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The global ranking game: narrowing academic excellence through numerical objectification

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ABSTRACT
The objective of this article is to study some of the intended and unintended effects on academe of the evolving global ranking game. I will start with some broader points on the global ranking game, the formal terms and economic interests it promotes, then continue with a presentation of the Shanghai ranking and its main rival the *Times Higher Education*. Through reversed engineering, I will bring out the main problems of the Shanghai ranking. I will finish with some of the key features of the demand side, the uses and effects of the tool: the psychosocial mechanisms that reproduce ranking and the lock-ins it creates.

KEYWORDS
Academic Ranking of World Universities (ARWU); global ranking game; symbolic power; numerical objectification; educational globalization

The Matthew effect may serve to heighten the visibility of contributions to science by scientists of acknowledged standing and to reduce the visibility of contributions to science by authors who are less well known (Merton 1968, 62).

Higher education is increasingly framed in global numerical terms. Produced by international agencies like the World Bank and the OECD, global scripts provide models for reform in higher education. A dominant computer science-logic feeds into expanding datasets and more sophisticated knowledge tools. Data has become the engine of global capitalism and its flagships Google, Apple, Facebook and Amazon (GAFA).

A variety of knowledge tools take part in the reshaping of educational globalization. This paper aims at rereading the debates on global university rankings, focusing on their geopolitical dimension and on the governance of research, more specifically the Academic Ranking of World University (ARWU). Launched in 2003, the ARWU or more familiarly the Shanghai ranking is an innovation, the first league table of 'world-class universities'. As the first digital instrument of its kind, it is one of the causes of some of the key features of global academic competition as we know it today. Since 2003, the ranking industry has expanded considerably. Similar tools, like the *Times Higher Education* (THE) ranking of world universities or the *QS World University Rankings* (QS) have been created to capture, structure and profit from the global flows of people and capital. Academic and political leaders, faculty and students use these tools to legitimize their goals and values (Altbach 2012; Hazelkorn 2017; Holmes 2006; Kauppi and Erkkilä 2011; Kauppi 2017; Soh 2015). As a highly objectified form of knowledge that has a material force of its own, data gives the impression of providing access to a more profound level of reality. However, as it impacts the perceptions and valuations of reflexive actors, the reality it refers to is not unchanging. Rather, it influences, with varying impact, actors' behavioral patterns. By becoming a constitutive part of the global higher education landscape,

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data and innovative knowledge tools like the Shanghai ranking impose themselves on these actors and reinforce certain dimensions of the reality they purportedly only reflect.

The Shanghai ranking and similar tools participate through the evolving practices of a myriad of players in the consolidation of existing asymmetries and monopolies of global power and knowledge. Its most important effect is akin to Robert Merton's Matthew effect, in which the rich get richer and the poor poorer. But the Shanghai ranking does not only favor well-known scientists, as in Merton's conceptualization. The ranking game openly combines the competition for academic prestige with that for global political and economic power (Hazelkorn 2017; Jöns and Hoyler 2013, 48; Rhoads et al. 2014). It is not restricted to the academic field. Today, the Matthew effect favors academics and universities as well as political and economic stakeholders that succeed in the ranking game. While the competition for scientific prestige is now also economic and geopolitical, it is restricted in significant ways by both supply and demand factors. It is limited on the one hand by what the rankers themselves are able to quantitatively measure, the information the datasets provide, and the existing competition in terms of knowledge instrumentation, and on the other hand by what their commissioners, clients or customers are interested in and willing to pay for. For instance commissioners of the 5/100 ranking and U-multirank are the Russian government and the EU. Since the 2000s for them higher education and research are key factors in economic development and innovation as well as in geopolitical prestige. They see university rankings as providing tools for steering higher education and research to produce more economically useful innovations. For more commercial rankers like THE or QS, customers include upper middle-class families and globally mobile students especially from Asia as well as recruiting firms. For these stakeholders, higher education is a private good. Despite these varying demands, the dominant rankers Shanghai and THS succeed in producing and legitimizing a similar unipolar global competitive order. The uniformity of this global order stems from the interaction between developments in supply and demand. The Shanghai ranking succeeded in setting the terms of global academic competition and the rapid development of the ranking industry was framed in grosso modo the same terms. On the demand side an expansion of the knowledge-economy and of uses of knowledge tools by a variety of players feed into a demand for more sophisticated knowledge tools such as rankings according to discipline or region as well as more varied service packages.

