—HIGHER—
EDUCATION
—POLICY—

Higher Education Policy, **2008**, **21**, (5–27)

www.palgrave-journals.com/hep

The Research University in Transition: The Emerging Global Model

Kathryn Mohrman[a], Wanhua Ma[b] and David Baker[c]
[a]Hopkins-Nanjing Center, Johns Hopkins University, 1619 Massachusetts Ave NW, Washington, DC 20036, USA.
E-mail: kmohrman@jhu.edu
[b]Graduate School of Education, Peking University, Beijing 100871, China.
E-mail: hma@pku.edu.cn
[c]Penn State University, University Park, PA 16802, USA.
E-mail: dpb4@psu.edu

In a knowledge intensive society, the research university is a key institution for social and economic development. Focused on the discovery of new knowledge and the development of the next generation of scholars, research universities are also becoming more international in focus. This article presents the Emerging Global Model (EGM) of the research university in the 21st century, a description of the top stratum of research universities worldwide. EGM has eight characteristics: global mission, research intensity, new roles for professors, diversified funding, worldwide recruitment, increasing complexity, new relationships with government and industry, and global collaboration with similar institutions. The worldwide reach of the EGM means that nation-states have less influence over their universities than in the past; the article ends with a discussion of the implications for both government and campus leaders.
Higher Education Policy (2008) **21,** 5–27. doi:10.1057/palgrave.hep.8300175

Keywords: research universities; administrative organization; international cooperation; college faculty; privatization

Introduction

In a knowledge intensive society, the research university is a key institution for social and economic development. Since the establishment of the University of Berlin in the early 19th century, many institutions have embraced the concept of linking science and research to national goals of modernization. While research universities represent only a small proportion of higher education, other institutions often look to them as models so their influence is greater than their numbers would suggest.

Research universities are institutions with a high priority on the discovery of new knowledge and the production of Ph.D.s in a wide range of disciplines.

While research universities also educate undergraduates, train professionals for a wide range of positions, provide service to society, and engage in applied work and technology transfer, their distinguishing feature is the production of new knowledge especially (but not exclusively) in science and technology areas. To achieve this mission, research universities must provide the necessary infrastructure — libraries, laboratories, technicians, and administrative support — for conducting scholarly work at the highest levels.

A subset of research universities reflects a new phenomenon, what the New Century Scholars group[1] has defined as the Emerging Global Model (EGM) of the 21st century research university. The emphasis here is on the international nature of a small group of institutions that represent the leading edge of higher education's embrace of the forces of globalization. EGM universities are characterized by an intensity of research that far exceeds past experience. They are engaged in worldwide competition for students, faculty, staff, and funding; they operate in an environment in which traditional political, linguistic, and access boundaries are increasingly porous. These top universities look beyond the boundaries of the countries in which they are located to define their scope as trans-national in nature. Their peers span the globe.

The EGM further suggests that investment in human capital is good for society and that new knowledge leads to a better world. In this model, nations can harness a rational process of knowledge production through public investment in the research university. Thus higher education, and especially the EGM institution, becomes a key ingredient of the recipe for managed social and economic progress sponsored by the nation-state.

The EGM is an intensification and globalization of the development of research universities in general. Some call the EGM a 'super research university' to emphasize the worldwide perspective and the high scholarly output of this subset of research universities (Baker, 2007a, b). In fact, there may be only a few dozen fully developed EGM universities but they are the institutions that head virtually every list of leading universities worldwide. At the same time, however, one or more of the eight characteristics listed below can be found to differing degrees in thousands of colleges and universities worldwide. The classification of attributes of research universities into these specific eight characteristics results from the authors' review of the literature on the development of institutions with intensive and extensive research aims and capabilities (Geiger, 1993, 2004; Graham and Diamond, 1997; Brint, 2002; Altbach and Balan, 2007). And although, at this particular stage in the development of the university, many of these features of the EGM are rooted in the American experience of the past four decades, this model is being embraced throughout the world (Levin *et al*., 2006; Altbach and Balan, 2007; Baker, 2007a).

The Eight Characteristics of the EGM

There are a number of specific qualities that define the EGM. Points 1 and 2 are the core values of this newly developing group of institutions, although all eight points are related and mutually reinforcing. In addition, not all EGM institutions display all eight characteristics in the same way and to the same extent. Taken together, however, these characteristics help to distinguish the EGM from the broader range of higher education institutions:

(1) EGM universities see their mission as transcending the boundaries of the nation-state, educating for global perspective and advancing the frontiers of knowledge worldwide.
(2) EGM institutions are increasingly more research intensive with the use of scientific methods in disciplines outside the sciences.
(3) Faculty members, as producers of new knowledge, are assuming new roles, shifting from traditional independent patterns of inquiry to becoming members of team-oriented, cross-disciplinary, and international partnerships, with research directed more often than before toward real-world problems.
(4) The research enterprise is extremely costly. Universities are going beyond government support and student contributions to diversify their financial base with funding from corporations and private donors, competitive grants for technology innovation, and creation of for-profit businesses as spin-offs of research enterprises.
(5) New relationships are being created among universities, governments, and corporations to advance economic development and to produce knowledge for the social good.
(6) These universities are adopting worldwide recruitment strategies for students, faculty, and administrators.
(7) EGM institutions require greater internal complexity directed toward research, such as interdisciplinary centers, integration of research elements in student training programs, and greater technological infrastructure for discovery.
(8) Universities participate with international non-governmental organizations and multi-governmental organizations in support of collaborative research, student and faculty mobility, and validation of international stature.

Global mission

EGM institutions emphasize the international dimension of their identity. Faculty members are as likely to collaborate with peers on different continents as often as with colleagues on their own campuses. Each year hundreds of

thousands of students leave their home countries to study elsewhere, sometimes in short-term programs, sometimes for degrees.

