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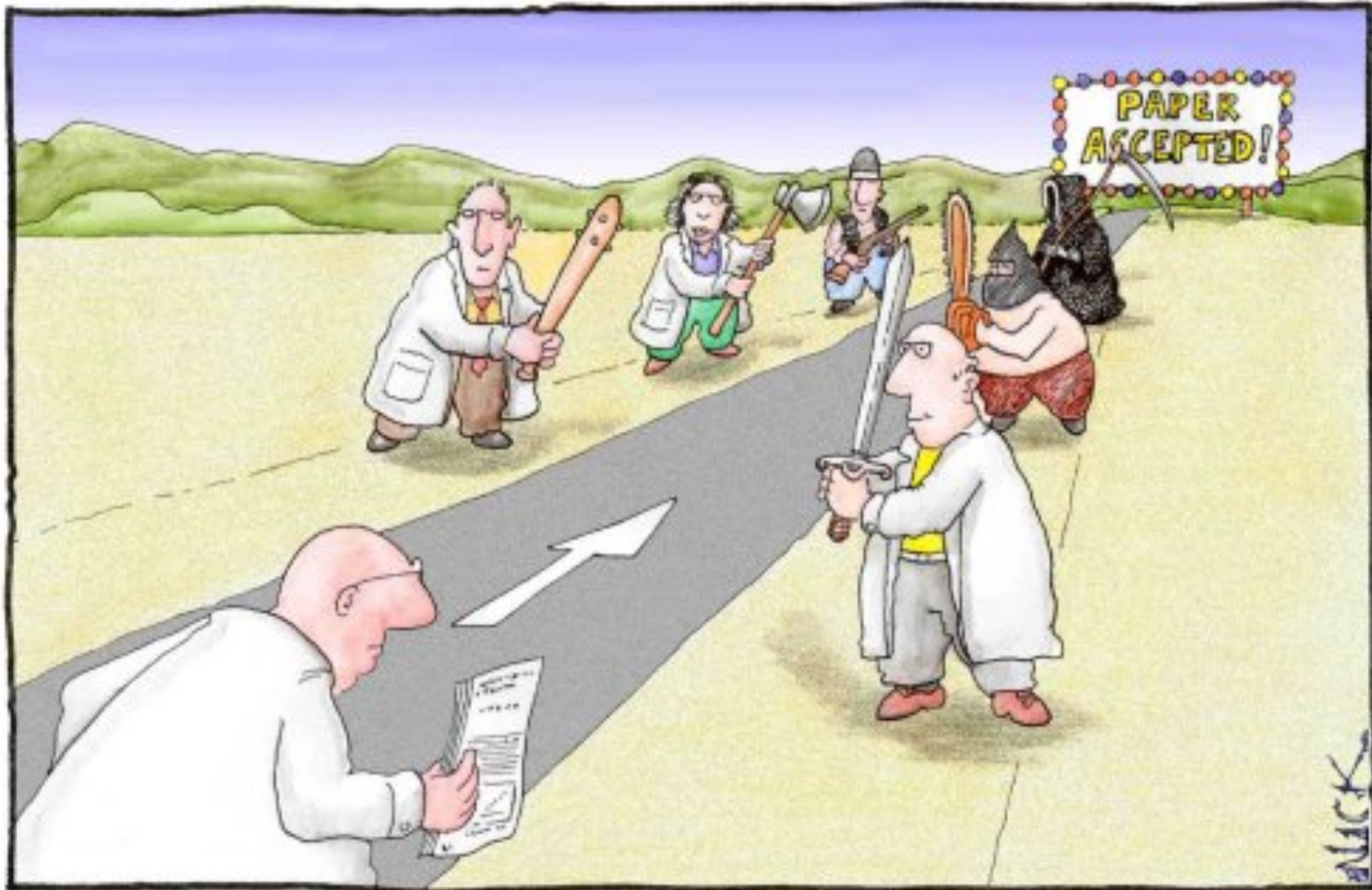


Peer Review – Alternatives?

Christopher Greenwell, Publishing Director, Elsevier
Rigour and Openness in 21st Century Science, Oxford, UK
Friday 12th April, 2013

RESEARCH &
ACADEMIC RELATIONS

Improving peer review?



