Four tiers

Abstract.

This paper posits a classification of tertiary education institutions into four tiers: world research universities, selecting universities, recruiting universities, and vocational institutes. The distinguishing characteristic of world research universities is their research strength, the distinguishing characteristic of selecting universities is their strong student demand, the distinguishing characteristic of recruiting universities is their lower student demand, and the distinguishing characteristic of vocational institutes is their predominance of vocational programs. Yet there is one general characteristic that underlies the whole classification: positional value. The classification is put within a theoretical framework which generates tests of the classification proposed in the paper.

Keywords: tertiary education; higher education; classification; stratification; tiers

Introduction

Classification is a basic tool of analysis. It is a way of summarising information and of building a simplified but explanatory model of reality. It allows one to identify common properties of phenomena from which one may develop laws or principles of action and hence it is an important early stage in the scientific method (Hempel 1965: 146). A major advance in the natural sciences was Carl Linnaeus' publication of his taxonomy *Systema naturae* (System of nature) in 1735, and Mendeleev's invention of the periodic table of the chemical elements in 1869 has been important not only in chemistry but also in physics, biology and engineering. Classification is also important in the scoial sciences. Montesquieu's treatise on political theory and jurisprudence *De l'esprit des lois* (On the spirit of laws) published in 1748 included an important classification of political systems. Georges de Cuvier's publication in 1800 of *Leçons d'anatomie comparée* (Lessons on comparative anatomy) not only established the discipline of comparative anatomy but was widely influential, being the model for the comparative studies of language and religion (Schriewer 2006: 301).

Cuvier also provided the model for comparative education. Jullien (de Paris), who is widely understood to be the founder of the discipline of comparative education, wrote –

> Research work in comparative anatomy has led to considerable progress in the science of anatomy. Likewise, research in comparative education should provide new means for improving the science of education … so that education might turn into an almost positive science instead of remaining at the mercy of the limited and narrow views, the caprices and the arbitrariness of those who are in charge of it.

> (Jullien 1817: 13; cited in Schriewer 2006: 303)

Cuvier's method was to deduce from his study of similarities and differences objects' functions and structural patterns or underlying laws of organization. Jullien proposed to collect data by questionnaire, a tool then novel but of course now ubiquitous, and to arrange the collected facts and observations in 'analytical tables so that they can be correlated and compared with a view to deducing therefrom firm principles and specific rules' (Jullien 1817: 324-5). According to Koehl (1977) education is still developing its analogue of the life science's taxonomy and chemistry's periodic table. Koehl (1977: 177) says that 'some of the crucial theoretical problems facing contemporary comparative education, particularly those of classification, terminology, and morphology, were confronted by the practitioners of these early sciences and have analogies if not exact parallels in the taxonomic manuals of chemistry, geology, and biology of the not too distant past'.

This paper posits a classification of tertiary education institutions as a basic tool of analysis in summarising information and building a simplified but explanatory model of reality. I claim the classification applies to wealthy English-speaking countries, but it may apply more widely. Although further testing of the classification is beyond the scope of this paper, the classification may be associated with other characteristics not included in the classification, such as institutions' different aspirations. The classification may even predict institutions' behaviour, such as their responses to changes in the environment.

Intuitive and functional classifications of institutions

Classification of tertiary education institutions became increasingly common following the great expansion of tertiary education in wealthy countries from the middle of the twentieth century. Mass systems serve multiple functions which, many argue, are best met by institutional specialisation (Meek et al 1996). Classification is a way of articulating and systematising different institutions which may serve different functions. One of the earliest influential typologies of institutions in the US is the Carnegie classification of institutions of higher education, first published in 1973, which classifies US institutions primarily by the highest qualification they mainly award (Carnegie Foundation for the Advancement of Teaching 2007).

Earlier classifications of tertiary education institutions were intuitive and largely historical. The Robbins (1963: 22-34) report into UK higher education categorized UK higher education institutions into three types: universities, colleges for the education and training of teachers, and institutions of further education. It considered universities in seven historical and national groups: Oxford and Cambridge, the four ancient Scottish universities, the University of London, the older civic universities of England, the University of Wales, what it called the younger civic universities but which later have been more commonly known as the redbrick universities, and finally the universities that had been established most recently such as the University of Sussex. Robbins divided further education institutions into six types: colleges of advanced technology, regional colleges, area colleges, local colleges, art schools and commerce

colleges, and other colleges such as national colleges in specialized technologies and agricultural colleges.

Scott's (1995: 44-8) classification of UK higher education institutions is heavily reminiscent of Robbins' groups. Scott identified 12 'sub sectors of the university system' based on universities' history, country (Scotland, Wales and Northern Ireland are each sub sectors), disciplinary orientation (Scott formed a sub sector of technological universities from the former colleges of advanced technology) and on universities' distinctive characteristics (Scott put each of the University of London and the Open University in their own separate sub systems). Scott propounded four sub groups of other higher education institutions: larger multi faculty colleges, liberal arts colleges which developed from teacher training colleges, mixed sector colleges which offer further and higher education, and specialized colleges such as creative arts academies and agricultural colleges.

