New forms of scholarly communications: opportunities and challenges

Rob Procter

Manchester eResearch Centre

rob.procter@manchester.ac.uk

Social Science and Digital Research
Oxford, March 2012


WordPress.com
LogBook
MediaWiki
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Present Yourself
Software
Taverna
myexperiment
OpenID
Literature
citeulike
Google
Compute resource
amazon web services
twitter
His friends and colleagues
Backup and Archive
Dropbox
Alfresco
friendfeed
Blogger
Data (files, spreadsheets)
Courtesy of Duncan Hull

Background

The scholarly community is experiencing the most profound changes in how it communicates since the establishing of conventions for writing scientific papers.

These changes are evident in how scholars communicate among themselves but also in how they communicate with stakeholders, including funders and the public.

These changes are taking place in a context of external pressures to make research faster and more robust; to improve knowledge

the scientific community

atural desire of individuals

ogical innovations which

exchange.

Why You Should Be Hot and Bothered About 'Climate-gate'

By John Lott
Published November 24, 2009 | FOXNews.com

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Science depends on good quality of data. It also relies on replication and sharing data. But the last couple of days have uncovered some shocking revelations. Computer hackers have obtained 160 megabytes of e-mails from the Climate Research Unit at the University of East Anglia in England. These e-mails, which have now been confirmed as real, involved many researchers across the globe with ideologically similar advocates around the world. They were brazenly discussing the destruction and hiding of data that did not support global warming claims. The academics here also worked closely with the U.N.'s Intergovernmental Panel on Climate Change.

Scholars' attitudes

A small cohort finds it useful to publish early research ideas via blogs, etc:

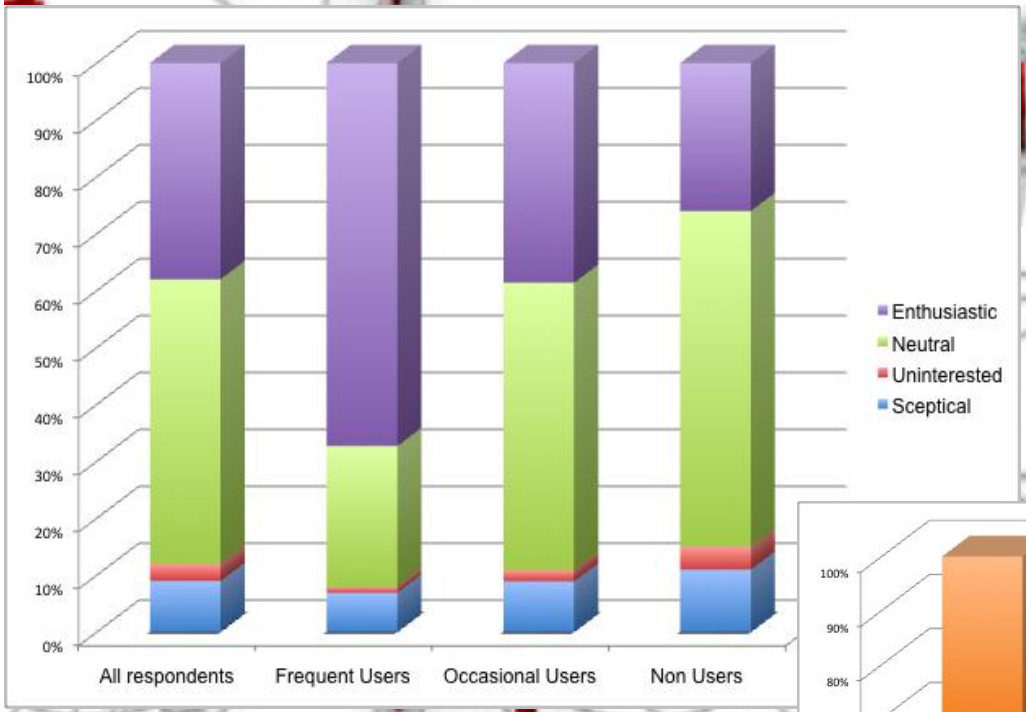
- Early adopters are not 'usual suspects'

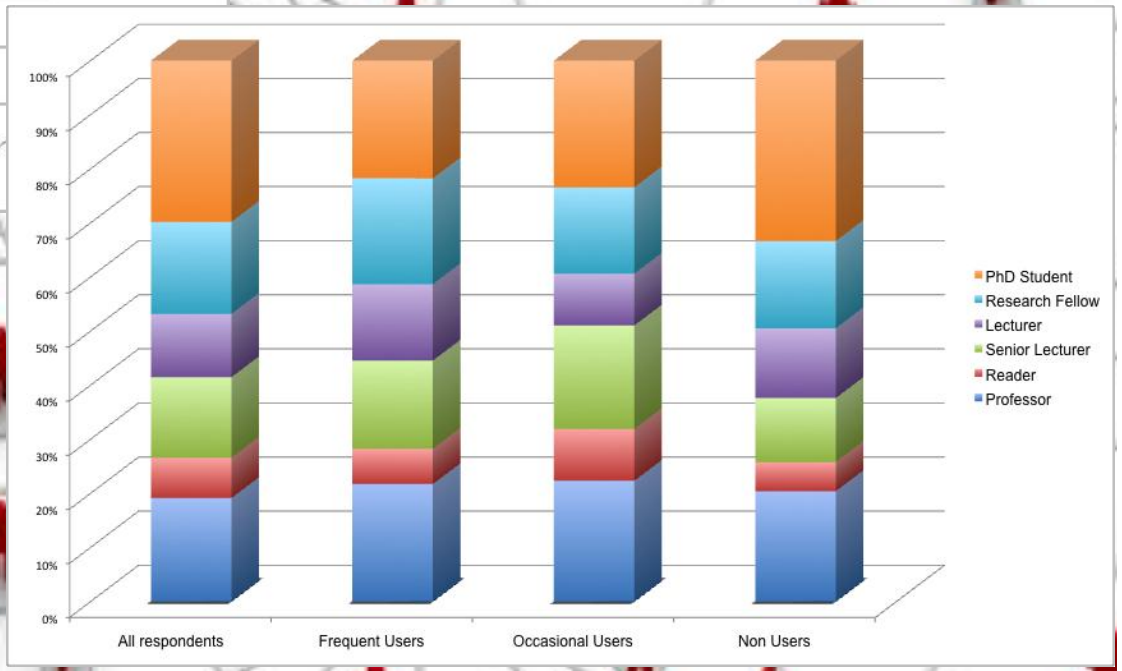
Many consider new forms of scholarly communication 'unscientific', dangerous and a waste of time:

