

Academic spring: how an angry maths blog sparked a scientific revolution

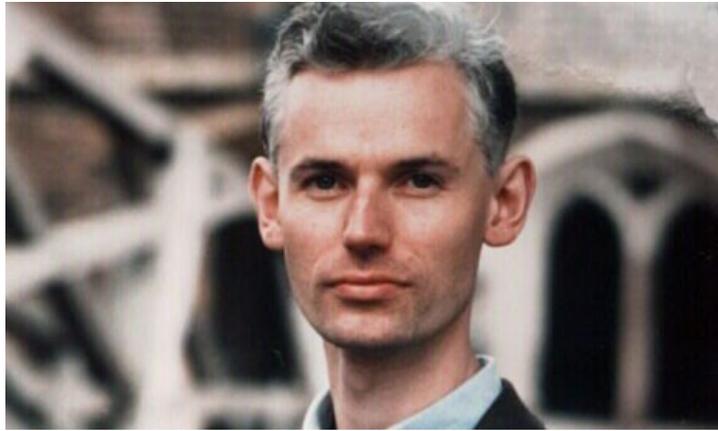
Alok Jha reports on how a Cambridge mathematician's protest has led to demands for open access to scientific knowledge



Alok Jha

The Guardian, Monday 9 April 2012 20.54 BST

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'I was taken aback by how quickly this thing blew up,' says Tim Gowers, a prize-winning Cambridge University mathematician.

It began with a frustrated blogpost by a distinguished mathematician. [Tim Gowers](#) and his colleagues had been grumbling among themselves for several years about the rising costs of academic journals.

They, like many other academics, were upset that the work produced by their peers, and funded largely by taxpayers, sat behind the [paywalls](#) of private publishing houses that charged UK universities hundreds of millions of pounds a year for the privilege of access.

There had been talk last year that a major scientific body might come out in public to highlight the problem and rally scientists to speak out against the publishing companies, but nothing was happening fast.

So, in January this year, Gowers wrote an [article on his blog](#) declaring that he would henceforth decline to submit to or review papers for any academic journal published by [Elsevier](#), the largest publisher of scientific journals in the world.

He was not expecting what happened next. Thousands of people read the post and hundreds left supportive comments. Within a day, one of his readers had set up a website, [The Cost of Knowledge](#), which allowed academics to register their protest against Elsevier.

The site now has almost 9,000 signatories, all of whom have committed themselves to refuse to either peer review, submit to or undertake editorial work for Elsevier journals. "I wasn't expecting it to make such a splash," says Gowers. "At first I was taken aback by how quickly this thing blew up."

Gowers, a mathematician at Cambridge University and winner of the prestigious [Fields Medal](#), had hit a nerve with academics who were increasingly fed up with the stranglehold that a few publishing companies have gained over the publication and distribution of the world's scientific

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research.

The current publishing model for science is broken, argue an ever-increasing number of supporters of open access publishing, a model whereby all scientific research funded by taxpayers would be made available on the web for free.

Expensive paywalls not only waste university funds, they say, but slow down future scientific discovery and put up barriers for interested members of the public, politicians and patients' groups who need access to primary research in order to exercise their democratic rights.

Stephen Curry, a structural biologist at [Imperial College London](#), says that scientists need to come to a new arrangement with publishers fit for the online age and that "for a long time, we've been taken for a ride and it's got ridiculous".

He adds: "We face important policy choices on a whole raft of issues – climate change, energy generation, cloning, stem cell technology, GM foods – that we cannot hope to address properly unless we have access to the scientific research in each of these areas."

Academic publishers charge UK universities about £200m a year to access scientific journals, almost a tenth of the £2.2bn distributed to them by the government, via the funding councils, for the basic running costs of university research.

Despite the recession, these charges helped academic publishers operate with profit margins of 35% or more, while getting their raw materials and the work of thousands of taxpayer- and charity-funded scientists free.

The big three publishing houses – Elsevier, [Springer](#) and [Wiley](#) – own most of the world's more than 20,000 academic journals and account for about 42% of all journal articles published. And, even as library budgets over the past few years in the UK and North America have been flat or declining, journal prices have been rising by 5-7% a year or more.

A standalone subscription to one of Elsevier's most expensive journals, [Biochimica et Biophysica Acta](#), costs more than €18,000 (£15,000) a year. Most universities buy bundles of journals, however, so they can soon rack up bills of more than £1m each to access the journals their academics request.

"As scientists, we do let ourselves be pushed around an awful lot," says Curry, who recently stopped reviewing for Elsevier and also resigned as an academic editor on an Elsevier journal.

"We give out all this work for free to publishers and I think, just becoming aware of the huge profits that are involved, I'm much less willing to give up my time ... I'm more inclined to say I'm going to devote my time and effort to journals that are more strongly open access."

Price, however, is only part of the issue. Academics and librarians are also asking themselves why publishers should have exclusive control of how research gets distributed and shared. "We think that's wrong and that's not the most effective way of running scholarly communications," says David Prosser, executive director of Research Libraries UK.

"To be made effective, scholarly information has to be made as widely available as possible. We've seen an increasing amount of evidence that shows that, if we move to an open-access world, there are benefits not just to the scientific process itself but also wider economic benefits."

