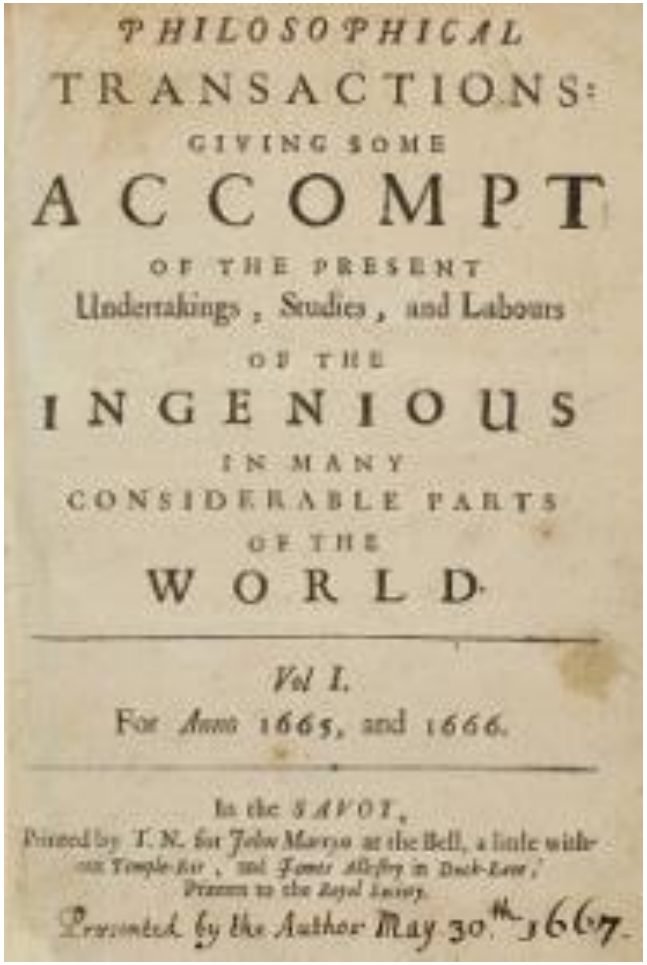
PLOS ONE: Managing Peer Review at Scale

OAI9 conference, Geneva

Damian Pattinson, PhD

June 2015

We have come a long way from this


PHILOSOPHICAL
TRANSACTIONS:
GIVING SOME
ACCOMPT
OF THE PRESENT
Undertakings, Studies, and Labours
OF THE
INGENIOUS
IN MANY
CONSIDERABLE PARTS
OF THE
WORLD.

Vol I.
For Anno 1665, and 1666.

In the SAVOY,
Printed by T. N. for John Martyn at the Bell, a little within
the Temple-Bar, and James Allestry in Duck-Lane,
Printers to the Royal Society.
Presented by the Author May 30th 1667.

What do you mean by scale?

57,000 submissions

32,000 publications

6,000 Academic Editors

PLOS ONE IN NUMBERS

(2014)

180,000 citations

140,000 reviews

5 million pageviews per month

80,000 reviewers

450,000 authors

How did we get so big?

- Multi-disciplinary
- Online only
- Open access
- Large, independent editorial board
- Manuscripts assessed only on the rigour of the science, not the novelty/scope of the topic

What does our scale offer?

- Visibility
- Large contributor network
- Easy sharing
- Negative results
- Reproductions
- Hidden connections
- Breadth of knowledge

What does our scale reveal?

What does our scale reveal?

- Plagiarism
- Figure manipulation
- Fake results
- Undeclared competing interests
- Publication bias
- Statistical manipulation
- Lack of ethical approval
- Data theft
- Fake peer review
- Lack of consent

Problem 1: peer review is expected to police the literature

BioMed Central retracting 43 papers for fake peer review

with 20 comments

BioMed Central is retracting 43 papers, following their investigation into 50 papers that raised suspicions of fake peer review, possibly involving third-party companies selling the service.