Tight (1996) analysed Scott's intuitive typology and constructed his own new typology. Tight applied two multivariate techniques - cluster analysis and factor analysis - on 42 variables of 140 universities and other English higher education institutions. The variables included institutions' total enrolments, enrolments by level and mode of study, mix of disciplines, funding level, and student demographics. Tight specifically excluded institution's age from the analysis. His analysis generated 16 groups which were differentiated mainly by size, discipline spread, and study level and mode. Interestingly, his typology 'distinguishes almost perfectly between the old universities, the new universities and colleges, though these characteristics did not form a direct part of the data base used' (Tight 1996: 74). So age of institution is sufficiently related to other institutional characteristics to be independently predicted by these other characteristics. And because age is salient Tight found considerable continuity with Scott's typology and other earlier typologies he examined.

Lysons and Hatherley (1996: 26) grouped UK universities, also by an intuitive analysis of their antecedents: classical redbrick universities, former polytechnics, former colleges of technology and greenfields universities. Lysons, Hatherly and Mitchell (1998: 14) conducted extensive sensitivity analysis of various systematic combinations of data on UK universities published by the Universities Funding Council and the Times Good University Guide in 1992. They found that unidimensional approaches did not discriminate well between universities and formed groups that appeared to be 'quite unrealistic', or counter intuitive. However, their multidimensional analysis of Times Good University Guide data on the quality of a diverse range of higher educational activities successfully predicted all four of the categories of institutions as being quite distinct (Lysons, Hatherly and Mitchell 1998: 15-6).

In 1976 Cameron (1981) analysed 41 colleges and universities in seven States in the northeast United States by nine dimensions of organisational effectiveness: student educational satisfaction; student academic, career and personal development; academic staff attainment and professional development; staff satisfaction; community interaction; ability to acquire resources; and organizational health. Cameron (1981: 34-5) found that the 41 institutions clustered in four dimensions of institutional effectiveness: external adaptation, morale, academic orientation, and student personal development. Cameron (1981:

34-5) found four groupings of institutions that had similar scores on his effectiveness dimensions also emerged from a clustering procedure. Cameron's (1981: 36, 40) four groups were 'scholarly-high morale' which he labelled affluent academic institutions, 'scholarly-medium morale' – affluent professional, 'externally oriented' – developing professional, and a 'mediocre group' which scored average and below average levels of effectiveness which he labelled developing teaching institutions.

Applying Cameron's method, Lysons (1990: 293) used a discriminant analysis of eight factors emerging from a survey of senior higher education staff to predict an intuitively meaningful classification of Australian higher education institutions into four groups reflecting their antecedents: older universities, institutes of technology, colleges of advanced education and younger universities. Stanley and Reynolds (1994: 359) and Marginson (1997a: 10, 12) posited Lysons' grouping of Australian higher education institutions, although with different labels reflecting subsequent developments and the authors' tastes, and apparently independently since they cite neither Lysons nor each other.

Stanley and Reynolds (1994: 366) concluded from their various cluster analyses of statistical and performance data that Australian universities in 1993 'differ from each other on so many characteristics that it is not possible to obtain consistent simple clusterings for the majority of universities'. Stanley and Reynolds (1994: 366) argue that 'it is not possible to reduce the complex multidimensional profile of institutional data into a simple ordering'. They note that their results are consistent with Johnes and Taylor (1990: 178) who found no consistency in the performance of UK universities in a range of indicators and concluded that 'it would be pointless to attempt to construct a composite performance indicator which attempted to measure the overall performance of each university across several indicators simultaneously'. In contrast, Ramsden (1999: 354) found that research performance predicted Lysons' categorisation of 28 of the 36 (78 per cent) of Australian universities.

Hierarchical classifications of institutions

Bleiklie (2005: 36) observes that while early classifications of institutions were by their specialisation such as teachers' colleges, liberal colleges and research universities, contemporary classifications establish a hierarchy 'from 2-year colleges via bachelor degree institutions to graduate degree institutions (universities)' to construct 'a standardised rank order against which all institutions are measured and positioned according to one single or a very limited set of criteria'. Bleiklie associates this development with institutions becoming more general and education systems becoming more integrated and standardised with common degree and grading systems which allow analysts to order institutions hierarchically.

But this is surely part of a broader trend. Once mass higher education had been established classifications changed from horizontal typologies associated with functional specialisation to vertical stratifications associated with hierarchical differentiation (Kogan 1997: 50; Teichler 2008: 361). This an application of Lucas' (2001) hypothesis of effectively maintained inequality, the hypothesis that once a level of education reaches saturated participation, lower inequalities in

participation overall are replaced by inequalities in participation in a more selective tier or track at that level. Applying this to higher education, the hypothesis states that more equal participation in higher education overall will be replaced by increased stratification of institutions and increased inequality in participation in the most selective tier of higher education.

