

# Scientific integrity

Andrea Saltelli

Open Evidence Research, Open University of Catalonia



Roundtable: "Science Policies, Research Funding,  
and the Future of the University"

EPSA (European Philosophy Of Science Association) 2021  
Turin 15–18 September 2021



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

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NEVER PARIBUS

## Tweets by @AndreaSaltelli



**andrea saltelli**

@AndreaSaltelli

Rapper. Arrested. 2021? 🤔 <https://twitter.com/guardian/status/1362147283492552712>



55m



andrea saltelli Retweeted



**Philip Stark**

@philipstark

Replying to @AndreaSaltelli and 13 others

The IHME COVID model qualifies. The underlying Farr model was debunked by the AIDS epidemic, and its 95% next-day prediction intervals for deaths missed up to 70% of the time btw 3/20 & 8/20 [arxiv.org/abs/2004.04734](https://arxiv.org/abs/2004.04734) & [royalsocietypublishing.org/doi/10.1098/rs...](https://royalsocietypublishing.org/doi/10.1098/rs...)



## Definition of *integrity*

1 : firm adherence to a code of especially moral or artistic values : incorruptibility

An incorruptible officer

2 : an unimpaired condition : soundness

The building's integrity was damaged by the earthquake

3 : the quality or state of being complete or undivided : completeness

The integrity of the sacred homeland



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ABSTRACT VIEWS

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# Science, the Endless Frontier of Regulatory Capture

30 Pages • Posted: 12 Mar 2021



[Andrea Saltelli](#)

Universitat Oberta de Catalunya

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University of Bergen

[Monica Di Fiore](#)

Italian National Research Council (CNR) - Institute of Cognitive Sciences and Technologies (ISTC)



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Date Written: March 1, 2021



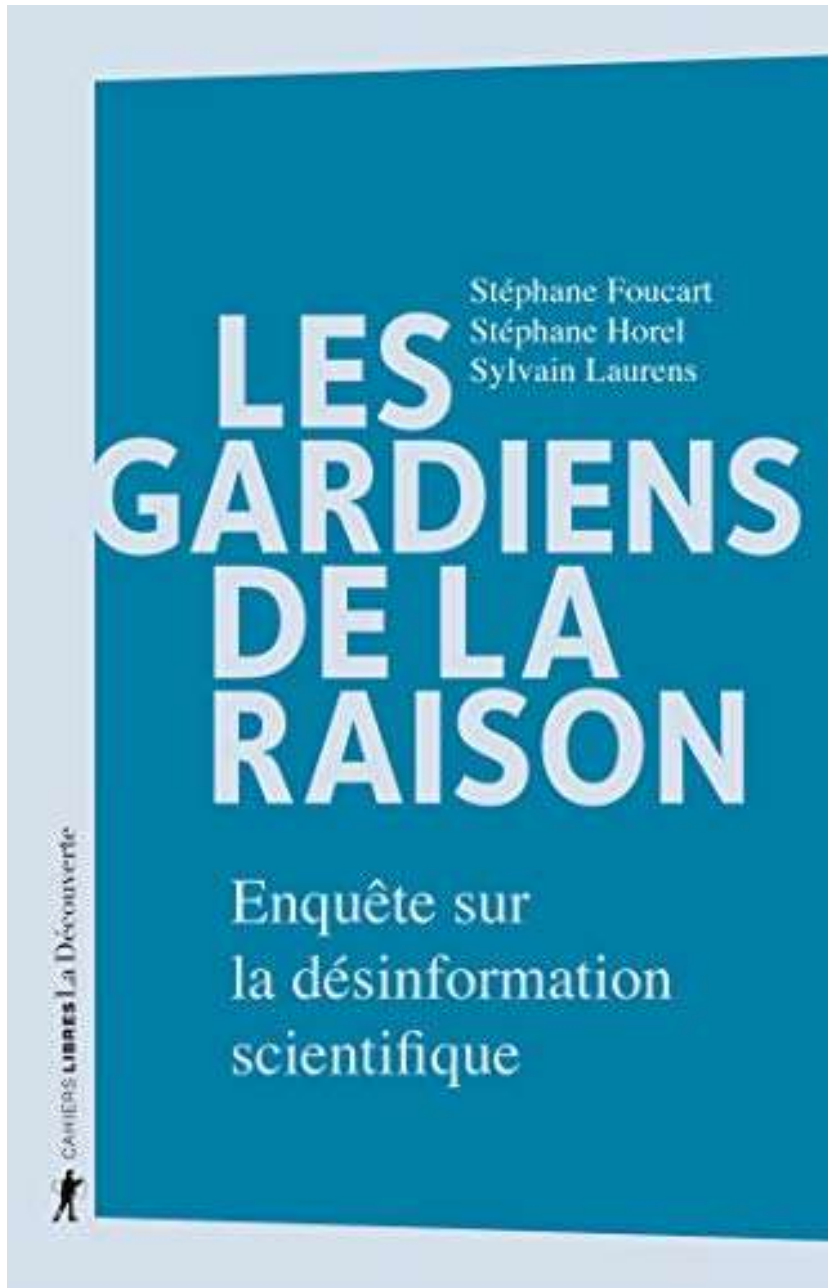
# From the abstract:

