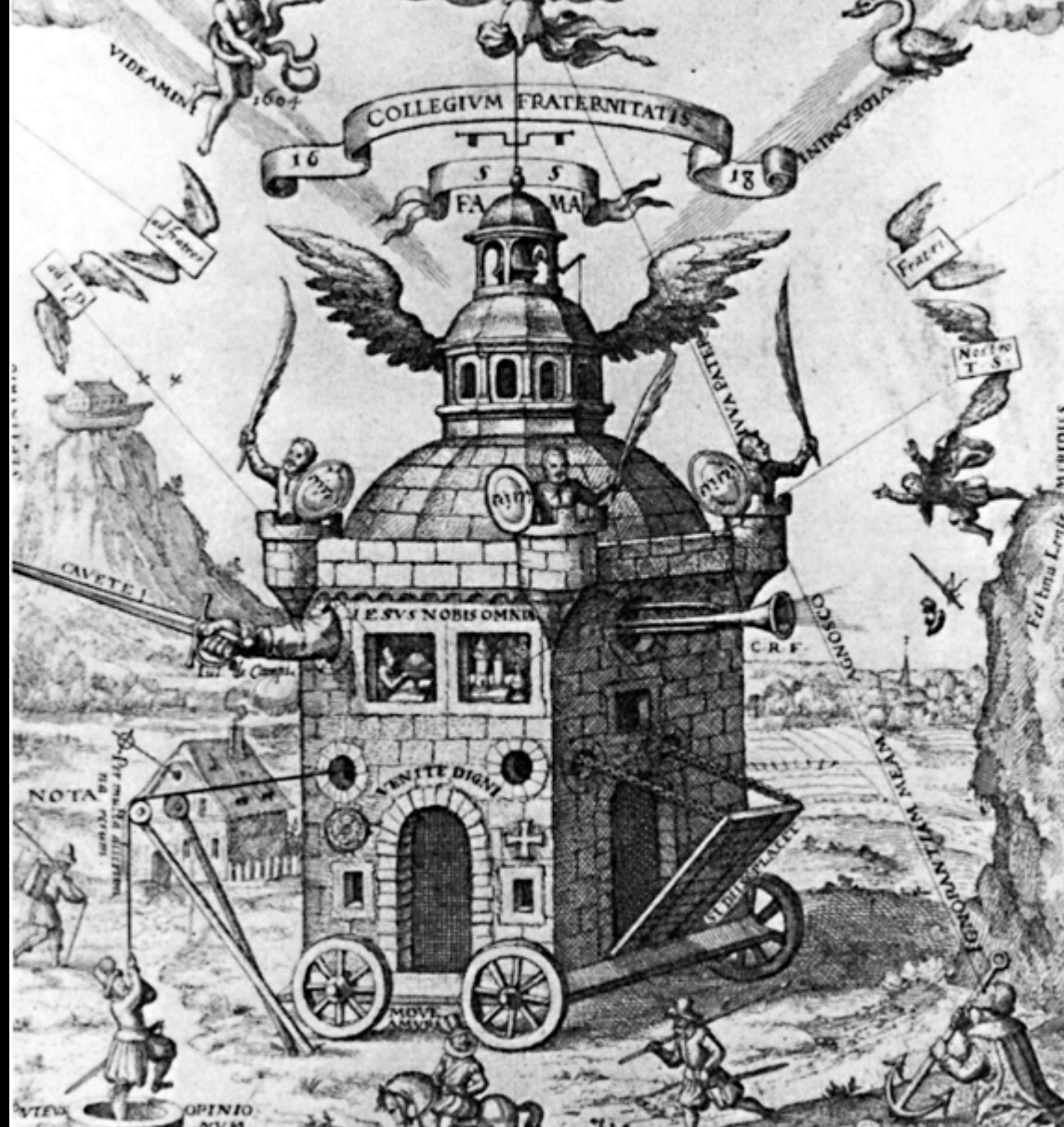


Rethinking 'excellence' for responsible research and innovation

Jack Stilgoe

j.stilgoe@ucl.ac.uk

@jackstilgoe



1. Why RRI matters
2. Science, innovation and inequality
3. RRI as opening up
4. Closure and 'excellence'
5. Rethinking 'good science'
6. RRI and the University

Bobby Vankav

90°

4:05

Family hopes autopilot death leads to improvements

DRIVER WATCHING HARRY POTTER WHEN CRASH HAPPENED



the **NOW**
@THENOWTAMPABAY

Tesla Model S travels with the Autopilot activated

Windshield hits trailer which tears up the roof, but vehicle passes underneath

Lil Food Ranch

The Model S continues on the road for a few hundred feet but veered off and hit a fence

