Excerpts from Theodore M. Porter, Trust in Numbers. The Pursuit of Objectivity in Science and Public Life, Princeton University Press, 1995.

Preface

Page ix

What is special about the language of quantity?
My summary answer to this crucial question is that quantification is a technology of distance. […] reliance on numbers and quantitative manipulation minimizes the need for intimate knowledge and personal trust. Quantification is well suited for communication that goes beyond the boundaries of locality and community. A highly disciplined discourse helps to produce knowledge independent of the particular people who make it. [This] implies nothing about truth to nature. It has more to do with the exclusion of judgment, the struggle against subjectivity. […]In science, as in political and administrative affairs, objectivity names a set of strategies for dealing with distance and distrust.

Introduction - Cultures of Objectivity

Page 8

The appeal of numbers is especially compelling to bureaucratic officials who lack the mandate of a popular election, or divine right. Arbitrariness and bias are the most usual grounds upon which such officials are criticized. A decision made by the numbers (or by explicit rules of some other sort) has at least the appearance of being fair and impersonal. Scientific objectivity thus provides an answer to a moral demand for impartiality and fairness. Quantification is a way of making decisions without seeming to decide. Objectivity lends authority to officials who have very little of their own.

Part One – Power in numbers

p.12 (This may sound like PNS to some readers)

The standard view has long held that in mature sciences, the truth is worked out or negotiated by a community of disciplinary specialists whose institutions are strong enough to screen out social ideologies and political demands. I will try to show toward the end of the book that the effectiveness of this segregation has been exaggerated …

Page 14-15 (A nice summary of Shapin and Schaffer's work – also elsewhere in the book)

In the seventeenth century, experimentation was still associated with […] mystery and secrecy. How was this private knowledge transformed into fit material for a culture of objectivity? One [reply] focuses on how experimental results, which can normally be witnessed by only a few people, came to be accepted as truthful by nearly everyone. This was above all a triumph of rhetoric—of what I call here technologies of trust—and also of discipline.

Page 32

Also, the self-interest of scientists is less likely to provide an incentive to deception, so rules and standards need not be defined so rigorously. In the anonymous and multifarious world of medicine, industry, agriculture, and regulation, informal working methods are almost impossible to harmonize. Unambiguous rules, supported by regular surveillance, are correspondingly more important.

Page 43 (Quote from Zinoviev)

Any hopes that one can make scientific discoveries in the sphere of predicting the future are without foundations. First of all, in the Soviet Union predictions about the future are the prerogative of the highest party authorities, and so scientific small fry are simply not allowed to make any discoveries in this area. Secondly, the Party authorities don't predict the future, they plan it. It is in principle impossible to predict the future, but it can be planned. After all, in some measure history is the attempt to correspond to a plan. Here it's like the five-year plans: they are always fulfilled as a guide to action, but never as predictions

Page 43 (Quote from Adorno)

"When I was confronted with the demand to 'measure culture,' I reflected that culture might be precisely that condition that excludes a mentality capable of measuring it." But, he determined, this need not rule out the quantitative study of mass entertainment. "It is a justification of quantitative methods that the products of the culture industry, second-hand popular culture, are themselves planned from a virtually statistical point of view. Quantitative analysis measures them by their own standard."

Page 44 (On Return on Investment ROI (and hypo-cognition), and (I would say) Goodhart's Law)

Any such measures necessarily involve a loss of information. In some cases, as with accounting, the credibility of the bottom line may be such that this loss seems largely irrelevant. But such an attitude presupposes that the bottom line is determined unambiguously by the activities it summarizes. It never is. When business managers are judged by the accounts, they learn to optimize the accounts, perhaps through such artifices as putting off needed maintenance and other long-term costs. Nonfinancial measures may be even looser. A congressional mandate permits the United States Forest Service to cut no more lumber than is renewed by annual growth. Since that law was put into effect, growth rates have been greatly enhanced, at least in the Forest Service accounts, by new herbicides, pesticides, and tree varieties. Through such doubtful forecasts, it drew the teeth from the law.

Given the ways that measures can be undermined through self-interested manipulations, we may doubt that they correspond to anything in the world. But a plausible measure backed by sufficient institutional support can nevertheless become real.

Page 45 (On the information society)

[…] the modern term "information society" is quite meaningless, for a village of peasant farmers could no more get by without information than can the head office of a large business firm. […]This explosion of knowledge is in important ways less impressive than we are often urged to believe. Knowing does not in general depend on print, and if early modern farmers, carpenters, butchers, and smiths had been as industrious about describing their work as they were while doing it they could have filled volumes, just

as our researchers do now. But theirs was an order based on more private ways of sharing skills and exchanging goods.