... a form of corporate penetration which is based on a strategic use of the image and legitimacy of science

...cases where lobbyists present themselves as upholders of the values of the evidence-based policy, and interested in the methodological and ethical aspect of science for policy

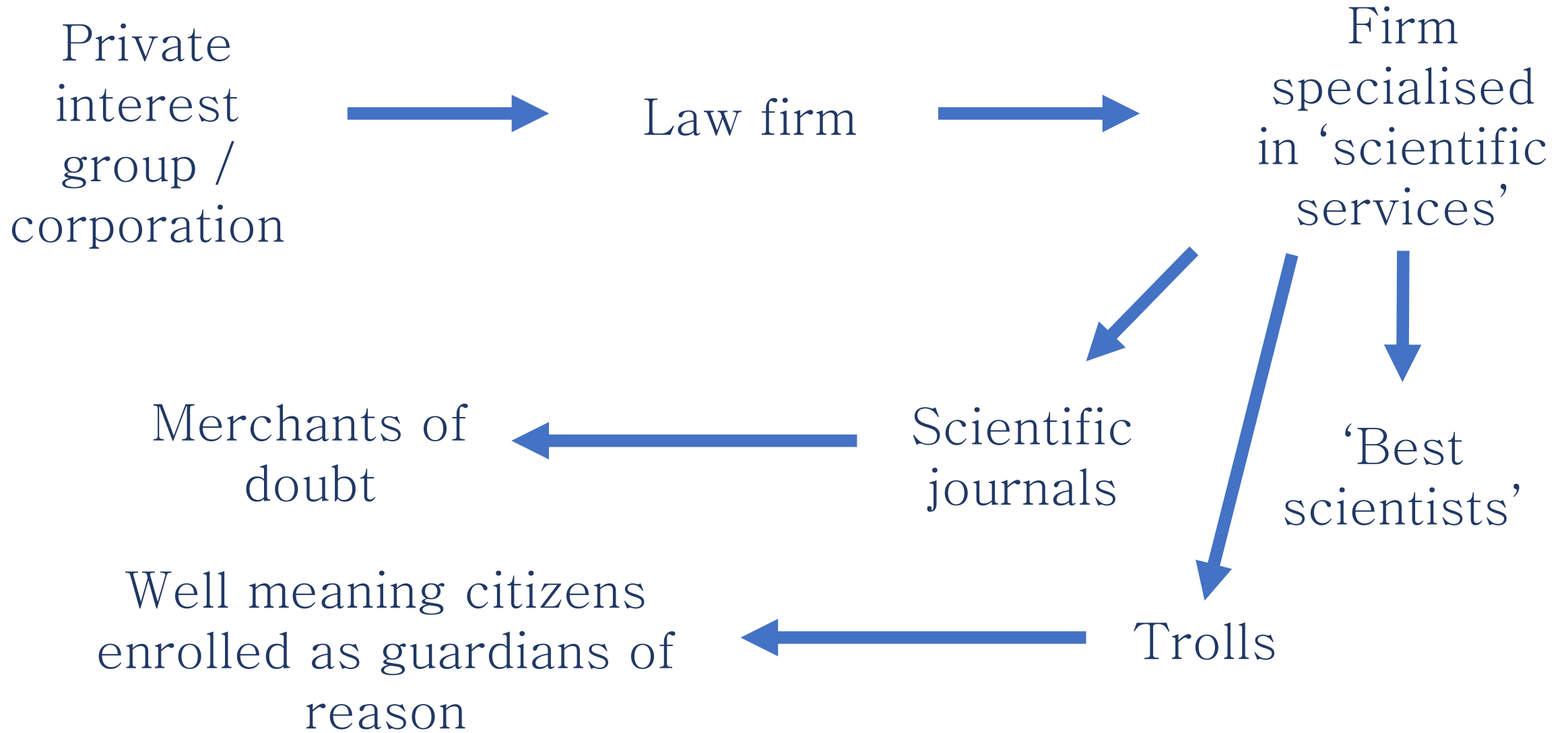
# From the abstract:

Epistemic ladder: lobbyists move from  
**questioning** the evidence to  
**questioning** its legitimacy, all the way to  
**creating** a worldview where not only the evidence, but the very  
idea of regulation, become irrelevant or undesirable

