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Veröffentlichungsversion / Published Version
Zeitschriftenartikel / journal article

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Reverse Engineering and Emotional Attachments as Mechanisms Mediating the Effects of Quantification

Wendy Espeland [*]

Abstract: *»Reverse Engineering und emotionale Bindungen als Mechanismen, die die Effekte der Quantifizierung vermitteln«.* Alain Desrosières understood statistics as simultaneous representations of the world and interventions in it. This article examines two mechanisms that mediate how numbers do both. The first, reverse engineering, describes how working backwards from a desired number shapes organizational routines. The second, emotional attachment, describes the processes by which numbers generate a variety of emotions that sometimes stimulate collective identities. Focusing on educational rankings but including examples of other types of numbers, it argues for the importance of disclosing the effects of specific causal mechanisms in the analysis of particular performance measures.

Keywords: Quantification, reverse engineering, emotional attachments, causal mechanisms, Alain Desrosières, rankings.

1.   Introduction

Alain Desrosières taught us how important it is to understand numbers as representations and interventions (Desrosières 2010, 2014; Didier 2016, in this HSR Special Issue). At the same time, numbers signify and change. This insight is central in an outpouring of scholarship in fields ranging from anthropology to accounting, much of it informed by his pioneering work. I wish to describe here two broad mechanisms and describe some of the interactions between them in how the impact of numbers as representations intervene in people's interpretations and the places to which they are applied. The first mechanism, *reverse engineering*, is strategic; the second mechanism, *emotional attachment*, is not. These two mechanisms describe both causes and patterns of change that numbers induce in a wide array of contexts and they produce changes in individuals, organizations and organizational fields in which they are introduced. Relying extensively on an extended case study of media rankings of education, work done jointly with the sociologist Michael Sauder, I

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want to explain these mechanisms and suggest why they would be useful in the analysis of other kinds of quantification.[1]

2.   Reverse Engineering as a Rankings Mechanism

Most definitions of reverse engineering emphasize the process of working backwards from an object in order to understand how something works. Legal scholars Samelson and Scotchmer (2002, 1577) define reverse engineering as "the process of extracting know-how or knowledge from a human-made artifact." No doubt the practice is an old one – an experienced cook can reconstruct a recipe from careful tasting, just as a good tailor can replicate an article of clothing with close examination – but according to the Oxford English Dictionary the term's origins were from the Cold War, with the first published record appearing first in 1957 hearings before the U.S. Senate Select Committee on Small Business in discussions about military procurement.

Now widely understood as a standard logic of investigation, the term has expanded beyond its origins in manufacturing and engineering to describe styles of inquiry or innovation in many fields. In genetics, scientists speak of reverse engineering genes; property law is filled with examples, most of which are lawful because reverse engineering is labor intensive in a way that mere copying is not (excepting a few instances in intellectual property). Network scholars have argued that reverse engineering is a helpful strategy for understanding network structures in both social and natural scientific fields, arguing that it helps to close the bedeviling gap between describing networks and explaining why they emerge and how they function (Alderson 2008). Currently, the most conspicuous use of reverse engineering is in computer programming where it describes widespread practices of decomposing code to debug it, copy it, or improve on it. Its cachet is conveyed in the idea that learning by emulating successful companies, hence the rather breathless title of a recent book *What would Google do? Reverse-engineering the fastest growing company in the history of the world* (Jarvis 2011).

Reverse engineering describes an almost universally deployed tactic law schools use to improve their rankings. By deconstructing their rank into its component parts, schools decide which factors they believe are most amenable to their control and develop strategies to improve those factors. Some common examples of reverse engineering strategies include the careful parsing of test scores and grade averages to create "target" numbers and devising an admission "formula" for improving these selectivity factors; less directly observable

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[1]   Some of this work includes Espeland and Sauder (2007), Sauder and Espeland (2006, 2009). Details about our data and methods are described in these articles.

but also widespread is the practice of marketing faculty accomplishments to improve scores on reputational surveys. Many schools also cultivate a robust "transfer" market in second year students as a way to improve their selectivity statistics since their grades or test scores do not count for rankings purposes. There are many other examples of gaming rankings, not only among law schools but by universities and graduate programs worldwide.

Reverse engineering encourages two widespread practices: keeping careful track of all the elements of rankings statistics and using them to project future rankings, and learning as much as one can about how U.S. News and World Reports [hereafter USN], the dominant university ranker in the U.S., calculates rankings. To do the former, schools invest in elaborate record keeping and statistical analysis of their data, something rankings encourage whether or not reverse engineering is an explicit tactic. Nearly every administrator we spoke with described how such demands have increased as a result of rankings. Many schools have either university or law school institutional research departments whose job it is to create and sometimes massage the requisite statistics.

There have been educational rankings for over a century but these early rankings were episodic exercises in evaluation that were intended for insiders, for educators. Educational rankings produced by media were first introduced in France in the 1970s but it was not until the 1980s that media rankings took off.[2] The catalyst this time was a new editor at an American weekly news magazine, USN created its first annual university rankings in 1988. Then a mediocre weekly news magazine, editors decided to rejuvenate its brand based on the slogan, "news you can use," in order to distinguish it from the far more prominent *Time* and *Newsweek* magazines. As part of this consumer-oriented framing, USN saw its university rankings as providing useful consumer information to help potential students and their parents in order to help with the often overwhelming decisions of where to apply and attend college. The magazine's motives did not include any effort to "improve" education or hold educators more "accountable." These "services" provided by rankings only emerged years later as rankings acquired new uses for new audiences. In this, rankings differ from other performance measures that are intended to encourage people to improve their performance. In Alain Desrosières' terms, the rankings were originally intended as descriptive measures but given the attention they received they quickly became prescriptive (Desrosières 2010, 1-6). As he points out, the tension in these two contradictory uses of statistics is a prominent feature of quantitative information.

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[2] Julie Buchard (2015) has written an illuminating account of the emergence of media rankings in France as a joint effort of educational reformers, wishing to challenge the hegemony of the elite Écoles, and journalists who, hired during the heyday of the student movements, were looking for things to do and ways to challenge the established status of universities.

USN expanded its wildly successful annual university rankings to include graduate schools in 1990. For law schools, the organizations we studied most intensively, USN uses four indicators: reputation, 40% of the overall score, is determined by two surveys sent to faculty and practitioners; selectivity, 25%, is based on first year students' grade averages from their undergraduate university, standardized test scores from the required admissions test, and the percent of applicants who were admitted; placement success, 20%, is based on the percent of students employed at graduation, nine months after graduation, and the bar passage rate; faculty resources, 15%, is composed of four separate measures: expenditure rate per student (for instruction, library, and supporting services), student-faculty ratio, "other" per-student spending (primarily financial aid), and volumes in library. To compute the final ranking, each school's score is standardized. These scores are then weighted, totaled, and rescaled so that the top school receives a score of 100 and other schools receive a percentage of the top score. It is important to point out that while USN consulted educators, rankings were created by staff with no training in methods, statistics, or education. USN initially did not provide much information about how it computed its rankings but over time, due to pressure from educators, it included more information.

