



ELSEVIER



# Peer review: evolution or revolution

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RESEARCH &  
ACADEMIC RELATIONS

# Peer review by numbers

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In 2009, over **1.4 million** research articles were published in peer-reviewed journals.

**1,419,835**



That's about one every **22 seconds**.

But each peer review takes  
2 to 4 hours ...

# Some assertions about peer review

The New York Times

Doctor Accused of Leak to Drug Maker

By STEPHANIE SAUL  
Published: January 31, 2008

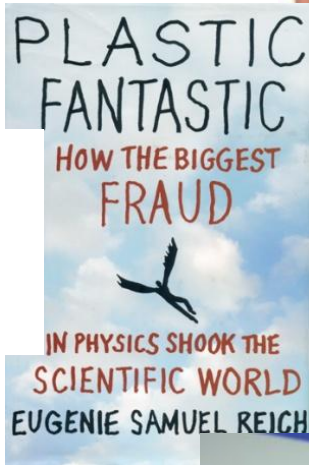


**General erosion of peer review**

**.... holding back innovative research**

**....research articles are not improved**

**...not good at stopping plagiarism or fraud**



Too few and overworked reviewers



Exploits of Jan Hendrik Schön



Woo Suk Hwang

SCIENTIFIC AMERICAN

Scan Uncovers Thousands of Copycat Scientific Articles

# Questioning of peer review in the media

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**theguardian**

“Publish-or-perish: Peer review and the corruption of science”  
(5<sup>th</sup> September, 2011), David Colquhoun

**THE**  **ON SUNDAY**  
**INDEPENDENT**

“Peer-reviewed journals aren't worth the paper they're written on” (Nigel Hawkes - *director of Straight Statistics, Sept 2010*)

**TheScientist**

“Is peer review broken?” (August 5th, 2010)

# What do we really know about peer review?



**sense about science**

equipping people to make sense of science and evidence

The Peer Review Survey was an electronic survey conducted between 28<sup>th</sup> July 2009 and 11<sup>th</sup> August 2009.

40,000 researchers were randomly selected from a database containing author names from over 10,000 journals.

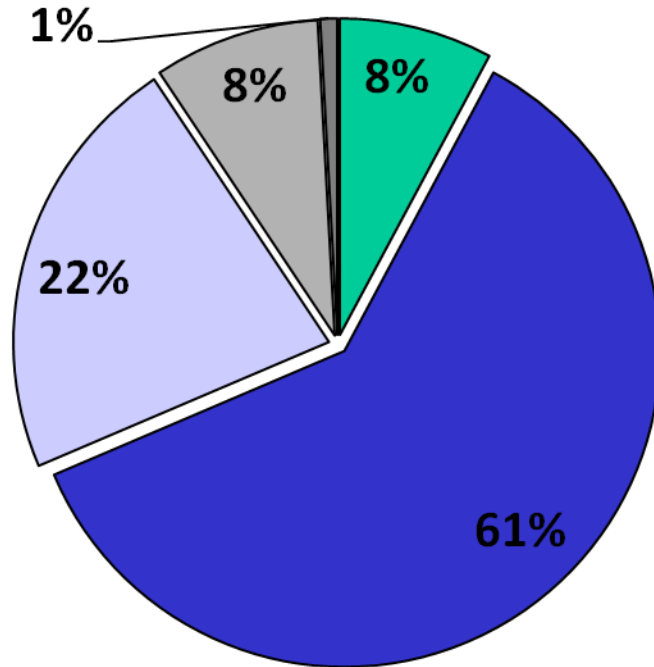
Researchers answered a series of questions regarding their attitude towards peer review.

Altogether 4,037 researchers completed the survey.

Builds on a previous survey in 2007: 'Peer Review in Scholarly Journals: perspective of the scholarly community. An international study'

# Broad satisfaction with peer review

Question: Overall, how satisfied are you with the peer review system used by scholarly journals?



The results show an increase in satisfaction since the 2007 survey.

69% in 2009 are very satisfied or satisfied, compared to 65% in 2007.