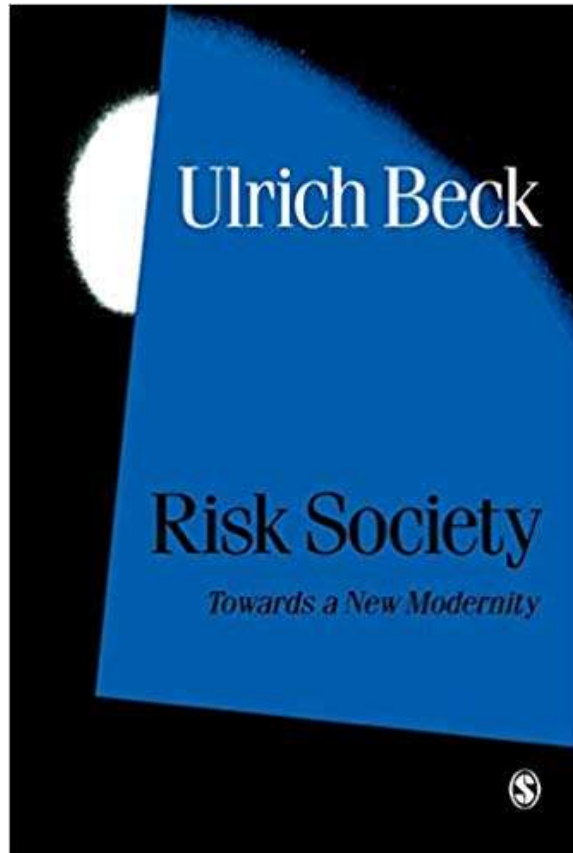


Well-meaning educators, scientific bloggers or micro-influencers, science associations are hijacked by corporate lobbyists to defend industrial positions on issues such as herbicides, genetically modified crops, nuclear energy, climate





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



1992 (1986)

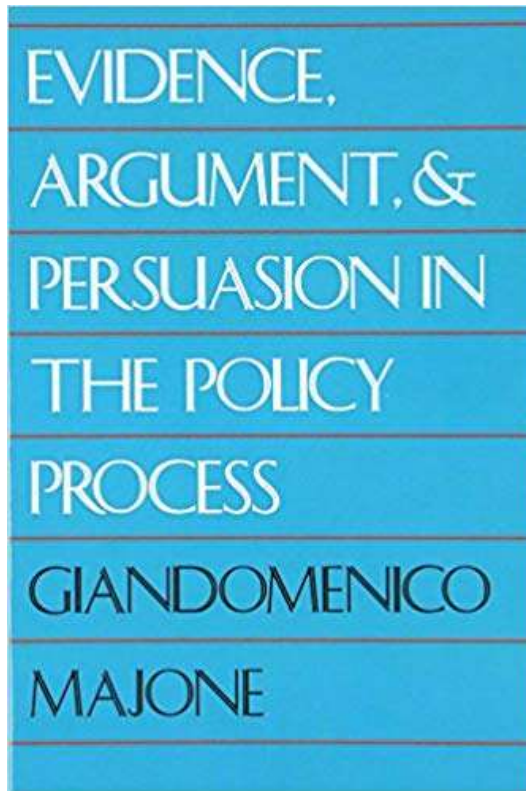


Ulrich Beck  
(1944 –2015)

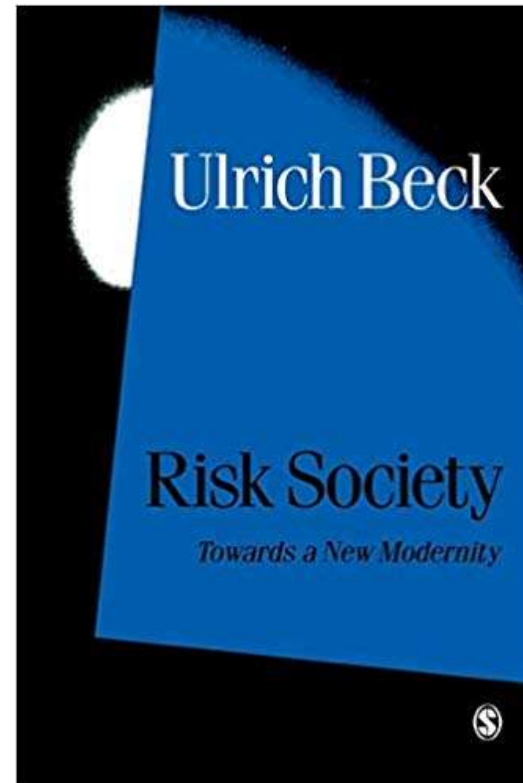
# From Ulrich Beck to Giandomenico Majone: the technique is never neutral



Ulrich Beck  
(1944 –2015)



1989



1992 (1986)



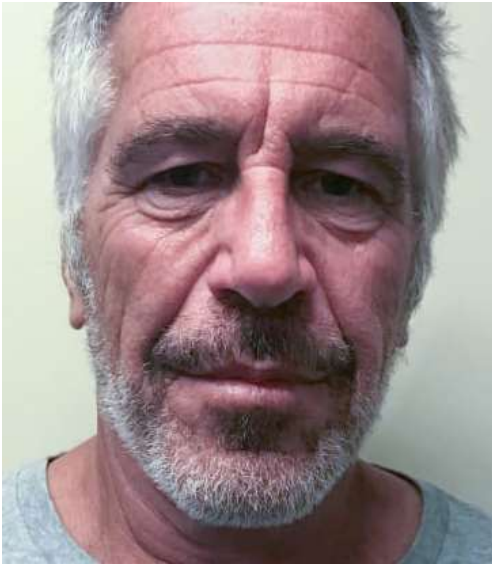
Environmental Science & Policy

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</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>