Some of the presuppositions of the global ranking industry

As anything that touches China interests a lot of people, it is no surprise that Chinamania is a defining feature of the politics and economics of the first decades of the twenty-first century. As part of this phenomenon, the Shanghai ranking was, contrary to the expectations of its creator (Liu 2009; Liu and Cheng 2005), a global big bang of immediate interest to anyone involved in higher education and research. While it transmitted a frame of mind and was built on pre-existing models like *US News and World Report* and its league tables, it innovated by globalizing through measurement, the stakes related to higher education and research. It has succeeded in 15 years in shaping the rules of global competition for academic prestige.

Since the 2000s, higher education governance has moved from knowledge governance to data governance. Increasingly, politicians, university administrators, funders, international organizations, faculty and students use data to set their priorities and goals. How can this be explained? A partial explanation is that this type of knowledge is exact and portable. '95' is not '96' or '94'. It is the same in China and North America. But a number is at the same time exact and inexact, as a single number like '95' does not provide any interpretation of its meaning. It acquires meaning when it is set in relation to other data. In an interval data order like the Shanghai ranking a position is not just higher or lower than another position. Its occupant is also qualitatively better or worse than other institutions in others positions. It has more or less academic capital, prestige, or status. The same way as ´95´is more than ´94´the quality of the university that gets '95' is better by '1' than a university that gets '94'. In the Shanghai epistemology, quality becomes an emergent property of

quantity, represented by a single indicator that points to the distance to the norm, which is the leading university. In this calculation, the leading university gets '100' and the others less. The properties attributed to the leader, the star of global academia, convey a set of values that provide university leaderships with instructions for use, a checklist of external signs of academic excellence that take the form of interlinked desirable actions and behavioral preferences that follow new public management precepts.

The main psychosocial assumption is that everyone taking part in the global ranking game will want to imitate the best. Being different or original is not encouraged. As a normative reward system, ranking encourages universities to associate themselves with whatever the leader incarnates as defined by the criteria of the ranking. Having something that the benchmark does not have is a liability, not having something that the benchmark has is a weakness that needs to be eliminated by imitation. The psychosocial belief is that closeness and similarity to the leader translates into a quasi-magical transmission of some of the leader's valued qualities to the lower ranked. This activity is not limited to an evident institutional isomorphism, as neo-institutionalism would lead us to believe (DiMaggio and Powell 1983). Consequently, any academic or student associated in real or imagined form with Harvard University, an institution that symbolizes global academic excellence, can acquire some of Harvard's excellence. Contagion can be triggered via cooperation with faculty or administrators, studies or visiting positions, duplicating certain types of research outputs like articles in venues used by Harvard faculty, or some of Harvard's institutional features such as a large endowment or alumni organizations, etc. By seeking association with prestige as defined by the ranking, the leadership in aspiring universities and their funders like ministries of higher education or foundations reproduce and legitimize the ranking game. The imitation game is proof of the power of the ranking to shape the criteria and rules of global scientific prestige. But equally powerful is the counter-imitation game that follows (Tarde 1993), that is tinkering with the rules if they are not favorable to one's interests and assets. As the actors involved are reflexive, this activity of trying to redefine the rules is also part of the global ranking game.

Before the advent of the Shanghai ranking in 2003, academic leaders like the rector of the University of Helsinki did not know what her university's position was compared to other universities. Other universities might not have even been competitors in the full sense of the term. Even using the term of 'position' or 'ranking' did not make any sense. But today, because of the Shanghai ranking and other league tables like the THE, she knows exactly the University of Helsinki's shortcomings compared to the leader and other ranked universities, as defined by the rankings. Some institutions, like Aalto University that was created in 2011, have become competitors wrestling in the same league of world class universities. As the ranking game globalizes the stakes and flattens the globe, competitors might now be in other countries, in Australia and the Netherlands for instance. One effect of these knowledge tools is divestment from activities that are seen as impeding access to world class prestige as defined by the rankers, activities such as improving teaching quality, a value very difficult to quantify satisfactorily, developing the university as a path of social upward mobility, a provider of community service or a training ground of national elites for instance.

