

# Academic Journal Publishing and the Open Access Revolution

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CFD Group Presentation

June 10, 2013

# Motivation

- Many of you will want to publish your research results.
- There are literally thousands of academic journals to choose from.
- There are several sweeping changes undertaking the academic publishing industry at this moment.

So ... there is a tough choice to be made ...

## Question:

How do I choose an academic journal to submit my research results to?

# Outline

- 1 Academic Journals
- 2 The Open Access Revolution
- 3 Choosing Where to Publish

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# Academic Journal Publishing

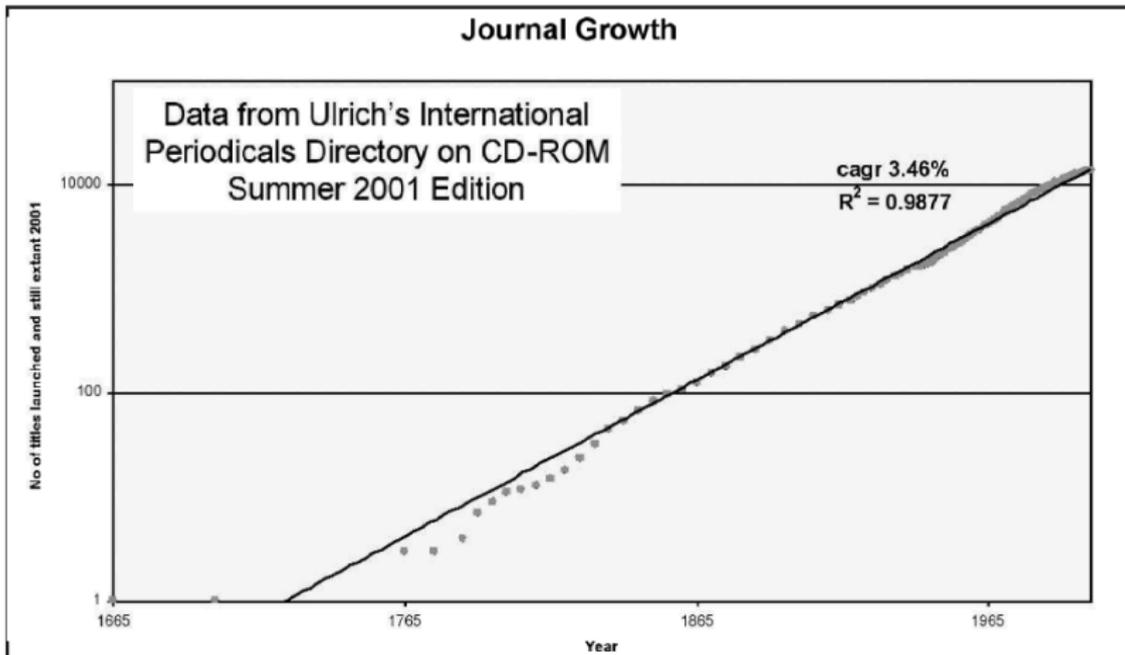
## Wikipedia definition:

*An **academic journal** is a peer-reviewed periodical in which scholarship relating to a particular academic discipline is published. Academic journals serve as forums for the introduction and presentation for scrutiny of new research, and the critique of existing research.*

- One of the first journals was *Proceedings of the Royal Society*, begun in the 17th century.
- Most early journals were associated with learned societies and had no real subject focus – “natural philosophy”.
- In the pre-internet days, a printed serial was one of the only ways to communicate new research results to a wide audience.
- Today, the number of peer-reviewed journals exceeds 25,000!

# Growth in Number of Journals

Figure 2. Active refereed scholarly/academic journal title growth since 1665 (log scale)



Source: Mabe (2003)

Exponential growth!

# Journal Quality

The “quality” of a journal derives from a number of factors:

- Who publishes there.
- Content of the articles: subject, breadth, depth, impact.
- Who sits on the editorial board.
- Rigor of the peer review process.
- How widely it's disseminated.