Jeffrey Epstein  
& paedophilia



Sackler family  
& opioids



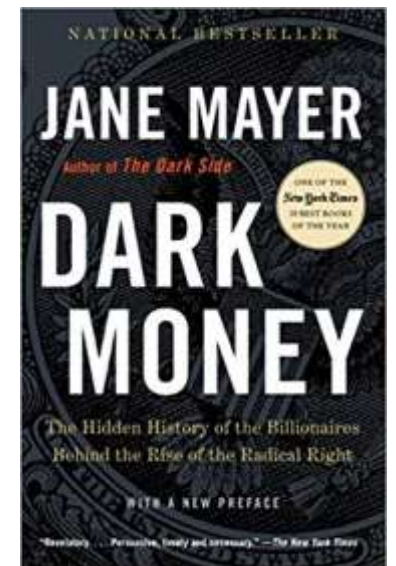
Koch brothers  
& climate

## How Rich Donors Like Epstein (and Others) Undermine Science

ADAM ROGERS

SCIENCE 09.15.2019 07:00 AM

WIRED





## Definition of *integrity*

1 : firm adherence to a code of especially moral or artistic values : incorruptibility

An incorruptible officer

→ Not incorruptible





## Definition of *integrity*

2 : an unimpaired condition : soundness

The building's integrity was damaged by the earthquake



## Futures

Volume 91, August 2017, Pages 5-11



# What is science's crisis really about?

Andrea Saltelli <sup>a, b</sup>  , Silvio Funtowicz <sup>a</sup>



## Futures

Volume 104, December 2018, Pages 85-90



# Why science's crisis should not become a political battling ground

Andrea, Saltelli 

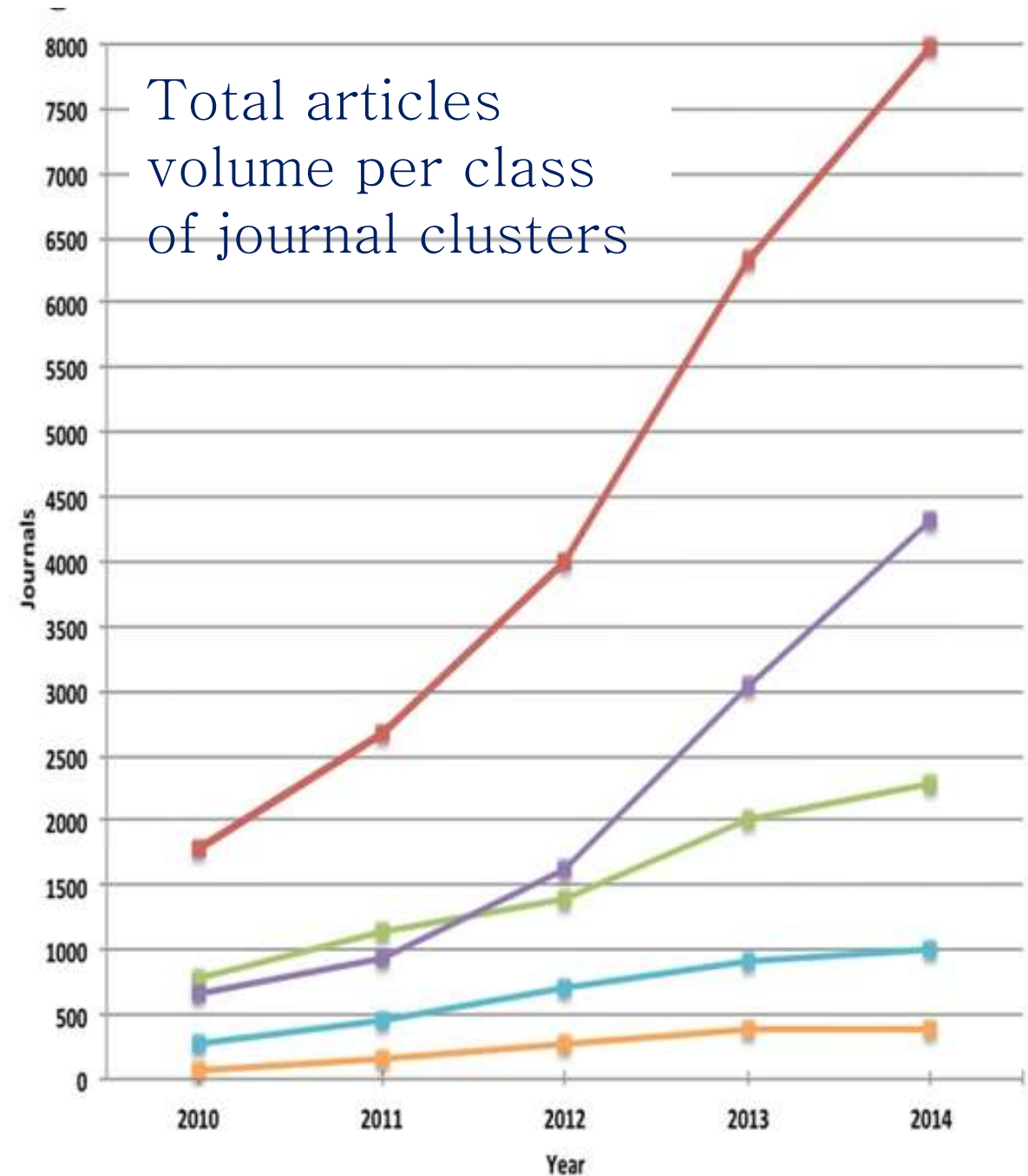


Silvio Funtowicz

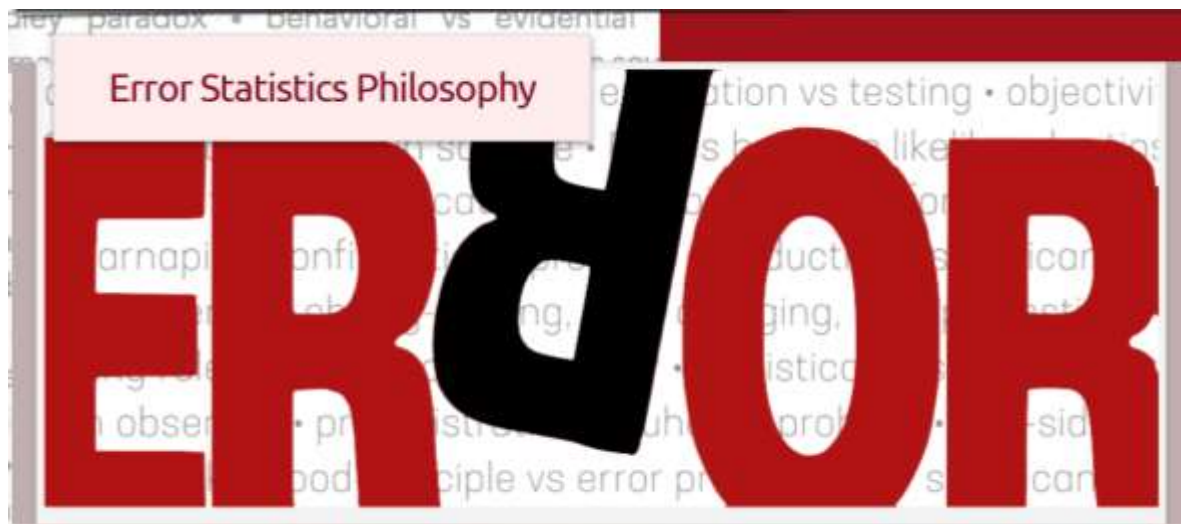
Failed replications, entire subfields going bad,  
fraudulent peer reviews, predatory publishers,  
perverse metrics, statistics on trial ...



C. Shen and B.-C. Björk, “‘Predatory’ open access: a longitudinal study of article volumes and market characteristics,” BMC Med., vol. 13, no. 1, p. 230, Dec. 2015.









