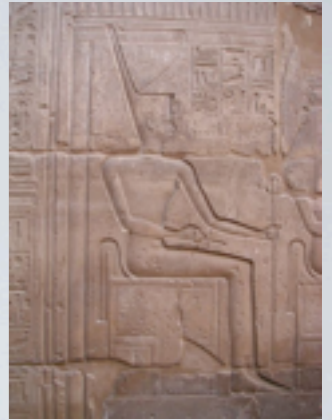




Qetesh, 1120 BC



Neith, 1250 BC

**Love for Science
or
'Academic Prostitution'?**

Lourdes Verdes-Montenegro

Instituto de Astrofísica de Andalucía (CSIC)

~~ERC Scientific Seminar, Brussels, 12/04/2013~~

---> Document Freedom Day 2014, CEVUG, Granada



NGC 5216: Keenan's System by Winder/Hager

Environment and galaxies

Large sample

Can't reproduce!

Sharing

Reinvent?

e-Science

Efficient search

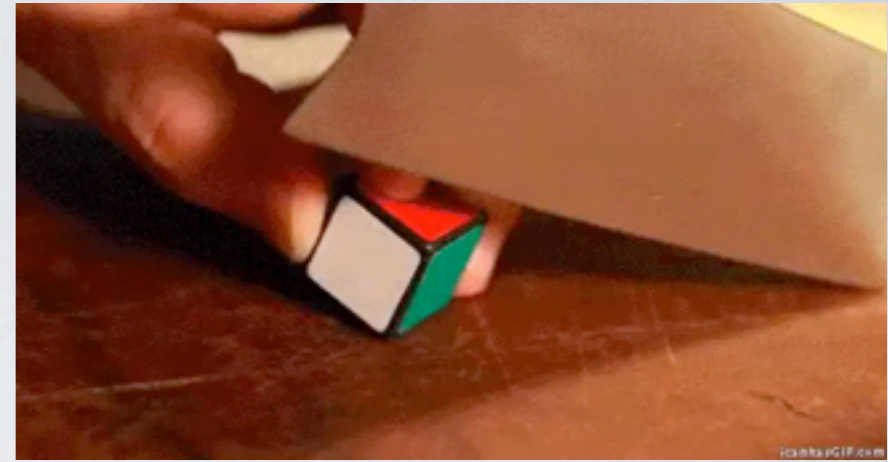
Different wavelengths

What should we publish?

Analysis tools

Outline

- Some warnings:
 - Marketing, Citations, Tricks
- Economy?
- New tools to measure impact
- New publication methods
- Reproducibility: data + methods
- Then what?



[The fine art of salami publishing](#)

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SCIENCE METRICS

The value of scientific output is often measured, to rank one nation against another, allocate funds between universities, or even grant or deny tenure. Scientometricians have devised a multitude of 'metrics' to help in these rankings. Do they work? Are they fair? Are they over-used? *Nature* investigates.

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Assessing assessment

Transparency, education and communication are key to ensuring that appropriate metrics are used to measure individual scientific achievement.

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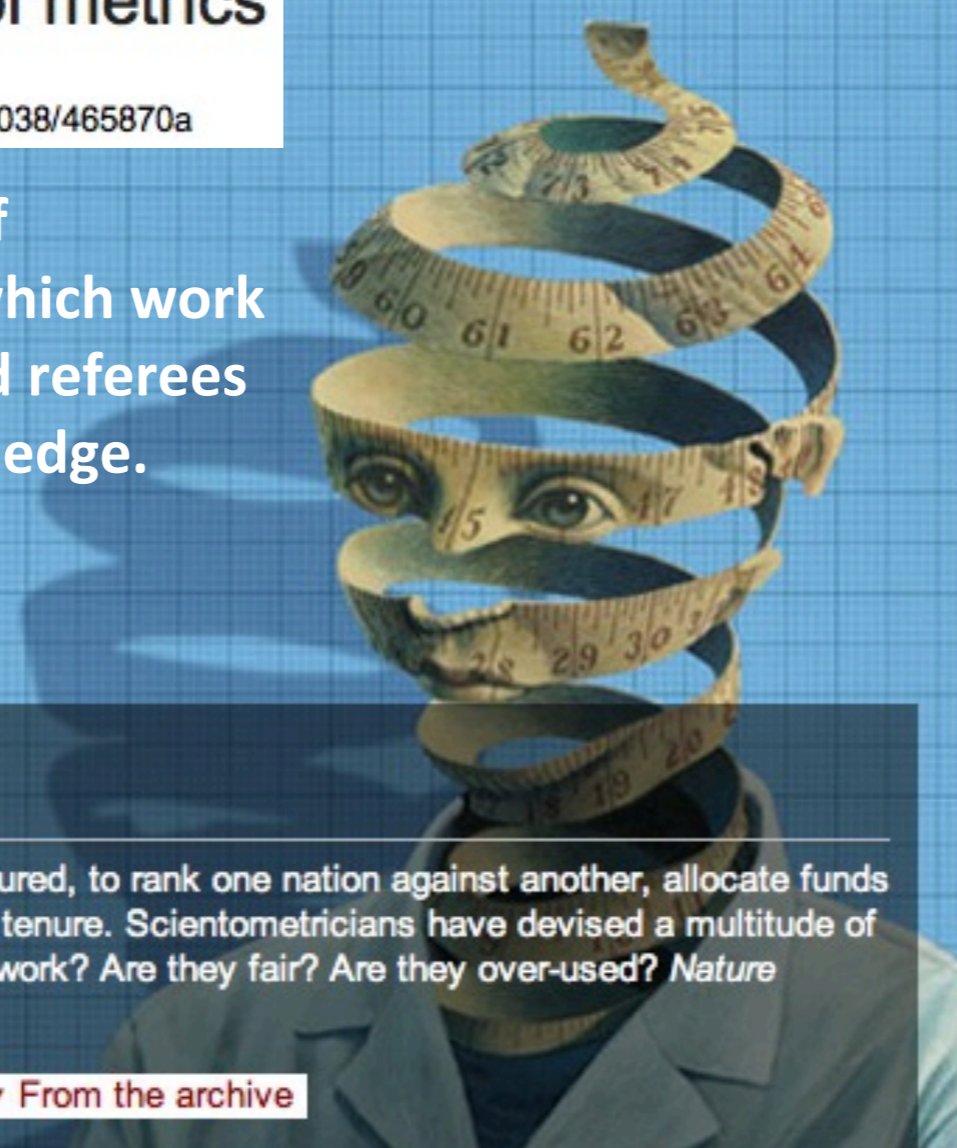
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How to improve the use of metrics

Nature **465**, 870–872 (17 June 2010) | doi:10.1038/465870a

Research reverts to a kind of 'academic prostitution', in which work is done to please editors and referees rather than to further knowledge.



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Research reverts to a kind of 'academic prostitution', in which work is done to please editors and referees rather than to further knowledge.

Academia is to knowledge what prostitution is to love; close enough on the surface but, to the nonsucker, not exactly the same thing

Nassim Nicholas Taleb, *The Bed of Procrustes: Philosophical and Practical Aphorisms*

SCIENCE METRICS

The value of scientific output is often measured between universities, or even granted 'metrics' to help in these rankings. Nassim Nicholas Taleb investigates.

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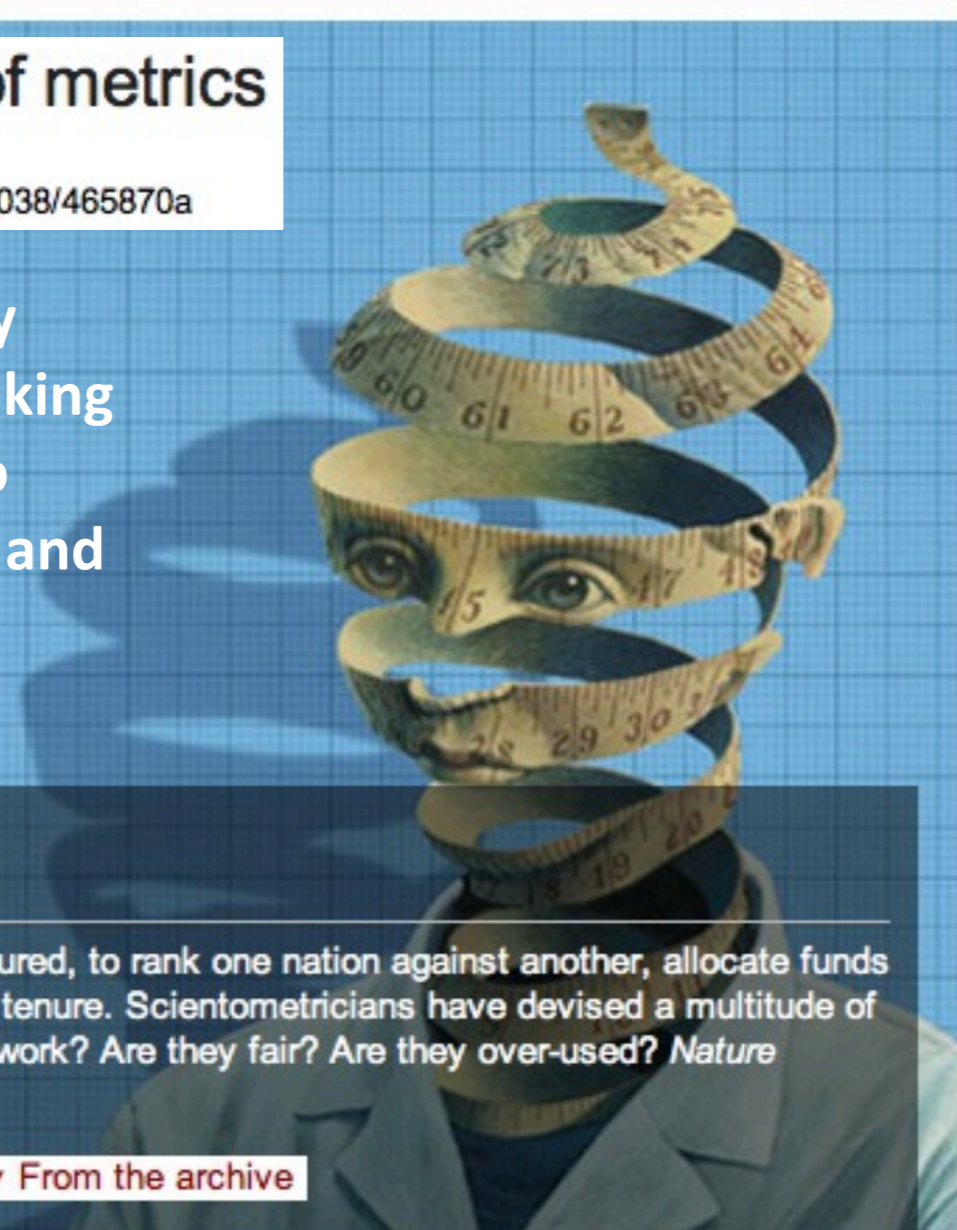
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How to improve the use of metrics

Nature **465**, 870–872 (17 June 2010) | doi:10.1038/465870a

... “Science is being killed by numerical ranking,” [...] Ranking systems lures scientists into pursuing high rankings first and good science second.



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Bruce Alberts is Editor-in-Chief of Science.

