

A funny thing happened on the way to the K-economy

The new world order in higher education: Research rankings, outcomes measures and institutional classifications

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Abstract

The paper outlines the global knowledge economy and its constituent elements: the open source ecology and the commercial markets in intellectual property. Since the advent of Internet-mediated communicative association, the k-economy has developed with extraordinary rapidity, particularly the open source component which, consistent with the economic character of knowledge as a public good, appears to be the larger(albeit shadowy) part of the k-economy. The question is, how do the chaotic open source flows of knowledge, which have no evident tendency towards predictability let alone to equilibrium, become reconciled with a world of national and university hierarchies, economic markets and institutions that routinely require stability and control in order to function? *The paper contends that in the k-economy, knowledge flows are vectored by a system of status production that assigns value to knowledge, and arranges it in ordered patterns.* This system of status production, here termed the k-status system, has rapidly filled the void opened up by the rise and rise of the k-economy. The new system for assigning value to knowledge in the form of ordered status includes league tables and other rankings such as university rankings in research, publication metrics, citation metrics, journal hierarchies, and other ordinal outputs such as comparative outcomes of student learning.

Some of these instruments have been advanced by state regulation; but mostly they originated in the publishing industries, on the Internet and in the higher education sector itself. These systems have rapidly secured near universal consent and are here to stay, but their precise forms are evolving, and there is much at stake in decisions about their development and use. The paper reviews the effects and effectiveness of different university rankings and research metrics, considers the role of institutional classifications, and then adds assessment of learning outcomes (currently under development in the OECD's AHELO project) to the picture. The league table form of rankings will almost certainly persist, but when rankings are comprised by reputational surveys, this tends to block recognition of performance-based merit. The use of a small number of dominant rankings tends to compromise diversity of nation and mission. The paper concludes by arguing for 'clean' comparisons, more plural forms of comparison, and multiple indicators.

‘And we can distinguish a type of time experienced on a world scale: world time, which is not however, and never can be the sum total of human history’.

~ Fernand Braudel, *The Perspective of the World, Volume 3 of Civilization and Capitalism, 15th-18th Century* transl. Siân Reynolds Fontana Press, London, 1985, pp. 17-18.

1. Introduction

What a remarkable time this is. As Stephen J. Gould (2002, Ch. 9) would put it, we live in a period of ‘punctuated equilibrium’ on two fronts. The biosphere is undergoing rapid climactic shifts and wholesale extinctions. Meanwhile the global knowledge economy, wherein might lie the way through, is emerging in tangible institutional form. Both are unfolding faster than our projections thought possible. The importance of the k-economy transformation ushered in by the Internet, the formation of a single world-wide communicative community of networked persons and institutions with a common cultural store, is such that it might eventually overshadow the industrial and scientific revolutions of the nineteenth century, becoming equivalent to the Neolithic revolution in its role in the human story. The Internet is the medium for the rapidly evolving knowledge economy with its dynamic open source flows of information and ideas. In turn this is quickly becoming associated with a global structuring and codification of the k-economy in university rankings, institutional classifications and publication/citation metrics, with potential for other comparative outcomes measures. This is not the last word in the evolution of the global knowledge economy. One suspects that ‘we ain’t seen nothing yet’. Nevertheless these processes of rankings, classifications and outcomes measures are of great interest to us at this meeting, as we ourselves are now helping to bring them into being.

The objective of this paper is to explain and reflect critically on the emerging combination of outcome measures in research and other areas, global rankings, and institutional classifications in higher education. These are constituent technologies of what the paper defines as a global knowledge-status system, the set of institutions and process which assign specific values to knowledge goods and flows. They are shaped by the character of knowledge as an economic and cultural good, and implemented in a world-wide setting criss-crossed by institutional hierarchies and uneven relations of power between nations, languages and disciplines.

These developments are new for us and we find that the analytical tools we bring to bear on the explanation of system dynamics, diversity and hierarchy at national level are not adequate for global analysis. For example, the global setting differs in crucial ways from the imaginaries of the population ecology, resource dependency and institutional isomorphism perspectives outlined by Frans van Vught (2008, pp. 158-163). It is less bounded, linear and determined than these perspectives imagine. In the population ecology model, ‘the environment determines which organizations succeed and which fail’ (p. 158); but in the global k-economy the environment is unbounded in crucial ways – for example the offshore activities of universities are partly disembedded from national policy contexts and fully regulated neither by the home country nor foreign governments (Marginson and van Der Wende, 2007a). The global setting is constantly moving and its ontological potentials never seem to be exhausted (Marginson, 2008a). In many respects higher education organizations make the global environment, through their responses to the potentials of global spatiality, for example the Singapore hub strategy; the chain of off-shore campuses in Asia established by British and Australian institutions; and the

hyper-investment in higher education and research in China, where both the number of tertiary students and the number of scientific papers have multiplied by more than four times in just ten years (NSB, 2008; Li et al., 2008). As van Vught notes, resource dependency theory is superior to the population ecology perspective, in that it acknowledges the potential for an institution to influence its environment. But arguably, it still underestimates the scope for global creativity. A focus on isomorphistic behaviour within a closed game-frame also misses the full implications of global novelty, contingency and strategic innovation. Institutions and nations certainly engage in imitating behaviour in the global setting; for example in the cross-border trend to research concentration policy, and the widespread installation of technologies for calculating research performance; but they are less constrained by necessity than at the national level.

The next two parts of the paper provides a brief account of the political economy of knowledge, open source knowledge production and dissemination, and relations between open source and the commercial markets (part 2); and explain the fast developing knowledge-status system that has emerged to vector and stratify the different knowledge flows, consisting of rankings and other ordinal comparisons, outcomes/output measures, and classification systems (part 3). Part 4 notes that more than one combination of rankings, classifications and outcomes is possible, and poses some key policy questions. Part 5 reviews the actual systems of university rankings and comparative output measures, especially research rankings, and publication and citation measures, discusses institutional classifications, and brings in student learning outcomes. The final part 6 concludes the paper with a small number of suggestions about lines of action.

2. The perspective of the world

The k-economy and open source

The global knowledge economy consists of a mix of commercial production and freely exchanged knowledge goods. The term ‘global knowledge economy’ or ‘k-economy’ is not used in this paper to mean the whole of economic life, as a kind of post-industrial descriptor for this phase of capitalist development. Rather the term is specific to knowledge-related activities. These overlap with the financial and industrial economy at many points. K-economy activity is partly driven by commerce, more of it can be expressed in financial terms, and its significance for business enterprise is increasingly central to contemporary economies; but the global knowledge economy also has a cultural dimension which, while it often involves competition for status (Bourdieu, 1993), is by no means wholly reducible to the drive for economic wealth. Arguably, to understand the role of knowledge in economic growth we need to comprehend its *modus operandi*, which requires us to incorporate its cultural and social dimensions also, including the dynamics of open source knowledge, without precedent in human history. In this paper the term ‘knowledge economy’ is used in Fernand Braudel’s sense of ‘economy’, as a comprehensive container of knowledge-related production and distribution, containing within it identifiable bounded sub-economies and social systems; including the production of intellectual property, the status competition between universities for research rankings, and so on.

Arguably this broad usage of the term ‘knowledge economy’, tending towards the universal, is consistent with the political economy of knowledge itself. In their form as ideas and know-how and as first creations of works of art; that is, as original goods; knowledge goods have little

mass and their production is sustainable, requiring little or no industrial energy. It rests on donated human energy and time. Subsequently these knowledge goods can be copied, mostly with minimal resources, energy and time. The production of commercial digital goods is subject to scarcity but freely reproduced knowledge goods are not. There is no scarcity of knowledge goods as such. Their dynamic is hyper-abundance not scarcity, very different to conventional industrial production. Knowledge goods become further multiplied as they are disseminated. In the k-economy the production and dissemination of knowledge goods, the creation of communicative networks and the emergence of markets are all convergent processes. Whereas in the previous era the dynamism of capitalist development broke through the constraints of older modes of production, aristocratic traditions and bureaucratic order, in the knowledge economy there are two heterogeneous sources of dynamism: economic commerce and free cultural creation. Freely circulating knowledge goods blend by osmosis into the communicative open source ecology which is their medium of production, and multiply. Manuel Castells (2000, p. 71) explains the growth economics of networked association. The benefits of being in the network grow exponentially, because of the ever-expanding number of connections. The cost of each new unit addition to the network is constant. Total cost grows in linear pattern and the benefit/cost ratio continually increases. The rate of expansion of the network increases over time until all potential nodes are included. Hence the dynamism of open source ecology.