This explains the recent growth of national and international university league tables. An early ranking of universities was a reputation survey in 1925 by Raymond Hughes, then president of Miami University of Ohio. Hughes asked his university's academic staff for the names of distinguished scholars in 20 fields. He surveyed those scholars to generate a rank of the top 38 PhD-granting institutions from the 65 that then existed in the US (Brooks 2005: 4). Various US surveys followed. In the mid 1970s the Oxford sociologist A H Halsey surveyed academics from across the UK and asked them to rank university departments (Morris 2005). The order of these institutions has hardly changed nearly 30 years later according to Morris (2005).

But league tables published in the popular media and directed to prospective students did not become prominent until the coincidence of three aspects of the massification of higher education:

1   a saturation of participation in higher education, increasing the importance of hierarchical distinctions between institutions;

2   an increase in higher education institutions beyond the number that could be readily known for their individual characteristics;

3   a broadening of the population of prospective students beyond those who have the cultural capital (Bourdieu 1973) to distinguish institutions by their positional value (Hirsch 1976).

Thus a popular league table became prominent first in the US, the first country to achieve mass higher education, in 1983 when the *US News and World Report* (2008) started publishing it annual rankings of US colleges and universities. Canada followed eight years later when *Maclean's* (2008) magazine first published its rankings of Canadian universities in 1991. The *Deutscher Akademischer Austausch Dienst* (DAAD, German academic exchange service) and *Centrum für Hochschulentwicklung* (CHE, Centre for higher education development) has produced a ranking of Germany's 250 universities since 1998 (Federkeil 2002: 390). However, this ranking is a web system for sorting institutions by performance in each major discipline, not a league table. The UK's *Sunday Times* (Times Newspapers Ltd 2008) first published its league table of UK universities in 2001.

World university league tables were developed when broadly similar conditions were met for international students. Thus it is noteworthy that an early popular international university league table was published in Asia, which for decades has been a major source of international students, when the magazine *Asiaweek* published its report 'Asia's best universities' from 1997 to 2000. In 2002 and again in 2004 the Swiss Federal Government's *Zentrum für Wissenschafts und Technologiestudien* (Centre for Science and Technology Studies 2007) published

its 'Champions league' of research institutions which ranked universities and other research institutions by their number and impact of research journal publications. These tables were developed mainly to inform public policy, as was Shanghai Jiao Tong University's institute of higher education's (2008) annual academic ranking of world universities which was first published in 2003. A popular world university league table is the Times Higher Education's (2008) annual world university rankings, which were first published in 2004.

Scholars, too, have developed hierarchical classifications of institutions. Yogev (2000: 184) established that Israeli universities form two distinct groups: elite universities aiming at academic excellence, and 'target' universities aimed at specific or peripheral populations. Williams and Van Dyke (2007, 2008) published league tables of Australian universities and their disciplines and Shin (2008) used a hierarchical cluster analysis of number of publications indexed by Thomson Reuters and external research grants to classify 47 Korean universities with doctoral programs into five clusters: research group 1 (Seoul National University), research group 2 (four universities), research group 3 (two universities), research active university (14 universities) and doctoral university (26 universities). Hermanowicz (2005: 42-3) derived a cultural classification of institutions into elite, pluralist and communitarian from his interviews of 60 physicists in departments ranked in the top, middle and bottom tier by the National Research Council's assessment of doctoral granting institutions.

Composite classifications of institutions

Grubb (2005: 28-9) observes that in many countries tertiary education is split into more than two parts, and that there are important differences within sectors. Grubb (2005: 29) proposes three tiers of tertiary education: universities which are older, have high status, strong research performance and which are highly selective; younger and lower status universities and non university higher education institutions which offer at least bachelor programs but which don't have as strong research performance and are less selective; and non university providers which typically do not offer full bachelor programs. This paper follows Grubb's approach but proposes four tiers of tertiary education. It presents the classification hierarchically: World research universities, selecting universities, recruiting universities and vocational institutes.

World research universities

As is well known, California formally segments its public four year colleges and universities into two segments. The more selective segment is the University of California which has a formal research role, offers doctorates in a wide range of disciplines and is restricted to admitting the top 12.5 per cent of high school graduates. The other segment is the California State University, which does not have a formal research role (although research is conducted in the university), does not offer doctorates in its own right and is restricted to admitting the top 33.3 per cent of high school graduates.

In some other jurisdictions there is no formal segmentation of universities but the older, more research intensive and more selective institutions have formed themselves into a group. One of the oldest of such groups is the Association of

American Universities (no date) which was formed in 1900 by a group of 14 universities offering the PhD. The association currently comprises 60 US and two Canadian universities. In the UK an informal self selected body of 20 research led institutions formed itself into the Russell Group (no date) in 1994. In the same year in Australia the eight universities with the biggest research expenditure formed itself into the Group of Eight (no date).

In other jurisdictions there may be no formal or informal segmentation of universities but it is still possible to discern two groups. The most prominent group is of institutions which have a big research expenditure, are normally at least 100 years old but most are much older and are highly selective and thus are also elite. These institutions might be called world research universities. The other institutions are generally younger, have less research expenditure and are moderately and less selective and thus are less socially elite.

