OPEN SOURCE KNOWLEDGE AND UNIVERSITY RANKINGS

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ABSTRACT The fecund growth of open source knowledge goods in the global communicative environment underlines their public good character. Once knowledge goods are disseminated, their cost and price tend towards zero. It is now obvious (as apparent in recent OECD policy documents) that commercial research and trade in intellectual property capture only a small fraction of open source knowledge, which is expanding even more rapidly than global markets. But for policy makers this poses the problem of how to assign stable and defensible value to free floating knowledge goods. Across the world, research universities have been positioned in a networked competition of institutions with globally mobile personnel and converging goals and organizational cultures. In rapid time global university ranking and the associated technologies of publication and citation ordering and counting have proved potent in arranging status, assigning value and shaping behaviours in higher education. We find that public goods are readily annexed to the longer-standing projects of producing university status and sustaining an imperial global geo-politics of knowledge. Here the relation between status production and free open source cultural production is not so much a contradiction as an antinomy. These issues are discussed in the light of the flourishing and fall of the lowland city-states of the Maya in Mesoamerica, a notable example of a status economy and of the interplay between status reproduction and cultural goods, a dynamic only partly nested in economic production. The article reviews the rankings technologies, led by the Shanghai Jiao Tong University research metrics, the global strategies of university executives, changing national policies on universities and research, and the aggregation of these effects in the emerging ‘arms race’ in investment in innovation.

KEYWORDS citations • cultural production • innovation • knowledge economy • Maya • public goods • research outputs • status goods • university rankings
All there is
is a slow road to freedom . . .

(‘We’re all in this thing together’, Old Crow Medicine Show, 2004)

The constituent elements of the industrial capitalist economy are now well known to us. It entails production by agents in confrontation with nature. Production and exchange are driven by scarcity. Exchange, led by monetary transactions but not confined to them, takes place between otherwise unrelated parties who locate each other not via search engines but via prices. If digital association is characterized by loose ties, in markets fleeting contact is all that is needed. One of the doughtiest advocates for this kind of economy, James Buchanan, stated that its virtue is that ‘strangers make market exchanges’. The riposte, from an equally doughty critic in Samuel Bowles, was that ‘markets make strangers’ (Bowles, 1991: 13). Thus the web of capitalist economic relations has spread across the world and become the vehicle, and often the driver, of the knowledge economy which has followed. The knowledge economy has followed the capitalist economy without displacing the latter. Yet the knowledge economy is another kind of beast.

The knowledge economy is not a jealous or reductionist beast. It seems to share the world comfortably with its predecessor. Rather than swallowing up the past, the knowledge economy layers an additional and fecund set of activities on top of what was there. This is not to downplay the change, which is profound. All trend lines show that knowledge-intensive production and labour are growing in relative terms, and information flows are multiplying at unprecedented rates. Innovation has moved from the fringes to the centre of economic thought, business strategy and nation-state policy. At times, fostering creative work becomes an object of governments. Increasingly, the relational architecture is global rather than national or local and there is remarkable growth in communicative encounters. We find that the millennial illusion of world as a single inter-subjective dimension again floats within reach and this time it begins to have more substance. In this setting, for those with the means of reflexive sensibility, the scope for self-transformation has widened dramatically: more places to go, more friends to have, many persons to be, many more knowledge-intensive goods from which to source identity. Some knowledge goods are managed by conventional money transactions, in Internet-based markets that provide synchronous price data on a worldwide basis. Other knowledge goods do not involve money at all. The global knowledge economy mixes capitalist production and exchange, conducted with unprecedented effectiveness, with an array of extra-market activity in which the movement of ideas and artefacts is governed by use value in the Marxian sense rather than commercial exchange value. The gravitational weight of these global knowledge goods is pulling human society into a new shape.
THE MAYA AND THE STATUS ECONOMY

Here there are opportunities to commit category errors. Though the accumulation of capital is implicated in the open source environment, and vice versa, they do not map neatly onto each other. There are also separate dynamics at work. This should not be surprising. Throughout history the production and trading economy have rarely been synchronous with knowledge flows and cultural goods. These domains intersect at many points, and they provide part of the conditions of each other. Still, even the most dedicated economic determinist must find it hard to derive Athenian theatre and philosophy from the slave mode of production, or Greek farming technologies, or the patterns of trade or artisan production in the city.

Consider the Ancient Maya in the lowland regions of northwest Guatemala, Belize and eastern Mexico. The Maya were an astonishing civilization. Their architecture continues to enthrall us. Their mathematics and astronomy surpassed all other civilizations prior to the European renaissance, using a circular rather than linear concept of time. Their complex agricultural adaptation to the rainforest ecology has yet to be equalled. How do we explain the achievements of the Maya? One strand in the literature observes Mayan civilization through the prism of theories of cultural evolution. In this perspective human societies are locked into evolutionary competition in which social groups survive, reproduce and spread ‘through more ecologically or economically adaptive technologies, ecological strategies or economic institutions’, as Arthur Demarest (2004: 22) puts it. These standard materialist theorizations achieved near dominance in Mayan studies from the 1950s to the 1970s, but there were also nagging doubts. Particular archaeological sites kept yielding not just Periclean leaders that had instigated moments of cultural brilliance but unexplained complexities and variations to every identified economic and ecological norm. By the 1980s the determinist position was being questioned.

Challenges to ecologically determinist interpretations were posed by the massive ancient Maya investments in ritual and religion, their weakly developed market systems, their largely decentralized economy and agriculture, and yet their surprisingly large early populations. . . . Finally, archaeologists began to find increasing evidence that religion, ritual, and cosmology were themselves an actual major source of ancient Maya political power, rather than just a ‘legitimization’ of authority based on control of agricultural systems, trade or economic resources . . . scholars began to realize that a complex interaction between social, political and ecological factors was involved in the rise of state societies. (Demarest, 2004: 24–5)

Mayan religion and political institutions emerged across a wide geographic area, cutting across language groups while becoming implicated in common cultural forms. The distinctive Mayan identity that developed mimetically across the region later proved to be so resilient that it survived the
collapse of classical lowland civilization in the 8th and 9th centuries AD and the Spanish conquest and Mexican modernization that followed. All of the lowland Mayan sites shared the characteristic pattern of dispersed mix-and-match agricultural plantings, with a wide variety of crops and each crop located in the appropriate natural zone so as to sustain the fertile but fragile environment. The cycle of Mayan agriculture and its mosaic style planting were closely linked to Mayan worldviews, social structures and political formations. This subsistence eco-niche farming was largely managed on a decentralized basis. The patchwork of self-determining agricultural production resulted in a horizontal dispersal of human agency at the base of the Mayan social pyramid crowned by the priest-aristocracy. Out of the aristocracy emerged the priest-kings of the pre-classic and classic periods who presided over ceremonial centres dominated by the great pyramids of the architectural kind in which the rituals of the theatre-state were played out. Around the monumental buildings at the centre of each city-state, in the interstices between the agricultural plots, were dotted many smaller centres with their lesser pyramids and stone residences of middle level leaders. In this manner authority was dispersed across the outer middle to the periphery of the settled zones, without extinguishing the agency of the agricultural producers, who sustained subsistence food production and small tradeable crafts. A feature of the rising Mayan city-states of the classical period was their capacity to combine the rising aristocracy, sustained by its spectacular displays and its religio-knowledge power, with a ‘thick’ distribution of productive capacity and human agency down and across the society.