In the global knowledge economy, commercial trade in knowledge goods and knowledge-intensive goods is also growing rapidly, partly stimulated by (and stimulating) both cultural creativity and the new markets opened up by networked association. As Braudel remarks (1985, pp. 628-632), the genius of capitalist enterprise is that it finds a way to harness other things to its own project. So it is with free knowledge flows. Open systems constantly suggest potential new markets and devise contents which can be packaged in the commodity form. Industry annexes part of the communicative architecture for the same purpose. At the same time, the spread of world markets is not the only story, as it by no means exhausts the potential of open systems to throw up forms outside the circuits of economic capital, that flourish for their own sake and as Arjun Appadurai (1996) notes, are governed by less linear, more disjunctive motions than markets. Here the issue is not simply that certain ideas, messages and cultural artefacts are traded as commodities and others are not. Open source has larger meanings. The capacity to produce and exchange knowledge and cultural forms is very widely dispersed technologically. In principle the knowledge economy tends towards a near universal democratic experience constrained only by individual poverty and lack of technical-social infrastructure (and we are becoming increasingly aware of its exclusions). The dissemination of knowledge might eventually come to reach almost as far as trade and monetary exchange; and the capacity to produce knowledge goods, which is now in the hands of increasing numbers of school children throughout the world, is already much more widely distributed than the capacity to produce industrial goods. Because of Castells' logic the rate of growth of commercial knowledge goods lags behind the extraordinary expansion of freely circulating knowledge goods. In cultural terms the relative role of non-market exchange is growing. Culture thickens relative to money and is associated with immense new potentials for cross-border community and the formation of individual identity. These effects blend into wholesale transformation.

Knowledge goods

The hyper-abundance of knowledge goods suggests the term 'post-capitalist'. Economists grappling with the nature of knowledge have not used that term. In 1954 Paul Samuelson

systematized the notion of ‘public goods’, economic goods that are non-rivalrous and non-excludable and tend to be under-produced in commercial markets. Thirty years later Paul Romer developed endogenous growth theory to explain the economic role of knowledge and innovation, not simply as saleable intellectual property in its own right but in constituting conditions of production throughout an economy. Romer’s shift from static categories to mobile categories, with the potential to track not just the feedback effects of continuous technological change in growth but economic globalization, was a major achievement in the discipline. In the late 1990s Joseph Stiglitz argued convincingly that knowledge is close to a pure public good. Except for commercial property such as copyrights and patents, the natural price of knowledge is zero. Stiglitz also noted that a large component of knowledge consists of *global* public goods. The mathematical theorem is useful all over the world and its price everywhere is zero.

Samuelson and Romer, writing prior to the Internet, underestimated the fecundity of an open-source communicative environment and the indeterminate, arrhythmic, multidirectional potential of global knowledge flows. The characterization of knowledge as a public good does not quite explain the scale, fertility, flexibility and disorder of the open source regime. While economics has the tools to describe individual knowledge goods, it cannot comprehend a relational system, if ‘system’ it is, that lies partly inside and partly outside the conventional cultural industries, publishing markets and learned academies; let alone one in which exchange is often open-ended and populated by a strange public/private mixture of e-business and gift economies, with information flows that tend towards infinity. The implications for the theorization of commercial property in knowledge have yet to be fully worked through. Stiglitz was rightly interested in knowledge goods because of their commercial possibilities but his own argument showed that their commercial potential (unlike their cultural potential) was limited by the intrinsic nature of knowledge. Knowledge goods are naturally excludable at one moment, the point of creation. The original producer holds first mover advantage. This first mover advantage provides the only viable basis for a commercial intellectual property regime. The advantage diminishes and disappears once commercial knowledge goods are in circulation and become non-excludable. Any property regime that tries to hold down commodity forms at this point is entirely artificial. Copyright is not just difficult to police, it is violated at every turn and impossible to enforce. In China the traditional reward for academic publishing is not market royalties but enhanced status as a scholar. In India localized low cost copying, not commercial marketing, leads the dissemination of digital goods. These approaches to knowledge goods, simultaneously pre-capitalist and post-capitalist, are more closely fitted to the intrinsic character of knowledge and open source ecology. In the longer term they may become dominant.

Congruently, the OECD has swung the primary focus of policy on research and innovation in tertiary education from commercial intellectual property to open source dissemination. *Tertiary Education for the Knowledge Society* (2008) notes that tertiary education is fundamental to research and innovation systems via human resource development of R&D capabilities, and knowledge diffusion. What earlier policy often saw as a ‘failure to commercialize public science’ was in fact typical of innovation and emblematic of knowledge. ‘A common criticism of commercialization is it takes at best a restricted view of the nature of innovation, and of the role of universities in innovation processes’ (OECD, 2008a, incl. pp. 164 and 180).

The idea that stronger IPR [Intellectual Property Right] regimes for universities will strengthen commercialisation of university knowledge and research results has been in focus in OECD countries in recent years... countries have developed national guidelines

on licensing, data collection systems and strong incentive structures to promote the commercialisation of public research... Even though the policy issue of stronger IPR for universities is prominent, it contains a number of problems however. The most important of these is that commercialisation requires secrecy in the interests of appropriating the benefits of knowledge, whereas universities may play a stronger role in the economy by diffusing and divulging results. It should be remembered that IPRs raise the cost of knowledge to users, while an important policy objective might be to lower the costs of knowledge use to industry. Open science, such as collaboration, informal contacts between academics and businesses, attending academic conferences and using scientific literature, can also be used to transfer knowledge from the public sector to the private sector... there have been very few universities worldwide that have successfully been able to generate revenues from patents and commercialising inventions, partly because a very small proportion of research results are commercially patentable. In addition, pursuing commercial possibilities is only relevant for a select number of research fields, such as biomedical research and electronics (OECD, 2008a, 161-162).

Creating private knowledge goods remains an important secondary objective of universities in fields such as pharmaceutical research. However if too many breakthrough discoveries become tied up by IPRs rather than placed in open science; or creative work becomes over-managed, or destabilized; the spread of useful knowledge is retarded (OECD, 2008a, p. 174).

3. Ordering global knowledge

The value of public goods

The picture of the global knowledge economy presented so far is that of a mixture consisting of (1) expanding commercial markets in knowledge goods and (2) an open source ecology vectored by spatial complexity with disjunctive patterns, variable rhythms, apparently contingent innovations vectored by human imagining, and often unpredictable feedback effects. The term 'mixture' is preferable to 'compound', which would exaggerate the extent of integration of this heterogenous couple, commercial market and open source ecology. But the two domains intersect and each provide some of the conditions of possibility of the other.

In principle global exchange is open and the volume of traffic tends to infinity. Researcher agency is association rich and initiative rich, though it is time poor. (Hyper-increasing communicability taxes our creative and productive time; though the issue is blurred, for often we create knowledge goods in and via communications). But do knowledge and its companion information circulate freely from all quarters in a universal process of flat cultural exchange? No they do not. While knowledge flows freely and disjunctively in the open source ecology as Appadurai points out, much of it is also being channelled and shaped. This is true of open source flows of knowledge as well as its commercial forms, though the former is less stable.

The means of knowledge creation are pulled gravitationally into strong centres that secure a superior capacity for creation and dissemination and are able to claim formal authority in the k-economy. Knowledge flows are often one-way rather than two-way, being affected by the concentrations of economic, political and cultural power in certain cities and sub-national

regions; the locations of websites and web technologies, mega-computers, system hardware, switching stations and communication lines (Castells, 2001; Webometrics, 2008); languages of use (Linguasphere Observatory, 2006); the market power of knowledge-intensive industries, brands and products; the priority of academic disciplines. Nations, national systems and meta-national regions continue to matter. The USA is the leading global power in knowledge and higher education (Marginson, 2008a), overwhelmingly preponderant in research in the sciences and the English-language social sciences. The UK, other English speaking nations, Western Europe and Japan play secondary roles and the European Research Area is gaining traction. China, Korea, Taiwan China and Singapore are rising. Many nations are positioned on the periphery and edge of the periphery of the k-economy (Marginson and van der Wende, 2007a). In other words, while knowledge is mostly a public good in the economic sense and can be generated from anywhere, there is nothing inherently egalitarian about global public goods. Like public goods at the national level, and despite their universality of reach and (potentially) of access, on the producer side global public goods can be controlled by some human agents at the expense of others. One obvious example is the undue dominance of research in a single language, English. Here we find that in the k-economy, the systems and flows of knowledge are conditioned by, and tend to reproduce, global relations of power in other domains such as the economic, technological and political - though as with the flows of knowledge (though less so perhaps) these other relations of power have a degree of openness and are subject to change.