Impact Factor Distortions

2013

THIS EDITORIAL COINCIDES WITH THE RELEASE OF THE *SAN FRANCISCO DECLARATION ON RESEARCH Assessment* (DORA), the outcome of a gathering of concerned scientists at the December 2012 meeting of the American Society for Cell Biology.* To correct distortions in the evaluation of scientific research, DORA aims to stop the use of the “journal impact factor” in judging an individual scientist’s work. The *Declaration* states that the impact factor must not be used as “a surrogate measure of the quality of individual research articles, to assess an individual scientist’s contributions, or in hiring, promotion, or funding decisions.” DORA also provides a list of specific actions, targeted at improving the way scientific publications are assessed, to be taken by funding agencies, institutions, publishers, researchers, and the organizations that supply metrics. These recommendations have thus far been endorsed by more than 150 leading scientists and 75 scientific organizations, including the American Association for the Advancement

The misuse of the journal impact factor is highly destructive, **inviting a gaming of the metric** that can bias journals against publishing important papers in fields [...] that are much less cited than others

And it wastes the time of scientists by overloading highly cited journals such as Science with **inappropriate submissions from researchers who are desperate to gain points from their evaluators.**

Evaluator of yearly review of FP7 EC STREP project:
 “There are people who are paying other researchers to get their papers cited, so as to increase their h-index”

German Fascination With Degrees Claims Latest Victim: Education Minister



Tobias Schwarz/Reuters

Education Minister Annette Schavan, left, with Chancellor Angela Merkel on Saturday.

By NICHOLAS KULISH and CHRIS COTTRELL

Published: February 9, 2013

BERLIN — For 32 years, the German education minister’s 351-page dissertation sat on a shelf at [Heinrich Heine University](#) in Düsseldorf gathering dust while its author pursued a successful political career that carried her to the highest circles of the German government.

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Scientists Review Own Papers

In the latest effort to boost publication records, researchers are writing positive peer reviews for their work under other scientists’ names.

By Jef Akst | October 3, 2012

0 Comments Like 1 Pin it

+1 20 Link this Stumble Tweet this



At least four scientists have been cheating the peer review system in a whole new way: when submitting a paper to a scientific journal, they suggest reviewers with email addresses that track back to themselves; then they write a glowing review. So far, the ploy has succeeded in getting work published in *Experimental Parasitology*, *Pharmaceutical Biology*, and several other journals, including two in journals under the umbrella of publishing giant Elsevier, *The Chronicle of Higher Education* reported this week (September 30).



rs and Editors

arge This Image



The academic work was a time bomb, however, and it exploded last year when an anonymous blogger published a catalog of passages suspected of having been lifted from other publications without proper attribution.

The university revoked the doctorate of the minister, Prof. Dr. Annette Schavan, on Tuesday (she retains the title pending appeal), and on Saturday she was forced to resign her cabinet post. It was the second time a minister had resigned from the government of Chancellor [Angela Merkel](#) over plagiarism in less than two years.



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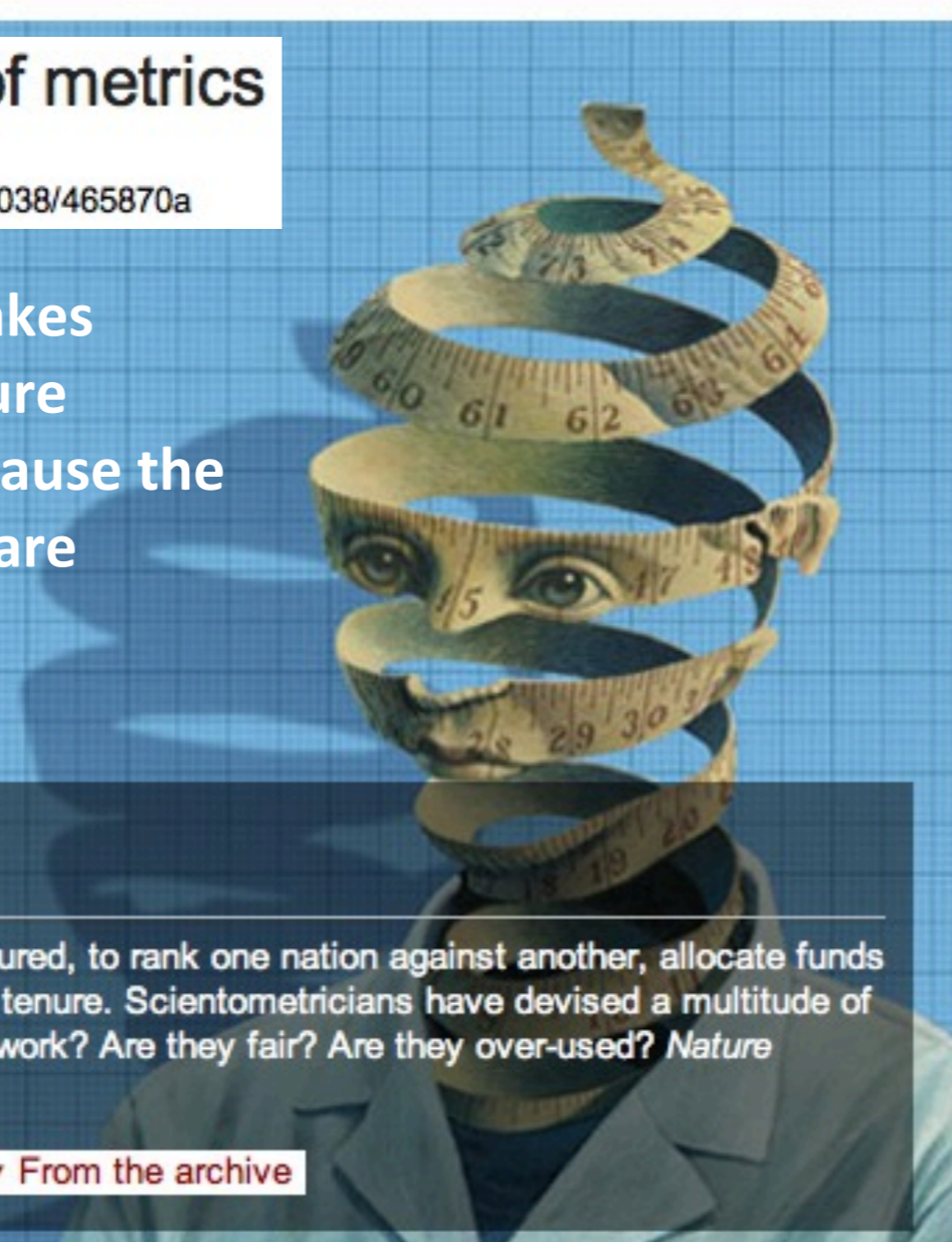
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How to improve the use of metrics

Nature **465**, 870–872 (17 June 2010) | doi:10.1038/465870a

Difficult to learn from mistakes made in evaluations of tenure promotions and grants, because the decision-making processes are rarely transparent



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Metrics: A profusion of measures

Scientific performance indicators are proliferating — leading researchers to ask afresh what they are measuring and why. Richard Van Noorden surveys the rapidly evolving ecosystem.

[Richard Van Noorden](#)

... an author's h-index can reflect longevity as much as quality — and can never go down with age, even if a researcher drops out of science altogether.

SCIENCE METRICS

The value of scientific output is often measured, to rank one nation against another, allocate funds between universities, or even grant or deny tenure. Scientometricians have devised a multitude of 'metrics' to help in these rankings. Do they work? Are they fair? Are they over-used? *Nature* investigates.

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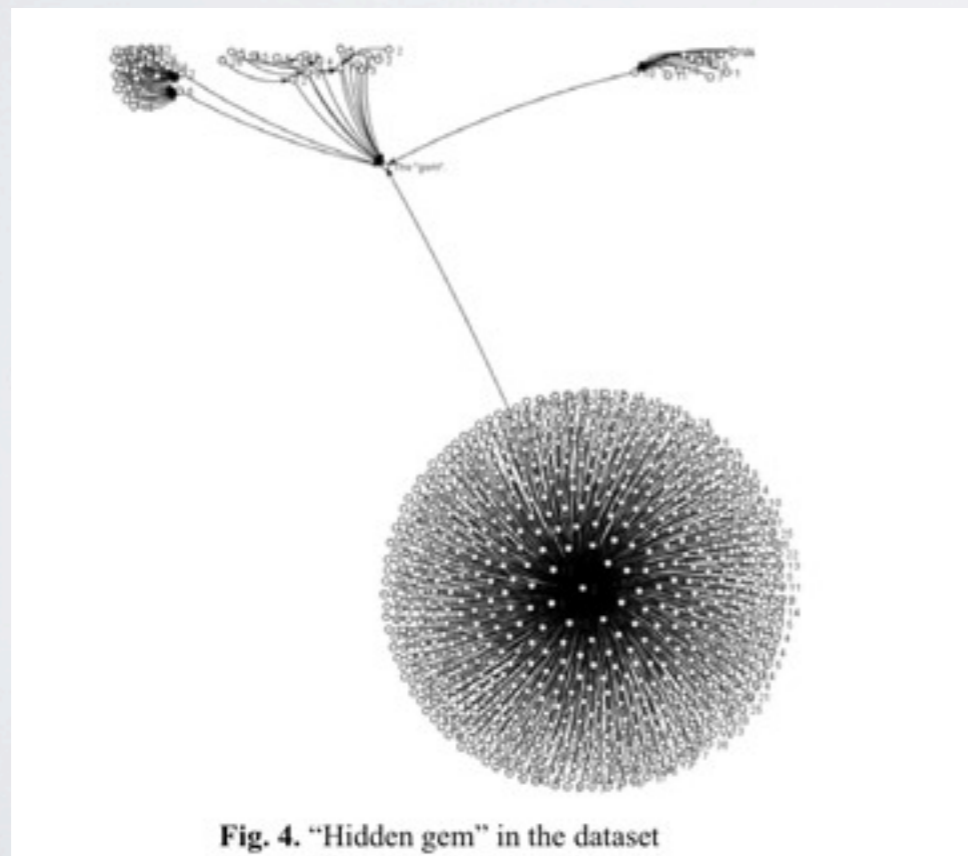
Transparency, education and communication are key to ensuring that appropriate metrics are used to measure individual scientific achievement.

Is peer review any good? (Casati et al)

- Rankings of the review process vs impact (citations):
Very little correlation
- Peer review filters out papers that are most likely to have impact:
Not confirmed

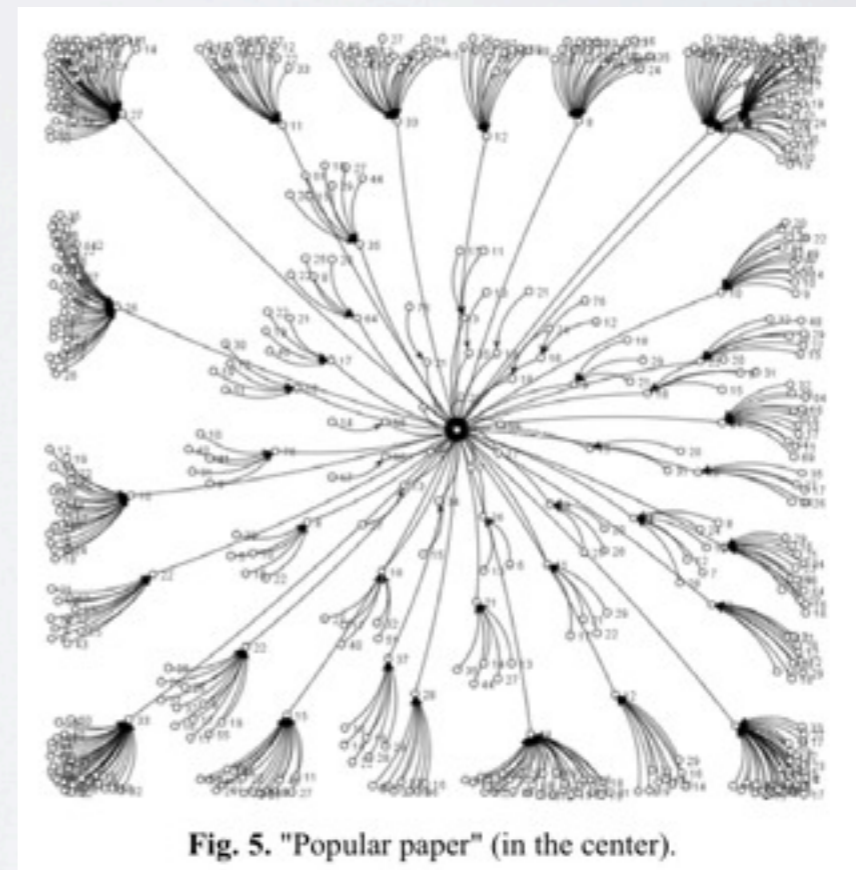
Exploring and Understanding Scientific Metrics in Citation Networks (Krapivin et al)

PaperRank



Citation counts

PaperRank



Citation counts

Reputation and Impact in Academic Careers

Alexander M. Petersen

Goal: to better understand the **role of social ties, author reputation, and the citation life cycle of individual papers**

- **author reputation dominates in the initial phase of a papers citation life cycle** --> papers gain a significant early citation advantage if written by authors already having high reputations in the scientific community.