In November 2014 we wrote about fake peer reviews for Nature; at that point there had been about 110 retractions across several journals. The addition of 16 retractions by Elsevier for the same reason, and today's 43 from BMC, brings retractions resulting from the phenomenon up to about 170.

BMC has also contacted institutions regarding 60 additional papers that were rejected for publication, but seem to be part of the same kind of scam. Regarding the third-party agents, BMC senior editor of scientific integrity Elizabeth Moylan writes:

> Some of the manipulations appear to have been conducted by third-party agencies offering language-editing and submission assistance to authors. It is unclear whether the authors of the manuscripts involved were aware that the agencies were proposing fabricated reviewers on their behalf or whether authors proposed fabricated names directly themselves.

When we asked for more information on these third parties, a representative for the journal told us:

Study had claimed that a brief discussion with a gay canvasser could make a voter more likely to support gay marriage.

Gay marriage study author LaCour issues defense, but critics aren't budging

Tweet 106 Share 93 +1 3

David is a Deputy News Editor specializing in coverage of science policy, energy and the environment.

Email David

By David Malakoff | 30 May 2015 8:30 am | 27 Comments

The lead author of a now-retracted study of voter persuasion and gay marriage published by *Science* has released a lengthy response to some of the allegations that led to the retraction.

In the 23-page document, political science graduate student Michael LaCour of the University of California (UC), Los Angeles, attacks the methods and motives of researchers who raised questions about his research, but confirms that he lied about some funding sources and the incentives used to attract participants. And he admits that he destroyed the data used to produce the study, claiming that action was required by a UC Los Angeles institutional review board (IRB) in order to protect the privacy of participants.

LaCour's response does not, however, directly answer a number of other questions surrounding the study—and it raises new issues. LaCour does not address, for

How the editorial office can help

- Trial registration
- Data deposition
- Reporting guidelines
- Ethical approval
- Data availability
- Competing interests
- Financial disclosures
- Permissions

What do we ask reviewers to check?

- Methods
- Techniques
- Concepts
- Statistics
- Presentation
- Conclusions
- Ethics

Science has become more cross-disciplinary, but reviewers have not

- Reviewers are often only qualified to comment on small parts of a paper
- The traditional system of 2 reviewers + 1 editor is rarely sufficient to evaluate an entire manuscript
- The act of reviewing has become entirely separate from the act of reading

Problem 2: science has become too complicated for the reviewers

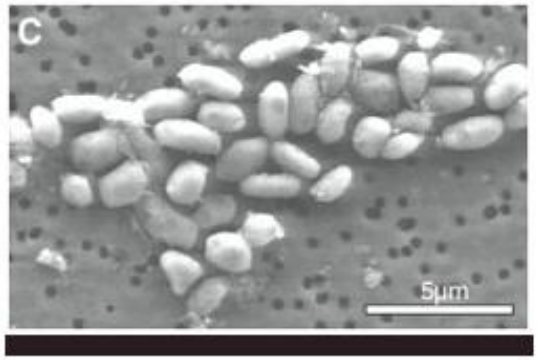
SCIENCE | THE STATE OF THE UNIVERSE. | DEC. 7 2010 10:53 AM

"This Paper Should Not Have Been Published"

Scientists see fatal flaws in the NASA study of arsenic-based life.

92 23 0

By Carl Zimmer



On Thursday, Dec. 2, **Rosie Redfield** sat down to read a new paper called "**A Bacterium That Can Grow by Using Arsenic Instead of Phosphorus.**" Despite its innocuous title, the paper had great ambitions. Every living thing that scientists have ever studied uses phosphorus to build

Slate

FROM WIRED

Retraction Watch

Tracking retractions as a window into the scientific p

Sebastiani group retracts genetics of aging study from Science

with 2 comments

When a group of researchers last year claimed to have found a "genetic signature" to identify people likely to live to 100, they were questioned immediately. Now they've retracted the controversial paper — but continue to stand behind their assertion.