### A. Saltelli (Guest post): What can we learn from the debate on statistical significance?

Posted on November 22, 2019 by Mayo



**Professor Andrea Saltelli**  
Centre for the Study of the Sciences and the Humanities (SVT), University of Bergen (UIB, Norway), &  
Open Evidence Research, Universitat Oberta de Catalunya (UOC), Barcelona

*What can we learn from the debate on statistical significance?*

Recent Comments:



## Cargo-cult statistics and scientific crisis

Written by Philip B. Stark and Andrea Saltelli on 05 July 2018. Posted in [Science](#)



Statistics in the  
wake of the  
reproducibility  
crisis

Statistical wars on significance





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

Pandemic politics highlight how predictions need to be transparent and humble to invite insight, not blame.

Andrea Saltelli , Gabriele Bammer, Isabelle Bruno, Erica Charters, Monica Di Fiore, Emmanuel Didier, Wendy Nelson Espeland, John Kay, Samuele Lo Piano, Deborah Mayo, Roger Pielke Jr, Tommaso Portaluri, Theodore M. Porter, Arnald Puy, Ismael Rafols, Jerome R. Ravetz, Erik Reinert, Daniel Sarewitz, Philip B. Stark, Andrew Stirling, Jeroen van der Sluijs & Paolo Vineis

The pandemic gives models more power, visibility and controversy while highlighting deep rooted malpractices

