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Can College Rankings Be Believed?

Abstract The article summarizes literature on college and university rankings worldwide and the strategies used by various ranking organizations, including those of government and popular media. It traces the history of national and global rankings, indicators used by ranking systems, and the effect of rankings on academic programs and their institutions. Although ranking systems employ diverse criteria and most weight certain indicators over others, there is considerable skepticism that most actually measure educational quality. At the same time, students and their families increasingly consult these evaluations when making college decisions, and sponsors of faculty research consider reputation when forming academic partnerships. While there are serious concerns regarding the validity of ranking institutions when so little data can support differences between one institution and another, college rankings appear to be here to stay.

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Fewer things raise the hackles of faculty in higher education like the periodic ranking of colleges and universities. Popular media and government agency ratings of the relative quality of institutions and individual academic programs appear arbitrary, uninformed by rigorous research, and symptomatic of misplaced administrative values. To academics, it is as though the hard work of building programs that meet students' educational needs, generating significant contributions to disciplinary knowledge, and serving the interests of professions has been reduced to an ordinal position on a list, without a meaningful explanation of what distinguishes one institution from the next. Faculty members are skeptical that the data collected actually measure what ranking systems claim, and also that ranking organizations actually verify the accuracy of their published descriptions. As an assessment, college rankings appear neither accountable to commonly understood performance criteria nor actionable in guiding plans for improvement.

So what is the history of such ranking institutions? What criteria and methods inform them? And what do rankings mean for institutions, faculty, and students?

A Brief History of College Rankings

Ellen Hazelkorn's 2015 book *Rankings and the Reshaping of Higher Education: The Battle for World-Class Excellence* traces the rise of college rankings worldwide. What started in the early twentieth century as an academic exercise – in the absence of common reporting data from colleges and universities – quickly became competition for global reputations.

Hazelkorn[1] attributes the popular rise of college rankings to four drivers of social change:

- Transition to a knowledge-intensive economy;
- Global pursuit of talent;
- Importance of higher education to the economy; and
- Consumerist student attitudes toward higher education.

Transition to a Knowledge Economy

In 1999, management consultant Peter Drucker wrote that in the twentieth century, *production equipment* – the buildings, tools, and raw materials necessary to make something – was the most valuable asset of a company. By contrast, "The most valuable asset of a 21st century institution (whether business or non-business) will be its *knowledge workers* and their *productivity*."[2] Productivity throughout much of history has depended on how hard or how long people worked. Drucker cited Taylorism – a study of each motion taken by a worker and the physical effort and time it took to execute the action – as the historical basis for measuring worker productivity. However, he also expanded the definition to include the *knowledge* it takes to organize workers' motions in productive ways. Drucker described the twenty-first century challenge to make knowledge workers more productive by improving the *quality* not the *quantity* of their work.

Changes to business success indicators reveal ample evidence of the shift from an industrial economy to a knowledge economy. Intellectual property experts at Ocean Tomo estimated that in 1975, 80% of the market value of a company consisted of *tangible assets* – buildings, equipment, and other physical property. Today, 84% of market value in Standard and Poor's 500 consists of *intangible* assets – legal assets such as patents and trade secrets, as well as competitive assets such as workers' knowledge, collaborative activities, and company methodologies.[3] In line with this shift, current indicators measured by college ranking systems also reflect the value society places on intangible assets. Faculty patents, citations, and research recognition have disproportionate influence over other indicators of educational

1 Ellen Hazelkorn, *Rankings and the Reshaping of Higher Education: The Battle for World-Class Excellence*, 2nd ed. (New York: Palgrave Macmillan, 2015), 3.

2 Peter F. Drucker, "Knowledge Worker Productivity: The Biggest Challenge," *California Management Review* 41, no. 2 (Winter 1999): 79.

3 Ocean Tomo, "Annual Study of Intangible Asset Market Value from Ocean Tomo, LLC," news release, March 4, 2016, http://www.oceantomo.com/2015/03/04/2015-intangible-asset-market-value-study/.

success in an institution's position in most rankings.

Hazelkorn[4] describes higher education as the primary source of human capital contributing to a reconfigured notion of what is important to employers. The transition to a knowledge economy has led to an unparalleled doubling in the number of PhD students in universities and unparalleled growth in funded research among the world's 22,000 institutions of higher learning. Universities in China, for example, awarded 240,000 doctoral degrees between the end of the Cultural Revolution and 2008, expanding at a rate of 24% annually.[5] A report from the Industrial Research Institute[6] predicts that 2016 global R&D investment will reach US$1.948 trillion, with 56% of all basic research originating in universities.

Nations have responded to this accelerating demand for knowledge by shielding higher education from cuts in national budgets. In the last decade, the global recession decreased state support for universities in the United States, but increased federal funding to US$75.6 billion.[7] The government's share of overall spending on education in European countries in 2012 ranged from 69% (Portugal) to 100% (Sweden). Expenditures on education vary widely among Asian countries, although there is clearly intent to grow innovation capacity everywhere.

College and university rankings, it is argued by supporters, are a way of ensuring that resources go to institutions viewed by the private sector and government as capable of delivering on the expectations of a rapidly expanding knowledge economy. In the absence of standardized data collected by all universities, ranking systems are purported to identify the elite schools most worthy of research funding – largely in science and technology – and those most likely to prepare the innovation workforce of the future.

The Global Pursuit of Talent

These conditions have resulted in a worldwide battle for brainpower in the face of an overall decline in the number of students.[8] Schools compete for global talent, with more than 4.3 million graduate students studying outside their home countries.[9] Western Europe and the United States continue to be the most preferred educational destinations, with some institutions sending recruiters to high schools in other countries to increase their admissions yield.

Post-secondary education expert Jamil Salmi attributes the success world-class universities have attracting the best students to a "high concentration of talent (faculty and students)… abundant resources to offer a rich learning environment and conduct advanced research…and favorable governance features that encourage strategic visions, innovation, and flexibility."[10] The use of English also appeals to international students who hope to work in the global economy. While Salmi believes emerging research universities that invest heavily up front in faculty expertise have the potential to compete for global talent, the financial and intellectual resources of elite schools seem to be continually renewed through reputation. The best students and faculty attract equally superior students and faculty, as well as research funding – which deepens perceptions of faculty qualifications. Therefore, college ranking systems based on factors such as scientific academy membership and research support not only establish international reputations, they also solidify the placement of those who sit on top. Other institutions might make modest upward progress, but they are unlikely to displace the upper echelon – whose members vocally support any ranking system that maintains their status.