These were cultural constants, not just in the Maya lowlands but in all the Mayan zones until the end of the classical period and in part beyond. However, the economic forms in which many anthropologists have sought to find the explanation for the Mayan pathway were much less consistent. At the highpoints of the lowland civilization there were considerable city-by-city economic variations in the size of the surplus generated from farming and the ways it was used. Often there was no surplus and the farmers’ main donation to the central institutions of the Mayan theatre-state was the labour time used in monumental construction. Trade was culturally influential, unifying the hundreds of city-states throughout the Mayan zone (in this regard again characterized by dispersed authority) in the manner of exchange in the global knowledge economy today, and trade also supplied certain common essentials. Again, the economic role of trade varied – sometimes it modified subsistence economies and sometimes it did not; sometimes it was associated with a merchant class and sometimes it was not; some of its products were controlled by or served the aristocracy and some did not. Some of the necessities serviced by trade were symbolic, such as quetzal feathers, obsidian and fine polychrome ceramics. Much of the exchange of goods was part of a gift economy, not a monetary economy, and fed the reproduction of royal and aristocratic status in the theatre-state.
The exquisite artefacts, ceremonies and monumental buildings served the political purposes of the elite. This is not to say that the whole of public cultural production was simply vectored by aristocratic control. The horizontal dimension of agency at the core of the lives of the subsistence producers also came into play in the ubiquitous ball game, without undermining the status economy but rather confirming it. Ball courts are dotted all over the Mayan zone and all the other civilizations of Mesoamerica. The ball game was a form of popular theatre that fostered decentralized agency in a form instantly recognizable to us: the drama of upward mobility and elite renewal, in which social conflict becomes transformed into a restored equilibrium. Each game recycled the legend of the ball court, in which two ordinary men won the game with intelligence and courage, defeating the existing elite and ascending to god-like status.\(^1\) We also find something like the modern celebrity cult in the veneration of the players, who often rose from humble origins. The Mayan preoccupation with status was even greater than our own. It was not simply that social status was managed and amplified by the fruits of Mayan culture, such as artefacts, innovations in religious ceremony, and the ball game. In many respects the astounding Mayan creativity was directly driven by the reproduction of status.

It was also the motors of this status economy that faltered and collapsed in spectacular domino fashion right across the lowland Mayan region at the end of the classical period. Demarest argues that the time horizon of the elite shortened and it became preoccupied with its own status to the exclusion of all else (much like the class of great land-owning magnates in the later years of the Western Roman Empire). ‘Elite status rivalry for power and prestige led to an overburdening of the economic system, misdirection in demographic growth, and eventual decline through direct endemic warfare, population movements, and politically induced ecological and demographic stress’ (Demarest, 2004: 294). More intensive warfare, directed by the elite for its glorification, eventually undermined its certainty and relativized its power. On the macro plane the new development in the last 200 years of lowland civilization was the great coalitions of city-states dominated by the rival centres of Tikal and Calukmul, culminating in the dominance of Tikal, which housed the then largest pyramids in the lowlands.\(^2\) We might imagine here a chain of centralization reaching down, from Tikal’s control over the city centres, to pressure on the middle level in the city-states, to the squeezing of the agency of farmers, possibly at the cost of ecological sustainability, more certainly at the cost of their continued political assent. There are some signs that the capacity of subsistence farmers to sustain small scale craft production and exchange was diminished. Thus royal authority became destabilized simultaneously from both above and below: by imperial forays from Tikal and Calukmul or other cities in their service (there is a general increase in fortifications during this time in much of the lowland region), and by the weakening of dispersed agency in the middle and lower reaches of the social
pyramid. In each ceremonial centre the energy of the theatrical ceremonies was turned inward and the celebration of life became more exclusively focused on the needs of the ruler. It has also been argued that political and demographic pressure on the agricultural economy coincided with exceptionally low rainfall, so that the predictions of astronomer priest-aristocrats no longer held, redoubling the pressure on the status machinery. What is certain is that the status culture of the theatre-state suddenly lost its power to hold assent and compel action.

The collapse of status was geographically mimetic, like other Mayan cultural phenomena, spreading across the lowlands from site to site inside two to three generations (much like the chain-like collapse of state and campus authority in universities across the world at the end of the 1960s). The dispersed agency that had long sustained the Mayan social pyramid sprung back, only this time as a terminal destructive force. In abandoned site after site there is evidence of desecration of religious spaces and artefacts, the symbols of the elite. The same traces are found at the terminal points of other major Mesoamerican civilizations such as Teotihuacán in the Valley of Mexico. The collapse of royal-aristocratic status in the lowlands brought with it the loss of mathematics, astronomy, writing, architectural design, and the disappearance of the artisans and builders attached to the aristocracy. The loss of cultural complexity was associated also with the failure of many of the adaptive secrets of rainforest cultivation including mosaic-style distributive planting.

For the knowledge economy, the point about the Mayan lowlands is threefold. First, it is not that knowledge and cultural production are unrelated to economic production and trade, but that such relations are complex. The economy/culture interfaces are mediated by social, political and ideological elements. Second, one of these mediating elements is the production and reproduction of status. Under some circumstances, status can move beyond a mediating function and secure a potent endogenous dynamic in cultural and social life, as the Mayan experience suggests. These matters are explored further below when the discussion moves to university rankings. Third, within a common geo-cultural universe, the economy/culture interface may adopt quite different configurations between sites, and in single sites over time. At times, marked changes in the economy/culture interface emerge without the necessity for wars or revolutions, and spread across the relational space.

We see this happening today. In the succession of capitalist economic-social-cultural formations, the global knowledge economy is a new departure, a symbiosis of open communicative cultural exchange (‘open systems’) with industrial and financial capitalism. The cultural and economic elements are deployed in a different way to the industrial economy. The genius of capitalist enterprise, as Fernand Braudel remarks (1985: 628–32), 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 for new markets.
and throw up contents which can be repackaged in the commodity form. Industry annexes part of the communicative architecture for the same purpose. At the same time, the rise and rise of world markets is not the only story. 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) points out, are governed by less linear and more disjunctive motions than the market economy. 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 widely dispersed technologically in the knowledge economy. This democratization of cultural production and exchange is akin to the dispersed agency sustained by Mayan agriculture, whose decentralized mosaic plantings were foundational to everything else. But it is in marked contrast with the aristocrat-controlled systems of cultural production and exchange in the Mayan world and in most other worlds prior to the rise and rise of the open source information ecology.

Manuel Castells explains the growth dynamic of networked association. The benefits of being in the network grow exponentially as the number of connections increases, while the cost of each new unit is constant and total cost grows in linear form. The benefit/cost ratio continually increases (Castells, 2000: 71). Economic trade also grows rapidly, but it lags behind. The relative proportion of non-market exchange within the global knowledge economy tends to grow. This enhances the scope for extra-capitalist rationalities of state-building, politics, identity and status, much as dispersed and collaborative units of agriculture provided a relational framework for the Mayan status culture and theatre state. These extra-capitalist rationalities then become integrated with the circuits of capital and knowledge flows at many points.

**POST-CAPITALIST KNOWLEDGE GOODS**

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 or no mass, require little or no energy and subsequently can be infinitely renewed. However, the production and circulation of these original knowledge goods require time. In their form as reproduced knowledge goods, whether commercial or non-commercial, digitally-transmitted knowledge-intensive products (for example electronic texts, data, images, sound and video), knowledge goods have minimal mass and unit production requires minimal outlay of energy and time. Here the production of commercial digital goods is subject to scarcity but the freely reproduced goods are not. Thus in a knowledge economy there is no scarcity of the knowledge goods themselves – their dynamic is one of hyper-abundance rather than scarcity – but there is a hyper-scarcity of time. ‘Economy of time, to this all economy ultimately
reduces itself', as Karl Marx remarked (1973: 173), but this takes different forms in different kinds of economy. In the communicative global knowledge economy, space and time become compressed towards zero and relational crowding is continually intensified. Human agency (freedom) is pulled in two contrary directions. On the one hand, communicative association multiplies and diversifies the information and the choices. On the other, there is less time to reflect, choose and communicate. Networks impose a heteronomous order that requires continual responsiveness to the agendas of others. It becomes essential to periodically withdraw from communication, or to establish decentralized spaces, to recover the distance required by self-determining agency.

The hyper-abundance of knowledge goods suggests the term ‘post-capitalist’. Economists grappling with the nature of knowledge have not used that term. Writing during the Cold War when ‘post-capitalist’ would have meant ‘pro-Soviet’, economist Paul Samuelson (1954) developed the notion of ‘public goods’. However, Samuelson imagined public goods as residuals from a pre-capitalist era that were yet to receive the magic of the market, not as the companions to a mature capitalist economy.