How do the chaotic open source flows of knowledge, which have no evident tendency towards predictability let alone to equilibrium, become reconciled with a world of national hierarchies, economic markets and institutions that routinely require stability and control in order to function? Global flows are not merely shaped and pulled by the stronger centres. Knowledge is structured and codified in research grant and patenting systems, research training; journals, books and websites; research centres and networks; professional organizations and academic awards. These processes of formal and codified academic and commercial knowledge, which at the global level are mostly led from the principal centres of power in the k-economy, exercise an (always provisional) authority in relation to the open source economy and are dominant where monetary transactions are involved. But the underlying question here is that given its public good character and the means of open communication, *how* is knowledge translated from the open source setting into formal processes and institutions, and in such a way that the formal processes secure coherence and often a controlling role within the global k-economy?

The contention of this paper is that in the k-economy knowledge flows are vectored by a system of status production that assigns *value* to knowledge and arranges it in ordered pattern. Whereas for a long time this formalization of the value of knowledge was itself a rather informal set of procedures – institutional ranks and journal hierarchies seemed to operate by osmosis in elite circles rather than being measured and rendered transparent and universal – in recent years we have seen the rapid emergence of more systematic and modernized processes. The new systems for assigning value to knowledge in the form of ordered status, classically in the form of league tables and other rankings, include university rankings in research, publication metrics, citation metrics, journal hierarchies, and potentially other ordinal outputs such as comparative outcomes of student learning. Some of them, for example the UK Research Assessment Exercise and the journal rankings systems by national government in Australia, are furthered by state regulation; but mostly they have originated in the publishing industries, on the Internet and in the higher education sector itself. These processes together constitute a bounded system in the form of a

quasi-economy. It could be termed a ‘global status economy’, but to avoid confusion with the larger global knowledge economy it is here the ‘knowledge-status system’ or ‘k-status system’.

The knowledge-status system

As noted the knowledge-status system takes the form of a bounded quasi-economy. It does not involve universal transactions but has some features of an industrial economy. It is vectored by competition for status, and status is subject to scarcity; though the dynamics of scarcity in the global k-status system differ in some ways to scarcity in the markets for industrial goods. This is zero-sum competition and there is a greater degree of closure. For example, in the ordinary operations of status competition, elite universities and other leading status producers find it relatively easy to protect themselves from displacement from below. Because of absolute limits to the volume of high value positional goods - for example, only ten institutions can be in the top ten institutions - they are protected from expansion in the number of elite producers. Once a university is installed in the top group it finds it relatively easy to reproduce its position. Status tends to breed both further status and the material conditions such as donations, research grants, and quality staff that sustain it (see the discussion of competition and ‘winner-take-all’ markets in Hirsch, 1976; Frank and Cook, 1995; Geiger, 2004; Marginson, 2004 and elsewhere). Here there is one qualification to the classical picture of status competition in higher education. That is the potential of global competition, concretized in rankings, to undermine the status hierarchy within national systems; both by diminishing the standing of leading institutions and providing strategic space for newer players to lever themselves upward via innovative global moves.

If the k-economy was an amalgam of solely commercial markets in knowledge goods, then there would be no need to devise a global k-status system for translating knowledge into ordered values. Market values expressed in prices would serve the purpose. However most knowledge does not and cannot take the commercial form because of its public good character. The outcome is two systems of value operating alongside each other in the global k-economy, sometimes intersecting and sometimes not: the commodity economy and the k-status system. To the extent that k-economy behaviours are incentive driven, the various institutions and agents are driven by one or both of the desire to accumulate financial resources, and the desire for status value or prestige. For those agents that intervene in the k-economy as another site for commercial enterprise the former motive is dominant, but it seems that only a minority of agents have this mindset, especially in research networks and the communications sector. More often the prestige motivation is uppermost, especially in the elite universities. Here finance is less an end in itself than a means to the real end, status. This preponderance of status objectives is evident not only in the priorities and strategies of university leaders, but of much of the open source production of knowledge and artistic works. The formalised k-status system extends to only part of the open source ecology, however. There is always a significant body of work whose status remains uncoded, with the potential to feed innovations into the formal domain.

What holds the global knowledge economy together is *not* uniform environmental conditions, as in a national higher education system. There are no common environmental conditions in an open source ecology, except those that are constructed. What gives form to the k-economy is these technologies of value creation: rankings, outcomes metrics (and potentially classification). The anarchic potentials of open source knowledge and global people mobility in the global k-economy; and the emerging arms race in investment in innovation and the growing stakes in knowledge power: this is a deeply unsettling combination. There is a close fit here between the

explosive expansion of open source knowledge flows, and the near universal enthusiasm for these new systems for assigning value to knowledge. The instruments of k-status play a vital role by filling the gap opened up by the emergence of the Internet, notwithstanding some disagreements about the detail and some qualms about the effects of these instruments. It must be added that in doing so they also place limits (incomplete) on what an open source knowledge ecology can do and this can temporarily limit our potential creativity. Perhaps in the face of such openness, novelty and complexity with all its dangers there is a deep human yearning for definition, simplification and closure. More concretely, it is in the interests of higher education institutions, national governments, publishing companies, scientific communities and many others to impose on the partly mapped terrain of the knowledge economy, where they can, their chosen method of ordering and their preferred scale of value. The emergent rankings systems and measures of outcomes reflect the combined and shifting effects of these forces. Inevitably the k-status system tends to reflect the status quo. It would be ineffective if it did not. The question is the extent to which it also secures closure and blocks upward institutional mobility.

In constructing a global competition between the leading universities and nations, the Shanghai Jiao Tong University research rankings locked into older assumptions about university status in which Harvard had long been the top institution. The Jiao Tong hierarchy, like that of the *Times Higher*, consists mostly of pre-1920 universities founded well before the Internet and the global knowledge economy, some dating back to before the industrial revolution. The new system of World's Best Universities is a recycling of the old 'reputation market' (van Vught, 2008) and rests on its remarkable capacity to recycle itself in stable fashion, thereby grounding the system of value creation. In other words, via research ranking and publication/citation metrics, a university status ladder largely dominated by the traditional Anglo-American leaders is installed as the engine of value in the global k-economy in modernized form. This index of value then becomes the means of interpreting the flows of post-market knowledge goods, distinguishing the solid, codified academic knowledge from everything else. It is also the means of attaching value to mobile agents such as researchers and doctoral students and graduates. It allows universities and R&D corporations to identify the most potent research bases and the high value mobile intellectuals and scientists, the producers of high volume status in the k-economy. It shapes research funding, general university funding, stratification between institutions, mergers and alliances, behavioural incentives and the determination of careers. With past performance ('track record') installed at the centre of these systems, reproduction is further stabilized.

Antinomy of the k-economy

Now in the global knowledge economy the modus operandi of status competition is distinct from that of open source ecology per se. Ivy League status is pre-capitalist; open source is post-capitalist. Status competition is framed by absolute scarcity and zero-sum distribution; open source ecology is characterized by hyper-abundance and dissemination without limit. Status is bounded and never fully contestable and the elite layer of producers is almost closed. While status competition fosters closure, for example the concentrated minaturization of production (for example maintenance of a highly selective student body) in order to enhance value; open source ecology sustains openness, its borders are porous and flexible and it continually moves into new areas of activity in response to demand, supply and imagining. The price of status goods rises proportionately with status; while regardless of their use value, the price of open source knowledge goods not captured by status is zero. Status rests on reproductive authority; open source production and dissemination are driven by the merit of the cultural contents. They

could hardly be more different worlds. Nevertheless they have come together; and the relation between them, which vectors the k-economy, is not so much a contradiction as an antinomy.

Here it is striking how the motor of the open source ecology has lent itself to the formation and evolution of the global k-status system. The value of knowledge is not simply bedded down by fiat, and it would be inaccurate to characterize the evolution of the k-status system simply as a process of pushing all this new creativity back inside the old containers. As well as a process of translating open source knowledge into the inherited configuration of power, the k-status system is a process of translation of the older status hierarchy into the Internet age. And like all mass media the Internet is a formidable engine in building status. MIT placed its courseware online knowing that the value of the MIT degree would be enhanced rather than diminished. Harvard Faculty of Arts and Science placed all its articles in the public domain on the Internet. In doing so Harvard undermined the copyright protocols inherited from the manufacturing era and endorsed open source knowledge. But Harvard also strengthened itself. With all university websites on the Internet even the reproduction of university status, which was once such an exclusive and untouchable operation, assumes the flakey sense of everything-everywhere and popularity-driven messaging that characterize the medium. Venerable gothic institutions begin to look like celebrities (while evading the boom-bust cycle that is typical of celebrity culture!). The web identity of Harvard can be instantly appropriated by all at the click of a mouse. The University itself remains dreamlike, alluring and a little out of reach, like all virtual places.