Universities measure their global reach in several ways. The number and percentage of foreign citizens provide evidence of internationalization. EGM universities give special attention to international Ph.D. students, seeking the best minds worldwide to contribute to the research agenda as part of their doctoral studies. In addition, EGM universities are developing partnerships, often in research rather than degree programs, with top institutions abroad, one way to expand their influence and intellectual capital without building campuses in other countries (The Complete List, 2006).

Outbound students and faculty also contribute to a university's global mission. Top institutions in Europe and North America create international opportunities for their own students, using the percentage of the student body with formal coursework in other countries as a measure of internationalization. Universities in economically developed nations encourage students to participate in short-term study abroad programs; European exchanges through the Bologna Process are seeking, in part, to create a sense of trans-national European-ness through what is probably the most extensive international migration of students. Many developing countries send students and faculty to leading institutions to gain the most up-to-date learning to contribute to their home countries' national growth. Establishment of formal agreements with universities and research institutes in other countries is another indicator of an institution's international scope.

Increasing intensity of knowledge production

A lasting powerful role of the western, and now the global, university is its ability to produce knowledge in a highly legitimated fashion. The heart of the EGM is an expansion of the older functions of teaching, research, and service into an organization that can best be described as a knowledge conglomerate (Geiger, 2004). The EGM university is an integrated organization that puts primacy on the production of new knowledge and the training of expert personnel to carry on this production into the future.

The new knowledge that is most prized is scientific and technological, as well as scientific study of human environments through the social sciences. For example, such disciplines as linguistics, political science, and history have become increasingly quantitative in methodology and 'scientific' in approach. The 'big science' model has spilled over into all parts of the faculty as life scientists, social scientists, and even traditional scholars in the arts and humanities adopt as much of the model has possible (Abbott, 2001; Powell and Owen-Smith, 2002; Frank and Gabler, 2007). At the present time, knowledge

production downplays the importance of older forms of knowledge focused on the social values of traditions, classics, and sacred texts.

In addition, the high demand for medical research driven by wealthy consumers in developed nations has linked medical schools and universities into a highly expansive research-based relationship. The university-based medical school became an engine for basic research far beyond its contribution in training and clinical practice. In addition, universities with medical schools have a higher publication rate, even controlling for faculty size, than similar institutions without medical schools (Graham and Diamond, 1997). Entrepreneurial institutions are positioning themselves strategically to identify emerging biomedical fields and to take advantage of new opportunities as they arise.

The intensity of knowledge production also demands that research must go beyond the intellectual curiosity of the investigator; scholars are expected to push their ideas to application and ultimately to the market. In many countries, the national research and development (R&D) system provides incentives for science and technology workers to carry their innovations through to implementation (Constructing Knowledge Societies, 2002; Salamon, 2002; Slaughter and Rhoades, 2004).

The term 'dual integration' describes the difference between the traditional system and the new priority of pushing the whole process to the end state of the market (Pau, 2003). Increasingly EGM universities are developing science parks, research incubators, technology transfer offices, and spin-off businesses to carry products to market. When research implementation is a high priority, those disciplines most closely aligned with the market and the needs of society often have the greatest influence within EGM universities, often at the expense of more traditional disciplines focused on cultural legacies.

In the EGM, everyone is expected to conduct research, with professors evaluated in large part on their success in getting external funding and on the publication of research results, especially in English language journals. Even on campuses quite different from leading research universities, the demands on faculty for research publications have increased dramatically, leading to a kind of institutional drift toward the prestige of the research-oriented university often at the expense of other priorities (Stromquist, 2007). The teaching and service missions of the old university are legitimated to a large extent in the new via their role in making the university into a knowledge conglomerate.

Changes in the academic profession

Within EGM universities in particular, professors face heightened competition of several kinds. In many countries, young Ph.D.s scramble for permanent appointments rather than temporary or part-time positions in academe.

Funding sources and publication outlets are not increasing as rapidly as the global professoriate seeking support. In developing countries, academics compete to earn Ph.D.s when lesser credentials were sufficient for university jobs a few years earlier. Doctorates from universities in the industrialized world, especially English-speaking nations, are often more highly prized than domestic degrees even from the most prestigious national universities.

Within the EGM, professors have multiple responsibilities. Not only are they expected to conduct publishable research but also to teach graduate and undergraduate students, to provide service to their universities, and to use their knowledge for the benefit of local and national communities. As noted above, these roles often conflict, but on EGM campuses the reward system clearly gives priority to published research, especially in prestigious journals, over other goals.

As a result, the academic working environment is changing rapidly (Stromquist, 2007). In developing countries and in non-science fields in particular, the demand for research productivity does not come with increased financial and administrative support. In many developed countries, a new category of faculty academics do not teach at all but rather work with contracted projects, consulting businesses, research institutes, and governmental agencies. They are busy commercializing their knowledge.

Academic freedom is also affected. Most professors cherish the right to teach what they feel is most appropriate, without external interference, and to pursue research ideas wherever the inquiry takes them. When funding agencies influence research priorities, these freedoms can be compromised (Bok, 2003; Kirp, 2003). Similarly, proprietary and corporate research influences both the direction of research and the long tradition of open sharing of results. Market pressures can limit the degrees of freedom of professors to follow creative instincts or even the logic of their own findings.

The cumulative impact of these changes tends to reduce faculty involvement in campus governance (Altbach and Balan, 2007). The degree to which professors make significant institutional decisions varies from country to country, but most faculties are able to determine academic direction at the departmental, school, and campus levels. The pressure to engage in funded research, especially commercially valuable research, lowers the relative priority on shared governance.

Professors in EGM universities probably have more freedom than their counterparts in less prestigious institutions but the feeling of being employees rather than the heart of the university prevails on many campuses. At the same time, successful faculty on EGM campuses have more money for research, more contacts with colleagues around the world, and more exciting intellectual challenges to pursue.