The emergence of global data

The development of the internet since the 1990s and data governance have meant an increasing introduction into higher education governance of digital tools such as rankings, impact factors and various computer interfaces like the EU's U-multirank. These and similar tools enable users to compare higher education institutions as well as individual departments and scholars (Google scholar for instance) according to a multitude of numerical criteria like research output or the amount of Nobel Prize winners. Quantifiable performance data is an important prerequisite for the development of a market logic that has accompanied global data governance. The idea of the commodification of higher education as a private good has come from the United Kingdom and the United States where HE institution evaluations like the one published yearly by *US News and*

World Report have provided students and their families with key information on higher education institutions such as tuition fees, fellowships and graduation rates.

Global data governance is subject to a variety of social forces. There is no legal order that regulates the production of data and its usage. The global market for data is embryonic at its best. Companies like Google, Thomson Reuters, Elsevier and Clarivate Analytics produce the raw material for the global governance of higher education and research. These include Elsevier's Scopus abstract and citation database of peer-reviewed research literature and the Institute for Scientific Information's (ISI) bibliometric databases such as Web of Science and Journal Impact Factor lists (cf. Garfield 1955). As a form of algorithmic evaluation Google scholar and its h-index has become prominent in the evaluation of faculty candidates and academic promotion in many higher education systems. *THE* and *QS* are important commercial players that provide some of the most visible university rankings and other paying services for universities and national ministries of education and research in search of academic prestige.

During the previous industrial revolution, it took some time before the dangers and pitfalls of new technology were noticed, and concrete safety measures set up. For the ongoing data revolution, an equivalent experience and know how that would form a public data culture as well as the corresponding concrete 'safety' measures are still largely missing. An exception is the French government's *loi pour une république numérique* (cf. Loi 2016) which seeks to provide a legal framework for data governance, including the ownership and circulation of data. A reflexive and informed production and usage of data will take time, as it requires the institutionalization and codification of experience-based practices. Currently, there is no collective sanction for the 'misuse' of data. An exception is provided by the Australian government's decision to drop journal rankings (see NHMRC 2010; Cooper and Poletti 2011; Rowbotham 2011). IREG (International Ranking Expert Group), which is composed of academics and administrators from universities, including the creator of the Shanghai ranking Professor Liu, tries to forge for itself the role of 'global police' on these issues. Unsurprisingly, in global higher education, the quality of the data produced is, to put it mildly, variable (Gingras 2016). Provided by the universities themselves or collected by national agencies such as ministries of education, sometimes for the purposes of the OECD or the EU in the European case (Dakowska 2017), data production is uncontrolled and the criteria of knowledge sustainability, transparency and validity rarely fulfilled. The Shanghai ranking is one of the few knowledge tools in higher education that attempts to fulfill these criteria as it uses only public, verifiable information. But the reasons for its transparency have little to do with the ideals of knowledge sustainability but rather with political control. Indeed, effective political control of data production originally meant transparency, but only for those in power. In this sense, the Shanghai ranking is a successor to ancient Chinese practices of government control of written material (on the link between transparency and government control of documents see Erkkilä and Kauppi 2017).

Despite the lack of legal control, social and economic control mechanisms exist in the form of an evolving global academic field of activity, an arena of social action that is convention based. In this space, actors are involved in a prestige competition that follows certain rules. This global competitive order develops on the background of historical changes in the global academic landscape. Since the middle of the twentieth century, the center of gravity of academic innovation has shifted from Europe, and more specifically large countries like Germany, the UK and France, to the United States. Attributed Nobel prizes testify of this shift. Numerous scholars have documented the various aspects of the current US scientific hegemony (Gerhards, Hans, and Drewski 2017; Münch 2013; Mittelman 2018). Since the beginning of the twenty-first century, this global shift has been institutionalized in the form of rankings and indicators of various kinds. These digital policy tools have had a powerful impact on academic life through a variety of positive feedback loops that have normalized certain asymmetries in power and knowledge. Partly, this structural development can be seen as a way by which the actors involved, academics, administrators, politicians and students, try to take advantage of the growing flows of capital (human, economic, scientific) that cross national

borders. The estimated 5 million students who are looking for a place to study outside their home country (OECD 2015) are obviously a very interesting source of economic capital for all fee charging providers of higher education.