Samuelson’s public goods (or services) were non-rivalrous and non-excludable. Goods are non-rivalrous when they can be consumed by any number of people without being depleted, such as knowledge of a mathematical theorem. Goods are non-excludable when the benefits cannot be confined to individual buyers. The mathematical theorem again satisfies this condition. So do collective goods such as law and order. Samuelson also noted that public and part-public goods are under-provided in economic markets. It is unprofitable to pay for goods that can be acquired free via someone else’s purchase – the ‘free rider’ problem. Following this line of argument, Joseph Stiglitz stated that knowledge is close to a pure public good and ‘complementary to public and private capital’ (Stiglitz, 1999: 320). It is non-rivalrous and in many forms is non-excludable. The exception is knowledge subject to commercial property arrangements such as copyrights and patents. Otherwise the price of knowledge goods tends back to zero. Stiglitz’s argument is convincing. We produce and circulate most knowledge goods not for profit but for symbol-making and self-making, to explore, to fulfil desires, to secure the purposes of politics and social status. The images and identities carried by digital goods populate our common imaginations and shape our social world; we freely share them with each other and we take them at much the same time so as to enjoy a common mentality. It is like the ceremonies and artefacts of the Maya, though the contents are not.

Stiglitz also noted that most knowledge is a global public good. Its value is not geographically constrained, though some knowledge is nationally or locally specific. Throughout the world, the natural price of a useful mathematical theorem is zero (Stiglitz, 1999, 308–11). At the end of the 1990s the idea of knowledge as a global public good, which synchronized with
globalization discourse, the rise of the Internet and one-planet ecological consciousness, and was also congruent with mixed public/private economy sensibilities in the Europeanization project, was popularized by Inge Kaul, Marc Stern and others working under the auspices of the United Nations Development Plan (Kaul, et al., 1999, 2003). Meanwhile, Paul Romer and the endogenous growth theorists had explained in macro-economic terms how public knowledge goods then became translated into the circuits of capital: both specifically, as intellectual property; and generally, in providing conditions for the continuous innovation of technologies and products. The shift from static categories to mobile categories, with the potential to track not just technological change but economic globalization, was a major achievement in the discipline.

Even so, Romer underestimated the scale potentials of public knowledge goods, and it was some time before the fuller implications of the open source regime were apparent. Also, the characterization of knowledge as a public good does not quite explain the flexibility, scale, fertility and (in economistic eyes disordered) character of the open source regime. Freely circulating knowledge goods blend osmotically into the communicative open source ecology itself, which is their condition of production. While economics has the tools to describe the individual knowledge goods, it cannot comprehend a relational system, if ‘system’ it is, that lies partly inside and partly outside the conventional publishing markets and the learned academies – let alone one in which exchange is open-ended and populated by a strange public/private mix of e-business and gift economies, and with information flows that tend towards infinity. Anyway, like Samuelson, most economists see public goods as stubborn residuals that are yet to graduate to the ‘real’ economy. Perhaps this is why Stiglitz was mostly interested in knowledge goods because of the commercial possibilities they suggested and skated over the inherent difficulties of an intellectual property regime. Arguably, Stiglitz understood public knowledge goods better than private knowledge goods. For example, he did not recognize the role of post-production time in determining the value of private knowledge goods. Stiglitz rightly noted that knowledge goods can be rendered excludable when the legal regulation of intellectual property is artificially imposed on their public good character. But he missed the fact that knowledge goods are also naturally excludable at one moment – the point of creation. The producer holds first mover advantage. Arguably, this first mover advantage provides the only viable basis for a commercial intellectual property regime. This advantage diminishes and disappears once the commercial knowledge goods are in circulation and become non-excludable. This means that, over time, the use value of knowledge goods remains constant but their exchange value tends towards zero. This pre-limits the economic potential of intellectual property.

Copyright is more than just difficult to police. It is violated at every turn and is ultimately impossible to enforce. In China, where the uncosted
reproduction of authoritative knowledge is at the core of learning, the reward for academic publishing is not commercial royalties but enhanced status as a scholar. Despite the WTO, in China little more than lip-service is paid to American and European copyright regimes. The national publishing markets remain impervious to them. In India, low cost copying, not commercial marketing, leads the dissemination of digital goods. These approaches to knowledge goods, which are at one and the same time both pre-capitalist and post-capitalist, are more closely fitted to the intrinsic character of knowledge and open source ecology. They are likely to become globally dominant.

Open Source Ecology at the OECD

In a parallel process the OECD has switched its main emphasis in policy on research and innovation in universities, from the direct formation of commercial intellectual property to the removal of barriers to the free dissemination of knowledge goods.

At the high point of Thatcher-style neo-liberalism in policy from the late 1980s to the mid 1990s, the sole concern of research policy was to secure the embodiment of knowledge in the commodity form. Private and public goods were imagined in a dualistic, either/or relationship that mapped onto Manichean Cold War imaginaries of a world divided between capitalism and socialism. Commodification was imagined as a linear process stretching from discovery to market. Scientists were reckoned to be chronically bad at business and rather too good at being socialist. The period that each new discovery spent in the economic wastelands as a public good retarded the turnover of capital. The objective of policy was to push this time down towards zero by changing the culture of the universities. Public good research was reconfigured in the form of medium-term projects subject to contested bidding, thereby simulating the product format and the market. Research management was focused on entrepreneurial science, facilitated by university technology officers, patent chains and the reinvention of university research centres as R&D companies. The internal research cultures of universities were partly reworked and some nations saw a significant shift in the balance of activity, from basic curiosity-driven research to applied and commercial projects. But the boom in entrepreneurial research failed to materialize. A few universities made a killing on major patents but most lost money on intellectual property regimes. Even in the USA, where the property arrangements governing federally-funded projects encouraged commercial science, the major universities had access to venture capital, and the practices of ‘academic capitalism’ (Slaughter and Rhoades, 2004) had the most purchase, no more than 5 per cent of research income was derived from industry and commerce. Unaccountably, the production of private knowledge goods in universities, the holy grail of regulators, continued to be dwarfed by the open source public knowledge domain. As will be discussed below, this was not exactly the flat, cosmopolitan domain with no closures imagined in Internet utopias, but nor was it simply a new kind of property market.
The end of the Cold War, endogenous growth theory and the new public good economics of Stiglitz and the World Bank ushered in the dismantling of the neo-liberal assumptions about research. In the late 1990s the OECD developed the less linear and more ecological notion of National Innovation Systems, with an overlapping division of labour between basic research primarily located in the universities, venture capital and entrepreneurial R&D in the knowledge markets, and applied science and technology in industry, government laboratories and the universities. Breakthrough discoveries with commercial importance could be triggered from anywhere in the system (OECD, 2008: 180–1). The relationship between public and private goods was no longer seen as antagonistic. Public knowledge goods maintained their value. In basic research the objective was no longer solely or even primarily to encourage commercialization. It was to disseminate discoveries widely in open source fashion as potential inputs for innovations. As a 2008 OECD draft on 'Enhancing the role of tertiary education in research and innovation' put it, summarizing the policy shift: ‘The transmission of knowledge is just as significant for innovation as knowledge creation, since it is only via diffusion that new knowledge can have economic and other societal impacts’ (p. 135).

A key policy focus in many OECD countries over recent years has been on enhancing the capacity of tertiary education institutions to contribute more actively to innovation and knowledge transfer through a sharper definition of intellectual property, followed by its commercialisation. . . . Policy mechanisms such as the Bayh-Dole Act in the United States not only made it legally possible for universities to patent results from publicly-funded research, they encouraged the idea that patenting ought to be a major function of universities. However patents have to be commercialised, and throughout the world universities have been establishing technology transfer offices (TTOs) which seek profitable links with industry through the licensing of university-produced knowledge. TTOs are meant to increase knowledge diffusion between higher education institutions and industry. Yet the record in this area is somewhat mixed. University patenting has increased in many OECD countries, although it was already on an increasing trajectory before Bayh-Dole . . . the record of TTOs has not been one of great success because results have been skewed, with only a few discoveries yielding major revenue flows. . . .

