

Evidence based policy and quantification blues

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Evidence based policy or policy based evidence?

Quantification in the context of evidence based policy.

The special place of mathematical and statistical modelling as master tools of science advice.

Guimarães Pereira, Â., and Funtowicz, S., Eds., 2015, The end of the Cartesian dream, Routledge's series: Explorations in Sustainability and Governance.

Saltelli, A., and Giampietro, M., 2015, What is wrong with evidence based policy? Draft, Submitted for a special issue on FUTURES, August 2015.

http://www.andreasaltelli.eu/file/repository/FUTURES_Saltelli_Giampietro_3.pdf

Rommetveit K Strand R Fjelland R & Funtowicz S, 2013 What can history teach us about the prospects of a European Research Area? Study procured by the Joint Research Centre EUR report 2612 (http://www.uib.no/sites/w3uibno/files/attachments/histera_final_report_25_2pdf)

See also: The Rightful Place of Science: Science on the verge, An anthology by Alice Benessia, Mario Giampietro, Silvio Funtowicz, Jerome Ravetz, Angela Pereira, Andrea Saltelli, Roger Strand, Jeroen P. van der Sluijs, with a preface of Dan Sarewitz, Published by the Consortium for Science, Policy and Outcomes at Arizona State University, to appear winter 2015.

Ravetz, J. R. and Saltelli, A., 2015b. "Policy: The future of public trust in science", Nature, 524: p. 161.

Evidence based policy
or
policy based evidence?

PETRUCHIO: I say it is the moon.

KATHERINE: I know it is the moon.

PETRUCHIO: Nay, then you lie. It is the blessèd sun.

KATHERINE: Then God be blessed, it is the blessèd sun.

But sun it is not, when you say it is not,

And the moon changes even as your mind.

What you will have it named, even that it is,

And so it shall be so for Katherine.

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(Shakespeare, the Taming of the Shrew, Act IV)



Financial Times titles “Free Lunch: Policy-based evidence-making” (Wilkes, 2015)...

A politician says “Greenpeace [...] wants is policy based evidence making not evidence based policy making (Sanderson, 2015) ...

Wilkes, G., 2015, Free Lunch: Policy-based evidence-making, Financial Times, July 3.

Sanderson, A.B., 3 Feb 2015, Breitbart, see <http://www.breitbart.com/london/2015/02/03/academic-attacks-greenpeace-for-ignoring-the-evidence-on-gm-crops/>; the politician is UKIP Energy Spokesman Roger Helmer MEP.

“This need [for evidence] has been reified in the UK and elsewhere, as routines of 'evidence-based policy'-making have been hardwired into the business of Government. [...] such approaches are fundamentally flawed [because] Government [...] seeks to capture and control the knowledge producing processes to the point where this type of 'research' might best be described as 'policy-based evidence'.”

Boden, R. and Epstein D., 2006, Managing the Research Imagination? Globalisation and Research in Higher Education. *Globalisation, Societies and Education*, 223–236.