- Lack of quality control, evidence of benefits, time to experiment

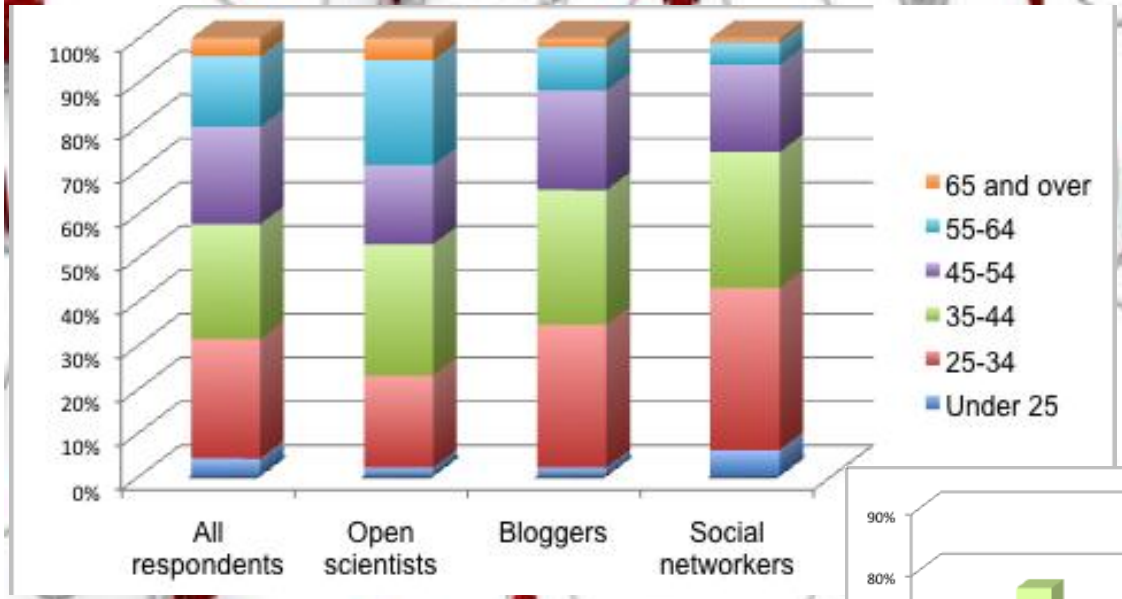
Procter R. et al. (2010). Adoption and Use of Web 2.0 in Scholarly Communication. Philosophical Transactions of the Royal Society A.

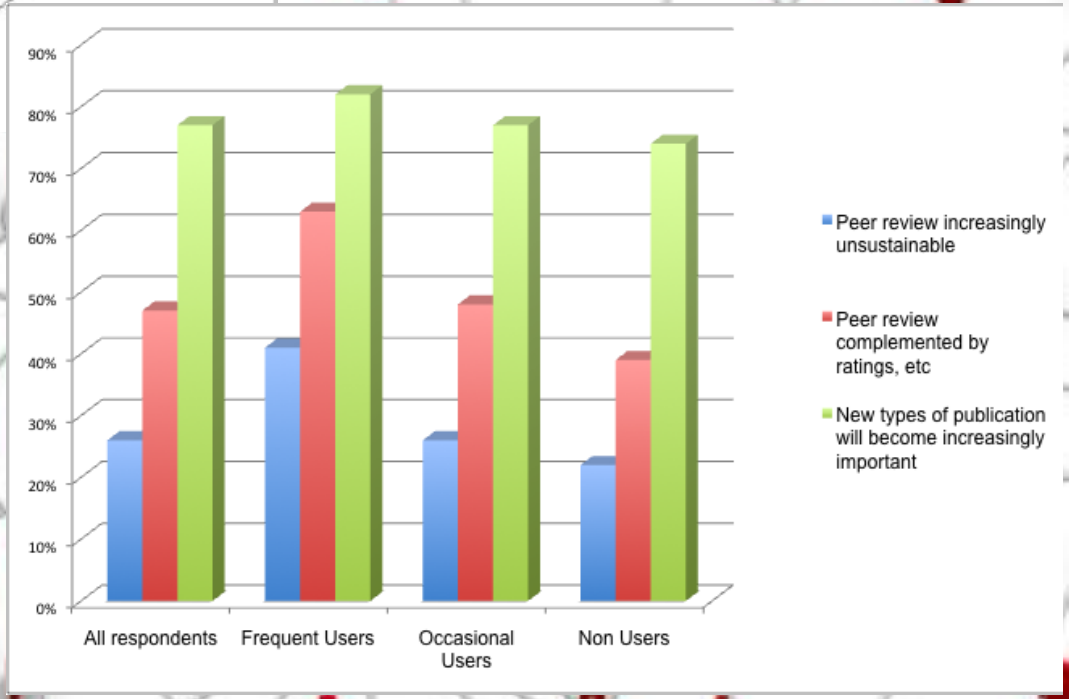
Scholars' attitudes





Scholars' attitudes





Scholars' attitudes

"I don't think my immediate colleagues in the (…) department are using Web 2, not to any great extent, not that I know of."

"I have a negative attitude to use blogs and videos in research. Once it's finished it should be published otherwise it will be anarchy in science."

"The blog system is being run by people who we see as not technically competent enough to do it reliably."

