing in what he terms “particular forms of human capital accumulation”. These relate to traditional reward-structures, indicators of esteem and academic practices, none of which may encourage the shift to academic capitalism. Appropriate incentives, such as those built in institutional intellectual property policies, would help to expedite this shift.

Summary

In summary, it can be seen that the exploitation of science generates both private and public goods, and that the one element feeds off and enriches the other. This plurality is crucial both for national economic competitiveness, and for the maintenance of the pivotal role universities play in society. There is, however, a balance to be struck in maintaining the two categories of output, and institutions need to make careful and continuing choices in determining how that balance will be managed, and how the potential risks and rewards will offset one another.

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Notes

1. In terms of the impact on society, however, the returns on these activities are relatively small, especially when compared to the positive effects of capitalising knowledge which are discussed in the next section.

2. Bok cites two examples of this happening (2003, pp. 72-73).
References


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