For students, staff, businesses and governments which are not internationally mobile the national indicators of institutional standing are sufficient. However, students, research funding and staff are increasingly mobile across national boarders. Because education is a positional good international students as well as domestic students choose institutions within their financial and educational reach which have the highest status. Multi national businesses commission research from the institutions which have the highest standing in their field of interest in the world, or at least in the countries in which they have operations or a market. Governments are also increasingly allocating research funds to the institutions with the highest international standing. Staff in turn are attracted to institutions with the best research facilities and working conditions and therefore the highest funding, as well as to institutions with the best prepared students and highest status.

Simply comparing the national groupings of world research universities is not satisfactory for internationally mobile students, staff and business. Many countries don't have formal groupings of highly selective universities. Of those that do, the balance between world research universities and other institutions differs in each country. Thus the Association of American Universities is two per cent of US universities, the Russell Group is 12 per cent of UK universities and the Group of Eight is 21 per cent of Australian universities. Since the markers of distinction differ in each country it is not possible to compare directly a member of the Association of American Universities and a member of the Russell Group, for example. An international distinction between world research universities and other institutions is therefore useful and salient because it affects the international flow of students, research funding and staff. The most methodologically sound and authoritative world ranking of universities is the academic ranking of world universities compiled by Shanghai Jiao Tong University's Institute of Higher Education. This ranking is, however, of research only, it is dominated by research in the physical sciences, it privileges English over other languages of science and it favours bigger institutions.

The level of selectivity of membership of the Association of American Universities, the Russell Group and the Group of Eight is similar to being in the top 200 of Shanghai Jiao Tong University's academic ranking of world universities. Inclusion in the top 200 of this rank is therefore arguably an appropriate working definition of world research universities. It is, however, very

selective and would mean that these countries would not have a world research university despite having very fine institutions: Chile, Czech Republic, Greece, Hungary, India, Ireland, New Zealand, Poland, Portugal and South Africa. All universities in Shanghai Jiao Tong University's academic ranking of world universities compete against each other on similar grounds, so it may be appropriate as well as convenient to define world research universities as those that are ranked in Shanghai Jiao Tong University's academic ranking of world universities. Some 500 universities are ranked in Shanghai Jiao Tong University's academic ranking of world universities, which is five per cent of the approximately 9,760 universities in the world. So the more inclusive working definition of world research universities is still very selective.

Selecting and recruiting universities

While the more inclusive definition of world research universities would include in one category universities with considerable differences, arguably there is even greater variation amongst the universities not included in the rank. The US has 159 universities in the 2008 Shanghai Jiao Tong University academic ranking of world universities, which is six per cent of its 2,580 institutions offering four year or bachelor degrees. The UK has 42 universities in the Shanghai Jiao Tong rank which is 25 per cent of its 170 universities and higher education colleges. Canada's 21 universities in the Shanghai Jiao Tong rank are 23 per cent of its 92 public and private not for profit universities and university-degree level colleges and 45 per cent of its 47 universities. Australia's 15 ranked universities are 38 per cent of its 39 universities. So from 60 per cent to 80 per cent of countries' universities are not world research universities and by virtue of their much greater number one may expect at least as much if not greater variation amongst non world research universities as there is amongst world research universities.

The considerable variation amongst universities not included in Shanghai Jiao Tong University's academic ranking of world universities is evident from the various university categorisations within countries. The substantially revised 2005 Carnegie classification of institutions of higher education has a basic categorisation of institutions by level of highest award into associate's colleges, baccalaureate colleges, master's colleges and universities, doctorate granting universities, special focus institutions and tribal colleges. Each basic category has sub categories. Thus doctorate granting universities are divided by level of research activity into three sub categories and masters colleges and universities are divided into three sub categories by size of their masters programs (Carnegie Foundation for the Advancement of Teaching 2007). The UK has sub groupings of universities based broadly on age and research intensity, with the 1994 group being the next prestigious after the Russell Group. There is a broader divide in UK universities between pre 1992 universities and post 1992 universities, most of which were formed by redesignating former polytechnics. *Maclean's* (2008) categorises Canadian universities into medical doctoral universities, comprehensive universities and primarily undergraduate universities. Like the UK, Australia also has sub groupings of universities based largely on research intensity and age, and also like the UK, Australia has a broad divide between pre 1987 universities and post 1987 universities which were largely formed by redesignating former colleges of advanced education.

While these distinctions between non world research universities differ in detail between countries, arguably it is possible to draw a common distinction between them based on Maclennan, Musselbrook and Dundas' (2000) distinction between selecting and recruiting universities. Maclennan, Musselbrook and Dundas (2000: 12) observe that post 1992 higher education institutions often promote themselves more prominently seeking to recruit students to fill their enrolment targets. In contrast, pre 1992 higher education institutions have traditionally followed a softer approach, relying more on liaison with schools. A recruiting university might be defined as one that has fewer than two applications for each student place to be filled while a selecting university would have two or more applications for every place to be filled. Recruiting universities have a demand problem and therefore operate in a buyers' market in which the competition is between institutions for eligible students. In contrast there is a supply problem with selecting universities which therefore operate in a sellers' market in which the competition is between students for admission to desirable institutions (Marginson 1997b: 251).