The Importance of Higher Education to the Economy

Hazelkorn[11] describes a shift in the perceived utility of higher education – no longer a simple social expenditure, it now represents an essential component of a productive economy. Industries and governments need objective measures that can

4 Hazelkorn, *Rankings*, 3.

5 Geoff Maslen, "The Changing PhD: Turning Out Millions of Doctorates," *University World News*, April 3, 2013, accessed December 17, 2016, http://www.universityworldnews.com/article.php?story=20130403121244660.

6 Industrial Research Institute, "2016 Global R&D Funding Forecast," supplement, *R&D Magazine* (Winter 2016): S3, S12, also available at https://www.iriweb.org/sites/default/files/2016GlobalR%26DFundingForecast_2.pdf.

7 Pew Charitable Trusts, Issue Brief on Federal and State Funding of Higher Education (The Pew Charitable Trusts, June 2015), accessed August 27, 2016, http://www.pewtrusts.org/en/research-and-analysis/issue-briefs/2015/06/federal-and-state-funding-of-higher-education.

8 Hazelkorn, *Rankings*, 4.

9 OECD, *Education at a Glance: Highlights 2013* (Paris: OECD Publishing, 2013), accessed December 17, 2016, 8, http://www.oecd-ilibrary.org/education/education-at-a-glance-2013_eag_highlights-2013-en.

10 Jamil Salmi, "Attracting Talent in a Global Academic World: How Emerging Research Universities Can Benefit from Brain Circulation," *Academic Executive Brief* 2, no. 1 (2012), also available at https://academicexecutives.elsevier.com/articles/attracting-talent-global-academic-world-how-emerging-research-universities-can-benefit.

11 Hazelkorn, *Rankings*, 5.

differentiate institutional productivity. Rather than maintaining a traditional egalitarian approach, funding efforts are now aimed at achieving strong results in areas important to economic competitiveness.[12]

More and more, funding bodies are looking to boost their return on investment, rather than merely add to the number of research proposals they fund. It is estimated, for example, that between 1988 and 2010, American investment in genomic research paid a 141:1 return on the dollar with an economic impact of US$796 billion.[13] Such factors figure in the criteria used to calculate some college rankings, and favor institutions with strong technology transfer cultures that point to patents and start-up companies that can result from research funding.

Consumerist Student Attitudes Toward Higher Education

Industry and government are not the only sectors to see higher education through the lens of economic return. Over recent decades, the rising price of a college education, relocation costs for an increasingly mobile international student population, and aggressive recruiting incentives for the best talent have cultivated consumerist attitudes in students looking for undergraduate and graduate schools. Students associate the quality of their education with a lifestyle, career opportunities, and a future salary. As consumers, they do more research about prospective schools before making enrollment decisions than did their **twentieth-century** predecessors. One survey found that 84% of American voters thought colleges and universities should be required to publish graduation rates, loan repayments, and job placement statistics.[14] The cost of a college education and shortfall in access to comparable information from institutions sends families to rankings by popular media – such as the *US News and World Report Best Colleges Rankings* – much as they would visit the *Consumer Reports* website or read online reviews when buying a new dishwasher.

College rankings emerged as a response to the demands of post-industrial society, especially in the United States, in the early part of the twentieth century. As early as 1910 various efforts to compare institutions calculated the ratio of exemplary scientists to the total faculty in elite universities, classified undergraduate training in terms of student preparation for admission to graduate schools, and ranked universities by the number of alumni who appeared in *Who's Who*.[15] Land grant universities – funded by the American government to focus on practical studies in areas like agriculture and engineering – did not appear in early rankings because they were seen as too new to have attracted the most qualified faculty and established research histories.[16]

By the second half of the twentieth century, reputation factors collected through surveys emerged as replacements for verifiable academic indicators. The *US News and World Report* (*USNWR*) ranking began as a survey of 1300 presidents of four-year colleges and universities, asking for top-of-the-mind perceptions of good schools. The print publication had 2.5 million readers in 1987, and its 2014 online release tracked 18.9 million page views in one day.[17] It routinely makes the best-seller list. The publication has expanded its rankings to include specific graduate programs in business, engineering, law, and medicine. More recently, *USNWR* ranked Master of Fine Arts programs, including graduate offerings in design. Rankings by the *Quacquarelli Symonds World University Rankings* (*QS*) also depend on reputation surveys – 50% of an institution's score is based on responses from more than 85,000 peer academics and 41,000 graduate employers, rather than on hard data that can be confirmed as accurate. Such dependency on reputation has prompted criticism from the research community and some industry leaders, who claim that rankings are a public relations competition that perpetuates unsubstantiated views of institutions and encourages peers to inflate the status of their own schools in

12 Ibid., 6.

13 Simon Tripp and Martin Grueber, *Economic Impact of the Human Genome Project* (Columbus: Battelle Memorial Institute, 2011), ES-2, also available at http://www.battelle.org/docs/default-document-library/economic_impact_of_the_human_genome_project.pdf.

14 Hazelkorn, *Rankings*, 7.

15 Ibid., 27.

16 Ibid.

17 Ibid., 27–28.

survey responses.

Global rankings emerged toward the end of the twentieth century, and are often based on a combination of reputational factors and bibliometric indicators pulled from databases such as Thomson Reuter's *Web of Science* or Elsevier's *Scopus*. Several more recent systems – including the *Academic Ranking of World Universities* (*ARWU*) by the Shanghai Ranking Consultancy, an independent organization located at Jiao Tong University, and the *Times Higher Education World University Rankings* (*THE*) – rank over 400 universities worldwide. *THE* maintained a partnership with *Quacquarelli Symonds World University Rankings* (*QS*) for a number of years, but now conducts independent reviews. The *German Centre for Higher Education Development* (CHE) entered the ranking business in 1998, rating 35 subject areas, and since 2005 it has published results in the weekly newspaper *Die Zeit*.