To learn more about how USN calculates rankings, schools scrutinize its published methodology, follow its social media, which is where changes in measures are usually announced, and monitor ranking stories in a wide array of media, including the many blogs on rankings written by law professors, journalists and others. Colleagues exploit professional networks, both formal and informal, for information and gossip. Tips for manipulating rankings are often carefully guarded secrets passed on only to trustworthy friends. On multiple occasions interviews we were asked to not reveal what many considered "trade secrets" for managing the numbers; nearly as often, we were asked for "insider" information about USN's methods. Schools also "learn" from past experience, accumulating techniques and for manipulating rankings, not all of which are demonstrably effective. Several times we have been contacted by administrators hoping to learn more about how some component is constructed. Robert Morse, the director of rankings, reports that he hears from many schools eager to learn more about how rankings are calculated or offering advice about how USN "improves" rankings.

It is important to examine the reasons why so many schools resort to manipulating ranking indicators rather than engage in more sincere efforts to improve their performance. There are a number of factors that contribute to "gaming" statistics. First, with rankings, most people believe they are not legitimate measures of performance. USN methods for producing rankings have been widely denounced by experts and the media. For example, the rankings leave out important educational criteria such as quality of teaching or even the goals of particular schools. The internal validity of the measures are dubious at best.

Does the money spent on library books affect the quality of education? Moreover, the scores of schools are tightly bunched together, even tiny changes in measures can produce dramatic shifts in outcomes. Rankings flunk all sensitivity tests that try to establish the robustness of a measure. Educators resent the influence of these poor measures.

More importantly, and more relevant to other kinds of performance measures, is that the gap between the number and that which the number purports to measure is so great it is far easier to manipulate a number than to try to change the characteristics that is supposed to be measured. A school's reputation is an important feature of the benefits it confers on its students. But reputation is a nebulous quality that changes only slowly over time. It is much easier to try to change reputation by gaming survey results, e.g. collecting surveys sent one's school and filling them out in tandem in order to maximize one's standing in relation to schools with rankings close to one's school, than it is to change one's reputation. For factors, such as selectivity, which are easier to control, schools do treat the measure quite literally.

They change admissions procedures to produce higher selectivity numbers by encouraging applicants they reject, admit students with higher test scores and offer them scholarship money, and so on. The larger question of whether these are the best students to admit is one that is pushed aside.

Finally, another reason why so many schools and likely so many others whose performance is measured resort to manipulation is the temporal dimensions of these measures. Most measures, like rankings, are produced annually which strongly encourages a short-term orientation. People are forced to care about the numbers *this year* when the goals behind the numbers are often complex and would take longer to address. Long-range strategy becomes a luxury in the realm of short-term measures.

While each performance measure will have particular effects on those it governs, if the rewards and punishments attached to the measure are important, if the measures are publicized, if the gap between the measure and the goal is great, or if it is extremely difficult to accomplish the goal behind the measure, the temptation will be to manipulate the number. Conversely, if the measures are seen as legitimate, if managers are given ample time to implement new policies, if efforts are rewarded as well as outcomes, we would expect less gaming and more efforts to change the substantive goals behind the measures.

"Reverse engineering" is a fruitful way to conceptualize the motives for rankings manipulations, first, because it is such a common strategy, one that members often use to name a bundle of practices used to make sense of and manage rankings. The people we interviewed routinely described what they did either explicitly or implicitly as "reverse engineering" and some reported that it is a helpful tool in explaining their rankings to various audiences or overseers. Reverse engineering is simultaneously a way to know something (how rankings work), a way to do something (manufacture the number you want), and a way

of checking something (are our plans working? are people doing their jobs properly?).

Conceiving of reverse engineering as a mechanism of change is helpful for several reasons. First, it allows scholars to connect this practice with other related strategic social processes such as creating "audit trails," which make it possible to trace backwards the calculations performed, "transparency," "accountability," or "reproducibility." It also encourages intellectual engagement with the broadly relevant literatures on auditing (Power 1994, 1997), risk assessment (MacKenzie 1993; Hutter 2000; Hutter and Power 2005; Power 2007), performance evaluation, strategic management and balanced scorecards (Johnson and Kaplan 1987; Kaplan and Norton 1996) and governmentality (Foucault 2007; Miller and O'Learly 1987; Rose and Miller 2008; Mennicken and Miller 2012). Moreover, reverse engineering is closely related to how others, including many of our respondents, talk about such practices. Reverse engineering can also be deployed as a "check" on the calculations or, more broadly, the methods of others – a form of doing and communicating and creating "reliability" or whatever notion of scientific respectability you desire, or for debunking, debasing the same.

It is useful to unpack some of the dimensions of reverse engineering to reveal how this form of thinking and action shapes organizational members' understanding of rankings. Deconstruction is the primary cognitive practice associated with reverse engineering and it is built on the assumption that something can be known if it is taken apart, if we somehow reduce to its parts. This is a sensible approach to understanding end-products but one that depends on other largely implicit assumptions. First, in many cases, it is extremely difficult to reverse engineer something, especially if crucial information is missing, which is typically the case. Although calculation is considered one of the most transparent and therefore reproducible forms of knowledge, scrutinizing proprietary algorithms is hardly easy. The classifications that create the definitions that are used to construct measures create a complex cognitive infrastructure for rankings, one that undergirds all measure but is often obscure to those who make and use rankings. This infrastructure is made, rather than given, and rests on the fundamental idea that the equivalences that rankings produce – within and between schools – are social conventions rather than relations exterior to measurement. They are created rather than given, and reflexive in ways that shapes the categories through which we understand ourselves as members of groups or as individuals. Desrosières calls this process a "convention of equivalences." Understanding calculation this way opens up measures to sociological analysis. Alain Desrosières was one of the central figures in elaborating this way of thinking about statistics and INSEE (the French National Institute of Statistics and Economic Research) was one of the central locations for this work. Other important researchers associated with the economics of convention are Laurent Thévenot, Robert Salais, François Eymard-Duvernay, Olivier Fa-

vereau, André Orléan, and Luc Boltanski.[3] The production of equivalence, at its most general, is the assumption that all universities are somehow the same and have the same goals. More concretely, the dimensions that rankings are intended to measure are made equivalent with one another so that one can easily compare the performances of people in different parts of the university; for example, one can "see" how well admissions staff are doing in comparison to career services staff by looking at their relative contributions to the rankings and comparing their performance over time.

Initially, USN did not provide much detailed information about its methods, something that came up often in criticisms. It reported the categories and weights assigned them in its methods but this left many unknowns. For example, for years USN did not disclose how its reputational surveys, a factor that determine 40% of a school's score and is the most heavily weighted component of rankings, were conducted or how many people responded to it. Only later did schools learn that a consulting company was hired to write and administer the surveys of both practitioners and law school members, that the response rate was very low, especially that for the practitioners, that within law schools four people were surveyed, the dean, dean of academic affairs, chair of appointments committee, and last tenured professor. But USN has never revealed how its sample is drawn and what are the biases of this likely non-random sample. Even today, one of the biggest mysteries surrounding the rankings is how respondents in the practitioner survey are selected.