Until the arrival of the web, printed peer-reviewed journals were the easiest and fastest way to keep up to speed with the ever-growing amount of research in an ever-growing number of universities around the world. But, as the numbers of journals grew, publishing companies became the de facto gatekeepers to scientific knowledge, restricting who could see the latest ideas rather than allowing ideas to spread as far as possible.

Academics submit the results of their research projects to a journal, whose editors then send the manuscript out to other academics in the same field for peer review.

If the article passes this stage, the editors often require researchers to pay hundreds or thousands of pounds if they go over a certain number of pages or if they want to include colour diagrams. Once these fees are

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paid, the research is published and made available, in print and online, to anyone willing to pay for access. Organising the whole process clearly takes effort, but does it justify the vast profit margins that publishing companies make?

Gowers says that publishers rarely make it explicit that the peer review they depend on for quality control is all done voluntarily and publishers are making profits on the back of this voluntary work.

"Academics write the papers, academics referee the papers, academics select the papers that are going to be published – it's almost as though the publisher does nothing that we need except perhaps their organisational role and lending the name of the journal that confers a certain reputation."

[Nature](#), one of the world's leading cross-disciplinary scientific journals and owned by the publishing group Macmillan, charges subscriptions for access to its suite of magazines and websites.

In an [editorial published in January](#), the journal defended the value it added to the scientific process, saying that publishing original research papers required its editors to "undertake careful assessment of scientific significance, and the refereeing stage involves much deliberation, occasional debate and revisions that significantly enhance the robustness and scientific impact of the paper".

An Elsevier spokesman said the subscription cost of research articles had "never been lower than it is today on a cost-per-download basis. This is a direct result of the investments publishers have made to digitise and disseminate scientific content." Volume discounts also meant the cost of an article was now "about one fifth of what it was just 10 years ago".

In an [open letter to scientists in February](#), Elsevier said: "While some of the facts about Elsevier are being misrepresented, the depth of feeling among some in the research community is real and something we take very seriously."

It is easy for most research scientists to remain oblivious to the high cost of journal subscriptions, because they are not usually the ones having to negotiate with publishers, says [Sir Mark Walport](#), director of the Wellcome Trust.

As an active researcher, he had easy access to all the papers he wanted and only became aware of the costs involved, he says, when he arrived at the trust and tried to read a paper that had been produced as a result of a research grant from the charity, only to be faced with an article charge of £25. "Not surprisingly, I felt somewhat resentful about it," he says.

[Björn Brembs](#), a neurobiologist at Free University Berlin and an outspoken supporter of open access, says the academic community should ditch publishers altogether, giving money spent on journal subscriptions to libraries instead. Brembs's idea, a global archive of academic research and data, is a supercharged version of one method of open access already in operation.

[ArXiv.org](#) is a long-established website where anyone can post any research manuscript they like and make it available to the world for free. In some subjects, notably physics, almost everything appears here before it goes out to peer review and before publication in a scientific journal.

Another model of open access comes from the [Public Library of Science](#) (PLoS), an organisation headquartered in San Francisco.

The organisation publishes several top-tier journals, including PLoS Biology and PLoS Medicine, as well as the more general [PLoS ONE](#), a journal that publishes on any topic that could be classed as scientific and accepts all submissions where the conclusions are supported by the presented data.

All PLoS journals are available free on the web as soon as they are published, and the costs of publication are borne by the researchers themselves – about \$2,900 (£1,800) per article for PLoS Biology and PLoS Medicine and \$1,350 per article for PLoS ONE.

Perhaps sensing the mood in 2011, Nature's parent company [announced its own open-access journal](#) in the mould of PLoS ONE, called Scientific Reports.



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Many standard subscription-based journals will liberate their papers from paywalls if the authors pay a fee, a process known as "gold" open access. This means academics can deposit pdfs of their research on university websites or central repositories at a cost of \$1,000-\$5,000. For those without such funds, there is "green" open access, where a publisher might allow a researcher to deposit a peer-reviewed, though unformatted, pdf of the paper on a university database.

Even if a paper is made available on university repositories, though, often the copyright restrictions are so draconian that the research cannot be used in any subsequent scientific inquiry without prior permission.

This has profound implications for the ability of scientists to use modern techniques to get the most out of published research, which grows at the rate of more than 1.5m new research articles every year.

Text mining, for example, is a relatively new research method where computer programmes hunt through databases of plain-text research articles, looking for associations and connections – between drugs and side effects, for example, or between genes and disease – that a person scouring through papers one by one may never notice.

In March, [JISC](#), a government-funded agency that champions the use of digital technology in UK universities for research and teaching, [published a report](#). This said that if text mining enabled just a 2% increase in productivity for scientists, it would be worth £123m-£157m in working time per year.

But the process requires research articles to be accessed, copied, analysed and annotated – all of which could be illegal under current copyright laws.

[Cameron Neylon](#), a biophysicist who will take up a position as director of advocacy at PLoS in July, says such copyright rules are problematic for several reasons.