"If it increases your profile and more people were aware of the work you did that would be a benefit.

"But I do need people to recommend why I need to change to use something."

"I'm enthusiastic in that I think there's a lot of potential there, but pragmatically I think there are problems still because people don't have the knowledge (…) to make use of it."

"I can see other people using it and I'd like to be able [to] use it better. I really could do with having a tutorial or something, but I really don't have time to do all these things (…)"

Scholars' attitudes

"One of the key social skills for the 21st century is building and maintaining your network (…) It is also about filtering the information coming in."

"[I] wouldn't use Wikipedia or anything like that, anything that isn't peer reviewed like that is worthless".

"In our university we have a certain guideline what may or not may be put onto the blog. I have to agree that something needs to be saved and I don't want people to say: we just discovered X."

"I'd rather spend the time thinking about what I'm going to do next rather than spend it telling others what I'm doing (…) I think it's definitely a younger person's thing."

"[blogs] not very taken seriously, even blogs based on Nature [colleagues] find it time consuming and not very credible, interesting yes, but it's almost regarded as piece of entertainment first and potentially useful almost serendipitously."

Scholars' attitudes

"If it increases your profile and more people were aware of the work you did that would be a benefit."

"There are career benefits too. Those working in the media field who are actively using these materials and are perceived to be on the 'cutting edge' are often very successful."

"It almost offers you a half way house in that you can be less formal, you don't have to have completed your research project, you can talk about your research findings as it were and it's kind of put out there in the public space and people can comment or interact without having to wait until your final output is a journal article that will appear in print."

"I think peer-review is essential (...) I think a lot of publications that I can use somehow are less useful because of suspicion that they were not peer-reviewed. It might not be common for areas where people put their materials online."

"I think the current system is unsustainable because of the demands of work load and the peer review process."

Scholars' attitudes

"Things like citation rates that come out of a formal process can be tracked (…), but reader comments and ratings would be so open to abuse it's hard to imagine that people would interpret it as valid of the paper's worth."

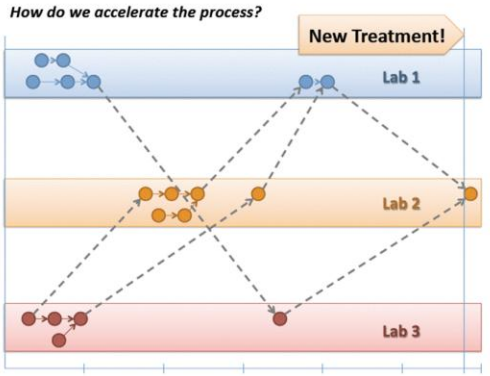
"Blogs are good for discussions about policymaking and planning where science goes in the future. This is good for bouncing ideas around the community. Some of these are closed because some of the discussions are sensitive and they want the people involved to be free to say what they want."

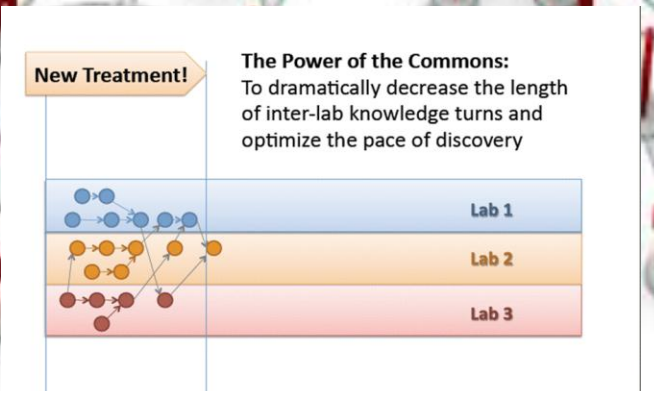
"I think this whole idea of using social networking tools in science is intriguing and we've really only begun to scrape the surface because, at heart, a lot of science is a social networking exercise. It's quite a good model for science when we finally get our head around it and I'm only beginning to start to understand that, I think."

"I do not support Open Science and I do not see any benefits for me. I have a negative attitude to use blogs and videos in research. Once it's finished it should be published otherwise it will be anarchy in science."

eResearch

Greater collaboration and increased sharing of resources will create conditions for faster time to discovery and more robust science.



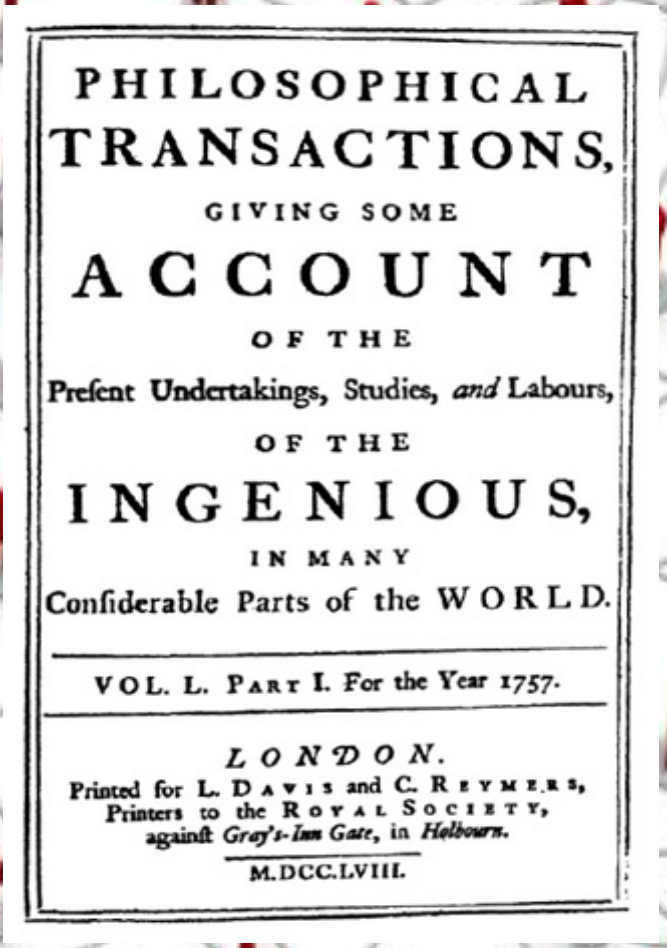


Features of the social organisation of scholarly communication practices that make them slow and ineffective will disappear.