It went through another fence and a pole before stopping



NUFFIELD
COUNCIL ON
BIOETHICS

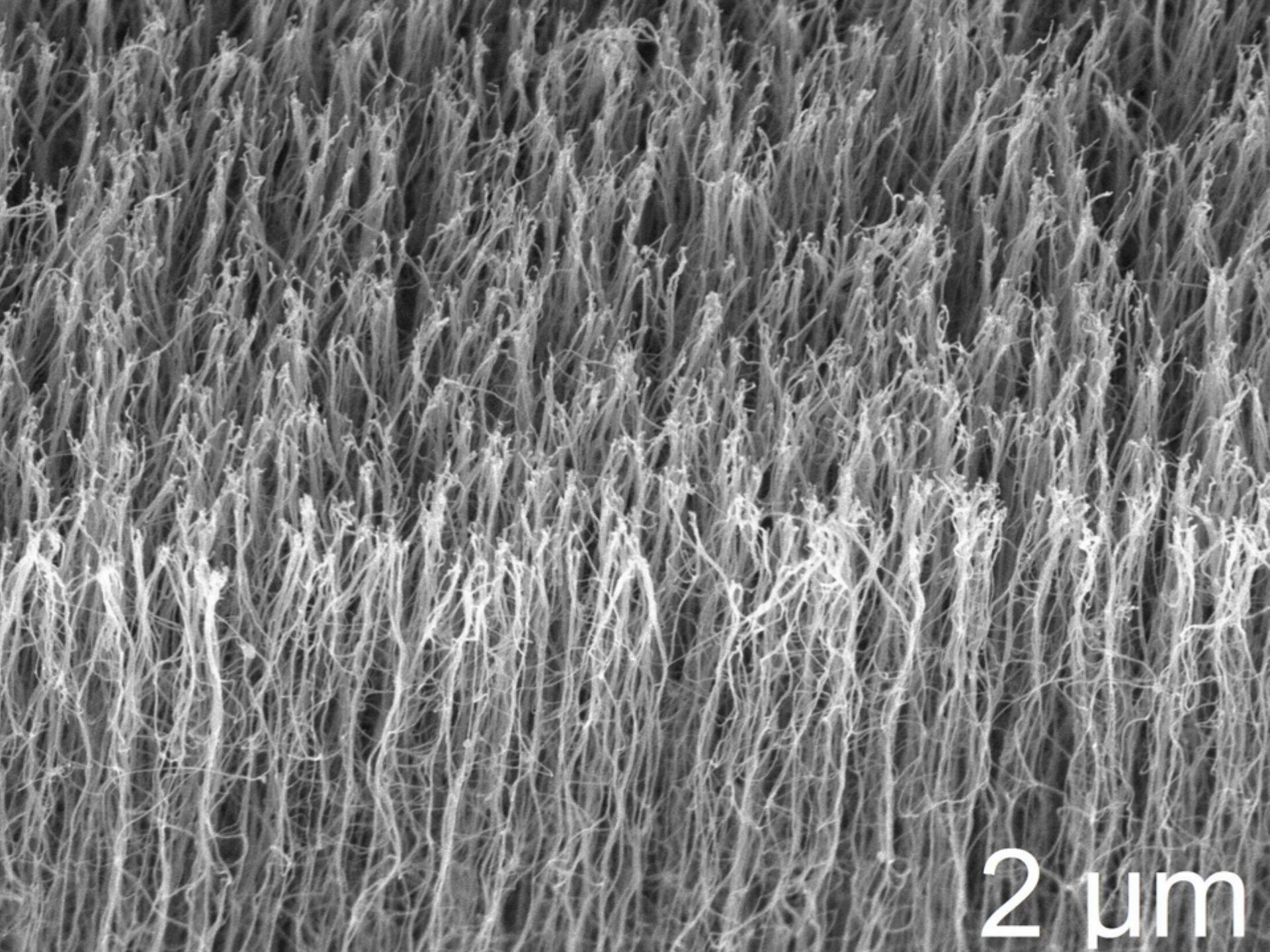


Genome editing



an ethical review - a short guide





2 μm

SLIM METEN = SLINKS WETEN



**Stop de 'slimme' spionagemeters
voor gas en elektriciteitsverbruik**

Stop de in deze poster van Vereniging 'VERBODT
en Blokkering Misgebruik ID-plicht

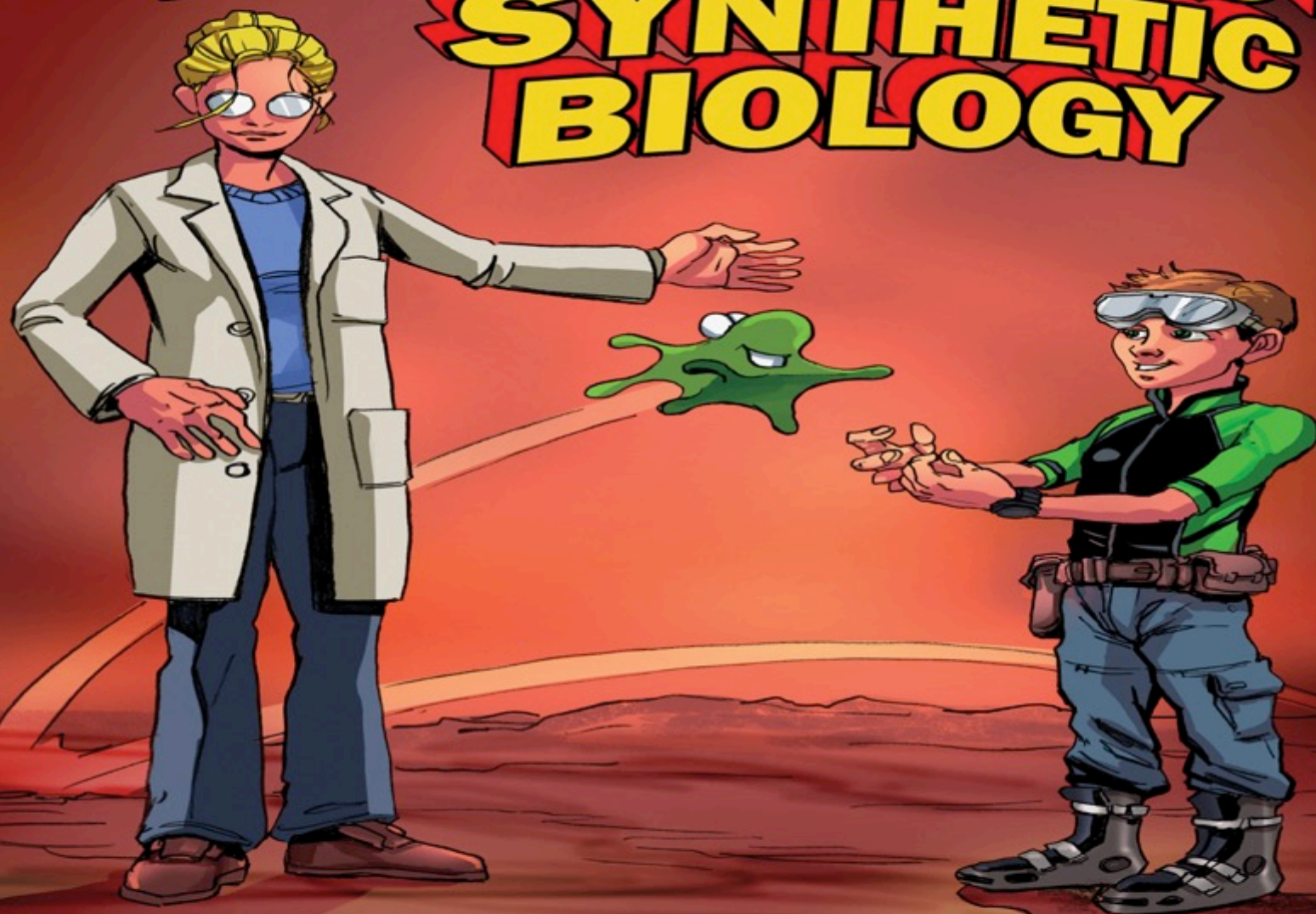
www.verbodt.nl
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**Slimme energiemeter
schendt privacy**



NO. 1
NOV 2005

ADVENTURES IN SYNTHETIC BIOLOGY



STORY: DREW ENDY ISADORA DEESE
THE MIT SYNTHETIC BIOLOGY WORKING GROUP
ART: CHUCK WADEY www.chuckwadey.com

There is a blind spot in AI research

Kate Crawford & Ryan Calo

13 October 2016

Fears about the future impacts of artificial intelligence are distracting researchers from the real risks of deployed systems, argue Kate Crawford and Ryan Calo.



[Rights & Permissions](#)

Subject terms: [Technology](#) · [Ethics](#) · [Society](#)