Altmetric @altmetric

4 abr

Your research is cool and all, but probably needs more pandas: new post up on the Altmetric blog: altmetric.com/blog/interacti...

Retwitteado por Jean Liu

Reducir Responder Retwittear Favorito Más

CITATIONS



Remains of Holocene giant pandas from Jiangdong Mountain (Yunnan, China) and their relevance to the evolution of quaternary environments in south-western China
Historical Biology



Kretzoiarctos gen. nov., the Oldest Member of the Giant Panda Clade
PLOS ONE



Microbes help giant pandas overcome meat-eating heritage
Nature News



Why Does the Giant Panda Eat Bamboo? A Comparative Analysis of Appetite-Reward-Related Genes among Mammals
PLoS ONE



Evidence of cellulose metabolism by the giant panda gut microbiome
Proceedings of the National Academy of Sciences



Whole-genome sequencing of giant pandas provides insights into demographic history and local adaptation
Nature Genetics



Climate-change impacts on understory bamboo species and giant pandas in China's Qinling Mountains
Nature Climate Change

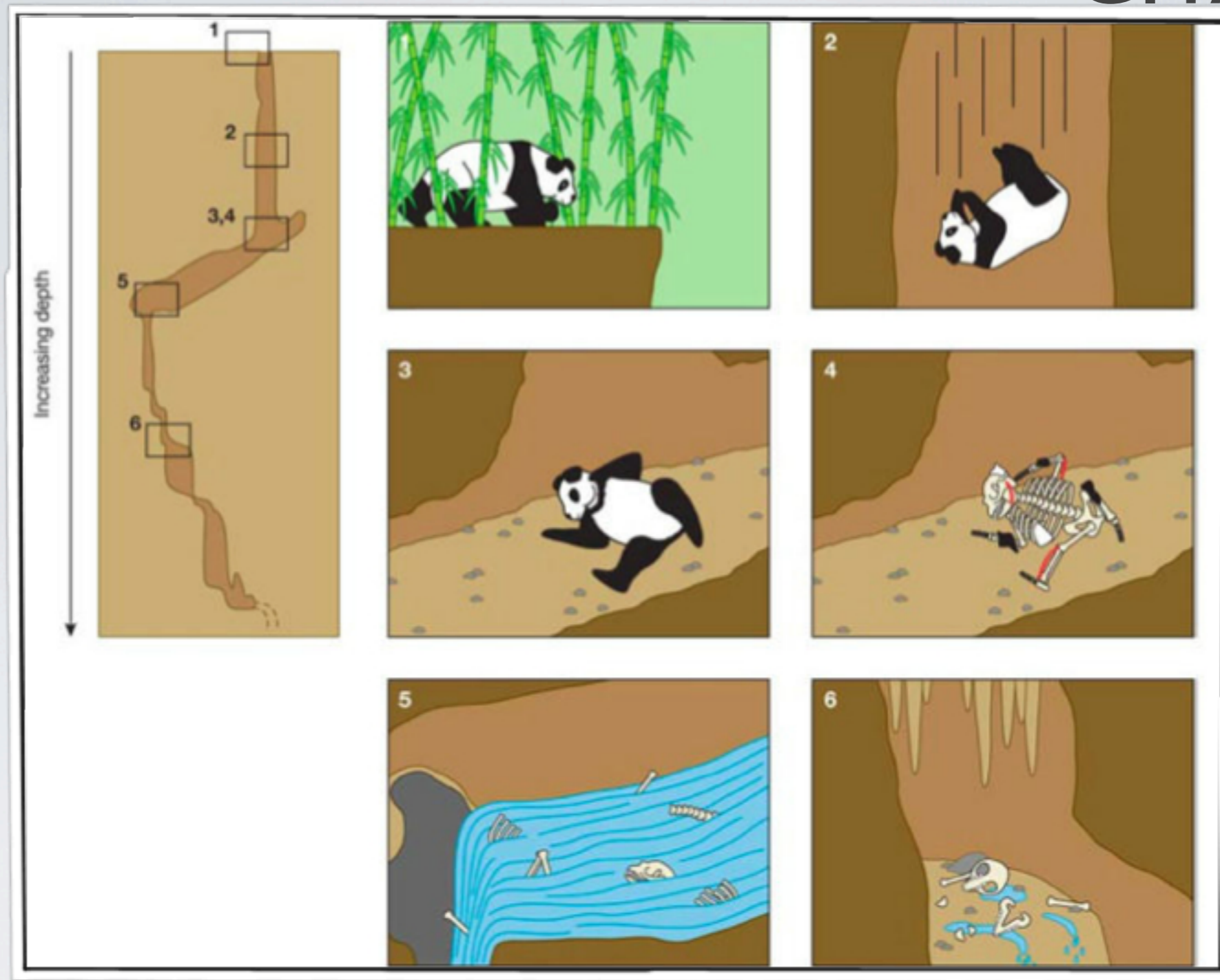


The sequence and de novo assembly of the giant panda genome.
Nature

“Remains of Holocene giant pandas from Jiangdong Mountain (Yunnan, China) and their relevance to the evolution of quaternary environments in south-western China” (by Jablonski et al. and published in Historical Biology)

“A quick look at the actual conversations about the paper reveal that it was Figure 7, not the research content of the paper, that attracted all of the attention”

Jean Liu, 2013, Who loves Pandas?

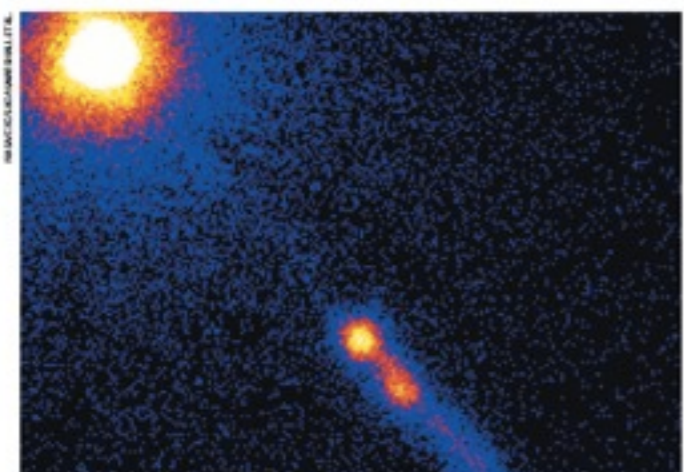


“A quick look at the actual conversations about the paper reveal that it was Figure 7, not the research content of the paper, that attracted all of the attention”

CITATIONS

COMMENT

COMMENT A call for an end to scientific snobbery about where people work p.167 | HISTORY Cholera cartographer and father of epidemiology, John Snow, remembered p.168 | BOTANY A biography of the ginkgo, the tree that has outlasted the dinosaurs p.170 | CULTURE Stunning ice-age art exhibition disappoints through lack of science p.171



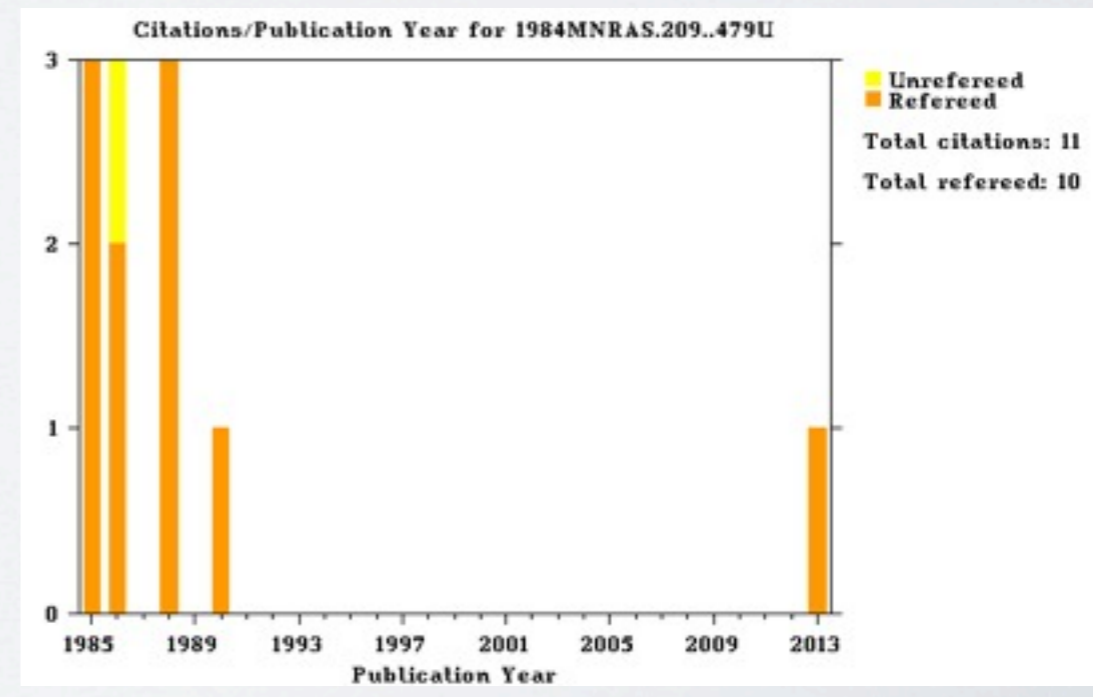
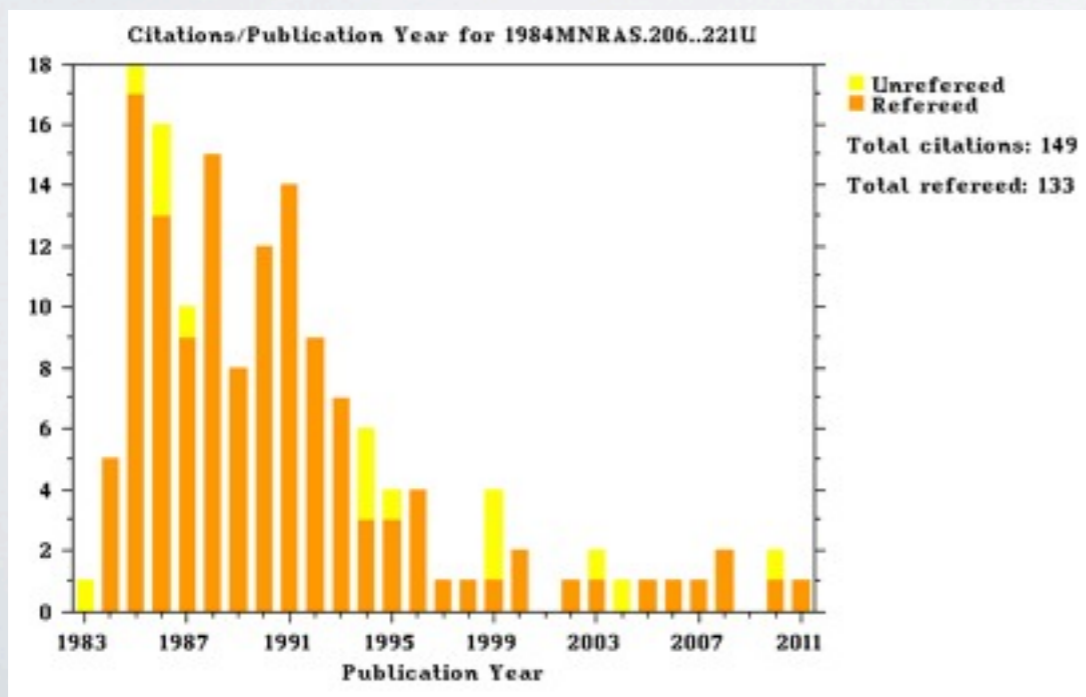
EXY observations show that quasar 3C273 shoots out a jet of plasma blobs that seem to move faster than light.