Most scientists regarded the new streamlined peer-review process as 'quite an improvement.'

<http://rationallyspeaking.blogspot.co.uk/>



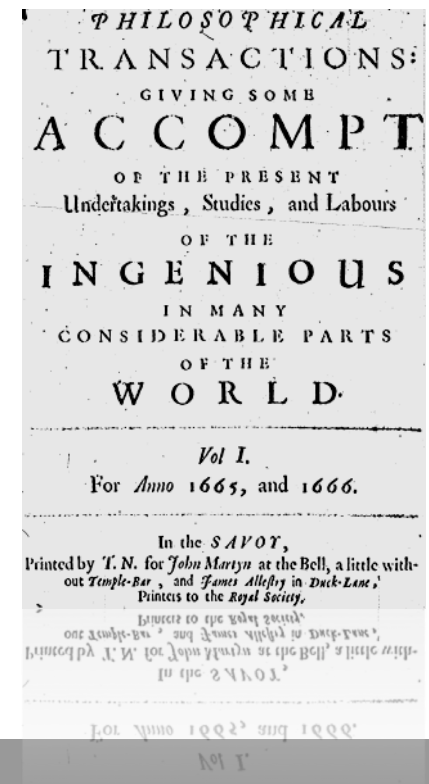
Background – and Breakdown?

The beginning of peer review

The first peer-reviewed journal was founded in 1665 by the Royal Society.

Although journal publishing has evolved dramatically since, the core functions remain:

- Registration of new research findings
- **Quality Assurance** through peer review
- Dissemination globally
- Archiving in perpetuity



Peer review by numbers

In 2011 there were **1,727,317** research articles published in peer-reviewed journals:

- That's about 3 per minute or one every **20 seconds**
- But an average peer review takes **2 to 4 hours...**

Electronic submission and online publishing have led to an explosion in the number of submissions and in the number of outlet journals.

Peer review by numbers

In 2012, just over **1 million** research articles were submitted to Elsevier journals:

- That's an average of about **1.5 per day per journal**
- They were handled by Editors-in-Chief, Associate Editors, Editorial Boards and over **542,000 reviewers**

After review and revision Elsevier will ultimately publish around **one third** of these submissions

Increased volume = Increased noise

The New York Times

Doctor Accused of Leak to Drug Maker

By STEPHANIE SAUL
Published: January 31, 2008



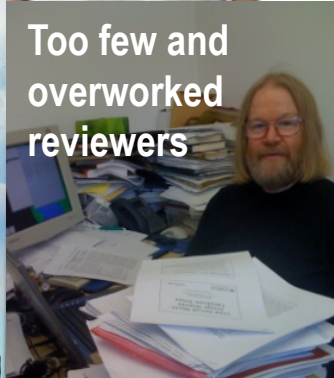
PLASTIC
FANTASTIC

HOW THE BIGGEST
FRAUD



IN PHYSICS SHOOK THE
SCIENTIFIC WORLD
EUGENIE SAMUEL REICH

Too few and
overworked
reviewers



Exploits
of Jan
Hendrik
Schön

As the number of papers has increased this seems to have been accompanied by a general erosion of faith in peer review:

- It holds back innovative research
- It does not improve research articles
- It is biased
- It is not good at stopping plagiarism or fraud



Woo Suk Hwang

SCIENTIFIC
AMERICAN

Scan Uncovers Thousands of Copycat
Scientific Articles

Mainstream media takes notice



“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)



“Criminal minds betray the academy's higher principles” (August 5th, 2010)



“Has the peer review process lost credibility?” (Sandy Starr, Oct 9th 2010)



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Researchers Researched

So what do we know about peer review?