Science, innovation and inequality





Silicon Valley

DIABETES

346 Million Afflicted



194,481
RESEARCH PAPERS



ELEPHANTIASIS LYMPHATIC FILARIASIS

120 Million Afflicted



1,858
RESEARCH PAPERS



HIV/AIDS

34 Million Afflicted

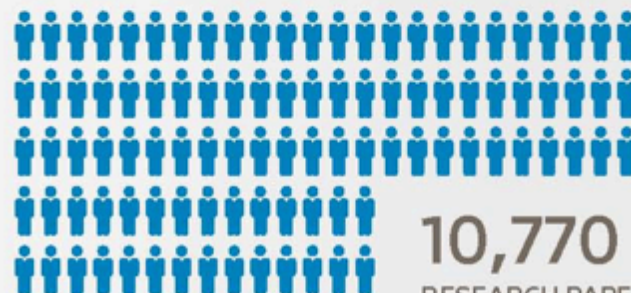


154,562
RESEARCH PAPERS

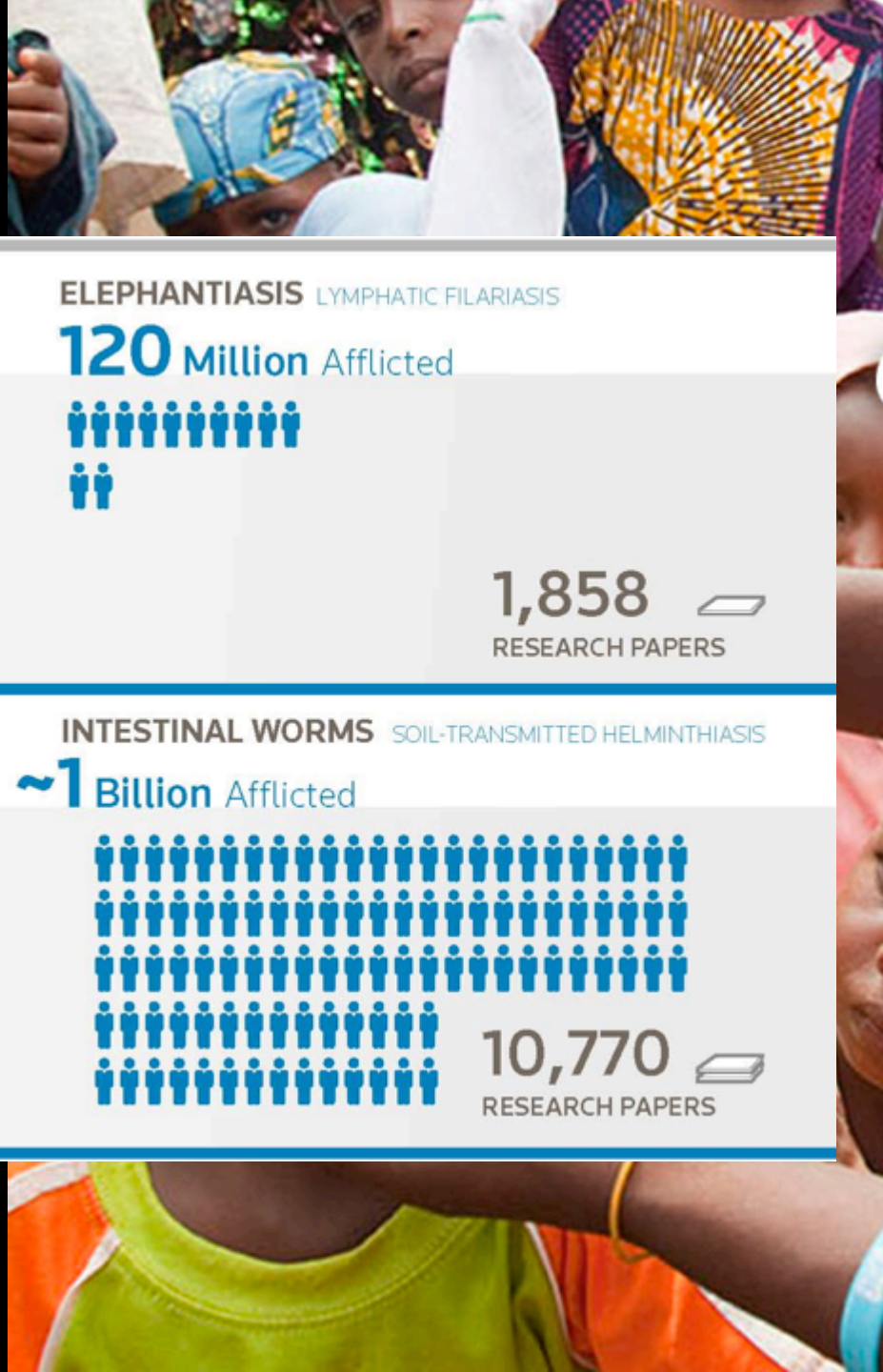


INTESTINAL WORMS SOIL-TRANSMITTED HELMINTHIASIS

~1 Billion Afflicted



10,770
RESEARCH PAPERS





aziz

@azizshamim



Follow

OH: SF tech culture is focused on solving one problem: What is my mother no longer doing for me?

RETWEETS

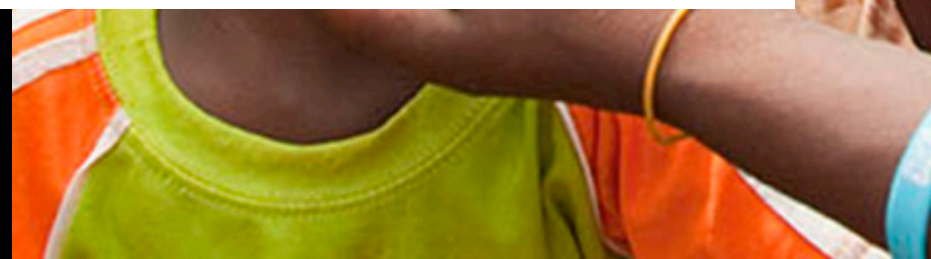
2,159

LIKES

2,564



6:53 PM - 4 May 2015



nature

WORLD VIEW

A personal take on events



Scientific research must take gender into account

From car design to drug discovery, the failure to acknowledge sex differences can be costly and even lethal, argues Londa Schiebinger.

In Madrid a couple of years ago, I was interviewed for Spanish newspapers. When I later ran the text through Google Translate, I got a shock: I was referred to repeatedly as “he”.

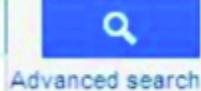
Like much science and technology, Google Translate has a male default. When I drive a car, the seatbelt is not designed to accommodate breast tissue. Any medicines I take are more likely to have been tested on male than on female animals. There are moral issues here: women pay taxes and buy products and should not be short-changed. But scientific objectivity is at stake, too. Because medical research is

unconscious bias. Applicants to its newly opened Horizon 2020 funding scheme are now asked to include gender analysis in their projects — for example, to assess whether the research will have different implications for women and men. The commission identified dozens of science areas that could benefit from gender analysis: computer hardware and architecture, biodiversity, ecology, biophysics, oceanography, geosciences, organic chemistry, aeronautics, space medicine and some 40 others, including nanotechnology (astrophysics did not make the cut).



why do gay|men have high voices
why do gay **men have high voices**
why do gay **men get aids**
why do gay **men lisp**
why do gays **exist**
why do gay **people talk funny**

About 17,800,000 results (0.21 seconds)