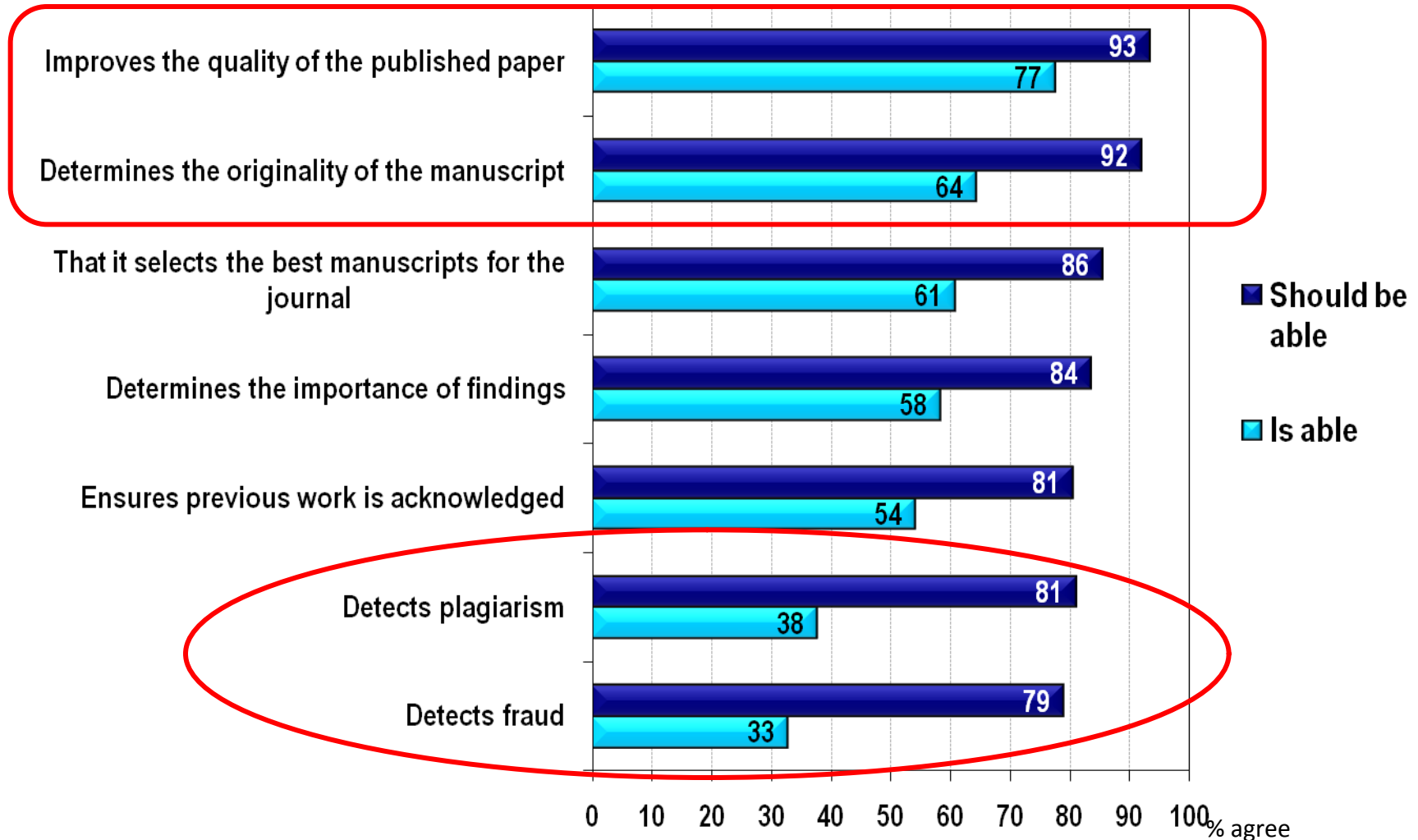


(n=4037)

2007 study – 6% Very satisfied, 59% satisfied, 22% neither satisfied nor dissatisfied, 10% dissatisfied, 2% very dissatisfied, 1% don't know/not applicable n=3040