Rankings, league tables, or champions' leagues create a uniform space of action, achieved by measurement through comparison with other universities (benchmarking). While the global competitive order that is being consolidated by various digital tools and their related social practices only partially cover national higher education systems, it has a powerful centripetal impact on national higher education and research. Figure 1 tries to capture a key aspect of this structural development, stratification of HE institutions into a higher, elite or world class and a lower national class institution. In the pre-Shanghai constellation, national university systems were relatively separate, involved in a variety of social functions, one of them being the production of world class research. In the Shanghai era, these national systems split into two parts: a national university system and a global order of universities. The latter share a certain number of features that are structured by the global competitive order and its emphasis on research performance as measured by digital tools like the Shanghai ranking. This global elite club mobilizes considerable centripetal force that induces a variety of structural changes in the five hundred measured national systems of higher education. These changes include a stratification of HE institutions into on the one hand national or regional institutions focusing on teaching and other less valued activities, and on the other hand a few world class universities, involved in more capital-intensive research activities.

Indicators are becoming more and more automatized, as they are linked with one another through algorithms of various kinds. For instance, Google scholar or Research Gate provide relatively up to date information on the publications of academics, information which is based on various interlinked data bases. While these give the impression that there is no judgment, the selection of what is measured and how it is measured are major interpretative moves. In reality, there is always an interest behind the numbers produced. Strategic decisions are motivated. Data is a human in disguise.

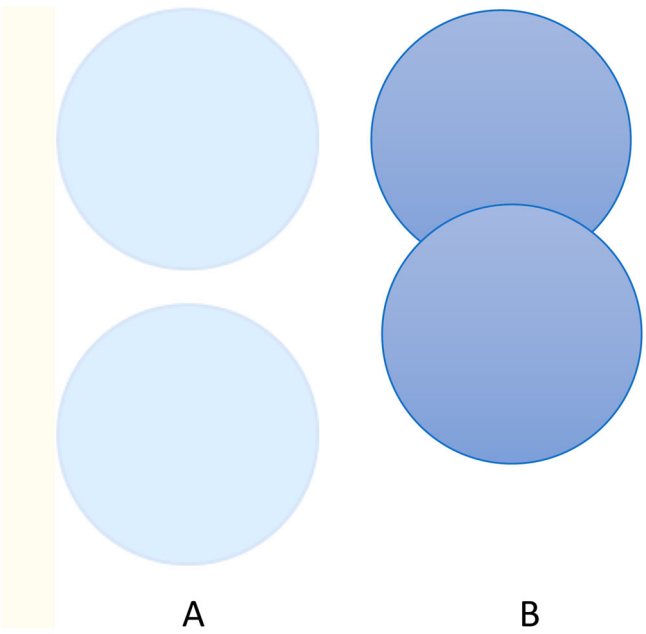

Figure 1. From autonomous national university systems with implicit global hierarchies (A) to partly overlapping national university systems in a global order of world class universities (B).

Creating world class through measurement

The 100 year anniversary of Peking University was celebrated in 1998. The same year, the Chinese government launched an ambitious program to reform the Chinese higher education system. It was coined project 985, as it was initiated in May, 1998. The goal was to duplicate the system that Chinese leaders considered to be the best in the world, the American university system. Not as a whole, but only the best part of it, the Ivy league system. The Chinese C9 system grouped the universities that the leaders considered as being the best in the country. They would get special funding from the government. The goal was and still is that they would form world class universities, at the same level as their American models, thus legitimizing the latter's claim to a monopoly on scientific excellence.

The focus would be on English language publications and US universities. Quantifying the best consisted of the following operations: benchmarking by defining the finality of action for Chinese universities; creating through this ranking a global unified playing field that includes the best in a quantified, descending interval order: and transforming the implicit criteria of excellence and reputation used hitherto in academia into formal criteria that constitute a numerical global competitive space. The generalized competition has opened the doors for entrepreneurs of various kinds. Companies like THE provide services for universities with their competition related problems, for a fee (THE Data Points 2017). Clients include for instance several universities in Australia, the UK, and Western Europe. InCites, a service of Clarivate Analytics, helps universities improve their standing in global rankings. For instance Ural Federal University in Russia used this service when it was still owned by Thomson Reuters to successfully improve its ranking position. The structure of the Shanghai indicator gives us clues on how the indicator was constructed (Table 1).

It is not clear what are the rationale for this structure or the weights ascribed to the different items. For instance, on what basis is research output assigned 20% and ultimately how do the different items chosen to collectively measure quality relate to teaching quality? Wouldn't Nobel laureates have better things to do than teach? Why measure the quality of faculty by quantifying articles in *Nature* and *Science*? Etc. It seems that what is measured is what is easily quantifiable like the number of Nobel laureates or that which already exists in data form as provided by Scopus and ISI. The benchmark had to be US private universities, not for instance research institutes in the US and elsewhere. The benchmark reproduces an academic reputational hierarchy. these signs are interpreted as being proxies to quality. In what sense these are proxies is not clear, and explanations for these choices are not provided. They seem to be guided mostly the easy availability of numerical data and by the political and economic interests of the Chinese government.