More recently, it has become clear that there are complex trade-offs between providing incentives for universities and firms to develop intellectual property rights (IPRs) versus creating incentives for diffusion of knowledge across the economy. . . . Improving knowledge transfer between universities and industry is widely recognised as important, however, although commercialization measures have been widely adopted, they are beginning to come under question. In Australia, for example, the Productivity Commission’s (2006) study of the science and innovation system has been critical of the effects of commercialisation as a policy objective, and advocates a wider approach to university-industry links.

The idea that stronger IPR 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. (OECD, 2008: 161–2)

‘A common criticism of commercialisation is it takes at best a restricted view of the nature of innovation, and of the role of universities in innovation processes’ (OECD, 2008: 180). Nor were universities the best managers of intellectual property (p. 162), and it was recommended that they should not squander their resources on long patent chains. Industry and specialist R&D companies were better at commercialization and much more likely to attract venture financing. The OECD also questioned the orthodoxy about product formats and simulated markets in public science. These were not optimal conditions for breakthrough discoveries which were generally researcher-led:

The shift to project-based research funding in tertiary education institutions raises a number of issues that need to be considered in relation to the long-term development of the research and innovation system. Competitive funding may promote more ad hoc and short-term research in cases where evaluation mechanisms and incentive structures focus on quantifiable and ‘immediate outputs’. As a result, researchers may be reluctant to engage in research that will not produce results that can be demonstrated over short time-spans. In addition, precisely because project-based funding is competitive, sustained funding is not guaranteed, which may impede the autonomy of researchers working in controversial fields. If project-based funding has a short duration, it may also mean that researchers need to spend time preparing applications to secure funding on a more frequent basis . . . competitive or performance-based funding could have an impact on the type and field of research because some academics avoided research with riskier outcomes . . . [and] short-term research and less risky research may reduce the likelihood of ‘scientific novelty’. (OECD, 2008: 174)

The university research regime primarily contributed to economic growth not by directly creating saleable intellectual capital but by providing favourable conditions for stimulating innovation in the industry sectors – particularly by producing and disseminating public knowledge goods and reproducing research capacity. ‘Tertiary education institutions are fundamental elements of the research and innovation system because of the effects of human resource development and R&D capabilities on innovation and knowledge diffusion’ (OECD, 2008: 145). Creating private knowledge goods remained
a secondary objective, especially in pharmaceutics, other biomedicine and electronics. Nevertheless, too much commercialization in the universities blocked dissemination and retarded innovation. What previous policy had seen as the ‘failure to commercialize public science’ was actually typical of innovation systems and emblematic of the nature of knowledge. ‘This suggests the policy focus should also be directed towards improving access to open science’, wherever it was produced, and fostering forms of university knowledge transfer other than patenting activity (p. 164).

**ENTER UNIVERSITY RANKINGS**

The picture of the global knowledge economy presented so far is that of a mixture of expanding capitalist markets in knowledge goods, with an open source ecology vectored by spatial complexity with disjunctive patterns, variable rhythms and often unpredictable feedback effects. The term ‘mixture’ is preferred to ‘compound’, which would exaggerate the extent of integration. But the two domains, the market and the ecology, intersect. Open source is a continuing source of ideas for products and markets, and the stimulus can also flow in reverse. Though comparisons are difficult when one is considering such a heterogenous couple, open source production and exchange seems to throw up a greater variety of knowledge goods, and sustain the larger volume of inter-subjective communication, than do the markets.

But it is time to look more closely at the open source ecology. As it has been presented so far, this ecology is structured dualistically between connectedness/non-connectedness. Beyond this threshold, in principle exchange is open and the volume of traffic tends towards infinity. Agency is association rich and initiative rich, though it is time poor. But does extra-market knowledge really proceed freely from all quarters in a flat cultural exchange grounded in mutual respect? Of course it does not. Knowledge flows in the global knowledge economy are structured and some agents have more knowledge capacity than others. These flows are channelled and stratified by the concentrations of economic, political and cultural power in particular cities and regions; the uses of the Internet, the origins of websites and web technologies, and the location of system hardware, communication lines, switching stations and mega-computers (Castells, 2001; Webometrics, 2008); the patterns of language use (Linguasphere Observatory, 2006); the market power of the various knowledge-intensive industries, brands and products; the diversity and priority of academic disciplines; and the hierarchy of leading universities and their cross-border activities. Nations continue to matter in the global knowledge economy and the latter is shaped by a map of knowledge power in which the USA continues to be dominant, the UK, other English speaking-nations, Western Europe and Japan have important secondary roles and China, Korea, Taiwan China and Singapore are rising (Marginson, 2008).7
All of this is an uncharted territory for us. The stakes in knowledge power; the accelerating cross-border flows of persons, ideas, policies, technologies and capital; and above all the anarchic potentials of open source ecology itself are an unsettling combination. In the face of openness, novelty and complexity, is it always human nature to apply definition, simplification and closure? Certainly, it is in the interests of higher education institutions, of commercial players and of national governments to impose on the unmapped terrain of the knowledge economy their chosen ordering and their preferred scale of value. Enter global university rankings.

On 28 June 2003, the first comprehensive set of global university rankings was launched on the Internet by the Shanghai Jiao Tong University Institute of Higher Education in China (SJTUIHE, 2008). The Jiao Tong Institute formulated a worldwide hierarchy of research universities, ordered in a format that was instantly familiar, that of the vertical league tables used in sporting competitions everywhere. The Jiao Tong Institute created an imagined market competition between leading universities and nations on a global basis, while also locking into older ideas of university status. Harvard was on top followed by the three leading universities in California: Stanford, Caltech and Berkeley. Cambridge in the UK was next, then MIT and research universities from the USA, UK and other nations down to number 500. The ranking was issued annually after 2003, with minor changes in the methodology. From 2007 onwards the Jiao Tong also issued a table of the world’s top 100 research universities in each of five broad discipline areas.

The Jiao Tong ranking rested on the traditional status hierarchy in the university, which for the most part consisted of universities founded before 1920, long before the Internet and the global knowledge economy, and some of which pre-dated the industrial revolution. At the same time the ranking exercise confirmed this status hierarchy as the outcome of a meritocratic competition in research where intellectual freedom was seen as the paramount quality. Thus traditional university status was installed as the index of value in the global knowledge economy and the means of interpreting its often novel concentrations and agents and flows. In turn, this locked into the inherited conventions of academic life, in which status has always been a more potent driver of individual behaviour than financial rewards, especially in research and publishing; and the abiding objective of research university leaders is not to generate profits but to lift the prestige of their institution above the rest. In this manner the global knowledge economy was re-represented as a global status economy. We are not as far from the Maya as we might think.

At first the Jiao Tong ranking was greeted with some skepticism, especially in the United States, where it was difficult for a top ten university from China which placed itself 400–450 in the world to secure the role of status arbiter in the American sector, against the US News and World Report (2006) which had ranked US universities since 1983. Nevertheless, the Jiao Tong
ranking was more coherent and defensible than that of *US News*. The Jiao Tong Institute was able to relativize all of the world’s universities, including those in the USA, by developing a superior technology of comparison. Previous global league tables had been based on small sample opinion surveys of university personnel. The Jiao Tong eschewed market research techniques, opting instead for census-type sociology and economic output modelling. There was a medium degree of complexity in the methodology and each university received a single ordinal number at the end. The Jiao Tong group argued that the only data sufficiently reliable for ranking were broadly available and internationally comparable data of measurable research performance (Liu and Cheng, 2005: 133). Data were transparent and sources known: Nobel Prize winners, leading researchers by citation, the number and quality of citations and publications. Research performance was measured in several ways; it was difficult to dismiss all of them. The data sources could not be manipulated by universities or by governments with a vested interest in their national systems. The Shanghai Jiao Tong team made it clear they were prepared to fine-tune the rankings on the basis of valid proposals for more accurate measures and were uninterested in special pleading. By 2005 the ranking was entrenched and its old/new map of global knowledge status was feeding into university strategies and government policies.