Vocational institutes

The international standard classification of education distinguishes between two types of tertiary education (UNESCO 1997). Tertiary type A programs typically require a minimum of three years' full time study, they are theoretically based and prepare students for research in basic disciplines or provide access to professions with high skills requirements. Tertiary type B programs are typically shorter than type A programs and are practical, technical or occupationally specific. This distinction also often coincides with a distinction between tertiary type A programs leading to the award of a baccalaureate or bachelor's degree and tertiary type B programs leading to sub baccalaureate awards such as certificates, diplomas and associate or foundation degrees. The distinction also often coincides with students' social origins, occupational destinations and manner of attendance.

While institutions that offer mainly tertiary type A programs are known as universities in most jurisdictions, institutions that offer mainly tertiary type B qualifications are known variously as further education colleges in the UK, community or two year colleges in the US and Canada, and vocational education and training institutions in Australia. They are called vocational institutes here. They often have open entry in contrast with recruiting universities which typically administer matriculation requirements notwithstanding that they enjoy weaker demand than selecting universities. Most university students are full time while in many jurisdictions a higher proportion of vocational education students study part time. Vocational institutes are also sometimes referred to as 'less noble' in contrast to the 'noble' universities (OECD 1971), referring to their status or esteem.

The proportions differ in different states, but in the US associate degrees typically comprise from 20 per cent to 40 per cent of total equivalent full time student load in tertiary education, with the national average being 30 per cent (US Department of Education 2000). Some 11 per cent of higher education load in England and 27 per cent of tertiary education load in Scotland is taken in colleges of further education (Parry and Thompson 2002). Vocational education is 17 per cent of tertiary education load in Australia, 37 per cent in Canada, nine per cent in France and 15 per cent in Germany (Grubb 2005: 19). Because vocational institutes tend

to enrol many more part time students than universities, and because their part time students often take a lighter study load than part time students in higher education, vocational education enrolments can be up to three times more than their equivalent full time student load.

Some countries offer in post compulsory non tertiary institutions vocational programs that other countries offer in tertiary institutions. Others provide programs at post compulsory non tertiary level which seem to have a similar occupational outcome as programs that are offered at tertiary level in other countries. These programs are classified in the international standard classification of education as level 4 - post secondary non tertiary education, with type 4B programs being those primarily designed for direct labour market entry. Thus the boundary between tertiary and post compulsory non tertiary institutions may differ in each country. Nonetheless, the distinction has been applied by almost all OECD countries for several years and is widely understood.

Four tiers

We may thus posit four tiers, segments or sectors of tertiary education (Moodie 2008: 117-120). At the top is world research universities. These are the universities listed in Shanghai Jiao Tong University's academic ranking of world universities, or if a more selective tier is sought, in the top 200 of the Shanghai Jiao Tong rank. These institutions are very research intensive, which is supported by considerable research funding from government and often from philanthropists, business and alumni. They compete internationally for staff, students and research funding. Most of their students study full time and a significant proportion live on campus in colleges or other university residences.

The second tier is selecting universities and colleges. These institutions offer at least bachelor degrees but probably also masters and doctorates. Most conduct research and some have areas of international research strength. However, their research strengths are not sufficient to win them a place in the Shanghai Jiao Tong rank or a place in the top 200 of that rank. These institutions nonetheless have very high standing at least in their region if not nationally and internationally and thus enjoy strong demand for their programs. Typically most students study full time and at least some students live on campus.

The third tier of recruiting universities and colleges comprises institutions which may be similar in many ways to selecting universities and colleges but they don't have the national nor perhaps even the regional standing of their selecting counterparts, probably because they are distinctly younger. While many students study full time many also study part time while working and most commute to campus from home. The fourth tier is of vocational institutes which enrol 75 per cent or more of their load in vocational education programs such as vocational associate's degree in the US, higher national certificate and diplomas and diplomas of higher education in the UK and diplomas and associate degrees in Australia. Typically most students study part time combining study with work, and all commute to college. This categorisation of tertiary education institutions is shown in table 1.

Table 1: four tiers of tertiary education

Tier	Rank	Research	Selectivity	Class
World research university	SHJT/top 200	Intensive	Extremely selective	Elite
Selecting university	High in national rank	Strong	Highly selective	Weighted to middle-upper
Recruiting university	Middle to low in national rank	Active	Selective – less selective	Weighted to middle-lower
Vocational institute	Unranked	None	Less selective – open entry	Broad

It should be noted that unlike some national categorisations such as the US' Carnegie classification and Canada's *Maclean's* categorisation, the classification proposed here does not distinguish institutions by size or breadth or even by nomenclature. The California Institute of Technology, widely known as Caltech, is clearly a world research university, being ranked sixth in Shanghai Jiao Tong University's 2008 academic ranking of world universities. Yet it has only just over 2,000 students concentrated in engineering and sciences and isn't even called a university. Imperial College London has 12,500 students concentrated in engineering, natural sciences and medicine. Yet Imperial Colleges is also clearly a world research university, being ranked 27 in 2008.