Despite these shortcomings the tool has been over the years remarkably stable. Comparing the 2003 first ranking to the 2017 ranking of universities reveals a stable global structure where academic capital as defined by the ranking strongly correlates with the institutions' economic capital, their endowment (Lepori 2016; Mittelman 2018). The tip of the iceberg is dominated by a top 20

Table 1. The structure of ARWU. http://www.shanghairanking.com/.

Criteria	Indicator	Code	Weight (%)
Quality of education	Alumni of an institution winning Nobel Prizes and Fields Medals	Alumni	10
Quality of faculty	Staff of an institution winning Nobel Prizes and Fields Medals	Award	20
	Highly cited researchers in 21 broad subject categories	HiCi	20
Research output	Papers published in Nature and Science*	N&S	20
	Papers indexed in Science Citation Index-expanded and Social Science Citation Index	PUB	20
Per capita performance	Per capita academic performance of an institution	PCP	10
Total			100

Note: For institutions specialized in humanities and social sciences such as London School of Economics, N&S is not considered, and the weight of N&S is relocated to other indicators.

dominated by US-based, private universities with the exception of those in the California system, and a few British universities. At this level change between 2003 and 2017 is and has to be minimal, as the top 20 is the standard of excellence. The institutions that represent excellence have become a new normal of academic achievement (Table 2).

In 2003, the top 20 included 15 US based institutions, 4 UK based institutions, and 1 Japan-based institution. In 2017, the top 20 included 16 US-based institutions, 3 UK-based institutions, and 1 Switzerland based institution. Both in 2003 and 2017, 19 out of 20 institutions were either US or UK based. Only 2, Johns Hopkins University and ETH Zurich. Swiss Federal Institute of Technology, Switzerland, were not in the top 20 in 2003, occupying positions 24 and 25. Otherwise the ranking includes the same institutions, testifying of the stability of the ranking tool and its criteria.

In 2003 and 2017, approximately half of the top 100 are based in the US. The overall progress of Chinese universities toward world-class status is clear, and in this sense the ranking has done its job. In 2003, 19 Chinese were in the top 500, in 2017 they were 57, a three-fold increase. In 2003, there were no Chinese universities in the top 100 in 2003, in 2017 they were 2. Successful countries in the ARWU ranking like Australia and the Netherlands have applied the criteria used for success in the ranking: fewer and larger institutions of HE, more research production, and a more internationalized system. Other countries whose institutions have done well in the ARWU include also South Korea and Portugal.

The ARWU has not been alone in framing a global competitive order for higher education and research. While the criteria used in ARWU are transparent, those used to create the London-based THE world university rankings are less clear, and a subject of a lot of speculation. 40 percent of the value of an institution in the THE ranking is dependent on a reputation survey. The response rate is not known. How the by-invitation survey is made is not clear (for analysis see Holmes 2006; Soh 2015). But since 2011 the THE ranking has produced a very similar ranking to the ARWU ranking with the same institutions in the top 20 but in a slightly different order compared to the ARWU ranking, as the next table shows (Table 3).

In 2017, the list includes 3 institutions that were not in the top 20 in 2011, namely University College London, Duke University and Northwestern University. All the others ranked in the top 20 in 2017 were already in the top 20 in 2011. In 2017, THE's top 20 includes 15 US based institutions,

Table 2. The top 20 in ARWU in 2003 and 2017.

- Harvard University, USA. –. 1st in US endowment ranking 2015.
- Stanford University, USA. –, 5.
- Cambridge University, UK. +2, 1st in the UK in 2016.
- Massachusetts Institute of Technology, USA. +2, 6.
- University of California, Berkeley. USA. −1, 13.
- Princeton University, USA. +1, 4.
- Oxford University, UK. +2, 2nd in the UK in 2016.
- Columbia University, USA. +2, 11.
- California Institute of Technology, USA. −6, not in top 20 US endowment.
- University of Chicago, USA. +1, 14.
- Yale University, USA. −3, 2nd in US endowment ranking 2015.
- University of California, Los Angeles (UCLA), USA. +3, 13.
- University of Washington, USA. +3, not in top 20 US endowment.
- Cornell University, USA. −2, 19.
- University of California, San Diego (UCSD), USA. −1, 13.
- University College London, UK. +4, 11th in the UK endowment ranking in 2016.
- University of Pennsylvania, USA. +1, 9.
- Johns Hopkins University, USA. +6, not in top 20 US endowment.
- ETH Zurich. Swiss Federal Institute of Technology, Switzerland. +6, 1st in Switzerland.
- Washington University in St. Louis, USA. +2, 16.