"Firstly, we do a lot of reinventing the wheel because older literature isn't as accessible as it should be. We really need to be running high quality mining tools over the older literature, because there is a lot of value in there.

"The second problem is that there is so much being generated today that people can't keep up – there is simply too much to cover – and this means that we are getting more and more trapped in the silos of our own discipline and missing parallel work in the noise."

Publishers are not the only hurdle to enabling wider adoption of open access – academics themselves are too. Academics are assessed on their publication record in scientific journals and the metrics of the system mean that the more prestigious the journal, the higher the chance there is of promotion or a research grant.

This problem is exacerbated by the [Research Excellence Framework \(REF\)](#), an exercise carried out every few years by the UK funding councils to assess the quality of every university department.

The assessments, largely based on publication records, determine how more than £2bn is distributed every year to universities. Universities are already gearing up for their assessments as part of the REF in 2014 and, although the adjudicating panels have been instructed to ignore the impact factors of journals, Curry says no one believes that it is "remotely possible to do so".

This means a paper in [Nature](#), [Science](#), [Cell](#) or some other high-impact (but non-open-access) journal will count for far more in the REF assessments than the enlightened notion that scientific research should be as widely available as possible.

Neylon says the obsession among scientists, as authors, with prestige means they are making their lives as readers and consumers of research much harder than it needs to be. "Prestige is driving the form and quality of papers and not always in a good direction," he says.

But perhaps the web can provide better metrics for scientists in the future, such as download numbers, bookmarks in social bookmarking services or even tweets and Facebook likes.

"Ultimately it will be a combination of all these things together that let you answer more specific questions about how your research is being used," says Neylon. "It's very early days for these measures. But, frankly, the

other measures we've used traditionally aren't very robust either."

Publishing companies will no doubt need to change in response to the call for increased open access. In response to the Cost of Knowledge petition, Elsevier said it would "create a scientific council for [mathematics](#), to ensure that we are working in tandem with the mathematics community to address feedback and to give greater control and transparency to the community".

But Gowers doubts Elsevier could do anything bold enough to win back his support and is instead focused on ways the web might open up scientific research in future. His main hope after writing his blogpost is that people get energised to try out new ideas and set up new open access journals or web-based evaluation methods.

"A lot of people are suddenly spending a lot of time on the internet and it's a serious help to research that's going on.

"A lot more discussion goes on – the fact that I wrote a blogpost that got read by thousands of people very quickly is something that wouldn't have happened five years ago."

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garydougill

9 April 2012 8:59PM

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I couldn't agree more. Having just finished my engineering degree dissertation I was continuously hampered in accessing relevant material that was hidden behind pay walls despite the research being funded by tax payers. I understand that publishers do a valuable job and need remuneration but often the cost to view a single online journal article can be extraordinary, typically 20 or 30 pounds but sometimes over 100 pounds to view a couple of pages of text. Elsevier simply cannot justify these astonishing costs.



TimLeunig

9 April 2012 9:12PM



Guardian
pick

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I am an Elsevier editor, and am pleased to say that Elsevier listened to my concerns and cut the price of subscriptions for individuals. You can read about our discussion here: <http://blogs.lse.ac.uk/impactofsocialsciences/2012/02/22/elsevier-price-boycotters-untruth/>. Dialogue with publishers, as well as protest, can achieve important results.

I should also add that Elsevier have always been helpful to authors wanting to cite work from my journal, allowing it to be included in other formats. Finally, a similar version to a final version can usually be found on the author's website, often as a working paper.

(Tim Leunig is managing editor of Explorations in Economic History)



MrBronze

9 April 2012 9:15PM

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If the scientists are creating the work and other scientists are reviewing it then all that is required is the scientists to create a website for themselves and publish the work themselves.



Quaestor

9 April 2012 9:23PM

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Brilliant work, and the reason The Guardian and free universities remain such a key part of a free society. Capitalism at times has the mentality of a leech. John Bald.



Quaestor
9 April 2012 9:28PM

Response to [MrBronze](#), 9 April 2012 9:15PM

Excellent, Mr Bronze. This is exactly what should happen. It would be the scientific equivalent of open-access software.

[Recommend \(37\)](#)

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Taxiandbrass
9 April 2012 9:31PM

Response to [MrBronze](#), 9 April 2012 9:15PM

Creating websites themselves and publishing themselves - this is a paradigm shift taking place across many subspecialties within publishing.

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HarmoniousFrog
9 April 2012 9:56PM

One aspect that may need further discussion is the question of sponsored journals. Elsevier is the most obvious culprit here, but there may be others and the subject is complicated.

The scandal a couple of years ago of Elsevier's spoof sponsored medical journals was perhaps the most eye-catching. However, without expressing an opinion, I suggest that interested readers could look into the probably more influential sponsorship of 'Regulatory toxicology and pharmacology'.

At a more subtle level, I recently had a stand-off with the very specialised 'Journal of pharmaceutical and biochemical analysis' for reasons that may possibly have had something to do with a strategy of its sponsor, the American Association of Pharmaceutical Scientists.

Back in the UK, some members of the Royal Society of Chemistry, which publishes numerous highly-rated journals (at a price), may be a bit concerned about its dual role as a professional association, that decides and announces policies, and a learned society that is concerned with chemistry as an academic discipline.