sense about science

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

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

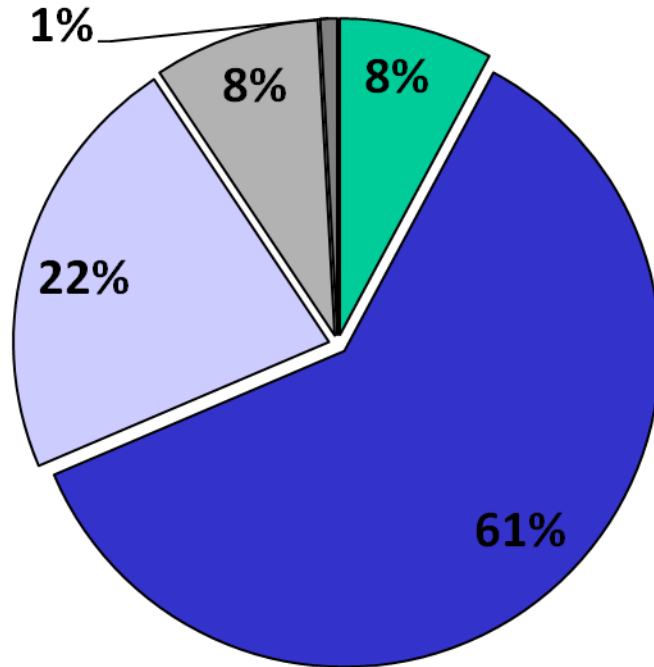
Researchers answered a series of questions regarding their attitude towards peer review.

Altogether 4,037 researchers completed the survey.

Builds on a previous survey in 2007 and has been built on again with peer review guide for young researchers.

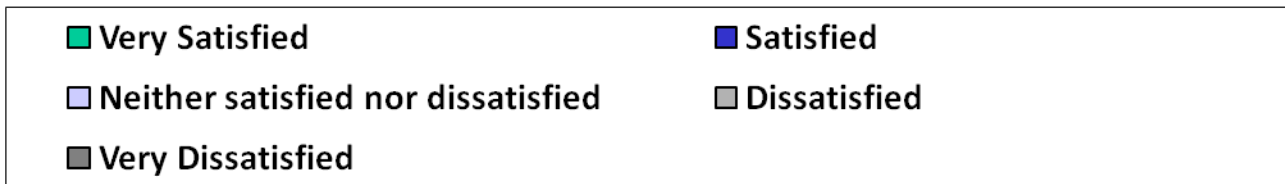
Broad satisfaction with peer review

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.



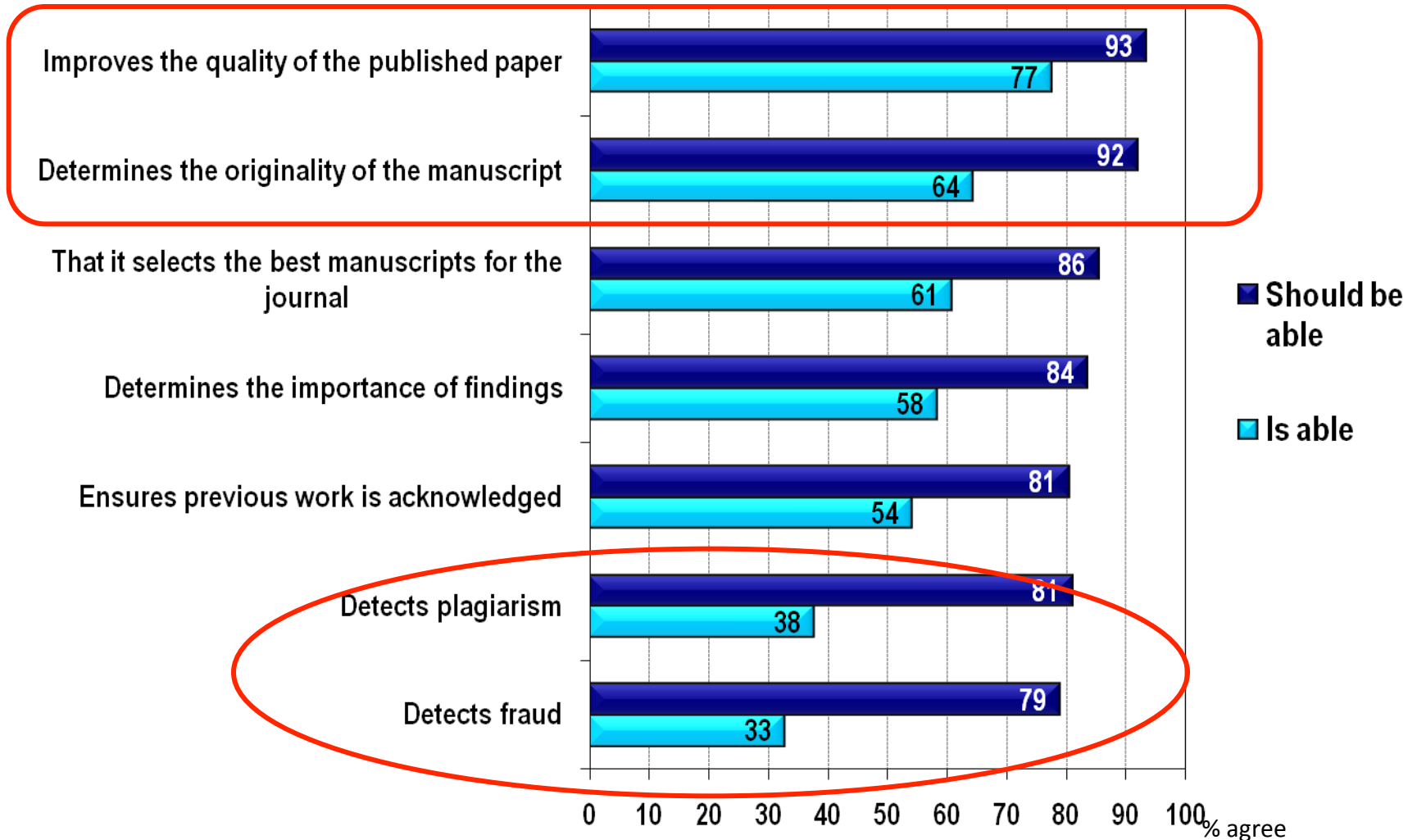
(n=4037)