The global k-economy order thus defined rests on the imaginary of a single and transparent circuit of knowledge. Yet there are many circuits of knowledge. Knowledge flows are manifest in different cultural fields, language groups and other human communities; their spatiality is mobile and complex, criss-crossed by linkages and punctuated by breaks and islands. The global k-status system could never constitute a complete coverage and outside it there are spaces for varied and alternative communities of practice, especially in languages other than English and in particular geographic regions. But there is no denying that it has reach. What ranking and the associated performance technologies have done is shape a dominant circuit of knowledge, the production and circulation of codified academic knowledge in the sciences, by representing it as the 'only possible' circuit. It is true that it is the only circuit in which value is assigned to knowledge in the form of university-mandated status. This enables external parties, not themselves involved directly in knowledge production and dissemination, to make sense of the global k-economy. It guides the funding and selection of knowledge goods. It provides points of strategic purchase for policy makers and private investors. Its indicators can guide investments in innovation and keep the score in global competition in the k-economy.

In sum, in the face of the novelty, contingency and complexity of open source knowledge a group of instruments have been developed that apply definition, simplification and a degree of closure. These are systems for making and distributing knowledge status as a quasi-economic value. They create bordered fields, a scale of order and a standard of value. These systems have emerged very quickly and secured a remarkable degree of consent; and they are becoming increasingly comprehensive. Much rests on their particular forms which is what shapes their effects in and through higher education and their other policy, social and economic meanings.

4. Some key questions

Impact of rankings

It is little over half a decade since the first release of the Shanghai Jiao Tong University research university rankings on 28 June 2003 (SJTUIHE, 2008). The *Times Higher* (2007) rankings are only four years old, the Webometrics (2008) rankings of institutions' presences on the Internet are younger. The first comparative research ranking by the Higher Education Evaluation and Accreditation Council of Taiwan (HEEACT, 2008) was in 2007. The two main systems for calculating publication and citation, Thomson-ISI and Elsevier-Scopus, are also very recent, especially the latter which commenced in 2007. Like national ranking by the *US News and World Report* (2007) the Carnegie classification of institutions in the United States has a longer history. The classification of higher education in China is recent and a European-wide system is still on the drawing boards, as is discussed below. Nothing like a global classification system has yet emerged but the two main research ranking systems (Jiao Tong and Taiwan) constitute de facto classifications of the worldwide research university sector.

The recency of these global systems underlines the speed and depth of their adoption. Research by Ellen Hazelkorn (2008) for OECD demonstrates that the new body of comparative information, especially institutional rankings and research output metrics, has rapidly become installed in the perspectives, performance measurement systems and objectives of both national governments and higher education institutions; and is entering into the funding decisions of corporations, philanthropists and donors. Hazelkorn surveyed and interviewed institutional leaders in 41 countries on their response to university rankings and league tables. Almost universally, respondents testified that 'rankings are a critical factor underpinning and informing institutional reputation', affecting applications, especially from international students; university partnerships; government funding; and the employer valuation of graduates (Hazelkorn, 2008, pp. 197-198). Most university leaders had set in place strategies and systems to lift rankings, especially the Jiao Tong position. Only eight per cent of respondents stated they had taken no action in response to rankings (p. 199). Hazelkorn notes that many institutions had stepped up data collection on research and were monitoring the performance of comparator institutions also. Some universities had 'taken a more aggressive approach, using rankings as a tool to influence not just organizational change but influence institutional priorities' (pp. 199-201). Strategic attention has become focused on the constituent elements that constitute the Jiao Tong ranking, for example by recruiting Nobel Prize Winners and HiCi researchers, and awarding incentive funding for the publication of articles in the most prestigious journals.

In their study of the effect of rankings in student application behaviour, Rod Gunn and Steve Hill find that in the early period after the introduction of league tables in the UK, 'the higher the league table position the faster the growth in [student] applications' (Gunn 2008, p. 273), though the effect was mainly felt in newer and lesser status universities rather than the better known ones. The association subsequently weakened, but the lesser status institutions remained vulnerable to large swings in student applications. If rankings have a larger effect in less well known institutions, this draws attention to their potential in the global market for students where they are likely to be more important than in national markets due to heightened information asymmetries. Likewise, market research in Australia suggests that global rankings provide an

important source of data for potential cross-border students, especially in relation to institutions and nations other than the US research sector and the leading British universities.

In national policy, research rankings appear to generate a tendency to favour policies of concentration through selective research funding or institutional merger. Among developments along these lines are the Exzellenzinitiative initiative in Germany, and the discussions concerning a large-scale merger program in France. In the first Jiao Tong ranking in 2003, the University of Manchester in the UK was placed at 89 and the University of Manchester institute of Science and Technology was at 201-250. Following a merger of the two institutions and their research, the University of Manchester climbed to position number 48 in the Jiao Tong table in 2007.

However the emergence of a formalized k-status system; with the capacity to shape and order the global knowledge economy and more effectively connect higher education and research to society, economy and government; raises many questions. Some will be now considered.

Shaping of the global k-economy

What will be the world-wide coverage of this formalised part of the k-economy and who will be excluded? Most governments and all research-intensive universities want data that reference their institutions in relation to the global knowledge system. But the k-status system fails to provide all nations with a valid global reference point that can be used constructively in a reflexive manner to shape self-determined local and national system development, aside for development that is exactly modelled in the terms of the k-status system itself. This may accord with national policy if the intention is to compete successfully on the established terms, but it will not favour a diverse and plural k-economy unless the k-status system is opened up.

A key difficulty with nearly all of the existing rankings and output metrics is that they tend to subordinate or exclude institutions where the primary language of use is other than English. The indicators of the k-status system provide an accurate rendering of the relative global position of those institutions within the terms of k-status competition itself. But as noted this is a bounded competition-game that excludes certain knowledge and under-recognizes other knowledge. It provides a misleading picture of the volume and quality of knowledge production in those institutions, and also reinforces the tendencies towards an English-language monoculture in the open source conversations outside the formal research system (Castells, 2001). The distortion is relatively mild in relation to those universities located in non-English speaking countries that are predominantly focused on the hard sciences where publication has long been largely in English. It is greater in relation to fields and institutions where national language is the primary medium, such as the humanities and parts of professional and occupational training. In addition, research-focused measures will always tend to exclude from the map of the global sector those institutions that are primarily focused on objectives other than research, including teaching and occupational preparation. This may include high quality second sectors with a vocational bent.

This suggests two meta-policy issues for consideration that go to the horizontal and vertical shaping of the global k-economy. The first issue is the extent of horizontal variety that is encouraged, or at least permitted, by the k-status system. The second issue is that given the vertical differentiation of institutions and nations on the basis of performance, a differentiation manifest in league tables, what is the scope for upward trajectories on the basis of merit? And combining those issues, and given the fecund potentials and ontological openness of the global

environment, what is the scope for both a different mission template *and* upward mobility; that is, what is the scope for successfully changing the rules of the k-status system?

Self-determination and diversity

Expanding on the first issue, do global rankings, classifications and outcomes measures sustain national identity and institutional autonomy? All comparisons install an element of heteronomy. They are external to each individual institution and on the global scale they are external to each national system. Given the ubiquity of the take-up of global rankings by media and government, leading institutions in most if not all nations find it difficult to evade rankings, though they may have legitimate reasons for questioning the applicability of the particular comparisons and measures to their national or local context. As Hazelkorn's research confirms, global rankings place pressure on institutions to improve the performance according to the criteria that compose the index of comparative performance. As noted, where an institution's profile of activity or priorities differs from that of the k-status system, there is pressure on it to change its objectives and patterns of activity. The pressure might be informal, sustained by desires for prestige and high quality academic faculty and doctoral students, or for fee-paying foreign students aware of rankings. Or the pressure might be mandated as a performance requirement by public authorities, who want to lift the measured global position of national institutions.