Diversified funding

Research universities have always been expensive but the new demands of international competition raise the costs of research to levels unimaginable a decade ago. Even in the most affluent countries, maintaining high quality programs in many disciplines is challenging (Baker and Lenhardt's article in this issue describes the difficulties in Germany of changing assumptions and patterns of funding). In many countries, the state does not have the financial capacity to build an internationally competitive research university, but even in wealthy nations, government funding represents a declining share of the total budget. For example, many public universities in the United States receive only 10–15% of their operating funds from state governments (although often much more from research grants awarded to professors by state and local governments). As governments find it impossible to meet the need, universities must raise money through different strategies including private donors, increased tuition and fees, grants for research and technical innovation, profits from spin-off businesses, contracting with corporate entities, recruiting international students for higher fees, and so on.

In most countries, universities have turned to cost-sharing mechanisms to raise the necessary funds. The reduction of government support is not always accompanied by a parallel structure of means-tested grants and loans to enable talented but low income students to gain access to higher education. Without such forms of compensating financial aid, universities are forced into the unenviable position of exacerbating existing inequalities in society by limited access to universities to the wealthiest families. Mohrman's article (this issue) describes the shift in China from total state support to a more market-oriented system with both positive and negative consequences for universities, professors, and students.

While funding crises are common throughout higher education (Clark, 1998), the situation is especially pertinent to EGM universities with their emphasis on basic research, since non-governmental players are often more interested in applied research with immediate applicability to the market (Altbach and Peterson, 2007). On the research side, David Ward (2005) estimates that it takes an annual operating budget of US$1.5 billion to support a comprehensive research university with a medical center. In the United States, such institutions receive about 20% of this amount from state tax revenues and another 30-40% from competitive research grants. Approximately 30 American universities have budgets of this size, while no European institutions can match such resources (Ward, 2005). These are the EGM universities that top most of the ranking systems of higher education worldwide; the size of their funding streams determines in large part their success in research output and global reputation. While the competition for

outside support is intense, successful EGM institutions have greater flexibility as they free themselves from the potential heavy hand of centralized control from a single funding source.

Shifting relationships among universities and government, business, and society

In both developed and developing countries, universities have traditionally looked to governments to fund research endeavors. In recent years, however, governmental direct investment in research has been augmented with new public policies that facilitate partnerships between research universities and corporate entities (Salamon, 2002; Pau, 2003; Tierney, 2006). The term 'triple helix' refers to this new relationship among higher education, industry, and government (Etzkowitz and Leydesdorff, 1998). This concept describes countries with *laissez-faire* capitalist systems using government encouragement for research universities to collaborate with businesses to develop the civilian economy. In socialist countries, governments have withdrawn from total control of science and technology policy, thus providing new flexibility for universities to work with local or global industrial entities. Overall, the state has become less of a sponsor and more of a facilitator for partnerships between universities and businesses, encouraging universities to seek funds from the private sector.

In order to hold universities accountable despite limited governmental budgets, many nations have adopted performance-based university research funding strategies for targeted programs. In this way, government agencies bring EGM and other universities to work on nationally important social and economic issues. Ma's article on the University of California at Berkeley in this issue described US policies to encourage stronger university–industry relationships and the impact of those policies at Berkeley.

Finland is a good example. In the international economic recession of 1991–1992, Finland suffered more than most European countries because of the simultaneous collapse of the Soviet Union, a major trading partner. The country's national recovery strategy placed priority on high technology applications, resulting in larger admissions quotas in engineering and other related fields as well as close collaboration between universities and leading telecommunications companies such as Nokia. Overall, R&D expenditure in Finland was 3.5% of GDP in 2003 compared with 1.9% for the European Union as a whole and 2.6% in the United States. Intensifying research is seen as the key to Finland's economic success although its universities have not yet reached the top level described by the EGM.

Worldwide recruitment

In the global environment, higher education is open to external forces both nationally and internationally, at the same time that university organization

and the research enterprise have become more complicated. As a result, the management of EGM universities is much more challenging than before. The trans-national character of the work also demands people with experience in and sensitivity to many cultures.

As a result many universities are now adopting a worldwide leadership recruitment strategy. When faculty and administrators come from different academic traditions, their new institutions gain a wider range of ideas for development and reform. Especially for universities newly entering the international competition in research, personnel with specialized experience to manage such issues as patents, international cooperation, and assessment are essential. Most of them will have been trained on campuses with more highly developed research infrastructure and can bring that experience to ambitious universities elsewhere.

Faculty recruitment is also global in EGM universities. Institutions such as the London School of Economics, ETH Zurich and the University of Hong Kong have more than 80% of their faculty from outside national borders. A number of other universities, especially British and Commonwealth institutions, report more than half of their professors are citizens of other nations. Ambitious universities eager to move into the international arena are recruiting professors from other countries to bring instant upgrading, and often prestige, to their campuses.

Increasing complexity of university organization

The changing academic landscape contributes to the complexity of the internal organization of EGM institutions. In recent years, research universities have expanded substantially, often desiring to become more comprehensive and more integrated by adding new programs to existing departments, establishing professional schools, launching new research centers, and encouraging interdisciplinary units. To support these activities, universities have added a number of administrative offices for human subjects review, patents, government liaison, and so forth.

Organized research units, such as the Jet Propulsion Laboratory at Caltech and the Applied Physics Laboratory at Johns Hopkins, have transformed the nature of large-scale academic scholarship. Such units supply research faculty with facilities, scientific colleagues, and other assistance to develop bigger, interdisciplinary, and very expensive science. The availability of competitive funding for scientific R&D has made such units essential for any institution that aims to become a high quality research university. Through their autonomous research role inside the university, these organized research units have intensified the knowledge production capabilities of their institutions (Geiger, 2004).

Many universities have established responsibility-centered strategies in order to hold individual units accountable, exerting new pressure for strong management throughout the university. Also, greater public demands for enhanced accountability and effectiveness require sophisticated responses involving offices for institutional research, program assessment, self-evaluation, and financial analysis.