Page 49 Chapter: Quantification as a social technology

Quantification is a social technology. Whereas modern mathematical ideals have their roots in ancient geometry, which emphasized demonstration and was largely separate from the domain of number, arithmetic and algebra were born as practical arts. They were associated with activities of merchants, the keeping of accounts.

Page 72 (A different look at Lord Kelvin's famous motto)

William Thomson, Lord Kelvin, once remarked that "when you can measure what you are speaking about and express it in numbers you know something about it; but when you cannot measure it in numbers, your knowledge is of a meagre and unsatisfactory kind."72 It is unlikely that those who converted this into a motto and printed it in stone above the social science building at the University of Chicago realized that Kelvin was here complaining about the "nihilism" of Maxwell's physical theory, and would have viewed neoclassical economics with even less favor.

Page 73 Chapter The Political Philosophy of Quantification

Critics, especially on the left, present the quantitative mentality as morally indefensible, an obstacle to utopia. Advocates have sometimes answered their opponents, but usually by defending the legitimacy of quantification as a way of knowing, not of organizing a polity and a culture.

Page 75 (Quotes from Karl Pearson)

Objectivity as impersonality is often conflated with objectivity as truth. Pearson, a firm positivist, made no such mistake. He emphasized its moral values even more than its epistemological ones. […]Pearson wanted to reorganize the school curriculum around science, not in order to make technicians, but to provide the best possible moral instruction. The scientific classroom could be a factory for citizens. "The scientific man has above all things to strive at self-elimination in his judgments, to provide an argument which is as true for each individual mind as for his own." Science leads to "sequences of laws admitting of no play-room for individual fancy." "Modern science, as training the mind to an exact and impartial analysis of facts, is an education specially fitted to promote sound citizenship."

Page 76-77 (On minorities, women, European Union, Foucault and Hacking)

But the impersonal style of interactions and decisions promoted by heavy reliance on quantification has also provided a partial alternative to a business culture of clubs and informal contacts—an old-boy network—that was and remains a still greater obstacle to women and minorities. Little wonder that the "culture of no culture," to borrow a phrase from Sharon Traweek's study of physicists, is now being vigorously promoted in a variety of contexts by the European Community. The language of quantification may be even more important than English in the European campaign to create a unified

business and administrative environment. It aims to supplant local cultures with systematic and rational methods. A revealing French cartoon image depicts a diverse humanity entering the business school at Fontainebleau, and identical white, male, business-suited eurocrats coming out. Its resonances are simultaneously egalitarian and oppressive. […]

Michel Foucault and a host of admirers have on this account dealt harshly with modern social science in most of its manifestations. Numbers turn people into objects to be manipulated. Where power is not exercised blatantly, it acts instead secretly, insidiously. Ian Hacking and Nikolas Rose have been especially acute in recognizing the authority of statistical and behavioral norms, through which an oppressive language of normality and abnormality is created. Those who fail to conform are stigmatized, and most others have internalized the values of an ever more pervasive bureaucracy of experts and calculators. Significantly, their power is inseparable from their objectivity. Norms based on averages advertise a beguiling independence of human choice that enhances their credibility.

Page 85-86 (On Hypo-cognition – without using the word)

Quantification is a powerful agency of standardization because it imposes order on hazy thinking, but this depends on the license it provides to ignore or reconfigure much of what is difficult or obscure. […]

For quantification is not an unmovable mover, or the product of a conspiracy, by which a culture has been overturned. It reflected values before it created them, and its massive expansion in recent times has grown out of a changing political culture. Yaron Ezrahi has argued powerfully for a symbiosis between democracy, American style, and a faith in surfaces. This superficiality is called, with some justification, openness, and it is designed to drive out corruption, prejudice, and the arbitrary power of elites. To no small degree it succeeds, though agencies exposed to democratic scrutiny are often also adept at the play of masks. When it does succeed, this nearly always comes at some cost in subtlety and depth. And often, as Oakeshott suggests, their disappearance from discourse may imply their disappearance from the world as well. In no other way has the power of numbers been so impressively displayed.

Part II Technologies of trust

Page 97 (On actuaries)

Fortunes have been made and lost through the reinterpretation of financial categories; heroic entrepreneurship and criminal embezzlement may be distinguished by no more than a subtle point enunciated a few years back by the regulatory agencies.

Page 100 (On a British culture of quantification)

Economics was anything but unimportant to Treasury officials and other administrators. It was in fact so important that they were unwilling to leave it to the academic experts. Economics was no specialty, like law and medicine, but the shared property of educated generalists, like moral philosophy and politics. In recent decades, the British government has found some use for quantification in complex and highly

factual inquiries. But the conclusions might in the end be simply set aside, as happened in the case of the monumental Roskill cost-benefit analysis in choosing the site for a new London airport.