The paper had been the subject of an "Expression of Concern" in November. The retraction notice in this week's *Science*:

> After online publication of our report "Genetic Signatures of Exceptional Longevity in Humans" (1) we discovered that technical errors in the Illumina 610 array and an inadequate quality control protocol introduced false positive single nucleotide polymorphisms (SNPs) in our findings. An independent laboratory subsequently performed stringent quality control measures, ambiguous SNPs were then removed, and resultant genotype data were validated using an independent platform. We then reanalyzed the reduced data set using the same methodology as in the published paper. We feel the main scientific findings remain supported by the available data: (i) A model consisting of multiple specific SNPs accurately differentiates between centenarians and controls; (ii) genetic

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About Ivan Oransky

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EXPRESSION OF CONCERN

Expression of Concern: Novel Allelic Variants in the Canine Cyclooxgenase-2 (Cox-2) Promoter Are Associated with Renal Dysplasia in Dogs

The PLOS ONE Editors

Published: November 8, 2012 • DOI: 10.1371/journal.pone.0049703

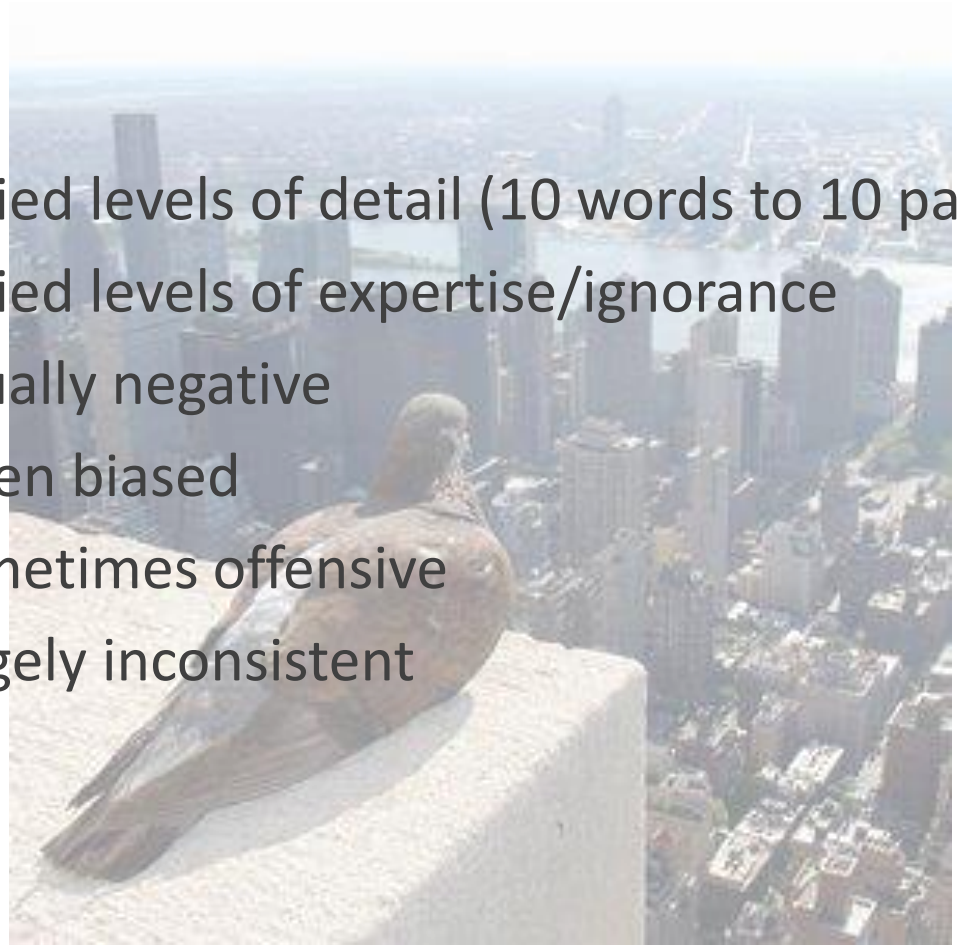
Reader Comments (1)
Media Coverage (0)