The rapid changes demanded of EGM universities require leaders to re-examine existing allocations in a world of limited resources. The increased emphasis on research means more support for scholarly work, sometimes at the expense of teaching and service. The growth of interdisciplinary studies means shifting money and people from traditional departments to new centers. The expectation of diversified financing means that leaders often spend more of their time on fundraising than on academics.

Global collaboration

In the 20th century, universities operated within the boundaries of the nation-state; governments set the rules on who should teach and who should learn. Today, however, the scope of the leading universities extends well beyond national borders. The proliferation of such organizations as Asia–Pacific Economic Cooperation (APEC), the North American Free Trade Agreement (NAFTA) and the World Trade Organization (WTO), reflect the development of a new world order.

The growth of international university associations demonstrates the interdependence of EGM universities through trans-national activities. A well-known multi-national organization is the European Union's Erasmus Mundus program, a cooperation and mobility initiative that promotes the European Union as a center of excellence in learning around the world. Another example is the Association of Pacific Rim Universities involving 37 comprehensive, research intensive institutions on all shores of the Pacific. These new associations differ from traditional international organizations in that they are less *ad hoc*, better organized, and more focused in their objectives and activities. The benefits to member institutions are multiple: to share information, to establish formal programs of student and faculty exchange, to improve access to international resources, to facilitate collaborative research, and to provide a global dimension to the curriculum. These global organizations also provide a form of validation of international stature, providing significant prestige to member universities.

These eight characteristics differentiate the EGM from the development of a wider range of research universities and other institutions. While one of more of these characteristics can be found on many campuses, the intensity of

research and the trans-national scope differentiate these top universities from the larger pool of colleges and universities worldwide.

How Did the EGM Come About?

In the early 19th century, Wilhelm von Humboldt had a vision of a university characterized by the primacy of research, the importance of science, the integration of teaching and research, and all these activities contributing to the development of the German nation. Knowledge production was the top priority, although the University of Berlin and other institutions inspired by von Humboldt's idea still taught students and worried about non-science disciplines. But the balance had changed.

In today's higher education universe, von Humboldt's ideas remain salient. At the same time, universities in all parts of the world have become increasingly responsive to trans-national or supra-models of what the university should be, above and beyond local competitive factors or national regulatory forces. The development of EGM is the most recent of these trans-national models with special validity in an increasingly globalized educational environment. These new international universities pay careful attention to the environments in which they live, not only the cultural and historical specifics of the nation in which they are located, but also the larger international forces that have an impact on higher education. This is not to imply that there are only eight characteristics, or that these characteristics are totally distinct from one another, or that an institution must be equally excellent in all of them to be influenced by the EGM model. This list attempts to get at the heart of the spreading model; there are certainly other subcomponents that play a part, just as there is overlap among the characteristics. And a model is just that, a roadmap, a goal, that universities take into account as they go about day-to-day planning and resource management (Meyer *et al*., 2005).

The development of the EGM is both a response to and an influence upon the major factors in contemporary society. One important force is the demand for broad access to tertiary education. In many countries, higher education is growing rapidly in terms of the number of institutions and the enrollment rates on those campuses. A second influence, privatization, is almost essential because most governments no longer provide full funding for their universities.

Internationalization and globalization are additional forces with critical influence on the development of the EGM. Perhaps the most important force within the model that perpetuates itself is the heavy emphasis on international interaction between universities across national boundaries. While many institutions look beyond their borders, EGM institutions often operate beyond the control of the nation-state, leading to new policy dilemmas for national governments.

Expansion of higher education

Over the last 150 years, mass education has been a dominant model of primary and secondary education in Western Europe and former English-speaking colonies (Schofer and Meyer, 2006). Elementary school enrollments began to soar around the world at the turn of the 20th century, followed by secondary school enrollments after World War II. This unprecedented expansion of mass schooling has fed a dynamic growth in higher education that became exponential after 1960.

This is not to imply that expansion of higher education is a sufficient condition for the spread of the EGM, although observers of the earliest development of the model in the American expansion of higher education and the development of the research-intensive university suggest that it is a necessary condition (Geiger, 2004; Baker, 2007a). Mass higher education to a considerable degree expands the overall societal legitimation of the institution that in turn leads to motivations for the support of higher education, including the research university.

The belief that expanded education leads to social betterment is an important motivation driving higher education expansion in many countries (Schofer and Meyer, 2006). The large research literature on the reasons for widespread educational development in modern society points to three distinct cultural ideas, each of which contributes to the overarching motivation behind the EGM: increasing global emphasis on democracy and human rights, the advent of modern national development as political objective, and expansion of science as a broad authority and economic asset in society (see review in Baker and LeTendre, 2005).

Privatization

The second major trend shaping the environmental context is the significant shift away from complete reliance on government funding of universities to both alternative sources of funds and new public methods of funding. There are multiple parts to this trend. Privatization of higher education, both in terms of tuition and the chartering of new fully or partially private universities in nations, represents new forms of investment in universities. The necessity of diversified funding sources brings dangers as well as opportunities for universities (Bok, 2003; Kirp, 2003). At the same time, the forces of globalization emphasize a financially driven, free-market ideology, not a clear conception for improving education (Carnoy, 2000).

In the United States there has been active participation of the national government in basic and applied research in universities. At the same time, R&D projects in universities have increasingly been funded by

non-governmental sources, including private industry and private foundations. In a number of countries, the government's development planning role has included explicit attention to business–university linkages as key components of national economic development.

Limited government funding combined with dramatic expansion of higher education in many countries leads to the imposition of or increase in tuition fees, as cost sharing emerges as a new policy imperative. Such policies can alter the fundamental conception of the purpose of the university, or alternatively, derive from a new sense of the purpose of higher education. One of the rationales behind the move for cost sharing between students and their universities is the idea that the greatest benefit goes to the individual, not to society, thus transforming a college degree into career investment or individual indulgence rather than a public good. Unless financial aid is included in the package, inequities are likely to result because only students from affluent families can afford to attend college. If benefits are seen to accrue to individuals, not to the nation, then reduced state support is a likely result.