Providing details about methods is a crucial part of producing "valid" social knowledge; however, as the extent of gaming became more known and threatening to undermine (further) the credibility of USN rankings, USN reversed its pattern of increasing disclosure in order impede gaming. It was common practice for schools to "improve" their placement numbers by counting any job, even the most menial, as a "placement," hiring their own unemployed students until the numbers were reported, and even paying firms to hire their unemployed students. When during the Great Recession, angry unemployed students started challenging schools' glowing job statistics, including filing law suits against them, when members of Congress began to threaten to regulate the reporting of job statistics, the American Bar Association, the accrediting agency for American law schools and USN began to require more nuanced employment statistics, including whether reported jobs required an law degree, were part-time or temporary, or were at a graduate's law school. In compiling the overall placement statistic used in its rankings, USN announced it would no longer provide all the weights to the various sub-factors as a way to deter gaming. Consequently, even though reverse engineering might seem an obvious

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[3]   I cite works in English. French titles appeared earlier.

strategy of management, it is not as easy to accomplish as it might seem at first, despite claims to transparency and rigorous methods.

Sequencing is another key feature of reverse engineering. The end product, the ranking, is a summary statement of worth or merit but in order to deconstruct this summary there are multiple intermediate processes that pertain to particular variables. The presumption underneath reverse engineering is the salience of the logical connections that create its integration; put differently, the ranking is a sturdy object that must be worked on in order to reveal itself, and that its ultimate commensuration or integration is a logical sequential connection rather than the arbitrarily accumulated and weighted parts that it is. An orientation to reverse engineering, in other words, encourages logical connections that are not necessarily there. In contrast to the reverse engineering of computer code or manufactured parts, the connections among rankings are more arbitrary.

Part of the sequential orientation of reverse engineering is a particular cognitive and temporal orientation toward its objects: one thinks backwards from the present in order to project forwards into the future. But this is not as one-directional as it might seem; the backwards and forwards of deconstructing rankings is more of a dialectical process for organizations as adjustments to organizational routines are often more continuous than a strict before and after approach to this disassembling. Whereas the motivation for much reverse engineering is innovation and improvement in the object under scrutiny, as well as copying something but with ranking these motives are irrelevant as schools have no control over the ultimate object, other than persuasion. For example, some schools may work on decomposing only one rankings factor, while others might work on multiple factors. Schools may abruptly change course as they learn more about factors (e.g. promotional material has little apparent effect), or as other schools adopt strategies that they feel they must also adopt, or as new information is revealed or changes made by USN.

Perhaps the most salient consequence of reverse engineering to encourage an already prevalent attitude of focusing on the number rather than what the number is supposed to measure. One school had the unhappy experience of falling out of the first tier (top 50 schools). When asked if they were strategizing about how move back into the top tier, the dean said: "Oh, absolutely. Absolutely. We've done a lot of careful studying of the USN methodology to figure out what counts the most and what is perhaps the most manipulable, because those are not necessarily the same things."

One law professor we interviewed described how at the retirement part of a retiring dean, he was presented with a crystal numbers that commemorated the schools rise in the rankings *one place*, as if this were his greatest accomplishment as dean.

We can find many examples of reverse engineering in the scholarly literature on performance rankings. From civil engineers who invented elaborate

benefits while ignoring obvious costs for their projects in order to produce positive cost-benefit analysis (Porter 1995; Espeland 1998), to New York surgeons who refuse to operate on risky cases in order to boost their scores on state-mandated "report cards" (Narins et al. 2005), to accountants at Ernst & Young who approved the practice of "Repo 105" in which Lehman Brothers investment bank bought back shares of its debt and reported these as sales in order to appear less leveraged that it was shortly before its collapse during the Great Recession (Jauhar 2015; Reed 2010), whenever there are fateful, public numbers in play, the temptation to produce positive numbers will be pronounced.

In sum, reverse engineering is a broadly adapted strategy that encourages an orientation toward rankings that strongly influences how schools respond to rankings, how they understand them as kinds of measures, and their legitimacy as such. As forms of "scientific" knowledge the publishing of methodology is an important part of what the magazine and some consumers see as the validity or respectability of rankings. Yet, the requisite public rendering of methods at the same times makes them more vulnerable to gaming, which undermines their legitimacy. This tension between publicly producing methods and data, a fundamental feature of scientific accountability and the manipulation of numbers to produce better looking results, is why many performance metrics provide a very tenuous and selective accountability. Many people know this but this seems to do little to dampen their power.

3. Emotional Attachment to Numbers

As Emile Durkheim has famously argued in *The elementary forms of religious life* (Durkheim 1995), the more abstract the relationship, the harder it is for people to invest it with emotion. That is why he believed it was so necessary for people to use symbols and rituals to produce the proper intense emotional attachments to society such that we are willing to sacrifice individual goals and interests to the needs of the collectivity. While they may seem less evocative than a totem or a flag, numbers can also become powerful symbols of belonging, identity, and status. Sometimes we become invested in a particular number or set of numbers: being "number one" or in the "top ten" appeals to many sports fans, students, and educators.

Scholars have mostly neglected people's emotional attachments to numbers, this despite their importance for the founders of the discipline of sociology. Marx wrote about the distinctive alienation associated with capitalism. Anomie was fundamental to Durkheim's modernism and he believed that "collective effervescence, the powerful emotional attachments forged through ritual," is crucial for our attachments to groups that is the antidote to anomie. For Weber, the capacity of rationalization to drain from life its meaning was crucial for understand the stakes of modernity, and while calculation was crucial for capi-

talism to develop, it contributes to the flattening of our emotional lives. And Simmel described cynicism and apathy as responses to the pace of modern life and the effects of a money economy. Nevertheless, these early investigations of emotional responses to broad changes in economic and political life were seldom emulated by more contemporary scholars, at least as systematically as in these classical accounts. This "prolonged marginalization of emotion," as Von Scheve (2013) terms it, lasted some sixty years. It was only in the 1980s due to, in part, the pioneering work of Arlie Hochschild, that the sociology of emotions became a legitimate sub-field in North American sociology.[4] Hochschild (1983) analyzed the emotional labor demanded and produced in service occupations and at home (Hochschild 1989); Robin Leidner investigates the emotional labor in the fast food industry, while Jennifer Piece analyzes it in law firms; Jim Jaspers (1997) and other social movement scholars (Goodwin, Jaspers and Polenta 2001) see emotions as central to social movements; and scholars such as Wharton (2009), Stevens (2009), and Hallett (2010) attend to the crucial role that emotions play in business and educational organizations. Understanding the production of emotions is now an important part of many fields within sociology. Key to most sociological analyses is conceiving of emotions as dynamic and relational, and therefore fundamental social and transactional, the subject of negotiation, interpretation, and suppression. As such, emotions cannot be understood as the product of individuated selves.

One important facet of contemporary social life is that we are increasingly governed by numbers and so it is important to understand how numbers shape our emotions.[5] Here I follow Randal Collins' (2004) prescriptions by first understanding emotion as a primary driver of most interaction and, second, focusing on the situation as the unit of analysis rather than the individual. The situations that matter most in this analysis are those that are shaped by rankings. And, as Sara Ahmed (2004) as argued, emotions are dynamic, increasing or decreasing in interaction and that emotions often become stronger and more salient as they circulate among actors.