Although the Jiao Tong ranking recreated a status economy, this was not its purpose. Nor did the Jiao Tong group set out to design a ranking system that would favour China’s universities and so boost their global reputation. Rather, the Jiao Tong ranking began as a nationally-supported project designed to show China exactly where its research-intensive universities stood. The Chinese government knew that China would need to make a transition from the medium technology manufacturing economy that was generating phenomenal economic growth based on cheap labour from the countryside, to a knowledge-intensive services economy based on higher educational levels. It set itself the goal of forming a modernized tertiary education system at OECD levels of participation, the rapid expansion of R&D and the creation of a system of world-class research universities. Between 1996 and 2005 investment in R&D as a proportion of GDP rose from 0.57 to 1.35 per cent, and in the first five years after 2000 it increased at an annual rate of 18.5 per cent per year, almost three times the rate of growth of R&D spending in Finland which was at the top of OECD Europe (OECD, 2007). Between 2004 and 2005 the number of international patents filed in China rose by 47 per cent (Li et al., 2008: 43). Between 1995 and 2005 the annual number of scientific papers rose from 9061 to 41,596 and the output of papers rose by 16.5 per cent per annum (NSB, 2008).

The purpose of the Jiao Tong data collection was (and is) to guide this accelerated investment program. It set out to monitor the continuing gap in research performance between China and universities in North America, the UK and Western Europe, according to the benchmark of the American
comprehensive research-intensive science university. This was seen as the
global standard, the sign of the world-leading knowledge economy that
China aspired to become. It was easy to adopt this conventional standard
because it was congruent with the hierarchy of power and resources in higher
education and fitted the pattern of university status already known in the eyes
of the world. Nevertheless, the reproduction of that standard in the rankings
was not automatic. And it was tendentious. It closed off the possibility of
less mimetic strategies of national development in China that could reframe
the global knowledge space and reset the policy options. It limited models
of worldwide higher education to the options available prior to the Internet,
including for example the universal use of English as the one language of
research, and the elevation of comprehensive teaching/research universities
above the rest, regardless of new potentials for diversification, and loosely
coupled systems. The Jiao Tong group thereby re-installed the traditional
status hierarchy on a credible modernized technical basis able to reach across
the globe; used it to explain that which was new (the global knowledge
economy); and against the chaotic, percolating potentials of open source
ecology it confirmed the triumphant vitality of the old Ivy League order.

The Jiao Tong research metrics spurred the evolution of the technologies
of publication counts, journal rankings and other nominal quality measures,
citation tracking and counting, and impact valuation. Increasingly, the insti-
tutional rankings by whole-of-university and discipline area and this array
of publication and citation metrics were fed into government policies and
the strategies of university managers. The data played (and continue to play)
a growing role in the allocation of research funding and general university
funding, the construction of behavioural incentives and the determination of
careers. In turn, this has fostered the evolution of quantitative techniques for
standardizing research performance data for comparative purposes so as to
eliminate the effects of unequal institutional size, different patterns between
disciplines of authorship, frequency and volume of publication and citation,
and so on.

In 2007 Leiden University in the Netherlands announced a new ranking
system based solely on its own bibliometric indicators, using four rankings
of institutions: publication number, average impact measured by citations per
publication, average impact measured by citations per publication modified
by normalization for academic field (controlled for different rates of citation
in disciplines), and the last measure further modified so as to take institu-
tional size into account. Leiden dispensed with the Nobel indicators, the least
credible aspect of the Jiao Tong approach, the counts of leading researchers,
and the composite indicator based on arbitrary weightings between different
aspects of performance (CWTS Leiden, 2007).

The Higher Education Evaluation and Accreditation Council of Taiwan
developed a more Jiao Tong-like comprehensive measure of research perform-
ance in 2007, with its own world's top 500 in league table order, though
like Leiden it dispensed with Nobel Indicators and leading researchers. The Taiwan measures utilized a larger number of single measures of publication and citation quantity and quality, including some data collection from the two years prior to publication, making it more recent than the Jiao Tong. In the outcome the Taiwan hierarchy was not very different to that of the Jiao Tong (HEEACT Taiwan, 2008). The same universities do well in most research ranking systems that reflect criteria for determining status established prior to the knowledge economy.

The Webometric rankings of universities, based on the volume, visibility and impact of university presence on the Internet in academic publishing and courseware, moved closer to the potentials of the new era. The Webometric rankings were again expressed as a league table of stand-alone universities without taking into account relational behaviour such as consortia and other networks. Further, 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 did not diverge markedly from those of the Jiao Tong. The main difference was that US universities were even more dominant (Webometrics, 2008). But this was an interpretation of the Internet in terms of older notions of status. A strange duality vectored intellectual life in the universities of the global knowledge economy era, reflecting its mix of free cultural mobility and partly closed political economy. On one hand, there was an open system of peer production where intellectual use value was created in collaborative open systems, and new knowledge could appear from anywhere in the system and be almost immediately recognized. On the other hand, there was a complex lattice of value held down by calculative and organizational systems in which past practice and track record shaped the metrics and pre-set the outcomes newly legitimated by the technologies of comparison; and intellectual development was propelled down certain pathways (English language, science and medicine, aggregations for ranking purposes, 'like Harvard', etc.) rather than others.

**The Empire Strikes Back**

The Jiao Tong’s chosen status hierarchy was not approved by all parties. In 2004, one year after the first Jiao Tong ranking, *The Times* of London published a different league table. Presented as a listing of the ‘World’s Best Universities’, the primary focus was not on research but on factors seen to inform student choice-making in the global degree market. A miscellany of indicators was used. The index went through changes but had settled by 2006. Half *The Times’* index was grounded in surveys of reputation: 40 per cent was comprised by a survey of academics (‘peer review’) and 10 per cent by a survey of ‘global employers’. Another 20 per cent was fixed by
the student–staff ratio, a quantity measure intended as proxy for teaching ‘quality’; 20 per cent was comprised by research citation performance per academic staff unit; and the final 10 per cent was composed of indicators of the proportion of students who were international (5%) and staff (5%). The Times issues an annual list of the top 200 universities in order, plus rankings by institution in five disciplinary fields (Times Higher, 2008).

Data collection, standardization and compilation were managed for The Times by QS Marketing which used techniques less rigorous than those of the Jiao Tong Institute. For example, in 2006 The Times survey of academic ‘peers’ gathered a response of just over 1 per cent from 200,000 emails sent worldwide. This pool of responses was weighted towards the UK and former countries of the British Empire where The Times was well known, such as Australia, New Zealand, Hong Kong, Singapore and Malaysia. Rates of return from Europe and the USA were significantly lower. The returns were not re-weighted to correct for compositional bias (Sowter, 2007). It was as if The Times still saw patches of red on the map and had a special place for them in its heart. Other problems with The Times method were a student internationalization indicator that was based on volume and did not discriminate between high and low quality students, and high and low quality institutions, thereby rewarding commercial volume building rather than ‘best universities’; a quantity measure used in place of teaching quality; and research performance that constituted only one fifth of the index. The Times Higher rewarded a university’s marketing division better than its research.

The outcome of The Times ranking was a conglomerate league table. It elevated the stellar universities in the USA and the UK via the reputational and research indicators; it picked up the best known institutions in national systems, especially those located in national capitals, via the reputation indicators; and it elevated UK and Australian universities involved in intensive cross-border marketing. One suspects that the shaky methodologies, suitably tweaked in the processes of data standardization, produced exactly the result that was wanted. The UK universities performed extraordinarily well in The Times, much better than in any other ranking system. In 2006 the UK had 15 per cent of the GDP of the USA, but it had almost half as many universities as the USA in The Times’ top 100: 15 for the UK, 33 for the USA. The Times managed to reduce American global dominance in the knowledge economy from 54 research universities in the Jiao Tong ranking to just 33 in its own league table. In the process it also weakened the standing of the Western European universities. The individual positions of the British universities were also much higher in The Times than those of Jiao Tong or the Taiwan Council. In 2006 the UK had two of The Times Higher top three and Cambridge had almost closed the gap on Harvard. The Empire strikes back. Yet the Harvard faculty was cited at three and a half times the rate of Cambridge and had greater worldwide prestige. Inadvertently, perhaps, The Times also elevated the Australian universities en masse for the same reasons: the composition
bias of the peer survey and the student internationalization indicator. In 2006 the Australian National University was ranked by *The Times* ‘academic peers’ ahead of Yale, Princeton, Caltech, Chicago, the University of Pennsylvania and UCLA. Despite a relatively poor citation rate and moderate staffing ratios, Australia had 13 of *The Times*’ top 200 universities, presenting it as the third strongest national system in the world, ahead of Canada, Japan, Germany and France. No one in Australia believed this to be true for a moment, but like their UK counterparts the Australian universities made great use of their elevated *Times* ratings in their marketing campaigns.

