

# Impact assessment culture in the European Union Time for something new?

upf.

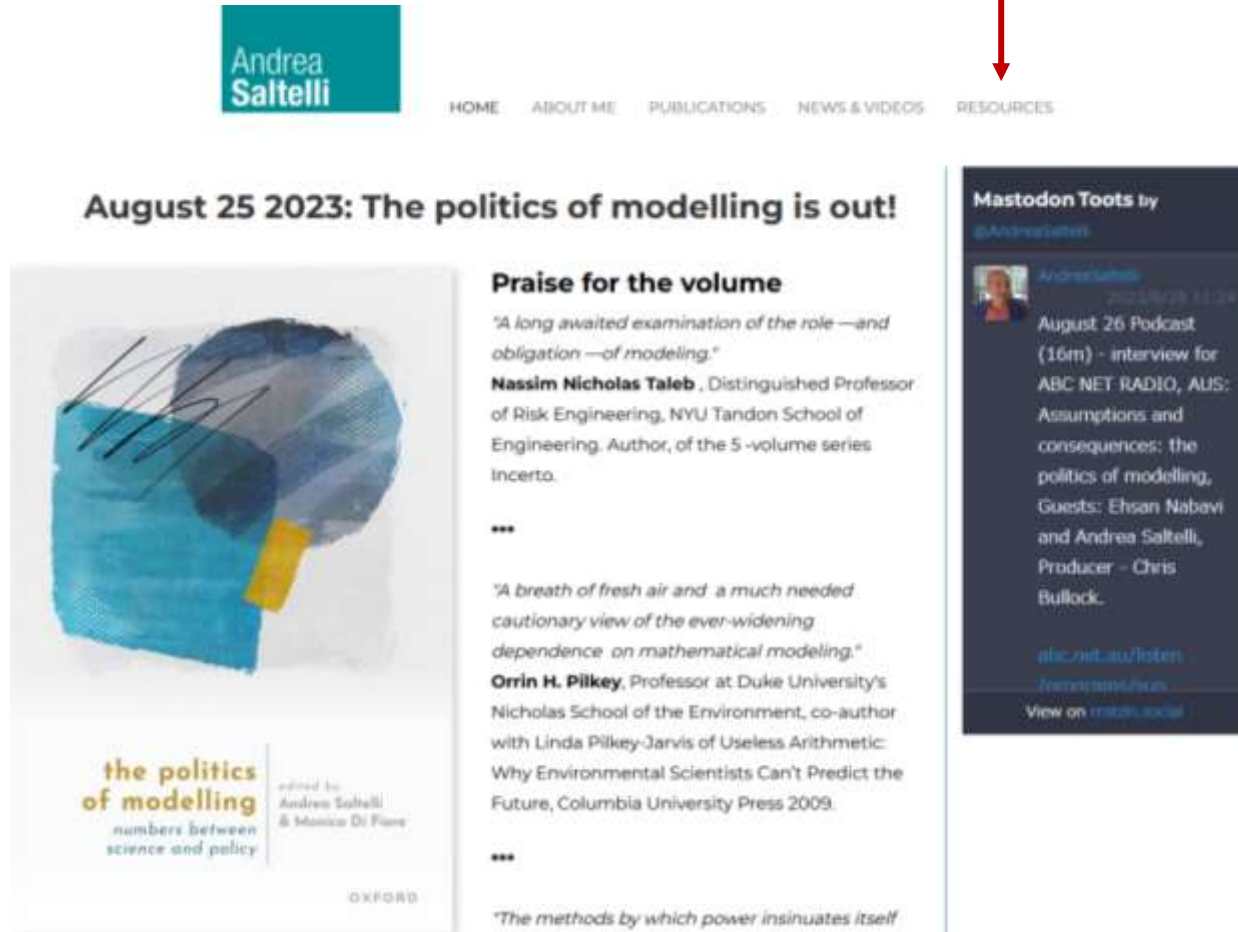
BARCELONA  
SCHOOL OF  
MANAGEMENT



Andrea Saltelli

PhD course in “Sustainable Agricultural Policy &  
Forestry System and Food Security”  
Department of Agricultural Science  
University of Napoli Federico II  
April 29, 2024, webinar

Where to find this talk: [www.andreasaltelli.eu](http://www.andreasaltelli.eu)




The screenshot shows the website [www.andreasaltelli.eu](http://www.andreasaltelli.eu). At the top left is the logo for Andrea Saltelli. The navigation menu includes HOME, ABOUT ME, PUBLICATIONS, NEWS & VIDEOS, and RESOURCES. A red arrow points to the RESOURCES link. The main content area features a book review for "the politics of modelling" edited by Andrea Saltelli and Monica Di Fusco. The review includes quotes from Nassim Nicholas Taleb and Orrin H. Pilkey. To the right, a Mastodon post by @Andreasaltelli is visible, mentioning an August 26 Podcast (16m) interview for ABC NET RADIO, AUS, about the book.

Andrea Saltelli

HOME ABOUT ME PUBLICATIONS NEWS & VIDEOS RESOURCES

## August 25 2023: The politics of modelling is out!



**Praise for the volume**

*"A long awaited examination of the role—and obligation—of modeling."*

**Nassim Nicholas Taleb**, Distinguished Professor of Risk Engineering, NYU Tandon School of Engineering. Author, of the 5-volume series *Incerto*.

...

*"A breath of fresh air and a much needed cautionary view of the ever-widening dependence on mathematical modeling."*

**Orrin H. Pilkey**, Professor at Duke University's Nicholas School of the Environment, co-author with Linda Pilkey-Jarvis of *Useless Arithmetic: Why Environmental Scientists Can't Predict the Future*, Columbia University Press 2009.

...

*"The methods by which power insinuates itself*

**Mastodon Toots by**  
@Andreasaltelli

August 26 2023, 16:28 +1:28

August 26 Podcast (16m) - interview for ABC NET RADIO, AUS: Assumptions and consequences: the politics of modelling, Guests: Ehsan Nabavi and Andrea Saltelli, Producer - Chris Bullock.

[abc.net.au/listen](http://abc.net.au/listen)  
<https://www.abc.net.au/australian>

View on mastodon.social



Environmental Science and Policy 142 (2023) 99–111

Contents lists available at [ScienceDirect](#)

Environmental Science and Policy

journal homepage: [www.elsevier.com/locate/envsci](http://www.elsevier.com/locate/envsci)



ELSEVIER



Mostly based on

Impact assessment culture in the European Union. Time for something new?

Andrea Saltelli <sup>a,b,\*</sup>, Marta Kuc-Czarnecka <sup>c</sup>, Samuele Lo Piano <sup>d</sup>, Máté János Lőrincz <sup>d</sup>, Magdalena Olczyk <sup>c</sup>, Arnald Puy <sup>e</sup>, Erik Reinert <sup>f,g</sup>, Stefán Thor Smith <sup>d</sup>, Jeroen P. van der Sluijs <sup>b,h</sup>

## Better regulation: guidelines and toolbox

### General principles

The better regulation guidelines set out the principles that the European Commission follows when preparing new initiatives and proposals and when managing and evaluating existing legislation.

The guidelines apply to each phase of the law-making cycle.

	3 NOVEMBER 2021 <b>Better regulation guidelines</b> English (983.75 KB - PDF)	Download 
	20 JULY 2023 <b>Better regulation toolbox</b> English (6.45 MB - PDF)	Download 



← 614 pages of tools

[https://commission.europa.eu/law/law-making-process/planning-and-proposing-law/better-regulation/better-regulation-guidelines-and-toolbox\\_en](https://commission.europa.eu/law/law-making-process/planning-and-proposing-law/better-regulation/better-regulation-guidelines-and-toolbox_en)

# Evidence based medicine came first!

Evidence Based Medicine was born when clinical decision making was set to integrate clinical expertise with external evidence (e.g. randomized trials) and patient values and preferences

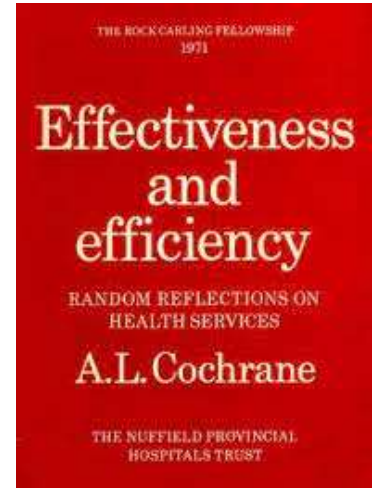


Archie Cochrane,  
1909 –1988



This led to the Cochrane collaboration (now simply Cochrane), involving health professionals, patients and policy makers

Runs major systematic reviews. Maintains a library



“A NEW paradigm for medical practice is emerging. Evidence-based medicine de-emphasizes intuition, unsystematic clinical experience, and ... stresses the examination of evidence from clinical research”

This Issue

Article

November 4, 1992

## Evidence-Based Medicine

### A New Approach to Teaching the Practice of Medicine

Gordon Guyatt, MD, MSc; John Cairns, MD; David Churchill, MD, MSc; Deborah Cook, MD, MSc; Brian Haynes, MD, MSc, PhD; Jack Hirsh, MD; Jan Irvine, MD, MSc; Mark Levine, MD, MSc; Mitchell Levine, MD, MSc; Jim Nishikawa, MD; David Sackett, MD, MSc; Patrick Brill-Edwards, MD; Hertzfel Gerstein, MD, MSc; Jim Gibson, MD; Roman Jaeschke, MD, MSc; Anthony Kerigan, MD, MSc; Alan Neville, MD; Akbar Parjoo, MD; Allan Detsky, MD, PhD; Murray Enkin, MD; Pamela Frid, MD; Martha Gerrity, MD; Andreas Laupacis, MD, MSc; Valerie Lawrence, MD; Joel Menard, MD; Virginia Moyer, MD; Cynthia Mulrow, MD; Paul Links, MD, MSc; Andrew Ozman, MD, MSc; Jack Sinclair, MD; Peter Tugwell, MD, MSc

▶ Author Affiliations

JAMA. 1992;268(17):2420-2425. doi:10.1001/jama.1992.03490170092032





**JAMA. 1992;**

**JAMA**<sup>®</sup>  
The Journal of the  
American Medical  
Association

SERIES: DAVID SACKETT – A YEAR LATER | VOLUME 73, P82-86, MAY 2016

 Download Full Issue

## Evidence-based medicine has been hijacked: a report to David Sackett

John P.A. Ioannidis  

Published: February 28, 2016 • DOI: <https://doi.org/10.1016/j.jclinepi.2016.02.012> •  Check for updates



“Under market pressure, clinical medicine has been transformed to finance-based medicine” (2016)



Early milestones in the development of impact assessment was the National Environmental Policy Act (NEPA) in the United States, enacted in 1969