Here the issue is not simply the fact of heteronomy. Few higher education institutions, and no public institutions, claim to be their own exclusive point of reference. Externally-generated performance requirements are a fact of life almost everywhere. The issue is the content of the heteronomy; and the extent to which this becomes problematic for institutions and/or systems is determined by the distance between the norms integral to the global comparisons and the norms of the national system and sub-sector. For example, if the research-intensive universities within a national system are already oriented to publishing for ISI journals, *Science* and *Nature*, and a high proportion of academic staff are research active in the disciplines included the Thomson- ISI publication and HiCi researcher counts, those parts of the Jiao Tong ranking replicate the local academic culture and function parallel to an internal process of outcome measurement or quality assessment. In that circumstance, the Jiao Tong rankings may imply little change to the institutional and academic cultures. As noted, these conditions are fulfilled by leading Anglo-American research universities, and to a lesser extent the major research universities in Western Europe and East Asia. The further an institution from that institutional template, the more potentially transformative the Jiao Tong research rankings. Institutions that claim prestige at home but have substantially different profiles to the Anglo-American high science institution - for example the comprehensive national universities in Latin America, the second sector in Germany, the specialist management institutes in India, can only engage with full effectiveness in the Jiao Tong rankings by changing their identity. But from the viewpoint of national policy there might be good reasons not to later the mission. This suggests a potential conflict between the national division of labour between sub-sectors and the national desire for stronger globally recognized performance. Further, where rankings predominantly emphasize high science missions they may trigger a tendency to 'academic drift' in sub-sectors with different missions, underlining the need to accompany rankings mechanisms with classification systems in order to sustain diversity within national systems (see below). Arguably also, in undermining the scope for specialized institutions, rankings favouring comprehensive missions such as the Jiao Tong or *Times Higher* tend to reduce the potential flexibility of the higher education sector.

In sum, rankings and outcomes measures contain an instrumental potential for homogenization and standardization, and some loss of local and national control over institutional mission and identity, that works to reduce diversity within and between national systems. In national systems the potential sources of homogeneity are government policies, academic cultures and market competition (Meek, et al., 1996; van Vught, 2008). In global rankings homogenization is primarily associated with competition; though in some nations the effect may be reinforced by government support for external referencing and academic cultures that is congruent with the rankings template. The potentials for reduction in diversity and identity, even the exclusion of some institutions from view, are enhanced when there one dominant rankings system with a uniform template. One concern is that in gaining standing at the national level, a dominant system of global comparison may even start to reshape institutions without global ambitions. Another concern is that the pressure to follow the pre-given global templates, based on the long-standing leaders of the higher education sector, may tend to diminish the capacity for strategic innovations that explore the much more open possibilities offered by globalization. These pressures are modified and reduced when a broader set of comparisons and indicators are in use. The impact of the pressures is narrowed to the extent that there is a substantial proportion of activity within single institutions, or sub-sectors, which is quarantined from global comparison.

Merit-based trajectories

Expanding on the second issue above, to what extent do the instruments of the global k-status system permit upward mobility of institutions and of systems? Will ranking systems and output counts merely reproduce the pre-given hierarchy of nations and institutions? Will there be room for meritocratic changes linked to performance? The degree of openness to merit in competitive systems determines whether competition drives a general improvement in performance; or is confined to a zero-sum game in which the the starting advantages of the top institutions are continually reproduced. Here there are questions of comparative methodology and questions about the template of institution on which the methodology is based. As noted the extent to which the template is modelled on forms of institution dominant in particular national systems, institutions from those systems enjoy an advantage; and other institutions will need to move close to the template to enjoy an equal capacity to compete. On the question of methodology, where rankings are based on reputational surveys, as in half of the *Times Higher* index, this sets in train a circular process whereby rankings drive survey outcomes drive rankings, and so on. This kind of reputational recycling is explicitly non meritocratic. There can be a significant lag between changes in performance and changes in reputation; and if the reputational dynamic is strong a marked deterioration in performance may be concealed. The same comment applies to measures based on the extent of student selectivity or exclusion. These, too, readily become circular in effect. This is one of the weaknesses of the *US News and World Report* rankings which in part draw on selectivity measures. As Gunn and Hill remark:

.. many of these components [of a league table] can become part of a self-fulfilling cycle... a university may have high application rates because of its league table standing, and high league standing because of its application rates. Hence various components of the league table ranking may have very little to do with the real performance of the university, that is, the quality of the learning experience provided (Gunn and Hill, 2008, p. 274).

It is inevitable that global comparisons will shape the reputation of institutions. The issue is the basis of reputational judgements, whether they are driven by past reputation or by k-economy fundamentals. Notwithstanding the circular reproduction that typifies status markets, continuous ranking suggests that this form of reputation making should be always open to challenge on the basis of performance. In the context of the world-wide trends to globalization and heightened external engagement of institutions the demands on institutions are evolving more rapidly than before (Marginson and van der Wende, 2007a; OECD, 2008a). Reputation is a weakening guide to future capacity and potential at the global level. The more that is known about real outcomes and outputs, at the discipline level as well as institution, the less opaque and the more grounded the determinants of reputation; and all else equal, the more space is opened up for new players. This is a crucial issue that touches nearly all other aspects of the system for valuing knowledge.

Engaging with stakeholders

Will the k-status system, in conjunction with open source flows of knowledge, strengthen the contribution of higher education institutions to society and economy? The public policy virtue of rankings, classification and outcome and output metrics is that when done well, they provide a mapping of higher education institutions that is both comprehensive and simplified. This makes the sector more transparent and more accessible to potential partnerships and requests for knowledge transfer from business and the community. At present this is most useful in relation to research where the present metrics of comparison are at their strongest. But there are questions about whether the data currently provided are optimal or useful for all the potential 'stakeholders'. The dominance of research data in the global k-status system, as it has evolved thusfar, mean that the comparisons are most useful for those that source R&D capacity and the other outcomes of university research systems. Those same data are largely unhelpful, and potentially misleading, for prospective students primarily concerned about graduate outcomes, teaching and learning (Dill and Soo, 2005). While the multiple comparisons of academic programs and student services by the Centre for Higher Education Development (CHE, 2007) in Germany provide useful data concerning the educational experience; the Jiao Tong and Taiwan research rankings do not. Nor do the *Times Higher* rankings, which contain no data about teaching or the student experience of programs. The extent to which the Jiao Tong and *Times Higher* are cited in guides to student choice-making is surprising. In part this reflects the absence of data that incorporate information on teaching and learning into an ordinal league table. It is doubtful if it is possible to express the outcomes of teaching programs at the same level of precision as can be used for comparisons of research performance, but league tables remain the form of comparison that is easiest to understand and carries the most public weight.

To what extent do measures of research performance provide useful indicators of research capacity for business and industry? Performance measures are proxies for measures of capacity. Again there is a problem of lags, for example in relation to the Thomson-ISI publication and citation data used in the Jiao Tong rankings, much of which is at least a decade old (in the case of data on the location of training of past Nobel Prize winners the lag is much greater). Having said that, university research capacity tends to be path dependent and normally changes slowly, suggesting that the proxy measures of the Jiao Tong or Taiwan type are useful, always provided that they are understood to refer to capacity in basic and strategic basic research, not in the production of commercially useful knowledge. There is a potential relation between university research and research useful in industries but the relation is field dependent and not automatic.

To what extent do the k-status instruments assist the fulfilment of social agendas such as the contribution of higher education to expanding equitable access to opportunity, or to regional economic and social development? The short answer is that they do not. Useful systems of cross-country comparison have yet to be developed in these areas. As noted in Appendix 3 of *Tertiary Education for the Knowledge Society*:

With respect to progress and completion of tertiary education programmes, a number of countries lack information on student retention, dropout, progress, completion and time needed for completion disaggregated according to the background of students to give insight into equity issues once students from disadvantaged groups are enrolled in tertiary education (OECD, 2008a, p. 198).

In the longer term it should be possible to compile comparative cross-country data in relation to the participation and graduation rates of lower socio-economic status groups and non-dominant ethnic groups. More complex descriptors of the external contribution, such as the transfer of research to industry, or the effect of professional and occupational training in regional economies, elude inter-institutional comparison at this stage. Many of the external effects of higher education, for example occupational training, leak across national borders and it would be necessary to measure the global as well as national/local effects.