Page 101 (On Margaret Thatcher)

Margaret Thatcher assigned accountants and cost-benefit economists a central role in gaining information that might help penetrate the relatively autonomous National Health Service. […]

Page 101 (Quoting a work of Brian Wynne about the contrast quantification – participation: Wynne, Brian, Rationality and Ritual: The Windscale Inquiry and Nuclear Decisions in Britain (Chalfont St. Giles, U.K.: British Society for the History of Science, 1982))

Still, the economist Alan Williams was not wholly off the mark in calling cost-benefit analysis a challenge to the "authoritarian" and "paternalistic" assumption that leaders already know what is best for society, even if it does not much promote the forms of public participation that many critics would prefer [ref. here to BW].

Page 137 (Discussing French State Engineer: the Corps des Ponts et Chaussées, A quote from Colson summarizes how Porter sees the Ethos of these men)

Colson, more ambitiously, favored calculation for this and other purposes, but he taught more than a generation of Ponts engineers that it could never be made rigorous. "There are many ingenious formulas to calculate the traffic volume on a planned route as a function of the population served; but to apply them with discernment requires taking account of the social, economic, and moral state of the population, and that is the great difficulty." This is how engineers most often represented their methods to the larger public. It is also how they thought of themselves. The rhetoric of inflexible laws, followed self-effacingly by men whose expertise is purely technical, was not theirs. They were a self-conscious elite. Their uses of quantification can be understood in no other terms.

Page 141-142 (The French engineers as "sensitivity auditors"? Quantification as a result of controversy and external pressure)

The engineers were comparatively loyal to their corps, but still took pride in polyvalence, not mere technique. J. Mante remarked serenely in 1967: "Our role as engineers of the Ponts et Chaussées does not consist in making calculations (this is the task of the forecasting engineers and their collaborators), but to verify their legitimacy, to weigh the consequences of their eventual deviation from reality, to determine how much can be left to chance." […]These were men who believed in their own capacity to make decisions. Within a body like the Corps des Ponts, informal discussion within a context of shared experience and personal trust was often sufficient to reach agreement. They felt no need to engage in the elaborate justificatory ritual of formal quantitative decision procedures unless threatened from outside by controversy and political pressures.

Page 146 (A somewhat long winded distinction is made between technocrats and quantifiers … difficult to capture in one quote – I try nevertheless):

The suspicion of parliamentary democracy does not mean the same thing to technocrats as to quantifiers. Technocrats wanted the authority to manage without being subjected to the constant scrutiny that parliamentary government entails. Quantifiers too may suspect that the legislative process will produce less than ideal results, but they have at least accommodated themselves to it by concealing, even denying, their own authority as men of culture and discernment.

Page 149 (Contrast the style and the status of the French Corps des Ponts versus that of the US Army Engineers)

Finally, and most revealingly, the historian of bureaucracy does not portray the Army Corps at the center of an administrative ruling class, but in a scene of utter disunity and savage infighting. This, I argue, is the appropriate context for understanding the pursuit of uniform cost-benefit methods. That form of economic quantification grew up not as the natural language of a technical elite, but as an attempt to create a basis for mutual accommodation in a context of suspicion and disagreement. The regime of calculation was imposed not by all-powerful experts, but by relatively weak and divided ones.

Page 187 – (Cost benefit analysis CBA taken over by Economists)

Richard J. Hammond, whose early critiques of cost-benefit analysis have never been surpassed, considered that the entry of fancy economics brought its downfall. As a handy bureaucratic convention, the comparison of readily quantifiable benefits with investment costs was perhaps not to be sneered at, but now, he believed, this form of analysis had become a license to concoct imaginary data.

Page 188 (Excesses)

The most favored vehicle for eliminating marginal projects was the imposition of a uniform discount rate, higher than the rate of interest on government bonds. […]A still more important consequence of this pursuit of unbounded quantification was the spread of cost-benefit techniques to all kinds of government expenditures, and later even to regulatory activities. An early, seemingly unpromising, topic was the economics of public health, which required placing a value on days of sickness and even on lives saved and lost. The economist Burton Weisbrod did not flinch, but used lost productivity as the measure of both, and concluded that even polio vaccination was of doubtful net benefit. Education was another. Gross returns from the labor market permitted an endorsement of high school and college, and, inevitably, of MBA programs, but not of graduate study in science or engineering. The authors duly recommended a shift of educational resources to where salaries were highest.

Page 189 (Again on CBA as a result of a culture of distrust)

The transformation of cost-benefit analysis into a universal standard of rationality, backed up by thousands of pages of rules, cannot be attributed to the megalomania of experts, but rather to bureaucratic conflict in a context of overwhelming public distrust.