After the publication of this article, a number of concerns were raised in relation to different aspects of the research reported. The *PLOS ONE* editors carried out an evaluation of the history of the manuscript, which revealed that due to a failure in the peer review process, several aspects of the research were not adequately evaluated before publication

Confidentiality of review

- Readers lose useful information on the validity and usefulness of a paper
- Confidentiality breeds negativity – reviewers find reasons to withhold papers from the public, not make them available.
- Blind review has enabled publishers to hide what goes on during the review process
- The scientific community is unable to assess how well peer review works

What does our scale reveal about review?



- Varied levels of detail (10 words to 10 pages)
- Varied levels of expertise/ignorance
- Usually negative
- Often biased
- Sometimes offensive
- Hugely inconsistent

Problem 3: Peer review is a black box

Is peer review broken?

- No.
- But

- It has narrowed its focus to one very specific question:

IS THIS PAPER SUITABLE TO BE PUBLISHED IN THIS JOURNAL?

A better question

IS THIS PAPER OF VALUE TO ANY PARTICULAR READER?

- Someone reading a paper that they have identified as being relevant to them is usually better qualified to evaluate it than the reviewers were.

- Reviewer behaviour needs to change to focus on value to colleagues/community, not the journal.

- Readers should be the reviewers
  - Reviewing the reviewer
  - Collecting metadata to identify what aspects of work need review
  - Expanding the scope of review beyond the usual ‘expertise’

Amazon

omer Reviews

13

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r	5
r	0
r	2
r	2

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st Helpful Customer Reviews

people found the following review helpful

Gilt Edged Palace of Song

egrant on 26 Mar. 2004

t: Audio CD

release promises much. Will Oldham is one of the greatest songwriters around but his aversion to emporary production values has never exactly increased the prospect of his spellbinding tales about horses, on, incest and copulating mountains featuring on mainstream radio. On "Greatest Palace Music" he records ection of his older tracks with an accomplished coterie of session musicians.
nteresting to see which albums dominate: namely "Palace Brothers" (also known as "Days in the Wake") 'Viva Last Blues" which contribute five and four songs respectively. Suitably enough, given the enterprise at , the former of these albums was effectively Oldham's "Pink Moon", almost exclusively featuring only elf on acoustic guitar and voice. By comparison, "Viva" is probably Oldham's most off-putting sounding se which did actually mar soms of the stunning writing.

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Ad feedback

Most Recent Customer Reviews

Brilliant

I don't understand the negativity over this superb CD. for some it is a sacrilege to mess around with the Pal originals but he wrote them and can do whatever he li

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Published 3 months ago by 11thman

Country Gold

If you like great country music in the Gram Parsons/E Lou Harris mold and you cross that with the great voi lyrics of Bonnie Prince Billy then you will love this albu

TripAdvisor

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Traveller rating

Excellent	0
Very good	4
Average	6
Poor	11
Terrible	12

See reviews for

Families	4
Couples	12
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Business	4

Rating summary

Location	
Sleep Quality	
Rooms	
Service	
Value	
Cleanliness	

Traveller tips help you choose the right room. Room tips (7)

33 reviews sorted by: **Date** | Rating Season: All months | English first

colbkk
Bangkok
2 reviews

"Close to centre but poor hotel"

Reviewed 4 weeks ago via mobile

Pros- the room was a good siZe and generally clean e.g bed linen , tv available, tea and coffee in the room and close to town (10-15minute walk) Cons- the bathroom was tiny, the decor and fittings of the rooms

Explore similar hotels

Stack Overflow

13

Should I make an alternate class and call the constructor from there after the validation is realized?

Or should/could I use a static method in the class for the validation?

