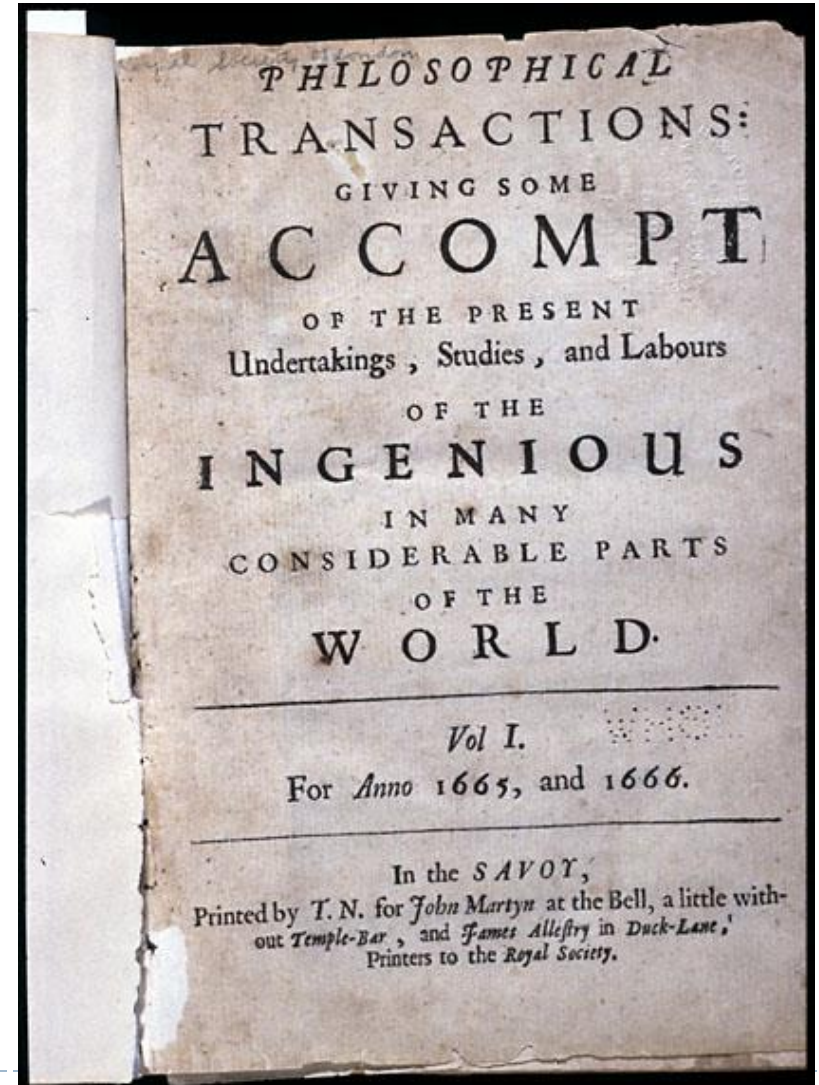


# Scientific publication and ethics – short contextual reflections

Prof. Matthias Kaiser  
Centre for the Study of the Sciences and Humanities (SVT)  
University of Bergen

# Recall the history of scientific publication:

- ▶ The important role of **Public knowledge**:
  - Universal science
  - Test of knowledge claims through peers
  - Birth of the scientific journal
  - For the benefit of all
  - No secrecy
  - Insure priority of discovery
  - Inspired by Arts and Crafts of the Renaissance (Da Vinci etc)



# Derek De Solla Price (1922-1983): the «father of scientometrics»

- ▶ Little Science, Big Science (1963)
- ▶ Noted exponential growth in virtually every aspect of scientific activity
- ▶ Pointed to the information dilemma and the function of «invisible colleges».