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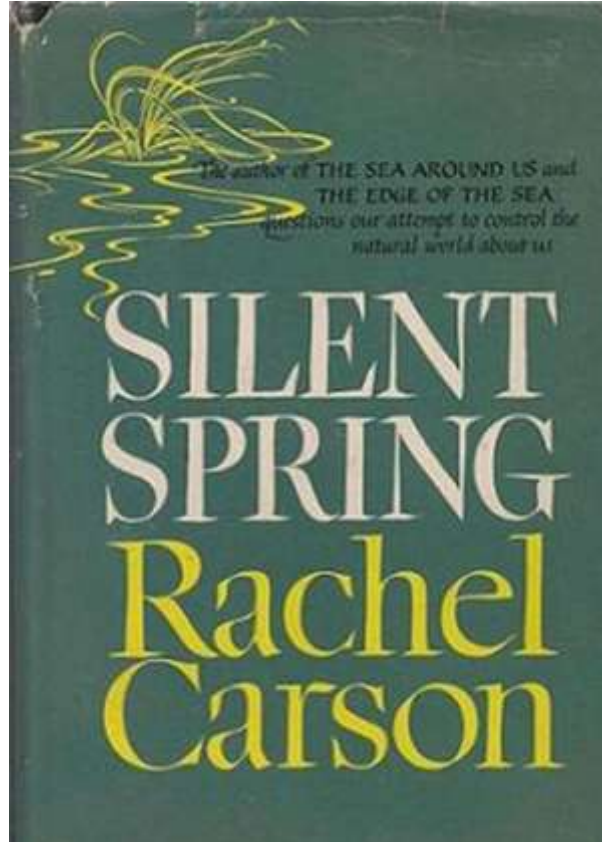
Bills & Resolutions / S.1075 (91st) / Text

**S. 1075 (91<sup>st</sup>): An Act to establish a national policy for the environment; to authorize studies, surveys, and research relating to ecological systems, natural resources, and the quality of the human environment; and to establish a Board of Environmental Quality Advisers**

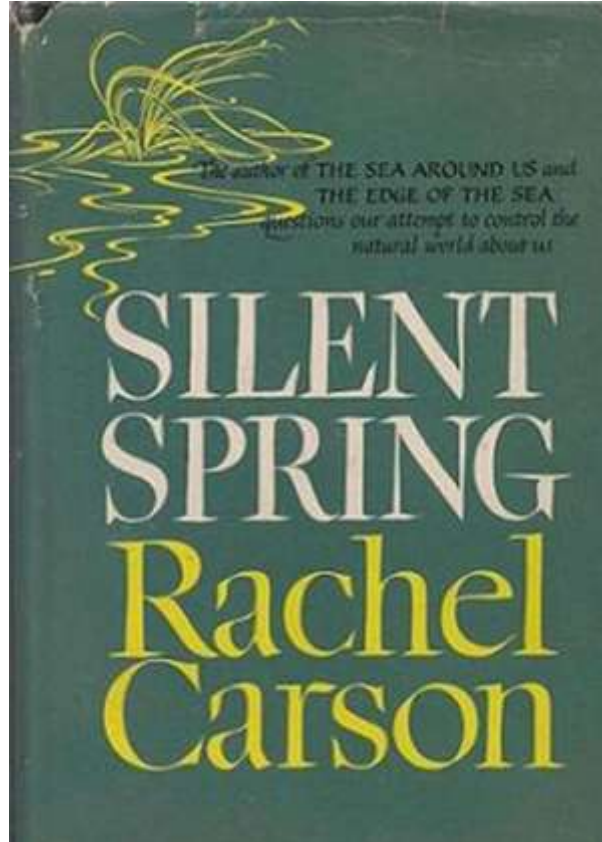


... NEPA came into being as a result ... of a book (1962)!

The book kickstarted the environmental movement worldwide. Led to the creation of the US Environmental Protection Agency (EPA) ...



... it also led in the US to a ban of DDT, to the Endangered Species Act (1973), to the Clean Air (1970) and Clean Water (1972) acts



A seminar with Naomi Oreskes and others about Carson's book in its 60<sup>th</sup> anniversary

<https://www.youtube.com/watch?v=jWixNOXJkns>



Science, lobbies and the environment | seminar on 60th anniversary of Rachel Carson's Silent Spring



Digging deeper on this question of where evidence based policy comes from...

## Chapter 2, Le probleme: La legitimation

‘C’est depuis Platon que la question de la **légitimation de la science** se trouve indissociablement connexe de celle de la **légitimation du législateur**. Dans cette perspective, le droit de décider de ce qui est vrai n’est pas indépendant du droit de décider de ce qui est juste [...] **savoir et pouvoir sont les deux faces d’une même question**: qui décide ce qu’est savoir, et qui sait ce qu’il convient de décider? La question du savoir à l’âge de l’informatique est plus que jamais la question du gouvernement.’

Liotard, J.-F. 1979. La Condition postmoderne. Rapport sur le savoir, Paris : Minuit.



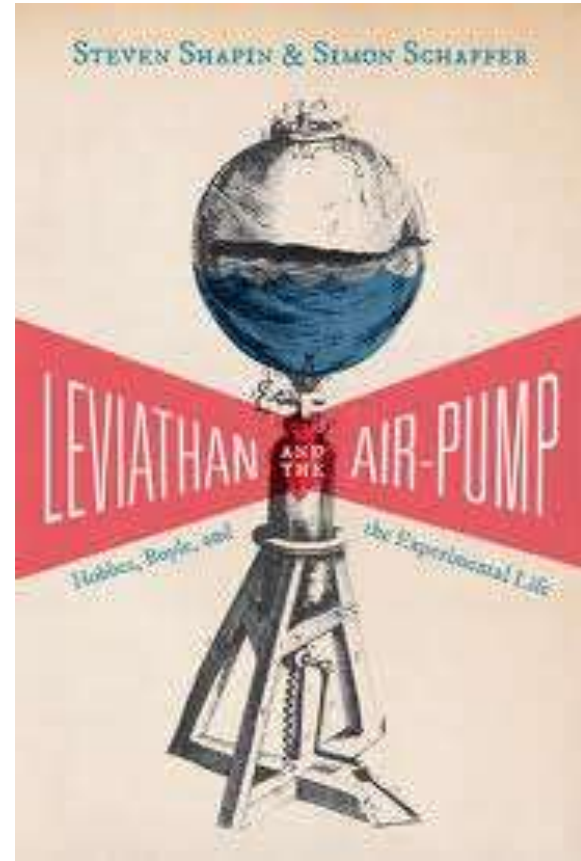
Jean-François Lyotard



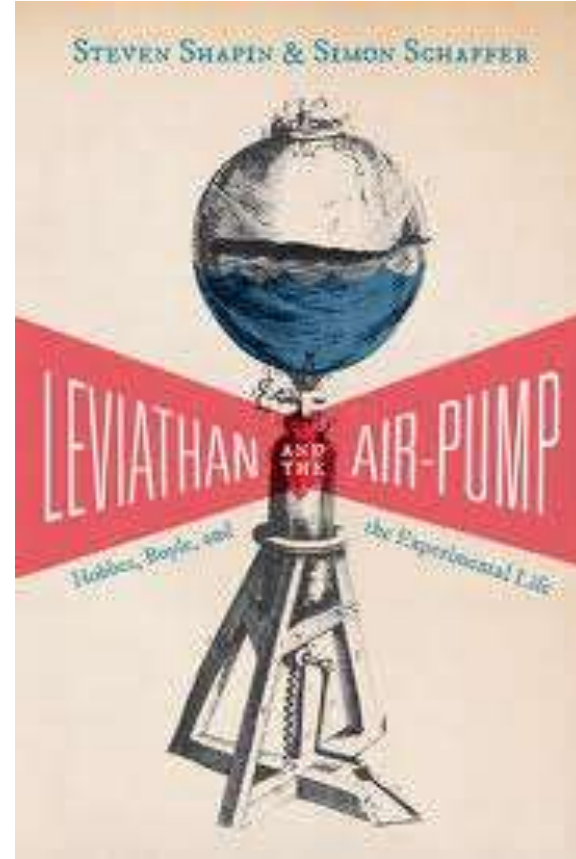
“Solutions to the problem of knowledge are solutions to the problem of social order.

[...] Trust in Science and trust in the prevailing social order are linked”

Shapin, S., Schaffer, S., 1985, *Leviathan and the Air-Pump: Hobbes, Boyle, and the Experimental Life*, Princeton, 2011 Edition



Shapin and Schaffer discusses how establishing 'matter of facts' under controlled 'laboratory' experiments before witnesses, was a way to subtract the discourse about knowledge from religious squabbles ...

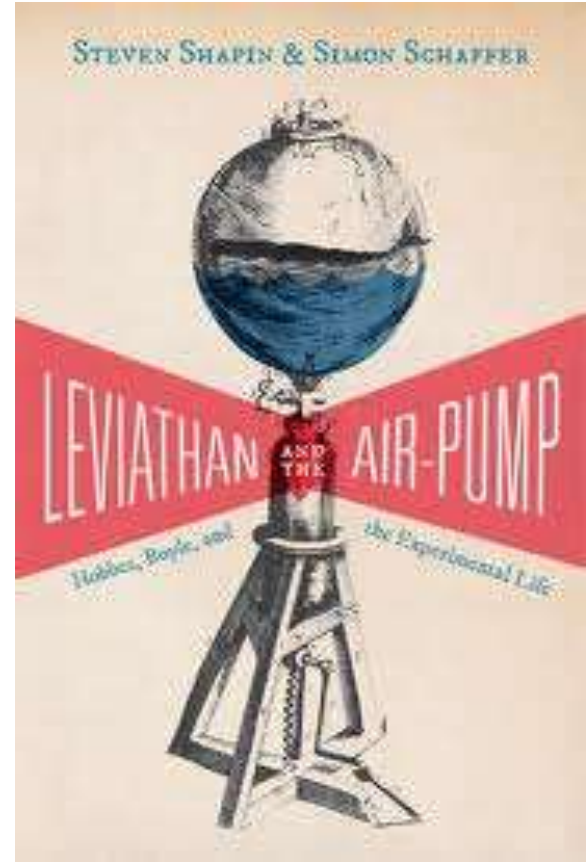




Shapin and Schaffer's book inspired Bruno Latour's 'Nous n'avons jamais été modernes', 1991, and was 'hot' during the 'science wars'



Bruno Latour

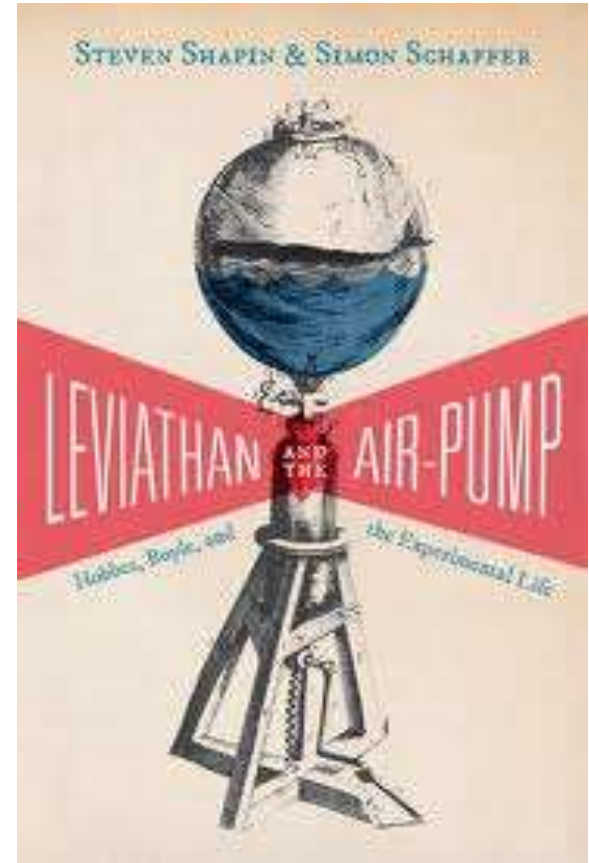


But what does it mean that we “have never been modern?”