Internationalization and globalization

These two terms are clearly overlapping but also distinct. Internationalization of the university can be seen as a series of policies and decisions within the control of the inhabitants of the institution — new curricula, international recruitment, joint ventures, and so on. In contrast, globalization tends to be something beyond any institution's control — the flow of technology, economy, knowledge, people, values, and ideas across borders. Knight (2003) makes the distinction this way, 'internationalization is changing the world of education and globalization is changing the world of internationalization'. Universities are both agents of globalization, instruments of its influence, as well as entities influenced by these larger shifts (Huisman *et al*., 2001). The EGM is especially engaged with these forces because it produces the intellectual capital required by the worldwide knowledge society.

New roles for higher education in modern society

Since World War II, the general expansion of education worldwide has led to the creation of national universities as the legitimate organization for the creation of new generations of social and political elites. Since the 1980s, however, the model of the national university has steadily lost ground to a more research-based model of the university that provides knowledge for all, not just for elites. Certainly the idea that nations should appropriately be concerned with increasing democracy and human rights is consistent with the logic behind expanded access to higher education.

Thus the EGM is both a result of, and an influence upon, contemporary society. Internationally oriented research universities feel the impact of the demand for higher education, not just for elites but for all, as a vehicle to produce trained citizens and to foster economic and social development. As the Baker and Lenhardt paper later in this issue discusses, national resources and political control interact with the ability of specific institutions to adopt the EGM; it is a globally shared model that takes it strength from a set of cultural ideas that are global as well (Drori *et al*., 2003). The emphasis on private support and private benefits of higher education affects the content of research, the access of students, and the sources of funding for the modern university. An increasingly integrated global economy naturally pushes universities, especially EGM institutions, to look as widely as possible for human capital, financial resources, and intellectual challenge to bolster international competitiveness. All of these trends are an intensification of factors to a level not experienced before in higher education worldwide.

Implications and Recommendations

The EGM is the most intense example of a priority on scholarship and an expansion to worldwide scope. Both of these characteristics, however, have been part of higher education for many years in a large number of colleges and universities. The EGM can be described as a super research university at one end of a continuum of institutional types.

Moving along the continuum, other universities and professional schools may have fewer Ph.D. programs than EGM universities and/or a concentration on master's level education for business, law, architecture, public administration, and other important fields. These professional programs are often linked to the specific needs of the nation or region for skilled workers. Their foreign student body is often linked less to research and more to institutional desires to grow in size and thus to contribute to the universities' bottom line (Marginson, 2006).

In such institutions, research at an internationally competitive level may take place in only a few departments or institutes with a comparative advantage based on geography, national culture, or other factors. In less affluent countries, universities may not have the resources to support more than one or two research programs while the rest of the institution focuses energy on applied work or training for national needs. In fact, Altbach and Balan (2007) state that it is essential for nations to have at least one university connected to the international discussions of science and scholarship, undertaking research in one or more fields relevant to national development. Without such connections, nations are unable to participate in the world knowledge system.

Such universities — mosaic institutions — have different units concentrating on very different priorities.

Further along the spectrum are predominantly undergraduate colleges. In the United States, privately funded liberal arts college and publicly funded community colleges serve nearly half of all higher education students. Some faculty in these institutions are active researchers with significant publication records but these activities are secondary to their commitment to their teaching; scholarship is an individual rather than an institutional priority (Ward, 2005).

Governments can also demand differentiation (Huisman *et al*., 2001). Some nations assign clear missions to avoid redundancy and inefficient use of public resources. In many nations, the California system of three tiers of higher education — doctoral, masters, and community colleges — has been adapted to create a segmented array of colleges and universities. Fiscal realities also tend to spread institutions along this continuum. The appeal of the EGM, however, lures more and more institutions to try to become research universities. One plausible scenario for the next 20 years is a significant attempt by most of higher education worldwide to mimic the success of EGM institutions.

Tensions between knowledge production and human capital formation

Citizens and bureaucrats in many countries are asking more frequently what tangible benefits the society is receiving for the tax revenues being spent on higher education. The emphasis on national needs is clearly part of the EGM, whether the implementation is an increase in engineering enrollments or more funding for new business incubation.

The EGM, however, can pit international research prestige against mass education demands. In many developed countries, the pressures of massification were greatest decades ago so policymakers and individual institutions have adjusted to both sets of demands. In other countries, however, where the move to mass education is more recent, the worldwide reach of the EGM creates uncomfortable, even impossible situations as nations and universities want it all — to play in the international knowledge game while at the same time providing tertiary education for as many people as want and can benefit from a college degree.

Assuming (for better or worse) that the EGM will dominate the development of research universities for the foreseeable future, there are people, programs, and institutions that have an advantage in the current higher education universe:

- A scientific (*vs* a more humanistic) approach to the study of all things, particularly as applied to fields that are seen as directly related to social and economic progress, dominate the prestige hierarchy.

- Academic departments that embrace scientific methods to some degree, even in social sciences and humanities, are winners within individual universities.
- Nations or individuals with strong English language skills who can interact with western scholars, read western journals, and present their research in English language publications have a significant advantage over their peers who cannot use English.
- Graduate education, where human capital formation (instruction and teaching) and knowledge production (research) are seen as complimentary rather than competitive, is easier to fit into the EGM compared with programs that demand difficult choices between these two fundamental goals of higher education.
- Disciplines that are seen as immediately useful/practical by the general public, government officials, and other decision makers are privileged over other fields. Faculty in these disciplines are often able to garner financial resources from society, thus enabling them to carry out substantial scholarly agendas greater than what can be mounted only with governmental and institutional support.
- To join the international marketplace of ideas, especially in science, requires acceptance of the methods, norms, and values of the universities in Western Europe and North America that dominate the system. The themes and subject areas of interest to leading scientists may not be relevant to universities at the periphery, yet involvement in world science means adherence to established research paradigms (Altbach and Peterson, 2007).