Unlike the Jiao Tong, the Taiwan rankings and the other citation and publication counts, *The Times* did not provide a comprehensive mapping of the knowledge economy. It was a different global imaginary. The global knowledge economy was ordered so as to emphasize market economy more than knowledge. There were also overlaps. As in the Jiao Tong, value was defined as status. In the case of *The Times* ranking the reproduction of status was built into the methodology itself: half the index was reputation-driven. The status hierarchy that was produced in the league table was then used to secure the primacy of British (and Australian) educational capital in the degree market and, improbably, the part return of the old imperial hegemony. Not just the status of UK universities but the status of the global UK project was in play.

**Antinomy of the Knowledge Economy**

In government policy and university management, global rankings quickly became the meta-performance indicator, except in the USA where higher education has long been rankings-driven and the *US News* continued to hold sway. For the OECD, Ellen 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: 197–8). Most university leaders had set in place strategies and systems to lift ranking performance. The main focus was on the Jiao Tong. Only 8 per cent of respondents stated that they had taken no action in response to rankings (p. 199). Hazelkorn notes that many institutions had stepped up data collection in relation to research and were monitoring the performance of comparator institutions as well as themselves. Some universities had ‘taken a more aggressive approach, using rankings as a tool to influence not just organizational change but influence institutional priorities’ and shape budgets (pp. 199–201).

The absorption of rankings counts into organizational systems, together with the mushrooming of the technologies of publication/citation counts and hierarchies and measures of the impact of research publications in knowledge
circulation, is readily interpreted in post-Foucaultian terms as an example of micro-political controls and government of the subject via ‘responsibilization’ and the ‘conduct of conduct’ (Miller and Rose, 2008; Rose, 1999). However, this is not the most interesting interpretation. It fails to distinguish university rankings from other technologies coined by or joined to the new public management in universities, which predates the era of the global knowledge economy. University rankings do not have their origins in neo-liberal public administration and imaginings of commodification. Notwithstanding the role of the government of China in the genesis of the Jiao Tong, these systems have their origins in zones which (unlike national government) were competent to visualize the global space: commercial publishers and social scientists in universities. The distinctive aspect of ranking as an organizational technology is not its micro but its macro dimension: its audacious imagining and ordering of the global knowledge economy and the profound implications of this imaging and ordering of the global, for the patterns of openness/closure, past/future and freedom/heteronomy played out in that space.

The global ranking project has two aspects, ordinal and cardinal. The ordinal project is the creation of a vertical system of valuation which is interpolated into the knowledge economy (or at least the codified academic disciplines, basic research and innovation in the universities). This system of valuation rests on the old/new structure of university authority that rankings have reproduced. The primary move made by the systems of university ranking is to restore an apparent certainty in the face of the open source ecology, by reinstalling a traditional university status hierarchy that maps roughly onto the existing concentrations of wealth, technology and knowledge power, and which by supporting those concentrations is able to buy its own stable reproduction as a hierarchy with a system of value-creation. This university hierarchy in turn is instrumentally associated with the formalization of mini-hierarchies in the form of research – led by big budget applied science and medicine – in the lists of publications and in citation tables. For example, journal editing and the design of citation counts are mostly led by personnel from leading universities. There is little debate about these changes except for the fine details. This suggests that most people find it comfortable to work higher education as a status economy.

The cardinal project is more tendentious and much less advanced. That is the translation of these ordering systems into a mathematized economics in which status functions as a calculable standard of value, enabling prices and a transactional status market. This occurs in the American private university sector but in an impure form. Tuition prices are over-determined by a long list of non-status non-economic elements.

**Competition States**

The implications of the ordinal project will now be explored further. Jiao Tong-style university ranking rests on a single table of universities measured
by one common set of criteria. It is a universal worldwide order, in the form of a universal competition in which all institutions and all nations appear to compete on the same terms. It rests on the fiction that a number one university could appear in any corner of the global ‘system’. This university order also rests on the imaginary of a single and transparent circuit of knowledge.

In reality, in the global knowledge economy there are many circuits of knowledge. Worldwide knowledge flows are manifest in many different cultural fields, language groups and other human communities; and their spatiality is mobile and complex, criss-crossed by linkages and punctuated by breaks and islands. What ranking and the associated performance technologies have done is to define the 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 the only circuit in which value in the form of university-mandated status is assigned.

These structures are associated with a global imaginary and with particular kinds of agency. The global imaginary is compelling. In a world where the potentials of open source ecology are unprecedented and seem to be beyond our grasp, university rankings define the global university field and the authoritative knowledge associated with it, and thereby provide a working model of the knowledge economy itself, or at least the research university part of it. Despite the simplifications and closures, it is a powerful imaginary. It carries an aura of realism and necessity: the global sphere can no longer be avoided and this is the only codified explanation of the global university sector in the public domain. It is an imaginary that could not have achieved hegemony until recently. It draws on post-Sputnik visions of earth-in-space global spatiality in which people and messages move hyper-fast, everything connects to everything else, there is no terminus and no point of separation or escape, each element can be relativized in relation to every other, and origins and futures are always together present. It is also an imaginary that could only have been formed in certain parts of the world, those for whom the global horizon is decisive, rather than national or single cultural horizons. It could definitely emerge from Singapore, or Denmark, or Australia. It did emerge in China, and the capacity of the Jiao Tong ranking to relativize China in global terms signals a break from Middle Kingdom autarky, a major development. The construction of the Jiao Tong World University Ranking signifies not the negation of China’s Beijing-centred national agency but its translation into a global project. More outwardly focused Shanghai thinkers were asked to re-imagine Middle Kingdom education as a university sector aspiring to lead the global knowledge economy.

A global university imaginary of sorts was also able to emerge in the UK, but *The Times* could only carry it through by tilting the board in its own favour. On the other hand, the imaginary of the world as a single system of research universities bound by relations of equivalence (even if merely nominal equivalence as in the case of *The Times*) could never have emerged.
in the USA. American freedom, like agency in ancient Rome, is located in ideologies of national exceptionalism. Unlike Imperial Rome, where in AD 212 Caracalla extended citizenship to all free-born men in the Empire, the USA does not imagine the civilized world as its own domain or want to turn everybody into itself. It is little interested in either multilateralism or global citizenship. It retains the option of non-engagement that a sea border provides, except for its unavoidable entanglement with the Hispanic South. In the United States, the ‘world’s best universities’ are identified by *US News and World Report*. Best in America is best in the world. The national horizon is the global horizon.

For the stronger institutions outside the USA, the global rankings imaginary invoked by the Jiao Tong Institute and *The Times Higher* is also attractive. It is highly attractive for those such as the National University of Singapore and the UK and Australian exporters, for whom global relations in education and/or research have become principal to their operation. It offers vast new possibilities for action: the potential to mobilize strategy, alliances and creative talent on a global scale. The strategic possibilities seem more open than in national systems. Despite the fact that it is ordered as a status hierarchy and a traditional one at that, the global higher education space appears to offer greater opportunities for upward mobility. This is the fascination of university rankings for the Asian science nations on a rising trajectory, the challengers of hegemony on the grounds of hegemony. By making visible the peaks of the university system, rankings bring them closer and intensify the will to achieve. The new fecundity of executive strategy in a globally ranked university world seems to invoke the cultural fecundity of open source and it carries something of the same excitement. It is ironic, because the new freedoms of university executives rest on the binding of unbindable cultural flows, as if creative talent has been subordinated to the firm-for-its-own sake ideology that lies at the roots of quality assurance mechanisms.