What is the best practice in this case?

java validation object constructor

share improve this question

edited Jun 12 at 13:10
Mureinik
51.5k ● 16 ● 29 ● 55

asked Jun 12 at 12:55
Tiago Sirious
90 ● 6

add a comment

7 Answers

active oldest votes

22

The standard practice is to validate the arguments in the constructor. For example:

```
class Range {
  private final int low, high;
  Range(int low, int high) {
    if (low > high) throw new IllegalArgumentException("low can't be greater than high");
    this.low = low;
    this.high = high;
  }
}
```

Side note: to verify that arguments are not null, which is fairly common, you can use:

```
import static java.util.Objects.requireNonNull;
```

Stack Exchange Podcast #65: The Word Has Two Meanings, You See

PIVOTing into a new career: please welcome Taryn Pratt, bluefooted Community …

Looking for a job?

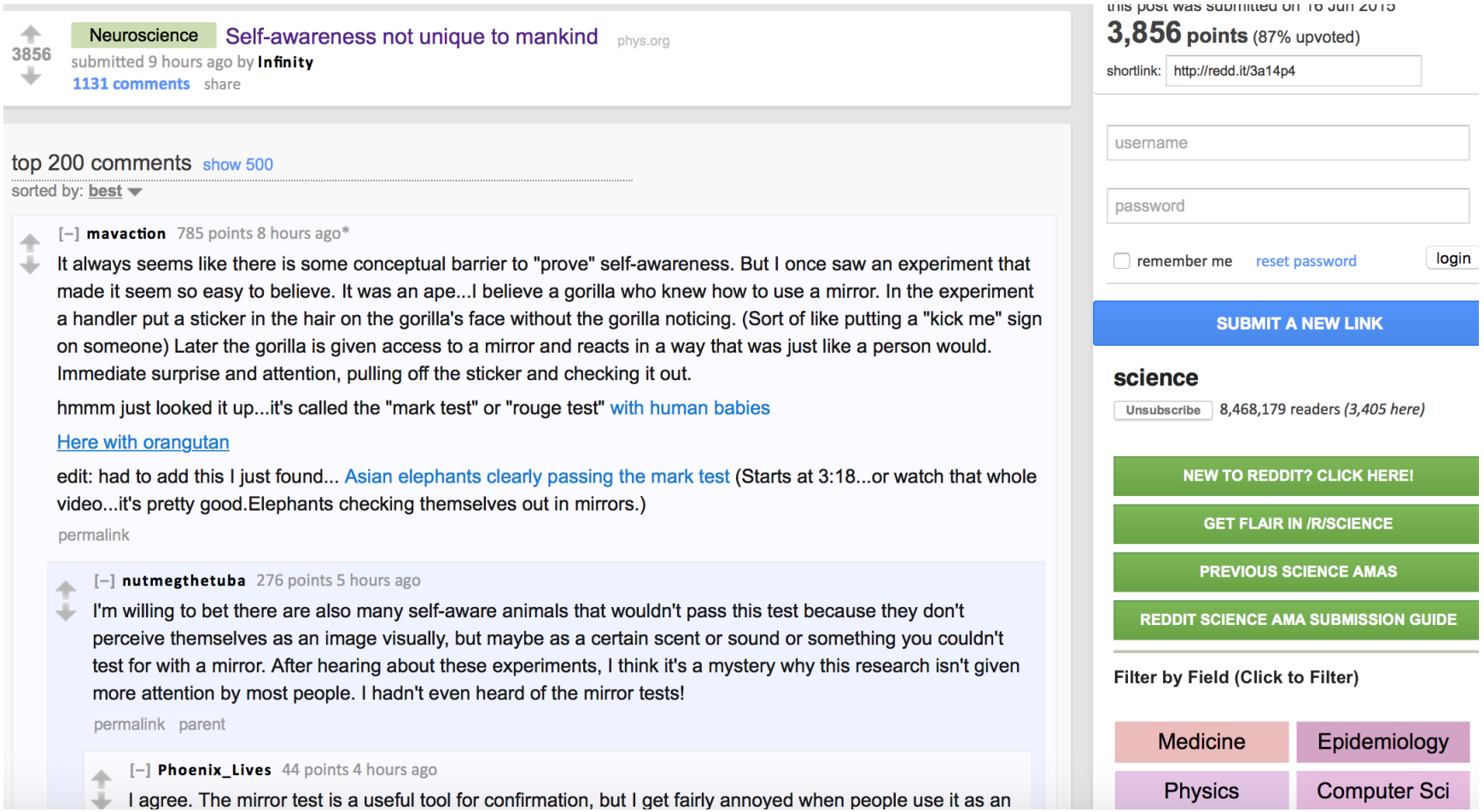
Java Developer
Government Digital Service
London, UK
java ruby