As the stakes for global competition have risen, governments have also stepped into the ranking business. The European Union created *U-Multirank*, the Organization for Economic Co-operation and Development (OECD) launched its *Assessment of Higher Education Learning Outcomes* (*AHELO*), and the US government developed the *College Scorecard*. These rankings emphasize personalization, allowing users to examine multiple dimensions minus any single, holistic ranking, and compare institutions with similar missions across a number of factors. Supporters argue that user-driven comparisons of multiple factors within groups of schools with similar missions better reveal the indicators used in rankings than the aggregation of data in holistic rankings.

Criteria and Methods that Inform College and University Rankings

Although it is debatable whether students and their families truly understand how ranking systems measure institutional performance – and which factors count – information regarding criteria and methodologies is generally available on the websites of the sponsoring organizations. Systems vary widely in their selection of quality indicators, typically using data from government databases; higher education sources, like *Web of Science* and *Scopus*, that often disadvantage the social sciences, arts, and humanities; and focus groups or survey data from students, peers, employers, and other constituents.[18] Most systems use *proxies*. For example, the number of citations in research publications may serve as a proxy for faculty quality, or the employment rates of graduates may substitute for program quality. There is no evidence that these are in fact valid indicators of quality, or that they represent achievement equally well in all disciplines. They are simply easier to obtain and compare than other types of information.

Weighting factors introduces another challenge when interpreting ranking results. Some systems favor research output over teaching, using indicators such as the number of grants, publications, citations, and patents per faculty, and the ratio of postgraduate research students to undergraduate students. Others assign value to the ratio of international students to overall graduate enrollment. The *ARWU* considers only research output and the size of institutions in its rankings, counting the number of Nobel Prize winners and showing a strong bias toward work in science. This variation in indicators and the weight assigned to them when determining institutional rank can send university faculty in diverse and often competing directions in efforts to move programs up in various lists.

The percentages of data obtained from various information sources also vary from system to system. For example, 50% of *QS* rankings are based on reputation surveys from academics and employers, with another 20% coming from faculty citation data on Elsevier's *Scopus* database. Only 30% of the data supporting *QS* rankings are actually generated by the institution, with faculty-to-student ratios serving as a

18 Ibid., 53.

proxy for teaching quality.

A reflection of deepening consumerist attitudes, financial data also receive disproportionate attention in a number of ranking systems. An article in the *New York Times* attributed 40% of a university's score in the *Wall Street Journal/Times Higher Education* rankings to earnings, graduation rate, and loan repayment.[19] *The Economist*, which also entered the ranking business last year, performs "a multiple regression analysis to assess how much a school's graduates earn compared with how much they might have made had they attended another school."[20] PayScale – an online salary, benefits, and compensation company that supplies data to *Forbes* and *Money* for their college rankings – recently refined its own rankings in response to criticism. Its analyses of earnings now take into account the percentage of students studying in high-wage fields such as engineering and business, as well as the percentage of students who found "high meaning" in their work, regardless of their major.[21]

Hazelkorn[22] identifies eight academic indicators often considered by ranking systems: beginning characteristics, learning outputs, faculty, learning environment, final outcomes, resources, research, and reputation.

- *Beginning characteristics* are represented by data such as student admission scores and the percentage of international students. Hazelkorn rightfully suggests that although SAT scores, graduation rates, and professional employment correlate in the United States, there is no statistical relationship shown between actual learning gains and students' performance in standardized admissions criteria. She cites admissions selectivity as misleading; that 82% of Harvard graduates receive honors at graduation, but that disadvantaged students in lower-ranked schools may have a much higher return on their college education.[23]

  It is not unusual for design programs within larger institutions to require and reward an alternate or expanded set of criteria for admission. Both undergraduate and graduate design programs typically require a second-level review of applicants – either at the time of admission or after completion of coursework qualifying for entry to a specific design major. Most faculty believe such evidence better predicts success in design than scores on standardized tests, yet ranking systems cannot and do not collect data from these reviews. Therefore, design program rankings reflect general admissions criteria that are incomplete or less valued by the professions they serve.
- *Learning outputs* are typically defined by a proxy of retention and graduation rates in most ranking systems. However, such rates rarely account for variables such as student participation in internships, study abroad, or outside work that pays for college; student demographics; the percentage of transfer students; or the influence of grade inflation. In 2015, the US National Governors Association Center for Best Practices warned that 60% of students who enter college directly from high school require remedial instruction that slows their progress to degree and increasing the likelihood that they will drop out before graduation – conflating admissions standards with how long it takes students to graduate in the interpretation of rankings indicators.[24]

  The pressure to increase graduation rates, among other factors, also encourages grade inflation. Former Duke professor Stuart Rojstaczer traced the trajectory of grades in four-year institutions in the United States. Prior to 1963 – before failing grades sent thousands of college-age men to fight in Vietnam – the most popular grade used by faculty in assessing student performance was the "C." By 1998, faculty nationwide awarded "A" grades to roughly 45% of students in their classes, with the upward trajectory

19 J. B. Stewart, "How Much Graduates Earn Drives More College Rankings," *New York Times*, October 20, 2016, accessed October 28, 2016, http://www.nytimes.com/2016/10/21/business/how-much-graduates-earn-drives-more-college-rankings.html?_r=1.

20 Ibid.

21 Ibid.

22 Hazelkorn, *Rankings*, 62–77.

23 Ibid., 63.

24 Richard Laine, Marjorie Cohen, Kate Nielson, and Iris Palmer, *Expanding Student Success: A Primer on Competency-Based Education from Kindergarten Through Higher Education* (Washington, D.C.: National Governors Association Center for Best Practices, October 27, 2015), 1, also available at https://www.nga.org/files/live/sites/NGA/files/pdf/2015/1510ExpandingStudentSuccess.pdf.

continuing today as a reflection of students' consumerist attitudes that good grades should be a payoff for the rising cost of a college education.[25] Grade inflation suggests that higher GPAs account for some graduation rates, raising questions about what degree completion really means as an indicator of institutional quality.