Goble C. et al. (2011). Accelerating Scientists' Knowledge Turns

Peer review

"… no system of shared useful (or any kind of) knowledge can exist without some mechanism that generates trust. The apparent skepticism with which scientists treated the knowledge created by their colleagues increased the trust that outsiders could have in the findings, because they could then assume—as is still true today—that these findings had been scrutinized and checked by other "experts."" *Mokyr, J. (2005). The Intellectual Origins of Modern Economic Growth*



PHILOSOPHICAL
TRANSACTIONS,
GIVING SOME
ACCOUNT
OF THE
Present Undertakings, Studies, *and* Labours,
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INGENIOUS,
IN MANY
Considerable Parts of the WORLD.

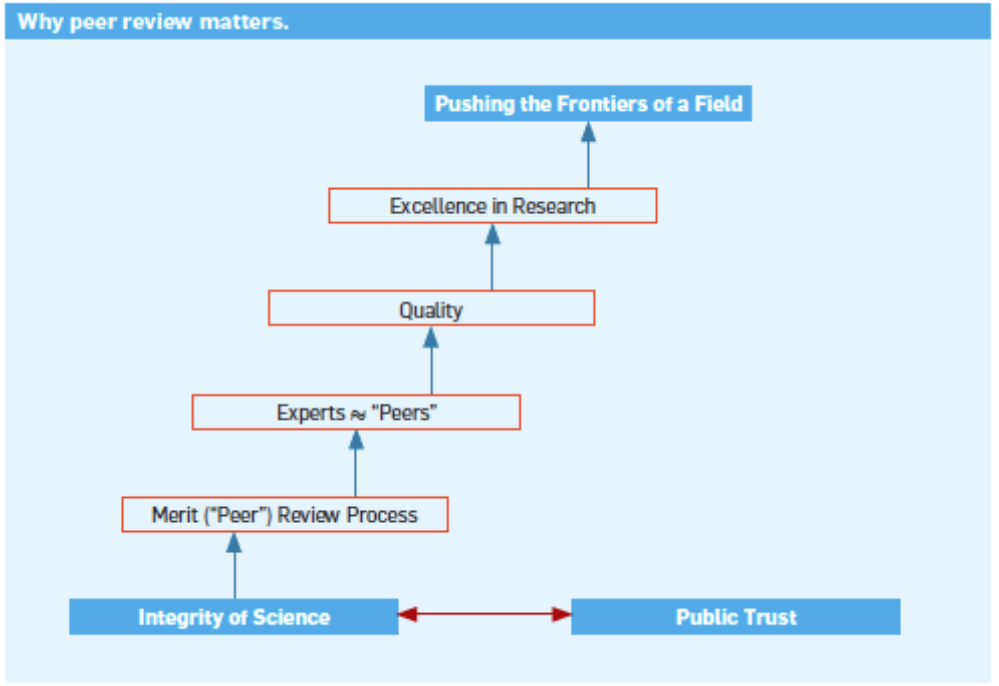
VOL. L. PART I. For the Year 1757.

LONDON.
Printed for L. DAVIS and C. REYMERS,
Printers to the ROYAL SOCIETY,
against *Gray's-Inn Gate*, in *Holbourn.*

M.DCC.LVIII.

Peer review

"In science, peer review matters not just for scientific truth, but, in the broader context, for society's perception of science. Peer review matters for the integrity of science. Scientific integrity is the basis for public trust in us, in our results, in science. Most people don't understand the technical details of a scientific result, let alone how it was obtained, what assumptions were made, in what contexts the result is applicable, or what practical implications it has."



Wing J. (2011). Reviewing Peer Review. CACM

Peer review

Peer review is the ‘gold standard’ for judging the quality of scholarly work. Yet, from Merton onwards, doubts have been cast about its efficacy

Bias (gender) – discriminates against women; bias (affiliation) – stifles innovation by concentrating resources and talents around

s, fraud; slow;
ecruit; lack of

“Recent estimates predicted that peer evaluation is applied to more than 1 million journal articles per year, not to mention conferences, research proposals, fellowships etc. This casts serious doubt about the possibility that voluntary, uncompensated peer review can go on efficiently with
Matthew strik
scientific com

> *At the journal Molecular Ecology, we find little evidence for the common belief that the peer-review system is overburdened by the rising tide of submissions.*

Any belief that peer review is a fair and consistent process is utopian […] Nevertheless, the peer review process does tend to select the better articles for publication; and, flawed as it is, there is no better alternative. *Hall J.C. How to dissect surgical journals.* http://www.anzsurg.com/view/0/dissectingSurgicalJournals.html

Reforming peer review

"… the Web, open source software, and Wikipedia have shown us that filtering after publication, rather than before, can work too. And filtering is not so hard. Filtering after publication is clearly the future […] It could not work in a paper-based culture. But there is no reason why it can't work in the near future." *Daniel Lemire http://cacm.acm.org/blogs/blog-cacm/98560-why-peer-review-matters/comments*

in 2006, British Medical Journal in 1999, and Journal of Interactive Media in Education in 1996) have had mixed results in terms of the quality and tone of the reviews. Interestingly, and perhaps unsurprisingly, ma… of those who are invited to review under the… new model decline… reviewers. This is … and journals, at a … due to the growth … *Reviewing Peer R…*

That's not what I mean by post-publication review, but it is a disappointment to me that comments are so sparse. My friend who blogs for cricket.com may get 2000 comments in response to a short blog, and blogs in the Guardian, for example, will often have several hundred comments. In contrast, the majority of scientific articles attract no comments whatsoever.