Note: Institution, country, change in position 2003–2017, position in US endowment ranking 2015 and in UK endowment ranking in 2016. On the return on the endowment see Piketty.
Source: ARWU 2017. http://www.shanghairanking.com/; Mittelman 2018, 113; Piketty 2013, 716.

Table 3. Top 20 in THE in 2011 and 2017. Institution, country, change in position 2011–2017.

(1) Oxford University, UK. +6.
(2) Cambridge University, UK. +4.
(3) California Institute of Technology, USA. −1.
(4) Stanford University, USA. –.
(5) Massachusetts Institute of Technology, USA. −2.
(6) Harvard University, USA. −5.
(7) Princeton University, USA. −2.
(8) Imperial College London, UK. +1.
(9) University of Chicago, USA. +3.
(10) ETH Zurich. Swiss Federal Institute of Technology, Switzerland. +5.
(11) University of Pennsylvania, USA. +8.
(12) Yale University, USA. −2.
(13) Johns Hopkins University, USA: –.
(14) Columbia University, USA. +4.
(15) University of California, Los Angeles (UCLA), USA. −4.
(16) University College London, UK. +6.
(17) Duke University, USA. +7.
(18) University of California, Berkeley. USA. −10.
(19) Cornell University, USA. −5.
(20) Northwestern University, USA. +5.

Source: THE 2017.

4 UK based institutions, and 1 from Switzerland. While slightly more fluid than the ARWU ranking, it nevertheless reproduces a similar global architecture of leading higher education institutions.

The overlap between the ARWU and the THE rankings is considerable. 17 out of 20 in the top 20 of 2017 are present in both rankings. UK based institutions fare better in the THE than in the ARWU ranking. Oxford University is ranked no.1 in the THE ranking, and no.7 in the ARWU ranking. Cambridge University is no.2 in the THE ranking, and no.3 in the ARWU ranking. The third UK based institution listed in the ARWU top 20, University College London, is ranked no.16 in both rankings. While there is no real competition between the USA and the UK, institutional competition for the first spots between Harvard/Stanford and Oxford/Cambridge, between 'big and small brother', seems pretty clear, although the funding gap between the top US and UK universities is significant. To give a sense of the proportions suffice it to mention that the leading institutions in the US and the UK are far from one another. In 2016, Harvard has an endowment of around 36 billion dollars whereas Cambridge has an endowment of around 8 billion dollars.

Since 2003, a ranking arms race has led to an expansion and specialization of rankings and their producers (see Kauppi and Erkkilä 2011 for an overview). As the production of data has become a very lucrative business, new rankers have produced more indicators, leading to specialization. Today, about a dozen global rankers control the global ranking game. A variety of more specialized, second-generation rankings that are regional and discipline specific have replaced the generic, first-generation ranking of the best universities in the world produced by Shanghai Ranking Consulting (a private company nowadays). With time, playing the ranking game and duplicating its closed rationality, a form of gaming disorder, has become normal. Not following their rules has become to be seen as something suspicious. It would not just be a refusal to partake in modern academic life and in the transformation of society and university but also a way to hide something that does not fit the norm. It would be a highly risky move for a ranked university to fall out of the competition.

As prestige competition in an interconnected world has become more central not just for universities and national education systems but also for nation states, the pressures to either be successful in existing rankings or to tinker with the rules of ranking are two main ranking strategies. Most universities try to adapt to existing rankings. But some political leaders do not see this as being efficient enough. Due to French president Nicolas Sarkozy's frustration with the lack of success of French elite institutions in the Shanghai ranking, the new European ranking, U-multirank would aim at 'doing justice to European universities' (Kauppi and Erkkilä 2011). In Russia, after a first failure, Vladimir

Putin launched the 5/100 program, the aim of which is a Russian global ranking with Russian excellence. However, neither have succeeded in challenging dominant rankings, the Shanghai ranking and THE, testifying to the solidity of the conventions and practices regulating the global ranking game. U-multirank became a computer interface that provides students with a variety of criteria of university selection. It might be fairer than the Shanghai ranking, but it has not succeeded in producing the semblance of representing a global order, a must in the current global competitive order. The same goes for Russia's ranking.