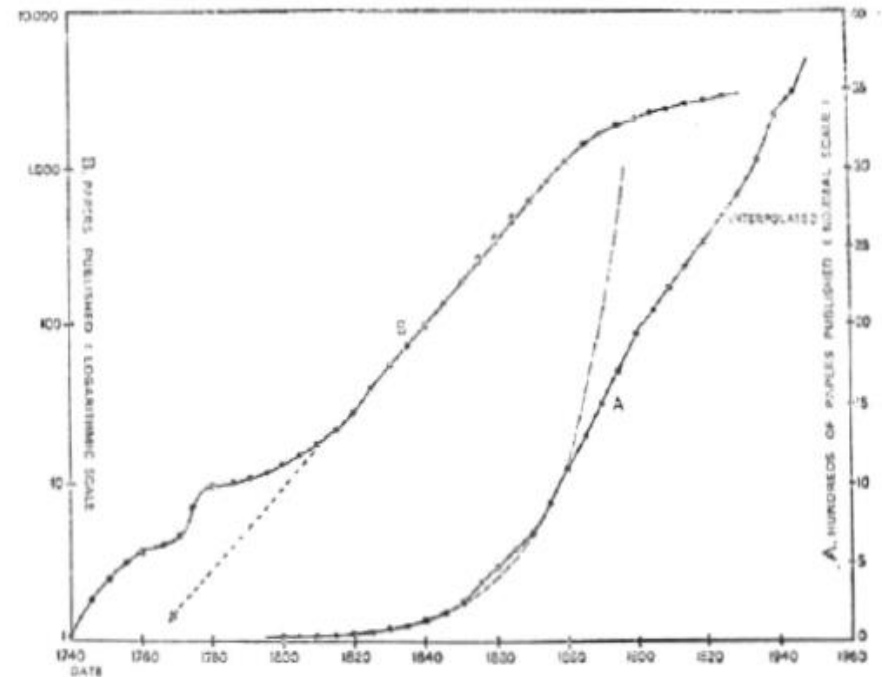


Figure 2. — Total number of papers published on “Theory of Determinants and Matrices” since commencement of field.

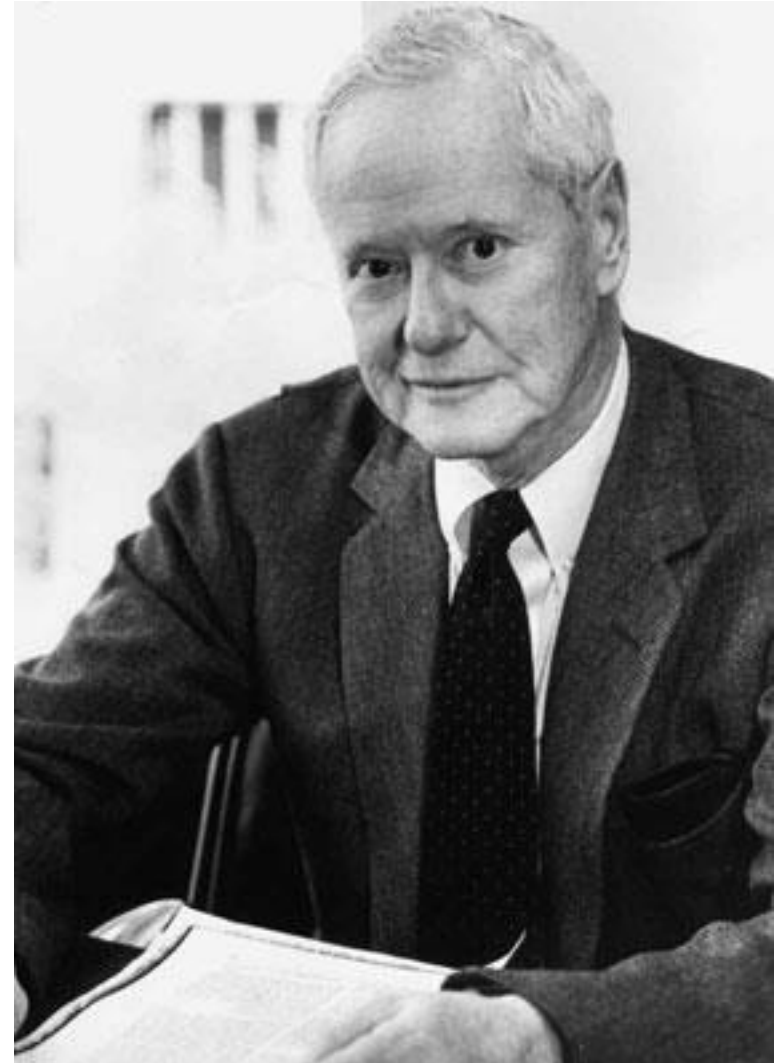
A) Normal plotting, the broken curve indicating the exponential approximation.

B) Logarithmic plotting to illustrate development before 1840. The broken line shows the course if growth had been exponential starting from one paper in 1760.

# Robert K. Merton (1919-2003) and the ethos of science

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- ▶ Consists of 4 (5)  
”norms”:
  - ▶ Communism
  - ▶ Universalism
  - ▶ Disinterestedness
  - ▶ Organized Scepticism
  - ▶ (Originality)
- ▶ Reward mechanisms in science:
  - ▶ Being credited in scientific literature
  - ▶ (symbolic capital)



# Significant points to remember:

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- ▶ The function of a scientific publication:
  - making scientific insights publicly available
  - ensure optimal growth of knowledge
  - provide quality assurance (peer-review + organized scepticism)
- ▶ The motivational engine:
  - being credited in literature (merits; thus forbidding plagiarism which amounts to free riders)
- ▶ The precondition:
  - the veracity of the publication (no fabrication or falsification)
- ▶ The consequential commitment:
  - to store and make original data freely available after publication for checking.