Ultimately, there is no absolute measure of “journal quality” — there is a range of article quality in any journal, and so **it's the articles that really count!**

# Journal Quality II

Regardless, there have been attempts to measure quality or rank journals according to various criteria:

- **Journal Impact Factor (JIF)**: average number of **citations** to recent articles (compiled by Thompson-Reuters|ISI).
- **ARC Rating**: from Australia, abandoned after one try in 2010.
- **Reputation**: a subjective measure of the “generally-accepted” expert opinion in a field — **By far, the best measure!**

## Sample ratings:

Journal	JIF	ARC
<i>SIAM J. Appl. Math.</i>	1.529	A*
<i>J. Comput. Appl. Math.</i>	1.029	A
<i>J. Comput. Phys.</i>	2.345	A*
<i>J. Fluid Mech.</i>	2.453	A*
<i>PNAS</i>	9.771	A*
<i>PLoS ONE</i>	4.411	A



ISI Web of  
**KNOWLEDGE.**  
Transforming Research

# JIF: Breaking News

## NATURE NEWS BLOG

### Scientists join journal editors to fight impact-factor abuse

16 May 2013 | 19:00 BST | Posted by [Richard Van Noorden](#) | Category: [Publishing](#)

If enough eminent people stand together to condemn a controversial practice, will that make it stop?

That's what more than 150 scientists and 75 science organizations are hoping for today, with a joint statement called the [San Francisco Declaration on Research Assessment \(DORA\)](#). It deplores the way some metrics — especially the notorious Journal Impact Factor (JIF) — are misused as quick and dirty assessments of scientists' performance and the quality of their research papers.

"There is a pressing need to improve the ways in which the output of scientific research is evaluated," DORA says.

Scientists routinely rant that funding agencies and institutions judge them by the impact factor of the journal they publish in — rather than by the work they actually do. The metric was introduced in 1963 to help libraries judge which journals to buy (it measures the number of citations the average paper in a journal has received over the past two years). But it bears little relation to the citations any one article is likely to receive, because only a few articles in a journal receive most of the citations. Focus on the JIF has [changed scientists' incentives](#), leading them to be rewarded for getting into high-impact publications rather than for doing good science.

# ARC's A\* List for Applied Mathematics

Annales de l'Institut Henri Poincaré (C) Analyse Non Linéaire
Chaos
Computational and Mathematical Methods in Medicine
Inverse Problems
Journal of Fluid Mechanics
Mathematical Finance
Mathematical Programming
Mathematics of Operations Research
Nonlinearity
Physica D-Nonlinear Phenomena
SIAM Journal on Applied Mathematics
SIAM Review

Source: Australian Research Council, 2010.

Seems a bit odd . . .

# Added Value

High quality journals from reputable publishers offer a number of advantages to researchers:

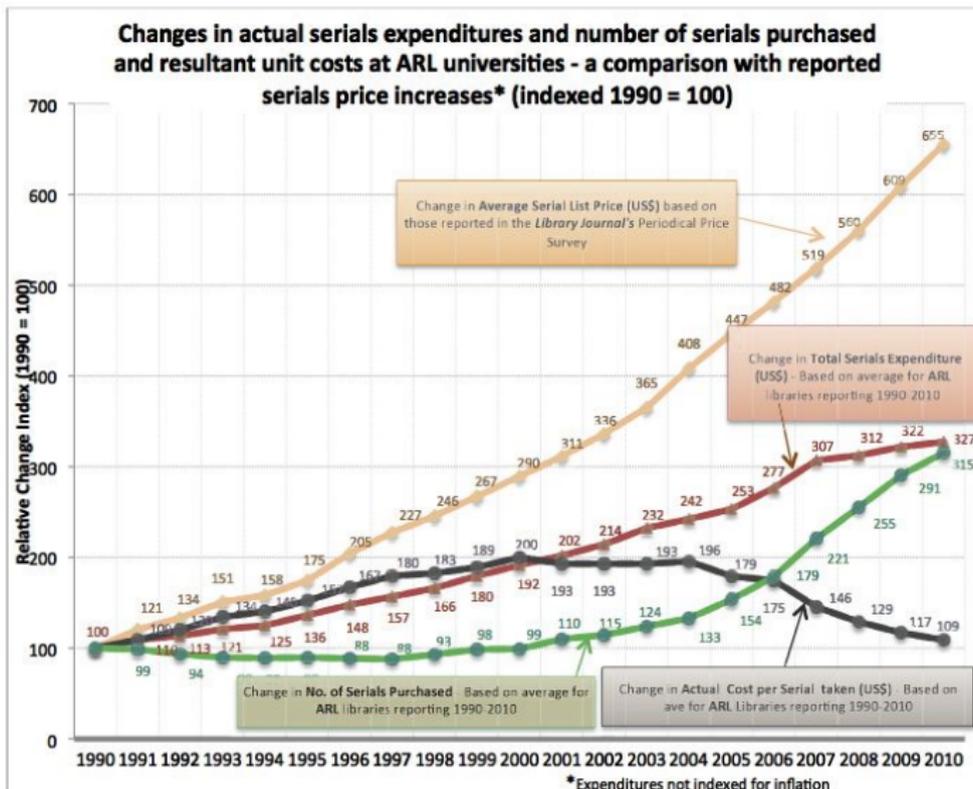
- Editing, formatting and (sometimes) graphics services.
- Access to a world-wide distribution network, which today is **instant**.
- Rigorous peer review with a prestigious editorial board and network of expert reviewers.
- A mark of quality: high rejection rate, high journal ranking, etc.
- Wide readership.
- On-line archival of papers and supplementary information.
- Citation alerts, cross-referencing, etc.

# Subscription Model

Until recently, most journals were published under a subscription model:

- Authors submit and publish their papers at no charge.
- Journals are purchased by individuals, libraries and other institutions on a subscription basis for an annual fee.
- Originally, publishers were mostly universities or learned societies whose main motivation was **NOT \$\$\$!**
- In this century, for-profit private companies have come to dominate the industry.
- Many journals have undergone major price increases (\$/page)!

# Price Increases for all Journals



# Price Comparison in Mathematics

**Table 1: Summary information for six journals.**

Journal	Publisher	Metrics	Price	\$/art.	\$/page	\$/cite
Annals of Mathematics	Princeton	3.7/A*	\$447	5.39	0.12	0.06
SIAM J. Appl. Math.	SIAM	1.8/A*	\$642	5.95	0.27	0.13
Journal of the AMS	AMS	3.6/A*	\$300	9.09	0.24	0.13
Advances in Mathematics	Elsevier	1.6/A*	\$3,899	11.53	0.35	0.90
Journal of Algebra	Elsevier	0.7/A*	\$6,944	13.89	0.75	1.22
Journal of Number Theory	Elsevier	0.6/B	\$2,745	17.49	1.12	1.91

Metrics are the 2010 5-year impact factor from *Journal Citation Reports* and the 2010 rating by the Australian Research Council (based on expert opinion). A\* = top-rated, B = "solid, though not outstanding".

**Table 2: Historical prices per page in constant 2012 dollars.**

Journal	1994	1997	2000	2003	2006	2009	2010	2011
Annals of Mathematics	0.19	0.20	0.14	0.15	0.13	0.13	0.09	0.10
SIAM J. Appl. Math.	0.20	0.24	0.23	0.25	0.27	0.24	0.18	0.27
Journal of the AMS	0.22	0.26	0.27	0.29	0.30	0.27	0.25	0.24
Advances in Mathematics	0.65	0.74	0.95	1.01	0.55	0.61	0.44	0.33
Journal of Algebra	0.36	0.43	0.50	0.73	0.60	0.77	0.92	0.66
Journal of Number Theory	0.57	0.67	0.98	1.01	1.04	0.86	0.95	1.05

Prices are from the AMS journal price survey (<http://www.ams.org/membership/mem-journal-survey>), adjusted using the Consumer Price Index.