OFFICE OF THE PRIME MINISTER'S CHIEF SCIENCE ADVISOR

Professor Sir Peter Gluckman, ONZ KNZM FRSNZ FMedSci FRS
Chief Science Advisor

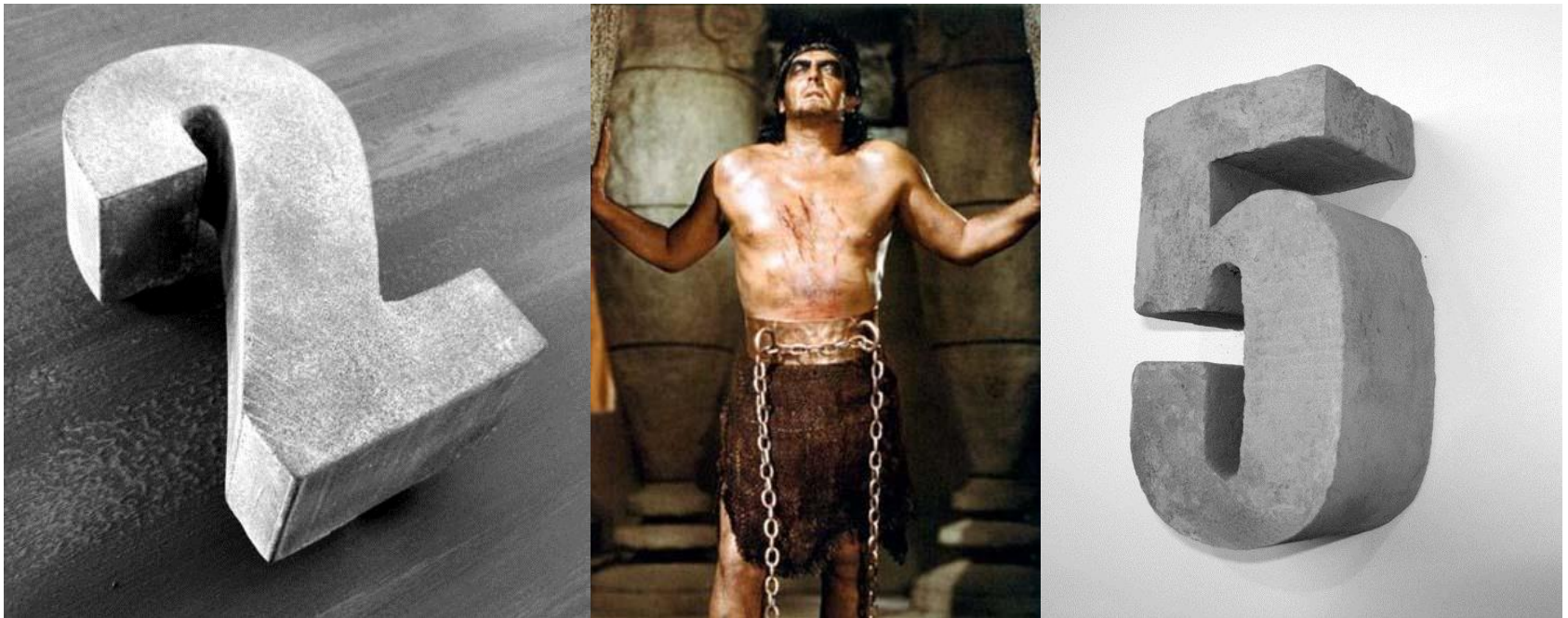
“evidence informed” rather than “evidence based”

“I have come to understand that the primary functions and greatest challenges for a science adviser are providing advice not on straightforward scientific matters, but instead on issues that have the hallmarks of what has been called post-normal science”

Gluckman, P., 2014, The art of science advice to government, *Nature*, 507, 163–165.

Problematic quantifications

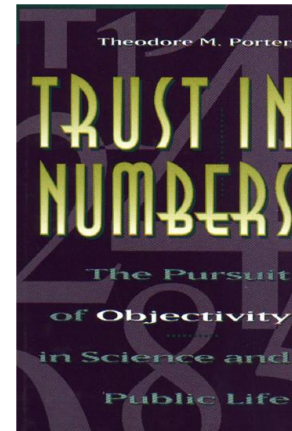
Concrete numbers: Evidence based policy and numbers –



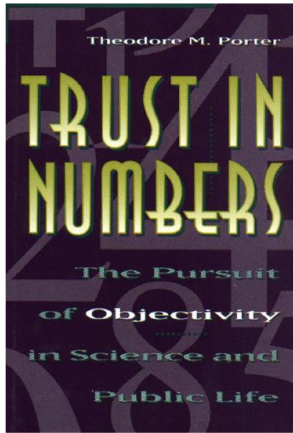
p. 8: “The appeal of numbers is especially compelling to bureaucratic officials who lack the mandate of a popular election, or divine right. Arbitrariness and bias are the most usual grounds upon which such officials are criticized. A decision made by the numbers (or by explicit rules of some other sort) has at least the appearance of being fair and impersonal.”