I claim the classification is exhaustive, although perhaps some institutions may not fit as neatly into some categories as others. Thus US liberal arts colleges (which are less than one per cent and shrinking albeit still prominent part of that country's higher education) would be selecting or recruiting universities depending on their student demand. But the tiers have fuzzy boundaries and some institutions at a boundary may move between tiers. Thus, a university may be ranked in Shanghai Jiao Tong University's academic ranking of world universities in one year but not in another. Likewise the boundary between selecting and recruiting universities is fuzzy. Many universities which have soft demand for most of their programs have one or two programs with strong student demand. Others may have a more even mix of programs with strong and soft student demand. While I have proposed a precise operational definition of selecting universities as those with two or more applications for every place to be filled, there will be institutions at the margin and these may change from time to time. For most institutions, however, the tiers seem to be clear and stable over several years.

The stability of the classification overall does not mean that every institution's placement in a tier is fixed. Some, but relatively few, institutions move between tiers over a relatively short period of a generation. The University of Warwick is an example of a UK university that has moved relatively quickly into the tier of world research universities, George Washington University may be an example of a US university that has relatively recently moved from recruiting to selecting en route to being a world research university, and Johns Hopkins University is often cited as an example of a university that relatively quickly established itself as a world research university in an earlier generation. Likewise, some universities fall down tiers over time. The classification thus admits movement of individual institutions while being stable overall.

The distinguishing characteristic of world research universities is their research strength, the distinguishing characteristic of selecting universities is their strong student demand, the distinguishing characteristic of recruiting universities is their lower student demand, and the distinguishing characteristic of vocational institutes is their predominance of vocational programs. The classification is therefore not just a simple stratification since the institutions in each tier are also differentiated by non hierarchical characteristics such as predominant study mode and vocational orientation.

Nevertheless, there is one general characteristic that underlies the whole classification: positional value (Hirsch 1976). The tiers are organised in order of their positional value from world research universities which have the highest positional value in descending order to vocational institutes which generally have the lowest positional value in tertiary education, although they still have markedly more positional value than secondary education. This is illustrated by the OECD's *Education at a glance*. Table A9.1a reports populations' relative earnings from employment by level of educational attainment. Employees without upper secondary education in OECD countries earned on average 78 per cent of the income of employees with upper secondary education. Employees with vocational education qualifications earned on average 24 per cent more than those with upper secondary education. And employees with a tertiary education type A qualification had an earnings premium of 63 per cent above workers with upper secondary education qualifications (OECD 2007).

These four tiers manifest differently in different countries and systems. For example, Labaree (2006: 7) also posits four tiers in US tertiary education, but notes the parallel hierarchies of religious institutions and liberal arts colleges in his classification. There are also exceptions to these generalisations. Employees with vocational education qualifications earn 54 per cent more than upper secondary graduates in Norway, 19 per cent higher than the earning premium of Norwegian university graduates. Since Norwegian vocational institutes confer greater economic value on their graduates than universities they are likely to also have more positional value. Arguably in France the *grandes écoles* that don't have a strong research role and thus would be classified as selecting institutions are more selective and have higher positional value than the French world research universities. And again in France, the *instituts universitaires de technologie* are vocational institutes but are more selective and arguably have higher positional value than many universities. Presumably there are other exceptions in other countries, but the broad generalisation holds.

Conclusion

This paper has posited a classification of tertiary education institutions into four tiers: world research universities, selecting universities, recruiting universities, and vocational institutes. The classification is descriptive, not normative. That is to say, my aim has been to describe broad patterns that seem shared by institutions in several countries that have mass higher education. I do not imply that such a tiering is desirable or even inevitable. In particular, I have not accepted the functionalists' argument that the different needs of society are best met by different types of institutions, rather than by, for example, comprehensive institutions that are internally differentiated.

The success of this attempt may be assessed at several levels. First, one may consider whether a classification of institutions is needed. However, the ubiquity of systems for classifying tertiary education institutions suggests that they are useful. One may also question whether a quasi hierarchical classification of institutions is appropriate or even possible in view of the lack of comparable international data on tertiary education institutions' most important activity: education. The OECD's (no date) proposed study of the feasibility of an international assessment of higher education learning outcomes may in time generate comparable data, but arguably until that time any hierarchical classification of institutions is not only gratuitous but misleading. The prevalence and indeed prominence of institutional ranks is no answer to their severe methodological limitations. On the other hand, I have argued that a broad banding of institutions reflects their relative position in society's social and economic hierarchies.

Secondly, one may assess whether this particular classification of institutions is adequate. The coincidence of this classification with previous classifications by Grubb (2005) and Labaree (2006) suggests that these types of classification have an intuitive cogency, at least for wealthy English-speaking countries such as Australia, Canada, New Zealand, the UK and the US. Readers will judge for themselves whether this classification succeeds in the first feature of classifications mentioned in this paper, of summarising information and building a simplified but explanatory model of reality.