- *Faculty* indicators include faculty-to-student-ratios and research output. Again, Hazelkorn[26] suggests that there is no linear correlation between faculty qualifications and the student experience. In many cases, students report some of the most brilliant faculty as completely incapable of imparting knowledge to students. And faculty workloads vary widely from institution to institution, with some of the most accomplished research faculty teaching as little as one course per year or not at all. The reduced teaching load of research faculty raises questions about the use of research citations, grants, and field medals as indicators for the quality of instruction students actually receive, especially in undergraduate degree programs. In contrast, design faculty frequently show contact hours with students far in excess of their colleagues in other fields of study, limiting their time for research. And because evidence-based research is relatively new to the field of design, there are fewer funding sources and refereed journals than in other, more established research disciplines. These conditions often place design faculty at some risk for tenure and promotion, and disadvantage their programs in terms of obtaining additional resources in research institutions.

  QS supporters argue that faculty-to-student ratios are the only comparable teaching-related data worldwide, yet research shows that the quality of college teaching is more important than class size, and that many faculty-to-student ratios do not account for part-time and non-tenure track teaching. In design, where faculty-to-student ratios are typically low, internal institutional metrics may penalize programs for the high cost and low credit-hour production of the studio format, sending mixed signals to programs about quality indicators. On one hand, programs feel pressure to rise in rankings and recruitment, while on the other to be more economical in how they deliver instruction.
- *Learning environment* reflects student engagement and satisfaction with the learning conditions at an institution. This data is usually obtained through student satisfaction surveys, and is difficult to quantify in a meaningful way. Most ranking systems do not drill down to ascertain what really matters to college graduates assessing the value of their education, and many universities find that student perceptions change between the time exit surveys are conducted and a few years after they enter the job market. It is also possible that students' experiences in a disciplinary program are significantly different from their overall satisfaction with the institution, conflating responses on institutional surveys. This is often the case in design programs, where students spend long periods of time with the same cohort and have close relationships with faculty, but far less interaction with the larger institution. For these students, college is truly the start of building a professional community.

  In other instances, graduates overrate their college experiences on satisfaction surveys to raise the reputation of their institutions and enhance their job opportunities. *DesignIntelligence*, for example, ranks architecture, landscape architecture, interior design, and industrial design programs through student satisfaction surveys and reputation surveys drawn from a Design Futures Council database of more than 1400 practitioners who hire or supervise design professionals. Some schools openly lobby students and

25 Stuart Rojstaczer, "Grade Inflation at American Colleges and Universities: Recent GPA Trends Nationwide Four-Year College & Universities," *gradeinflation.com*, last modified March 29, 2016, http://www.gradeinflation.com/.

26 Hazelkorn, *Rankings*, 67.

alumni to promote the school in their survey responses.

As a contrast to reputation-based ranking systems, a number of efforts seek more meaningful assessments of teaching quality. The OECD's *Assessment of Higher Education Learning Outcomes* (AHELO) was launched in 2008 to identify and measure key factors in good teaching and assess globally what students know and can do upon graduation. The OECD proposed a study to introduce criterion-referenced standards to explain the performance of students, compare additional categories of data within and among institutions, provide greater detail by showing proficiency-level performance, and strengthen reporting.

The *US National Survey of Student Engagement* (NSSE) assesses the time and effort American students devote to their studies and extra-curricular activities, as well as how colleges and universities organize learning opportunities to encourage student participation in the academic environment. It collects data annually on ten engagement indicators and six high-impact practices from students in 400 institutions after the first and last year of undergraduate education and reports them as trends in student engagement.

A Gallup-Purdue research project attempts to address meaningful factors that shape students' consumerist attitudes toward education and illustrate the gap between what ultimately matters to graduates and the foundation of most college ranking systems. The *Gallup-Purdue Index 2015 Report* is based on interviews with more than 30,000 graduates of colleges and universities in the United States, and describes the second year of findings in a longitudinal study. The report addresses two questions: Do American universities provide students with opportunities and experiences equal to increasing college fees? Do students graduate well equipped to find good jobs and prosper financially as well as pursue their passions and lead healthy, fulfilling lives?[27]

Gallup-Purdue found that only 50% of 2006–2015 graduates of universities in the United States strongly agree that their bachelor's degree was worth the cost, with negligible differences between graduates of public and private universities, but significantly lower satisfaction from graduates of for-profit institutions and students whose college debt exceeds $25,000.[28] Graduates of research institutions – designated by the Carnegie Classification system – were no more likely to agree that their education was worth the cost than students from other schools,[29] raising some questions regarding the usefulness of faculty research as a ranking indicator of educational quality for prospective students and their families.

Graduates were nearly twice as likely to say their education was worth the cost when they believed their professors cared about them as people, made them excited about learning, and mentored them in pursuit of their goals and dreams.[30] They identified work on a project that took at least a semester to complete, internships, and active engagement in extracurricular activities as strongly related to good jobs and satisfying lives after college.[31] Only 3% of respondents could answer positively to all six of these factors. The study therefore suggests that relationships matter in how graduates view the value of their study, yet few if any of the college rankings take these factors into account in significant ways. Gallup-Purdue, however, did find a very loose correlation between students' perceptions of their institutions with regard to these factors and rankings by *US News and World Report*, even though the two studies measure entirely different factors, and the USNWR surveys faculty rather than students.

- *Final outcomes* include the employability and average salaries of graduates as

27 Gallup-Purdue, "Gallup-Purdue Index Report 2015," accessed August 27, 2016, 2, http:www.gallup.com/services/185888/gallup-purdue-index-report-2015.aspx.

28 Ibid., 5.

29 Ibid., 5–6.

30 Ibid., 8.

31 Ibid.

proxies for the quality of education. Of course, this indicator is influenced by a variety of factors, including the economy, academic discipline, and other market forces. A liberal arts college may have far less clarity in representing the career success of graduates than a science and technology university, but there are also questions about whether differences with respect to jobs and salaries really represent the quality of educational outcomes. Hazelkorn[32] cautions that information about final outcomes is usually based on first-destination employment surveys conducted during the six- to nine-month period following graduation. An investigation by the *Wall Street Journal* in 2010 found that most of an individual's employment changes happen between the ages of 16 and 24, making the first years after graduation less likely to reflect true earning potential or commitment to a particular type of work.[33] Students in the creative disciplines, such as design, are especially difficult to track and classify because they often begin careers by freelancing or contract work, apply their design education in non-traditional jobs, or are likely to change employers frequently as they move up in the field and build specializations.