Theodor M. Porter



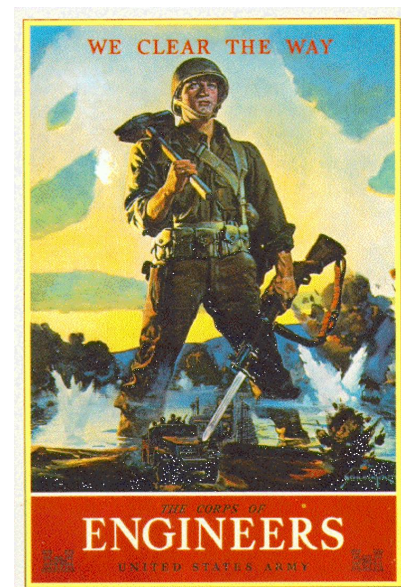
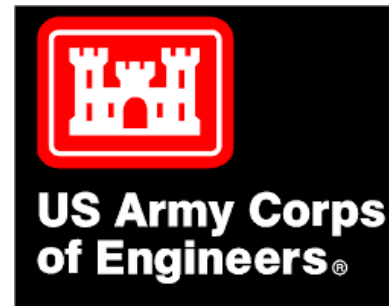
Theodore M. Porter, *Trust in Numbers, The Pursuit of Objectivity in Science and Public Life*, Princeton 1995



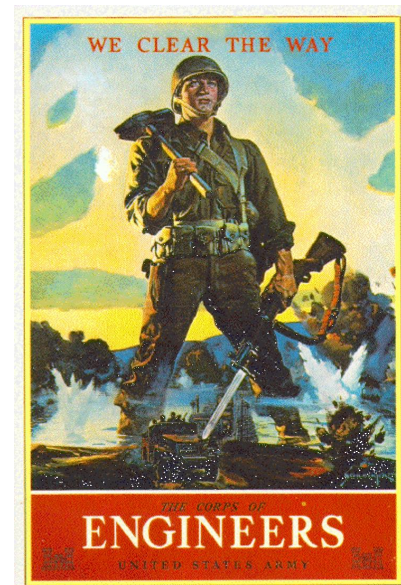
p. 8: “Scientific objectivity thus provides an answer to a moral demand for impartiality and fairness. Quantification is a way of making decisions without seeming to decide. Objectivity lends authority to officials who have very little of their own.”

Quantification: the discrete charm of bureaucracies?

Trust, authority and styles of quantification: two different stories



Porter's story: Quantification needs judgment which in turn needs trust ...without trust quantification becomes mechanical, a system, and 'systems can be played'.





Charles Goodhart

p. 44 “Any ... measures necessarily involve a loss of information ... [and distorts behavior]” (Porter, 1995)

This is what we normally call Goodhart’s law, from Charles Goodhart. "When a measure becomes a target, it ceases to be a good measure."

http://cyberlibris.typepad.com/blog/files/Goodharts_Law.pdf

Mathematical modelling
errors, misuse, abuse

Error

THE NEW YORKER

“Carmen Reinhart and Kenneth Rogoff [...] famous (now infamous) research that conservative politicians around the world had seized upon to justify pennypinching Policies ...”

John Cassidy, April 2013 issue

Error

“... rising levels of government debt are associated with much weaker rates of economic growth, indeed negative ones ...”

It was instead a coding error uncovered by three researchers at the university of Michigan.

“In Britain and Europe, great damage has been done as a result.”

THE NEW YORKER



Saltelli, A. and Funtowicz, S., 2014, When all models are wrong: More stringent quality criteria are needed for models used at the science-policy interface, Issues in Science and Technology, vol. winter, pp. 79-85.