Everything

Images

Videos



transgenders are |

transgenders are - Google Search

transgenders are **freaks**

transgenders are **gross**

transgenders are **sick**

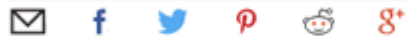
transgenders are **wrong**

transgenders are **crazy**



How tech's lack of diversity leads to racist software

By **Wendy Lee** Updated 11:01 am, Wednesday, July 22, 2015



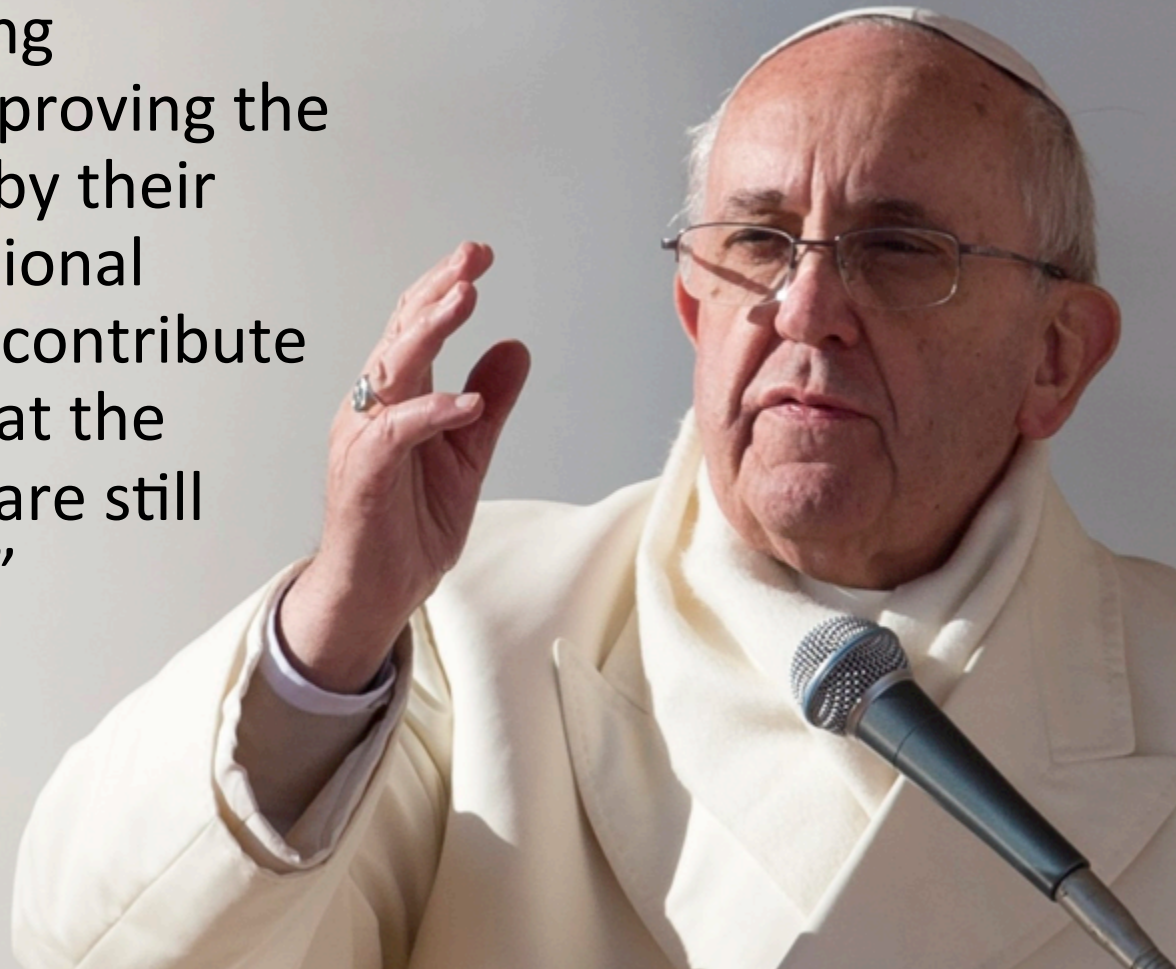
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Pope Francis

World Economic Forum, 2014

“Those who have demonstrated their aptitude for being innovative and for improving the lives of many people by their ingenuity and professional expertise can further contribute by putting their skills at the service of those who are still living in dire poverty.”





“In the future, people will spend less time trying to get technology to work ... If we get this right, I believe we can fix all the world’s problems.”

Eric Schmidt, Google

“There are a lot of really big issues for the world that need to be solved and, as a company, what we are trying to do is to build an infrastructure on top of which to solve some of these problems.”

Mark Zuckerberg, Facebook

“I am optimistic enough about this that I am willing to make a prediction. By 2035, there will be almost no poor countries left in the world.”

Bill Gates, 2014

“This disparity between rich and poor has been noticed... Whatever else survives to the year 2000, that won’t.”

CP Snow, 1959

RRI as opening up

Pathologies of innovation

- Late lessons from early warnings (EEA)
- The dilemma of control (David Collingridge)
- Systemic risk and normal accidents (Charles Perrow)
- Technological lock-in (Paul David)
- Myths of technological fixes (Dan Sarewitz)
- Altered nature of human action (Hans Jonas)
- Organised irresponsibility (Ulrich Beck)
- Hype and Expectations (Brown, Hedgecoe et al.)
- Deficit models of publics (Brian Wynne)
- Technologies as experiments; Society as a laboratory (Krohn and Weyer)

The *what*, the *how* and the *why* of innovation

Products

- What are the likely risks and benefits ?
- What other impacts can we predict ?
- How might these change in the future?
- What don't we know about?
- What might we never know about?
- How will the risks and benefits be distributed?

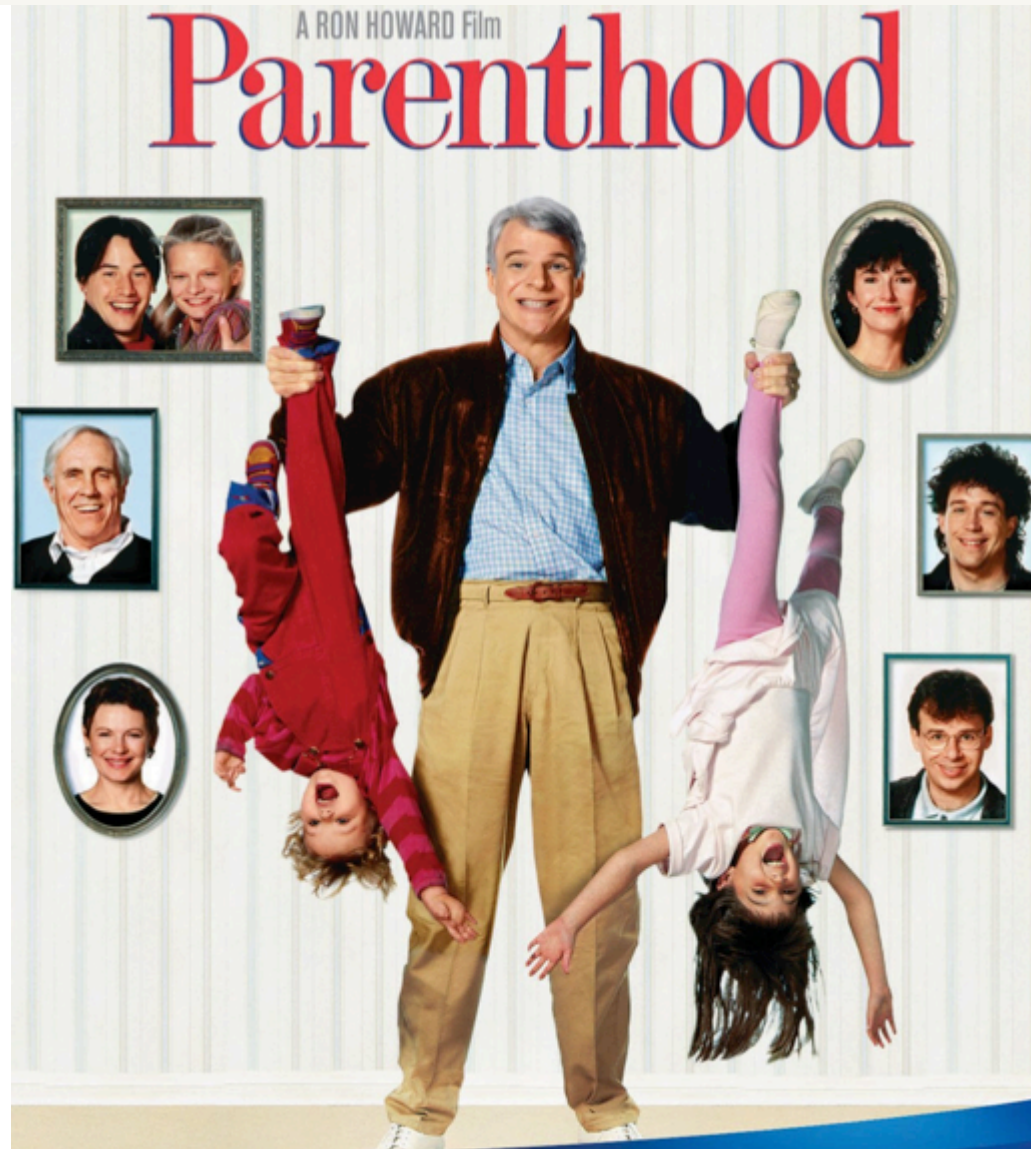
Processes

- How should research and innovation take place?
- How should standards be drawn up and applied?
- How should risks and benefits be defined and measured?
- Who is in control?
- Who will take responsibility if things go wrong?
- What if we are wrong?