When we speak about numbers we often use the language of social distance. Numbers are abstract, hard, devoid of passion, cold or even heartless. Numbers allow us to create knowledge without the distortions of politics or feelings; they are impersonal, such that we sometimes describe assaults on personhood as someone being "reduced to numbers." This way of thinking about numbers is also, of course, crucial for their usefulness and their power. Abstraction, because it strips away so much of the local and specific, makes it easy for num-

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[4] For reviews of this literature see Thoits (1989), Turner and Stets (2006), and Wharton (2009). Important efforts to theorize emotions include the work by Katz (1999), Turner and Stet (2006), and Collins (2004).

[5] Recent work on the importance of numbers in governance include Davis et al. (2012), Rottenburg et al. (2015), and Merry et al. (2015).

bers to travel, to be put to new uses, to be inserted into new places. Numbers are also supposed to be bland and boring but as the historian, Theodore Porter (1995) has suggested, that is also part of their power.

As Lorraine Daston (1992) might put it, numbers help to produce "aperspectival objectivity"– a "view from nowhere," where the places and persons are extracted from their use (see also Daston and Galison 2007). Numbers also permit "mechanical objectivity," a set of rules about how to make and deploy numbers that contains the discretion and biases of those using them. Mechanical objectivity is especially welcome when there is conflict, mistrust, or social or cultural differences, conditions that make it hard to trust those charged with making decisions, or when decisions must be justified to others (Porter 1995). But despite their capacity for producing distance some numbers become obsessive objects of intense identification and internalization. Some produce emotions that run the gamut from pride to revulsion. Some become the embodiment of aspirations or a shorthand for identities. And just how numbers do this is worth exploring.

Educational rankings are one example of quantification that produces powerful emotional responses. As a relatively recent innovation, it is possible to trace their trajectory from what many saw as a silly novelty to a device that reorganized the status system of higher education. I begin my discussion of the emotional consequences of rankings with a brief taxonomy of some of the most prevalent emotions that rankings generate. After that, I suggest of the processes that provoke and direct these emotions and provide examples of reverse engineering and emotional attachment for other performance measures.

When USN rankings first appeared, a few deans, including those at Harvard and Yale, denounced them but they were ignored by most law schools. It was not until administrators realized that prospective students were using them that they began to take them seriously. Media reported how local law schools were doing and this increased pressure on deans to focus on rankings. The release of rankings in March became a predictable annual story about whether regional law schools were moving up or down and they compared with each other. For example, one headline in *Chicago Magazine* (October 23, 2013) declared: "Does University of Chicago's slip in the rankings matter?"

Before long, current law students would anxiously monitor their school's ranking, concerned for the effect it would have on their job prospects. One administrator described reactions at his school this way: "The students will get very upset. I'll get letters and comments from students, 'Man we dropped from 30 to 35th. Can you believe it?'"

Another dean described his experience as:

[The reaction to rankings] was primarily student-driven. The student body took a very aggressive stance with the dean and said there is absolutely no reason why we should suffer in our job prospects and salary outlooks because of this phenomenon, and we want you to do something about it. So she invested in areas where the school would tend to get points.

If rankings were popular with prospective students and local media, they were widely loathed by professionals in legal education. It is not hard to understand why. Created by journalists at a for-profit magazine with no experience in survey research, statistics or education, rankings were viewed as misleading information that threatened the authority of specialists. Administrators and faculty became angry at what seem like an affront to their expertise and their status, and a danger to legal education. Administrators and faculty described rankings as "oppressive," "loathsome," as an "assault." One dean likened them to a cockroach. They reported "hating" the rankings and "resenting" time spent on them. A dean who had worked four law schools described the effects of rankings this way:

> I never thought about [rankings] except to think about how silly they were, when I was a faculty member [...] And it was really only when I became a dean that I started to think about their extraordinarily perverse effects on the decisions that get made in institutions, and also to appreciate what a brilliant public relations scam has been pulled by the editors of USN. One of the remarkable scams of the 21st century and how they've pulled the wool over the eyes of the corporate-academic world is to their credit.

3.1 Anxiety

Anxiety is the most widespread emotion generated by rankings. Over and over, everyone from students to deans reported how anxious they were that their school might drop in the rankings. One experienced dean of admissions remembers the first time he became aware of the power of rankings. He was at a forum for prospective students when a colleague at the next table rushed out to buy the latest edition of the rankings "and was shocked to find that his [top-ten] school had slipped [three spots] and was frankly worried for his job. And I was absolutely baffled at this phenomenon." One dean reported:

> The tiers can be devastating. As you know we've been fortunate enough to be in the second tier, but every year we live in fear because to fall again is probably going to hurt contributions, is going to hurt relationship with faculty, with prospective students.

Other deans offered similar responses:

> You know it's not so much pressure to move up as it is a negative impact if you should move down. Somebody told me about a school that I actually know a lot about which is a school in the top – probably the top ten [...] And they experienced a drop of two positions and the Dean really kind of went into overdrive to send out letters to alumni and in their alumni magazine to make a very elaborate explanation of that. And you say, 'Why would anybody care?' It doesn't mean a thing. It's just one of those minor statistical variations that is always going to occur from time to time. But that sort of tiny little change was seen as very threatening to the school and really required some sort of emergency program to combat. That's a little nonsensical.

So the effects were sort of immediate hysteria. So I had alumni writing me left and right, I had my board of directors asking me what had suddenly happened that [...] it was an irrational response because the people writing mostly actually knew about the school. I had my student body protesting, and they're here and they know in the course of one year that nothing had happened. But they all essentially were saying, 'What did you do?' So I had to spend a lot of time answering questions and calming people down, and that's a waste of time.

It is not hard to understand why rankings make people anxious. They offer a precise and public comparison of one's school to every other school. They are extremely portable and circulate at impressive speed on the internet and in print media. They are tightly bunched such that only very small differences separate many schools; it is not unusual for six or seven schools to tie for the same position. In the 2016 edition, for example, 4 schools tied for 22th and 6 schools tied for 34th and 87th.[6] When annual rankings are published, rankings of nearby schools are widely reported in local media and in online forums. Blogs devoted to law or legal education meticulously deconstruct changes in rank.

Most importantly for their impact, rankings are relative, a zero-sum affair. The rise of one school can mean that many schools can drop, depending on their location. Moreover, the force of rankings became magnified as new groups began to use them for new purposes; so, for example, as when some law firms started to incorporate rankings into their hiring criteria and central administrators started using them to evaluate deans or to make decisions about where to distribute resources.

Research shows that stress levels at work are mediated by whether or not people feel they have control over their work (Sauder and Espeland 2009; Bond and Bunce 2001). The most stressful situations are those in which workers are accountable for outcomes but without having the resources or discretion to shape outcomes in significant ways. This stress and lack of control manifests itself in various ways. As Robert Merton (1957, 195-206) pointed out, those without much power become hyper vigilant over that which they do control and this often takes the form of meticulously enforcing rules, even if doing so is counter-productive. Anxiety is a predictable byproduct of accountability without control.

Each of these features of rankings – clarity, visibility, lack of control, speedy discrimination, finger-pointing – are elicited by the intense competition that rankings generate.

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[11] This is the 2016 edition, published in 2015, based on data from 2014 found at: <http://www.usnews.com/education>.