Ranking acrobatics

During September 2017, the yearly ritual of rankings proceeded its normal way. First came out the *Financial Times*' ranking of management masters programmes, then the *THE* ranking of the best universities in the world, the *QS* ranking of employability of diploma holders, followed by the *THE* ranking in arts and the humanities (Graveleau 2017). This business cycle shapes the future through the creation of legitimate expectations and consumption habits.

It also encourages expanding usages. While originally designed to provide Chinese political leaders information on the development of Chinese universities, the Shanghai ranking has also provided Chinese and other students information on the top universities in the world. It has also been used extensively by academic leadership in ministries and universities for strategic planning that is setting goals. Political leaders have seen it as a way to legitimize investing in innovation and the growing knowledge economy, as well as boosting status competition at the level of regions or the nation. The media regularly picks up on the success of universities in a tightening global competition (Panula 2017).

Developments in institutions of higher education explain some of the current trends. The logic of datafication is linked with specialization and the development of the social demand for a certain type of knowledge from public administration and the economy. University and research governance have become increasingly professionalized. A differentiation process has detached administration from faculty and students. For instance, in the 1990s in Finnish social science departments it was not unusual to see administrators follow departmental research seminars. Not the case anymore. Administration has become a full-time job, a specialty that requires professionalization. This differentiation has not only been social but also epistemic, relative to the type of knowledge needed. Differentiation has created a demand for digestible, that is non-professional and understandable information on what people do in academic departments and research institutions. The pressures have been to transform a certain type of knowledge and know-how that is difficult to define (scientific excellence) even by academics themselves into an understandable, common sense type of knowledge that anybody can 'understand' and that can be commercialized. This has meant producing various easily understandable proxies or external signs of scientific excellence like the number of Nobel prizes or of citations of an institution or a scholar. A focus on scientific trophies or outputs has had as a consequence a decreasing interest in non-quantifiable inputs and throughputs such as scientific culture as well as in other key social functions of universities such as training elites, building a democratic society or contributing to regional development for instance.

The French case illustrates the power of these global structural transformations. For several decades now, the French government has been attempting to reform the French higher education system in view of streamlining it with global models that are represented by global rankings (Harfi and Mathieu 2006). This alignment has included for instance simplifying the degree structure and providing more readable labels for the various positions in the French system. Because of these classification problems the international visibility of French research has been low. One way to improve this visibility has been by way of combining universities into larger units, with more research output, following the global check list and its epistemology (Kauppi 2018). As the fusing of universities into larger units has been a real hot potato for trade unions and student organizations, very active in the sector of higher education and research, a 'compromise' has been to create looser

PSL RESEARCH UNIVERSITY PARIS

Dauphine, with its PSL « research university » partners wants to build a research university that will join the global top 20

Key figures

- *3 200* teachers, researchers and post-docs
- *18 500* students
- *22* Nobel prizes: *10* in physics, *5 in chemistry*, *3* in literature, *2* in physiology and medicine, *2* in economy
- *10* Fields medals
- *34* CNRS Gold medals
- *1* Idex, *12* Labex, *8* Equipex
-

Figure 2. PSL Research University Paris. Source: Paris Dauphine University, 2017. My translation. http://www.dauphine.fr/fr/universite/dauphine-et-paris-sciences-et-lettres.html.

groupings of institutions of higher education called communities of universities (communautés d'universités). One of these is Sorbonne University (2017, see http://www.sorbonne-university.com/). This new unit cleverly fuses existing universities like Université Paris I-Sorbonne with smaller institutions to provide them all with more international visibility. Sorbonne University uses the historically prestigious symbolic label 'Sorbonne' in an innovative way through a coupling with the English-language concept of 'university', the unit of measure of the global ranking game. The new unit is not Université de la Sorbonne as in normal French but Sorbonne University, an English language label that rimes with Harvard University or Princeton University, without however being a single institution with a single budget and administration like Harvard or Princeton. Adapting to global transformations requires dropping indigenous classifications and adopting global classifications.