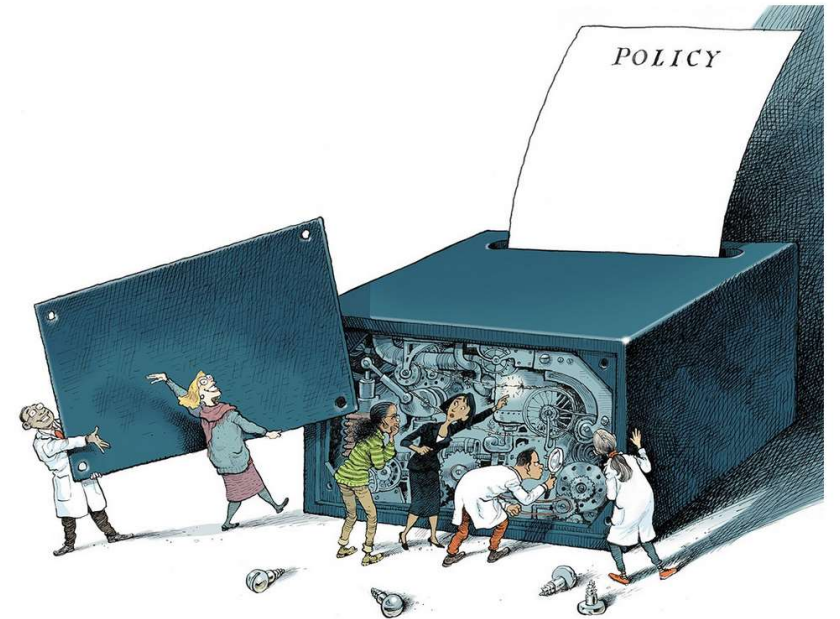
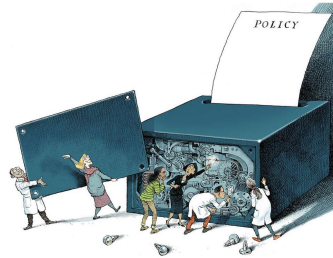




Illustration by David Parkins



COVID-19 policies dictated by  
'science' with several digits  
precision in the presence of  
fundamental uncertainties



Undocumented research code used  
as a policy tool (chameleon models)



Pfleiderer, P. Chameleons: The Misuse of Theoretical Models in Finance and Economics. *Economica* 87, 81–107 (2020).



## Definition of *integrity*

2 : an unimpaired condition : soundness

The building's integrity was damaged by the earthquake

→ Not undamaged



## Definition of *integrity*

3 : the quality or state of being complete or undivided : [completeness](#)