3.2   Resentment, Frustration, and Anger

Because rankings are seen as a coercive intrusion promulgated by unqualified third parties, they generate outrage as well as anxiety. Administrators repeatedly complained about the time they spent preparing information for USN, which they see as subsidizing a for-profit enterprise They complained about having their lives governed by journalists. They complained about the bad behavior of colleagues in manipulating rankings. And they complained about feeling impotent in their efforts to curtail the effects of rankings. Two deans described their reactions this way:

> We didn't even care, but we didn't want to be hurt with such a bizarre [...] for such a bizarre reason. If we were going to be hurt, we wanted to deserve it. Like we have a shitty faculty, we have a 42,000 to 1 student-faculty ratio. You know, something […] we wanted to deserve it and we knew we didn't.

> I wish Al Queda would make USN their next target. When sitting in people's offices watching them talk about rankings it was hard to miss the passion.

3.3   Embarrassment and Shame

Irving Goffman (1967, 105) describes embarrassment as having "to do with unfulfilled expectations." Participants have a sense of their identities and what is appropriate behavior in a given context and when these do not align, they are embarrassed. When people's identities and their sense of what is appropriate behavior for the context do not align, they are embarrassed. Katz (1999, 15) describes shame as "impotence to organize conventional behavior." Many of those interviewed for this project were embarrassed by how much time and attention they paid to rankings. While they did not often say this directly, their discomfort was expressed in avoiding eye contact, and their gestures and tone of voice when they talked about how much rankings mattered in their work routines. People said things like 'I can't believe how much time I spend on them' or 'I should be spending my time on things that matter,' Beneath this embarrassment, I believe, is a generalized sense of impotence, of having to compromise professional values for inappropriate or even harmful policy. Catering to rankings is professionally demeaning because it means being complicit in harming rather than improving legal education and the legal profession. One former dean expressed it this way:

> I think [rankings] have turned educational institutions, not all of them, thank God, but it's turned many educational institutions to gamesmanship, and a feeling that there's a winner and a loser. For God's sake, we're about educating students. You know, I spent twelve years of my life with the daughters of policemen, firemen, and sanitation workers […]. It's about vocation, right? And the rankings change it from a vocation and encourage a 'race to the bottom' in turns of manipulation. And that's getting to the essence of professional life that I won't compromise.

Another dean said:

> Now the other thing I've heard – and I've heard this only as rumor, but I think it's true – that our Dean this year hired a statistician from the business school to help us better game the USN and he's obviously not talking about that. That's a pretty disgusting use of university resources.

When asked about gaming strategy, someone who had been dean at four different law schools spanning three tiers put it this way:

> I think it's awful. I think the inducement to act dishonorably is not good. We are supposed to be teaching people about an honorable profession. We are what we are – that's what I say to people here – the school is what it is and it took 115 years to be what we are and if we want to be something different – being something different isn't being higher ranked, it's about the actual outcomes. And I think we've lost sight of a lot of what's professional.

Similar views came up often:

> I've heard of some stuff that I think is really, really underhanded, especially in the admissions area. If we can't be ethical when we get these kids in the door, how can we possibly give them an education in which we preach that ethics are important? What you do preaches a lot louder than what you say.

> [Rankings] create a lot of day-to-day anxiety. The most important thing is the ability to develop better resources for the students. And it's shameful that we can't do what we're hired to do.

Disgusting, awful, dishonorable, underhanded, shameful – this is strong language that reveals the depth of people's feelings about rankings. It was enlightening to witness how quickly an interview summoned such strong reactions.

3.4 Cynicism

Scholars disagree about how to define emotion and how many emotions there are. Some restrict the definition to five or six primary emotions such as fear, anxiety, joy, envy, disgust, or shame. It may be that cynicism is more accurately described as an attitude but I prefer to include it in my more expansive definition. Cynicism is generally understood as distrusting the motives of others and resulting in a sense of detachment from some aspect of social life. For Georg Simmel, cynicism is closely associated with what he describes as a "blasé attitude." He sees both cynicism and feeling blasé as effects of the pace of modern life and being closely linked the modern money economy where values and interactions come to be seen as transactions.

Rankings are, quite literally, the commodification of reputation and they accentuate the force of market logic in understanding education. Applicants now talk quite explicitly of the trade-off between (scholarship) money and the status of one's school. Administrators talk about "buying" high test scores with scholarships. And when the editors at USN launched rankings they framed them as consumer information so people could know what they were buying. Those in-

terviewed described with contempt people who "sold out" for rankings. While it is not possible to pin down how much the further infusion of market values shapes people's emotional responses, it is clear that efforts to game rankings produce a form of fatalistic detachment from the process that makes it easy to comment wryly on how corrupt the system is while remaining passive. This reaction often took the form of an ironic, detached, scornfulness. It is common for people to feel that corruption is rampant under the rankings regime, that colleagues cannot be trusted, and that there is no way to control rankings. As one faculty member commented wryly, "the most innovative thing about law schools now was the invention of new gaming techniques." Cynicism produces a passivity, a paralysis that offers the superficial comfort feeling superior to those understand less and so attempt change. It is an excuse for not acting.

3.5   Happiness

Of course not all of the emotions evoked by rakings are unhappy ones. When a school moves up in the rankings, when administrators receives bonuses, when deans are praised, and when alumni send in more checks, these are occasions for celebration and pleasure. As Austin Parrish, dean of Indiana's Maurer School of Law put it: "As much as deans rail against [the rankings] they celebrate pretty hard when they move up" (Odendahl 2014). Whether with champagne or pizza, bonuses or raises, 'good news' is broadly shared with prospective students, alumni, and others. The response of Tom Campbell, dean of Chapman University's law school, which moved up 13 slots to 127 in the 2015 rankings, is typical of schools receiving good news:

> I could not be more pleased to see Chapman University's Fowler School of Law making a solid move up the rankings; but I am not surprised. In a climate where students have been more selective in making the decision to pursue a career in law, we continue to attract top candidates with excellent credentials. Our renewed rise in the *U.S. News'* Top Schools list can be attributed in large part to the strength of those students, along with our early adoption of a powerful practice-ready curricula and a world-class faculty that includes four former U.S. Supreme Court clerks and a Nobel laureate.[7]

But the pleasure associated with a move up is always tinged with worry about falling back down. As one dean relayed: "We get excited for about 5 minutes and then we start to worry again." This view was reiterated by others:

> I think everybody is aware of [rankings]. When we went from the third tier to the fourth tier, there was despondency, and when we went from the fourth back to the third there was euphoria. And I think the rankings are remarkably important, much too important.

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[7]   March 10, 2015 <https://blogs.chapman.edu/law/2015/03/10/chapman-universitys-fowler-school-of-law-moves-up-in-new-u-s-news-rankings>.

I noticed one year [when we] moved into the top tier. There was this sort of internal gratitude and elation. People were really happy and there was a lot of politicking, and we put a lot of effort into specifically increasing our rank […]. But then we fell back out again.

One dean of an elite school seemed less concerned about volatility during an interview: "I think students are very smart, most people we deal with are very smart. As far as trustees go, if we do well we celebrate and if we do poorly, we don't burn down the house." But faculty who taught at this school reported that this dean was "obsessed by rankings" and when this school moved down, even one or two positions, "he went crazy trying to figure out how to fix it."

3.6 Competition, Suspicion, and Seduction

Anxiety, anger, embracement, shame, cynicism, and happiness are just some of the more common emotions that rankings elicit. It is helpful to consider in more detail some of the interactive processes that help promote these feelings. Here I identify three: competition, suspicion, and seduction.