Other university communities like PSL, Paris Sciences et Lettres (https://univ-psl.fr/) brings together 25 institutions like the Ecole normale supérieure (ENS), Mines Paris Tech, Paris Dauphine University, the CNRS (the French national center for scientific research) and the Beaux-Arts. For the ENS, which is one of the most prestigious institutions of HE in France and has been since the nineteenth century the training ground for most of its intellectual elite, this strategy has been successful in terms of ranking. In 2016 in the THE ranking in the arts and humanities, the ENS was the best ranked French institution, in 45th place. A year later, now as part of PSL, ENS had gone up 13 positions to the 32nd position (Graveleau 2017). PSL was also the best ranked French repackaged HE institution in the 2017 THE ranking. According to insiders, these and other groupings that have proliferated in Paris during 2016–2017 were seriously initiated only after preliminary negotiation with the ranking authorities, that is Shanghai and THE among others, to make sure that the groupings would indeed be counted as single institutions. As such, this institutional ranking strategy is not aimed at increasing the quality of the research in these institutions. Rather, it aims at pooling the resources of separate institutions of HE to satisfy the criteria of international visibility as captured by databases like Scopus. Paris Dauphine University exemplifies this new, global research oriented identity on its website (Figure 2).

Conclusions

With the Shanghai ranking and other equivalent tools, educational globalization has evolved from implicit and relatively fuzzy hierarchies of scientific excellence to formal and explicit global value

hierarchies of performance. This structural transformation has created a lock-in constellation, in which possible worlds for developing global higher education in other directions than those incarnated by rankings such as a democratic university have become unlikely. Compared to other ranking tools like THE and QS, the Shanghai ranking is in many ways 'better'. It is simple and transparent, relying on public knowledge and third-party data, not on data provided by the universities themselves or solely on performance data provided by operators like ISI. But does it or the other rankings provide sustainable and long-term knowledge that is required for developing academia? It does not. The criteria used are one sided: only the quantifiable is counted. Following the interests of the Chinese government, the benchmark is defined as being US private institutions of HE. The definition of quality is narrow and formal (how many references or clicks). For instance, the validity of the indicator for teaching quality, the ratio of faculty and students, is weak. As we have seen, the structure and weights of the Shanghai ranking are impressionistic, and do not even try to capture adequately a complicated reality.

The global competitive order that has been partly shaped by the Shanghai ranking excludes from the ranking game research centers exterior to universities and small institutions. Exceptions include the California Institute of Technology or Caltech. In terms of measurement traditionally largely excluded but increasingly included into expanding data bases are books, non-English language publications and open access and electronic publications. In the Shanghai world, first-class philosopher, historian and social scientist Michel Foucault would not be considered a first-class scholar. He wrote books in French and worked in institutions like the Collège de France, unlisted in the Shanghai ranking, THE or QS. Paradoxically, the Shanghai involves two simultaneous operations: denationalization global higher education from non-English language elements, and renationalization it through universalization of English-language elements.

From this perspective, rankings and the dictatorship of numbers dramatically narrow scholarly diversity by reducing the sources of innovation into certain types of institutions and specific types of quantifiable and formal output performance: production in certain types of institutions of higher education and English-language journal databases and scientific trophies like Nobel prizes. An additional problem is the unit of measurement. As such, institutions do not produce anything. However, they, and not the individual scientists as in Merton's study, are the main focus of the ranking and the units of scientific competition. Nevertheless, it is the individual and in some cases her team that produce innovations. This individual and group activity is based on a certain education and experiences, a scientific habitus, and a sustained collective interest in scientific inquiry (scientific culture) (Callon 1994; Flexner 1939). In their attempt to square the circle, numerical rankings and knowledge instrumentation more broadly do not leave any space for these crucial immaterial and non-quantifiable factors.

By the criteria used, rankers legitimize established power relationships and large institutions with significant resources and consolidate acquired advantages, producing a lock-in situation. Academic capital correlates with economic capital. Like other dominant rankings such as the THE ranking or the QS ranking, Shanghai certifies 'scientifically' that world class research can be produced only in English language and in certain private institutions of higher education in the US or, to a lesser degree, the UK (exceptions are Californian public universities). For public HE institutions not based in the US or the UK, this is an unreachable and unrealistic goal. Other biases reinforced by the Shanghai ranking include a focus on highly cited papers and global academic stars, defined as the most cited scholars in databases like Elsevier's Scopus. Through these choices, the ranking codifies these types of power and knowledge asymmetries and the valued resources they represent into a unified global playing field dominated by the criteria it further consolidates through its yearly publications and consulting services. The result is a global competitive order that is more institutionally structured than before, legitimizing what is now self-evident, a unipolar world of science dominated by US-based private institutions of higher education and English-language scientific production.

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