A move towards independent open access publications may possibly help allay fears that research in fields such as environmental studies and chemical safety might be unduly influenced by various lobbies. This would not, however, reduce any possible influence of interested sponsors on, for example, the choice of research topics and objectives.

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Optymystic
9 April 2012 10:33PM

Response to [MrBronze](#), 9 April 2012 9:15PM

If the scientists are creating the work and other scientists are reviewing it then all that is required is the scientists to create a website for themselves and publish the work themselves.

Or, more straightforwardly, the presence of the article on the web site of a reputable university conveys the authority of that university to the article in question. The authors and the reviewers can all be credited. The university can also create sections for pre-review drafts discussion papers etc.

The cost would be negligible and the information would be published.

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MrBronze
9 April 2012 10:52PM

It appears from another article that the Wellcome Trust has made said website already.

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AnsonChina
9 April 2012 10:54PM

This is a much needed debate. Academic publishers are utilising the free labour of academics and exploiting public funds. Surely a rigorous peer-review system can emerge without the need for recourse to Elsevier et al and their bloated profit margins.

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agreewith
9 April 2012 10:57PM

Restricting knowledge is the economic model for academic publishers, a wonderful and sad irony that publicly funded research is then so restricted. I applaud the

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bill4me
9 April 2012 11:34PM

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Response to [MrBronze](#), 9 April 2012 9:15PM

If the scientists are creating the work and other scientists are reviewing it then all that is required is the scientists to create a website for themselves and publish the work themselves

There are snags, which is the issue of quality control. Whilst some institutions will no doubt carry on with peer review, others may be less scrupulous, which leaves us wondering who is reliable and who is not.



barciad
9 April 2012 11:43PM

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Response to [bill4me](#), 9 April 2012 11:34PM

Which is where the 'peer review' system comes in. The weaker sites that publish the less stringent articles will be torn to pieces by their more diligent colleagues. Those on the other hand that possess the necessary scientific rigour will survive.



bill4me
9 April 2012 11:48PM

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Response to [barciad](#), 9 April 2012 11:43PM

The weaker sites that publish the less stringent articles will be torn to pieces by their more diligent colleagues. Those on the other hand that possess the necessary scientific rigour will survive.

Somewhat naive. So when it comes to the what's the current name? REF? - how are the assessors going to be able to grade the papers?



EmileEconomopoulos
10 April 2012 12:00AM

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How ironic!

They, like many other academics, were upset that the work produced by their peers, and funded largely by taxpayers, sat behind the paywalls of private publishing houses that charged UK universities hundreds of millions of pounds a year for the privilege of access.

Without realising it, Gowers and his friends have just described our banking system. A system of private banks charges us for the free service of "creating money". What is free and should be free is held hostage by a group of publishing houses (banks) who pretend that they do something that we could not do without them.



lesbiches
10 April 2012 12:08AM

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Extremely informative article and very nicely written for this generalist reader.

The model in the last third of the article - paying \$1500 to publish your own article? And that's meant to be the "new, open" model?

Crikey.

-----> Wordpress this way



SecondChance
10 April 2012 12:29AM

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Ha, this is not even an academic issue - purely economic - if we did indeed move to open access, free, University and peer published work, we would remove many monetised steps from the process and this would lead to a shrinking of the economy (or GDP).

Now, don't get me wrong - we would be richer for it, but unfortunately our economic health is measured purely in monetary terms, and any move to increase the value while reducing the cost would be met with fierce resistance - with worry that this would be the thin end of the wedge, where people would start to use new technology to reclaim fundamental resources from third parties.

Who knows, before long we could even start the dream that we could have access to our own form of exchange - a form of money that was ours, debt free, instead of relying on money being produced as interest bearing loans by private banks. Now that would just not do, would it?!



L7777777777
10 April 2012 12:32AM

Scientists are not businessman, as you can see here.

But the Guardian has been talking about that for a long time. Nothing much changed obviously.
Maybe the universities have to cancel their subscriptions first?

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elpaw
10 April 2012 1:25AM

Response to [SecondChance](#), 10 April 2012 12:29AM

Ha, this is not even an academic issue - purely economic - if we did indeed move to open access, free, University and peer published work, we would remove many monetised steps from the process and this would lead to a shrinking of the economy (or GDP).

Since the big publishing houses are foreign (Dutch, German and American), the UK economy shouldn't shrink.

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fabcat21
10 April 2012 2:25AM

Response to [MrBronze](#), 9 April 2012 9:15PM

Yes. It is how journals started, really - letters between gentleman-researchers, then papers for discussion over dinner or to send to colleagues abroad. There is no justification whatsoever for the publishing houses being involved or taking profit.

Except this: as an editor, I corrected papers and re-wrote sections to turn them from gibberish into English, translated papers from one language to another and worked hard to reduce the errors per page. I was paid full-time to do it and it takes a lot of work. Perhaps that is less important than editors like to think, but it does help. Apart from that, there is the peer-review process; it has to be organised and reviewers are often paid.