Judging educational quality by salary is also a questionable practice that does not always reflect job satisfaction. Jerry Z. Muller, Catholic University professor and author of *The Costs of Accountability*, studies misplaced and misunderstood metrics. He cautions that graduates of elite schools enjoy higher earnings because of selective admissions criteria rather than the quality of their education. These graduates are smart, motivated, and come from privileged families, all factors that correlate with high earnings.[34] Pointing out that an MIT-educated engineer will earn more than an Oberlin musician, Muller argues that pay says nothing about the relative quality of different colleges, and ranking them on the basis of graduates' ultimate earnings narrows the concept of what college is supposed to be for.[35] Economist Jonathan Rothwell developed a set of "value-added" rankings for the Brookings Institution, based on achievements by graduates that exceed what their socio-economic backgrounds might have predicted.[36] Rothwell's "top ten" schools included none from the Ivy League.

Alumni data – used by the *ARWU* and *USNWR* rankings – cannot distinguish native talent or being in the right place at the right time for hiring into a good job from the effects of a good education. Nor do data account for employment choices made by graduates for lifestyle reasons other than salary – such as office size, client base, regional market diversity, or potential for creative autonomy. Many undergraduate students in practice-oriented fields like design, for example, see their first job as a continuation of their professional education – an opportunity to sort through and apply what they have learned in school. Often, they choose firms that are more likely to offer interesting work under a strong mentor rather than a high salary. And because a master's is the terminal degree in the field, a significant number of graduates of advanced design programs enter teaching at salaries far lower than those they would earn in professional practice.

Graduates may better understand the link between higher education and preparation for employment with some work experience behind them. The 2013 study *Educating Higher Education Students for Innovative Economies: What International Data Tell Us* asked college graduates five years after the completion of their degrees to rank the importance of nineteen learning outcomes to their success in innovation jobs. Their innovation employment varied across the development of new products, technologies, and knowledge or methods. Overall, graduates viewed the most critical skills for

32 Hazelkorn, *Rankings*, 76.

33 Carl Bialik, "Seven Careers in a Lifetime? Think Twice, Researchers Say," *The Wall Street Journal*, September 4, 2010, accessed December 17, 2016, http://online.wsj.com/news/articles/SB10001424052748704206804575468162805877990.

34 James B. Stewart, "College Rankings Fail to Measure the Influence of the Institution," *New York Times*, October 1, 2015, accessed October 28, 2016 from http://www.nytimes.com/2015/10/02/business/new-college-rankings-dont-show-how-alma-mater-affects-earnings.html.

35 Ibid.

36 Frank Bruni, "How to Make Sense of College Rankings," *The New York Times Sunday Review*, October 29, 2016, accessed October 29, 2016, http://www.nytimes.com/2016/10/30/opinion/sunday/how-to-make-sense-of-college-rankings.html?_r=0.

innovation jobs as: 1) the ability to come up with new ideas; 2) willingness to question ideas; 3) the ability to present ideas to various audiences; and 4) alertness to opportunities.[37] Mastering their own field ranked tenth overall. Students generally credited higher education for their acquisition of analytical skills and knowledge in their respective fields, but they were far more critical about the ways their curricula and instructors helped them develop social and behavior skills, including collaboration, creativity, and communication.[38] In other words, the skills and knowledge that truly add value to an innovative knowledge economy may not be the things that college ranking systems measure.

- *Resources* account for the budgetary and physical assets of the institution. In some systems, faculty salaries and the proportion of full-time faculty are weighted indicators. They are indicators of wealth – however, they do not necessarily connote educational value, and some institutions are even penalized in ratings systems for keeping expenditures low. There is little evidence that data collection includes how institutions spend resources or whether resource distribution across academic programs supports disciplines equally.
- *Research* is represented in rankings by the number of faculty publications and citations, as well as in the level of funding for faculty work. Yet there is no indication that bibliometric data are accurate measures of research activity, that they capture all types of research equally well, or that they measure impact or benefit. There is a practice of using publication in high impact journals as a criterion, artificially raising the influence such journals have on schools' rankings regardless of research and article quality. The *ARWU,* for example, uses just two publications in formulating 20% of its publication score.[39] This practice disadvantages new interdisciplinary areas of research that might actually be a stronger indicator of cutting edge work and knowledge transference. For fields such as design – where the research culture is emergent – there may be more limited access to venues for dissemination and far less consensus regarding the merits of publishing in various journals. In general, an emphasis on citations favors work in the sciences, as does consideration for patents and transfer of technology.
- *Reputation* is established by peer review but is subject to reviewer bias; a halo effect in which perceptions of one academic unit extend to others in the same institution; and a tendency to restrict judgments to known institutions. The *USNWR* and *QS* surveys ask respondents to list the top 30 universities in their respective fields without access to any data from the institutions.

The more ranking systems rely on reputational data in assessing these factors – that is, on top-of-the-mind impressions by peers and employers rather than on hard data – the higher the likelihood of biased and/or inaccurate results. The *USNWR* rankings of MFA programs, for example, begins with a list of American institutions that offer graduate study in art and design, from which respondents rank the top ten programs in each art/design discipline. The list does not include schools that award degrees titled *Master of Design, Master of Science,* or *Master of Professional Studies*, even though some of the most highly regarded design programs in the United States award these degrees under requirements that are directly equivalent to the MFA. Further, there appears to be no verification by *USNWR* that the top-ten ranked institutions even offer courses in the disciplines for which they are ranked. In the most recent MFA ranking, for example, Art Center College of Design (California) earned a rating among the top ten master's programs in graphic design. At the time, the institution had no graduate program in the discipline. A previous

37 Francesco Avvisati, Gwenaël Jacotin, and Stéphan Vincent-Lancrin, "Educating Higher Education Students for Innovative Economies: What International Data Tell Us," *Tuning Journal for Higher Education* 1, no. 1 (2014): 230.