Purposes

- Why should this research be undertaken?
- Who will benefit ?
- What are the alternatives?
- Who gets to decide?

Responsibility



Anticipation

- Participatory, not predictive
- Understanding expectations, promises



Inclusion

- Public engagement
- User-driven innovation
- Value-centred design



Responsible (research and) Innovation

Reflexivity

- 1st and 2nd order



Responsiveness

- Answering and reacting /
- Understanding the political economy of innovation



Framework for Responsible Innovation

Anticipate, reflect, engage
and act (AREA)

Support

Expectations

Acknowledgements and
resources

EPSRC is committed to develop and promote Responsible Innovation. This site reaffirms our own commitment and sets out our expectations for the researchers we fund and their research organisations.

Introduction

Responsible Innovation is a process that seeks to promote creativity and opportunities for science and innovation that are socially desirable and undertaken in the public interest. Responsible Innovation acknowledges, that innovation can raise questions and dilemmas, is often ambiguous in terms of purposes and motivations and unpredictable in terms of impacts, beneficial or otherwise. Responsible Innovation creates spaces and processes to explore these aspects of innovation in an open, inclusive and timely way. This is a collective responsibility, where funders, researchers, stakeholders and the public all have an important role to play. It includes, but goes beyond, considerations of risk and regulation, important though these are.



'Open science': Windows or doors?



Against Excellence



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Mission

[Organisation and Working Groups](#)[History](#)[Reviews and Development](#)[Facts and Figures](#)[Job Opportunities](#)[Calls for Tender](#)[Useful links](#)

Mission

Also available

(EN) ENGLISH



The ERC's mission is to encourage the highest quality research in Europe through competitive funding and to support investigator-driven frontier research across all fields, on the basis of scientific excellence.

The ERC complements other funding activities in Europe such as those of the national research funding agencies, and is a flagship component of Horizon 2020, the European Union's Research Framework Programme for 2014 to 2020.

Being 'investigator-driven', or 'bottom-up', in nature, the ERC approach allows researchers to identify new opportunities and directions in any field of research, rather than being led by priorities set by politicians. This ensures that funds are channelled into new and promising areas of research with a greater degree of flexibility.

ERC grants are awarded through open competition to projects headed by starting and established researchers, irrespective of their origins, who are working or moving to work in Europe. The sole criterion for selection is scientific excellence. The aim here is to recognise the best ideas, and confer status and visibility on the best brains in Europe, while also attracting talent from abroad.



The sole criterion for selection is scientific excellence. The aim here is to recognise the best ideas, and confer status and visibility on the best brains in Europe



“In the pursuit of excellence, [my view] offers no part to the popular will and accepts instead a condition of society in which the public interest is known only fragmentarily and is left to be achieved as the outcome of individual initiatives aiming at fragmentary problems.”

Polanyi, 1962, The Republic of Science

“[Mode 2 demands] a redefinition of excellence among academics, of their career aspirations, of their disciplinary contributions, and their institutional loyalties.”

The new production of knowledge

The
dynamics
of
science
and
research
in
contemporary
societies

Michael Gibbons
Camille Limoges
Helga Nowotny
Simon Schwartzman
Peter Scott
Martin Trow



Science in Dialogue

Towards a European Model for
Responsible Research and Innovation

Odense, Denmark 23-25 April 2012

‘We need to shift the focus from
aspiring to creating the best science *in*
the world to aspiring to creating the
best science *for* the world.’

europa1⁺.dk

Morten Østergaard, 23 April 2012

‘Excellence is the way forward.’

Morten Østergaard, 17 April 2012

Excellence and relevance are drifting further apart



50

Science Policy Briefing • June 2013

**Science in Society:
caring for our futures
in turbulent times**

Excellence as unhealthy competition



[Science and Engineering Ethics](#)

..... December 2007, Volume 13, [Issue 4](#), pp 437–461

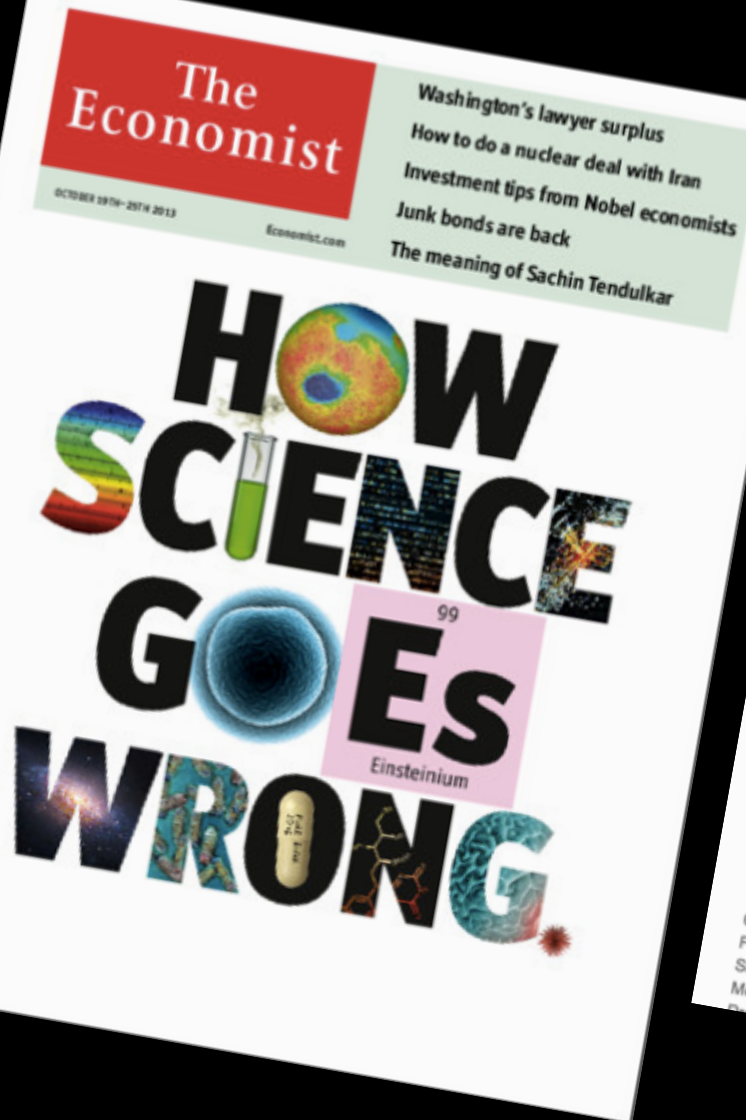
The Perverse Effects of Competition on Scientists' Work and Relationships

Authors

[Authors and affiliations](#)

Melissa S. Anderson , Emily A. Ronning, Raymond De Vries, Brian C. Martinson

Good Science?



What is good for scientists, may be bad for science and society

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Research



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R. Soc. open sci. **3**: 160384.