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

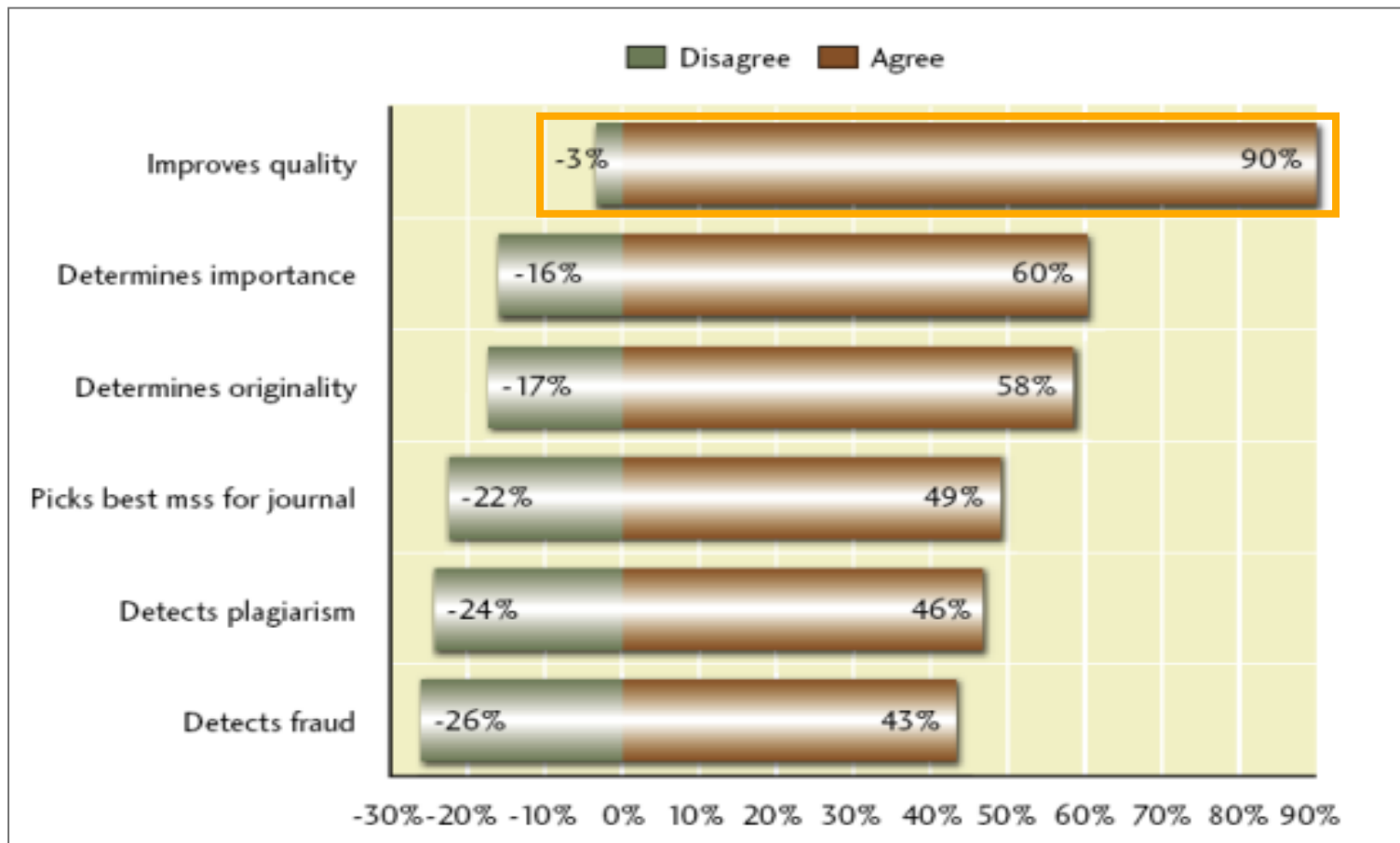
But peer review is not a panacea

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?