Eclipse UI Expert
ARM
Cambridge, UK / relocation
java c++

Software Engineer 3
Gumtree
Richmond, UK / relocation
java scala

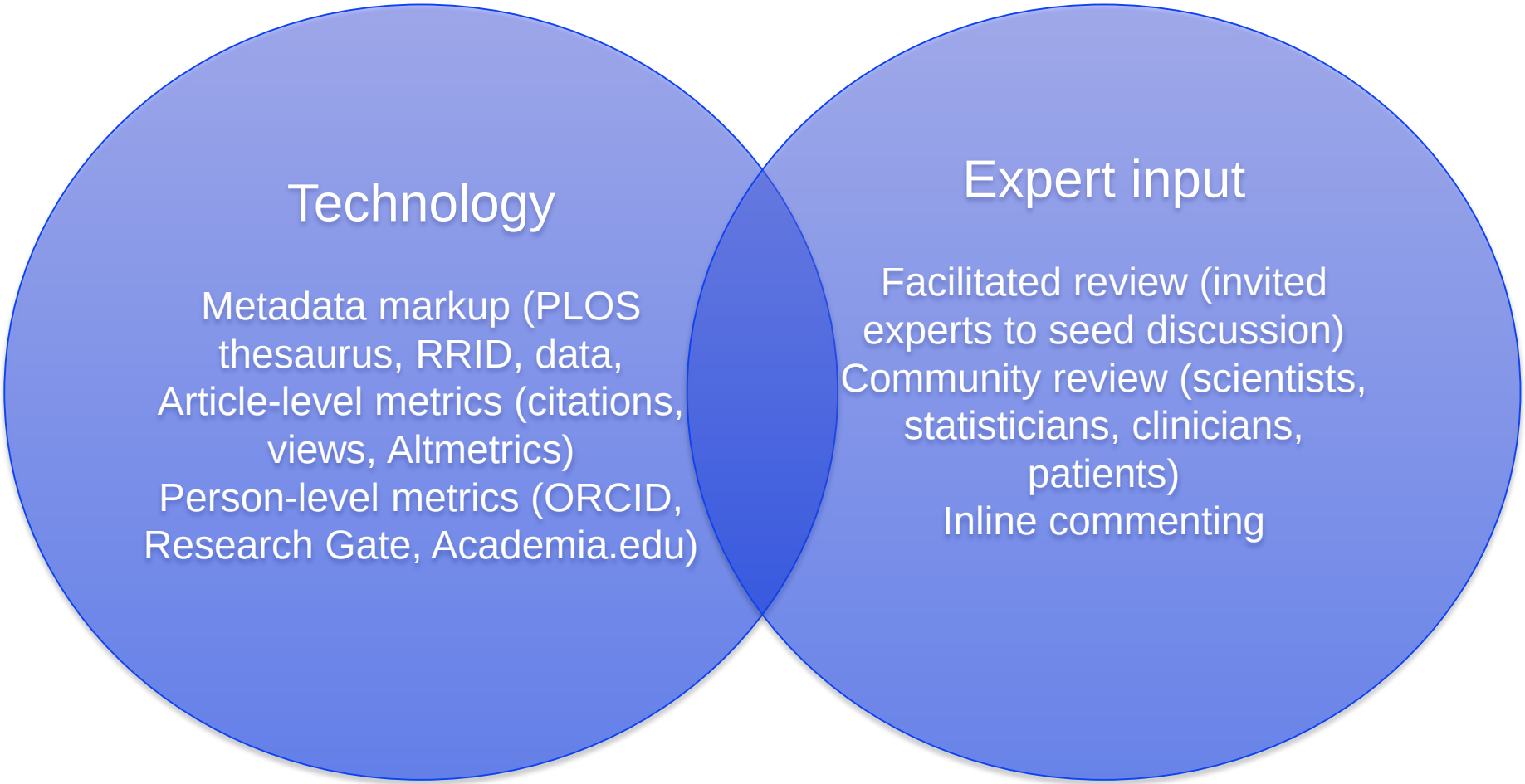
Senior Java Developer
Financial Times
London, UK
java rest