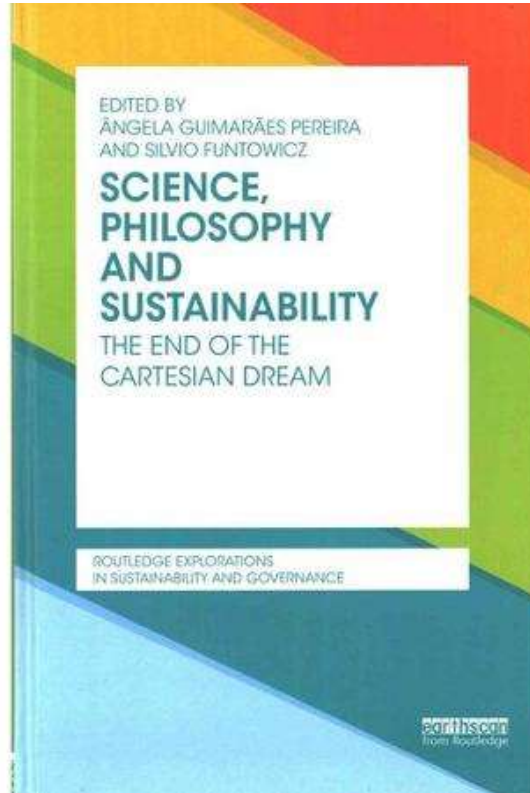
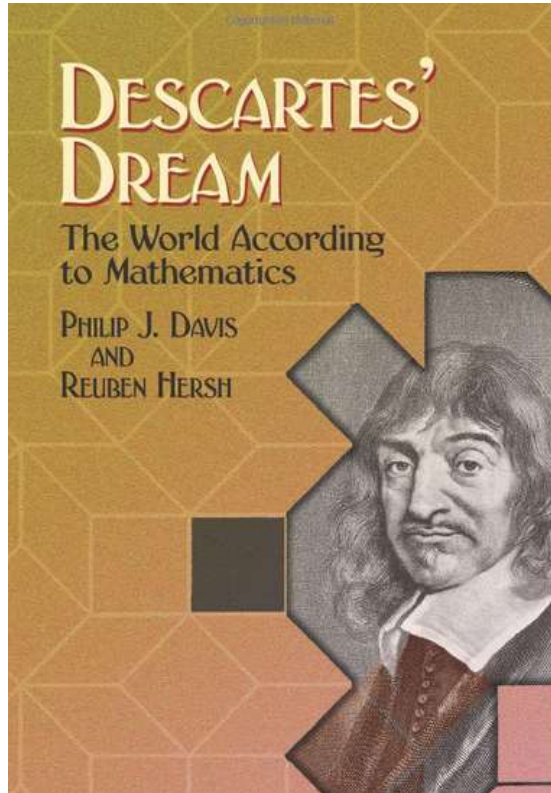
The theory in a nutshell: we have never been good at separating facts from values



Bruno Latour



Digging deeper in this culture of evidence at the root of the governance of human affairs we find the Cartesian Dream





Francis Bacon  
(1561–1626)

We call Cartesian dream the idea of man as master and possessor of nature, of prediction and control, of Bacon's wonders of science and of Condorcet's mathématique sociale...



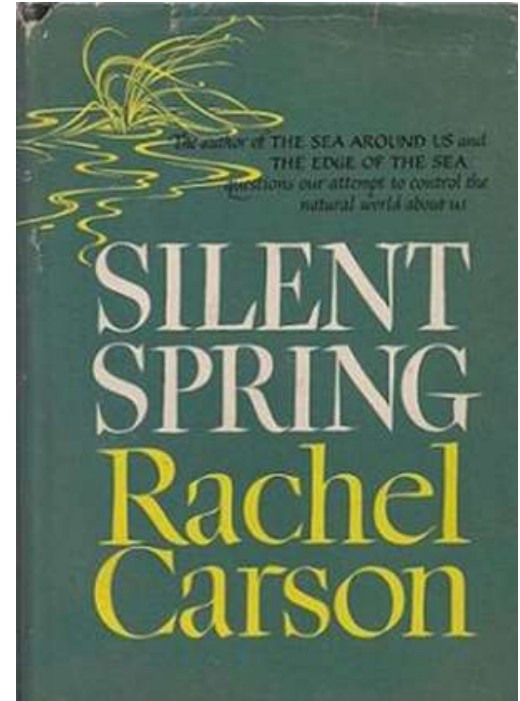
René Descartes  
(1596–1650)



Nicolas de Caritat, marquis de  
Condorcet  
(1743– 1794)

# The end of the Cartesian dream?

“The ‘control of nature’ is a phrase conceived in arrogance, born of the Neanderthal age of biology and philosophy, when it was supposed that nature exists for the convenience of man. The concepts and practices of applied entomology for the most part date from that Stone Age of science. It is our alarming misfortune that so primitive a science has armed itself with the most modern and terrible weapons, and that in turning them against the insects it has also turned them against the earth.”



← How the book ends

# Why is this story of evidence based policy (EBP) so important?

- Because it is a key component of the policy cycle and is enshrined in standards and guidelines
- It is a conflicted topic (like evidence based medicine)
- Many say it has become its opposite (policy based evidence), also as part of New Public Management theories and movement
- Some highlight power differentials (industry-regulators-citizens) and see EBP as a vehicle for regulatory capture
- Some take issue with its purported neutrality



## What is New Public Management (NPM)?

- Gained traction in the 1980s and 1990s
- Market-oriented reforms, privatization, deregulation
- Origin in public choice theory (James M. Buchanan )
- Neoliberal revolution (UK, both Tories and New Labour)
- US: reinventing Government Movement (1990s); NPM principles applied to federal agencies (Al Gore)
- World Bank and the International Monetary Fund (IMF)



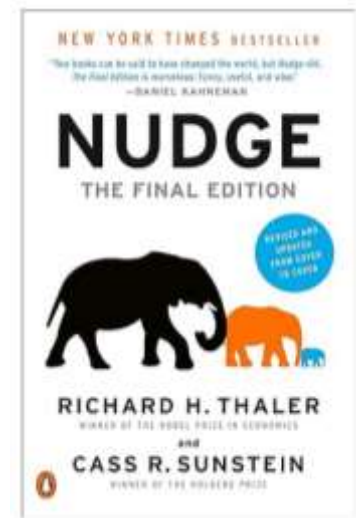
## What is public choice theory?

- Rational choice
- Actors maximizing their utility
- Fighting bureaucracy thanks to market incentives (see Thaler and Sunstein's 'nudging')
- Tackles rent seeking and voting behaviour



Cass Sunstein

Timms, A. (2019, June). The Sameness of Cass Sunstein | The New Republic. New Republic. <https://newrepublic.com/article/154236/sameness-cass-sunstein>



The most widely used technique: Cost Benefit Analysis

Pros: Efficiency, simplicity, ease of communication, *prima facie* impersonality

Cons: Dependence of the outcome upon what is included or excluded (what are the externalities?); monetization

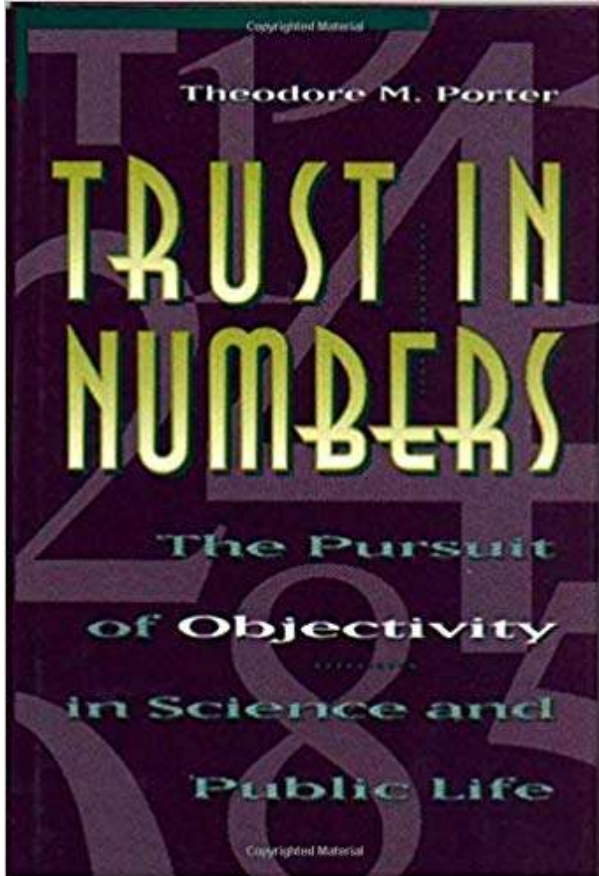
## Exercise in class (20m + 10 reporting)

Imagine you work for the health ministry and need to find analytic arguments to judge the desirability and feasibility of policies aimed to reduce smoking habits in the population.



Source: The Simpsons, Smoke on the Daughter

- 1) What policies to consider?
- 2) What other ministries should participate to the discussion?
- 3) What factors should be considered in the analysis?
- 4) What costs should be included? What benefits?
- 5) Indicate whether the selected cost and benefits are amenable to quantification.



History of cost benefit analysis. See Chapter 7: “U.S. Army Engineers and the Rise of Cost–Benefit Analysis”

or this paper:

Porter, T. M. Objectivity as Standardization: The Rhetoric of Impersonality in Measurement, Statistics, and Cost–Benefit Analysis. in Rethinking objectivity (ed. Megill, A.) 197 –237 (Duke University Press, 1994).

<http://ereserve.library.utah.edu/Annual/WRTG/3705/Mathison/objectivity.pdf>

# Frames

Most analyses offered as input to policy are framed as cost benefit analysis or risk analyses, but some environmentalists disagree



Langdon Winner

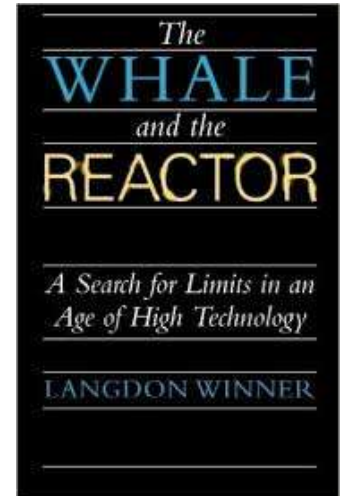
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8

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ON NOT HITTING  
THE TAR-BABY

Winner, L., 1986. *The Whale and the Reactor: a Search for Limits in an Age of High Technology*. The University of Chicago Press, 1989 edition.



# Alternative to Cost Benefit Analysis?

## Use of different ‘lenses’

The image displays three journal article covers from Elsevier. Each cover features the Elsevier logo on the left and a small thumbnail of the article's content on the right. The top cover is from the journal 'Futures', Volume 91, August 2017, Pages 62-71. The middle cover is from 'Environmental Science & Policy', Volume 106, April 2020, Pages 87-98. The bottom cover is also from 'Environmental Science & Policy', Volume 142, April 2023, Pages 99-131.