<http://dx.doi.org/10.1098/rsos.160384>

Received: 1 June 2016


Accepted: 17 August 2016

The natural selection of bad science

Paul E. Smaldino¹ and Richard McElreath²

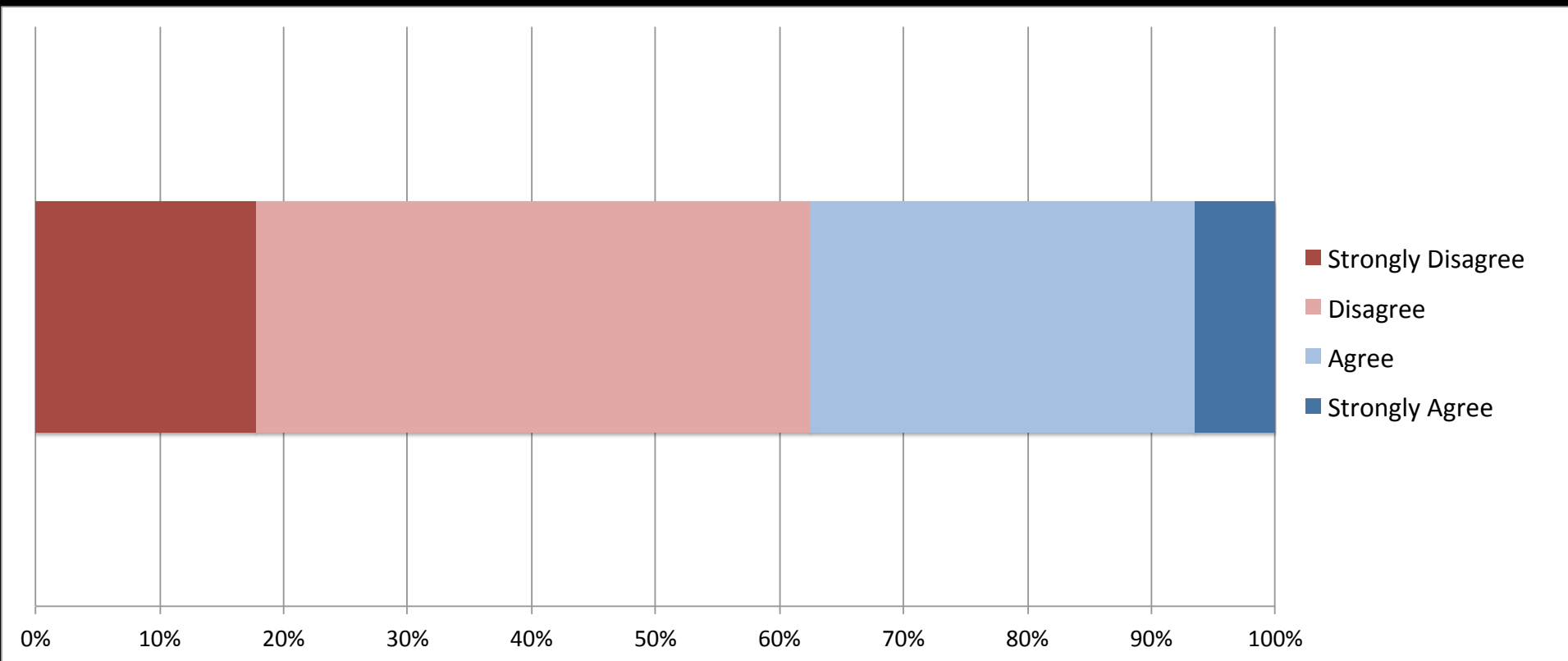
¹Cognitive and Information Sciences, University of California, Merced, CA 95343, USA

²Department of Human Behavior, Ecology, and Culture, Max Planck Institute for Evolutionary Anthropology, Leipzig, Germany

 PES, 0000-0002-7133-5620; RME, 0000-0002-0387-5377

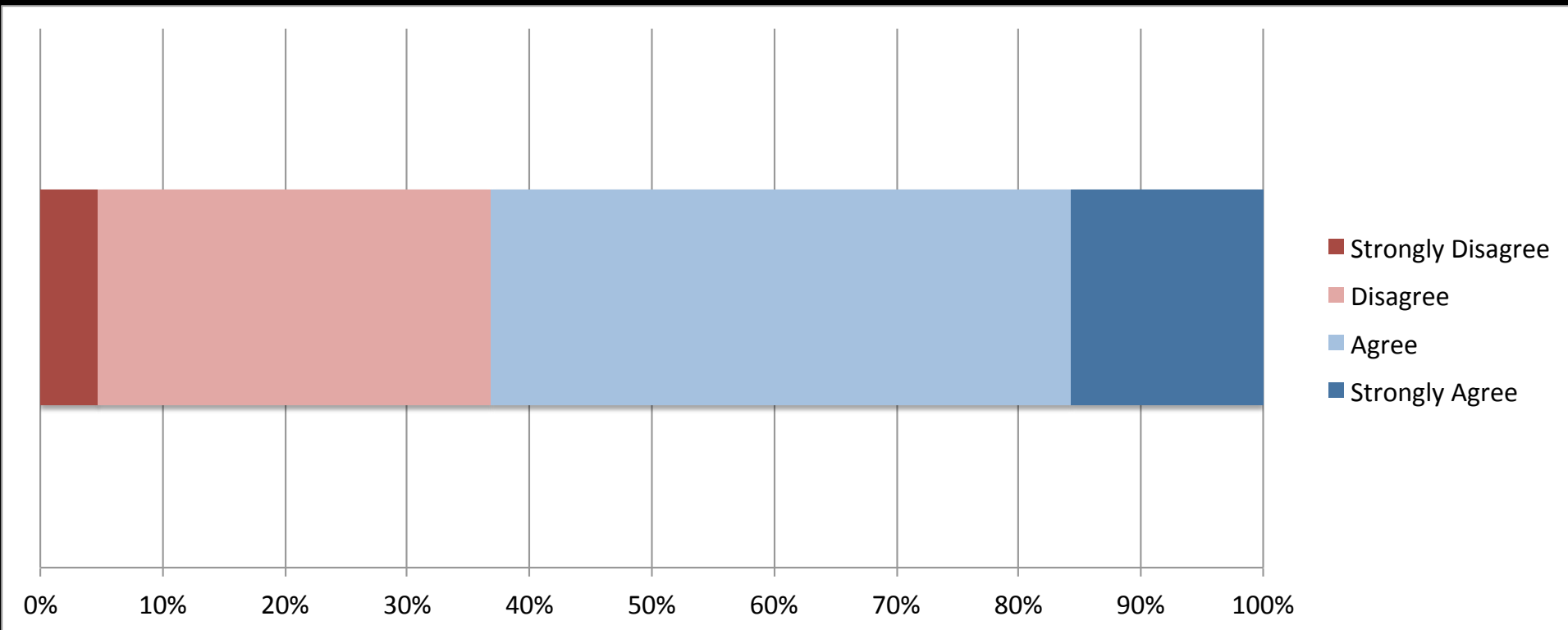
Poor research design and data analysis encourage false-positive findings. Such poor methods persist despite perennial calls for improvement, suggesting that they result from something more than just misunderstanding. The persistence of poor methods results partly from incentives that favour them, leading to the natural selection of bad science. This dynamic requires no conscious strategizing—no deliberate cheating nor loafing—by scientists, only that publication is a principal factor for career advancement. Some normative methods of analysis have almost certainly been selected to further publication instead of

“In government decisions about research funding, the scientist’s intellectual curiosity should be much less important than the potential of the research to improve people’s lives”



Source: Barry Bozeman, Research Value Mapping, National Survey of Academic Scientists (n= 2,010; mean=2.26)

“Government has too big a role in setting priorities for research”