Law schools have always competed against each other over their reputational standing, the best faculty and students, the prestige of their students' jobs, or for the most celebrated alumni. But rankings have escalated and transformed the competition among law schools. One way it did so was by eliminating useful ambiguity. If, before rankings, the stature of schools like Harvard, Yale, and Stanford were securely elite, there was uncertainty about how other less famous schools fared. Depending on which characteristics one cared about, many schools could make believable claims being highly ranked. After rankings there was no longer ambiguity about which schools were among the top ten or the top twenty five. One administrator put it like this:

[Rankings were] a huge change. I mean, it's kind of a standard line that there are 50 schools in any discipline think that they're in the top 20. In the old days it was very easy to convince yourself that that was true because there was nothing out there to show otherwise. And when there were these various, not very influential rankings, they were easy to ignore. But USN is so pervasive and it has the aura of objectivity.

Competing over rankings has become the norm. This emerged when people talked about how rankings came up in discussions at faculty meetings, with colleagues at professional meetings, or in hallway conversations. Administrators also talked about how competition shapes those in charge of producing the statistics that USN uses.

[Staff] do get very competitive, especially with things like the faculty-student ratio. Maybe told you about this, but we were trying to figure out how to get our faculty-student ration to get better without falsifying anything. So went to the seminar that the ABA put on about the report, and there are so many classifications."

An associate dean talked about the practice of filling out reputational surveys strategically: "And then you can't tell me people vote without thinking about who they are voting for in terms of their competition. It's bogus."

Law professors also described how opportunities to publish are shaped by rankings. U.S. law schools publish journals called law reviews that are edited by their students. The status of these journals often map the status of the law schools that produce. Because scholars can submit the same article to as many law reviews as they like, the journals are inundated with manuscripts. Professors believe that student editors use rankings as a proxy for the quality of an article. One professor reported:

> Students who work on the law reviews pay attention to that ranking process, so even though you have some sort of great paper, if you are coming from a school that doesn't have a good ranking the competition is much more stiff. They look at where it comes from; it's not blind at all. Relentless competition is exhausting and some schools give up. Recognizing the uneven playing field that makes it impossible for them to be more successful, or refusing to adjust their goals to comply better with rankings criteria, some unhappily accept their more or less permanent inferior status. For others, the churning that accompanies rankings may generate shorter appointments, whether from stress or dismissal. Rankings turned inchoate competition into precise, public and hard to control numbers, which is a recipe for anxiety. Rankings generate suspicion that colleagues cannot be trusted to behave ethically. This suspicion, in turn, increases anxiety and competition.

As three administrators relayed:

> I think that some deans have been forced into mendacity. But they're probably people who had flawed characters to begin. It wasn't the rankings that did that. It's one of the sad facts of our society, that that kind of thing can be rewarded in some contexts. I think that the nature of being a dean has changed dramatically over the last 10 or 15 years, but only one small reason for that the rankings.

> I will look at the rankings each year and I will look particularly at the placement part of the ranking. And if you do this long, you sort of get a sense of where people stand with their statistics and I'm always a little amazed, or at least curious, because there are some institutions that are putting out numbers that for the life of me do not jibe with what I know is reality.

> There is lying that goes on. Basically on the LSAT scores and the GPA scores of students. And it's tragic that people who get into education who are presumably there to pursue some vision of truth. And I know of at least several instances, I know for a fact that people in the face of this pressure to do well in the rankings, exaggerated or out-and-out lied.

Suspicion encourages more gaming which also encourages people to adapt cynical attitudes about legal education.

In spite or maybe because of the hostility many feel towards ranking there is still ambivalence and this often takes shape as seduction.[8] To withhold affection and then succumb is a familiar pattern in courtship but it has parallels with metrics. Efforts to game rankings create an emotional investment in "winning," one that is largely unconscious, at least at first. There is the satisfaction of feeling clever, of "outsmarting" something odious, and of trying to reassert one's agency in the face of uncertainty and the loss of control. A new dean reported:

> I actually found myself this year, for the first time, looking at what are the elements of faculty resources [...] because most of those numbers now *USN* takes out of the ABA [American Bar Association] questionnaire that law schools have to file every year. And I actually sat down and quizzed the person who is primarily responsible for doing that document about how they do it. For example, we do have one endowed fund that lets us bring a visiting professor every year, and we usually aim very high in terms of the kinds of people, so we pay that person probably as much for a semester almost as we pay some of our faculty for a year. And I actually found myself saying, 'Louise, now when we do the instructional budget, we do include money from the endowment that goes to instruction, right?' Because I just am finding myself thinking that we have never thought about the elements of it in terms of *USN* [rankings] and I realized that, 'Oh God, I'm getting the disease' (quoted in Sauder and Espeland 2009).

Emotions, even negative ones, can be vehicles of investments. They energize, focus attention, evoke interpretations, and prompt action. They also become a means by which we internalize rankings. In doing so, they create relationships with rankings that members use make sense of the organization and its members in particular ways.

The power of collectivities to inspire and direct passion is a crucial insight in sociology. Returning to Collins, it is important to consider how specific contexts shape emotional responses to rankings. As we know, simultaneity is an important component of ritual, one that heightens emotional response. That USN rankings are released all at once at the same time each year means that schools' attentions are all focused on rankings at the same time. That rankings become the subjects of lots of articles and posts only heightens their salience and the emotions they generate.

Moreover, when a school dips in the rankings, administrators swing into action to try and mollify the anxiety this provokes. Typically, deans will hold a "town meeting" for students to explain the drop, reassure the students that it is

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8   Eve Chiapello and Norman Fairclough (2002) use the concept of "stimulation" to depict a feature of the "new spirit of capitalism" that "generates enthusiasm." While this is similar to my conception of "allure" it differs in my emphasis on its focus on gaming as the primary mechanism of seduction. See also Boltanski and Chiapello (2007). See Sauder and Espeland (2009) for a description of the allure of rankings.

a meaningless blip, and explain what they are going to do about it. Whether rankings move up or down, whether they engender celebrations or public therapy, they elicit lots of "we" talk that reinforces members' ties to one another. Schools may hang banners announcing an improved rank, print tee-shirt or coffee mugs that make tangible this new status. All of these actions heighten emotions.

I have argued that it is important to specify the causal mechanisms that propel the organizational changes that performance measures produce. I selected two kinds of mechanisms that demonstrate the importance of both highly strategic responses to such numbers and less deliberate responses. While reverse engineering and emotional attachments can be independent causal processes, it is important to consider how these interact. In some cases, one mechanism produces the other. For example, reverse engineering a ranking may produce a cynical response to the power of rankings as members come to see the number as something to be manipulated rather than as a goal to achieve. The opposite might also be true, too, as cynicism about rankings prompts members to deconstruct them in order to manipulate them; their illegitimacy makes crass manipulation seem appropriate. Anxiety is also a powerful impetus for reverse engineering. And in the case of rankings, emotions seemed to play less of a role in particular decisions and were most important in the more general processes of helping people understand what was happening to them and their organization.