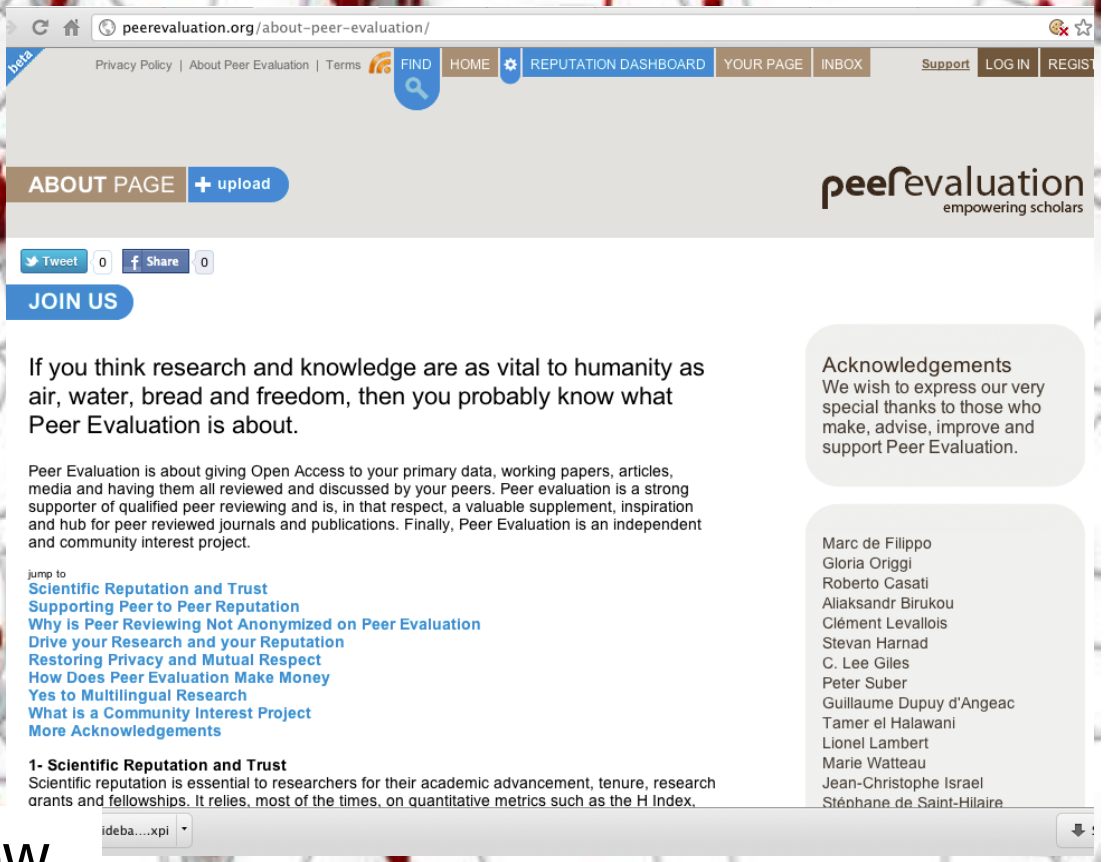
Smith R. (2011). What is post publication peer review? http://blogs.bmj.com/bmj/2011/04/06/richard-smith-what-is-post-publication-peer-review/