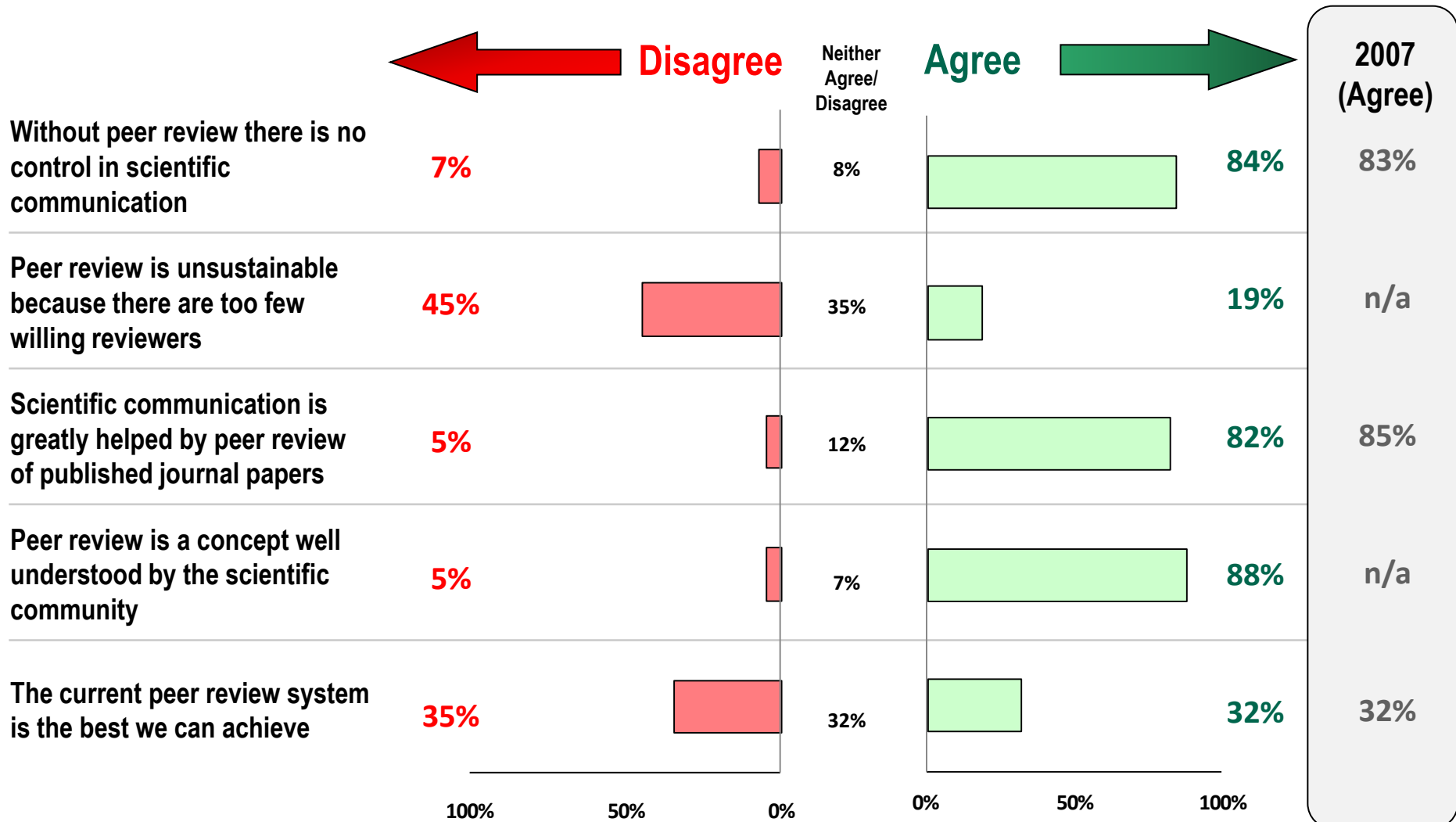
# Peer review is not a panacea

Questions: To what extent do you agree or disagree that the following objectives **should be** the purpose of peer review  
 To what extent do you agree or disagree that peer review is currently **able to** do the following?