Error

Perils of placing faith in a thin theory



By Wolfgang Münchau

Reinhart and Rogoff told policy makers what they wanted to hear

“As for Profs Reinhart and Rogoff, I suspect that they, too, will be mostly remembered for the fact that their policies have been tried”

Munchau, W., 2013, Perils of placing faith in a thin theory Financial Times, April 21.

Kenneth Rogoff (2015) still defines ‘a very good idea’ to ‘employ technocrats to provide objective analysis’ in the columns of the Financial Times.

Rogoff, K., 2015, World’s economic slowdown is a hangover not a coma, Financial Times, October 9.

Misuse

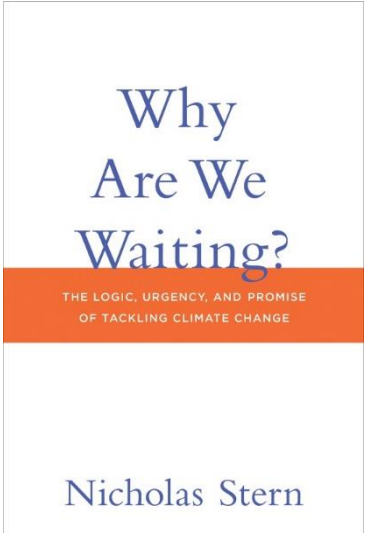
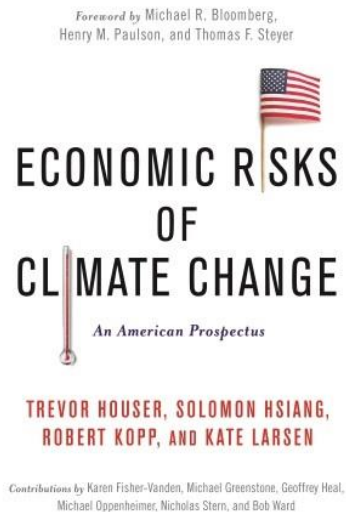


“To be fair, DSGE and similar macroeconomic models were first conceived as theorists’ tools. But why, then, are they being relied on as the platform upon which so much practical policy advice is formulated? And what has caused them to become, and to stay, so firmly entrenched?”

Quote from Miller, B., 2010, Opening Address, The Hearing Charter of the House Committee on Science and Technology and sworn testimony of economists Sidney Winter, Scott Page, Robert Solow, David Colander and V.V. Chari, in Mirowski, P., 2013, *Never Let a Serious Crisis Go to Waste: How Neoliberalism Survived the Financial Meltdown*, Verso Books.

Abuse

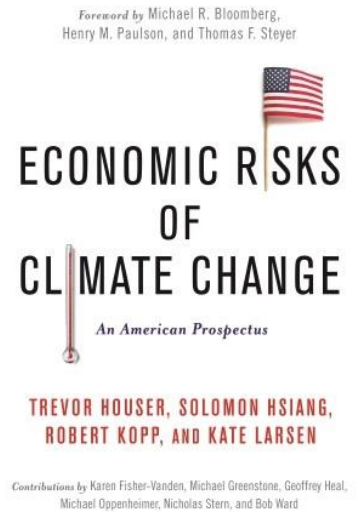
Counting climate's dollars. Occupational psychosis or valuable input?



Abuse

“[...] the report forecasts—at the level of individual counties in the U.S.—energy costs and demand, labor supply, mortality, violent crime rates, and real estate property prices up to the year 2100 [...] The report presents the amount of computer power and data generated as evidence of the scientific legitimacy of the enterprise. The authors note, however, that out of an abundance of caution they did not model deterioration in cognitive performance as temperatures rise”