**Futures**  
Volume 91, August 2017, Pages 62-71

Original research article

**What is wrong with evidence based policy, and how can it be improved?**

Andrea Saltelli<sup>a,b,c</sup>, Mario Giampietro<sup>a,c,d</sup>

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**Environmental Science & Policy**  
Volume 106, April 2020, Pages 87-98

**The technique is never neutral. How methodological choices condition the generation of narratives for sustainability**

Andrea Saltelli<sup>a,b</sup>, Lorenzo Benini<sup>e</sup>, Silvia Funtozowicz<sup>e</sup>, Mario Giampietro<sup>a,d</sup>, Matthias Kaiser<sup>f</sup>, Erik Reinert<sup>g,h</sup>, Jansen P. van der Sluis<sup>h,i</sup>

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**Environmental Science & Policy**  
Volume 142, April 2023, Pages 99-131

**Impact assessment culture in the European Union. Time for something new?**

Andrea Saltelli<sup>a,b</sup>, Marta Kuc-Czarnecka<sup>f</sup>, Samuele Lo Piano<sup>d</sup>, Máté János Lőrincz<sup>d</sup>, Magdalena Olczyk<sup>f</sup>, Arnold Puy<sup>g</sup>, Erik Reinert<sup>g,h</sup>, Steffen Thor Smith<sup>e</sup>, Jansen P. van der Sluis<sup>h,i</sup>

# Taking issue with purported neutrality





Environmental Science & Policy

Volume 106, April 2020, Pages 87-98



## The technique is never neutral. How methodological choices condition the generation of narratives for sustainability

[Andrea Saltelli](#)<sup>a b</sup>  , [Lorenzo Benini](#)<sup>c</sup>, [Silvio Funtowicz](#)<sup>a</sup>, [Mario Giampietro](#)<sup>d e</sup>,  
[Matthias Kaiser](#)<sup>a</sup>, [Erik Reinert](#)<sup>a f</sup>, [Jeroen P. van der Sluijs](#)<sup>a g h</sup>

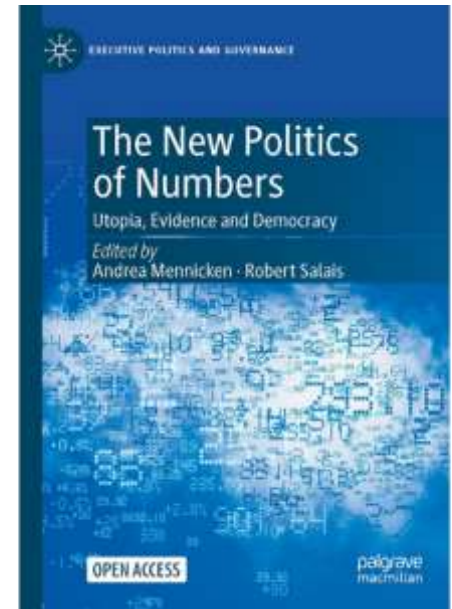


A technical proof of quality is illusory without a parallel investigation of normative quality

Technical Quality

Normative quality

How the numbers of neoliberalism (New Public Management) constitute a regime of a-democracy; the example of indicators of employment



Salais, R. (2022). “La donnée n’est pas un donné”: Statistics, Quantification and Democratic Choice. In *The New Politics of Numbers: Utopia, Evidence and Democracy*, Andrea Mennicken and Robert Salais, Palgrave Macmillan, pp. 379–415.

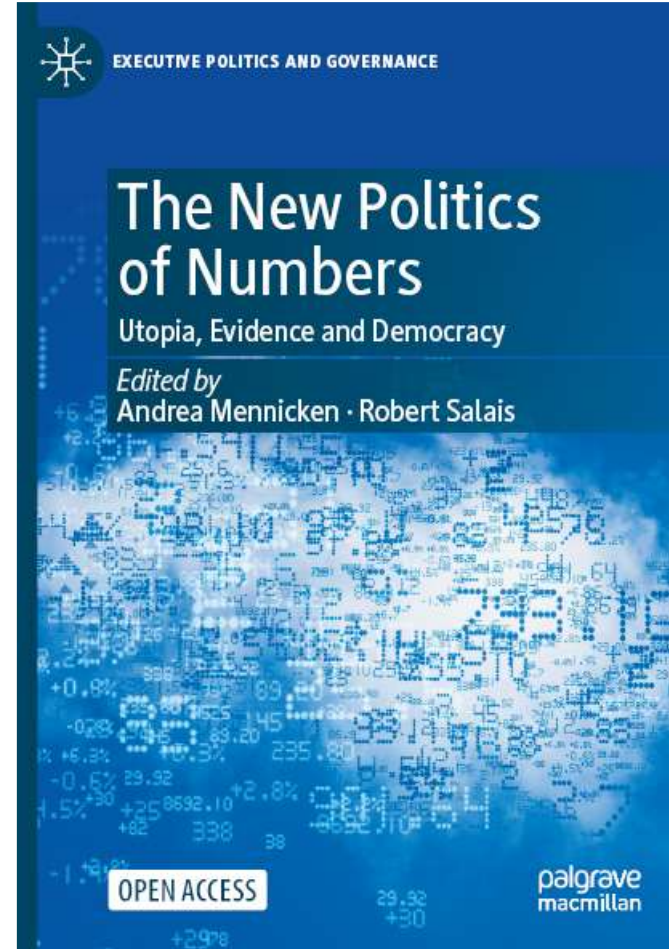
**Evidence based policy**

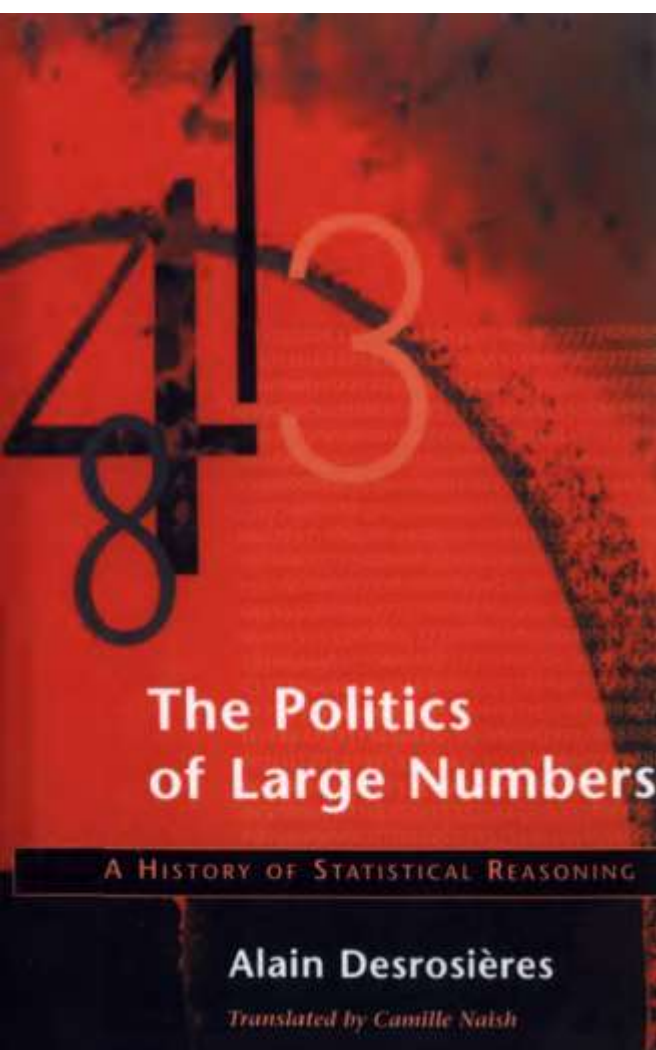
**Statistics (creating things that hold together (Desrosières) for the solution of practical problems)**

**Policy based evidence**

Governance driven quantification (a reversal of the statistical pyramid)

CHAPTER 12, “La donnée n’est pas un donné”: Statistics, Quantification and Democratic Choice, *Robert Salais*





Alain Desrosières: “Making things that hold”

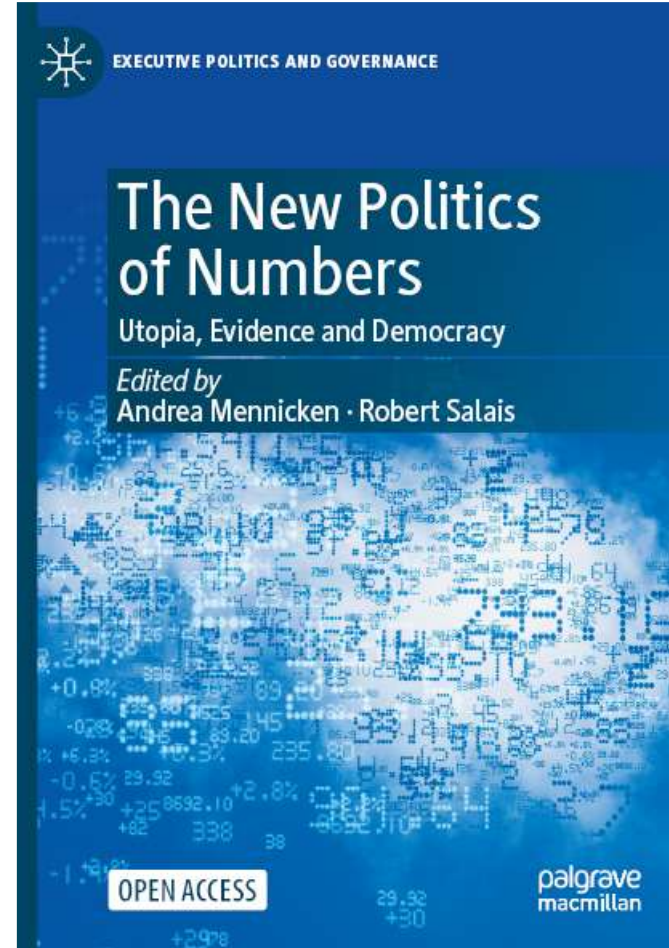
The construction of statistical concepts and categories that can serve for action

**BUT**

“It is because the moment of objectification can be made autonomous that the moment of action can be based on firmly established objects”

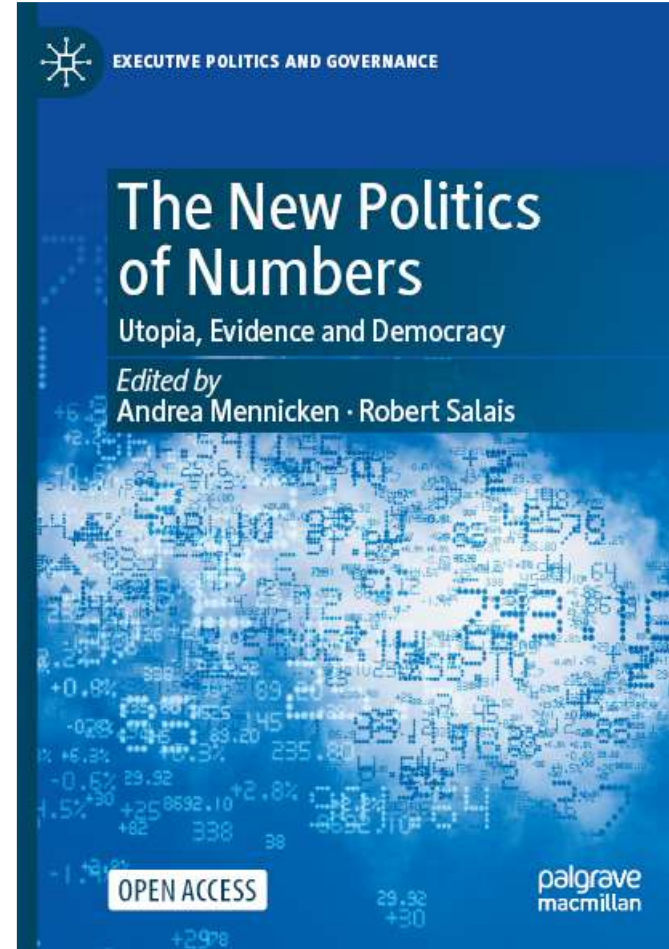
Governance driven quantification is based on pretended objectivity (neutrality), reductionism and justificationism that contribute to a loss of democratic agency (a-democracy)