PLoS PUBLIC LIBRARY of SCIENCE

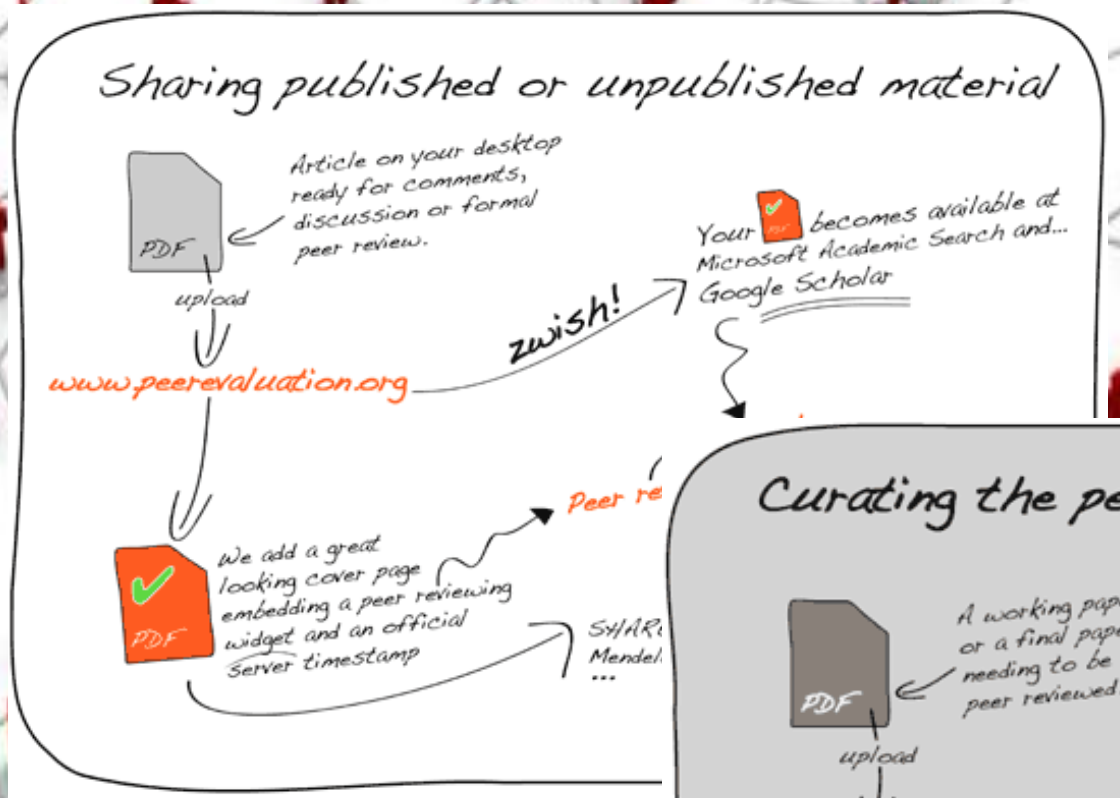
Reforming peer review

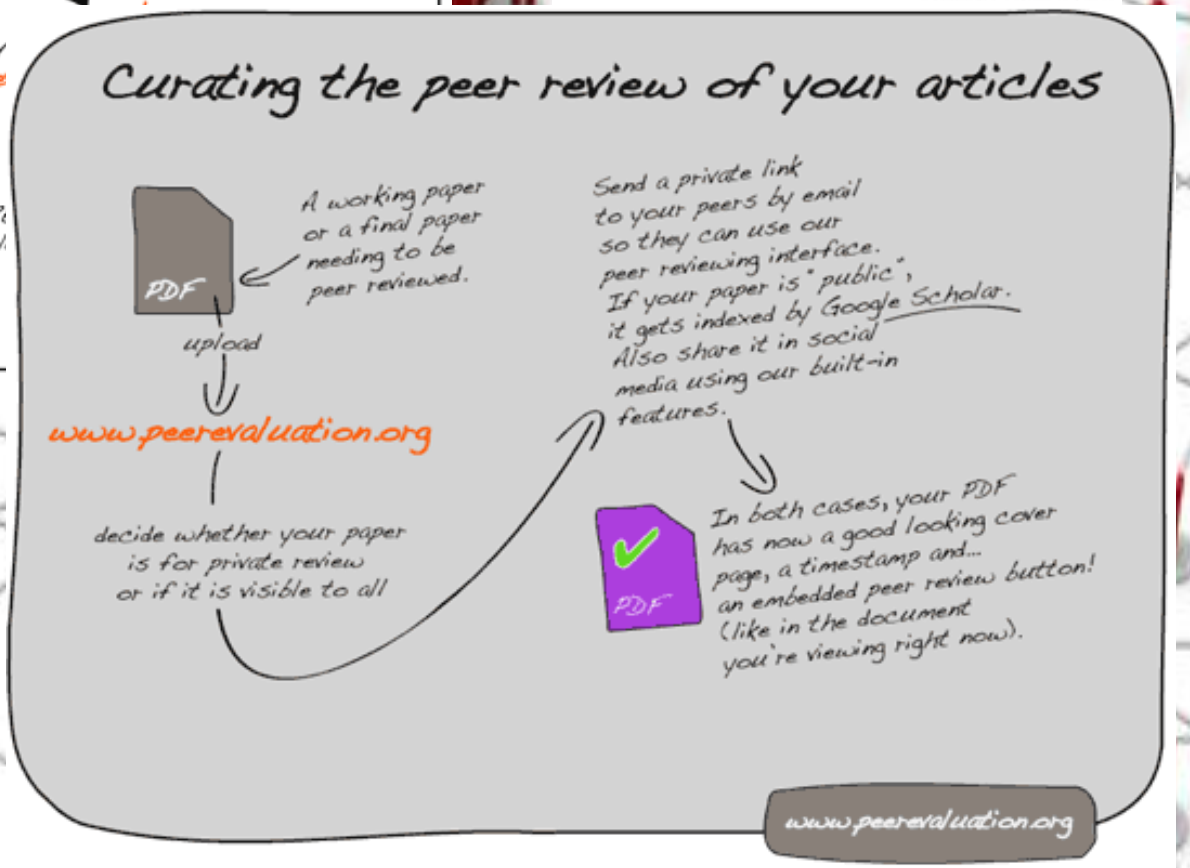
Other experiments in post-publication peer review seek to move beyond the confines of established publication outlets and make review *radically open.*

"Peerevaluation.org aims at becoming a place where scholars come to make sure that they are getting the best of online sharing: increased dissemination, visibility, accessibility, commentary, and discussion, fruitful collaborations and, finally, evidence of impact, influence and re-use."



Crowdsourcing peer review.





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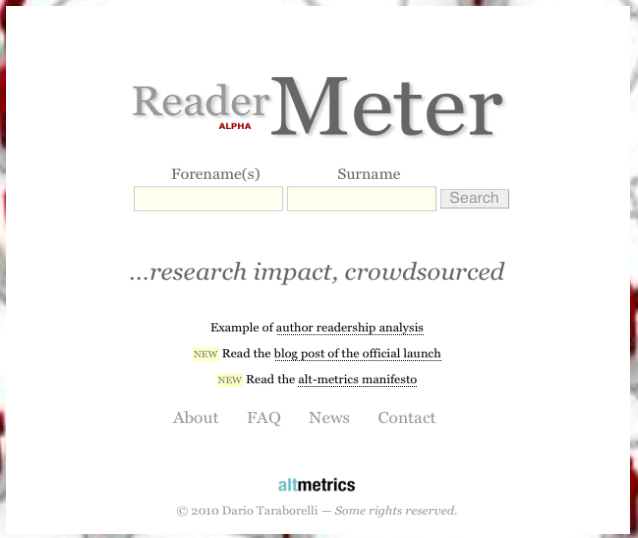
INSTANT COMMUNITIES

Impact and how to increase it

In parallel with growth in interest in new forms of peer review, we are seeing in scholars experimenting with new ways of measuring – and generating – impact.

total Impact

MENDELEY



Altmetric

ScienceCard

ScienceCard Users Works Journals Books About Rob Procter

Martin Fenner

@mfenner
Hannover, Germany
Clinical fellow in oncology and science blogger.
http://blogs.plos.org/mfenner

JSON | XML | BibTeX | RIS | CSV

Identifiers | Metrics | Journal Articles (29) | Book Chapters (1)

29 Journal Articles

Response of renal lesions during systemic treatment with sunitinib in patients with metastatic renal cell carcinoma: a single center experience with 14 patients
Seidel C, Fenner M, Merseburger A, Reuter C, Ivanyi P, Länger F, et al. *World Journal of Urology*. 2011:29 (3);355-360. http://doi.org/dmf
9 months ago - Comment - Like - Share on Mendeley - Share on CiteULike