Page 200

Part III (Political and Scientific community – argue that quantification befits weak, divided scientific communities and is less idolized by strong communities (high energy physics given as an example))

Still, the extraordinary modern success of inferential statistics must be understood partly as a response to conditions of mistrust and exposure to outsiders similar to those that have been so important in the history of accounting and cost-benefit analysis. On the whole, statistical inference has not made its way down the hierarchy of science, from mathematics and physics to the biological and at last the social sciences. Rather, it was seized most readily by weaker disciplines, such as psychology and medical research, and indeed by their relatively applied subfields.

Page 213

Probabilities are in every case artifacts, created (but not arbitrarily) by instruments and by well-disciplined human labor. By now, an economist, doctor, or psychologist who cannot comprehend statistical arguments involving variances and probability values will work less effectively on that account. This is not because the world is inherently statistical. It is because quantifiers have made it statistical, the better to manage it.

Page 215

Recent history suggests that the pursuit of mechanical objectivity cannot suffice to settle public issues in conditions of pervasive distrust.

Page 216 (A deconstruction of objectivity due to Randall Albury)

A book by Randall Albury denies that much sense can be made out of the most common meanings of objectivity: knowledge unaffected by interests and idiosyncracies; “knowledge corresponding to reality”; or “value-free knowledge.” He concludes that objectivity has no deeper meaning than “knowledge produced in conformity with the prevailing standards of scientific practice as determined by the current judgements of the scientific community.”

Ibidem: (A discussion which resemble the present debate about the secret science act in the US)

The other example is a critique of cost-benefit analysis by Mark Green. The search for quantitative rules is futile, he argues. Insistence on rigorous standards of knowledge has become a strategy of opposition, used by powerful industrialists to immobilize the regulatory agencies. To reject expert judgment, then, is to abandon all hope of constructive public action. The need for effective regulation, he concludes,

requires “a presumption in favor of expert agencies appointed and confirmed by the president and Congress that, after hearing all evidence in due process hearings, arrive at a judgment.”

Page 217

Yet the idea of making individual rationality the foundation of objectivity in science dies hard—and not only among unreflecting scientists and starry-eyed novelists. Most philosophers, too, have not known quite how to embrace a social conception of rationality.

Page 224 - 225

The role of science in standardizing and objectifying political and economic life is one of the most important reasons that humanists and social scientists should be concerned with it. But we may still be a little uncertain just why science has played this role, and for that matter why scientific knowledge itself is normally expressed in a highly objectified, rationalistic language. In this book I have emphasized two lines of response to this, though at bottom they are almost the same. One reflects the broader social and political relations of science, pressures from the outside. The other has to do with the social life of scientists in their own institutions, and the difficulties of forming a community of belief and practice.

Ibidem; (Porter enrols Shapin and Schaffer)

The remarkable openness and lack of rigid rules in high-energy physics is possible only under very special circumstances. It must be added that high-energy physics is scarcely a model of anti-objectivism in science. Every body of scientists, every disciplinary grouping, is subjected to strong pressures tending to the confinement of judgment in favor of mechanical and impersonal standards. Thomas Hobbes, the hero of Steven Shapin’s and Simon Schaffer’s book Leviathan and the Air-Pump, identified the problem clearly. Experiment, he held, provides no basis for acquiring public knowledge. Experiment is intrinsically private. Any particular one can only be properly witnessed by a few people. It is always possible to criticize an experiment by placing in the foreground details of construction and execution that, according to the logic of the experimental demonstration itself, must be relegated firmly to the background. Hobbes himself tried in this way to deconstruct, as we might say, Robert Boyle’s air pump: he claimed it leaked, and pointed to the trials that didn’t work as Boyle expected. Experimentation is futile, he suggested. The only firm basis for public knowledge, indeed for organizing a polity, is geometrical reasoning: solid demonstration, which brings its own evidence with it and depends on nothing more than writing on paper.

Although his attack on experimentation failed spectacularly, the problems Hobbes identified were real.

Page 230 (The answer to the question: is science made of communities; yes and it is in the weak ones that objectivity impartiality and rigour are must on demand)

Scientific knowledge is most likely to display conspicuously the trappings of science in fields with insecure borders, communities with persistent boundary problems. That is, one has to look at a wider context for science to understand even the accepted forms of scientific production, the standards by

which work is judged. So, science is indeed made by communities, but communities that are often troubled, insecure, and poorly insulated from outside criticism. Some of the most distinctive and typical features of scientific discourse reflect this weakness of community. The enormous premium on objectivity in science is at least partly a response to the resultant pressures.