Creativity

A final but important question is about the effects of global comparisons in research and scholarship. Is the emerging k-status system consistent with self-determining intellectual freedoms (Marginson, 2008b)? Will it tend to foster or retard path-breaking innovations? The extent to which performance management in research drives path-breaking intellectual innovations, as distinct from high quality work and from innovations in the application of knowledge, is debatable. Not all path-breaking innovations gain early peer recognition and some are sidelined precisely because they challenge established ideas. One danger is that an emphasis on maximizing the volume of high quality work, so as to augment the position in citation metrics and rankings, may drive a higher proportion of inquiry down more predictable and less risky intellectual pathways. Perhaps scholars and researchers are more likely than before to work to the academic opinion market and less likely to overturn received wisdom. The heteronomy in external comparisons with normalizing effects carries dangers for agency freedom. Rankings and publication/citation metrics are potent administrative technologies with the capacity to shaping academic careers at the point of hiring and promotion. This may be too pessimistic. No doubt for many researchers and scholars, rankings and research performance metrics do not matter. They shut them out and pursue their intellectual agendas regardless. But the effects in the processes of the imagination are worth empirical investigation. The effects are probably slight in well ranked institutions, where performance is driven more by internal peer cultures than extrinsic measures, and the ranking position is largely unproblematic.

Another problem is that the categories used in performance data collection, such as research output in disciplines; may inhibit innovative forms, for example inter-disciplinary inquiry.

The larger issue is the effect of the formal k-status system in relation to open source knowledge production which generates many of the ideas driving formal recognized research performance. As suggested in *Tertiary Education for the Knowledge Society* (OECD, 2008a) an undue focus

on short term indicators of competitive performance and on top-down systems for driving knowledge can inhibit open source potentials or weaken transfers between the open source domain and the formal research sector. This is another crunch issue. It is more difficult to solve than the problem of meritocratic trajectories, because while the latter can be addressed by tweaking the internal dynamics of the k-status system, the potentials of open source creativity require us to limit the hold of the drivers of the k-status system itself. Here again a more plural and more complex set of indicators can open space for diverse and innovative activity. The larger solutions lie in fostering robust agency freedoms among creative personnel; and in the organization of knowledge work, foregrounding the imagination (Peters, et al., forthcoming).

5. Constituents of the global system

Institutional rankings

Through the Shanghai Jiao Tong University Institute of Higher Education ‘Academic ranking of world universities’, a top ten university from China which initially placed itself in the band 400-450 was able to secure the role of global status arbiter. The exception is the American sector which continues to be vectored by the *US News and World Report*. Nevertheless, the Jiao Tong ranking is more coherent and defensible than *US News*. The Jiao Tong Institute has been able to relativize all of the world’s universities by developing a superior technology of comparison. It eschews opinion based market research techniques in which reputation recycles reputation, opting instead for census-type sociology and economic output modeling. There is a medium degree of complexity in the methodology, while it is also user-friendly: each university receives a single ordinal number at the end and the resulting league table is instantly comprehensible, notwithstanding the complex issues of contextual interpretation that are concealed beneath the data. The Jiao Tong group argue that the only data sufficiently reliable for ranking are broadly available and internationally comparable data of measurable research performance (Liu and Cheng, 2005, p. 133). The data are transparent and the sources known; Nobel Prize winners, leading researchers by citation, the number and quality of citations and publications, and performance per academic faculty. These data are beyond easy manipulation by universities or by governments with a vested interest in their national systems, though some manipulation is possible, for example in relation to academic staff counts. Because research performance is measured in several ways it is difficult to dismiss all of them, strengthening the standing of the ranking. The Jiao Tong team has made it clear that it is prepared to fine-tune the rankings on the basis of valid proposals for more accurate measures, and is uninterested in special pleading.

In retrospect we can say that the characteristics of the Jiao Tong ranking derived from its purpose, which was to help guide China’s national policy of accelerated investment in R&D and assist Chinese universities in navigating an upward trajectory through the established global science system which was and is seen as foundational to national performance in the global k-economy. Hence the methodologies are both meritocratic, in that they focus on measured performance rather than reputation per se; and reproductive, in that they the install English-speaking comprehensive science-based university as the template for comparison. With the United States seen as the k-economy benchmark the model is the U.S. university. This model has also shaped reform of the research university sector in China, which has been shifted away from the old Soviet model of specialized research and professional institutes. Thus the Jiao

Tong ranking creates more space for new players than does the peer ranking in the *Times Higher*, but initially it favours the inherited hierarchy and the hegemonic United States system.

The limitations inherent in the Jiao Tong ranking are now widely understood. The use of the Nobel indicators was always problematic; the Prizes are too scarce and too open to politicking to constitute a representative body of stellar scientific work. But the Jiao Tong group cannot readily set aside these indicators, comprising 30 per cent of the index, without compromising its longitudinal comparisons. However it could produce two sets of rankings, one with the Nobel indicators and one without them. A second problem is the use of a composite index based on arbitrary weightings. While league tables based on composites are compelling (and regardless of the ways social scientists such as the Jiao Tong group handle their own data it is probably impossible to stop parties such as media companies from comprising such tables where they can), it would be better for the Jiao Tong group to place a greater emphasis than it does on comparative performance in relation to the specific areas of data collection, such as publication, citation and research output per head. Each indicator has distinct meanings for measures of value in the k-economy, and for policies of innovation and performance improvement. The Jiao Tong research group took an important step forward when it provided disciplinary indicators in five groups in 2007. It is highly desirable for the group to extend its collections to include the humanities and also languages other than English, as it has indicated that it wants to do.

Despite the limitations of the Jiao Tong exercise, and the inevitable misuse of the data as signifiers of ‘best universities’ for heterogenous purposes such as teaching or international education, we should not lose sight of the achievement. The Shanghai Jiao Tong University Institute of Higher Education established focuses on real outputs, and transparent and accurate data collection, as essential to the measurement of comparative research performance. This provided a platform for the further development of research measures and rankings elsewhere, and a set of data able to sustain the k-status system for assigning value in the k-economy.

The initial impact of the *Times Higher* ranking was considerable, especially in relation to the global market for students which shaped its indicators of reputation and internationalization. However the *Times Higher* ranking has lost ground because of its methodological weaknesses: and the Anglo-bias and flaky, inconsistent ranking patterns below the top 20 universities that have resulted from those weaknesses (Marginson, 2007). Further problems include the claim of the *Times* to provide a comprehensive ‘best universities’ ranking while using a quantitative indicator, staff numbers, as proxy for the quality of teaching and learning; and the incorporation of research performance as just 20 per cent of the index (*Times Higher*, 2007).

The Webometric (2008) rankings of universities is based on the volume, visibility and impact of university presence on the Internet, in academic publishing and courseware. Despite the adventure into the open source setting, like the Jiao Tong and the *Times Higher* the Webometric rankings are again expressed as a league table of stand-alone universities. Not only does Webometrics draw on the older ideas about university status, it also conceives intellectual production in pre-Internet terms, failing to incorporate relational behaviour in consortia, other networks and individual scholarly activity. Volume measures such as number of web pages are unable to discriminate between on one hand a nominal or one-way web presence, and on the other hand a dynamic, interactive and influential web presence that shapes the field; and they are unable to pinpoint either the leading new ideas or innovations like social network

technologies. The results of the Webometrics ranking do not diverge markedly from those of the Jiao Tong, though the U.S. universities are even more dominant in Webometrics.

Metrics of research output

The Jiao Tong indicators advanced the development of bibliometric indicators of research and citation output, including impact measures and incorporating judgements about the centrality and quality of field-specific journals. The field of data compilation now involves two major publishing houses and researchers in many nations that specialize in science and k-economy indicators. In 2007 Leiden University in the Netherlands announced a new ranking system based on its own bibliometric indicators, using four rankings of institutions: publication numbers; average academic impact measured by citations per publication; average impact measured by citations per publication modified by normalization for academic field, that is, controlled for different rates of citation in disciplines; and the previous measure further modified so as to take institutional size into account (CWTS, 2007). The last measure is described as the ‘Crown Indicator’. Leiden dispensed with the Nobel indicators, the least credible aspect of the Jiao Tong, and the counts of leading researchers. More strikingly it also set aside the use of a composite indicator dependent on arbitrary weightings between different aspects of performance. Initially the Leiden bibliometric indicators were applied only to universities in Europe. The Leiden Crown Indicator is the best so far for comparative judgments about research performance in the sciences and quantitative social sciences. It shares with all such metrics a tendency to block recognition of innovations in field definition and new journals.

The Higher Education Evaluation and Accreditation Council of Taiwan developed a more Jiao Tong-like comprehensive measure of research performance in 2007, preparing its own world’s top 500 in league table order (HEEACT, 2008). Like Leiden it dispensed with Nobel indicators and the list of leading researchers. Compared to the Jiao Tong, the Taiwan measures utilize a larger number of single measures of publication and citation quantity and quality, including some data collection from the two years prior to publication, more recent than the Jiao Tong data. This also allows a comparison between short term and longer term research performance. Using the short term measures the United States’ universities seem to do even better while the position of most UK universities declines. The Taiwan exercise is welcome because it provides valuable data for policy purposes and may encourage a further evolution and pluralization of research performance measures. In the outcome the Taiwan hierarchy is not very different to that of the Jiao Tong. The same universities do well in most research ranking systems that reflect criteria for determining status that emerged prior to the k-economy.