Quasars still defy explanation

Fifty years after finding that these cosmic beacons lie far away, astronomers need to think harder about how they radiate so much energy, says Robert Antonucci.

Robert Antonucci. NATURE, 495, 165

One revealing faux pas highlights the fact that some astronomers like to 'see what they believe'. In 1984, many in the field rejoiced when the first sensitive orbiting ultraviolet telescope obtained a temperature for one AGN that agreed with the prediction of the accretion disk model. Then, an amateur astronomer spotted a missing factor of ten in Newton's gravitational constant in the analysis. The model no longer fitted and the authors quickly issued a correction. Yet the erratum⁹ is hardly cited, whereas the original paper has more than 100 citations.



ECONOMY?

“What has economics to do with science?
economics is about understanding how human beings behave
when one or more resources are scarce”

Blog M Nielsen 2008

People pushed to apply for grants

ECONOMY?

Examples of advices to improve chances of getting a grant:

- **title of the project counts 50%**
- **proposals circulated at the home institution**

OK that sounds fun, but what does it reflect?

“Evaluators don’t have time to read in detail proposals”

“Evaluators are not experts, so if your full institute can follow and find it attractive a typical evaluator will”

ECONOMY?

“Impact factors still pretty much rule. A lot of people — grant committees, administrators and even referees — can't assess quality. All they can do is count or pseudo-quantify. They count the number of papers you've got and count the impact factors of the papers and make a little metric, rather than just reading the papers.”

R. Brooks (Univ. New South Wales)

Economy has a bad influence in:

- Candidates: pushed to get funds
- Funders: expensive to get enough experts during enough time

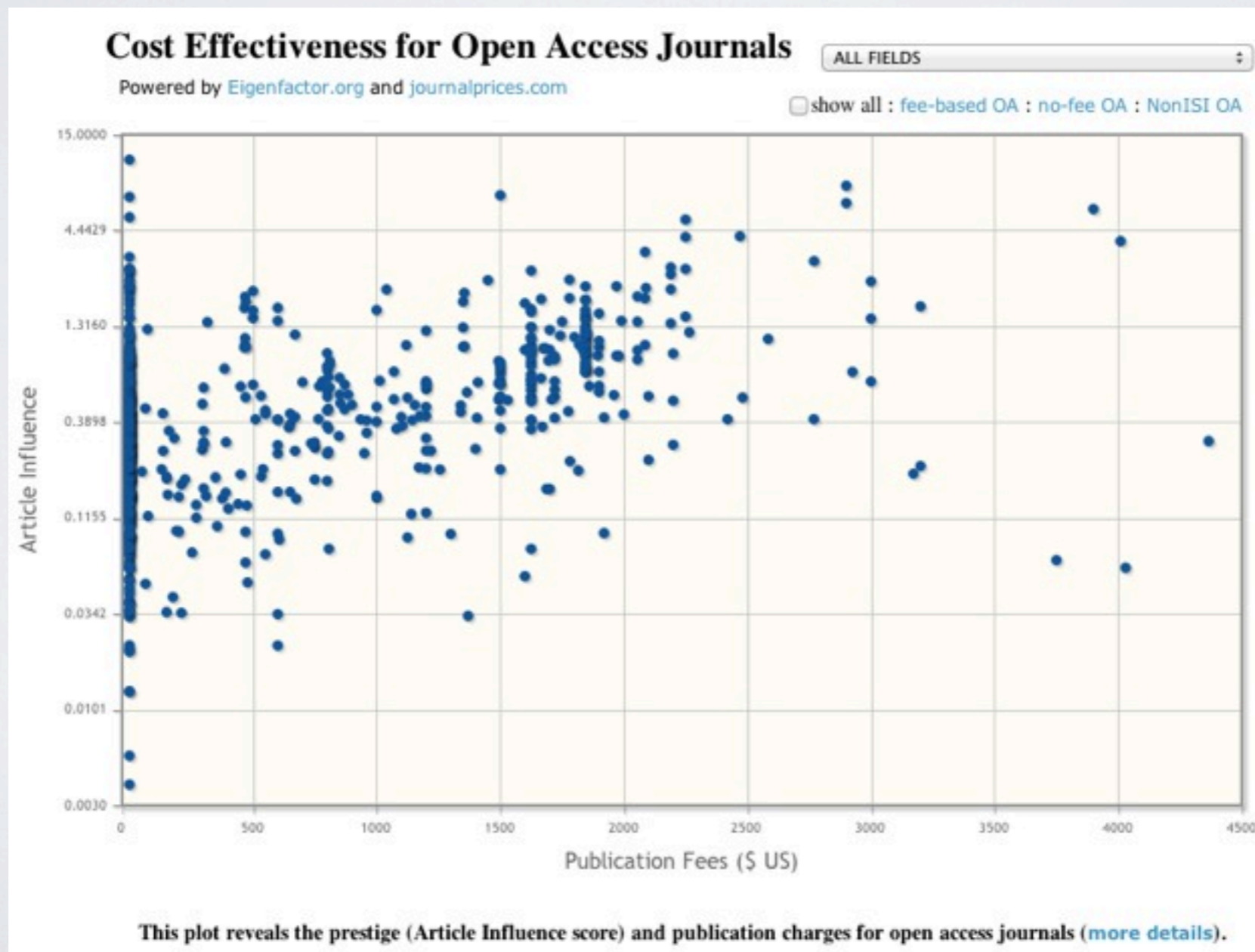
hence in Science

ECONOMY?

“OPTING FOR OPEN ACCESS MEANS CONSIDERING COSTS, JOURNAL PRESTIGE AND CAREER IMPLICATIONS”

STEPHEN PINCOCK, 2013. NATURE, 495, 539

- Senior advice to young scientists: go to the most prestigious journal



POLICYFORUM

SCIENTIFIC PUBLICATIONS

Coercive Citation in Academic Publishing

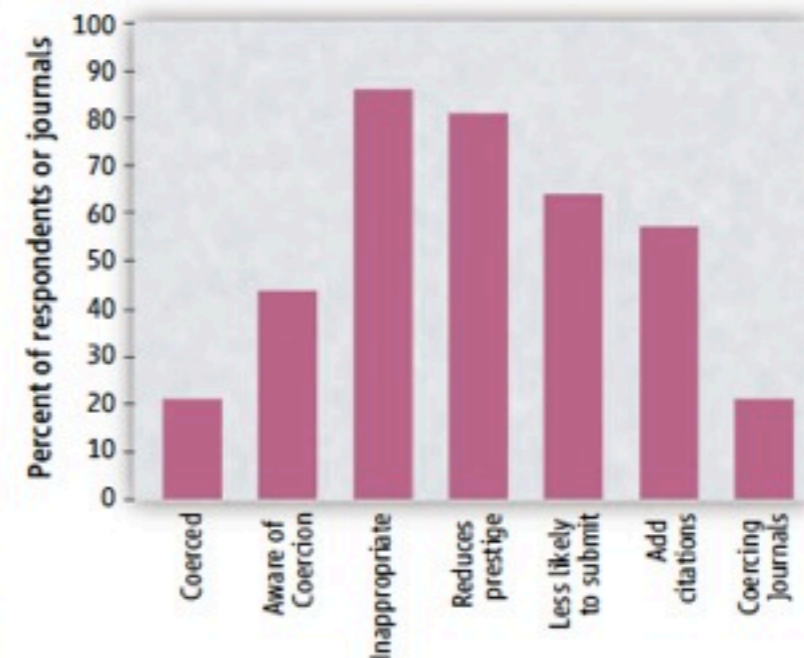
Allen W. Wilhite*† and Eric A. Fong*

Despite their shortcomings (1–4), impact factors continue to be a primary means by which academics “quantify the quality of science” (5). One side effect of impact factors is the incentive they create for editors to coerce authors to add citations to their journal. Coercive self-citation does not refer to the normal citation directions, given during a peer-review process, meant to improve a paper. Coercive self-citation refers to requests that (i) give no indication that the manuscript was lacking in attribution; (ii) make no suggestion as to specific articles, authors, or a body of work requiring review; and (iii) only guide authors to add citations from the editor’s journal. This quote from an editor as a condition for publication highlights the problem: “you cite *Leukemia* [once in 42 references]. Consequently, we kindly ask you to add references of articles published in *Leukemia* to your present article” (6). Gentler language may be used but the message is

fied multiple times, with the worst offender being named by 49 different respondents. To put this in context, our respondents reported a total of 45,955 accepted articles, an average of 55.2 articles per journal. By that calculation, the most flagrant offenders may be coercing most of their contributors. However, this rough calculation does not account for variation in the number of articles in journals, references per article, or disciplines. In our regression analyses, we control for those attributes to get a more accurate picture.

Although 86% of our respondents view coercion as inappropriate, 81% agree that coercion reduces a journal’s prestige, and 64% even say they are less likely to submit to a coercive journal, the majority (57%) still say they

Many journal editors appear to strategically target authors and papers to pressure them into citing the editors’ journals.



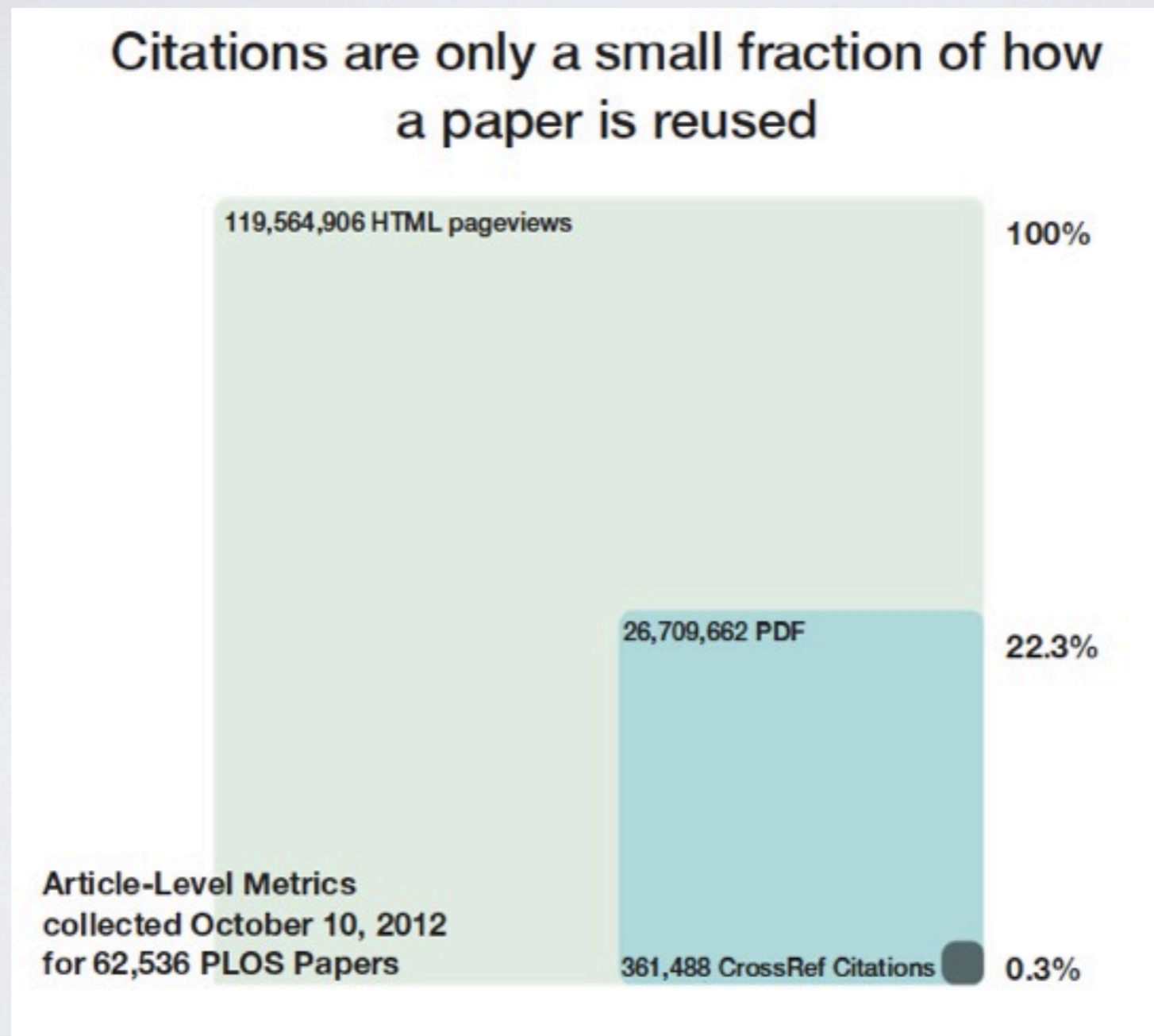
Survey results reflecting the extent, and opinions, of coercion. Percentages of respondents who (i) have been coerced, (ii) are aware of coercion, (iii) think coercion is inappropriate, and agree or strongly agree that (iv) coercion reduces the prestige of a journal, (v) they are less likely to submit to a coercive journal, and (vi) they are likely to add journal-specific citations before submission. The percentage of journals in the study identified as coercers is also shown. See SOM for details.