# Subscription Bundling



Springer



**WILEY**  
*Publishers Since 1807*

- Publishers like Elsevier, Springer, Wiley & Sons now publish >40% of all articles and so hold enormous clout in the industry.
- “Bundling” is a common practice in which:
  - Many prestigious/popular journals charge a high price.
  - Large numbers of journals are packaged together for a much lower total cost.
  - Libraries are forced to subsidize many low-quality journals in order to get a small number they really want/need.
  - Perpetual access is not guaranteed: on-line archives of previously paid subscriptions are lost if a subscription is cancelled.
- Publishers have been accused of exploiting universities by manipulating prices and bundling arrangements.
- Actual pricing agreements are shrouded in secrecy!

# Recent Developments

- **Instant access:** the internet now permits immediate access to papers through publishers' and authors' web sites.
- **Movement to on-line:** archival is only guaranteed for paper issues.
- **L<sup>A</sup>T<sub>E</sub>X:** most academics now typeset their own articles.
- **arXiv:** and other preprint-hosting services provide access to pre-publication versions of articles.
- **Huge profits:** Elsevier, the largest academic publisher, had 2011 profits of \$1.1 billion. Many journals have huge profit margins.
- **Controversies:** mega-profits, accountability, author dishonesty and plagiarism, editorial misconduct, public access to tax-payer funded research, etc.
- **Open access:** a new-ish model for journal publishing . . .

# The Cost of Knowledge

In response to particularly egregious activity at Elsevier, mathematicians initiated a petition on 21 January 2012.

## The Cost of Knowledge

### 13669 Researchers Taking a Stand. *[See the list](#)*

Academics have protested against Elsevier's business practices for years with little effect. These are some of their objections:

1. They charge exorbitantly high prices for subscriptions to individual journals.
2. In the light of these high prices, the only realistic option for many libraries is to agree to buy very large "bundles", which will include many journals that those libraries do not actually want. Elsevier thus makes huge profits by exploiting the fact that some of their journals are essential.
3. They support measures such as SOPA, PIPA and the ~~Research Works Act~~, that aim to restrict the free exchange of information.

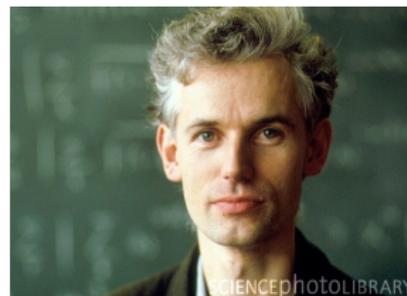
The key to all these issues is the right of authors to achieve easily-accessible distribution of their work. If you would like to declare publicly that you will not support any Elsevier journal unless they radically change how they operate, then you can do so by filling in your details on this page.

Source: <http://thecostofknowledge.com>

# The Cost of Knowledge II

- Led by a public letter from Timothy Gowers, academics pledged to refrain from involvement in Elsevier publications as
  - authors,
  - referees, and/or
  - editors.
- Many top journals are published by Elsevier, with actually not so many in (pure) math.
- There was a rapid and apparently humbled response from Elsevier ... but nothing has really changed.
- In reality, Springer, Wiley and others are not much better!

Timothy Gowers  
Fields Medal Winner  
(1998)



# Profits: The Bad Side

- Universities and governments pay for research and researchers' salaries.
- Researchers submit the papers.
- Other academics review the research, usually for free.
- Publishers charge universities and governments for the journals.
- Publishers make an **astronomical** profit . . . 40% profit margins!

# Profits: The Good Side

- Learned societies (such as AMS, SIAM, CMS, IEEE, . . . ) make a large proportion of their revenue from journal and book publishing.
- The profits are usually used to offset the cost of activities that are a benefit to the academic communities they serve.

So . . . it's hard to argue that eliminating the for-profit subscription model is a good thing!