CHAPTER 12, “La donnée n’est pas un donné”: Statistics, Quantification and Democratic Choice, *Robert Salais*

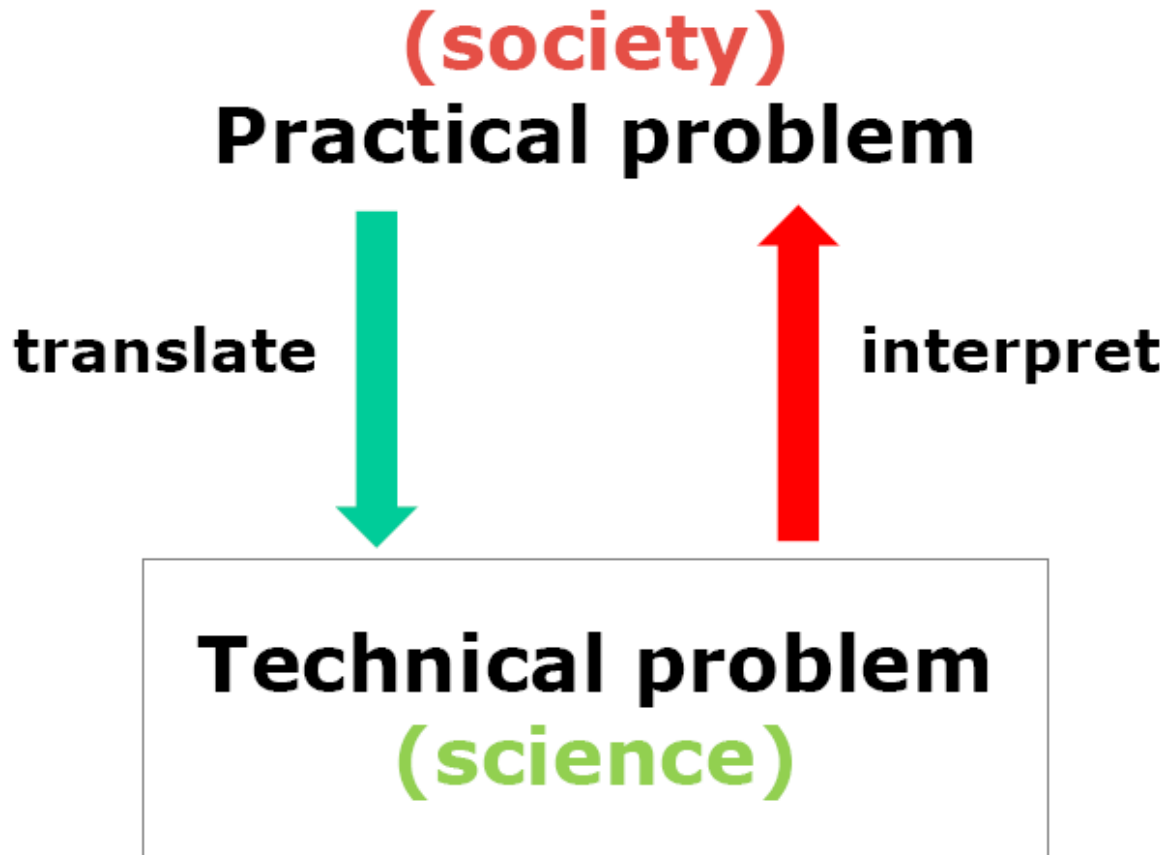


Contesting unjust/unfair governance arrangement is impossible without producing alternative constructions of evidence – that requires muscles not easily available to the lay citizen

CHAPTER 12, “La donnée n’est pas un donné”: Statistics, Quantification and Democratic Choice, *Robert Salais*



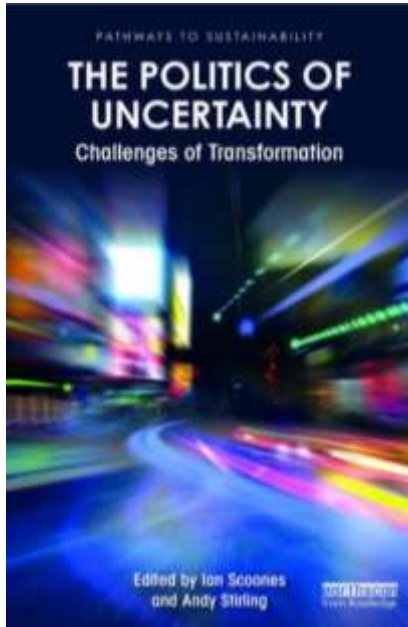




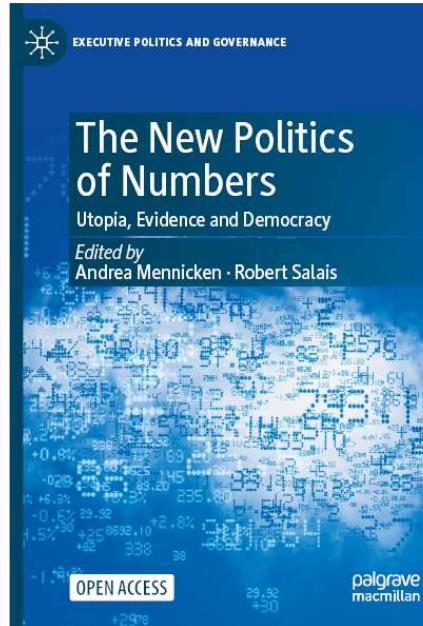
Courtesy of Jeroen  
van der Sluijs



Drawn after Ravetz, J.,  
1971, Scientific  
Knowledge and its  
Social Problems, Oxford  
University Press.



2020



2022



2023

## Politics and numbers



ARTICLE IN PRESS

COMMENTARY | 20 JULY 2020

## Five ways to ensure that models serve society: a manifesto

Pandemic politics highlight how predictions need to be transparent and feasible to better insight, not blame.

By Andrea Saltelli<sup>1,2,3</sup>, Gabriele Serrano<sup>4</sup>, Roberto Arino<sup>5</sup>, Luca Di Lorenzo<sup>6</sup>, Stefano Di Iorio<sup>7</sup>, Giovanni Di Stefano<sup>8</sup>, Marco Fedrizzi<sup>9</sup>, Giancarlo Agha Jani<sup>10</sup>, Giovanni La Parola<sup>11</sup>, Giacomo Lippi<sup>12</sup>, Marco Pappalardo<sup>13</sup>, Tommaso Paganoni<sup>14</sup>, Thomas M. Post<sup>15</sup>, Anand Prasad<sup>16</sup>, Robert R. Rizzo<sup>17</sup>, Scott D. Soderstrom<sup>18</sup>, Erik Steiner<sup>19</sup>, David Szendrői<sup>20</sup>, Yuhan S. Park<sup>21</sup>, Andrea Saltelli<sup>22</sup>, Antonio S. Silva<sup>23</sup> & Paolo A. Uberti<sup>24</sup>

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## What can mathematical modelling contribute to a sociology of quantification?

[Andrea Saltelli](#)<sup>1,2,3</sup> & [Arnald Puy](#)

*Humanities and Social Sciences Communications* **10**, Article number: 213 (2023) | [Cite this article](#)

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Article | [Open access](#) | Published: 19 August 2020

## From sociology of quantification to ethics of quantification

[Andrea Saltelli](#)<sup>1,2,3</sup> & [Monica Di Fazio](#)<sup>4,5</sup>

*Humanities and Social Sciences Communications* **7**, Article number: 69 (2020) | [Cite this article](#)

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Futures

Volume 116, February 2020, 102509



Essays

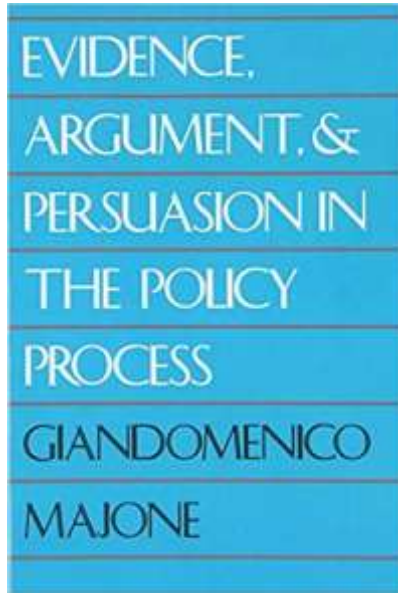
## Ethics of quantification or quantification of ethics?

[Andrea Saltelli](#)

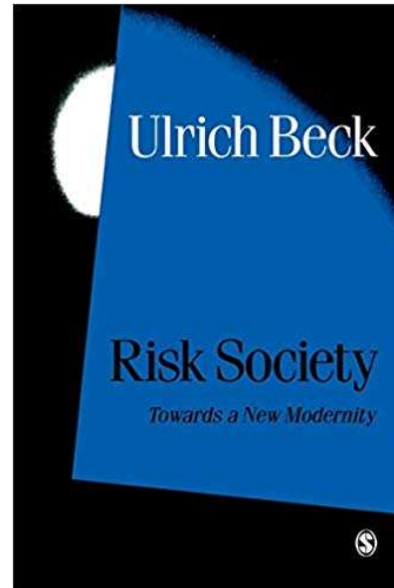
# From Ulrich Beck to Giandomenico Majone: the technique is never neutral



Ulrich Beck  
(1944 –2015)



1989



1992 (1986)



Environmental Science & Policy

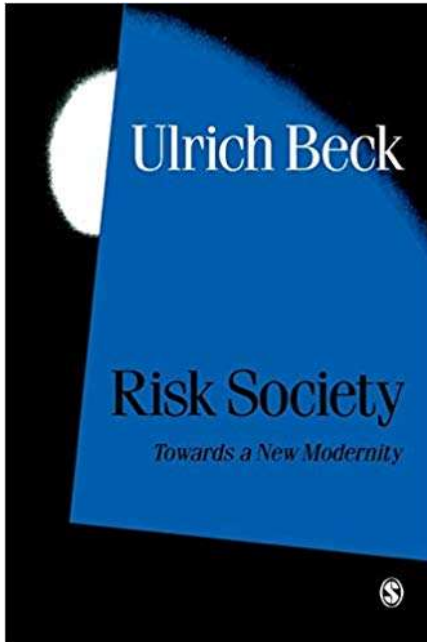
Volume 106, April 2020, Pages 87-98



The technique is never neutral. How  
methodological choices condition the  
generation of narratives for sustainability

Andrea Saltelli <sup>a, b, R, BB</sup>, Lorenzo Benini <sup>c</sup>, Silvio Funtowicz <sup>a</sup>, Mario Giampietro <sup>d, e</sup>, Matthias Kaiser <sup>a</sup>,  
Erik Reinert <sup>h, f</sup>, Jeroen P. van der Sluijs <sup>h, B, h</sup>

Science as a self-service shop for financially well-endowed customers in need of arguments  
(Beck 1992)