38 Ibid.

39 Hazelkorn, *Rankings*, 78.

ranking included Rhode Island School of Design at the top of Digital Design programs before the institution had established a major in the field, and when digital work in the Graphic Design program was relatively new to the institution. Respondents – whose expertise may have been completely outside the discipline they were ranking – simply assumed that an institution that was good at some things was good at everything. *USNWR* is not alone in misrepresenting an institution in its rankings. One edition of the *QS* rankings included Hong Kong Polytechnic University among top schools in architecture. Hong Kong Poly does not have an architecture program. And this halo effect is not exclusive to art and design school rankings. In one case, Princeton University was ranked as having one of the best law schools in the country, but it doesn't have a law school.[40]

Other practices by ranking organizations raise questions about the separation between the institution and the ranking organization. The *QS Stars* service uses *QS* consultants – paid by an institution – to conduct audits against 50 different indicators. Institutions receive one to five stars across eight fields, plus an overall rating, from an organization that profits from the activity. The practice is considered by some as "coaching" with respect to indicators favored by the *QS* ranking system.

Weighting among these indicators raises questions about whether rankings truly reflect the institution as a whole.[41] Putting institutions on a ranked list ensures that differences among many schools will be statistically insignificant but interpreted by the public as meaningful. To complicate matters, ranking organizations often change their weighting methodologies from year to year, resulting in the fall or rise of institutions in the rankings with no real change in institutional or program quality. University of Sydney professor Simon Marginson recounts celebration by the University of Malaya when it was ranked number 89 by the *THE* system, placing it among the top 100 universities in the world in 2004. The next year under a new methodology, *THE* reclassified Malaya's Chinese and Indian students from international to national status and the university dropped to number 169.[42] The Vice-Chancellor was replaced and the institution's reputation suffered. The 80-place drop in rank occurred without any change in the quality of its performance or change in the competition.

The Impact of Rankings

Ranking systems, therefore, are never objective. They limit what they measure, weight some indicators over others, and typically treat all institutions the same, regardless of purpose. A report by the OECD describes a limitation of college rankings as norming "one kind of higher education institution with one set of institutional qualities and purposes, and in doing so [they] strengthening its authority at the expense of all other kinds of institutions and all other qualities and purposes."[43] A side-by-side comparison of an institution's holistic scores across different ranking systems also shows that positions can vary widely, depending on the rating criteria, yet prospective students and employers rarely understand the priorities of each ranking organization.

Holistic ranking systems, in particular, mislead the public that they are complete assessments of institutions and that differences between one institution and those above and below it in the rankings are significant. In the case of the *ARWU* system – which measures only research and has a scientific bias – the ranking becomes synonymous with overall institutional quality. "Harvard becomes understood not as a number one research site but as a number one *university*."[44] No one ranking system measures every important factor needed to make decisions about institutions; colleges serve different purposes and student populations, and holistic rankings rarely reveal such differences. They compare apples to oranges and

40 Simon Marginson, "Global University Rankings: Where to from Here," paper presented at the 2007 Asia-Pacific Association for International Education Conference & Exhibition, National University of Singapore, March 2007, 14, also available at https://www.researchgate.net/profile/Simon_Marginson/publication/242561674_Global_university_rankings_Where_to_from_here/links/00b4952e28788424c6000000.pdf.

41 Hazelkorn, *Rankings*, 83.

42 Marginson, "Global University Rankings," 2.

43 Marijk van der Wende, "Rankings and Classifications in Higher Education: A European Perspective," in *Higher Education: Handbook of Theory and Research*, vol. 23, ed. John C. Smart (Springer, 2008), 57.

44 Marginson, "Global University Rankings," 6.

purport to make judgments of overall quality.

Global bias in various ranking systems also skews conclusions reached from data. For example, the British-based *THE* system appears to favor universities in the United Kingdom. Marginson[45] argues that the United Kingdom has 15% of the gross domestic product of the United States but almost half of the *THE* top 100 universities. The China-based *ARWU* includes 54 American research universities in its top 100, but the *THE* world rankings include only 33.[46] Because the *THE* rankings depend on reputation surveys, institutional positions in the rankings depend on who fills out the survey and the weight given to various responses. Inversely, the United States produced almost a third of the output of scientific papers in 2001 (200, 870) while Indonesia generated only 207.[47] There is no way Indonesian universities can hope to compete with the top 500 institutions in the *ARWU* rankings, regardless of research quality or contribution.

A concern within higher education is that rankings change institutional behavior. Rankings increasingly appear as a target in university and department mission statements and goals. Struggling to augment their global reputations, institutions direct resources and rewards to areas of operation that match the priorities of ranking systems. Because the *ARWU* rankings consider research only, some Chinese universities focus their attention on bolstering scientific investigations in areas most likely to yield quick results. Speculative work, research in emergent fields not yet recognized by disciplinary academies, faculty scholarship in fields that do not produce Nobel laureates, and teaching receive less consideration in institutions' strategic planning.

In the United States, where national rankings by the *USNWR* dominate, some institutions manipulate statistics by maximizing admissions scores and refusal rates. Any shift from needs-based financial aid to merit-based aid influences the average scores of an entering class.[48] In publicized accounts, a number of American universities – including Clemson, Claremont McKenna, Northeastern, Emory, George Washington, Bucknell, Baylor, and Tulane – admitted to revising class sizes, boosting academic salaries, or intentionally supplying incorrect information to *USNWR* to improve their positions in the rankings.[49]

Because many ranking systems use faculty research as a weighted indicator, institutions may exhibit organizational behaviors designed to build a reputation. Some universities establish research centers to advertise areas of expertise, often consolidating smaller efforts under an umbrella title that sounds more impressive than the individual research foci.[50] Others make "star" appointments, seeking faculty who bring with them existing evidence of what the indicators rankings systems look for when assessing schools. It is common for Asian schools to encourage faculty to publish in English-language journals to improve their visibility because a number of ranking systems do not recognize scholarship in other languages. Hazelkorn[51] quotes the rector of a college as saying "killing the humanities" is one of the fastest ways to improve research standing, because it shifts the representation of the institution's scholarship to bibliometric data in the sciences.