Reddit


3856
Neuroscience
Self-awareness not unique to mankind
phys.org
submitted 9 hours ago by Infinity
1131 comments share
top 200 comments show 500
sorted by: best
[–] mavaction 785 points 8 hours ago*
It always seems like there is some conceptual barrier to "prove" self-awareness. But I once saw an experiment that made it seem so easy to believe. It was an ape...I believe a gorilla who knew how to use a mirror. In the experiment a handler put a sticker in the hair on the gorilla's face without the gorilla noticing. (Sort of like putting a "kick me" sign on someone) Later the gorilla is given access to a mirror and reacts in a way that was just like a person would. Immediate surprise and attention, pulling off the sticker and checking it out.
hmmm just looked it up...it's called the "mark test" or "rouge test" with human babies
Here with orangutan
edit: had to add this I just found... Asian elephants clearly passing the mark test (Starts at 3:18...or watch that whole video...it's pretty good.Elephants checking themselves out in mirrors.)
permalink
[–] nutmegthetuba 276 points 5 hours ago
I'm willing to bet there are also many self-aware animals that wouldn't pass this test because they don't perceive themselves as an image visually, but maybe as a certain scent or sound or something you couldn't test for with a mirror. After hearing about these experiments, I think it's a mystery why this research isn't given more attention by most people. I hadn't even heard of the mirror tests!
permalink parent
[–] Phoenix_Lives 44 points 4 hours ago
I agree. The mirror test is a useful tool for confirmation, but I get fairly annoyed when people use it as an
this post was submitted on 16 Jun 2015
3,856 points (87% upvoted)
shortlink: http://redd.it/3a14p4
username
password
remember me reset password
login
SUBMIT A NEW LINK
science
Unsubscribe 8,468,179 readers (3,405 here)
NEW TO REDDIT? CLICK HERE!
GET FLAIR IN /R/SCIENCE
PREVIOUS SCIENCE AMAS
REDDIT SCIENCE AMA SUBMISSION GUIDE
Filter by Field (Click to Filter)
Medicine
Epidemiology
Physics
Computer Sci

What do we need to do this?

- Technology
  - Allows for interaction and sharing across the entire globe
  - BUT cannot make the interaction human
- ‘Humanness’
  - Provides validation and criticism of new discoveries
  - BUT needs to be linked to the right humans


Technology
Metadata markup (PLOS thesaurus, RRID, data,
Article-level metrics (citations, views, Altmetrics)
Person-level metrics (ORCID, Research Gate, Academia.edu)
Expert input
Facilitated review (invited experts to seed discussion)
Community review (scientists, statisticians, clinicians, patients)
Inline commenting

How do we get there?

1. ***OPEN IT UP***
   - Access
   - Data
   - Peer review
2. ***SHARE IT EARLY***
   - Public review
   - Community commenting
   - ‘Facilitated’ review
3. ***CHANNEL IT***
   - Self-organising communities
   - Content curation
4. ***GIVE CREDIT***
   - Incentivize readers to engage
   - Reward good behaviour

So that this…

…can become this