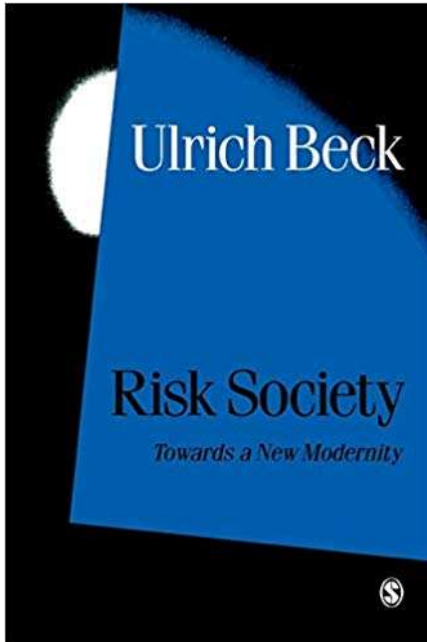


1992 (1986)



Ulrich Beck  
(1944 –2015)

“... from the experts and the fundamental controversies they have fought out (or not fought out) one can learn how unwelcome results can be blocked professionally (by methodological criticism, for instance).”(Beck 1992)



1992 (1986)



Ulrich Beck  
(1944 –2015)

EVIDENCE,  
ARGUMENT, &  
PERSUASION IN  
THE POLICY  
PROCESS  
GIANDOMENICO  
MAJONE

Since to say anything of importance in public policy requires value judgment, this artificial separation between values and rational capacity is a threat to all notions of public deliberation and defensible policy choices (p. 8)

Multiple policy evaluation should also be possible. It would recognize the legitimacy of the different perspectives ... the objective is not to construct a grand model that would combine all the partial perspectives into...a weighted average ...of equity, effectiveness, legality ... (p.9)

EVIDENCE,  
ARGUMENT, &  
PERSUASION IN  
THE POLICY  
PROCESS  
GIANDOMENICO  
MAJONE

The pretended distinction between facts and value is used instrumentally

In the policy process fact and values cannot be separated in the making of an argument

# The impossible separation between facts and values is one of the 'keys' of post-normal science


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## What is Post-normal Science? A Personal Encounter

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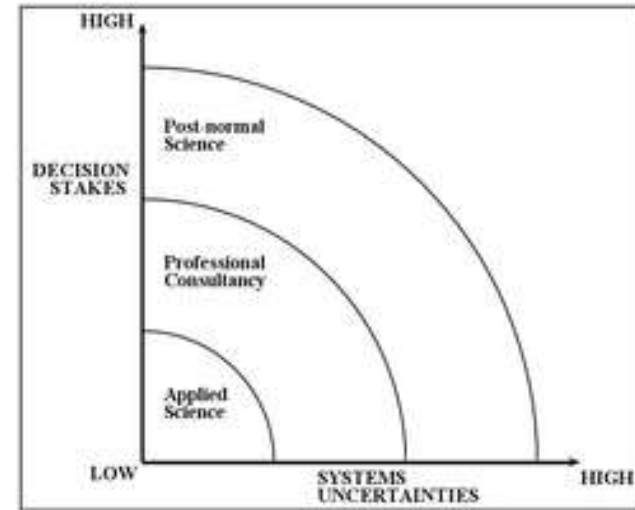
Andrea Saltelli 

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**Foundations of Science**

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S. Funtowicz and J. R. Ravetz, 'Science for the post-normal age', *Futures*, vol. 25, no. 7, pp. 739–755, Sep. 1993, doi: 10.1016/0016-3287(93)90022-L.



EVIDENCE,  
ARGUMENT, &  
PERSUASION IN  
THE POLICY  
PROCESS  
GIANDOMENICO  
MAJONE

“In any area of public policy the choice of instruments, far from being a technical exercise that can be safely delegated to the experts, reflects as in a microcosm all the political, moral, and cultural dimensions of policy-making”

EVIDENCE,  
ARGUMENT, &  
PERSUASION IN  
THE POLICY  
PROCESS

GIANDOMENICO

MAJONE

“ [my suggestion is to view a] policy analyst as a producer of arguments, capable of distinguishing between good and bad rhetoric, rather than as a “number cruncher” ...

Power asymmetries in the framing of issues:  
those who have the deepest pockets marshal  
the best [foremost ‘scientific’] evidence




Futures  
Available online 26 October 2021  
In Press, Journal Pre-proof ?



---

## Science, the endless frontier of regulatory capture

Andrea Saltelli <sup>a</sup>  , Dorothy J. Dankel <sup>b, c</sup>, Monica Di Fiore <sup>d</sup>, Nina Holland <sup>e</sup>, Martin Pigeon <sup>e</sup>

# An epistemic ladder for regulatory capture

- Epistemic. Invalidating the inference or the methods
- Institutional. Delegitimising and/or 'colonising' institutions
- Political. Promoting a worldview where the very idea of regulation is undesirable

## Science, the endless frontier of regulatory capture

Andrea Saltelli <sup>a, \*</sup>, Dorothy J. Dankel <sup>b, c</sup>, Monica Di Fiore <sup>d</sup>, Nina Holland <sup>e</sup>, Martin Pigeon <sup>e</sup>



Credits: <https://www.subpng.com/>



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### Impact assessment culture in the European Union. Time for something new?

Andrea Saltelli<sup>a,b,\*</sup>, Marta Kuc-Czarnecka<sup>c</sup>, Samuele Lo Piano<sup>d</sup>, Máté János Lőrincz<sup>d</sup>,  
Magdalena Olczyk<sup>c</sup>, Arnald Puy<sup>e</sup>, Erik Reinert<sup>f,g</sup>, Stefán Thor Smith<sup>d</sup>,  
Jeroen P. van der Sluijs<sup>b,h</sup>

A reaction to the treating of conflicted issues, where none of the involved parties is neutral, with techniques routinely presented as neutral

**The present:** excessive reliance on a standard neoclassic economic toolbox that neglects alternative perspectives

**The new:** non-Ricardian economics, bioeconomics and qualitative-quantitative methods from post-normal science



Source: <https://sellhimvs.life>

**The aim:**

- more inclusive uses of quantitative evidence
- more possible futures explore

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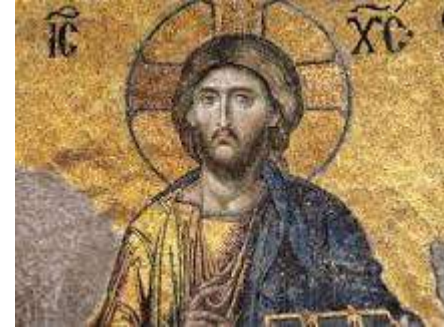


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Magdalena Olszyk<sup>f</sup>, Arnald Puy<sup>g</sup>, Erik Reinert<sup>h,i</sup>, Stefan Thor Smith<sup>j</sup>,  
Jeroen P. van der Sluijs<sup>k,l</sup>

# A technocratic orthodoxy in the EU? Why 'reductionism'?

- The single market needs a centralized, standardized risk assessment approach
- EU pro-industry (e.g. biotech) growth agenda
- Fear of opening the road to endless deconstruction of planned policies



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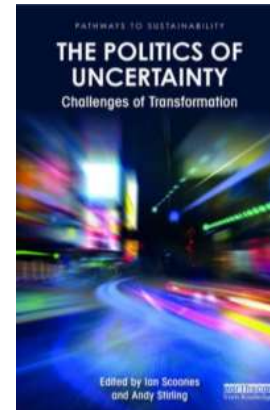
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Andrea Saltelli<sup>a,b,c</sup>, Maria Kuc-Czarnecka<sup>d</sup>, Samuele Lo Piano<sup>e</sup>, Máté János Lőrincz<sup>f</sup>,  
Magdalena Olezyk<sup>g</sup>, Arnald Puy<sup>h</sup>, Erik Reinert<sup>i,j</sup>, Stefan Thor Smith<sup>k</sup>,  
Jeroen P. van der Sluis<sup>l,h</sup>

See 'The unravelling of technocratic orthodoxy', of P. van Zwanenberg





Terms such as ‘expected utility’, ‘decision theory’, ‘life cycle assessment’, ‘ecosystem services’, ‘externality assessment’, ‘impact analysis’, ‘sound scientific decisions’ and ‘evidence-based policy’ deployed to deliver precise answers

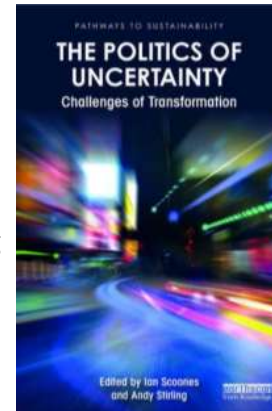
- Is the precision rhetorical?
- Is the aim to prove that a given policy or practice are ‘safe’ or ‘best’



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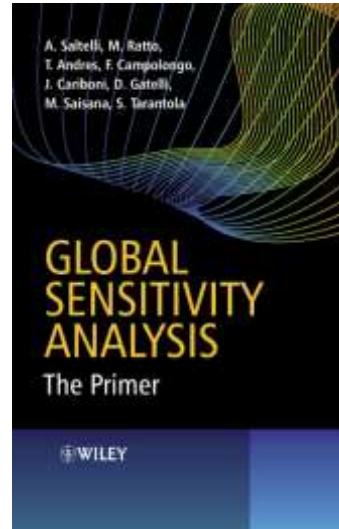
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See ‘Uncertainty and the Politics of Transformation’ of I. Scoones and A. Stirling



# Proposed lenses

- Non-Ricardian economics
- Bioeconomics (in the sense of Nicholas Georgescu-Roegen)
- Approaches originated in the context of post-normal science
  - global uncertainty and sensitivity analysis
  - sensitivity auditing
  - NUSAP
  - quantitative storytelling



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# Contrasting invisibilities

Non-Ricardian economics: invisibility of qualities, whereby all hours of work are taken to have the same value

Bioeconomics: invisibility of nature, whereby natural resources are considered as infinite or infinitely substitutable

Post-normal science: invisibility of values, obfuscated by the purported neutrality of quantification



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Erik S. Reinert; Nicholas Georgescu-Roegen; Jerome Ravetz and Silvio Funtowicz

# Test cases

- Climate, energy, and Sámi herders
- Climate and Water security
- Biodiversity and pollinator decline
- Lessons learned from COVID-19



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Andrea Saltelli , Joachim P. Sturmberg, Daniel Sarewitz, John P. A. Ioannidis

First published: 06 June 2023 | <https://doi.org/10.1111/jep.13876> | Citations: 2



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Andrea Saltelli<sup>1,2,3,4</sup>, Marta Kuc-Czarnecka<sup>5</sup>, Samuele Lo Piano<sup>6</sup>, Máté János Lórincz<sup>4</sup>, Magdalena Olczyk<sup>7</sup>, Arnald Puy<sup>8</sup>, Erik Reinert<sup>9</sup>, Stefán Thor Smith<sup>4</sup>, Jeroen P. van der Sluis<sup>10</sup>

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## Irrigation modelling needs better epistemology

Arnald Puy , Michela Massimi, Bruce Lanford & Andrea Saltelli

Nature Reviews Earth & Environment 4, 427–428 (2023) | [Cite this article](#)

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Robinson, Claire, et al. 2018. “Ensuring a Higher Level of Protection from Pesticides in Europe: The Problems with Current Pesticide Risk Assessment Procedures in the EU –and Proposed Solutions. A White Paper Prepared for the Coalition Citizens for Science in Pesticide Regulation.” <https://doi.org/10.5281/ZENODO.2543743>.