7053 POSTER Hormonal Impact of Second-line Salvage Chemotherapy With Carboplatin Plus Weekly Docetaxel in Patients With Castration and Docetaxel-resistant Prostate Cancer
/mfenner, Reuter C, Morgan M, Fenner M, Ivanyi P, Grünwald V, et al. *European Journal of Cancer*. 2011:47;S501. http://doi.org/dvpb63
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7053 POSTER Hormonal Impact of Second-line Salvage Chemotherapy With Carboplatin Plus Weekly Docetaxel in Patients With Castration and Docetaxel-resistant Prostate Cancer
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Comment - Like - Share on Mendeley - Share on CiteULike

Carboplatin plus weekly docetaxel as salvage chemotherapy in docetaxel-resistant and castration-resistant prostate cancer 4 1 2 2
Reuter C, Morgan M, Ivanyi P, Fenner M, Ganser A, Grünwald V, et al. *World Journal of Urology*. 2010:28 (3);391-398. http://doi.org/djq

formats, simply append the format to the author page, e.g. http://sciencecard.org/mfenner.json or http://sciencecard.org/mfenner.bib. You can import references into your reference manager using the bib or ris format. The Contact Info Options Wordpress plugin adds a ScienceCard field to the user profile, so you can display ScienceCard information in your Wordpress author page.

Tomorrow's filters: altmetrics

In growing numbers, scholars are moving their everyday work to the web. Online reference managers Zotero and Mendeley each claim to store over 40 million articles (making them substantially larger than PubMed); as many as a third of scholars are on Twitter, and a growing number tend scholarly blogs.

These new forms reflect and transmit scholarly impact: that dog-eared (but uncited) article that used to live on a shelf now lives in Mendeley, CiteULike, or Zotero–where we can see and count it. That hallway conversation about a recent finding has moved to blogs and social networks–now, we can listen in. The local genomics dataset has moved to an online repository–now, we can track it. This diverse group of activities forms a composite trace of impact far richer than any available before. We call the elements of this trace altmetrics.

Altmetrics expand our view of what impact looks like, but also of what's making the impact. This matters because expressions of scholarship are becoming more diverse. Articles are increasingly joined by:

- The sharing of "raw science" like datasets, code, and experimental designs
- Semantic publishing or "nanopublication," where the citeable unit is an argument or passage rather than entire article.
- Widespread self-publishing via blogging, microblogging, and comments or annotations on existing work.

Because altmetrics are themselves diverse, they're great for measuring impact in this diverse scholarly ecosystem. In fact, altmetrics will be essential to sift these new forms, since they're outside the scope of traditional filters. This diversity can also help in measuring the aggregate impact of the research enterprise itself.

Altmetrics are fast, using public APIs to gather data in days or weeks. They're open–not just the data, but the scripts and algorithms that collect and interpret it. Altmetrics look beyond counting and emphasize semantic content like usernames, timestamps, and tags. Altmetrics aren't citations,

- k8lir
  be nice to have a Tweet button attached to abstracts and search pages on @ncbi_pubmed?#hcsm #altmetrics »
- Holo_08: RT @jessykate: Scholarship in the Age of the Internetatron: http://t.co/JIhproDH nice spoof in support of @PeerEvaluation, #altmetrics and #openscience »
- View All

resources

- altmetrics on Mendeley
- altmetrics on FriendFeed
- altmetrics on LinkedIn

upcoming events

- 19-21 January 2012:
  Science Online 2012
  (NC State University)

past events

- 24-25 October 2011:
  Transforming Scholarly Communication
  (Harvard & Microsoft Research)
- 22-23 October 2011:
  Open Science Summit 2011
  (Mountain View, CA)
- 2-3 September 2011:
  Science Online London 2011
  (British Library)
- 15 June 2011:
  altmetrics11 workshop
  (ACM Web Science Conference 2011)
- 9-11 May 2011:
  Beyond Impact Workshop
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Potent PPARα Activator Derived from Tomato Juice, 13-oxo-9,11-Octadecadienoic Acid, Decreases Plasma and Hepatic Triglyceride in Obese Diabetic Mice PLoS ONE

This is the link of the original article regarding tomato juice effects if you are interested in. ;) =

Potent PPARα Activator Derived from Tomato Juice, 13-oxo-9,11-Octadecadienoic Acid...

"PLoS ONE: Potent PPARα Activator Derived from Tomato ... es Plasma

Altmetric's mission

POWERED BY

What do these numbers actually mean? The short answer is: probably something useful, but we're not sure what. We believe that dismissing the metrics as "buzz" is short-sited: surely people bookmark and download things for a reason. *http://total-impact.org/about*

About

Altmetric i

- Scient
- Autho
- Publis
- Editor

Auditory

coverage of

ics of

Picked up by **4** news outlets
Blogged by **5**

Reconstructing Speech from Brain suggest it may b ... ble 2 readout intended speech directly from brain activity

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Scientists talk, we listen

We've created and maintain a cluster of se
mentions of scholarly articles.