The integrity of the sacred homeland



# Science wars have never gone away



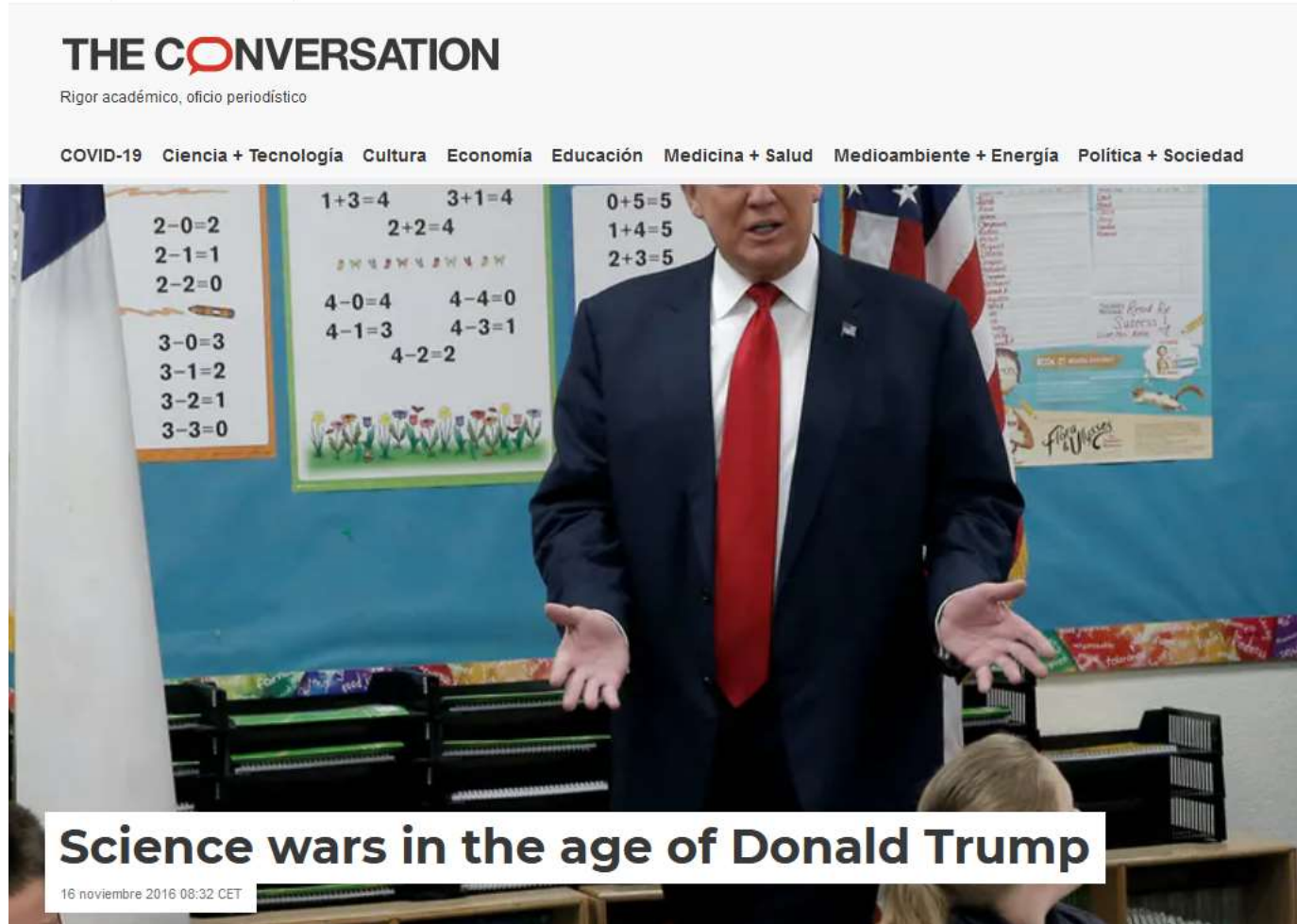
**Andrea Saltelli**

Adjunct professor, University of Bergen



**Silvio Oscar Funtowicz**

Adjunct Professor Centre for the Study of the Sciences and the Humanities, University of Bergen



“A worrying consequence of the present condition of the crisis of science is that, in some circles, the blame for the supposedly loss of faith in expert knowledge is put on postmodernist thought itself, thus confusing the diagnosis with the problem” (2016)

Alan Sokal  
Jean Bricmont

# Impostures intellectuelles



# So science moves from Sokal to Sokal-squared

**Vox**

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## The controversy around hoax studies in critical theory, explained

The "Grievance Studies" or "Sokal Squared" hoax aimed to discredit gender and critical race studies. Did it work?

By Zack Beauchamp | @zackbeauchamp | zack@vox.com | Oct 15, 2018, 8:00am EDT

“How Can Science Contribute to the Saving of the Commons? [...No] contributions to maintaining a habitable environment will be made by science unless there is a significant break in the insularity of the two scientific tribes”

**The Tragedy of the  
Commons Revisited**

28 November 1969, Volume 166, Number 3909

**SCIENCE**

Beryl L. Crowe



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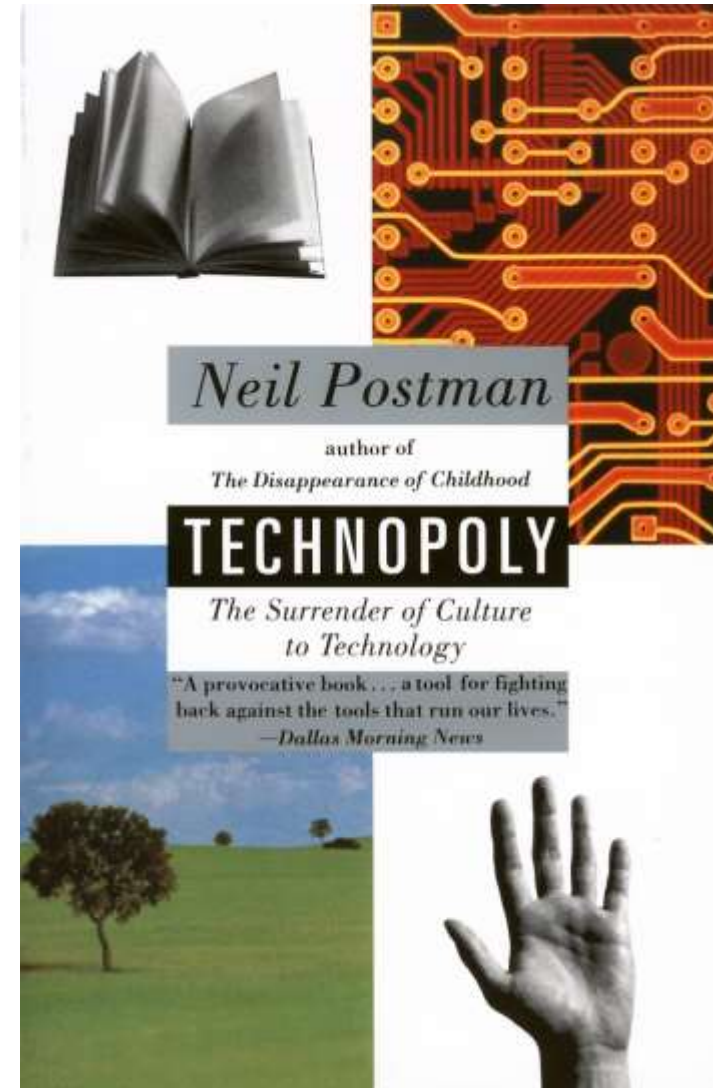
The integrity of the sacred homeland

➔ Divisions among families  
of science



*“I am, like most other critics, armed less with solutions than with problems”*

Neil Postman ([Postman, 1992](#)).