# Can we do better?

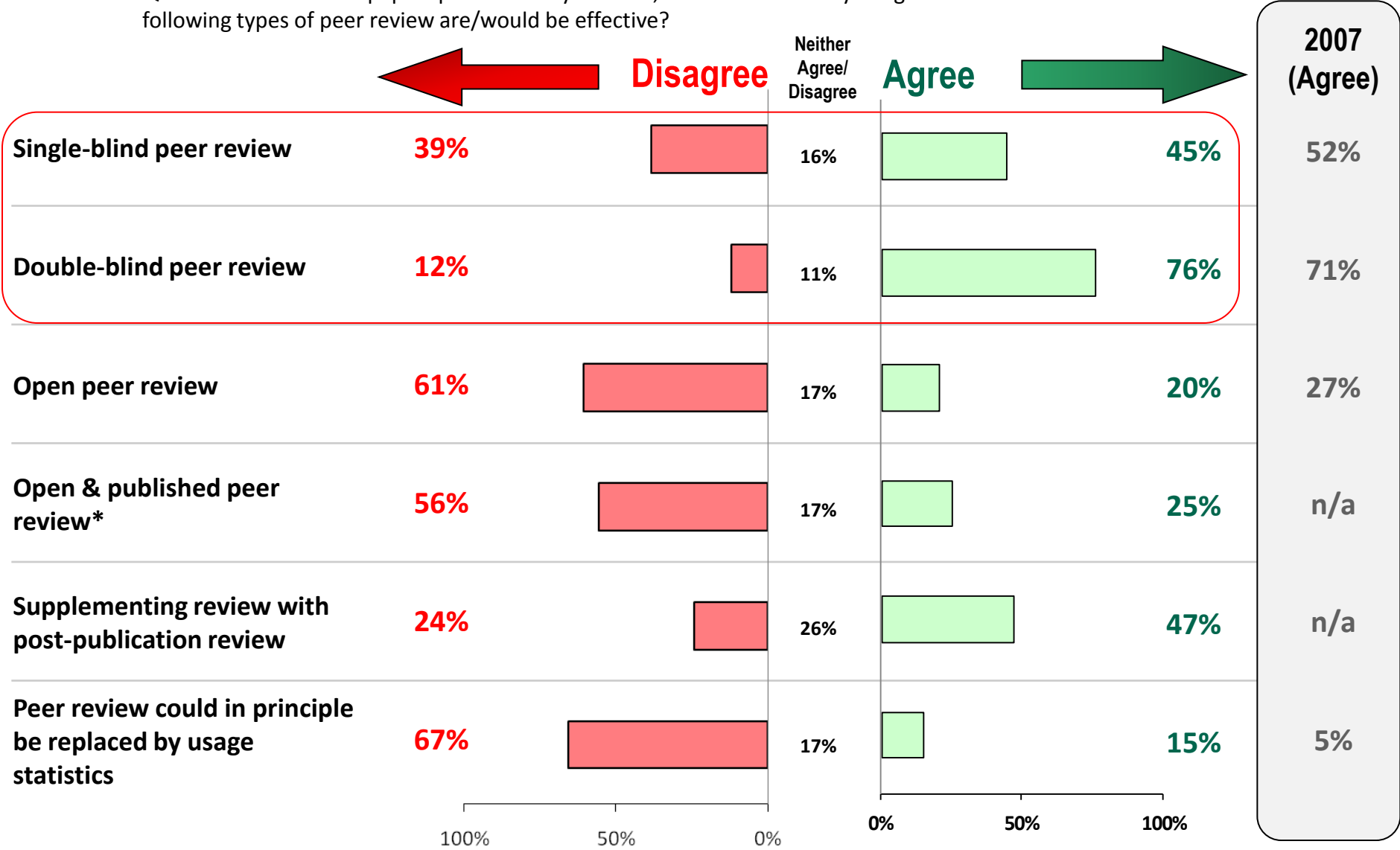
Question: Please indicate the extent to which you agree with the following statements





# What form of review is most effective?

Question: For research papers published in your field, to what extent do you agree that the following types of peer review are/would be effective?