We can set up panels and circulate papers, but those panels will either expect to get paid - it is a lot of work and often there are only a few who can do it - or will do it for love. If you rely on love you will have a large backlog. It is also harder to enforce standards when no formal payment has been made, and please do not imagine that reviewers are unbiased lovers of pure scientific truth - like the rest of us, they have prejudices, blind spots and vendettas, so have to be carefully chosen and observed.

Wikis are one thing, but properly scutinising the methodology and results treatment for, say, a new gene sequencing approach, a model of cosmology (where the maths is tricky) or even something simple like a meta-analysis of the effectiveness of a drug is not something most people can do. Will the right people do it? It is easy to produce a plausible paper, and easy to produce a plausible statistical test, but often the errors are subtle or at least evasive (as was shown recently by some tardy Italian Neutrons).

Personally, I despise the publishing industry big names and I like the approach of PLoS, if only for moral reasons. We are moving away from paper-based journalism and into the all-virtual world and having our version of the DRM struggle. Let us hope that free access and low publishing costs are the outcome, rather than bankrupted publishers and chaotic web publishing. Look at the usefulness of customer review sites - there are many of them, all boasting 'reviews' - not a one of them gives me anything but biased, partial, uninformed dross and I am worse off than when 'Which?' wrote useful reviews in the 1970s. They sites are too easy to manipulate and are there for profit and marketing purposes. It is not too hard to imagine the same thing happening with science publishing.

The journals must be advertising-free or they will be the organs of the companies that pay for the advertising, and they must be able to pay for well-qualified staff to sift and improve. So there are costs - but not the costs that Elsevier impose.

Meanwhile - there are thousands of papers being published at any instant, and we need to the whole archive available, so one web-site is unlikely to do the job unless papers are self-published. But then what of the review process that makes a paper worth reading? Just because some fresh post-doc thinks he has shown a protein-folding process that doesn't mean he has and if we have no review processes, then how will we filter our searches? If I do a search on, say, the molecular biology of Diabetes, am I to read the 100,000 papers that might result? Yes, I can do key-word searches and so on, but I have to study the paper hard to see if it holds up. People lie, you know, scientists included. Others are just wrong. Having someone do some of that for me makes me MUCH more productive, and that has a cash value to me and my institution.

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mp3walking
10 April 2012 2:43AM

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At my present place of employment, Teledyne Scientific & Imaging, we have been actively engaged with our librarian about the rising costs of academic books, as well. Our librarian pointed out that a court ruling in the 1970s legalized the

photocopying of academic journals for private and academic use. The move to digital has given publishers a fantastic control over access they never had before. They cannot prevent people from photocopying books in a library, but now they can charge admission to the new digital library, and, most unfortunately, our laws are lagging this advent.

The American Chemical Society's Chemical & Engineering News had the courage to publish [my criticism in 2006](#). They have not, however, acted on my demand to increase access.

The damning fact against the publishing industry is that they are increasing revenues and profits while they **reduce** access. The gravest consequence is that research will suffer at universities and colleges whose budgets are limited. The digital revolution ought to **increase** access for all. So far, the opposite is happening.



biseig

10 April 2012 4:15AM

Response to [barciad](#), 9 April 2012 11:43PM

Its not a case of 'less stringent' or 'without scientific rigour'. Every year, tens of thousands of scientific articles are published which are both rigorous and correct, without being of any interest to anyone beyond the authors. The main benefit of a peer review system is to ensure that the best and most important articles get filtered into a small handful of top journals so that those in the field can read them without having to spend god knows how many hours wading through all the chaff.

Being 'correct' is an exceptionally low bar indeed.

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Japana

10 April 2012 4:18AM

Response to [Lzzzzzzzzzz](#), 10 April 2012 12:32AM

Maybe the universities have to cancel their subscriptions first?

On the face of it, you would think that an obvious choice, but it would be catastrophic for those currently studying and researching at said institutions, and as it would never be uniform, you'd have some universities (so the students and researchers) with access, and others without. Though it might bring enough pressure to bear on the publishing houses in time, the damage done to those at said institutions in the meantime would be inexcusable.

A secondary point to the discussion:

Some professions require registration with a professional body in order to practice, and part of this is the stipulation that you keep abreast of relevant research in your field. This is maintained by having subscription to a chosen journal as part of your membership. I wonder how much annual fees to a range of professional bodies would reduce by if the publishing model of journals were to change? Some more than others would be my guess, but an interesting aside (for me at least).

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futurehuman

10 April 2012 4:40AM

Response to [HarmoniousFrog](#), 9 April 2012 9:56PM

You raised an important issue. One important aspect that neither this article nor any of the scientists (leading the admirable campaign for open access to scientific knowledge) addressed properly; is the possible monopoly and controls of political, ideological, philosophical, social etc. authority that these elite publishing conglomerates can wield through the choice of materials they publish. Because the high profile and prestigious journals like Nature, Science etc. sets the trend and the direction for scientific discourse as the "official" position of contemporary natural science. They do the pre-selection, make the choice for the referees who are most likely to follow the official paradigm for any paper, before it is recommended for publication.