University ranking systems

The last decade has witnessed an explosion of university ranking systems at both national and international levels although there is no consensus of what constitutes excellence in higher education. The Shanghai Jiaotong ranking system emphasizes publications, citations, and academic prizes, especially in science and technology (http://ed.sjtu.edu.cn/2006/ARWU2006_Top100.htm). In contrast, the *Times Higher Education Supplement* system relies heavily on peer evaluation (World University Rankings, 2006). The difference in emphasis between these two is exemplified by the fact that Peking University is ranked 14th in the *THES* survey but between 201 and 300 on the Shanghai Jiaotong list. The *Newsweek International* ratings of the world's most globally oriented universities give special attention to the proportion of foreign citizens in the faculty and student body of an institution (The Complete List, 2006).

A careful statistical analysis of international ranking concludes that there is broad consensus about the first 10-12 universities, but after that the lists begin to diverge. The lack of an absolute set of performance criteria may mean that 'world class' standing will probably be based more on academic reputation

than on a set of formal standards (Levin *et al*., 2006). Levin and his colleagues go on to say that 'there is a tacit assumption that if an institution is highly competitive in its admissions that the educational quality is also very high, even without measuring that quality. Yet, student competition for admission may be based upon a prestige reputation that is largely due to the research visibility of a university rather than its educational virtues' (Levin *et al*., 2006, 22).

The popularity of worldwide university rankings reflects the internationalization of higher education. Institutions that at one time compared themselves only to others in the same country now look across national boundaries for peers. While the development of the EGM predates the current ratings, the major ranking systems reinforce the definitions of quality embodied in the EGM.

Implications for national and institutional policymakers

The expansion of enrollments and diversification of institutional types suggests there will not be one single model of the higher education institution over the next several decades. Nevertheless, the EGM carries great prestige and therefore has significant appeal. As with many features of the modern system of nations, once a new organizational arrangement is developed in wealthier countries, there is high motivation to spread it worldwide.

The transnational priorities of EGM programs pose special concerns for policymakers. Whether in student recruitment or research partnerships, the EGM reflects a global reach. Their ambiguous position as both the lever and the instrument of globalization can confound national officials wrestling with the increasing integration of the world economy (Huisman *et al*., 2001). The more international the EGM becomes, the less dependent it is on the nation-state in which it is located and the less easily controlled it is by government entities.

Social scientists and others are engaged in a lively debate about the impacts of globalization. One group argues that the forces of worldwide economic integration inevitably lead to diminishing capacity of governments to control economic and social activity within their borders. Power is shifting from traditional political systems to a global economy beyond the full control of nation-states, limiting the ability of governments to function successfully under the old rules (Held, 1999; Woods, 2000; Stiglitz, 2002). Strange (1996, 12) in outlining the declining authority of states, declares that 'it is a long time since territorial states lost such control as they may once have had over the production of goods and services within their borders, and over the creation, storage, and communication of knowledge and information'.

Other analysts take a less dramatic position, arguing for the continuing importance of the nation-state while acknowledging the growing role for regional organizations and other collaborative approaches (Huisman *et al*.,

2001; Waters, 2001). These observers see a variety of national, regional, and local responses to the forces of globalization that take into account the continuing influence of culture, tradition, and national priorities. Most would agree, however, that the stratification brought about by the emphasis placed on market capitalism and information technology tends to create greater disparity between the haves and have-nots of the world, leading to greater marginalization of developing nations (Castells, 1996; Held, 1999; Stiglitz, 2002; Mok, 2006).

Both groups emphasize the importance of non-state actors — from multinational corporations to UNESCO, the International Monetary Fund to *Médecins Sans Frontières*. The European Union is a prime example of cooperation in higher education across national boundaries with significant impact on education within the member states (Huisman *et al*., 2001). Salamon (2002) describes the engagement of non-state actors as 'third party government' in which social service agencies, commercial banks, private hospitals, corporations, and financiers share in the delivery of publicly financed services in pursuit of publicly authorized purposes. Services are decentralized and often privatized, relying more on market mechanisms and self-regulation than direct government involvement (Jayasurya, 2001).

In this new environment, the state must rethink its strategies, moving from command-and-control to coordination through regulation, enabling, and facilitating desired actions by others. Governments' policy toolbox has expanded to incorporate a number of new policy instruments, many of them quite indirect, to guide a series of public–private partnerships toward the goals of the nation-state. This 'new managerialism' or 'new public management' provides new ways for the nation-state to impart direction and service (Pierre and Peters, 2000).

Higher education is an important component of third-party government. Most colleges and universities in the world are public institutions, thus direct extensions of the state, although their relationship to government has changed along with other public entities. In many systems, the state now uses such mechanisms as contracts, tax incentives, loan guarantees, and social regulation to compel, coerce, entice, and encourage universities to offer programs in support of national goals, and to encourage other players in third-party government to work more closely with higher education. Devolution of authority to lower levels of government and to individual institutions is accompanied by after-the-fact evaluation of behavior that is essentially self-regulated.

In nations with a strong private sector of higher education, the relationship between the state and individual institutions can be even less direct since no public money is involved. Here broad accountability measures, inducements for participation, and oversight of the market for higher education are the state's most effective means of directing the enterprise toward general goals.

At the same time that nation-states are less able than before to control their destinies, they are more dependent upon universities for knowledge production and human capital essential for national economic and social development. Yet many societies have come to consider higher education as a private good (benefiting the individual) rather than a public good (benefiting society as a whole) and thus not worthy of significant public financial support. For philosophical and economic reasons, many countries have shifted much of the cost of education to the consumer through tuition and other fees (Constructing Knowledge Societies, 2002; Mok, 2006; Tierney, 2006). As the state's share of the higher education budget diminishes, its ability to control the academic enterprise is diminished.