The rank ordering of the global knowledge economy calls up three kinds of agency: institutional, national, individual. First, rankings valorize the individual university, more than the disciplinary unit. They encourage growth of the institution and the concentration of knowledge power within it, and highlight its strategy, its resources, and its trajectory: whether it is moving up or down. Here ranking functions almost in the manner of an equity price. Second, rankings valorize national higher education systems qua systems. Like Olympic gold medals, the rankings of individual institutions are quickly aggregated into national league tables and these data feature prominently in both the media and national policy circles. Third, rankings valorize a small number of leading researchers whose individual performance is such that their careers are strategically significant to institutions and national systems, for example Nobel Prize winners and the Thomson-ISI ‘HiCi’ researchers in the Jiao Tong.

Rankings have generated material effects in all of these areas. At the level of the institution they encouraged mergers in order to build scale. In
the UK the unification of the University of Manchester with a neighbouring science and technology institution saw Manchester rise up the league tables. The European Commission has debated possible forms of a European Institute of Technology which would combine the strengths of existing research universities and secure a high Jiao Tong position. Within institutions, ranking encourages the splitting of teaching and research activities so as to intensify research; the concentration of research efforts and resources in domains of knowledge reckoned likely to generate competitive advantage; and the recruitment of leading researchers from other institutions. At the level of the national system, rankings lock into the role of government as global competition state. Many governments have implemented, or are considering, policies of concentration within national systems to lift the performance of selected universities. The €1.9 billion Exzellenzinitiative project in Germany is one such programme. France has announced a large scale programme of mergers, including the integration of the universities and the Grandes Écoles, to secure an augmented Jiao Tong position. Global competition in the knowledge economy is feeding into an ‘arms race’ in innovation policy, driving up investment in tertiary education and research. The Lisbon targets require each nation in the European Union to spend at least 3 per cent of GDP on R&D. Several funding programmes in China are designed to augment the leading research universities. Korea and Singapore are on the same path. The United States will almost certainly respond.

**Status Competition**

The commodification thesis in higher education partly misses the mark. The expansion of commercial markets (for example the University of Phoenix model of for-profit institution) has been an important secondary development. But as we have seen, most knowledge goods cannot be produced for profit. However, some of those same knowledge goods are accessible to a status economy. Indexes of value can be devised for knowledge goods by stratifying them via the university hierarchy, once this has been defined. The main zone of change has been in public goods rather than private goods. Student places, research programmes and breakthrough discoveries: all can be valued according to the identity of the institution in which they are provided or produced. In the USA the Carnegie classification of institutions and the competitive ranking by *US News and World Report* have long provided such a valuation at the national level. Likewise, global rankings provide a broadly applicable index of value on a world scale. If valuation on the basis of institutional prestige might appear crudely aggregative, too traditionally arbitrary (too gothic) – especially in the case of research which is modernist in temper – the status hierarchies of disciplines, publications, and the laborious calculation of citations and impact measures can be invoked. But status competition has peculiar laws of motion. These are now considered.

Status goods or ‘positional goods’ in education and other sectors are discussed by Fred Hirsch (1976), Robert Frank (1985) and Philip Cook (Frank
and Cook, 1995) on the dynamics of ‘winner-take-all markets’. Some status competition takes the form of an economic market and involves financial exchange. Other status competition takes place without money changing hands, for example in systems of education in which tuition is free but there is a scarcity of places in elite institutions. The crucial point about status goods is that precisely because these are goods of position within a finite hierarchy there is an **absolute limit** to the number of status goods of high value. There can only be one priest-king. As Hirsch puts it, positional goods are goods, or jobs, that are either (1) scarce in some absolute or socially imposed sense, or (2) subject to congestion or crowding through more extensive use'. One implication is that ‘positional competition . . . is a zero-sum game. What winners win, losers lose’ (Hirsch, 1976: 27 and 52). Positional goods/status goods confer advantages on some by denying them to others. In higher education both the statuses acquired by students and the statuses of the universities are bound by this logic of zero-sum. This logic also shapes the differentiation of consumption, creating unequal social opportunity, and of production, creating uneven educational quality. Hierarchy in all its aspects is both necessary to status competition and continually produced by it.

In status competition, universities do not behave like conventional firms. Non-profit universities are prestige maximizers, performance maximizers and revenue maximizers. As noted, the first objective is the most important. For non-profit universities status (‘competitive position’) is an end in itself and the overriding bottom line, while at the same time status is also a tool of financial survival in that it enhances the potential to raise revenues from teaching, research, donations and other sources. Another implication of status competition in higher education, even when it is organized as an economic market, is that elite institutions have a vested interest in remaining modest in size rather than growing ad infinitum to meet the potential demand. To expand without limit in the manner of a business driven by profit volume and market share would be to devalue the individual value of each student place and forgo institutional standing. Because of these circular effects, once an institution has secured high status, which is the difficult part, to reproduce its position while closing off access to newcomers merely requires ordinary prudence – providing that it continues to follow the logic of a status market. ‘Success breeds success’ (Frank and Cook, 1995: 36). Thus, maintaining elite status merely requires ordinary prudence. Status competition is characterized by closure, unlike competitive capitalist economic markets. In established status competitions, outsiders may try to ‘game’ the competition so as to lever themselves upwards, but membership of the elite remains largely stable over time. Where this pattern changes, it is not on the side of greater access but of greater closure. In some status markets, unless it is modified, status competition slowly leads to a more intensive concentration of status at the very top over time. The final end is reached in markets such as those for popular music or film stars, or ‘rock star’ faculty, in which a tiny proportion
of products command exceptionally high prices and the vast majority have no special value at all. Something of this effect is playing out at institutional level in US higher education. Institutions just below the very top face growing financial pressure and have greater difficulty in paying for top-priced faculty, while the Harvards, Stanfords and Princetons have never had it so good.

**Status Competition and Open Source**

In today’s global knowledge economy the modus operandi of status competition is distinct from that of open source ecology. Status is pre-capitalist but open source is post-capitalist. Status competition is framed by absolute scarcity; open source ecology is characterized by hyper-abundance. Status is bounded and never fully contestable and access to the elite layer of producers is almost closed. While status competition fosters closure, for example concentrated minaturization of production 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. There is little scope for hybridity. This helps to explain the oddly fragmented and deeply multiple character of much of university life.

Status production often coexists with free cultural production. In the arts it always has (and this is another strangely fragmented world). Here the desire for social status, more than the need for economic sustenance, helps to push creativity to the heights. In the university world the decision of the Harvard Faculty of Arts and Science to place all its academic papers online provided important support of the free production and dissemination of knowledge goods. This might be a decisive move in the transition from the manufacturing-era copyright regime. At the same time, the enlargement of access to Harvard-produced knowledge further strengthens the status of the institution, both directly and via the creation of value in the publication and citation metrics. The Internet is a formidable engine for building status. Yet both in universities and in the arts, status is never the only motivation at play. There are inward drivers of creativity, the desires to make and to know; and we have needs to communicate other than building prestige for ourselves and our institutions. One characteristic of open source and post-capitalist production is that its technologies enable creative wills and communicative wills to flourish, to an extent unprecedented in history, outside the desires for wealth or esteem. The relation between status production and free cultural production is not a contradiction so much as an antinomy.

It might then be argued that the new assertion of university status as a means of vectoring the global knowledge economy, via rankings and research
metrics, is simply a natural response to accelerating globalization and open-ended creative chaos, a swing of the pendulum of this antinomy, a necessary process of rebalance. Open source flows are too changeable, too evanescent to be harnessed to capitalist economy, but the more primitive status economy, containing some and excluding others, can manage them. But can it? Where the antinomy turns feral is where the claims of status production are exercised on a universal basis. One such case is when all the efforts of university leaders are bent upon ranking position rather than fostering creative work. The short-term ranking position sets the horizon. Open source activity that falls outside the conventional tracks is penalized, though this activity is the origin of much of the conventional achievement of the future. It is a case of the goose and the golden eggs. To better foster the goose the OECD now wants to abandon the 1980s/1990s NPM-instigated strategies of research management. In such circumstances university status has moved from its long-standing dyadic role in the circle of status production/cultural production, whereby each factor tends to generate the other, to the role of an overarching sign and an always determining force, as with the Maya in the later years. It is the very facility of university ranking technologies in concentration and control systems that opens the institutions of the k-economy to the clear and present dangers of homogenization and over-use.

