UNIVERSITY OF HOHENHEIM

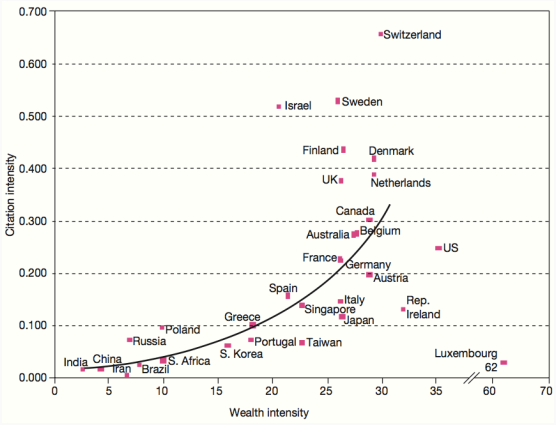
Science and the public

3502-440 Methods of Scientific Working for Crop Science

WS 2024/2025

Prof. Dr. Karl Schmid
Institute of Plant Breeding, Seed Science and Population Genetics
University of Hohenheim

The scientific wealth of nations



King (2004)

Introduction

Results of science:

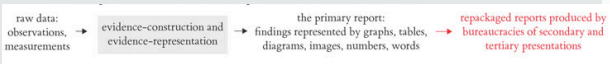
- Publications
- Patents
- Products
- Personnel (you!)

Science and the public

The interaction of science and the public suffers from a key problem:

- Scientists are experts who produce primary literature
- The public rarely reads primary literature
- The connection is through the media

In the words of Edward Tufte:



http://www.edwardtufte.com/bboard/q-and-a-fetch-msg?msg_id=0001to

Important issues in science communication

- *Recency of evidence decides relevance of evidence* (E. Tufte)

Readership of scientific information

Reviewers of submitted journal manuscript:	2-4
Readers of primary article:	100
Readers of abstract:	1,000
Readers of a news report:	100,000
Readers of the advertisement of the product:	1,000,000

The original content was repackaged several times along the way!

Consequences of the repackaging of science

- From primary to secondary report: Edit, clarify, interpret, summarize, simplify, over-simplify, spin, tart up, mess up (E. Tufte) → Evidence corruption
- Secondary presentation may limit access to primary report: Copyrights, costly subscriptions, overreaching claims of corporate privilege or government secrecy

The dilemma of scientists

Without publicity a terrible thing happens - nothing (– P. T. Barnum)

- Self-marketing of scientists
- Self-marketing of institutions (e.g., universities)

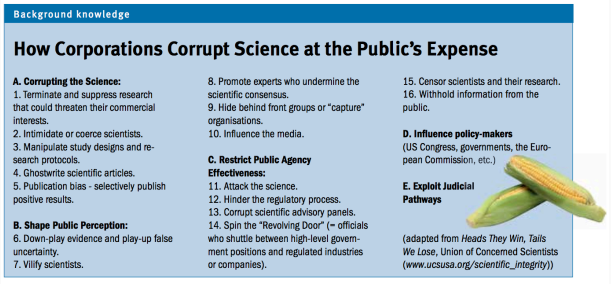
A pitch culture is a result:

- Exaggerated claims
- (Over-) simplification
- Cherry picking: Report only results that fit your goals

Conflict areas involving (crop) science

- Global change: Real or not?
- Pesticides: Large scale pollution of the environment or not?
- Organic vs. industrial agriculture
- GMO technology vs. classical plant breeding

How is science used for fighting these wars?



Background knowledge

How Corporations Corrupt Science at the Public's Expense

A. Corrupting the Science:
1. Terminate and suppress research that could threaten their commercial interests.
2. Intimidate or coerce scientists.
3. Manipulate study designs and research protocols.
4. Ghostwrite scientific articles.
5. Publication bias - selectively publish positive results.

B. Shape Public Perception:
6. Down-play evidence and play-up false uncertainty.
7. Vilify scientists.
8. Promote experts who undermine the scientific consensus.
9. Hide behind front groups or "capture" organisations.
10. Influence the media.

C. Restrict Public Agency Effectiveness:
11. Attack the science.
12. Hinder the regulatory process.
13. Corrupt scientific advisory panels.
14. Spin the "Revolving Door" (= officials who shuttle between high-level government positions and regulated industries or companies).
15. Censor scientists and their research.
16. Withhold information from the public.

D. Influence policy-makers (US Congress, governments, the European Commission, etc.)

E. Exploit Judicial Pathways

(adapted from *Heads They Win, Tails We Lose*, Union of Concerned Scientists (*www.ucsusa.org/scientific_integrity*))

LabTimes 07/2013 – labtimes.org

Further reading

- Grimes (2019) - An Essay about the interaction of scientists with the public

References i

Grimes, D. R. (2019). A dangerous balancing act: On matters of science, a well-meaning desire to present all views equally can be an Trojan horse for damaging falsehoods. *EMBO reports*.

King, D. A. (2004). The scientific impact of nations. *Nature*, 430(6997):311–316. Number: 6997 Publisher: Nature Publishing Group.