This monopoly allows almost medieval type control of radical ideas on controversial subjects such as astrophysics, biology, evolution, medical and environmental sciences etc; while the promotion of the pet theories and mediocre research that conform to the "official" position becomes the norm. Heretic Halton (Chip) Arp and other astrophysicists like him (for example) who question the Big Bang theory, or "dialectical biologists" like Richard Levin, Richard Lewontin etc. (who do not conform to the "official" paradigm) gets their papers routinely rejected by the mainstream and prestigious journals.

This type of monopoly domination can even encourage "ghost" writing and the suppression of important scientific findings that goes against the interest and the paradigm of the established order. Only (politically and ideologically) unbiased journals, abolition of vested commercial/economic interest in science publishing and fully open access to scientific knowledge can rectify this type of crippling control of natural science.

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biseig

10 April 2012 5:47AM

There is no evidence whatsoever to suggest that journals owned by corporations

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like Elsevier have political/ideological leanings to a greater extent than similarly ranked society journals



Helen121

10 April 2012 6:45AM

Can I also add that this issue does not only affect scientific journals but history, economics, and other humanities subjects. As such, it also affects (good) schools. As a librarian helping students research their Extended Essays for the International Baccalaureate we were a) paying thousands of pounds in subscriptions and b) constantly coming up against pay walls.

Hopefully this movement in the scientific community might also have a domino effect on other areas also.

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TobornottoB

10 April 2012 7:27AM

Beyond the comments by Mr Bronze and Optymystic, the logical further step is for the major funding agencies to join together and run the online journals themselves.

These journals should be run in the same way as the Company of Biologists, for example. That is, with editorial handling by active research scientists in the specialty field.

The other big problem with academic publishing is the fact that peer review is no longer the major factor for publication in the highly rated journals. Entry to these journals is determined by the professional editors who are usually failed researchers. We now have a system where success is measured by publication in elite journals but acceptance into these journals is determined by a handful of overwhelmed, poorly qualified individuals, often working outside of their PhD/post-doc specialty, who are highly susceptible to influence from big names and fashions. The decisions made by these editors often determine the way in which a young scientist takes their next career step. Furthermore there is so much reward from getting into the elite journals that fraud is fuelled. So to be fair, and to promote better research, we need a completely different metric and this can only be achieved by a complete overhaul and a level playing field. The elite publishing system has to go. The Wellcome, MRC, NIH, DFG etc should get together and clean up this scene - they will also save money and/or put it to better service.

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MichaelGoldfarb

10 April 2012 7:29AM

Guardian
pick

Excellent article but the reporting needs to step back and include humanities journals as well.

As an independent author, researching and writing my last book, Emancipation, a work of European history covering the era roughly from 1789 to 1933 (you figure what the bookend events were) I was deeply angered by the price of access to various historical research websites like J-Stor. I felt it very keenly as a taxpayer as virtually all the research was funded from the public purse.

Some of the stuff I was looking for could be found reprinted in books and the British Library, where I did most of my work (basically free to get a reader's ticket and to use, thank God) often had these anthologies but really, the research into history is not secret and should not be kept away from the public by price.

Beyond that, the benefit of opening up these humanities journals to all of us would be to end jargon. Around 90 percent, by my estimate, of writing in humanities journals is in sub-standard English. If academics were constantly mocked and shamed by knowledgeable lay readers into writing comprehensibly that would be of equal value to making their work available for free or near as dammit free.

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OneMoreCoffee

10 April 2012 7:36AM

For established academics with their network of friends the open model could work fine. However, for people trying to break out in academia I can imagine it could lead to an even deeper nepotistic "me and my mates" culture - which to be honest, if you have any dealings with academics, is already rife.

This notion that academics are unbiased puritans defending the realm of research is also rather old school. Research is now big business. They want research budget. They have ideas they want to promote and ideas they want to kill. They are manipulative. They want to defend their research pillars from people doing similar or potentially better. Will that get better or worse if the academics are given free reign?

Another point is that peer-review is often over-rated. I bought a paper the other day that was a complete bag of pap - both in terms of technical content and presentation. The same can be said for conferences - I was at one the other week where they announced in a fabulously self-congratulatory way that it was very thoroughly peer-reviewed "even more than in previous years". Again it was a bag of pap. Somebody needs to hold peer-review to a high standard - and not only in name and prestige, but also that they can contribute time to the task.

I do however sympathize with the academics. The other day I had the joy of downloading a paper with a single PC licence and limited print outs. As it was a

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relatively old paper, the archivist had also rather poorly scanned the initial material and the images were almost invisible. 30 USD. I mean what the hell is that!?

So yes, I am all for opening up research, but if we are going to review the system then the above points should be tackled too.



biseig

10 April 2012 7:44AM

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Response to [OneMoreCoffee](#), 10 April 2012 7:36AM

The part about big business and fighting over grants is only really true of lab science, which is a mugs game. Other disciplines such as mathematics (which is the subject of the original article), computer science, statistics, the humanities, etc do not have the same culture, since there is less necessity to obtain grant money, and research is more about individual creativity than about large teams of people grinding out results in laboratories.