More substantial tests of the classification are whether it can serve the roles that Hempel (1965: 146) identified for classifications in science. One test is whether the institutions similarly classified share characteristics beyond those that were used to define the classification. For example, do institutions in the same tier have similar aspirations, and are they substantively different from the aspirations that are shared by institutions in the other tiers? There is some evidence that they do in Cyrenne and Grant's (2007) study of factors that affect the prestige and behaviour of Canadian universities. Cyrenne and Grant found that universities ranked differently on *Maclean's* reputational survey placed different emphases on research, student selectivity and community service.

A second test derived from Hempel is whether the classification allows one to develop hypotheses which may be tested by subsequent observation. For example, Vincent-Lancrin (2004: 259) posits six drivers of higher education futures: demographic change and the introduction of lifelong learning, the mix of funds from public and private sources, the breadth and specialisation of institutions' roles, the take-up of information and communication technology, and the cross-border mobility of students, academics, educational programs and institutions. If the institutional tiers posited in this paper are salient institutions in each tier will respond similarly to each driver, and institutions in each tier will respond to at least some of the drivers differently from institutions in other tiers. These substantial tests of the classification go beyond the scope of this paper. But they would be a fruitful subject of future research for they may lead to theory building, giving the classification systematic import as Hempel (1965: 149) describes.

References

Association of American Universities (No date). About AAU. http://www.aau.edu/. Accessed 6 July 2008.

Bleiklie, I. (2005). Organizing higher education in a knowledge society. Higher Education, 49, 31–59.

Bourdieu, P. (1973). Cultural reproduction and social reproduction. In R. Brown (Ed.), Knowledge, Education and Cultural Change (pp. 71-112). London: Willmer Brothers Limited.

Brooks, R. L. (2005). Measuring university quality. Review of Higher Education, 29, 1-21.

Cameron, K. S. (1981). Domains of organizational effectiveness in colleges and universities. The Academy of Management Journal, 24(1), 25-47.

Carnegie Foundation for the Advancement of Teaching (2007). The Carnegie classification of institutions of higher education. http://www.carnegiefoundation.org/classifications/. Accessed 5 July 2008.

Center for Science & Technology Studies (2007). Bibliography of the competence center for scientometrics. http://www.cest.ch/en/scientometrie/studies.htm. Accessed 6 July 2008.

Cyrenne, P., & Grant, H. (2007). University decision making and prestige: An empirical study. Economics of Education Review, doi:10.1016/j.econedurev.2008.06.001

Deutscher Akademischer Austausch Dienst (DAAD). CHE university ranking. http://www.daad.de/deutschland/hochschulen/hochschulranking/06543.en.html. Accessed 6 July 2008.

Federkeil, G. (2002). Some aspects of ranking methodology—the CHE-ranking of German universities. Higher Education in Europe, XXVII(4), 389-97.

Gautherin, J. (1993) Marc-Antoine Jullien ('Jullien de Paris') (1775–1848). Prospects: the quarterly review of comparative education, XXIII(3/4), 757–73. http://www.ibe.unesco.org/publications/ThinkersPdf/julliene.PDF. Accessed 23 December 2007.

Group of Eight (no date). Group of Eight. http://www.go8.edu.au/. Accessed 6 July 2008.

Grubb, N. W. (2005). Chapter 1: Alternatives to universities revisited. Education Policy Analysis 2004, 15-46.

Hempel, C. G. (1965). Aspects of scientific explanation and other essays in the philosophy of science. New York: Free Press.

Hermanowicz, J. C. (2005). Classifying universities and their departments: a social world perspective. The Journal of Higher Education, 76(1), 26-55.

Hirsch, F. (1976). Social limits to growth. London: Routledge & Kegan Paul.

Johnes, J. & Taylor, J. (1990). Performance indicators in higher education. Society for Research into Higher Education. Bury St Edmunds: St Edmundbury Press. Cited in Stanley and Reynolds (1994).

Jullien, M. (1817). Esquisse et vues préliminaires d'un ouvrage sur l'éducation comparée [Outline and preliminary views of a work on comparative education]. Paris: L Colas. Cited in Gautherin, J. (1993: 12 fn 8).

Koehl, R. (1977). The comparative study of education: prescription and practice. Comparative Education Review, 21(2/3), 177-94.

Kogan, M. (1997). Diversification in higher education: differences and commonalities. Minerva, 35, 47-62.

Labaree, D. F. (2006). Markets, politics, and American higher education: an institutional success story. http://www.stanford.edu/%7Edlabaree/. Accessed 23 December 2007.

Lucas, S. R. (2001). Effectively maintained inequality: education transitions, track mobility and social background effects. American Journal of Sociology, 106, 1642-90.

Lysons, A. (1990). Dimensions and domains of organisational effectiveness in Australian higher education. Higher Education, 20(3), 287-300.

Lysons, A., Hatherly, D. (1996). Predicting a taxonomy of organisational effectiveness in U.K. higher educational institutions. Higher Education, 32(1), 23-39.

Lysons, A., Hatherly, D., Mitchell, D. A. (1998). Comparison of measures of organisational effectiveness in U.K. higher education. Higher Education, 36, 1–19.