Peer review - Researcher perceived value

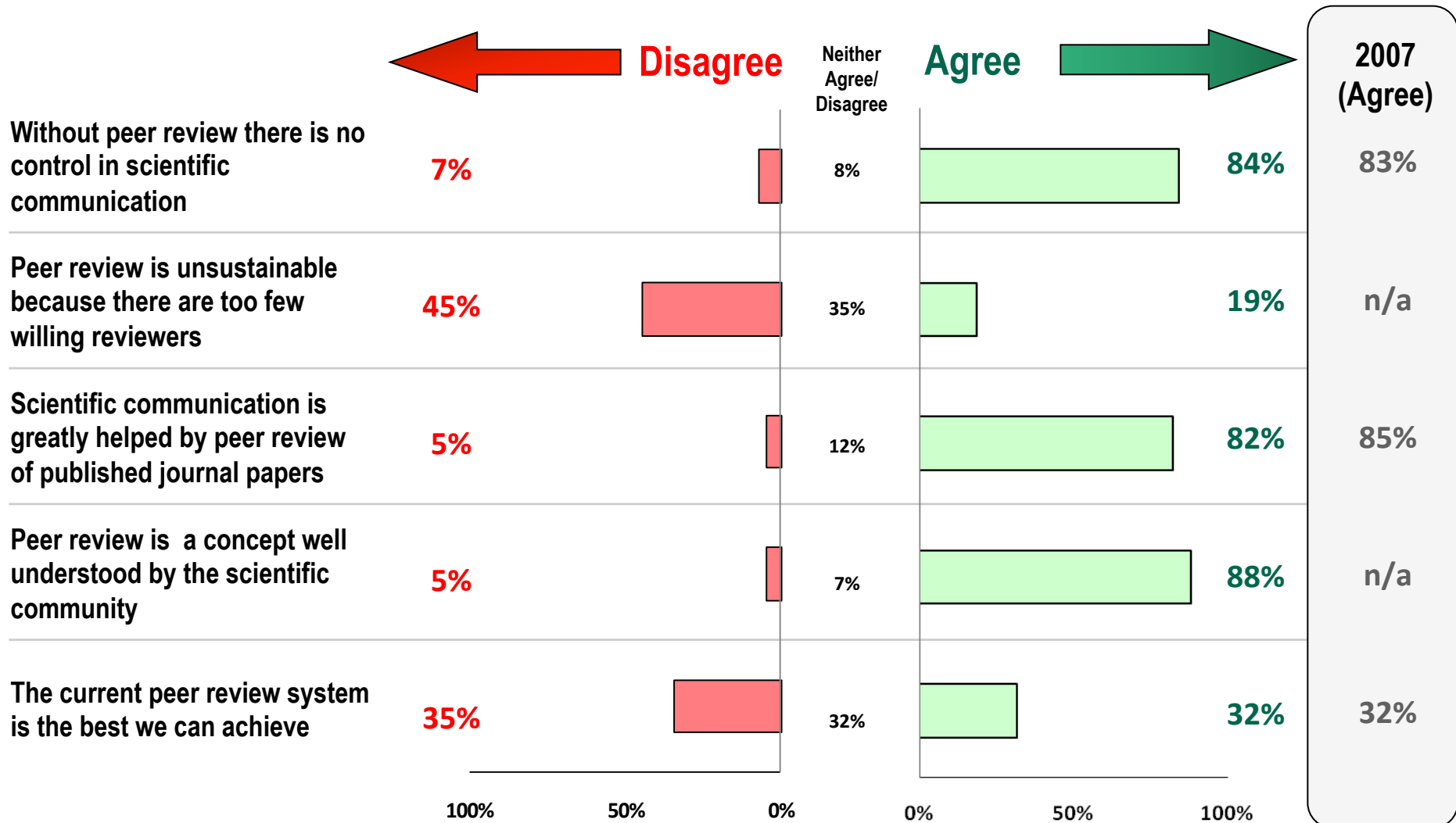


90% of researchers believe that the peer review process improves the quality of published research but there were also comments about speed and overload