\* This is where the authors and reviewers are known to each other and additionally the reviewers' signed reports are openly published alongside the paper

# Peer review influencing behaviour

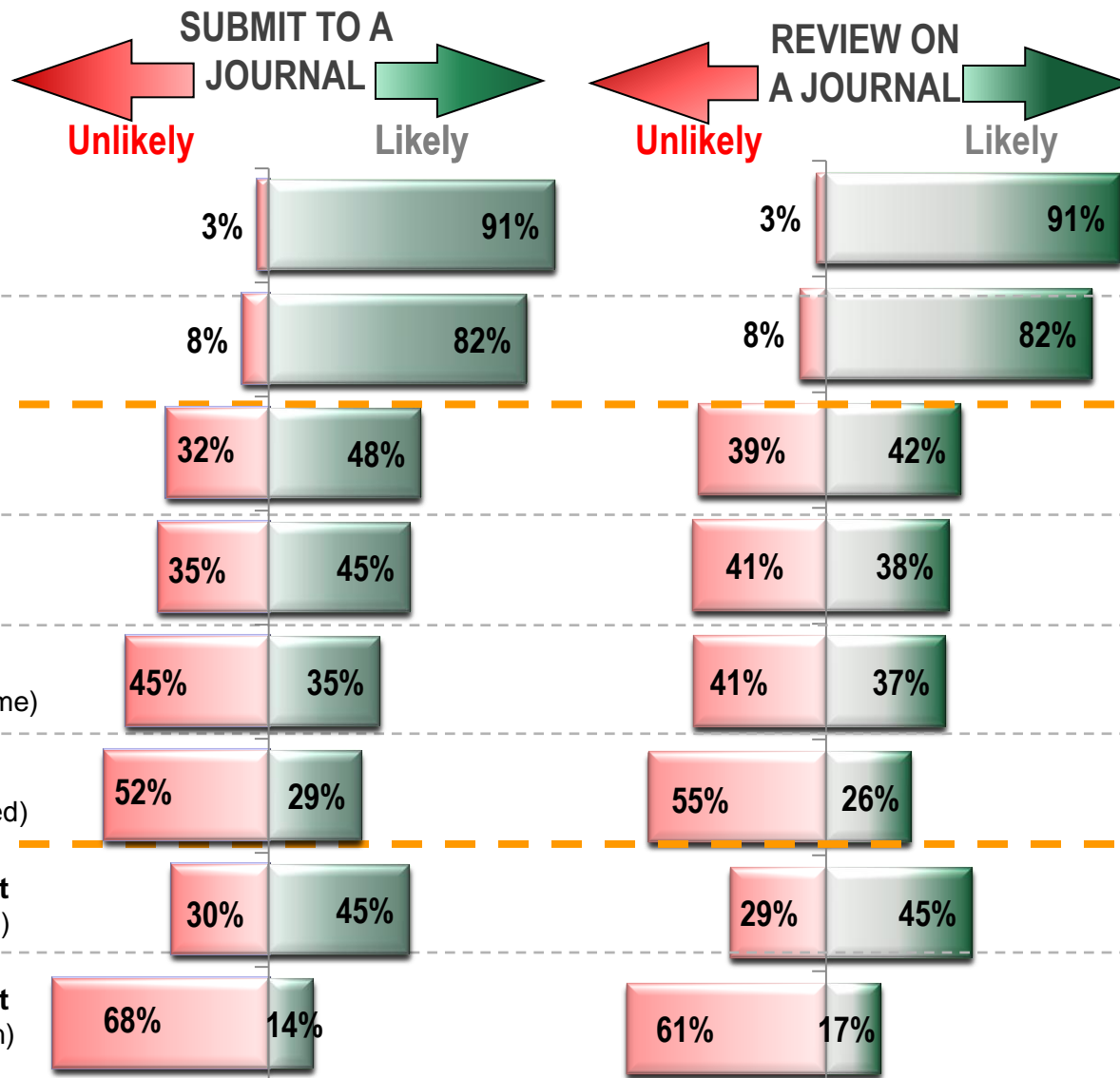
Q16. How likely is it you would submit/review a research article to/on a journal that conducted the following form of assessment