Are Alternative Metrics Still Alternative?

by Mike Buschman and Andrea Michalek

IMPACT

Citations represent less than 1% of usage for an article.



PLOS (Public Library of Science) (November 2012)
Richard Cave at the Charleston Conference 2012, Charleston

Introduction

Altmetrics: What, Why and Where?

by Heather Piwowar, Guest Editor

altmetrics is the creation and study of new metrics based on the Social Web for analyzing, and informing scholarship.

EDITOR'S SUMMARY

The *ASIS&T Bulletin* special section on altmetrics presents alternative metrics as a new and critically needed approach to measuring the impact of scholarly research. With long-established citation-based metrics unable to capture the increasing variety of online references to a scholar's work, alternative indicators offer a different view of the influence of that work. Contributed papers demonstrate how altmetrics can work on a personal level to enhance a scholar's CV and on a broad, even global level, to transform scholarly communication through its interaction with open access, digital repositories and research in emerging countries. One article suggests altmetrics should soon be included among mainstream metrics, and other contributions describe specific indicators and altmetric software considerations. The need for innovative measurement and the advantages of altmetrics in particular bode well for their wide acceptance and continuing development.

Are Alternative Metrics Still Alternative?

by Mike Buschman and Andrea Michalek

Indicators for funding bodies of recent research (a large number of downloads, views, plays...):

how open and accessible scientists are making their research

The Power of Altmetrics on a CV

by Heather Piwovar and Jason Priem

Strongly recommend altmetrics be considered not as a replacement but as **a supplement** for careful expert evaluation:

to highlight research products that might otherwise go unnoticed

Alternative metrics are thought to free researchers from conventional measures of prestige

STEPHEN PINCOCK, 2013. NATURE, 495, 539



Ask Not What Altmetrics Can Do for You, But What Altmetrics Can Do for Developing Countries

by Juan Pablo Alperin

EDITOR'S SUMMARY

Traditional citation counting for evaluating scholarly impact unfairly benefits those in North America and Europe and shortchanges the alternative scholars of the developing world. Alternative metrics more accurately measure the impact of scholarly writings, better serve all scholars and can foster a research culture that supports national development goals. The current system favors dominant journals and topics of interest to the prevailing scientific community, captured by the leading bibliographic databases. Yet publishing on platforms more open to underrepresented journals and scholars in developing nations would promote a greater range of ideas and scholarly exchange. With facilitating international development in mind, scholarly communication should encourage research on topics of local and national relevance and be presented through globally accessible channels, disseminated by social media. Publishing technology barriers to participation must be lowered. The value of altmetrics will be evident, providing advantages to alternative scholars, serving public needs and revealing scientific contributions long underrepresented in the standard literature.

Amendment to 'guidance on submissions':

Following consultation on the draft panel criteria, the definitions at paragraphs 112-113 of 'guidance on submissions' have been amended, and are now superseded by paragraphs 43-44 as indicated below.

These changes have been made in response to concerns raised that the evolving nature of publication practices, such as online 'pre-publication', would have meant that some research outputs published near the boundary between the 2008 RAE and the 2014 REF publication periods may not in practice have been eligible for submission to either exercise.

Policies of the UK programme for assessing research quality, the Research Excellence Framework:

no grant-review sub-panel “will make any use of journal impact factors, rankings, lists or the perceived standing of publishers in assessing the quality of research outputs”

Head of digital services at the Wellcome Trust Library

(one of the world's major resources for the study of medical history):

“If you come to the Wellcome for a grant, funding decisions are based on the intrinsic merit of the work, and not the title of the journal.”

Robert Kiley

Not only a solution: it is just happening

In the next ten years, most scholars will join such networks, driven by both the value of **improved networking** and the **fear of being left out of important conversations**.

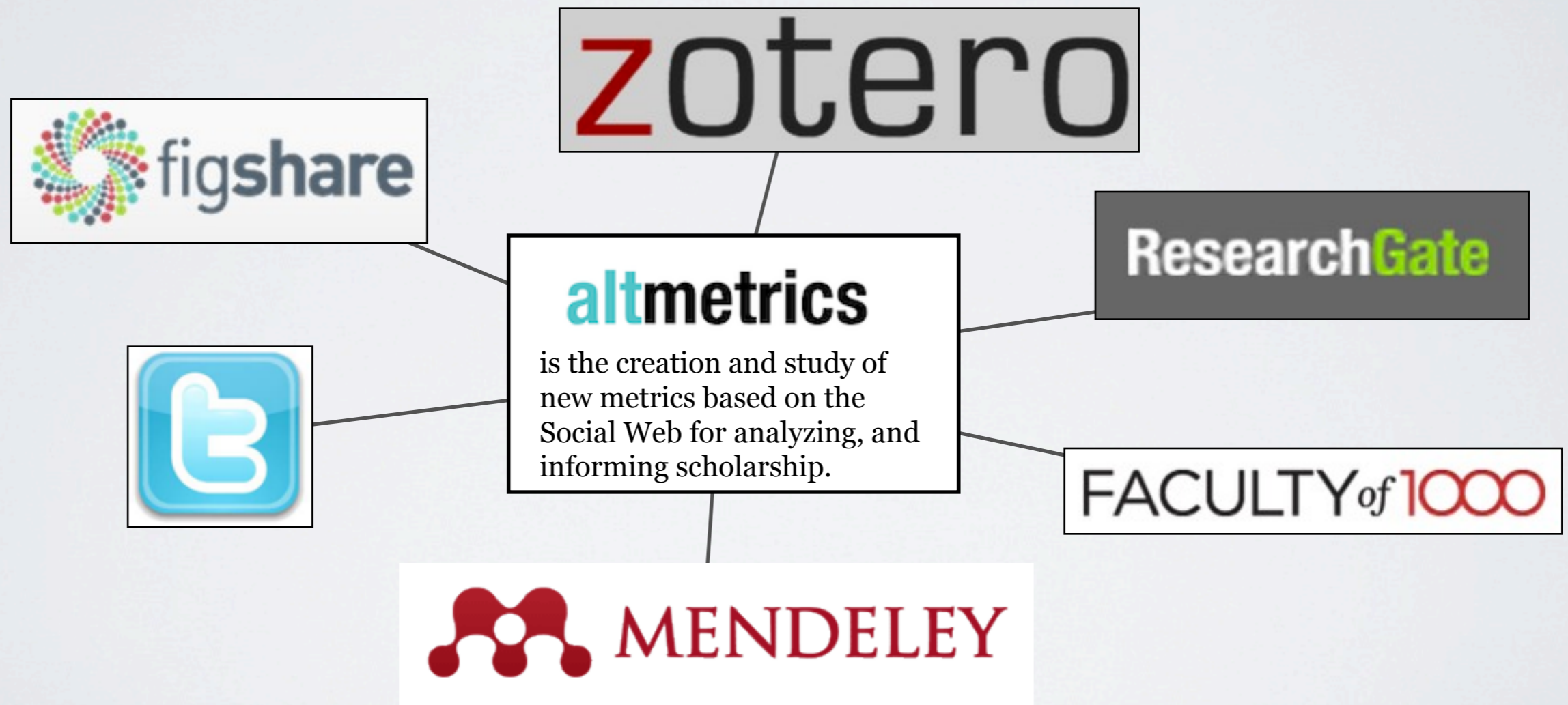
The flow of scholarly information is expanding by orders of magnitude, swamping our paper-based filtering system



In the Web era, scholarship leaves footprints.

The editors and reviewers employed as proxy community assessors will be replaced by the aggregated, collective judgements of communities themselves

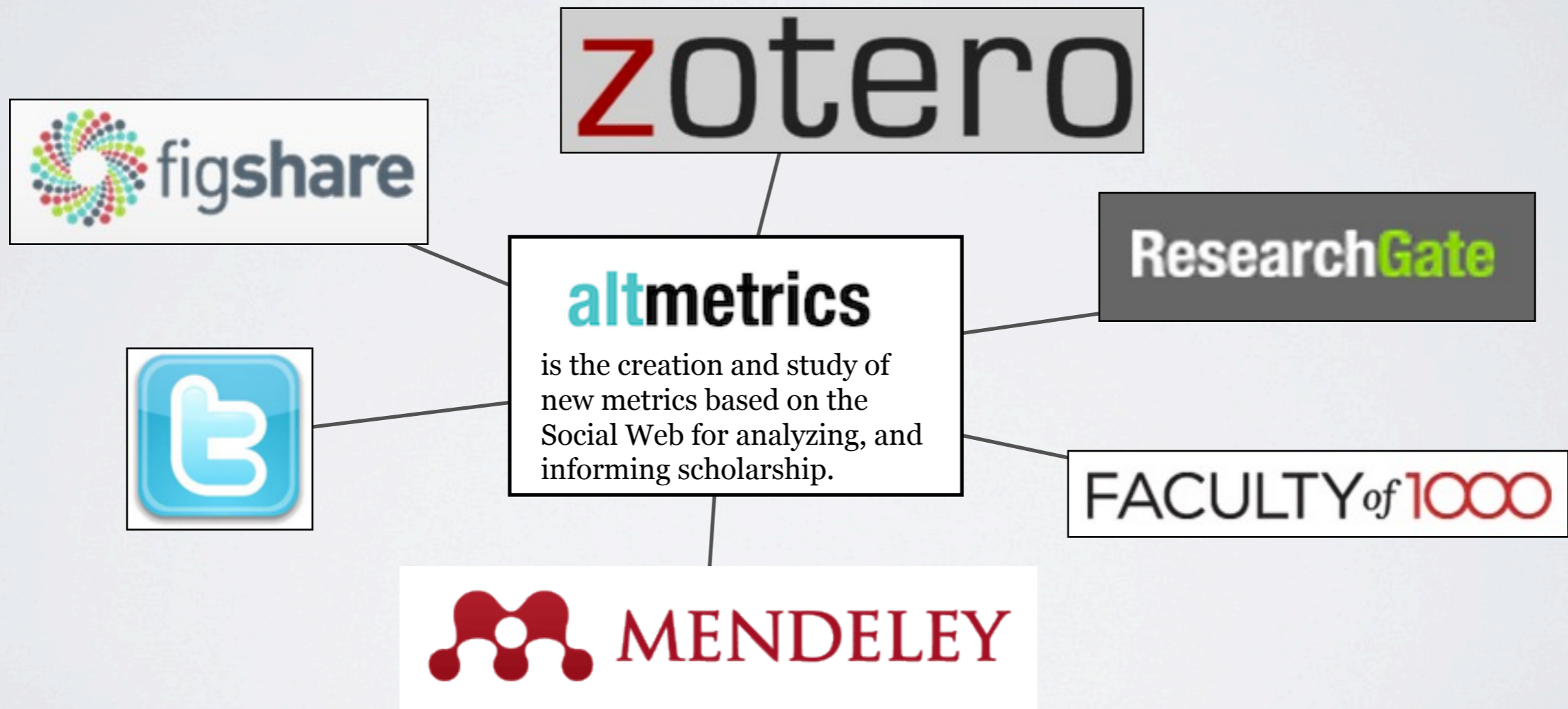
J. PRIEM, 2013. NATURE, 495, 437





Altmetric now collects paper mentions from YouTube videos

Up until now, Altmetric has focused on collecting mentions from [text](#) and [images](#). Today, we'd like to announce that we've begun collecting mentions of papers from YouTube videos. These mentions are now displayed in the new "Videos" tab on article details pages, and are also indicated in green on the Altmetric donut. To see some YouTube mentions, navigate to