Source: Peer review: benefits, perceptions and alternatives, Mark Ware Consulting, Publishing Research Consortium 2008

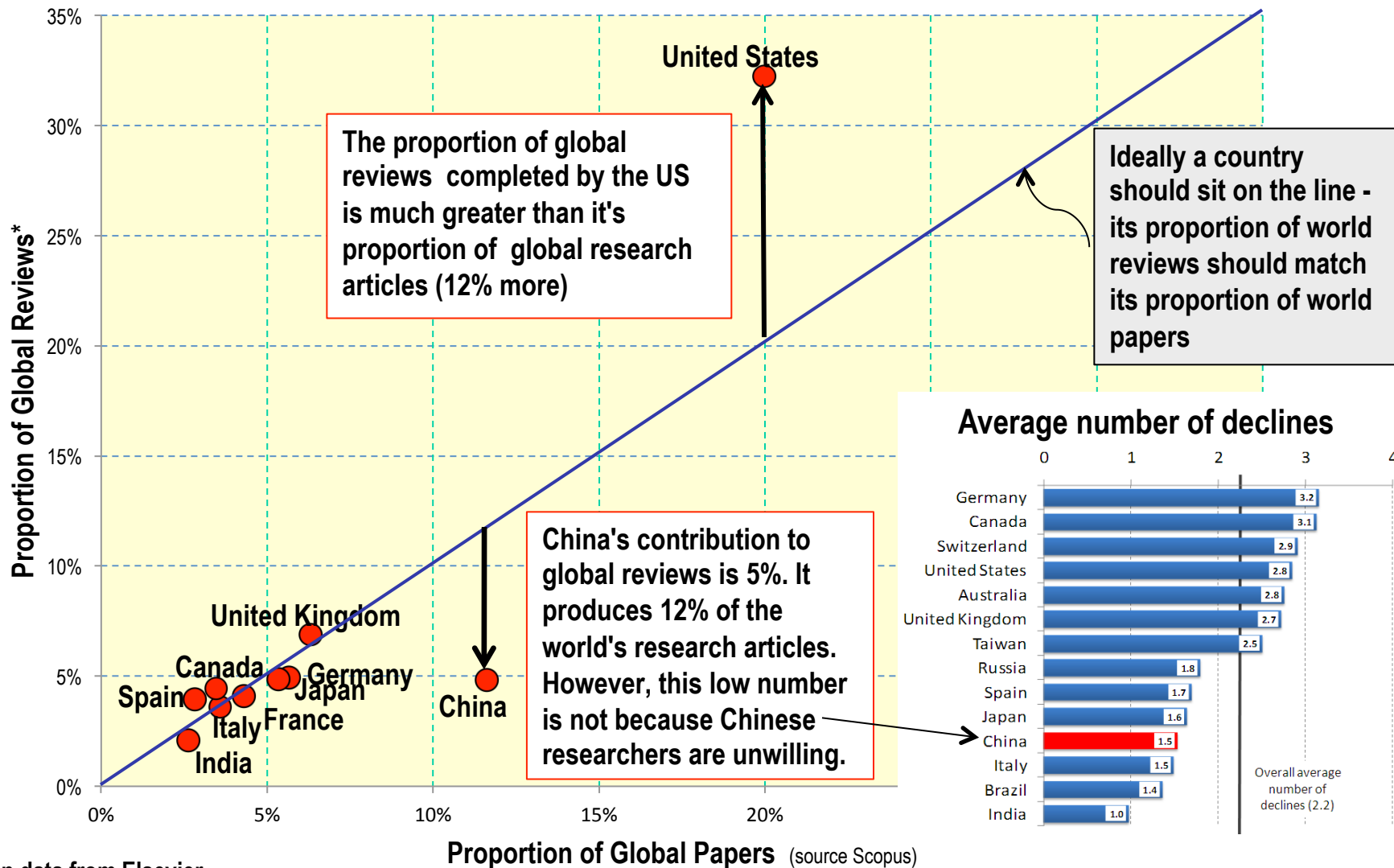
Can we do better?