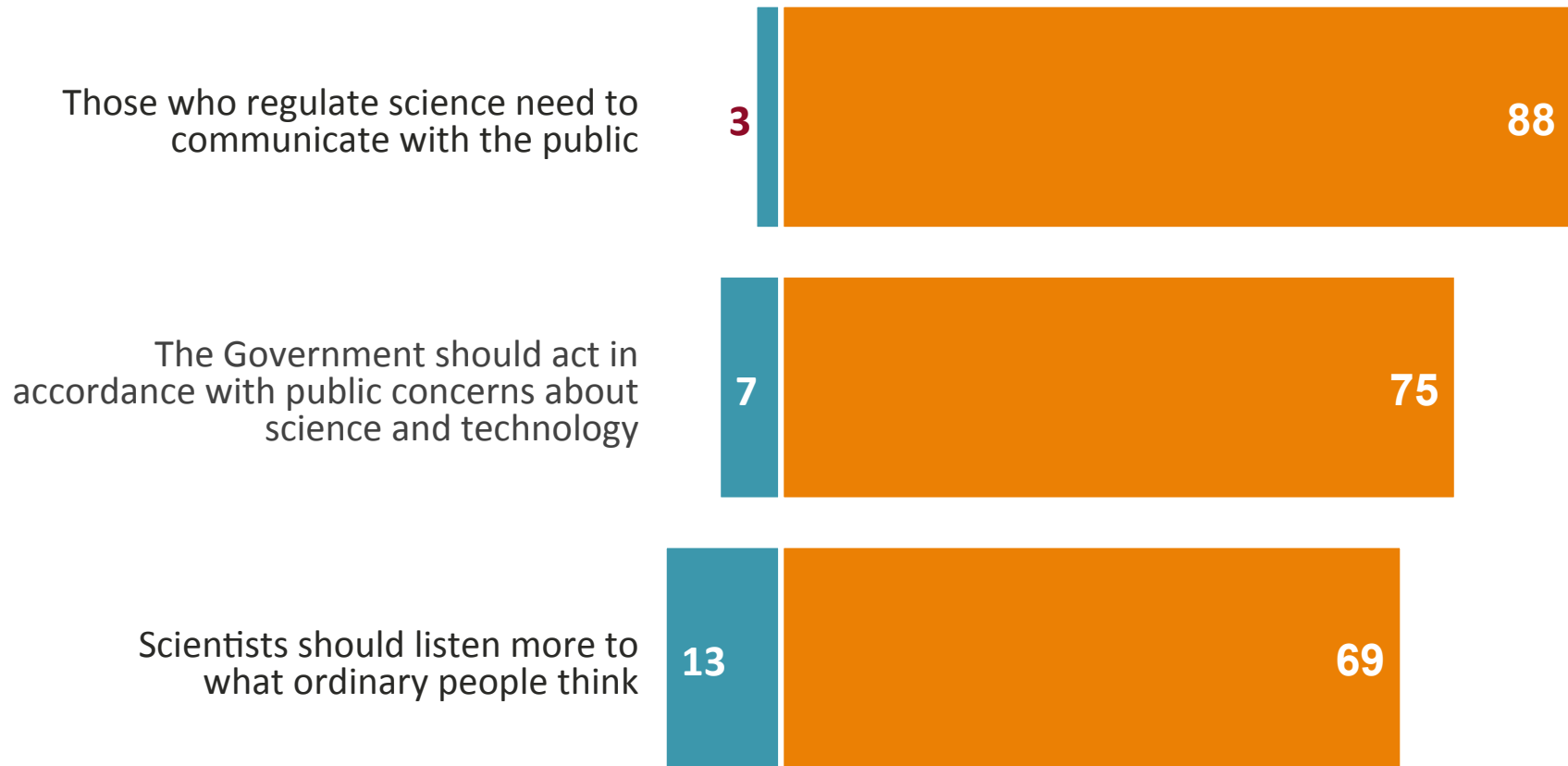


Source: Barry Bozeman, Research Value Mapping, National Survey of Academic Scientists (n= 2,026; mean=2.74)

A Democracy deficit?