This 'race for the top' in research, often to the exclusion of indicators of teaching quality, can have consequences for the teaching mission of colleges and universities, especially at the undergraduate level. There is overarching concern that rankings deepen already existing divisions between teaching and research activities. Many universities differentiate between research and teaching faculty – with the latter hired at much lower salaries and carrying disproportionate service workloads in curricular programs. Others staff undergraduate courses with graduate teaching assistants, lowering faculty-to-student ratios but lessening the qualifications of instructors to which undergraduates are exposed. Classrooms can be lost to research labs and less-favored research areas often see an overall decline in

45 Ibid., 9.

46 Ibid.

47 Ibid., 15.

48 Simon Marginson and Marijk van der Wende, "To Rank or to Be Ranked: The Impact of Global Rankings in *Higher Education*," *Journal of Studies in International Education* 11, no. 3/4 (Fall/Winter, 2007): 321, citing David L. Kirp, *Shakespeare, Einstein and the Bottom-Line: The Marketing of Higher Education* (Cambridge, MA: Harvard University Press, 2004).

49 Hazelkorn, *Rankings*, 112.

50 Ibid.

51 Ibid., 120.

resources.[52] It is not unusual for senior faculty in tenure and promotion committees to question whether a candidate's area of research is likely to yield publication outcomes that build department reputation, regardless of faculty performance quality. Honors and graduate programs rise in importance, while there is a disincentive to teach undergraduates who will transfer to other institutions and non-traditional students, because they skew retention and graduation rates. And because international students are highly valued by most ranking systems – both the *THE* and *QS* ranking systems use international students and faculty as a proxy for institutional reputation – colleges make special efforts to attract and retain students and faculty from abroad.

In 2010, Thomson Reuters conducted a survey of 350 employees and students of academic institutions from thirty countries.[53] All respondents were familiar with ranking systems and questions on the survey specifically addressed the *USNWR*, *ARWU*, and *THE*/*QS* rankings. Findings of the survey showed that 74% of respondents believed institutions manipulate data to improve their position in the rankings, and 71% believed that institutions focus more on numerical comparisons than on educating students. Confidence in the methodologies of ranking systems was not much better – 70% described methodologies and data as neither transparent nor reproducible, and 68% questioned the appropriateness of metrics used to make comparisons among institutions.

On the surface, institutional rankings would appear to encourage improvement in the quality of education and research. But because faculty generally have so little trust in the choice of indicators and question their link to the outcomes they purport to represent, there are few concrete lessons or benchmarking of best practices in rankings that guide strategies for enhancing academic programs. The lack of transparency regarding data and how it is collected – especially via reputation surveys that lack any context – make faculty skeptical that positive actions are likely to move the needle. Furthermore, rankings can have a dampening effect on the exploratory nature of research topics faculty choose to pursue and experimental efforts at curricular innovation. Marginson[54] also suggests that rankings as a whole discourage the development of distinctive institutional missions that contribute to the diversity of educational offerings in a region.

Blanco-Ramírez and Berger[55] argue that current assessments of value in higher education are explored in isolation from issues of access, relevance, and investment in education. Despite development of quality assurance mechanisms in most universities, the researchers suggest that western nations serve as models worldwide, and that many practices lack a theoretical underpinning of what quality really means.[56] In fact, some rankings may actually ignore professionally negotiated quality standards for disciplinary accreditation. *DesignIntelligence*, for example, ranks design schools in the United States using reputation and student satisfaction surveys. It indicates that independent data analysis is aided by information from accrediting and professional organizations, but there is no explanation in its findings of how survey questions reflect established thresholds for student performance.[57]

In a 2002 meeting in Warsaw, Poland, forty higher education policy experts agreed that further work is necessary on the conceptual frameworks, methodologies, and organizational aspects of rankings.[58] UNESCO and the Institute for Higher Education Policy led an effort in 2006 to define guidelines for ranking institutions of higher education.[59] The *Berlin Principles* outline sixteen recommendations, including those that assert rankings should:

- Recognize the diversity of institutions and take the different missions and goals of institutions into account;
- Be transparent regarding the methodology used for creating the rankings;
- Measure outcomes in preference to outputs whenever possible;

52 Ibid., 121.

53 Jonathan Adams and Kathy Baker, "Global Opinion Survey: New Outlooks on Institutional Profiles," (Thomson Reuters, 2010), 7, accessed December 17, 2016, http://ip-science.thomsonreuters.com/m/pdfs/Global_Opinion_Survey.pdf.

54 Marginson, "Global University Rankings," 16.

55 Gerardo Blanco-Ramírez and Joseph B. Berger, "Rankings, Accreditation, and the International Quest for Quality: Organizing an Approach to Value in Higher Education," *Quality Assurance in Education* 22, no. 1 (2014): 88.

56 Ibid., 89.

57 DesignIntelligence, "Research Methodology — America's Best Architecture & Design Schools 2013," last modified November 1, 2012, http://www.di.net/articles/research-methodology-america-s-best-architecture-design-schools-2013/.

58 Jamie Merisotis and Jan Sadlak, "Higher Education Rankings: Evolution, Acceptance, and Dialogue," *Higher Education in Europe* 30, no. 2 (2005): 97.

59 Institute for Higher Education Policy, "Berlin Principles on Ranking of Higher Education Institutions," last modified May 2006, http://www.ihep.org/research/publications/berlin-principles-ranking-higher-education-institutions.

60 Ibid.

61 Marginson, "Global University Rankings," 19.

- Use audited and verifiable data whenever possible; and
- Provide consumers with a clear understanding of all of the factors used to develop a ranking, and offer them a choice in how rankings are displayed.[60]

Marginson[61] suggests that rankings not be grounded in judgments about reputation, and that they avoid holistic evaluations of institutions when using combined indicators grounded in arbitrary ratings, use discipline-based measures for evaluating faculty research, and be managed by independent agents for data collection and publication.

Systems that group institutions by mission and rate institutions based on user queries within a variety of indicators and verifiable data – such as *U-Multirank* and the College Scorecard – produce more informed consumers by revealing a more nuanced evaluation. This approach encourages prospective students to select colleges and universities on the basis of personal educational goals rather than an organization's weighting of factors and a holistic score. It also allows institutions to see where they excel and where they need improvement.