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



Who bears the burden of peer review

% of global reviews vs % global research output



*Based on data from Elsevier

Peer review and rigour

What does this mean?

It means that peer review is seen as critical to:

- **maintaining standards,**
- **identifying excellent research, and**
- **encouraging articles that are comprehensive enough to be reproducible**

Peer review is a vital part of rigour in science.

But can the system be improved?



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Alternatives

Evolution and efficiencies

In recent years the journal structure has evolved:

- **Editorial desk rejects** of clearly unsuitable papers are now more widely accepted as standard (and beneficial for reviewers, authors and editors)
- Journals have been **restructured** – more editors, less emphasis on regional structures or editorial offices

Electronic workflows/systems have allowed for the efficient movement of manuscripts around the world

Cascades

Journals have now begun to group together to cascade articles to more suitable journals to reduce reviewer requests and increase efficiency:

- **Reviews stay with the paper** so that papers are not reviewed twice
- The Neuroscience Peer Review Consortium is an alliance of **around 40** journals that have agreed to accept manuscript reviews from other members

Cascades will become more popular but they will probably remain in-house in many cases



Open Peer Review

New workflows have been trialled in recent years:

- **Open Peer Review** which is designed to increase transparency and remove bias by allowing authors to see reviewer names and, in some cases, publishing reviewer reports alongside the paper.
- Has been trialled in several journals but to date **uptake has been low and reviewers still have a reluctance to be revealed**
- Can be **pre- or post publication**
- Already exists to some degree in **discussion papers** in existing journals

FACULTY of 1000 PeerJ



BMJ

Reducing the need for reviews

Several reduce peer review:

- Some allow for a more **flexible** system which will publish anything that is technically sound. For instance PLOS One's criteria is "*Submissions are considered on the basis of scientific validity and technical quality, not perceived impact.*"
- Others deliberately look for **rejected (but still peer reviewed)** material.
- Often these start as cascades that fill a need for **fast publication** but they can become the first choice.



Variations on a theme

Several new initiatives are also gaining exposure:

- **Review and then allocation to journal** – authors choose review deadlines and journals offer publication based on Peerage Article Quality (PAQ)
- **Peer review independent of journal** – papers are chosen by journals based on “R-Score (an overall score based on Quality of Research, Quality of Presentation, and Novelty and Interest) as a new article level metric.” Claims to reduce bias.
- Review without **readership context** or allocation is more difficult.