Another such case of misplaced universalism is where status valuation is made into the basis for a comprehensive price system. This leads to hyper-inflation of the price of high status goods – for example tuition at the peak of the American private universities – and an inability to recognize public goods that fall outside the status indexes and are therefore invisible to the price system. We need to recognize, understand and factor into our organizational systems the post-capitalist production of knowledge goods, which is the primary zone where we make our future. These goods have become the carriers of much of our sociability and identity. In these respects we have now moved beyond the monarch-priests of the Maya, for whom the circular reproduction of status was the final objective of sustenance, action and being.

No enclosure of human affairs is ever complete. It is not that university rankings and status markets ‘suppress’ or ‘eliminate’ the open source ecology. It is more that the status hierarchy simply cannot comprehend open source knowledge flows. In their universal form, university ranking systems will eventually fray and break. They will be succeeded by comparisons and valuations that are more modest and more plural.

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Notes
1. It seems that this was the founding legend of the ball court throughout most of Mesoamerica.
2. The pyramids at the pre-classical site of El Mirador, which peaked about 150 BC, were even larger and more extensive than those that followed.
3. It is likely that as the status economy moved towards crisis, there was a cultural shift in which the theatre of status which fostered the hierarchical imagination increasingly squeezed out the countervailing horizontal images of dispersion, laterality and symmetrical exchange. A principal trend of the late classic period, which coincides with the trend to imperial coalitions of city-states, was that more Mayan 'eggs' became placed in the basket of a single ruler, like the cult of the CEO in our own time. The cult of the ever ascending god-king temporarily subordinated the rest of the aristocracy while opening up options for them after the leader failed. In our business culture, the gladiatorial spectacle of the rise, flourishing and fall of leader CEOs serves to reinforce our own core myths such as merit-based competition, untrammelled individual freedom, temporary supremacy ('aristocrat for a day' plays out in both business hierarchy and consumption) and continuous access to opportunity. But in the Mayan setting, each failure, each end to the god-like leader – especially death through capture by the enemy – threatened to destabilize the culture of status itself. More became invested in the dignity of the god-kings even as their instability and mortality was becoming increasingly apparent, triggering or reinforcing the downward spiral. This was the price of royalty and its deification. Sometimes Mayan aesthetics takes us to the raw edge of these problems of status reproduction. Consider the superb burial sculptures found in the tomb of the king of Palenque, Pakal, who reigned for 68 years and presided over the finest of all the art and buildings of the city. In these two reliefs, the Mayan custom of living among the remains of the dead combines with the emotion that Pakal invoked among the living in his lifetime, to create an extraordinary Hellenic naturalism. When we see these reliefs, it is as if Pakal is with us. The naturalism is atypical of Mayan sculpture. But Mayan cultural forms varied from site to site and here soaring status, exceptional veneration and wonderful technique have combined to achieve a unique humanism. The sculptor appreciates Pakal's greatness not as fear and distance but as intimacy and love. This capacity to express emotion is distinctive to Palenque. There is also a deep sadness evident in the inscriptions about Pakal's second son, Kan Hoc Chitam, who was captured and sacrificed by the rival lord of Tonina in 711, a blow from which it seems the city never really recovered. It would be interesting to know if the
ball game changed in the last few decades before the lowland collapse (was the legend seen as subversive as authority weakened?) and whether there were changes in the work of the artisans. There is much scope for further research and interpretation into the motors and decline of the status economy.

4. Mayan civilization continued after the collapse of the monumental lowland city-sites, in the highlands, the Pacific coast and particularly in the drier lands of the Yucatan north of the rainforest zone. Whereas the cultural achievement of the Yucatan cities that paralleled the classical lowlands period was almost as remarkable – Frank Lloyd-Wright called the long Governor’s Palace building at Uxmal ‘the most impressive building, ancient or modern, in the Americas’ – in the post-classical period the Yucatan moved to less elevated forms of leadership in which status was more broadly distributed. Thus the distributed agency at the base of the pyramid was strengthened by more horizontal dispersion of status near the top. It is perhaps not a coincidence that the cultural achievement of the post-classical Maya fell well short of the remarkable efflorescence in the lowlands and also the heyday of Uxmal and the surrounding sites. The motivation for monumental buildings and aristocratic artefacts had been greatly reduced, though walls and fortifications were still built, and there was more trade than before.

5. Until recently the contemporary Maya were using the slash-and-burn technique widely employed prior to the rise of the city-states in the last millennium BC, to which their ancestors had resorted after the collapse of Mayan civilization. Adaptive mosaic planting is now being revived in what is left of the rainforest in the region.

6. Arguably the profit-making university research identified by Sheila Slaughter and collaborators, while important especially in the leading institutions in the USA, is more the exception than the rule in university science. Research universities are harnessed to the knowledge industries via ideology, policy and marginal funding, and there are continuing tensions between academic values and commercial interests (Bok, 2003), but the commercialization of research findings takes place largely outside the academic units and most of the economically useful science is free rather than purchased. Public goods contribute to the capitalist economy, but this is different from becoming identical with it. The most obviously commercial zone is biomedicine and pharmaceutical research. These disciplines are the ones mostly discussed in relation to the commercialization of research but, although important, they are also exceptional.

7. The global trajectory of India in the knowledge economy is less clear, though its trading and information power is apparent.

8. The website contains all of the ranking outcomes since the series began in 2003, including the rankings by broad disciplinary field from 2007 onwards, and a detailed explanation of the methodologies used, relevant papers and links to ranking sites worldwide.


10. The index is primarily driven by academic publication and citation, mostly in science-based disciplines with some attention to social sciences and humanities: 20 per cent citation in leading journals as listed by the publisher Thomson;
20 per cent articles in *Science* and *Nature*, and 20 per cent the number of Thomson/ISI ‘HiCi’ researchers in the top 250–300 in their fields on the basis of citation (Thomson-ISI, 2008). Another 30 per cent is determined by Nobel Prizes in the sciences and economics and Fields Medals in mathematics, based on their training (10%) and current employment (20%). The other 10 per cent is determined by dividing the above total by the number of academic staff (SJTUIHE, 2008). The Nobel indicators are the most controversial, as the prizes are submission-based and, arguably, factors other than merit enter into the decisions.

11. Trends in the Jiao Tong indicate that China’s universities have been steadily lifting their research performance according to the self-imposed rankings benchmark. In the first five Jiao Tong rankings, the number of universities from China and Hong Kong in the world’s top 500 rose from 13 in 2003 to 18 in 2008. Shanghai Jiao Tong University itself moved from the world’s top 450 research universities in 2003 to the top 300 research universities in 2008. There is still far to go to achieve the ultimate objectives. As yet, there are no universities from China in the world’s top 100 research institutions.

12. ‘Saying that a high-ranked position in society is a thing of real value is exactly the same as saying a low-ranked position imposes real costs’ (Frank, 1985: 117).

13. In the United States both the number and the make-up of the leading universities have been largely constant since World War I, though the position of public institutions has deteriorated relative to private institutions (Pusser, 2002).

14. This is distinct from the polarity identified by Bourdieu (1993) between the sub-field of high status production in which ‘art for art’s sake’ masks claims for social primacy, and the sub-field of mass or commercial production. There is no place for the fecund open source world in Bourdieu’s argument about cultural production, which was developed prior to the digital age. Arguably, Bourdieu’s polarity applies more exactly to the production of education, where it describes the contemporary tension between elite universities and mass universities (Marginson, 2008), and where digital delivery has not substituted itself for face-to-face institutions, than it does to cultural production.

15. Here we contrast with the civilized Neolithic, the worlds of classical Greece and the Maya. In these settings dispersed agency flourished via agricultural and artisan production, at a high level of creativity in the case of the mosaic field plantings and occasional use goods of the Maya, street philosophy in Greece, and the architecture, sculpture, ceramics and decorative arts in both sets of city-states. Both developed a public theatre nested in reciprocity between the formation of agency and the responses of the participant-audience. In the global knowledge economy, dispersed human agency flourishes in the more connective (and in that respect more socially formative) and even more democratically dispersed open source cultural production and social networking technologies such as Facebook.

References


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