While there is ongoing debate as to whether refinements in ranking strategies have resolved any of the issues related to comparing institutional quality and academic offerings, the consensus is that rankings are here to stay. National and disciplinary ranking efforts are multiplying, and the audiences for findings are becoming larger and more diverse. Most ranking organizations are not accountable to independent oversight, and media-related systems profit from ranking activities and thus have little incentive to change current practices.

The challenge for college and university design programs is to frame the relevance of rankings appropriately in arguments made for institutional support, industry partnerships, and student recruitment. Administrators must evaluate the credibility and appropriateness of ranking systems as drivers of educational planning, and diversify sources of information that shape policy decisions. The emerging design research culture will have to decide whether the content and dissemination of its investigations can and should align with the priorities of ranking systems – and their influences on higher education – or with other imperatives. Ultimately, for consumers, the institutional match should drive the choice of a college design program with a student's educational interests, professional aspirations, and personal goals, not third-party rankings.

Appendix A. Websites of Ranking Organizations.

Academic Ranking of World Universities (ARWU)	http://www.shanghairanking.com/
Assessment of Higher Education Learning Outcomes (AHELO)	https://www.oecd.org/site/ahelo/
College Scorecard	https://collegescorecard.ed.gov/
German Centre for Higher Education Development (CHE)	http://www.qs.com/qs-world-university-rankings.html
Quacarelli Symonds World University Rankings (QS)	http://www.qs.com/qs-world-university-rankings.html
Times Higher Education World University Rankings (THE)	https://www.timeshighereducation.com/world-university-rankings
U-Multirank	http://www.umultirank.org/
US News and World Report (USNWR)	http://www.usnews.com/rankings

Appendix B. Holistic Ranking Systems and Their Sources of Information.

Ranking System	Source of Information	Weighting
Academic Ranking of World Universities (ARWU)	**Uses a database of 1200 research universities developed by the Center for World-Class Universities**	
http://www.arwu.org/index.jsp	Number of alumni Nobel Prize winners and field medalists	10%
	Number of staff Nobel Prize winners and field medalists	20%
Began ranking universities in 2003.	Number of highly cited researchers (HiCi score)	20%
	Number of articles in *Nature*/*Science*	20%
	Number of articles in *Citation Index*	20%
	Size of institution/per capita academic performance	10%
Quacarelli Symonds World Rankings (QS)	**Uses a global reputation survey of academics (200,000 data points) and a global reputation survey of 5,000 employers**	
http://www.topuniversities.com/university-rankings/world-university-rankings/home	Academic reputation	40%
	Employer reputation	10%
	Student-to-faculty ratio	20%
	Number of citations per faculty (from Scopus database of 20% academic journals)	20%
Ranked universities in collaboration with the Times Higher Education organization from 2004–2009. An independent organization since 2010.	International student ratio	5%
	International faculty ratio	5%
Times Higher Education (THE)	**Uses two reputational surveys for research and teaching (previously used Thomson-Reuters Global Institutional Profiles project data but now plans to do its own data collection and analysis)**	
http://www.timeshighereducation.co.uk/world-university-rankings	**Teaching (30%)**	
	Reputation survey	15%
	PhDs awarded per academic staff	6%
Ranked universities in collaboration with the Quacarelli Symonds organization from 2004–2009. An independent organization since 2010.	Undergraduate entrants per academic staff	4.5%
	Institutional income per academic	2.25%
	Ratio PhDs/Undergraduate degrees awarded	2.25%
	Research (30%)	
	Research survey	18%
	Research income	6%
	Academic papers/academic or research staff	6%
	Citation (30%)	
	Citation impact	30%
	Economic/Innovation (2.5%)	
	Research income from industry per academic staff	2.5%
	International Diversity (7.5%)	
	Ratio international/domestic students	2.5%
	Ratio international/domestic staff	2.5%
	Proportion of published papers with international co-authors	2.5%
US News and World Report Global Rankings (USNWR)	**Uses Thomson-Reuters Incites data and its own Academic Reputation Survey**	
http:/www.usnews.com/education/best-global-universities	Global research reputation	12.5%
	Regional research reputation	12.5%
	Publications	12.5%
Began ranking global universities in 2014.	Citation impact	10%
	Total citations	10%
	Number of highly cited papers	12.5%
	Percentage of highly cited papers	10%
	International collaboration	10%
	Number of PhDs awarded	5%
	Number of PhDs awarded per academic staff member	5%

(*Continued on next page...*)

Appendix B. (*Continued*)

Ranking System	Source of Information	Weighting
US News and World Report College Rankings (USNWR) (National rankings for the US)	**Uses peer and high school counselors' reputation surveys and self-reported data from ranked institutions**	**Contribution to category**
http://www.usnews.com/education/best-colleges/articles/ranking-criteria-and-weights	**Graduation and retention rates (22.5%)**	
	Average graduation rate	80%
	Average first-year student retention rate	20%
	Undergraduate academic reputation (22.5%)	
Began ranking universities and colleges in the United States in 1983.	Peer assessment survey	66.7%
	High school counselors' ratings	33.3%
	Student selectivity for entering class (12.5%)	
	Acceptance rate	10%
	High school class standing in top 10%	25%
	Critical reading and math portions of SAT and composite ACT scores	65%
	Faculty resources for academic year (20%)	
	Faculty compensation	35%
	Percent of faculty with terminal degree in their field	15%
	Percent faculty that is full time	5%
	Student/faculty ratio	5%
	Class size	40%
	Financial resources (10%)	
	Financial resources/student	100%
	Alumni giving (5%)	
	Average alumni giving rate	100%
	Graduation rate performance (7.5%)	
	Graduation rate performance	100%

Information on global rankings obtained from Table 2.3 in *Rankings and the Reshaping of Higher Education: The Battle for World-class Excellence* by Ellen Hazelkorn, 2015, pp. 32–36. Information on national ranking by US News and World Report retrieved from the website at: http://www.usnews.com/education/best-colleges/articles/ranking-criteria-and-weights.