## Futures

Volume 115, January 2020, 102491



Paul-Marie Boulanger

# Technoscience, policy and the new media. Nexus or vortex?

Andrea Saltelli <sup>a, b</sup>  , Paul-Marie Boulanger <sup>c</sup> 

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<https://doi.org/10.1016/j.futures.2019.102491>

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## Highlights

- The crises of science, technology and policy are entangled with one another.
- An expanding and accelerating media system accelerates this entanglement.
- Social system theory provides useful insights for this analysis.

# Why ethics of quantification is needed now

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School of Law at the University of Essex

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**UCL Institute for  
Innovation and  
Public Purpose**

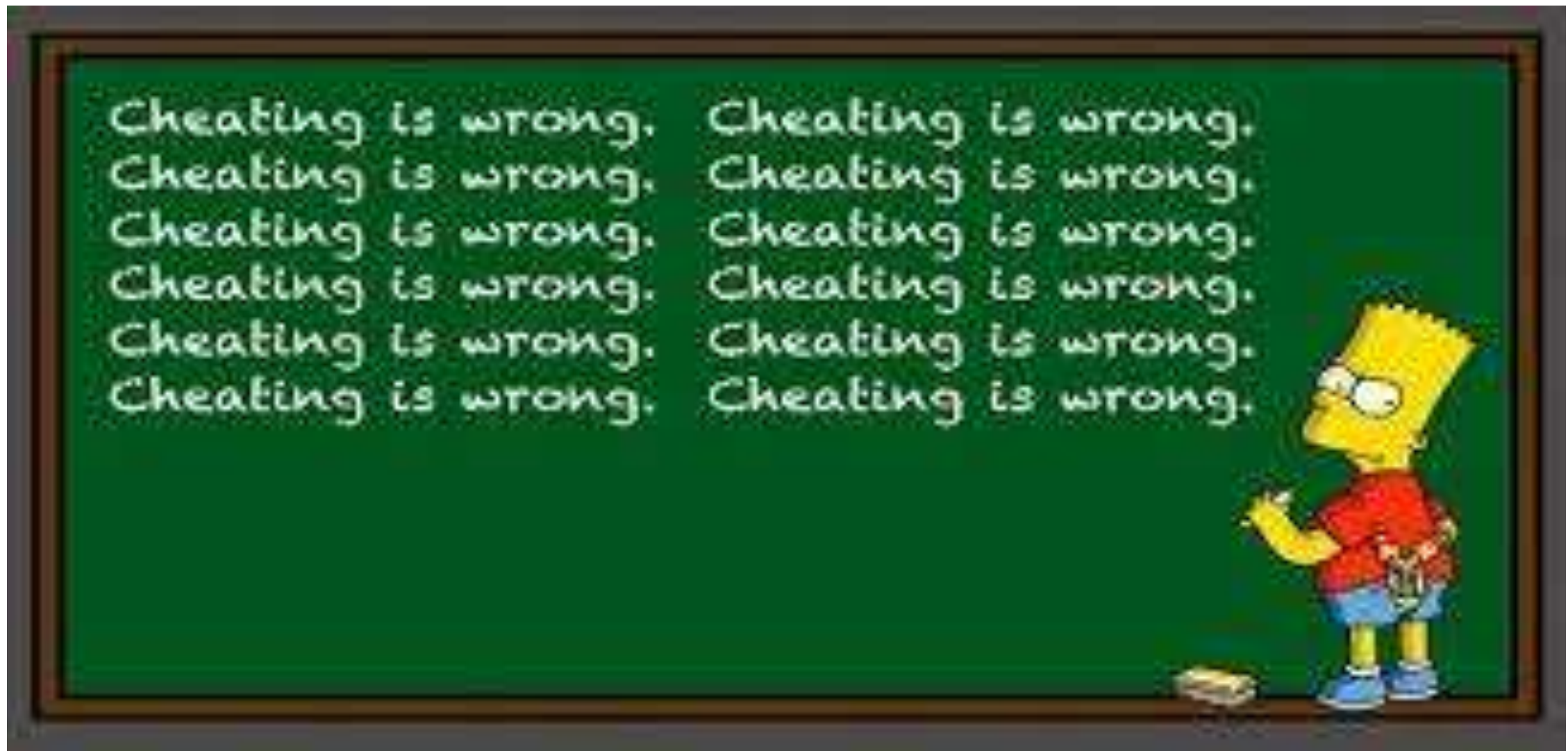
WORKING PAPER  
WP 2021/05



[http://www.andreasaltelli.eu/file/repository/Integrity\\_Vitrimat3.pdf](http://www.andreasaltelli.eu/file/repository/Integrity_Vitrimat3.pdf) (Slides of the lesson science's integrity in English)

[http://www.andreasaltelli.eu/file/repository/seminario\\_saltelli.mp4](http://www.andreasaltelli.eu/file/repository/seminario_saltelli.mp4) (Video of the lesson science integrity in Italian)





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