Many of these policies and practices stem from a philosophy of a reduced role for the state, exemplified by the Thatcher government in UK and the Reagan administration in the US. In addition, multinational organizations such as the World Bank and the International Monetary Fund have encouraged what is generally called neo-liberal economic policies or the Washington Consensus, emphasizing reliance on market forces, privatization of traditional state organizations and activities, and the imposition of user fees including tuition fees (Stiglitz, 2002; Mok, 2006). Since many developing countries are dependent upon World Bank and IMF support, they have adopted such measures willingly or unwillingly. The implications of the new paradigm — higher education as a private good — are far-reaching, especially in EGM universities where basic research is not likely to be supported by entities other than government.

Oversight of EGM universities is complicated by the desire for academic freedom. Supporting free inquiry, wherever it leads, means less control by the nation-state over the educational enterprise, a major concern in countries that traditionally have viewed universities as state enterprises or extensions of the state. Altbach and Balan (2007) argue that academic freedom is essential to the research culture, especially for inquiry into areas of knowledge that are considered politically or socially sensitive, such as ethnic and religious studies, environmental research, and social conflict. In addition, research university professors are more likely than other academics to be 'public intellectuals' (Altbach and Balan, 2007, 19–20) Their freedom to comment on topics of civic importance needs to be protected. Academic freedom is a core value essential for the success of EGM and research universities worldwide.

Another threat to free inquiry is the increasing commercialization of research. Especially in the United States, corporate support for applied research is often accompanied by restrictions on public disclosure of findings and contracts regarding proprietary results (Bok, 2003; Kirp, 2003; Geiger, 2004). This is one of the serious consequences of the philosophical and ideological shift to higher education as a private good.

The current policy environment suggests a number of questions for both institutional and governmental leaders, and the emergence of a new global model of the research university only adds to the challenges. Policymakers should ask:

- Why should we strive to become an internationally competitive university? What is the goal? How will it make us a better institution?
- Do we have the resources — financial, human, intellectual — to accomplish the goal?
- Should we consider being competitive only in certain disciplines or programs?
- How will international-level research promote the needs of our country?
- How do we manage a shift from government control to a more market-like contest among universities within the country?
- Can we balance the sometimes competing pressures of academic freedom and corporate funding?
- How can our government adopt the best features of third-party governance while still directing institutions in nationally desired directions?
- Can we avoid turning discussions of new policy paradigms into partisan political debates?
- How can we arrive at a definition and a shared committee to the public good?
- In less affluent parts of the world, could regional collaboration be more effective than attempts to create an EGM in every country?
- What might be the unintended consequences of new policies and programs?
- How can highly controlled systems of higher education build a culture of academic freedom to nurture high-level scholarship?
- What forms of accountability and quality assurance are necessary as we move toward greater autonomy of individual universities?
- What mechanisms will best encourage private investment from many segments of society to fund the high cost of global knowledge production?

In answering these questions and others like them, leaders must give attention to local needs and local context. There is no 'one size fits all' model of higher education development. In particular, leaders at both national and institutional levels should think carefully about realistic goals; not every institution can be an EGM university — nor should it be.

Conclusion

The EGM of the 21st century research university is an intensification of trends in recent decades. EGM universities look worldwide for research partners,

graduate students, prospective faculty, and financial resources. Their dependence on regional and national governmental entities tends to be reduced as the proportion of funding from public sources has declined. In addition, the relationship between center and periphery has changed as EGM institutions act far beyond national borders. As part of this changing relationship, many governments have moved away from traditional state control and now rely more heavily on incentives, evaluation, and accountability measures as forms of influence.

The EGM fosters winners and losers. The individuals and institutions that are most international tend to be favored — English-speaking faculty and students, science disciplines, research topics that attract funding from businesses and society, publications in international journals, and graduate programs in which human capital development and knowledge production are complimentary rather than competitive. Individuals and institutions that are more locally focused tend to be at a disadvantage.

The EGM, fully developed, requires significant financial resources. It is no surprise that the institutions listed at the top of most international ranking systems are located in the United States, United Kingdom, and other highly developed countries. Smaller and less wealthy nations can participate internationally by focusing on one or two disciplines, developing strategic advantages, and collaborating with other universities.

Over time, more and more institutions will become fully fledged EGM universities, although not every institution can be or should be an EGM institution. This group of global universities will form an elite subset in a larger universe of higher education institutions. For the foreseeable future, most college students will attend non-EGM institutions, the colleges and universities focused on regional needs and the development of well-trained citizens who can contribute to economic and social advancement. At the same time, however, the pressures of globalization and the attractiveness of internationalization will both push and pull on these locally focused institutions to adapt elements of the EGM to their own circumstances. Thus the EGM is relevant to higher education in many countries and many locations, even those that will never fully develop the EGM of the research university.

Note

1 The authors were members of the New Century Scholars V program of the Council for the International Exchange of Scholars (the Fulbright program). In 2006–2007, 30 scholars from 20 countries, ranging from Ethopia to Brazil, Russia to Indonesia to the United States, collaborated for 15 months under the broad theme of 'Higher Education in the 21st Century: Global Challenge and National Response'. For this article, the authors drew upon the three seminar/discussions of the program and thank their NCS colleagues for advice and insights.

References

Abbott, A. (2001) *Chaos of Disciplines*, Chicago, IL: University of Chicago Press.

Altbach, P.G. and Balan, J. (eds.) (2007) *World Class Worldwide: Transforming Research Universities in Asia and Latin America*, Baltimore, MD: Johns Hopkins University Press.

Altbach, P.G. and Peterson, P.M. (eds.) (2007) *Higher Education in the New Century: Global Challenges and Innovative Ideas*, Rotterdam: Sense Publishers.

Baker, D. (2007a) 'Mass Higher Education and the Super Research University: Symbiotic Trends and Future Scenarios', in *Graduate Education 2020*, Washington, DC: Council of Graduate Schools.