While I have relied mostly on rankings to illustrate the role played by emotions and reverse engineering in prompting changes such as organizations to change routines, budgets or recruitment, these mechanisms are widespread. One famous example of reverse engineering took place in 1982 when the Manville Corporation declared bankruptcy.[9] The Manville Corporation had made a fortune in mining asbestos since its founding in the 1860s. Its bankruptcy filing was puzzling, given that at the end of 1981 the company reported almost $2 billion in revenues, was listed at 182 in the Fortune 500, was part of the 30 Dow Jones companies, and had an A3 debt rating (Delaney 1989, 650). The reason for this "strategic bankruptcy" was a series of lawsuits. The first time there was evidence suggesting a link between asbestos and the pernicious cancer mesothelioma was in 1906. But it was not until the 1970s when thousands of victims first began suing the company. The company was well insured, had more than 2 billion in assets and fought the litigation vigorously. It also took out full page ads in the *New York Times* and *Washington Post* declaring that "Nothing is wrong with our businesses." So what changed in less than one year?

Manville's annual report in 1981 stated it was good financial state but its accounting firm, Cooper and Lybrand, did add a qualifying footnote, acknowl-

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[9] Details about this case come from Delaney (1989).

edging the litigation but stating that the firm's liability was impossible to calculate. In 1982, a new CEO and a new accounting firm, Price Waterhouse, found that the liability from litigation was calculable and this made it possible for the firm to file for bankruptcy. The firm had commissioned an epidemiological study of potential liability produced an estimate but one that it acknowledged could be half as large or twice as big. Yet, this number along with flexibly in calculating when liability damages would be awarded permitted the company to completely alter its financial outlook. In this case, outside expertise was used to produce the requisite financial profile that permitted the firm, under pressure from its insurers and creditors, to declare bankruptcy, restructure its organization and avoid millions of dollars of liability.

More often, reverse engineering is directed toward boosting numbers. The conglomerate era of the 1960s largely revolved around companies using mergers to sustain the high price/earnings ratios that were attracting investors. The price earnings ratio is used to evaluate the market value of a stock by the market price per share to the earnings per share. Anytime a firm buys another firm that has a lower P/E ratio, it improves the buyer's ratio. Another common way to manipulate P/E ratios is for firms to buy back their own stock, which reduces the denominator of the ratio. Investors often rewarded improvements in P/E ratio with increased prices of shares. Both strategies fueled mergers in the 1960s, as well as subsequent merger movements.

Metrics were central feature of change and control in Stalin's efforts to industrialize the Soviet Union. His infamous Five Year Plans launched in 1928, 1932, and 1937 included exhaustive and sometimes unrealistic production targets for industries, factories, shifts, managers, and individual workers. Harrison (2010) describes the production system as "target-driven culture" in which the Politburo fixed priorities that were turned by planners at the ministerial or regional level into production quotas or "plans." Under Stalin, those who did not meet goals were punished, often severely, and managers would manipulate numbers to meet targets. Even in less draconian times, the rewards and reputations of most official and managers, according to Harrison, were determined by how well they met these plans. The systematic manipulation of these numbers was referred to as "pripiski," a term that was used beginning in the 1930s and was common throughout the Soviet era; the verb for adding on was pripisyvat' and the noun for what was added on was pripsika. If small manipulations of numbers was commonplace, big manipulations was dangerous and uncommon.

Emotional attachments can also be formed with unlikely numbers. As the sociologist Martin de Santos (2009) shows, Argentina, in 2001, became obsessed with an unlikely object, the country risk indicator known as "riesgo pais." This indicator, more formally known as Emerging Markets Bond Index (EMBI), is a benchmark produced by the investment bank Morgan Stanley to help investors gauge how the risk associated with the bonds of a particular country. It is a daily comparison of the interest rates between what is consid-

ered to be the safest bonds, the U.S. Treasury bonds, and three bond indices of a given country's bonds. Beginning in 1998, Argentina experienced a painful depression that shrunk the economy, destroyed jobs, created frightening inflation, eventually toppling the government.

The country risk factor saw a huge jump during 2001. The jargon, normally restricted to finance professionals, became the topic of daily conversations of housewives and cab drivers, was an almost daily news feature in local and national media, and became what de Santo calls "powerful collective representation" that shaped how Argentines understood not only their economy but their country and its place in the world. It was the subject of nearly daily coverage in the newspapers and Argentina's most prominent newspaper, *Clarin,* ran front page stories about the country risk indicator 4-6 times a month. A key part of Argentina's national identity is that it is a modern "European" country in Latin America. The economic boom during the 1990s gave rise to a self-consciousness of becoming a first world nation. This view of itself was hard to reconcile when its economy was rated as riskier than some of the poorest African countries. This indicator, which contradicted Argentines' understandings of themselves, evoked shame, anger, anxiety, as well as satire and humor. De Santos (2009) conceptualizes numbers that are simultaneously facts about the world and symbols of community "fact-totem" in order to highlight the importance of this dual quality.

As these examples show, the mechanisms of reverse engineering and emotional attachment can help us understand the effects of a variety of numbers that both represent and intervene in what they measure. These examples show broad reactions that people sometimes have in relation to numbers that affect them: they can become strategic goals, encouraging an instrumental manipulation of their components; they can become evocative symbols of self and community; and they can become both at once. These mechanisms can operate in many different conditions that will be amplify or diminish their power. Numbers that affect resources or reputations, or become symbolically attached to groups, or are widely disseminated will be more prone to these orientations. Ratings, which pit individuals, organizations or countries against one another often may be more subject to reverse engineering. By considering in careful empirical analyses how mechanisms such as these drive changes in organizations and communities we can better understand the impact of the numbers that organize our lives.

References

Alderson, David L. 2008. Catching the "network science" bug: Insight and opportunity for the operations researcher. *Operations Research* 56 (5): 1047-65.

Boltanski, Luc. 1987. *The making of a class. Cadres in French society.* Cambridge: Cambridge University Press.

Boltanski, Luc, and Eve Chiapello. 2005. *The new spirit of capitalism.* London: Verso Press.

Boltanski Luc, and Laurent Thévenot. 2006. *On justification. The economies of worth.* Princeton: Princeton University Press.

Bond, Frank W., and David Bunce. 2001. Job control mediates change in a work reorganization intervention for stress reduction. *Journal of Occupational Health Psychology* 6 (4): 290-302.

Bouchard, Julie. 2015. La médiatisation de l'évaluation et les flux de valeurs. In *La médiatisation de l'évaluation/Evaluation in the Media*, ed. Julie Buchard, Étienne Candel, Hélène Cardy and Gustavo Gomez-Mejia, 1-24. Bern: Peter Lang.

Chiapello, Eve, and Norman Fairclough. 2002. Understanding the new management ideology: a transdisciplinary contribution from critical discourse analysis and new sociology of capitalism. *Discourse Society* 13 (2): 185-208.

Chicago Magazine. 2013. Does University of Chicago's Slip in College Rankings Matter? October 23 <http://www.chicagomag.com/Chicago-Magazine/November-2013/Does-University-of-Chicagos-Slip-in-College-Ranking-Matter>.

Collins, Randall. 2004. *Interaction Ritual Chains*. Princeton: Princeton University Press.

Davis, Kevin E., Angelina Fisher, Benedict Kingsbury, and Sally Engle Merry. 2012. *Governance by Indicators.* Oxford: Oxford University Press.