All respondents  
n= 2,700

Traditional

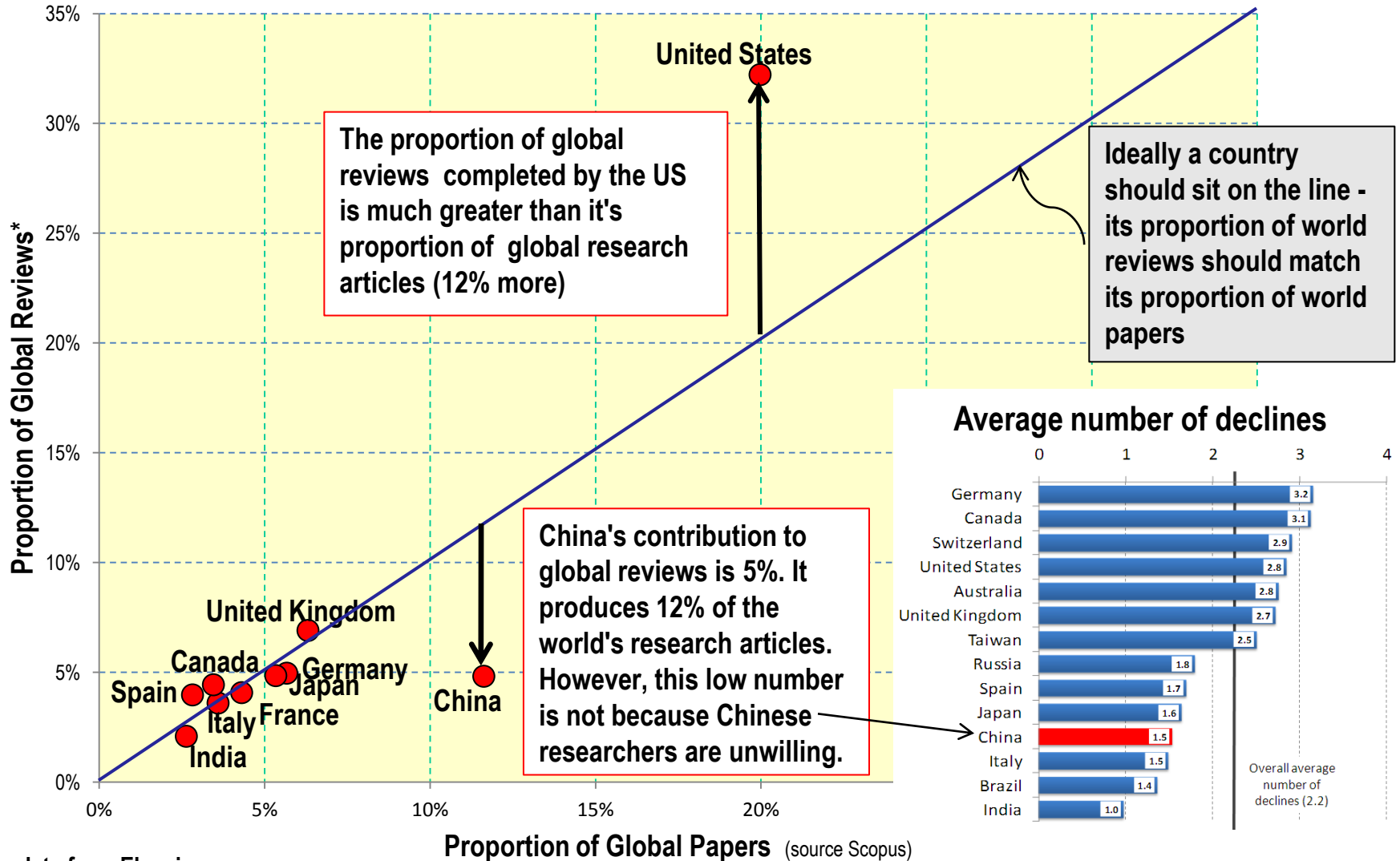
Open Peer Review

Commentary



# Who bears the burden of peer review

## % of global reviews vs % global research output



\*Based on data from Elsevier

# ...some initiatives in peer review

## Open Peer Review

Purpose: increase transparency and eliminate bias

Reviewers' names and reports made available to author/s

Reviewers' names published with paper

Reviewers' & Readers' reports/comments published with paper (attribution optional)