Baker, D. (2007b) 'Mass Higher Education and the Super Research University: A Symbiotic Relationship', in *International Higher Education* 49: 9–10.

Baker, D. and LeTendre, G. (2005) *National Differences, Global Similarities: World Culture and the Future of Schooling*, Stanford, CA: Stanford University Press.

Bok, D. (2003) *Universities in the Marketplace: The Commercialization of Higher Education*, Princeton, NJ: Princeton University Press.

Brint, S. (2002) *The Future of the City of Intellect: The Changing American University*, Stanford, CA: Stanford University Press.

Carnoy, M. (2000) *Sustaining the New Economy in the Information Age: Reflections on Our Changing World*, University Park, PA: Pennsylvania University Press.

Castells, M. (1996) *The Rise of the Network Society*, Oxford: Blackwell.

Clark, B. (1998) *Creating Entrepreneurial Universities: Organizational Pathways of Transformation*, New York: Pergamon Press.

Constructing Knowledge Societies: New Challenges for Tertiary Education. (2002) Washington: World Bank.

Drori, G., Meyer, J., Ramirez, F. and Schofer, E. (2003) *Science in the Modern World Polity: Institutionalization and Globalization*, Stanford, CA: Stanford University Press.

Etzkowitz, H. and Leydesdorff, L. (1998) 'The endless transition: a 'triple helix' of university–industry–government relations', *Minerva* 36(3): 203–208.

Frank, D. and Gabler, J. (2007) *Reconstructing the University: Global Changes in the Academic Core over the 20th Century*, Stanford, CA: Stanford University Press.

Geiger, R. (1993) *Research and Relevant Knowledge: American Research Universities since World War II*. New York, NY: Oxford University Press.

Geiger, R. (2004) *Knowledge and Money: Research Universities and the Paradox of the Marketplace*, Stanford, CA: Stanford University Press.

Graham, H.D. and Diamond, N. (1997) *The Rise of American Research Universities: Elites and Challengers in the Postwar Era*, Baltimore, MD: Johns Hopkins University Press.

Held, D., McGrew, A., Goldblatt, D. and Perraton, J. (1999) *Global Transformation: Politics, Economics, and Culture*, Stanford, CA: Stanford University Press.

Huisman, J., Maassen, P. and Neave, G. (eds.) (2001) *Higher Education and the Nation State: The International Dimension of Higher Education*, Amsterdam: Pergamon.

Jayasurya, K. (2001) 'Globalization and the changing architecture of the state: the regulatory state and the politics of negative co-ordination', *Journal of European Public Policy* 8(1): 101–123.

Kirp, D.L. (2003) *Shakespeare, Einstein, and the Bottom Line: The Marketing of Higher Education*, Cambridge: Harvard University Press.

Knight, J. (2003) 'Updating the definition of internationalization', *International Higher Education* 33: 2–3.

Levin, H.M., Jeong, D. and Ou, D. (2006) *What is A World Class University?* Presentation at the Comparative and International Education Society, Honolulu, 16 March.

Marginson, S. (2006) 'Dynamics of national and global competition in higher education', *Higher Education* 52: 1–39.
Meyer, J., Ramirez, F., Frank, D. and Schofer, E. (2005) 'Higher Education as an Institution', in P. Gumport (ed.) *Sociology of Higher Education: Contributions and Their Contexts*, Baltimore, MD: The Johns Hopkins University Press.
Mohrman, K., Ma, W. and Baker, D. (2007) 'The Emerging Global Model of the Research University', in P.G. Altbach and P.M. Peterson (eds.) *Higher Education in the New Century: Global Challenges and Innovative Ideas*, Rotterdam: Sense Publishers.
Mok, K.H. (2006) *Education Reform and Education Policy in East Asia*, London: Routledge.
Pau, B. (2003) 'From Knowledge to Innovation: Remodeling Creative and Knowledge Diffusion Processes', in G. Breton and M. Lambert (eds.) *Universities and Globalization: Private Linkages, Public Trust*, Paris: UNESCO.
Pierre, J. and Peters, G. (2000) *Governance, Politics and State*, Basingstoke: Macmillan.
Powell, W. and Owen-Smith, J. (2002) 'The New World of Production in the Life Sciences', in S. Brint (ed.) *The Future of the City of Intellect: The Changing American University*, Stanford, CA: Stanford University Press.
Salamon, L.M. (2002) *The Tools of Government: A Guide to the New Governance*, New York: Oxford University Press.
Schofer, E. and Meyer, J. (2006) 'The world-wide expansion of higher education in the twentieth century', *American Sociological Review* 70(6): 898–920.
Slaughter, S. and Rhoades, G. (2004) *Academic Capitalism and the New Economy: Markets, State, and Higher Education*, Baltimore, MD: Johns Hopkins University Press.
Stiglitz, J.E. (2002) *Globalization and Its Discontents*, New York: Norton.
Strange, S. (1996) *The Retreat of the State: The Diffusion of Power in the World Economy*, Cambridge: Cambridge University Press.
Stromquist, N.P., Gil-Anton, M., Balbachevsky, E., Mabokela, R., Smolentseva, A. and Colatrella, C. (2007) 'The Academic Profession in the Globalization Age: Key Trends, Challenges and Possibilities', in P.G. Altbach and P.M. Peterson (eds.) *Higher Education in the New Century: Global Challenges and Innovative Ideas*, Rotterdam: Sense Publishers.
The Complete List: The world's most global universities. (2006) *Newsweek International*, 21–28 August.
Tierney, W.G. (ed.) (2006) *Governance and the Public Good*, Albany: SUNY Press.
Ward, D. (2005) 'Universities as Global Institutions', Speech at the University of Manchester, 19 October.
Waters, M. (2001) *Globalization*, London: Routledge.
Woods, N. (ed.) (2000) *The Political Economy of Globalization*, New York: St. Martin's Press.
World University Rankings. (2006) *The Times Higher Education Supplement*, 6 October.