Experimental science has changed a lot over the last 50 years with the corporatization of laboratories, and while these changes may be good for society as a whole, they are probably not good for the scientists. However this doesn't apply to people in non-experimental disciplines, where things are largely the same as they've always been.



OneMoreCoffee

10 April 2012 7:54AM

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Response to [biseig](#), 10 April 2012 7:44AM

I believe that it may well change in the future though. Corporations are looking further up the chain for solutions, and there is also a growing culture of proving the reason to be as the politicians tighten purse strings.



BristolBoy

10 April 2012 8:17AM

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Response to [Lzzzzzzzzzz](#), 10 April 2012 12:32AM

Maybe the universities have to cancel their subscriptions first?

How, then will they access the back issues?



BristolBoy

10 April 2012 8:18AM

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Can I take the time out to whine at the Grauniad for having two articles on this issue by the same author published a few hours apart and with two separate comment threads.

This is bloody annoying.



Wickywickyman

10 April 2012 9:11AM

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Point 1:

Will publishers still pay technical editors and reviewers of content if all the material is posted online with free access for everyone? Presumably they are only able to do these things because of the money they get from university libraries for subscriptions. I think the problem is that publishers have been allowed to get too greedy because the most influential journals have just got too powerful as determiners of who has a successful academic career. The publishers running those particular journals have made them more and more expensive.

Point 2:

Will publishers like say Johns Hopkins University Press, who I think must make any profit that they make from journals, still be able to produce the high-quality but unprofitable monographs which in the humanities are the most worthwhile things of all to publish?



yddraigoch

10 April 2012 9:42AM

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The "author pays for open access publication" model will effectively bar academics in poorer countries from publishing in prestigious outlets. Now at least their papers are subsidized by the fees paid by universities in the developed world.



fitzgmd

10 April 2012 10:20AM

[Recommend \(4\)](#)

[Responses \(0\)](#)

Response to [garydougill, 9 April 2012 8:59PM](#)

We have the net - we no longer need these bloodsucking gate-keeping publishers.

how about portals for each subject, with sub-portals by topic? - you could post the documents with the same tools we use for youtube every day.

hosting is VERY cheap nowadays - fund it with advertising or linking to say wolfram alpha for sponsorship.

combine that with a forum (tiered access - more access for peers) for review and collaboration.

In light of the tools available today there is NO need for publishing houses at all.

They know this and the idea of free public online distribution terrifies them no doubt - bring it on!!!

another nail in the coffin of capitalism and elite control is always a good thing :)



PeterBuck

10 April 2012 11:01AM

All PLoS journals are available free on the web as soon as they are published, and the costs of publication are borne by the researchers themselves – about \$2,900 (£1,800) per article for PLoS Biology and PLoS Medicine and \$1,350 per article for PLoS ONE.

Elsewhere in the world of publishing this is known as 'vanity publishing' and widely despised. So surely, if we want to keep the benefits of the organisational and professional skills of the publishers, we should also adopt the flipside of the publishing model. The authors, or their institutions, should receive royalties from the papers they have published in a journal rather than pay to have it published. That way, the institutions that do the research get back some funds, which can be used to pay for subscriptions. The journals can still be published to the same high standards, and sold as at present. Commercial organisations will still pay for the journal, whereas under the 'open access' model they would benefit from all the research for free.

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mouthOfTheUmbur

10 April 2012 11:26AM

Whilst Elsevier publish most of this work digitally via ScienceDirect - <http://www.sciencedirect.com/> - they still have to maintain the servers. But that shouldn't be a huge cost.

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goto100

10 April 2012 12:56PM

I agree we need open access journals. In my field, there is one (1) I can think of - Swiss Journal of Geosciences - a rather specialised though very nice, journal. Okay - there are open access provisions of some "special series" of the EGU/EGS.

PLoS sounds great. It even allows searches by subject tag. Nearest thing to geoscience I find is physics - which turns out itself to be 900+ articles on biology/biochemistry/biomedicine - with a "physics" bent (barely in some cases).

PLoS is for all intents and purposes bioscience. eLife is unashamedly only bio/life science. As such, PLoS's impact factor (~4.1) is low given the "prolific" publishers from the bio/medical field are more or less the only one's using it.

I want to shout at Wellcome and eLife, "why can't you be genuinely altruistic and establish something for all science rather than your narrow field? (which you are also trying to promote to the ultimate detriment of the rest in the wider sphere of scientific influence on government and the public etc. etc.)?". It's a poor do. It makes me suspicious of what their motives may be.

So I'm left with Nature's, Scientific Reports as far as I can tell.

When will someone establish a full-spectrum science journal *and* make the effort to solicit serious contributions from every field? Until then, I'll be stuck with paying AGU page charges for producing subscription only articles - at least the AGU is a scientific body that puts its money and resources back into the subject it publishes on - not always terribly well, but better than nothing.

Better the devil you know at the moment.

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icurahuman2

10 April 2012 12:58PM

Cross-pollination of widely varied fields of science would be more common and productive if open-access to journals was typical. Copyright wouldn't be such a big problem either, datestamped articles would have as much copyright cover as a datestamped photograph, which is well-covered under law.