Institutional classifications

Classifications constitute an indispensable move in the direction of diversity. In addition to the established systems of classification in the United States, Canada, China and other national systems, a system of classification is currently being developed for the 3300 higher education institutions in the European Union and approximately 4000 in Europe as a whole (Bartelse and van Vught, 2007, p. 9). The number of institutions, and students, in Europe is broadly similar to those in the United States, where there are 4194 institutions (Eckel, 2008, p. 175) though there are more diverse traditions and practices in Europe than in the U.S.

As van Vught emphasizes, classifications help to enhance the benefits of rankings and minimize their downsides (see also van der Wende, 2008):

If we wish to maintain and even increase the diversity of higher education systems, we will have to develop different ranking instruments in which different forms of institutional performance can be compared. We should design multiple ranking instruments that enable us to make inter-institutional comparisons per category or type of institution. In order to create higher levels of diversity in higher education systems, we therefore need to develop typologies of higher education institutions. In these typologies (or classifications) the diversity of institutional missions or profiles should be made transparent, offering the different stakeholders a better understanding of the specific ambitions and performances of the various types of higher education institutions (van Vught, 2008, p. 21).

Classifications can advance institutional and system transparency for business, government and students; facilitate mobility, especially cross-border student investment in foreign education; and provide an additional set of regulatory tools (Bartlese and van Vught, 2007). National or European classification systems need to be relatively stable, while also being subject to periodic review with potential for mobility into a new category as environmental circumstances change, or on the basis of a compelling case for formalization of a new mission.

One challenge is to establish a meaningful system of institutional classifications on the global scale. At that level the ordering function of classifications, their capacity to shape mission, is negligible because institutions are not subject to global governance. Global classifications would be merely descriptive, and their accuracy would need to be regularly monitored. No doubt the placement of institutions in categories would tend to reflect the prior decisions of nation-state authorities, at least in relation to public institutions. As noted the Jiao Tong and Taiwan rankings have established a de facto category of research intensive universities. This category can be built in two ways: on the basis of publication metrics and other evidence of research output; and/or on the basis of national system designation, that is by potential mission rather than historical performance, which creates more room for potential newcomers. Defining a category of second sector, specialist ‘technical’ or industrially vocational institutions is a more difficult problem because it involves individual many institutions that are globally invisible, and variation between nations in the mission. This would need to await the completion of the European process, which faces the same issues.

The virtues of classifications should not be overstated. They are modified when there are strong homogenizing and mimetic dynamics at work, as in the United States. At worst, however, a system of institutional classification is associated with homogenization effects within each separate domain rather than in one single domain. This not only enables greater diversity across the higher education sector, it provides a means whereby national authorities can continue to shape missions and the division of labour between them; that is it enhances national self-determination within the global order. It also has the potential to strengthen the agency of the non research-intensive sector. It also spreads the potential for high performance on a national and global scale, by modifying the tendency of single mission systems of comparison to dramatically bifurcate systems between a small number of ‘winners’ and a long tail of ‘losers’.

One feature of classification systems that is little noticed is that in regulating mission drift, they may strengthen the de facto protections that the mechanisms of status competition already

provide to the elite university sector. Traditional dominance is easier to sustain when some potential competitors are arbitrarily removed from the equation. Here public regulation designed to safeguard diversity can introduce meritocratic closure. However it is impossible to altogether avoid the use of a classification system as a de facto hierarchy of institution, that is, as an arbitrary ranking system. To some extent the public interpretation of classifications lies outside the control of the higher education sector and of state or civil authorities with responsibilities in the administration of higher education. But classifications have the singular virtue of focusing attention on missions, even while homogenizing mission within each classification. All else being equal they are likely to encourage public authorities to sustain a stronger resource regime in non research-intensive institutions than would be otherwise the case. This has particular significance for primarily vocational and occupational institutions.

In turn this raises the question of the appropriateness of cross-border comparison for second sectors such as vocational universities and polytechnics, not to mention ‘third sectors’ such as community colleges. As noted some non research-intensive institutions have nothing to be gained from global comparison. But employment in many fields is becoming more globalized, and the case for treating vocational sectors as exclusively local or national in orientation is weakening. Here the appropriate comparison may not always be the global one. For example in the second sectors in Europe it may be other European or the Mediterranean institutions. In the case of community colleges, comparisons between the United States and Canada are appropriate given the strong mission resemblances and the scope for movement across the common border. Likewise all sectors in Australia are readily comparable with those of New Zealand.

Learning outcomes

The potential importance of comparative measures of learning outcomes, now emerging in the OECD Assessment of Higher Education Learning Outcomes (AHELO) project, can hardly be overstated. It is foreshadowed by the world-wide reception given to the PISA data on school achievement (OECD, 2007), and the shaping influence of the Jiao Tong research rankings. Comparative measures of student learning in tertiary education are an obvious gap in the apparatus of policy instruments and a frontier issue for the sector. If established on a credible and comprehensive basis, and communicated well, such measures could be expected to become important to prospective domestic and foreign students, employers and investors in higher education, not to mention governments focused on national capacity and the competitiveness of national k-economies. They would address a major weakness in the present k-status system, which is the undue domination of research-related metrics, in that these tend to be used as proxy measures for teaching and learning quality. Dill and Soo note that the bulk of research into higher education finds no necessary connection between the quality of teaching and learning, and the quantity and quality of research: ‘Empirical research . . . suggests that the correlation between research productivity and undergraduate instruction is very small and teaching and research appear to be more or less independent activities’ (Dill and Soo, 2005, p. 507).

As such measures of learning outcomes would become crucial to the status position of institutions. If comparative data on learning outcomes become turned into league tables – neither the OECD nor its member countries are likely to favour this but it would be difficult to stop altogether, just as it would be difficult to stop composite ‘research and teaching’ league tables from being prepared – then in the determination of k-status, a specific global ranking on the basis of learning outcomes would be only slightly less important than the existing research

rankings. While the research mission would continue to be seen as the main signifier that distinguishes elite universities from other institutions, and would therefore retain the premier role in determining status, the foregrounding of learning outcomes would provide the leading institutions with a motivation to compete for primacy on that terrain also. AHELO is likely both to emphasize the claims of those institutions that position themselves as doyens of synergistic Humboltian leadership in research and teaching simultaneously; and also to encourage some bifurcation between the two missions, as alternative routes to institutional primacy. In the longer term such developments are potentially transformative of the sector and its relations with society and economy, in the national, meta-national regional and global dimensions of action.

The present assessment of learning outcomes in the OECD countries is diverse and partly rudimentary (Nusche, 2007). There are numerous issues to address (OECD, 2008b; 2008c). These will be canvassed elsewhere in the conference. A few brief remarks are made here.

One issue is the question of units of measure. The strong argument for conducting assessment on an institutional basis as with the Jiao Tong research rankings, rather than a national basis as with PISA, is that the institution-centred approach is consistent with institutional autonomy and academic freedoms, including the self-accrediting character of universities in some countries. At the same time, if individual institutions are the site of data collection, rather than national systems, then it is likely that the institutions will nevertheless become understood, albeit informally, as representative of national systems. If so this could be particularly significant in the market for cross-border students. This might in turn raises questions about the identification of institutions for inclusion in data collection and the capacity of the process to encompass internal national variations in mission and standards. If so this will inexorably propel the assessment of learning outcomes towards inclusion of more institutions in each system, without solving the problem of selection. That could only be effectively addressed by establishing a comprehensive assessment regime, using a structured sample. As with PISA this would allow intra-national variation to be tracked alongside average and high achievement. Note that measures of intra-system variation would require a standardized classification system.

A second issue is the breadth of inclusion of nations. AHELO assessment of student learning outcomes would still be viable if most but not all countries were included. However, if the United States institutions decided not to take part, one suspects the measures would need to take in the bulk of European nations, Korea, Japan and if possible the partner countries in Asia, and at least some English speaking nations, to provide a comparison with sufficient global reach.