Browse articles with mentions in the past:
1d, 3d, 1w, 1m, 3m or all time

8,122
different journals

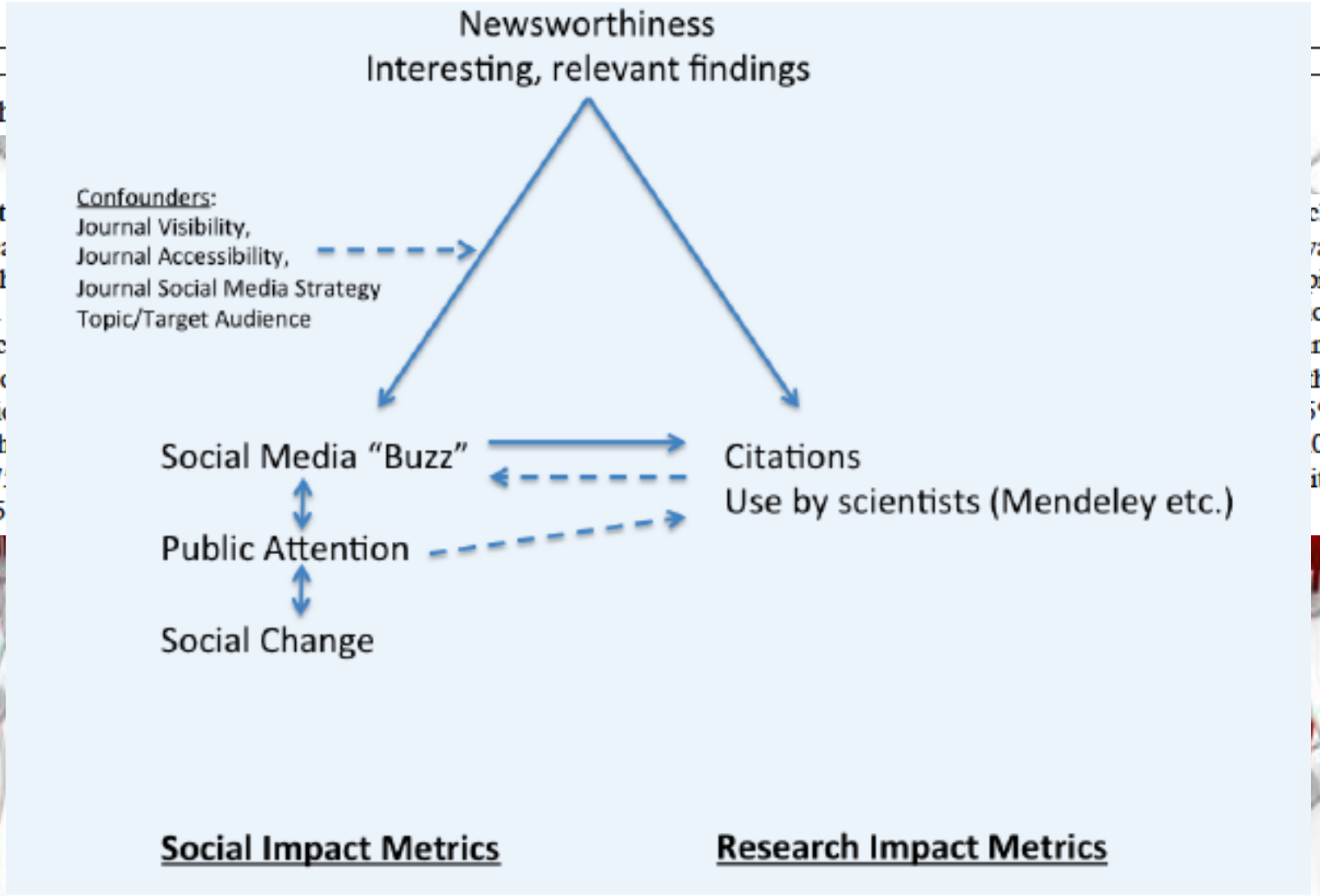
In mid January 2012 we were tracking approximately three thousand unique papers a day. We have broad coverage and are getting better every month - we can track articles from hundreds of different publishers, preprint databases and institutional repositories. If somebody has recently tweeted, blogged or posted a public link to your paper then we quite possibly know about it.

Altmetric database contents, **January 201**

We clean up the data, disambiguate articles and give each one an Altmetric score as described below.

zotero

Can Tweets Predict Citations? Metrics of Social Impact Based on Twitter and Correlation with Traditional Metrics of Scientific Impact



Questions

"Research work is being part of a conversation"

Too much conversation and not enough action “The main obstacle, of course, is unquestionably the added time required for scholars to participate in additional review activities (and the lack of formalized credit for doing so). *Harley D., Acord S.K. (2011). Peer Review in Academic Promotion and Publishing: Its Meaning, Locus, and Future. Center for Studies in Higher Education, UC Berkeley*

Change is unpredictable “[…] while in principle electronic communication serves to widen access and availability, the practical effect of search, reputation and recommendation tools may in fact be to narrow it […] it is possible that electronic distribution and evaluation systems will heighten the already-known “rich-get-richer” phenomenon of citation, and perhaps reinforce existing inequalities of attention.” *Birikou A. et al. (2011). Alternatives to Peer Review: Novel Approaches for Research Evaluation. Front Comput Neurosci, 5.*

Questions

Change is risky Peer review has evolved over more than 250 years. It has its flaws but there are potentially grave risks in introducing major changes when implications are unpredictable.

"When [the public] read in the news that “Scientists state X,” there is an immediate trust that “X” is true. They know that results before th process to work not to lose the p peer review matters.” *Wing, J. (2011). Reviewing Peer Review. CACM.*

Will bad science drive out the good?

Are new forms of scholarly communication at less or greater risk of being manipulated by vested interests?

Is not having the conversation in public a necessary price for maintaining public trust?

Attacks paid for by big business are 'driving science into a dark era'

Researchers attending one of the world's major academic conferences 'are scared to death of the anti-science lobby'

Robin McKie, science editor
The Observer, Sunday 19 February 2012
Article history

The vast majority of scientists on both sides of the Atlantic say rising levels of carbon dioxide in the atmosphere threaten to increase temperatures to dangerous levels. Photograph: Paul Souders/Corbis

Most scientists, on achieving high office, keep their public remarks to the bland and reassuring. Last week Nina Fedoroff, the president of the American Association for the Advancement of Science (AAAS), broke ranks in a spectacular manner.

She confessed that she was now "scared to death" by the anti-science movement that was spreading, uncontrolled, across the US and the rest of the western world.

"We are sliding back into a dark era," she said. "And there seems little we can do about it. I am profoundly depressed at just how difficult it has become merely to get a realistic conversation started on issues such as climate change or genetically modified organisms."