Q. To what extent do you agree or disagree with the following statements?

■ % agree ■ % disagree



Q. Which of these statements, if any, comes closest to your own attitude to decision-making about science issues?

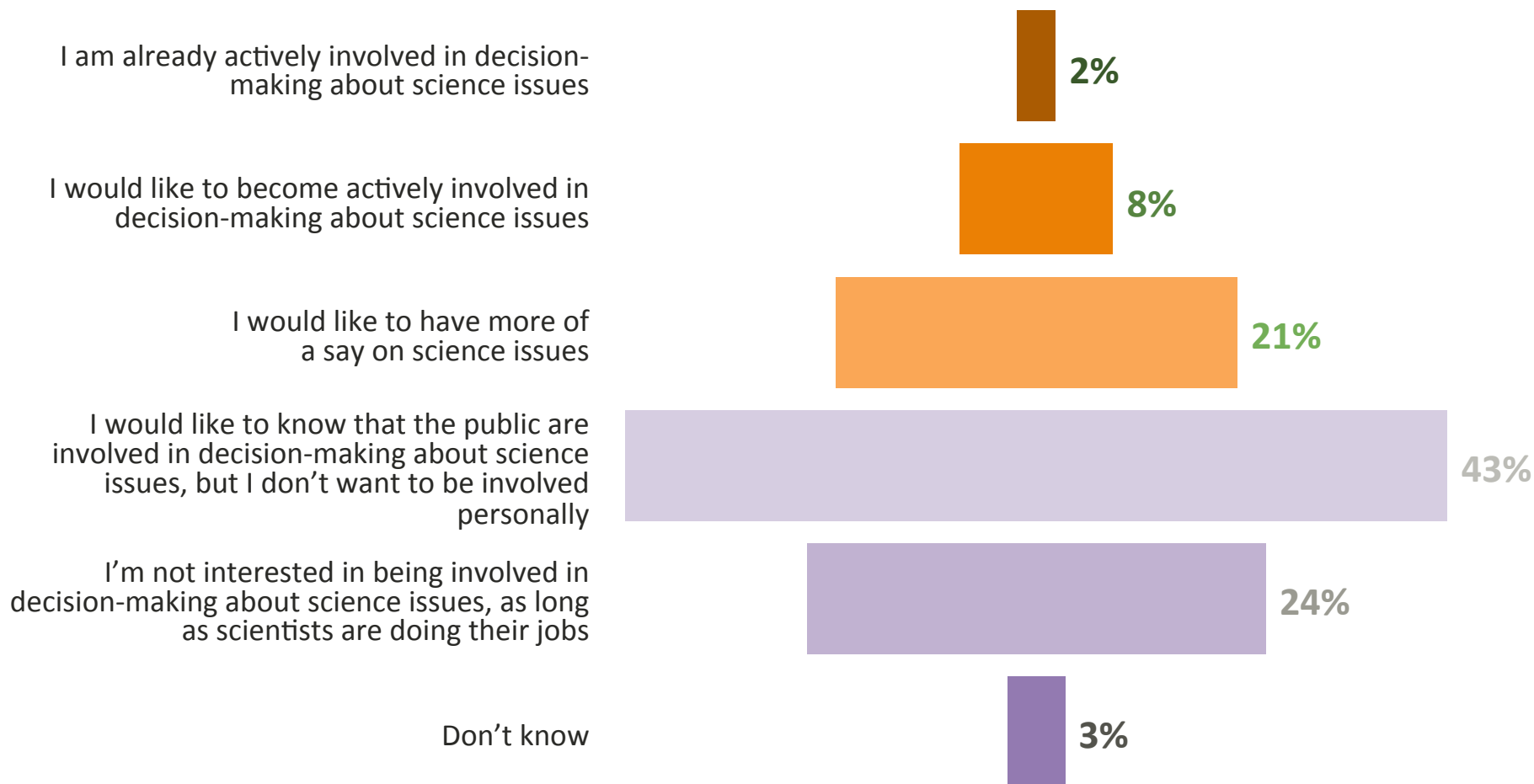
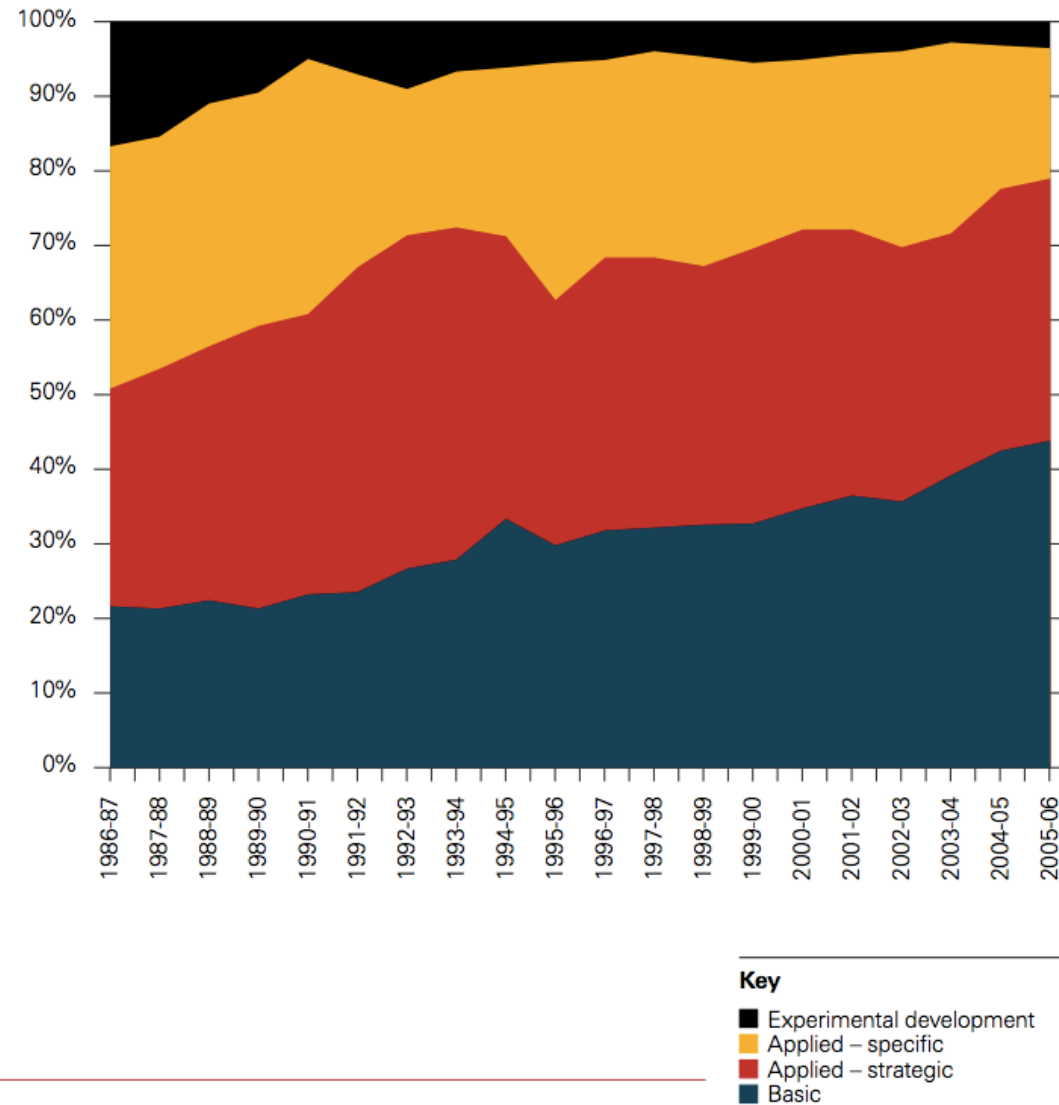
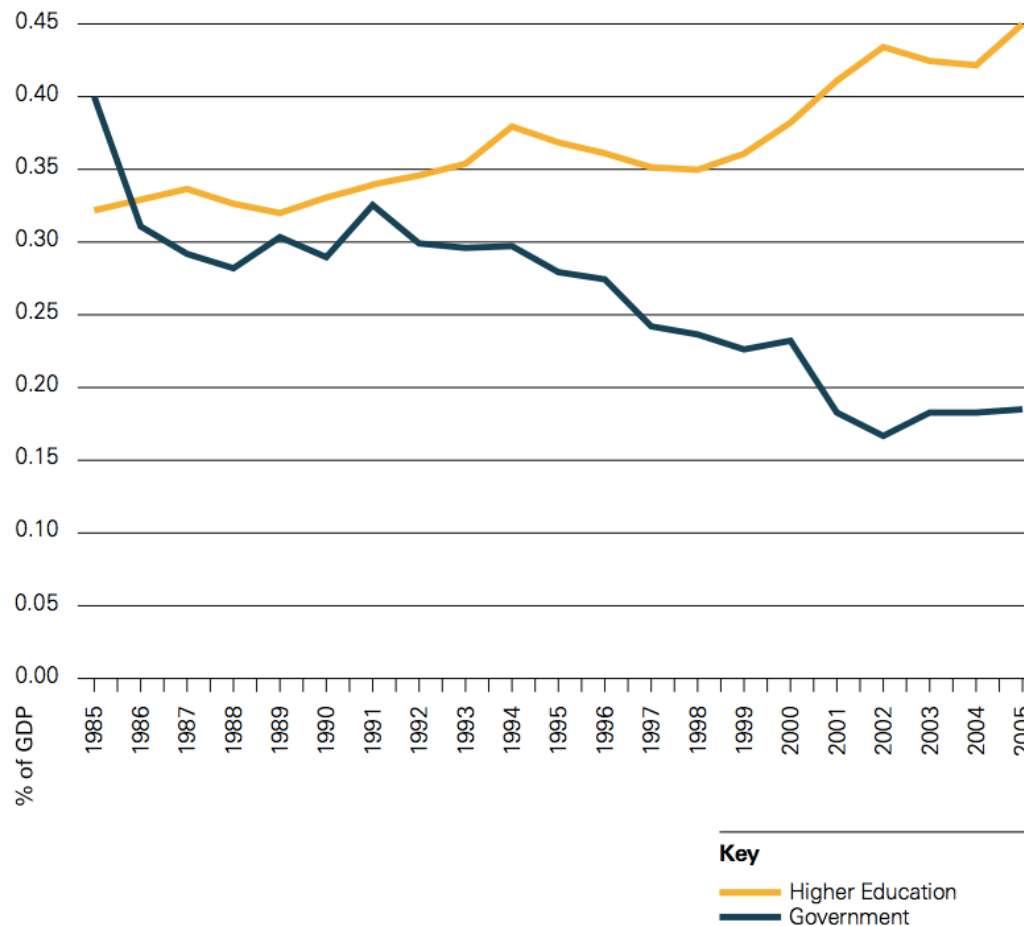


Figure 1.7 Types of publicly-funded science³⁸



University research is booming, but under strategic pressure

Figure 3.3.1 Public Expenditure on Research and Development as a percentage of GDP by sector, 1985-2007¹



RRl and the university

‘Safe’ space



Shared space