Increasingly more open

Practitioners

BMJ

frontiers

BioMed Central

BIOLOGY DIRECT

Atmospheric Chemistry and Physics

SHAKESPEARE QUARTERLY

Approaches

# British Medical Journal

Manuscripts randomised either to have:

- the reviewer's signed report made available on the BMJ's website alongside the published paper (intervention group)
  - report made available only to the author (control group).
- The intervention was the act of revealing to reviewers—after they had agreed to review but before they undertook their review—that their signed report might appear on the website.

55% of reviewers approached to take part in the study declined.

There was no significant difference in review quality between the two groups.

Reviewers in the intervention group took significantly longer to review (mean difference 25 minutes)

van Rooyen, S. Delamothe, T., Evans, S.J.W. (2010) Effect on peer review of telling reviewers that their signed reviews might be posted on the web: randomised controlled trial. *BMJ* 341 c5729

# Atmospheric Chemistry and Physics

On average, each paper receives 4–5 comments during peer review which are available publicly (includes reviewer, editor, community and author responses).

About 1 in 4 papers receives a comment from the scientific community in addition to the comments from designated referees.

In total, there are typically 0.5 pages of comments per page of original discussion paper.

3 out of 4 referee comments are posted without the referee's name, showing that most referees in the scientific community of ACP prefer anonymity.

Pöschl, U. (2010) Interactive Open Access Publishing and Peer Review: The Effectiveness and Perspectives of Transparency and Self-Regulation in Scientific Communication and Evaluation. *Liber Quarterly* 19 pp. 293-314

# ...some initiatives in peer review

Cascading peer review

Purpose: Reduce burden on reviewers

Approach

Reviews are passed on to next journal

Practitioners



# Neuroscience Peer Review Consortium - NPRC

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## What is it?

- The Neuroscience Peer Review Consortium is an alliance of 37 journals that have agreed to accept manuscript reviews from other members

## Process:

- Authors whose papers are rejected by a participating journal, and wish to submit their manuscript to a second journal, request the first set of reviews be forwarded.

## Modest Success

- <5% of ms submitted have been forwarded to another consortium journal
  - Low uptake due to low awareness
  - Lack of desire to disclose previous reviews (want a fresh start)
- For those papers using the scheme
  - Majority are sent to original referees again for verification of revisions made
  - 36% have a final decision made without need to re-review
- Pilot started Jan 2008 (Extended in Nov 2009, and again in Nov 2010) [nprc.incf.org](http://nprc.incf.org). Will be re-evaluated in November 2011.



# ...some initiatives in peer review

Approaches

Removing peer review as a filter tool for impact

Peer review normally anonymous – all papers judged to be technically sound published

Papers previously rejected published

Purpose: Remove bias, speed up publication

Practitioners



# PLOS one

- Introduced in December 2006
- Acceptance rate of 70%
- Just under 6,800 articles published in 2010
- Assessing impact - the community decides
  - citation metrics - IF of 4.4
  - usage statistics - ave. downloads per article (2010) = 900
  - user ratings – 3% have ratings\*
  - reader comments – 14% have reader comments\*

\* Based on 120 randomly selected articles published in 2010

# Rejecta Mathematica

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- Takes pride at being journal of last choice
  - It will only accept manuscripts that have been rejected by other math journals.
  - Open Letter published - stating the case (in spite of the rejection) for the paper's value to the mathematical community.
  - Successful?
    - » 6 papers published in inaugural issue in July 2009
    - » 6 papers published in the second issue in June 2011

<http://math.rejecta.org/>

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**THANK YOU**