Daston, Lorraine. 1992. Objectivity and the escape from perspective. *Social Studies of Science* 22 (4): 597-618.

Daston, Lorraine, and Peter Gallison. 2007. *Objectivity*. Cambridge: MIT Press.

Delaney, Keven. 1989. Power, law and intercorporate networks and "strategic bankruptcy. *Law and Society Review* 23 (4): 643-66.

Desrosières, Alain. 1998. *The politics of Large numbers. A history of statistical reasoning*. Cambridge: Harvard University Press.

Desrosières, Alain. 2011. The economics of convention and statistics: The paradox of origins. *Historical Social Research* 36 (4): 64-81 <http://www.ssoar.info/ssoar/handle/document/36315>.

Desrosières, Alain. 2014. *Prouver et gouverner. Une analyse politique des statistiques publiques*. Paris: La Découverte.

Didier, Emmanuel. 2016. Alain Desrosières and the Parisian Flock. Social Studies of Quantification in France since the 1970s. *Historical Social Research* 41 (1): 27-47. doi: 10.12759/hsr.41.2016.2. 27-47.

Durkheim, Emile. 1995 [1912]. *The elementary forms of religious life*. New York: The Free Press.

Eymard-Duvernay, François, Olivier Favereau, André Orléan, Robert Salais, and Laurent Thévenot. 2005. Pluralist integration in the economic and social sciences: The economics of convention. *Heterodox Economics from the Post-autistic*

Economics Review 34 <http://www.paecon.net/PAEReview/issue34/Thevenot34.htm> (Accessed April 6, 2016).

Espeland, Wendy. 1998. *The struggle for water*. Chicago: University of Chicago Press.

Espeland, Wendy, and Michael Sauder. 2007. Rankings and reactivity: How public measures recreate social worlds. *American Journal of Sociology* 113 (1): 1-40.

Foucault, Michel. 2007. *Security, territory, population: Lectures at the Collège de France 1977-1978*. London: Palgrave Macmillan.

Goodwin, Jeff, James M. Jasper, and Francesca Polletta, eds. 2001. *Passionate politics, emotions and social movements*. Chicago: University of Chicago Press.

Hallett, Tim. 2010. The myth incarnate: Recoupling processes, turmoil, and inhabited institutions in an urban elementary school. *American Sociological Review* 75 (1): 52-74.

Harrison, Mark. 2011. Forging success: Soviet managers and accounting fraud, 1943 to 1962. *Journal of Comparative Politics* 39 (1): 43-64.

Hochschild, Arlie. 1983. *The managed heart: The commercialization of human feeling*. Berkeley: University of California Press.

Hochschild, Arlie. 1989. *The second shift: Working parents and the revolution at home*. New York: Viking Penguin.

Hutter, Bridget. 2011. *Anticipating risks and managing risk regulation*. Cambridge: Cambridge University Press.

Hutter, Bridget, and Michael Power, eds. 2005. *Organizational Encounters with Risk*. Cambridge University Press.

Jarvis, Jeff. 2011. *What would Google do? Reverse-engineering the fastest growing company in the history of the world*. New York: Harper.

Jasper, Jim M. 1997. *The art of moral protest*. Chicago: University of Chicago Press.

Jauhar, Sandeep. 2015. Giving Doctors Grades. *New York Times*, July 21.

Johnson, H. Thomas, and Robert S. Kaplan. 1987. The rise and fall of management accounting. *Engineering Management Review, IEEE* 15 (3): 36-44.

Katz, Jack. 1999. *How emotions work*. Chicago: University of Chicago Press.

Kaplan, Robert S, and David P. Norton. 1996. *The balanced scorecard: Translating strategy into action*. Boston: Harvard Business School Press.

Leidner, Robin. 1993. *Fast food, fast talk: Service work and the routinization of everyday life*. Berkeley: University of California Press.

MacKenzie, Donald. 1993. *Inventing accuracy: A historical sociology of nuclear guidance missiles*. Cambridge: MIT Press.

Mennicken, Andrea, and Peter Miller, 2012. Accounting, territoriality and power. *Foucault Studies* 13: 4-24.

Merry, Sally Engle. 2015. *The quiet power of indicators: Measuring, governance, corrpution and power*. Cambridge: Cambridge University Press.

Merton, Robert K. 1957. *Social theory and social structure*. Glencoe: Free Press.

Miller, Peter, and Ted O'Learly. 1987. Accounting and the construction of the governable person. *Accounting, Organizations and Society* 12 (3): 235-65.

Narins, Craig R., Ann M. Dozier, Frederick S. Ling, and Wojciech Zareba. 2005. The influence of public reporting of outcome data on medical decision making by physicians. *Archives of Internal Medicine* 165: 83-7.

Pierce, Jennifer. 1995. *Gender trials: Emotional lives in contemporary law firms.* Berkeley: University of California Press.

Odendahl, Marilyn. 2014. Law school ranking rumble. *The Indiana Lawyer* <http://www.repository.law.indiana.edu/cgi/viewcontent.cgi?article=1007&context=parrish> (Accessed December 22, 2015).

Porter, Theodore. 1995. *Trust in numbers.* Princeton: Princeton University Press.

Power, Michael. 1994. *The audit society. Rituals of verification.* Oxford: Oxford University Press.

Power, Michael. 1997. *The audit explosion.* Oxford: Oxford University Press.

Power, Michael. 2007. *Organized uncertainty: Designing a world of risk management.* Oxford: Oxford University Press.

Reed, Kevin. 2010. E&Y Sued over Lehman's Audit. *Accounting Age*, December 20.

Rose, Nikolas, and Peter Miller. 2008. *Governing the social: Administering economic, social and personal life.* New York: Wiley.

Rottenburg, Richard, Sally E. Merry, Sung-Joon Park, and Johanna Mugler, eds. 2015. The world of indicators: *The making of governmental knowledge through quantification.* Oxford: Oxford University Press.

Salais, Robert. 2004. *Europe and the politics of capabilities.* Cambridge: Cambridge University Press.

Samuelson, Pamela, and Suzanne Scotchmer. 2002. The law and economics of reverse engineering. *The Yale Law Journal* 111 (7): 1575-663.

Santos, Martin de. 2001. Fact-totems and the statistical imagination: The public life of a statistic in Argentina. *Sociological Theory* 27 (4): 466-89.

Sauder, Michael, and Wendy Espeland. 2006. Strength in numbers? The advantages of multiple rankings. *Indiana Law Journal* 81: 205-27.

Sauder, Michael, and Wendy Espeland. 2009. The discipline of rankings: Tight coupling and organizational change. *American Sociological Review* 74 (1): 63-82.

Storper, Michael, and Robert Salais. 1998. *Worlds of production. The action frameworks of the economy.* Cambridge: Harvard University Press.

Thoits, Peggy. 1989. The sociology of emotions. *Annual Review of Sociology* 15: 317-42.

Turner, Jonathon H., and Jan E. Stet. 2006. Sociological theories of human emotions. *Annual Review of Sociology* 32: 25-52.

Vanoli, André. 2005. *A history of national accounting.* Amsterdam: IOS Press.

von Scheve, Christian. 2013. *Emotions and social structures: The affective foundations of social order.* London: Routledge.

Wharton, Amy S. 2009. The sociology of emotional labor. *Annual Review of Sociology* 35: 147-65.