# Test cases

- Climate, energy, and Sámi herders ←
- Climate and Water security
- Biodiversity and pollinator decline
- Lessons learned from COVID-19



[https://www.researchgate.net/publication/233760548\\_Eurasian\\_Arctic\\_Land\\_Cover\\_and\\_Land\\_Use\\_in\\_a\\_Changing\\_Climate/figures?lo=1](https://www.researchgate.net/publication/233760548_Eurasian_Arctic_Land_Cover_and_Land_Use_in_a_Changing_Climate/figures?lo=1)

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# Climate, energy, and Sámi herders

A grid interconnection between Scandinavian countries and Iceland?

Complex web of interests and vulnerabilities

Negative effect of (green) energy production in Scandinavia for the migratory patterns of reindeers, against increased infrastructural burden in Iceland

## Norwegian wind farms violate rights of Sámi reindeer herders, says court



Copyright: PHOTO: SHOOTER / GETTY IMAGES

**Norway's Supreme Court has ruled that two western wind farms have illegally encroached on the grazing land of Sámi reindeer herders.**





# Climate, energy, and Sámi herders

Loss of habitat, economic predation and legal frameworks “potentially dwarf the putative effects of projected climate change on reindeer pastoralism”

N. J. C. Tyler *et al.*, ‘Saami reindeer pastoralism under climate change: Applying a generalized framework for vulnerability studies to a sub-arctic social-ecological system’, *Global Environmental Change*, vol. 17, no. 2, pp. 191-206, May 2007, doi: 10.1016/j.gloenvcha.2006.06.001.



[https://www.researchgate.net/publication/233760548\\_Eurasian\\_Arctic\\_Land\\_Cover\\_and\\_Land\\_Use\\_in\\_a\\_Changing\\_Climate/figures?lo=1](https://www.researchgate.net/publication/233760548_Eurasian_Arctic_Land_Cover_and_Land_Use_in_a_Changing_Climate/figures?lo=1)

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Jeroen P. van der Sluijs<sup>b,h</sup>



# Climate, energy, and Sámi herders

Reductionism in the EU energy policy making: the problem are the emissions and the solution is swapping fossil fuel based with renewable

This ignores causal linkages with social and environmental structures, such as how this interfere with the Sámi herders

[https://www.researchgate.net/publication/233760548\\_Eurasian\\_Arctic\\_Land\\_Cover\\_and\\_Land\\_Use\\_in\\_a\\_Changing\\_Climate/figures?lo=1](https://www.researchgate.net/publication/233760548_Eurasian_Arctic_Land_Cover_and_Land_Use_in_a_Changing_Climate/figures?lo=1)



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Jeroen P. van der Sluijs<sup>b,h</sup>

# Chemicals pollution and biodiversity and ecosystem services: the case of neonicotinoid insecticides and entomofauna collapse (insectageddon)



Impact assessment culture in the European Union. Time for something new?

Andrea Saltelli<sup>a,b,h,i</sup>, Marta Kuc-Czarnecka<sup>a</sup>, Samuele Lo Piano<sup>d</sup>, Máté János Lőrincz<sup>d</sup>,  
Magdalena Olszyk<sup>e</sup>, Arnold Puy<sup>f</sup>, Erik Reinert<sup>g</sup>, Stefan Thor Smith<sup>g</sup>,  
Jeroen P. van der Sluijs<sup>b,h</sup>

[www.andreasaltelli.eu](http://www.andreasaltelli.eu)

<https://orcid.org/0000-0003-4222-6975>

[@AndreaSaltelli@mstdn.social](https://twitter.com/AndreaSaltelli)

<https://www.youtube.com/channel/UCz26ZK04xchekUy4GevA3DA>

Late lessons from early warnings:  
science, precaution, innovation

# Pollinators decline has been a policy issue for some time now ... see this 2013 report from the European Environment Agency



Impact assessment culture in the European Union. Time for something new?

Andreas Sahelli<sup>a,b,h</sup>, Marta Kuc-Czarnecka<sup>a</sup>, Samuele Lo Piano<sup>d</sup>, Máté János Lőrincz<sup>d</sup>,  
Magdalena Olszyk<sup>e</sup>, Arnold Puy<sup>g</sup>, Erik Reinert<sup>c,g</sup>, Stefan Thor Smith<sup>e</sup>,  
Jeroen P. van der Sluijs<sup>b,h</sup>



[h](#)

# Decline of pollinators

## Insects Opinion

# Insectageddon: farming is more catastrophic than climate breakdown

## *George Monbiot*



## The shocking collapse of insect populations hints at a global ecological meltdown

🐦 @GeorgeMonbiot

Fri 20 Oct 2017 12:11 BST



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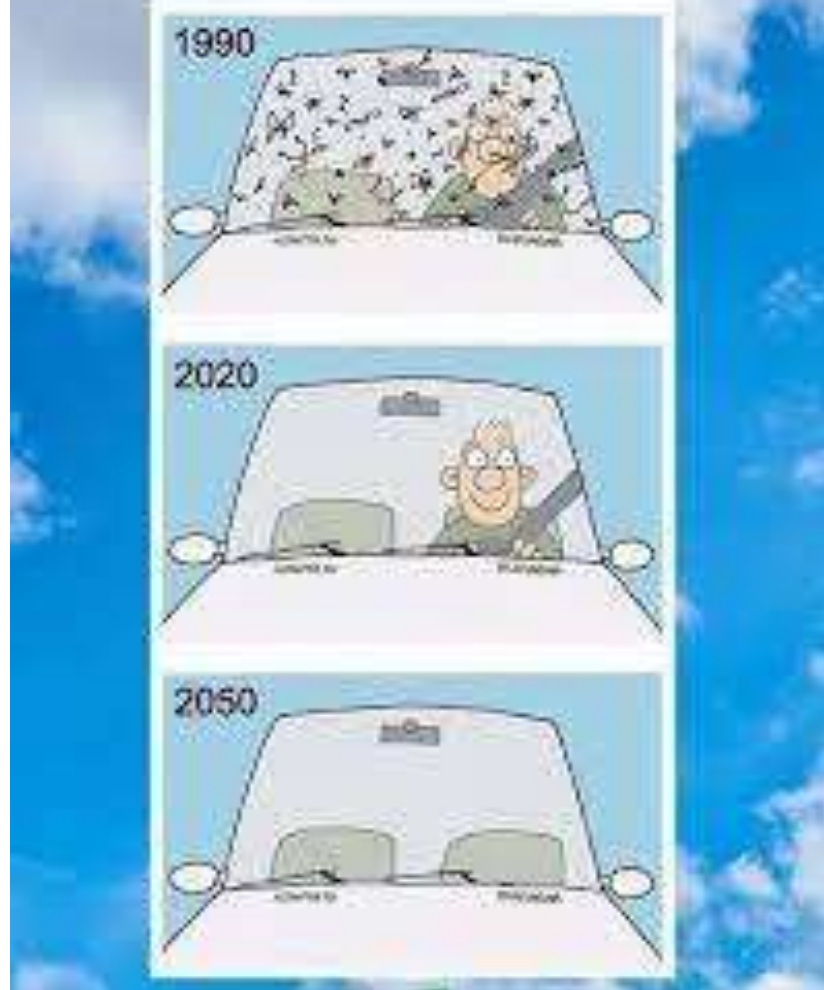
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# Windshield effect



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Magdalena Olszyk<sup>e</sup>, Arnold Puy<sup>f</sup>, Erik Reinert<sup>g,h</sup>, Stefan Thor Smith<sup>e</sup>,  
Jeroen P. van der Sluijs<sup>b,h</sup>

Source: <https://jeffreyrubel.substack.com/p/bugs-on-a-windshield>

While the foraging area of bees may extend over up to 9 km away from the honeybees, and the impact of insecticides implies bioaccumulation and hence long term effects, **the prevailing measuring techniques held valid in regulation fail to detect the toxicity of these insecticides**

See: Van der Sluijs, Jeroen P., Noa Simon-Delso, Dave Goulson, Laura Maxim, Jean-Marc Bonmatin, and Luc P Belzunces. 2013. “Neonicotinoids, Bee Disorders and the Sustainability of Pollinator Services.” *Current Opinion in Environmental Sustainability* 5 (3–4): 293–305.



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Andreas Saltelli<sup>a,b,c</sup>, Marta Kuc-Czarnecka<sup>a</sup>, Samuele Lo Piano<sup>d</sup>, Máté János Lőrincz<sup>d</sup>,  
Magdalena Ożczyk<sup>e</sup>, Arnold Puy<sup>f</sup>, Erik Reinert<sup>g,h</sup>, Steffen Thor Smith<sup>e</sup>,  
Jeroen P. van der Sluijs<sup>a,b</sup>





A jungle of conflicts of interests, loopholes, and sloppy regulation in the way pesticides are regulated in the EU



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Andreas Sahelli<sup>a,b,c</sup>, Marta Kuc-Czarnecka<sup>a</sup>, Samuele Lo Piano<sup>d</sup>, Máté János Lőrincz<sup>d</sup>,  
Magdalena Olszyk<sup>e</sup>, Arnold Puy<sup>f</sup>, Erik Reinert<sup>g</sup>, Stefan Thor Smith<sup>h</sup>,  
Jeroen P. van der Sluijs<sup>a,b</sup>



At the level of the narratives, one side insist to a plurality of factors that might explain the decline (including climate change), the other the specific and determinant role of pesticides



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Magdalena Olszyk<sup>e</sup>, Arnold Pay<sup>f</sup>, Erik Reinert<sup>g,h</sup>, Steffen Thor Smith<sup>e</sup>,  
Jeroen P. van der Sluijs<sup>b,h</sup>

# Epilogue

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# The more things change, the more they stay the same: promises of bioeconomy and the economy of promises

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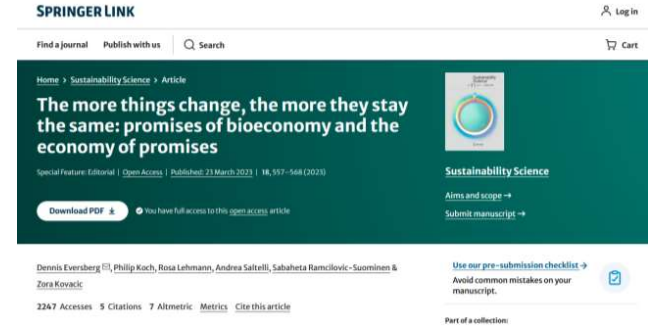
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“... promises of far-reaching change made by recent bioeconomy policies are directed at avoiding transformative change to existing societal arrangements”

More of the same in technological advance and economic expansion will transform societies toward sustainability without transforming anything substantial about them

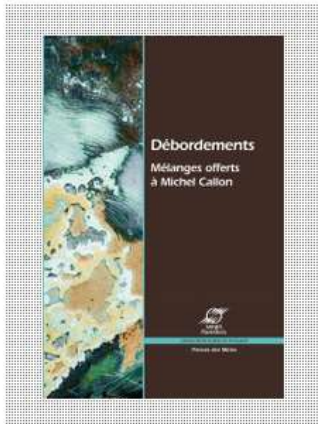


“Innovation” to defuse the political nature of the problem, and to reframe it as a technical one

ETP mobilizes the authority of science and its supposed impending breakthroughs as the mode of achieving change

This amounts to a ‘production of irreversibility’ and ‘lock-ins’ that renders society dependent and can progressively lock out any other solutions (P.-B. Joly)

DÉBORDEMENTS | Madeleine Akrich, Yannick Barthe, Fabian Muniesa, et al.