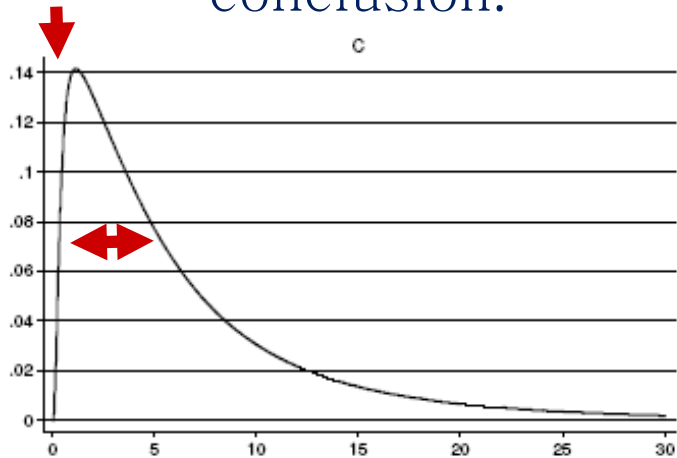
Saltelli, A., Stark, P.B., Becker, W., and Stano, P., 2015, Climate Models As Economic Guides Scientific Challenge or Quixotic Quest? Spring issue of Science and Technology (IST) April 2015.



Abuse

The Stern review makes the case for urgent action against climate change based on a cost benefit analysis (CBA). We have shown that the stipulated uncertainties in the CBA do not allow any useful conclusion.

Missing points



% loss in GDP per capita



Saltelli, A., and d'Hombres, B. 2010, 'Sensitivity Analysis Didn't Help. A Practitioner's Critique of the Stern Review', *Global Environmental Change*, vol. 20, pp. 298–302.

Abuse

THE LOGIC, URGENCY, AND PROMISE OF TACKLING CLIMATE CHANGE

“Integrated assessment models have produced valuable insights” p. 139

“In Chapter six of the Stern review we made use of the PAGE model” p. 345

Then, after a list of criticism moved to the realism of IAM’s:

“[...] the point is that estimates based on these models are very sensitive to assumptions and are likely to lead to gross underestimation” p.139

Why
Are We
Waiting?

THE LOGIC, URGENCY, AND PROMISE
OF TACKLING CLIMATE CHANGE

Nicholas Stern

Abuse

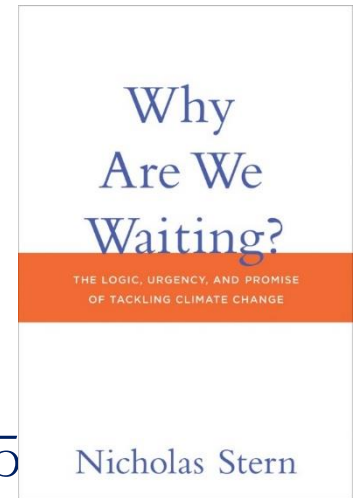
Things to be incorporated in ‘formal modelling’

“Damage to social, organizational or environmental capital [...]

Damage to stock of capitals and land [...]

Damage to overall factor productivity [...]

Damage to learning and endogenous growth”, p. 145



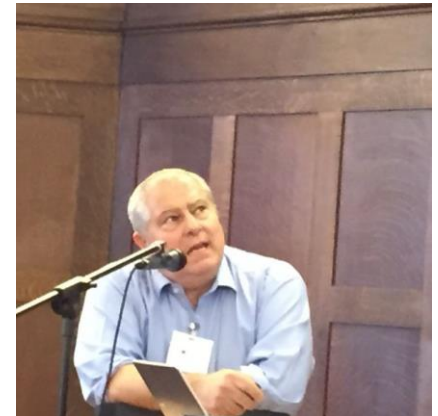
‘formal modelling’ as to produce ‘numbers’?



John Kay, Financial Times

Workshop 'Significant digits.
Responsible Use of Quantitative
Information', Brussels, 11,9–10 June
2015, organized by the Joint Research
Centre of the European Commission.

Mario Giampietro,
ICREA-ICTA, Barcelona



See videos:

<https://ec.europa.eu/jrc/en/event/conference/use-quantitative-information>