ALTMETRICS = NEW PUBLICATION METHODS

The screenshot shows the MathOverflow website interface. At the top, there is a navigation bar with the site logo 'mathoverflow' and buttons for 'Questions', 'Tags', 'Users', 'Badges', 'Unanswered', and 'Ask Question'. Below the navigation bar, there is a section for 'Recent Questions' with filters for 'active', '4 featured', 'hot', 'week', and 'month'. The main content area displays a list of questions with their respective statistics (votes, answers, views) and tags. The questions listed are:

- Influence of parameter variations on the solution of an ODE system** (0 votes, 0 answers, 7 views, tags: mathematical-modeling, ca.analysis-and-odes, 42m ago Jack Thomas 1)
- Contraction of graded vector fields on de Rham complex** (1 vote, 1 answer, 85 views, tags: differentials, differential-graded-algebr, super-linear-algebra, 50m ago quid 11.7k)
- sh Lie algebra cohomology** (0 votes, 0 answers, 102 views, tags: sh-lie-algebra-cohomology, lie-algebra-cohomology, 1h ago quid 11.7k)
- Status of Beilinson conjectures?** (5 votes, 2 answers, 477 views, tags: nt.number-theory, arithmetic-geometry, motives, homotopy-theory, big-picture, 1h ago François Brunault 6,552)
- Generators for a certain congruence subgroup of $SL(n, \mathbb{Z})$** (9 votes, 3 answers, 307 views)

On the right side of the page, there is a 'Welcome to MathOverflow' message: 'A place for mathematicians to ask and answer questions.' Below this, a tip box states: 'Tip: If you add a tag to your "interesting" (or "ignored") list, all questions with that tag are visually highlighted (or greyed out), making it easy for you to find the questions you want to look at. See more tips and tricks.'

*Authority and expertise are central in the Web era as they were in the journal era. The difference is that whereas the paper-based system used subjective criteria to identify authoritative voices, the **Web-based one assesses authority recursively from the entire community.***

J. PRIEM, 2013 NATURE, 495, 437

ALTMETRICS = NEW PUBLICATION METHODS



Reputation:

a (very) rough measurement of how much the MathOverflow community trusts you.

never given, earned by convincing other users that you know what you're talking about.

- good question or helpful answer: voted up by peers: 10 points
- off topic or incorrect: voted down: -2 points.

*10 = Make community wiki posts

*100 = Vote down

*250 = Vote to close or reopen your questions

*2000 = Edit other people's posts

....

ALTMETRICS = NEW PUBLICATION METHODS

- Journals adopting an open/collaborative process of review/evaluation
 - arXiv, Nature Precedings, PlosOne
- Social bookmarking and tagging:
 - Connotea, CiteULike, Del.icio.us, BibSonomy



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March 3, 2012

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NEW PUBLICATION METHODS

NANOPUBLICATIONS

Smallest unit of publishable information

nanopub.org

- **Triplet - subject, predicate, object:**

UNIPROT 05067 is a protein

- Uniquely identified and attributed to its author
- Can be serialized using existing ontologies and RDF
- Machine readable: knowledge exchange assisted by computers
- Administered by the Concept Web Alliance
- Based on open standard
- Twittered nano-publication assessed by 1000 experts



THE NEW YORKER

ANNALS OF SCIENCE

THE TRUTH WEARS OFF

Is there something wrong with the scientific method?

BY JONAH LEHRER

DECEMBER 13, 2010

On September 18, 2007, a few dozen neuroscientists, psychiatrists, and drug-company executives gathered in a hotel conference room in Brussels to hear some startling news. It had to do with a class of drugs known as atypical or second-generation antipsychotics, which came on the market in the early nineties. **The drugs, sold under brand names such as Abilify, Seroquel, and Zyprexa, had been tested on schizophrenics in several large clinical trials, all of which had demonstrated a dramatic decrease in the subjects' psychiatric symptoms. As a result, second-generation antipsychotics had become one of the fastest-growing and most profitable pharmaceutical classes.** By 2001, Eli Lilly's Zyprexa was generating more revenue than Prozac. It remains the company's top-selling drug.

But the data presented at the Brussels meeting made it clear that something strange was happening: **the therapeutic power of the drugs appeared to steadily waning.** A recent study showed an effect that was less than half of that documented in the first trials, in the early nineteen-nineties. Many researchers began to argue that the expensive pharmaceuticals **weren't any better than first-generation antipsychotics**, which have been in use since the fifties. **"In fact, sometimes they now look even worse,"** John Davis, a professor of psychiatry at the University of Illinois at Chicago, told me.



Many results that are rigorously proved and accepted start shrinking in later studies.



THE NEW YORKER

ANNALS OF SCIENCE

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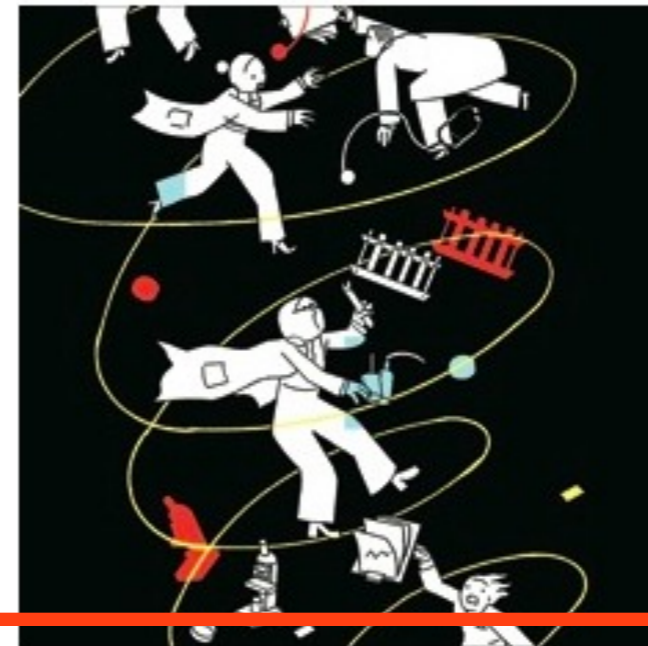
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THE NEW YORKER

ANNALS OF SCIENCE

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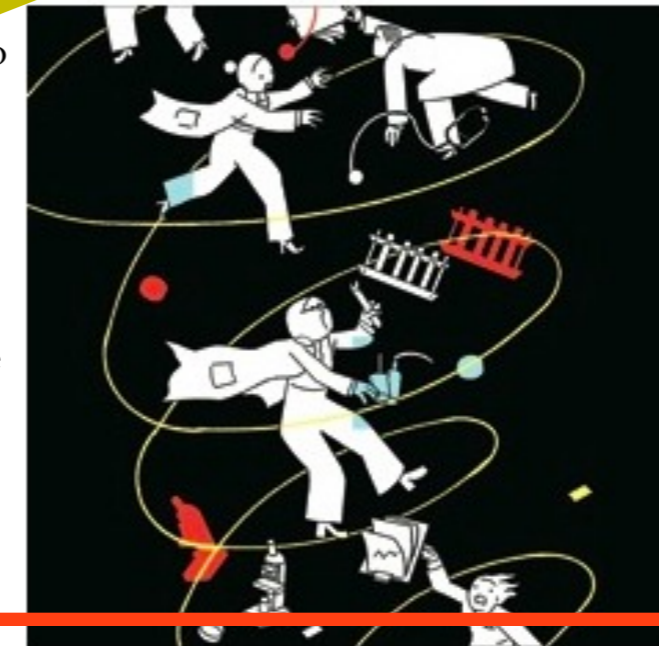
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Reproducible experiments
Good statistics



THE NEW YORKER

ANNALS OF SCIENCE

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Is there something wrong with the scientific method?

BY J

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Jonah Lehrer quits New Yorker after admitting he made up Dylan quotes

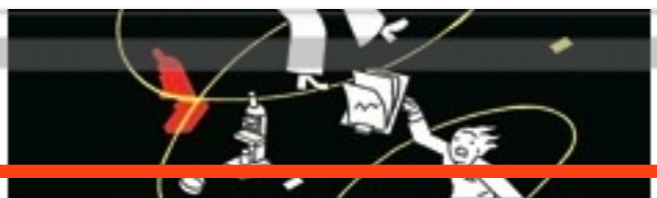
New Yorker staff writer quit his gig after admitting to falsifying statements from folk singer Bob Dylan in his bestselling book

Reproducible experiments
Good statistics

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Retraction Watch

Vacuum retracts paper on nanorods for plagiarism, image manipulation

with 3 comments

What's that sucking sound you hear from the journal [Vacuum](#)? Why, a retraction, of course.

The journal is pulling a 2012 paper by a group of researchers from India who stole images and used them in misleading ways — that's data fabrication, kids.

Here's the [retraction notice](#) for the article, titled "Microwave synthesis, characterization and humidity sensing properties of single crystalline Zn₂SnO₄ nanorods":

“ [Read the rest of this entry »](#)

Written by amarcus41
April 5, 2013 at 9:30 am

Posted in [elsevier](#), [faked data](#), [image manipulation](#), [india retractions](#), [misused data](#), [physical sciences retractions](#), [plagiarism](#), [vacuum](#)

Arsenic-in-the-water paper with “interesting data” first corrected, now retracted

with 3 comments

The *Journal of Contaminant Hydrology* has retracted a 2008 paper by a group of Indian scientists for plagiarism and the failure to adequately reference their sources.

What makes this case so interesting is that the journal first announced a correction (of the mega-dose of arsenic) and then evidently decided that the data was iatrogenic.

Here's the [retraction notice](#) for the article, titled "Arsenic-enriched groundwater in the West Bengal, India":



Tracking retractions as a window into the scientific process

Tracking retractions as a window into the scientific process

- [including comments policy](#)
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Recent Comments

A blog that reports on retractions of scientific papers (Ivan Oransky - executive editor of Reuters Health - and Adam Marcus - managing editor of Anesthesiology News)

Aim: to increase the transparency of the retraction process: retractions of papers generally are not announced, and the reasons for retractions are not publicized.



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Open access, peer-reviewed, promotes discussion of results:

- unexpected, **controversial**, provocative and/or **negative**
- that **challenge** current models, tenets or dogmas.
- illustrate how **commonly used methods and techniques** are **unsuitable** for studying a particular phenomenon.

Not all will turn out to be of such groundbreaking significance.

However, we strongly believe that such "negative" observations and conclusions, based on rigorous experimentation and thorough documentation, ought to be published in order to be discussed, confirmed or refuted by others.



NEW PUBLICATION METHODS

An abundance of challenges in journal editing

Some scientific journals in the past few years have increased page counts so much that a single editor can no longer handle all of the incoming manuscripts. As a result of that growth, many new and inexperienced associate editors are employed. They may not be familiar with all the problems encountered in scientific editing nor with the best ways to handle them.