## On the economics of techno-scientific promises

Pierre-Benoît Joly

p. 203-221

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FULL TEXT



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Governments supply imagery such as that of the “bioeconomy airport” ... plant-based unbreakable window panes and moss walls to filter out air pollution → ‘change’ in the lobby while wide-body planes burning hundreds of tons of fossil kerosene keep taking off from the runway ...

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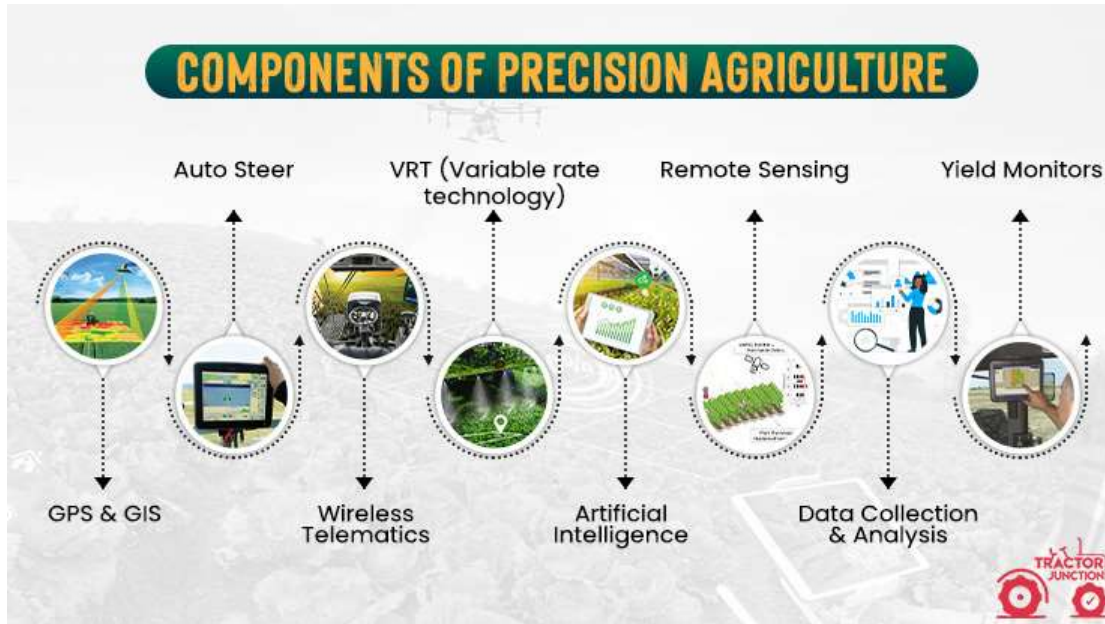
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... technologies promising to boost biomass production by improved control over genetic and environmental factors (GMOs, precision agriculture), ...



Source: <https://www.dnv.com/to2030/technology/precision-agriculture.html>



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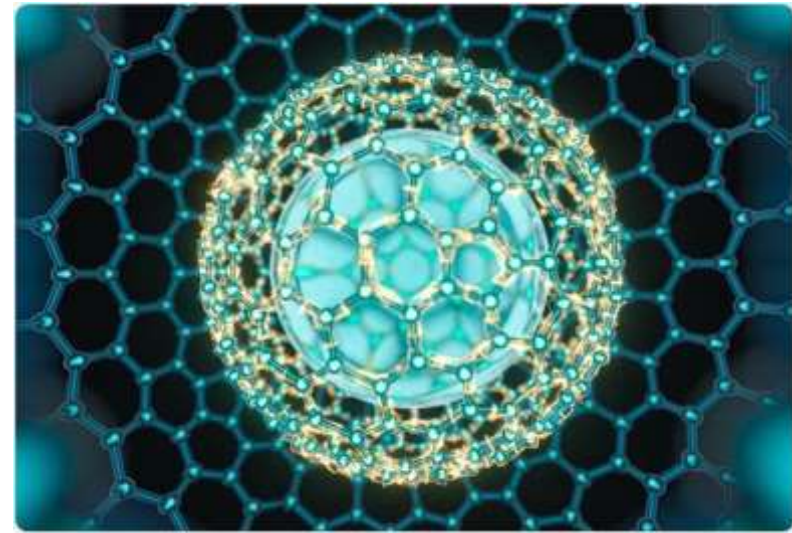
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... and/or substitute fossil-based materials and processes as bio-based drop-in replacements, such as tires made from dandelion or biopolymers produced by genetically modified bacteria



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Source: <https://weibold.com/continental-receives-award-for-tires-made-from-dandelion-rubber>

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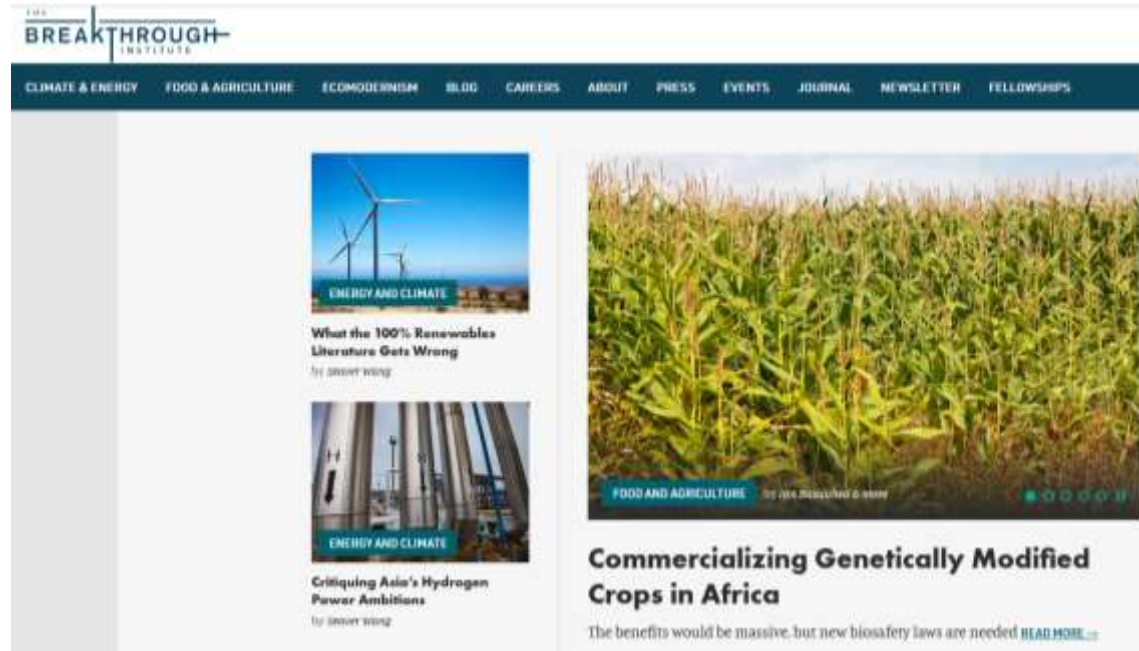
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### The more things change, the more they stay the same: promises of bioeconomy and the economy of promises

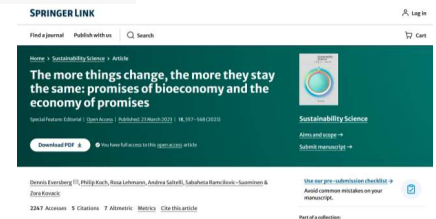
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# The ideology of ecomodernism

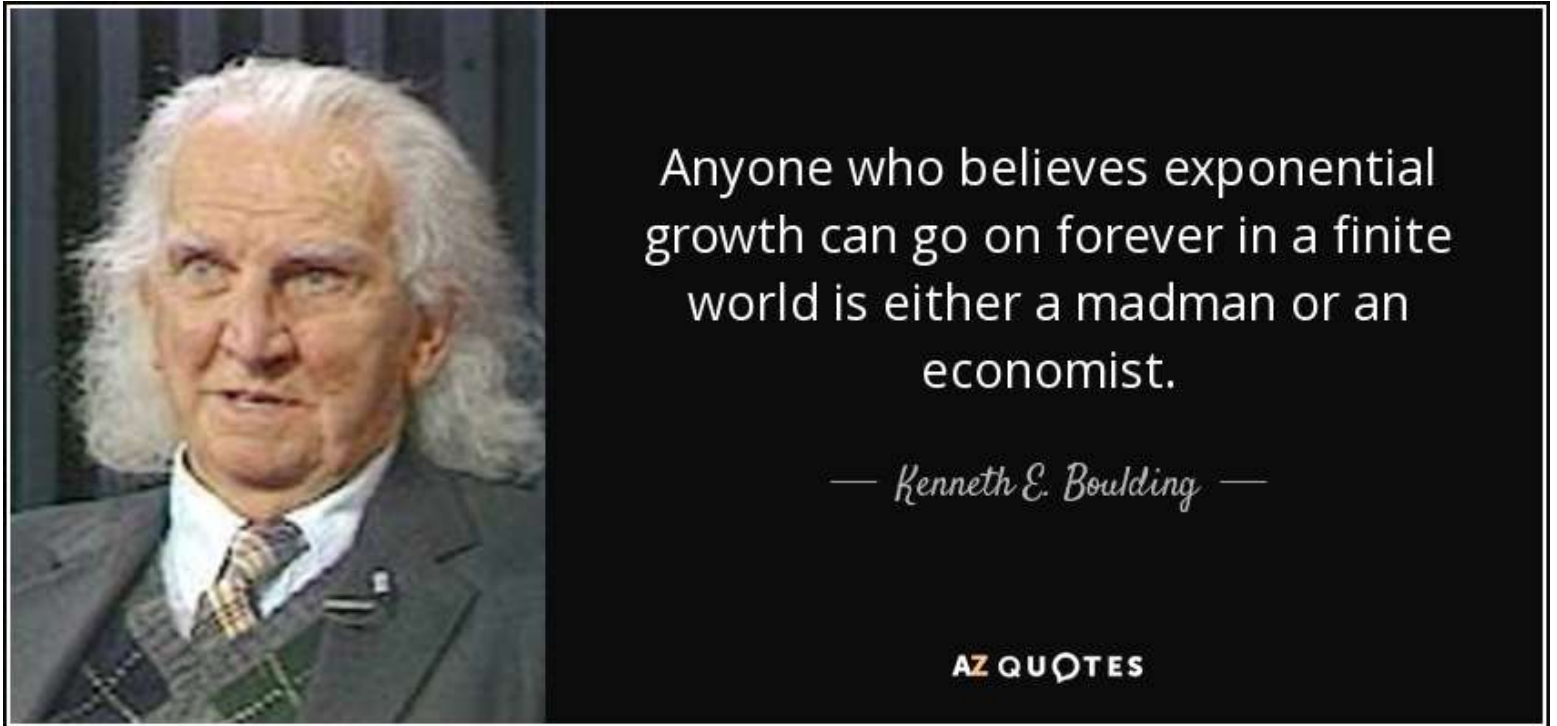


Substantial embraced by both the EU's Green deal and Biden's 'Inflation Reduction Act'





bioeconomy policies: contradictory efforts to deal with the destructive effects of economic expansion while at the same time attempting to keep it going at all costs



# Thank you