Macleans (2008) Rankings. http://oncampus.macleans.ca/education/rankings/. Accessed 6 July 2008.

Maclennan, A., Musselbrook, K. & Dundas, M.(2000). Credit transfer at the FE/HE interface – research report for the Scottish Further Education Funding Council. Edinburgh: Scottish Further Education Funding Council.

Marginson, S. (1997a). Competition and contestability in Australian higher education, 1987–1997. Australian Universities' Review, 40(1), 5–14.

Marginson, S. (1997b) Markets in education. St Leonards: Allen & Unwin.

Meek, V. L., Goedegebuure, L., Kivinen, O., Rinne, R. (eds) (1996). The mockers and the mocked: comparative perspectives on differentiation, convergence, and diversity in higher education. New York: Permagon/IAU Press.

Moodie, G. (2008). From vocational to higher education: an international perspective. Maidenhead: McGraw-Hill.

Morris, H. (2005). A rank influence. Education Guardian, 9 December. http://education.guardian.co.uk/higher/comment/story/0,9828,1662118,00.html. Accessed 16 July 2008.

Organisation for Economic Co-operation and Development (OECD) (1971). Towards new structures of post-secondary education: a preliminary statement of issues. Paris: OECD.

Organisation for Economic Co-operation and Development (OECD) (2007). Education at a glance 2007. Paris: OECD. http://www.oecd.org/document/30/0,3343,en_2649_37455_39251550_1_1_1_374 55,00.html. Accessed 6 July 2008.

Organisation for Economic Co-operation and Development (OECD) (no date). Proposed OECD feasibility study for the international assessment of higher education learning outcomes. http://www.oecd.org/document/22/0,3343,en_2649_35961291_40624662_1_1_1_ 1,00.html. Accessed 15 July 2008.

Parry, G. & Thompson, A. (2002). Closer by degrees: the past, present and future of higher education in further education colleges. Learning and Skills Development Agency. http://www.lsneducation.org.uk/pubs/Pages/021164.aspx. Accessed 23 December 2007.

Ramsden, P. (1999). Predicting institutional research performance from published indicators: A test of a classification of Australian university types. Higher Education, 37: 341–358.

Robbins, L. (chair) (1963). Higher education. Report of the committee appointed by the Prime Minister under the chairmanship of Lord Robbins 1961-63. Cmnd. 2154. London: Her Majesty's Stationary Office.

Russell Group (no date) The Russell Group. http://www.russellgroup.ac.uk/home.html. Accessed 6 July 2008.

Schriewer, J. (2006). Comparative social science: characteristic problems and changing problem solutions. Comparative Education, 42(3), 299-336.

Scott, P. (1995). The meaning of mass higher education. Buckingham: Open University Press.

Shanghai Jiao Tong University Institute of Higher Education (2008). Academic ranking of world universities. http://ed.sjtu.edu.cn/ranking.htm. Accessed 6 July 2008.

Shin, J. C. (2008). Classifying higher education institutions in Korea: a performance-based approach. Higher Education, doi: 10.1007/s10734-008-9150-4.

Stanley, G., Reynolds, P. (1994). Similarity grouping of Australian universities. Higher Education, 27(3), 395-366.

Teichler, U. (2008). Diversification? Trends and explanations of the shape and size of higher education. Higher Education, 56, (3), 349-379.

Tight, M. (1996). University typologies re-examined. Higher Education Review, 29(1), 57-77.

Times Higher Education (2008). World university rankings. http://www.timeshighereducation.co.uk/hybrid.asp?typeCode=142&pubCode=1&navcode=118. Accessed 16 July 2008.

Times Newspapers Ltd (2008). Good universities guide. http://www.timesonline.co.uk/section/0,,716,00.html. Accessed 6 July 2008.

United Nations Educational, Scientific and Cultural Organisation (UNESCO) (1997). International Standard Classification of Education. http://www.unesco.org/education/docs/isced_1997.htm. Accessed 23 December 2007.

US Department of Education, National Center for Education Statistics (2000). Higher Education General Information Survey (HEGIS): Fall enrollment in colleges and universities surveys; Integrated Postsecondary Education Data System (IPEDS): Fall enrollment surveys. http://nces.ed.gov/pubs2001/digest/dt201.html. Accessed 13 January 2002.

US News and World Report (2008). America's best colleges 2008. http://www.usnews.com/usnews/edu/college/rankings/rankindex_brief.php. Accessed 6 July 2008.

Vincent-Lancrin, S. (2004). Building futures scenarios for universities and higher education: an international approach. Policy Futures in Education, 2(2), 245-263.

Williams R. & Van Dyke N. (2007). Measuring the international standing of universities with an application to Australian universities. Higher Education, 53 (6), 819-841.

Williams R. & Van Dyke N. (2008). Reputation and reality: ranking major disciplines in Australian universities. Higher Education, 56(1), 1–28.

Yogev, A. (2000). The stratification of Israeli universities: Implications for higher education policy. Higher Education, 40, 183–201.