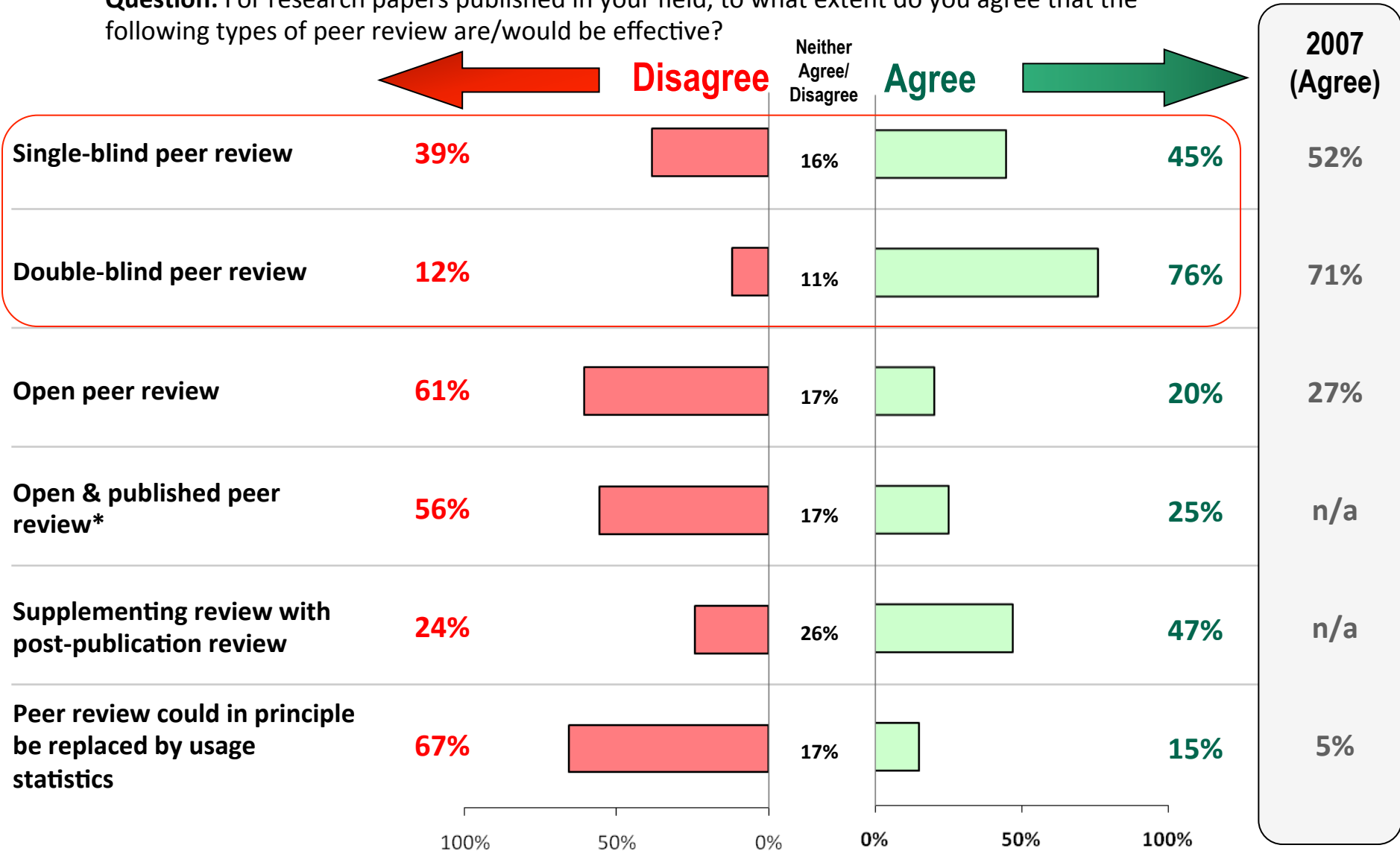
Almost all these initiatives (to date) are in health and life sciences

Peerage of Science



What do researchers think?

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?



Other challenges

The **number of articles** is a challenge but there are other challenges to the peer review process:

- **Reward and recognition.** Not just financial but recognition by research assessment, the academic community and publishers
- **What defines a paper?** Increasingly papers now include data sets, executable code, video and audio – what should be reviewed and how will we define these elements in the future?

Conclusion

Why? Peer review, in whatever form, is still seen as vital to the publication process as an indicator of quality.

How? There are many new models for peer review. The “traditional” model prevails but the pressure on the system has led to an evolution of the system. The review needs to be appropriate for the material being considered.

Drivers for Change? The key driver for change in peer review has to be the scientific community. Peer review has to meet your needs.

THANK YOU