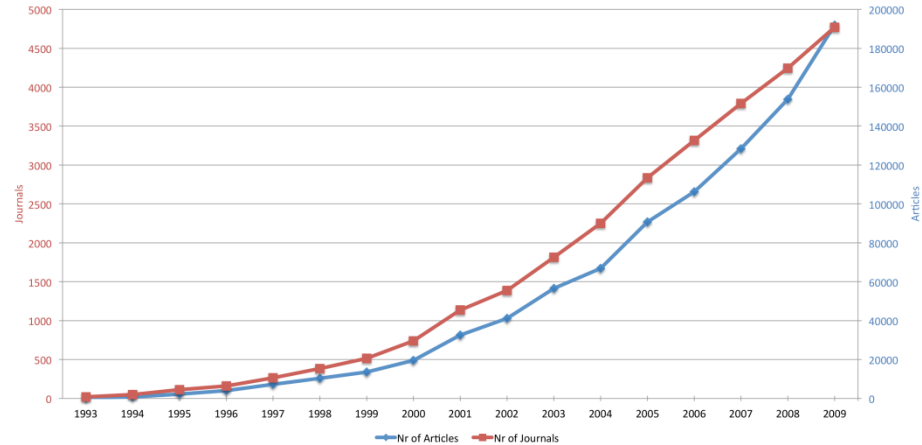
# Open access development

## ► Provides an answer to:

- Equity and the informational divide (global North-South)
- Justice and the tension between public funding and restricted access due to high costs
- Visibility and utilizing the positive potential of the internet

## ► Struggles with:

- Recognition
- Transparency of quality assurance



A chart which shows the development of Open Access from 1993 to 2009.

13 June 2011

Scientific article in PLOS ONE

Laakso M, Welling P, Bukvova H, Nyman L, Björk B-C, et al.

# John P. Ioannidis points at some selective challenges in scientific publishing:

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**Table 2.** A List of Described Impediments to Self-Correction in Science With Reference to Psychological Science

Impediments	Selected references
Publication bias	Ferguson & Brannick (2012); Shadish et al. (1989)
Other selective reporting bias (analysis and outcomes)	
Flexibility in data collection and analysis	Simmons et al. (2011); Wagenmakers et al. (2012);
Misreporting of results	Bakker & Wicherts (2011)
Voodoo correlations	Fiedler (2011)
Fabricated results	Fannelli (2009)
Other questionable research practices	John et al. (2012)
Excess significance bias (may reflect any of the above)	Francis (2012b); Ioannidis & Trikalinos (2007)
Underpowered studies	Maxwell (2004)
No replication work done—especially direct replication by independent investigators	Makel et al. (2012)
Underestimation of the replication crisis	Pashler & Harris (2012)
Editorial bias against replication research	Neuliep & Crandall (1990)
Reviewer bias against replication research	Neuliep & Crandall (1993)
Data, analyses, protocols not publicly available	Alsheikh-Ali et al. (2011); Wicherts, Borsboom, Kats, & Molenaar (2006)

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## Why Science Is Not Necessarily Self-Correcting

John P. A. Ioannidis

*Perspectives on Psychological Science* 2012 7: 645

DOI: 10.1177/1745691612464056

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# Be also aware of publishing policies, ethics and retractions:

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Part of COPE's guidelines on retracting a paper or issuing an expression of concern

## **Journal editors should consider retracting a publication if:**

- ▶ they have clear evidence that the findings are unreliable, either as a result of misconduct (eg, data fabrication) or honest error (eg, miscalculation or experimental error)
  - ▶ the findings have previously been published elsewhere without proper cross-referencing, permission, or justification (ie, cases of redundant publication)
  - ▶ it constitutes plagiarism
  - ▶ it reports unethical research
  - ▶ Editors should seek assurances that all research has been approved by an appropriate body (e.g. research ethics committee, institutional review board) where one exists. However, editors should recognise that such approval does not guarantee that the research is ethical.
  - ▶ Best practice for editors would include:
    - being prepared to request evidence of ethical research approval and to question authors about ethical aspects (such as how research participant consent was obtained or what methods were employed to minimize animal suffering) if concerns are raised or clarification.s are needed
- 





## A final note:

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- ▶ Every unethical publication – be it FFP or QRP – invariably undermines public trust in science.
- ▶ Every unethical publication harms the fabric of scientific collaboration.
- ▶ With the highly increased international attention to scientific integrity the chances of discovering breaches of ethics have increased.
- ▶ The potential individual costs of unethical publication outweigh by far the short-term gains.



# Thanks for your kind attention!



Just one more thing... is your  
data faked?

[matthias.kaiser@svt.uib.no](mailto:matthias.kaiser@svt.uib.no)