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goto100
10 April 2012 12:59PM

Response to [BristolBoy](#), 10 April 2012 8:17AM

Well, many libraries will also have physical copies of the volumes. Back then to the academic going to the building and actually "photocopying" - hopefully directly to pdf. Beyond that, there are still inter-library loans.

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jheather
10 April 2012 1:02PM

I was on a scientific committee back in 1995 voicing the same concerns. As scientists we are not REALLY concerned about the money. All we really want to do is good research. The cash is just a means to an end.

The point of good science is that you get it seen. Not much point in inventing antigravity or faster than light travel if you are the only person in the world that ever sees it is there?

Scientific journals did serve a purpose. They were, but are no longer, the only way of getting science seen into the outside world.

In the 18th century!

But now we have the internet it has changed all that. I can look up facts and check the veracity of their claims in seconds. I play chess daily with a friend of mine half a world away. So get real!

However these dinosaurs are still roaming the scientific community. We can do very well, and probably better, without you thanks. We write the papers, we review the papers. And all you ever do is stop the flow of ideas.

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jobags
10 April 2012 1:02PM

And of course, the doubly annoying thing about all this is that the publishers don't even tend to pay their staff all that well either...

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AlokJha
10 April 2012 1:12PM



Thanks for all the comments - lots of food for thought in your experiences and I'll certainly be looking into as many angles as possible for future stories.

I'll respond in a short while to specific comments but I wanted to pose a question to academics out there: apart from funding issues of author-pays open access, what would make you submit more often to open access journals? Prestige is clearly important in getting good REF ratings and research grants so how do open access journals start to build the kudos that is required? Or do HE policymakers need to come up with better metrics and ditch REF altogether?

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goto100
10 April 2012 1:37PM

Response to [AlokJha](#), 10 April 2012 1:12PM

REF? Don't you mean "Hirsch Factor? Itself a total joke, as evidenced by the entirely fictitious mathematician someone dreamt up who, with careful "placing" of stuff in the googlesphere has acquired an HF > 100...

But even so, HF is only based on the actual citations of the papers in question, so that already removes one obstacle to open access - prestige. A Nature paper cited twice is 1/10 as valuable as a GRL paper cited 20 times. Exactly as it should be. Nevertheless, there is always the "subjective appraisal" part of any academics advancement where those niceties are ignored and the OB's slap their preferred candidates heavily on the back....

Kudos? How about actually representing all of science seriously....? A stand at the upcoming EGU in Vienna? Or the AGU in San Francisco (for my field). Similarly for all others? Probably also need more subject differentiation to increase visibility of certain fields or everything just gets "drowned" in bio-medical noise.

Currently, PLoS is as big a misnomer as the "Bad Science" column was. In both cases the S should be replaced with "M" for Medicine.

If the public think that PLoS's current content is a true "library of science", then they're being led up the garden path.

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baobab09
10 April 2012 2:01PM

I think the boycott and article raise some very important issues. Good, also, to see a

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senior academic using their secure position to speak out on issues where juniors often can't.

However, I just wanted to note that the example of academics having to pay for their own publications has one small problem: it favours academics at wealthy institutions or/and in wealthy countries. Surely that is also an issue??



baobab09

10 April 2012 2:18PM

Response to [AlokJha, 10 April 2012 1:12PM](#)

Hi Alok,

The obvious way, and an approach that has been successful in a number of cases, is for an open access journal to be started by top people in the discipline or sub-discipline who then also send their work there (this of course has some cronyist issues associated with it but that's a problem in the for-profit journals anyway and a separate discussion). Another, complementary, way is for a disciplinary body to initiate the process.

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snick

10 April 2012 2:48PM

This is a good start. I think it will be difficult for young scientists trying to gain funding which is not so very easy in the US anymore, if they do not get published in "good" journals. I like the idea of universities posting papers by their researchers to give them more credence. Even so, as Baobab09 points out, this favors large wealthy universities in wealthy countries. My lab has moved to a smaller non profit and we are struggling with lack of funding/lack of resources etc that a smaller institute faces.

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brembs

10 April 2012 3:39PM

Response to [goto100, 10 April 2012 12:56PM](#)

Actually, PLoS One is for all sciences - it's acceptance that leads to the skew, not any specific policies by the journal. In fact, PLoS One would be more than happy to publish any underrepresented scientific fields and especially welcomes Academic editors from those fields.

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MikeTaylor

10 April 2012 4:02PM

Response to [fabcat21, 10 April 2012 2:25AM](#)

MrBronze says: "Apart from that, there is the peer-review process; it has to be organised and reviewers are often paid."

I occasionally hear this stated. But in ten years as an academic researcher I have never once been paid for a review, nor heard of a single one of my colleagues ever having been paid for a review. That's a hit rate of zero for a thousand or more reviews. If these mythological paid reviews exist at all, they are a negligibly tiny proportion of the total pool of reviews.

No: peer-review is done for love of the subject, for prestige or for community. Not for money. Which of course makes it even more scandalous when for-profit publishers lock up the results of the freely donated work. (It's very rare that reviewers are even sent a copy of the finished article that they contributed to. I've heard of it happening, but it seems to be in maybe 1-3% of cases.)

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