A third issue goes to the question of the capacity of a process of measurement of learning outcomes to encompass the diversity of learning objectives, modes and contents and in different languages. The PISA experience indicates that translation of student or graduate competency tests into many different language environments is technically possible; but it might be that in AHELO the challenge is also to incorporate cultural variations in academic disciplines and the manner in which the learned professions are practised. Here the evolution of the Tuning (2008) project in Europe and Latin American is encouraging. While it has not encompassed the assessment of learning outcomes as such, it involves the reconciliation of subject contents and descriptors of outcomes, including different types of competences, across many nations and language settings. The success of the Tuning project to this point signifies the now well-honed ability of European nations to work with diversity while securing common frameworks and

purposes in higher education. This set of policy and practice skills is likely to be integral to the development of the OECD project, though the latter requires a greater cultural stretch.

A fourth issue is the mix of generic and discipline-based skills and knowledge deemed appropriate for comparative purposes. It is important to recognize that the inclusion of generic skills does not by-pass contextual specificity in comparison. While ‘generic’ skills are like language, in that they contain elements that are common across sites, they are also specific to the disciplinary, occupational and national-cultural contexts. One advantage of generic skill assessment is that by capturing the transferable elements in learning such as communication skills they provide a more useful guide to broad-based employability than discipline-based learning can. A large proportion of graduates work outside the fields in which they were trained. Correspondingly, one of the virtues of a discipline-based assessment is that it distinguishes knowledge and skills specific to higher education rather than other kinds of learning sites and life experience. A mix of the two forms of assessment, as proposed in the AHELO pilot study, is appropriate to the multiple ways in which the learned attributes of graduates are utilized.

This suggests the fifth issue which is the difficult problem of whether to use summative assessments or value-added assessments. Summative assessments do not distinguish what has been learned during the period of higher education from what was known at the point of entry, particularly in relation to generic skills. On the other hand elite institutions might argue that value-added assessments disadvantage them because their student clients arrive with a relatively high level of skills and knowledge. It is easier to generate a proportionately high value-added in less selective institutions. A further difficulty is that additional learning cannot always be represented in linear form. While some of it proceeds incrementally on the basis of transfer from what is already known, some takes the form of the imaginative appropriation of the new or ‘other’. The latter, more transformative experience can play havoc with value-added measures. The discussion goes to technical issues that are beyond the compass of this paper.

A final issue is the extent to which graduate employability should be assessed using not just the learned attributes of graduates but their labour market experiences, for example employment rates or levels of earning. Indicators of the latter are used in some systems, for example the Graduate Destinations Survey in Australia (GDS, 2008). However there are significant problems in using such indicators, especially on a comparative basis. Employment rates and graduate earnings are shaped by a range of factors specific not only to individual countries (such as the structuring of professional labour markets, gender segmentation, and work organization including the deployment of new graduate labour) but also historical factors such as the state of the macro-economy and demand for skills at a given time. There is no point in holding higher education to account for factors over which it has no control; and rather than using proxy measures of graduate preparedness it is more effective to measure skills directly.

6. Lines of action

No looking back

The constituent technologies of the global k-status system have become quickly and deeply embedded in the practices of system and institutional management. In a short time we have

learned much about the nature and limits of rankings (for example van Dyke, 1005; Dill and Soo, 2005, Usher and Savino, 2006; Salmi and Saroyan, 2006; Marginson and van der Wende, 2007). However the issue is *not* whether we agree with rankings and outcome comparisons. It is inconceivable that the pre-Jiao Tong environment will return. Rankings will continue to shape missions and priorities. League tables, that simplified and limiting form of comparison, are likely to continue (though there should be more scope for debate about their methods and interpretations). The extension of credible global comparisons to incorporate some of the outcomes of learning, while fraught with difficulties, is a major and welcome step because it meets the needs of national systems and stakeholders for necessary information and installs a dynamic of reflexive performance improvement in relation to teaching that is as powerful as that already installed by the Jiao Tong and other research measures in relation to research. This enables a more balanced and nuanced evolution of the sector world-wide, enhances the potential for diversity of mission and goals, and ultimately strengthens our grasp of the k-economy.

The issues are three-fold. First, to secure ‘clean’ comparisons which are transparent; as far as possible free of institutional and national self-interest; methodologically coherent; and lead to coherent data sets that are sound in terms of social science. Second, to secure comparisons that are inclusive on a global scale; enable a broad range of missions, social contributions and institutional cultures to flourish; sustain the self-determination of national systems, institutions and disciplines; and leave ample scope for path-breaking creativity. Third, to secure comparisons that foster a tendency to improvement across all nations and sub-sectors; and forms of competition for measured performance that are open to merit and innovation.

Plural rankings and multiple indicators

The key move is to abandon the search for the ‘one best’ ranking system (or perhaps to foster many such ‘one best’ global rankings!) and to advance much more plurality and a greater use of disaggregation in comparison. The history of the *US News and World Report* rankings points to the limitations created by a single omnibus comparison (Kirp, 2004) while at the same time it highlights the potentials of specific indicators. Although the US system of higher education is protected from full homogenization by *US News’s* use of the Carnegie classification, there are strong tendencies to mimetic behaviour in each group of institutions. These tendencies could be substantially modified if a more plural set of comparisons was in use. At the global level, the more that new comparisons governed by different objectives and models of higher education can emerge, the more the quality of comparisons can improve, the more that the normalizing and homogenizing effects of any one comparison are diminished, and the more that the potential for a range of different fitness for purpose comparisons is enhanced. In that situation there is also a greater potential for stakeholders to customize the comparative data so as to suit their particular mix of purposes. The same point can be made about institutional classifications, which also advance the potential for comparisons customized to purpose.

Plurality of rankings and multiplicity of indicators is crucial if the range of potential global diversity is to be fostered. Plurality of rankings has clear benefits for those regions and groups of institutions with academic cultures divergent from the Anglo-American science university, by providing them with comparative performance data that is reflexively grounded in their own history and context. This is very significant in work in national languages in the humanities, parts of the social science and professional training. For example it is surprising that rankings specific to universities in the Spanish-speaking and Arabic-speaking worlds have yet to emerge.

At the same time, comparisons based in single or limited elements and objectives, rather than omnibus rankings that ‘cover’ all aspects of performance with one number, take us closer to the relevant issues of data validity. For example, rather than developing a university ranking system that artificially combines research performance indicators with learning outcomes indicators - artificial because the balance between the elements, the weightings used for the composite index, would be arbitrary and beg the question of goals and priorities – it would be better to leave the question of priorities to stakeholders and to provide them with both sets of data in full. This also advances the fitness for purpose orientation as a core discipline of comparison.

At the same time it should be possible for national systems to decouple component sub-sectors from the process of global comparison without disadvantage to those sectors. Not all higher education is globally oriented, or fundamental to the capacity of nation and population at the global level. Nor should all be globally referenced. Where particular sectors have a primarily local mission, are not involved in global research circuits or teaching markets, and bear no close resemblance to the sectors of other nations, nothing can be gained by applying global data comparisons that could not be more accurately secured by national performance management.

Cultures of comparison

Multiplicity and plurality can also contribute to more sophisticated and professional cultures of comparison with closer attention to questions of validity and purpose, including field boundaries and inclusion, and the effects on perspective, on the range of alternatives that come into view, when choosing one kind of comparison rather than another. Issues of sameness and difference, which are at the heart of comparative method (Marginson and Mollis, 2001) and are mostly left in the province of professional comparativists, would then start to colonize the policy debate. Given the growing use of global comparisons in policy, a more complex understanding of comparison has the potential to elevate the quality of policy. One would also hope that if a more robust culture of comparison develops, where techniques of comparison are vetted by social scientists, we can also expect a greater willingness to identify and critique examples of ill-based or poorly interpreted comparison; for example the low rate of return and nationally biased sample used in the *Times Higher* peer survey (Marginson, 2007), and the practice of using non-statistically significant differences between institutions in league tables. We might also expect some decline in the role of newspapers and magazines in designing rankings, and managing their methodologies, though the media will retain a role in communicating them.

The use of plural comparisons and multiple sets of indicators might appear to complicate the value-creating function played by the k-status system. Ultimately it enhances this function because it provides a richer and more nuanced set of data to facilitate judgements about knowledge and its uses. At the same time, the potentials of the k-economy and especially of the open source component also require us to leave more room than we have done for the emergence of new templates, new comparisons and new trajectories that depend on changing the rules. We will advance this ideal to the extent that more than one kind of upward institutional trajectory is imagined by the existing indicators, as would occur for example if research rankings can be held separate from rankings on the basis of learning outcomes. A more mature culture of comparison will also better educate us in the limits of comparison itself and of the established institutional models. Ultimately our capacity to draw the best value from global rankings and other k-status technologies is maximized when we can glimpse their limits and more readily move beyond them on the basis of new imaginings of education and knowledge.

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