Helmut A. Abt June 2013
ApJ Editor-in-Chief for 28 years, till 1999

- Several journals have adopted a practice of automatically rejecting any manuscript that has received two critical reports.

Unfortunately, such a policy virtually ensures that important new ideas are rejected, whereas innovative papers are just the sort that we should most want to publish.

physicstoday

NEW PUBLICATION METHODS

A MOVEMENT TO PUBLISH RESEARCH IN REAL TIME

The journal Push lets scholars build journal articles incrementally, with each version tracked and open online, available for collaboration and comment throughout (see <http://push.cwcon.org>).

PUSH

RESEARCH & APPLIED THEORY IN WRITING WITH SOURCE



Introducing Push

Push is a journal dedicated to publishing original research on writing with source code.

Mission

Push's mission is:

- to help develop writers and researchers working with source code, both through the published issues of the journal and the active, open process by which



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How is *F1000Research* different?

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Really fast. Articles in *F1000Research* are published within a week.
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Peer review is as formal as a traditional journal, but the reviewer names, affiliations and comments are published with the article.
- 3 All findings are supported by open data:**
100% of our research articles are published with their full datasets. Data can be viewed and downloaded easily, and is accessible for computational mining.
- 4**

- 1 Make your work visible quickly:**
No more frustrating delays with the peer review process.
- 2 Respond to your individual peer reviewers and revise your article:**
Know who your reviewers were. Get the chance to directly address their comments and the option to publish a revised version of your article at no extra cost.
- 3 Help the wider scientific community:**
Your data can be viewed and downloaded easily, allowing others to draw new conclusions and advance scientific knowledge.
- 4 Get credit for a wider range of work:**
Along with traditional articles, we also accept article types that can be

No
Publication
Delay

All Data
Included

formal

Post-
publication
Peer Review

Open
Refereeing

Full Open
Access

All articles, including research findings, analyses of scientific developments, opinions, and comments are published immediately, following a quick internal check for obvious inappropriateness.

Don't Publish. Release!

Professor Carole Goble FREng FBCS
University of Manchester, UK
carole.goble@manchester.ac.uk

***Is NOT a release early, instead
of peer review model.***

*Treat research as software:
release notes & version management*



Research
Builds on
prior work

Components:
data, codes, interpretation

Changes

Versions

Forks

ATTENTION TO PUBLISHING DATA AND METHODS

Many scientists are too busy or lack the knowledge to tackle data-management on their own

R. MONASTERSKY, 2013 NATURE, 495, 430

THE DATA GAP

A survey of more than 1,300 US scientists in 2010 showed an appetite for sharing data but significant hurdles that kept many from doing it.

67%

Said lack of access to others' data is a major impediment to scientific progress.

39%

Said their organization has an established process for long-term data storage.

22%

Said their organization or project provides funds for long-term data management.

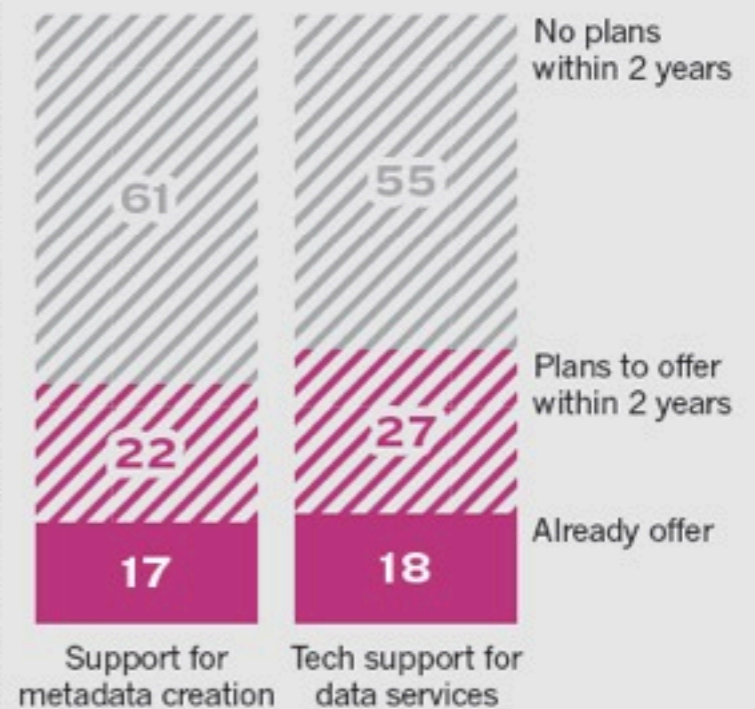
84%

Scientists who said that they would use other researchers' data sets if they were easily available.

36%

Scientists who said that others can access their data easily.

A survey of US research universities showed that many libraries are gearing up to provide data services.



ATTENTION TO PUBLISHING DATA AND METHODS

Abelard and Héloïse: Why Data and Publications Belong Together

Eefke Smit (International Association of STM Publishers: members collectively publish nearly 66% of all journal articles)

- Journals to require **availability of underlying research material** as an **editorial policy**
- Ensure **data is stored, curated and preserved** in trustworthy places
- Ensure **links** (bi-directional) and persistent identifiers between data and publications
- Establish **uniform citation practices of data**

ATTENTION TO PUBLISHING DATA AND METHODS

MOVING FROM NARRATIVES (LAST 300 YRS) TO THE ACTUAL OUTPUT OF RESEARCH

- How to measure science output:
 - data in any format (tables, images, etc)
 - algorithms
 - analysis tools
- **NSF example:**
 - Chapter II.C.2.f(i)(c), Biographical Sketch(es), has been revised to rename the “Publications” section to “Products” and amend terminology and instructions accordingly. This change makes clear that products may include, but are not limited to, publications, data sets, software, patents, and copyrights.
 - To make it count, however, it needs to be both citable and accessible.

<http://datapub.cdlib.org>

Did you know?
NSF changed their rules for reporting your accomplishments.

You can now list **products** in your biographical sketch, **not just publications.**

“...including but not limited to publications, data sets, software, patents, and copyrights.”

NSF Grant proposal guidelines Chapter II.C.2.f(i)(c)

Your data now counts as a product!

How do I make my data count?

It needs to be both **citable & accessible.**

We can help you:

1. Archive and share your data in the Merritt repository: merritt.cdlib.org
2. Obtain a unique identifier from EZID: n2t.net/ezid
3. Start citing your data product!

ATTENTION TO PUBLISHING DATA AND METHODS

DataOne

(US NSF funded)



Preservation + access to multi-scale, multi-discipline, and multi-national science data: biological data from the genome to the ecosystem of environmental data available from atmospheric, ecological, hydrological, and oceanographic source

The Collage Authoring Environment

(Nowakowski et al)

A software infrastructure which enables domain scientists to collaboratively develop and publish their work in the form of executable papers

Paper Maché: Creating Dynamic Reproducible Science

(Brammer et al 2011)

Paper management system using virtual environments so that the full experiment is packaged with a Virtual machine.



Wf4Ever (Workflows forever) project

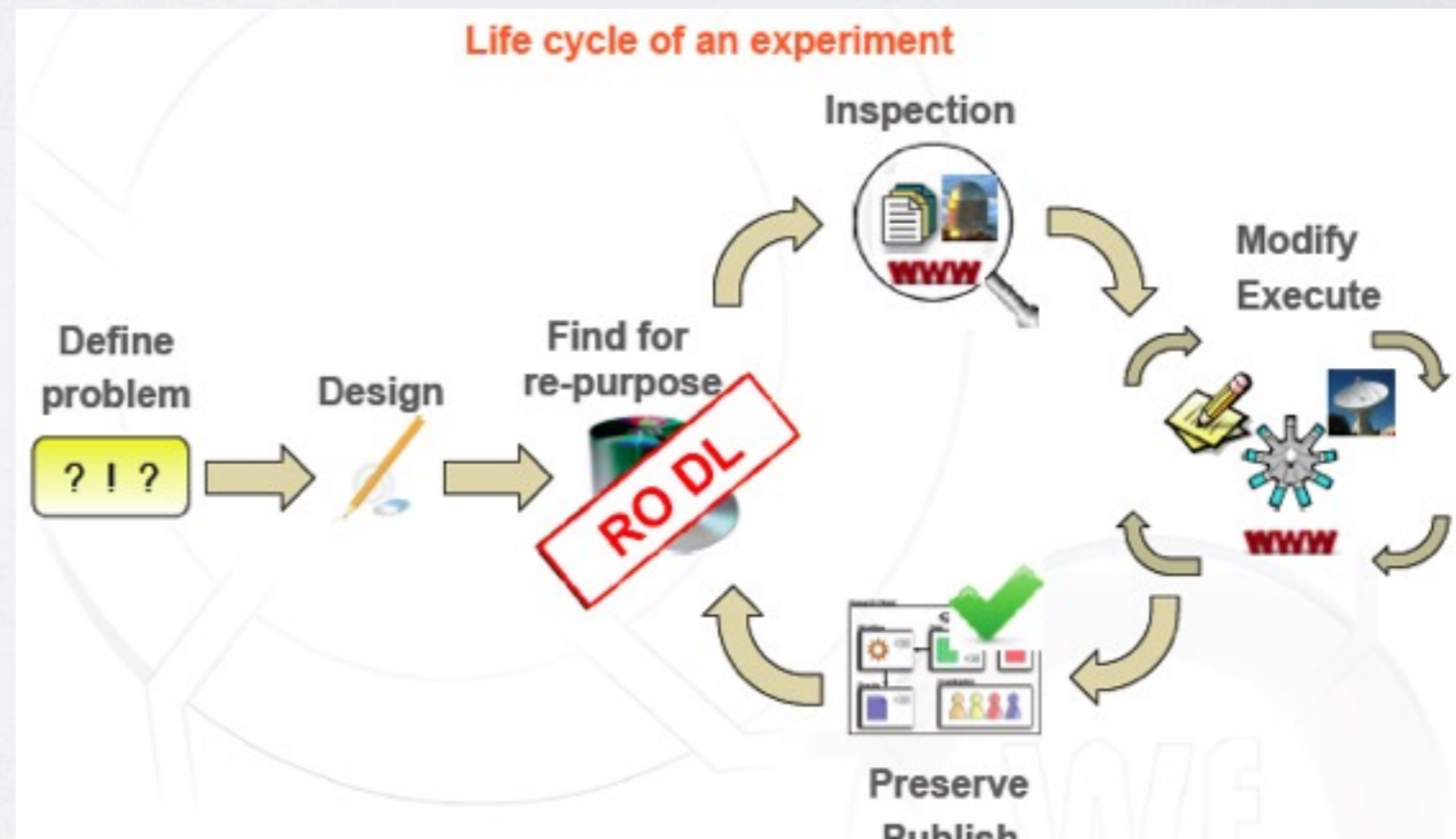
Astronomy Use Case



Preservation of the methods

- Investigates and develops technological infrastructure for the preservation and efficient retrieval and reuse of scientific workflows
- Introduced the concept of a **Research Object**, containing the artefacts needed to interpret or reconstruct research

- High investment in data infrastructures
- Exploitation is usually an issue
- Workflows as live-tutorials

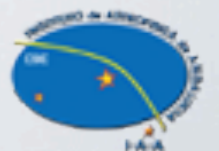


EU FUNDED FP7 STREP PROJECT
DECEMBER 2010 – DECEMBER 2013

Canube: Ciencia Abierta en la Nube

Open Science

- El proyecto Canube es un proyecto de Ciencia Abierta correspondiente a la **II Convocatoria de Proyectos del Campus de Excelencia Internacional BioTIC de la Universidad de Granada** (aprobado Marzo 2013)
- La **propuesta del proyecto está publicada** en Ciencia Abierta en la Nube: CANUBE con una licencia CC-BY-SA
- CANUBE propone la **difusión de modelos de ciencia abierta** en el conjunto del CEI-BioTIC y el resto de los componentes de este proyecto, así como la inclusión de conceptos de computación en nube en la misma. Estos conceptos serán aplicados a diferentes líneas de investigación y desarrollo, tanto de los investigadores de la UGR como de los agregados.





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This is the experimental interface for searching the collection of electronic fulltext at ADS, the Digital Library for Physics and Astronomy. It allows searching the full text of the **scanned literature** in ADS as well as **a select portion** of the current astronomical literature, including ApJ, ApJS, AJ, A&A, MNRAS, PASP, the last 15 years of Icarus, and all of arXiv.org. For more information view the [help page](#).

Refereed Only | Disable Synonyms | Journal Abbreviation(s)



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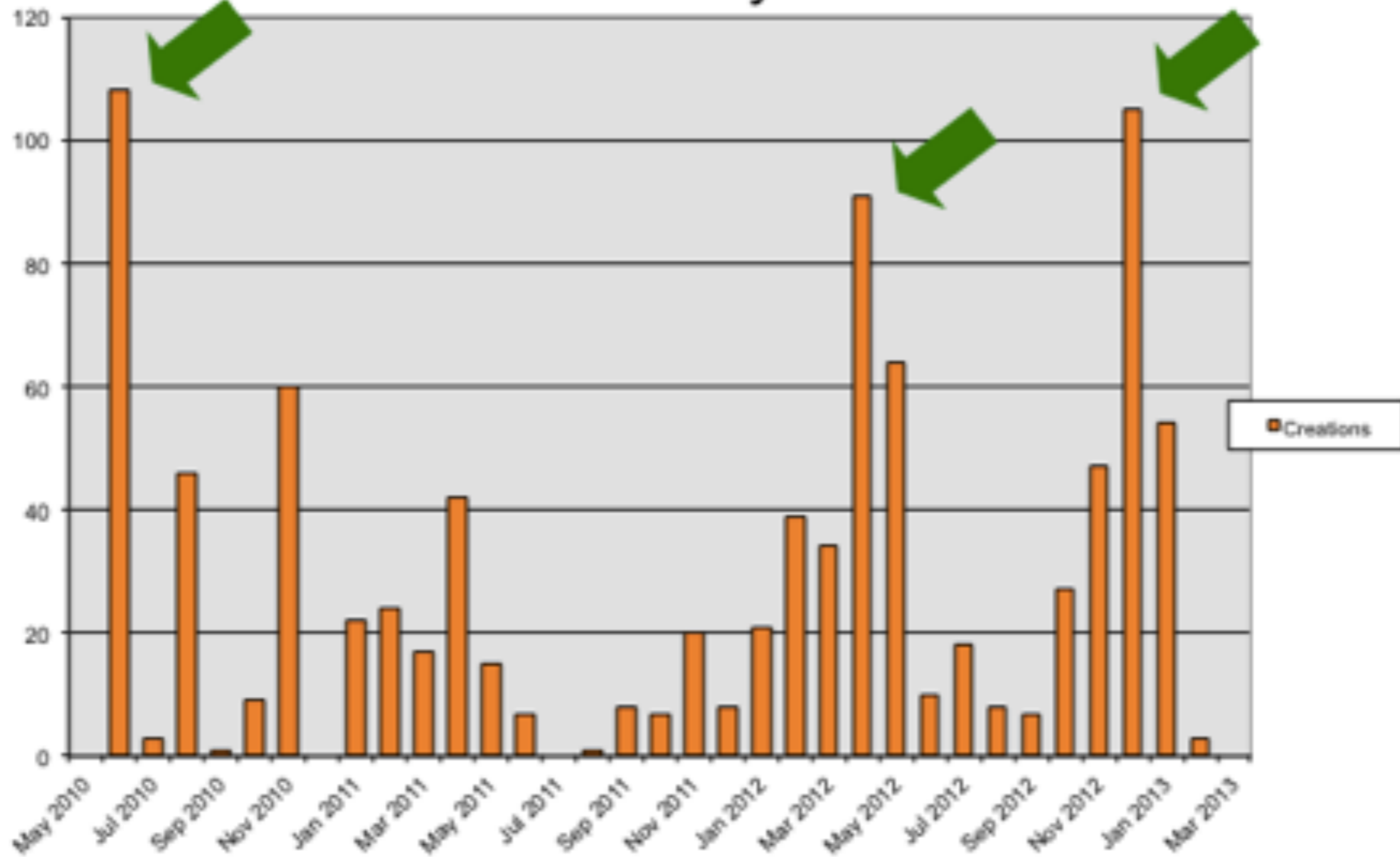
Astronomy: ADS has been linking papers with VizieR data. Now also observing proposals, telescope, software is being referenced
Collaboration with Wf4Ever started to transform to Research Objects

THEN WHAT?

Find, share and exchange **Data, Models** and **Processes** within the **SysMO Consortium**.



Contribution Activity – Review Correlation Accountability & Coercion

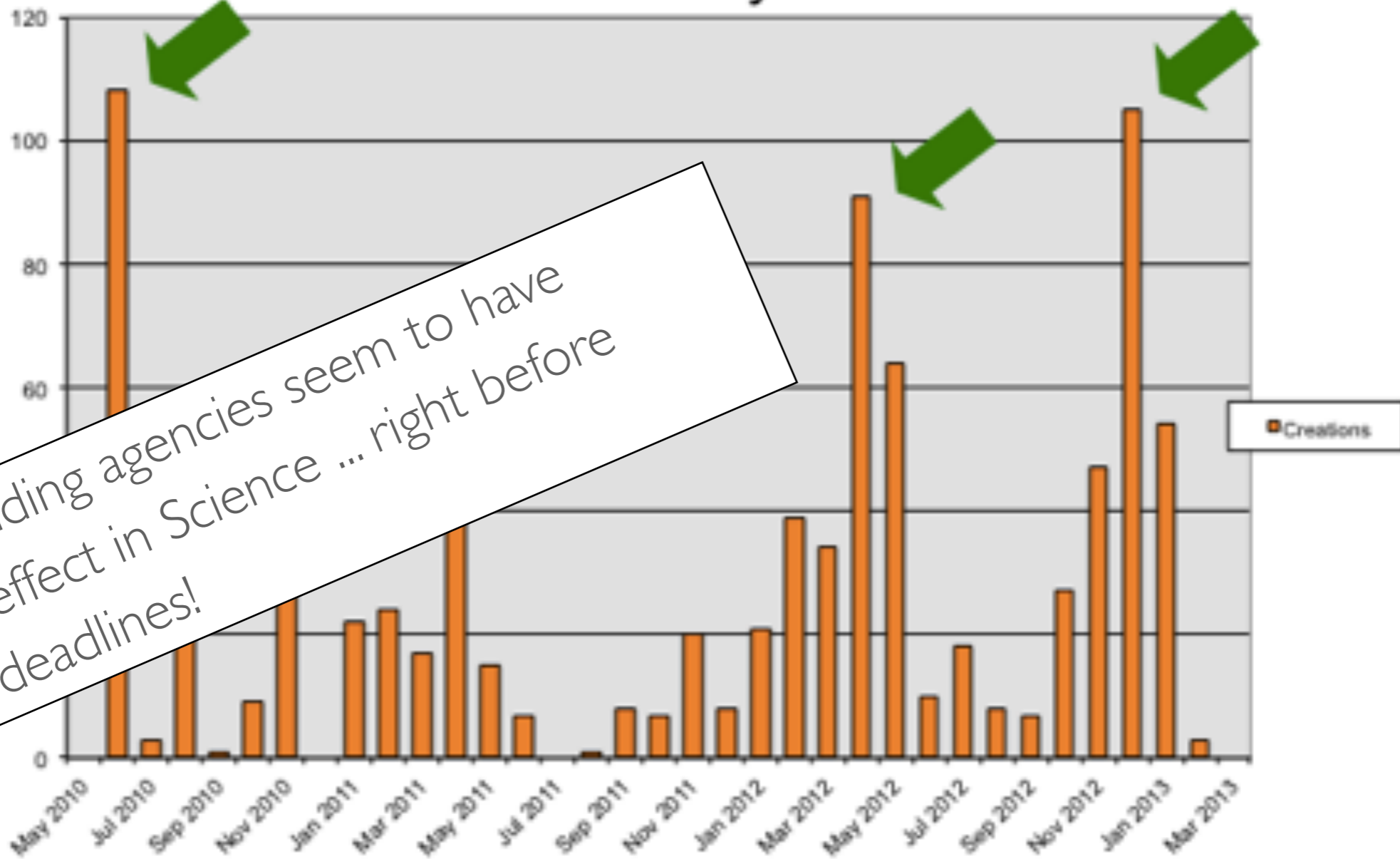


(Carole Goble, Beyond the PDF 2013)

Find, share and exchange **Data, Models** and **Processes** within the **SysMO Consortium**.



Contribution Activity – Review Correlation Accountability & Coercion



Hence funding agencies seem to have positive effect in Science ... right before review deadlines!

SOME IDEAS

- Give to the committees the scientometry so they know *de facto* that their role is not counting numbers?

- Include someone with basic understanding of scientometrics
- Allow to submit top few papers for evaluation to allow tenure candidates to submit just their top few papers for evaluation

(K. Shaw, Scientific Method blog)

- In an evaluation, researchers have to show that at least one of their Research Objects has been used by someone else. Maybe cited. Preferably Used.

(Carole Goble, Beyond the PDF 2013)

- Each review needs to be the subject of evaluation, just as with scientific publications.

FOSE: a framework for open science evaluation

Alexander Walther^{1} and Jasper J. F. van den Bosch²*

Can excellence kill Science?

Such metrics further block innovation because they encourage scientists to work in areas of science that are already highly populated, as it is only in these fields that large numbers of scientists can be expected to reference one's work, no matter how outstanding.

Science Editorial, 17 May 2013

By Bruce Alberts, Science Editor's in chief

- Science works through micro improvements and multiple errors and failures until something finally works
- We've become paralyzed with the notion that showing incremental improvements and corrections hurts, rather than helps, our personal careers and science.

Who Killed the PrePrint, and Could It Make a Return?

By Jason Hoyt and Peter Binfield

Shift the balance to the Methodology

- Clear hypothesis
- Data
- Formula
- Methods

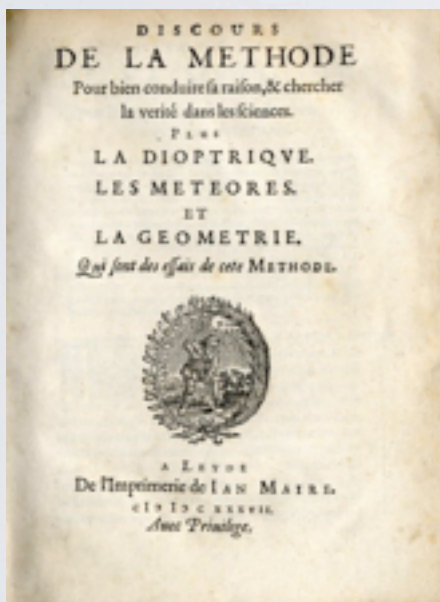
Is it reproducible? is Science

Give less weight to the results: better quality

*Understanding metrics, reducing reliance on rankings, and suggesting new ways to evaluate scientists are **only the beginning**; it's going to take a sea change and **lots of cooperation among scientists, journals, and academic and government institutions to banish the “publish or perish” mentality.***

(K. Shaw, Scientific Method blog)

The aim doesn't justify the ~~mean~~ (Scientific) Method



In my opinion, the greatest limiting factor in understanding quasars is not a lack of intelligence, effort or creativity, nor is it a dearth of fantastic new facilities. It is a widespread lack of critical thought among many researchers. Theories are being published that have already been ruled out by observations. Observers cling to falsified theories when interpreting their data. A vast amount of work has been wasted.

Robert Antonucci. NATURE, 495, 165

**STOP
AND
THINK**



S. GROSS

"It sort of makes you stop and think, doesn't it."