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# Legislation on Open Access

This all set the stage for the entry of the open access movement:

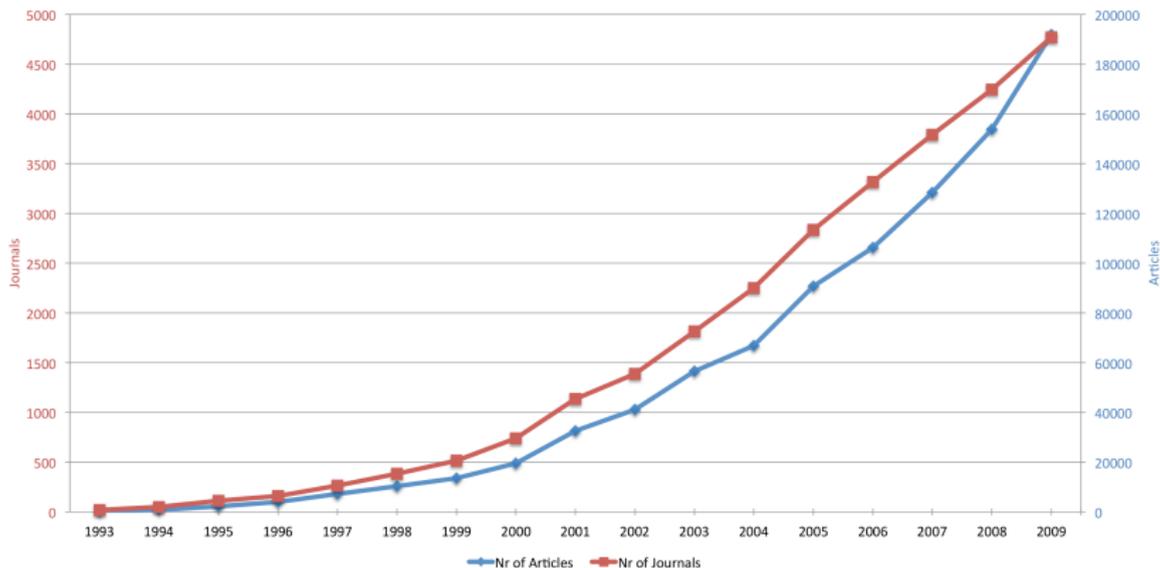
- Some governments have reacted by legislating that government-funded academic research be publicly available for free (e.g., Research Councils UK, NIH in the USA).
- Laws will sometimes allow a 6-month window after publication for restricted access.
- If adopted universally, this form of open access is likely to wipe out many for-profit publishers.

# Open Access Model

- Authors submit papers as usual, but pay a fee if their article is accepted.
- Fees range from \$100's to \$1000's of dollars per article.
- Publisher provides open, public access to all articles.
- Some subscription-based journals have a mixed model, with some fraction of articles being open access (e.g., *PNAS*).

# The Open Wave

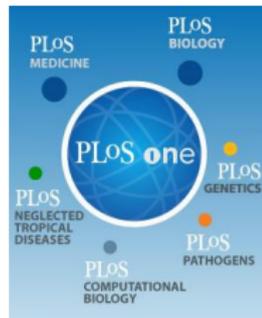
There has been an enormous growth in open-access journals:



# Disadvantages of Open Access

Some successful open access efforts:

- **Bulletin of the AMS**: published since 1891.
- **PLoS ONE**: started in 2006, publishes any technically correct work, significance not an issue (article fee of \$1,350).
- **PeerJ**: started in 2012 (one-time author fee, \$299 unlimited).
- **Forum of Mathematics Pi, Sigma**: initiated by the math community in 2013, in partnership with Cambridge University Press (no fees for first 3 years).



# Disadvantages of Open Access

- **Inequitable:** Only researchers with large grants can afford to publish in the most prestigious (most expensive) journals.
- **Supports elitism:** Third World countries may be left out – “the rich get richer, the poor get poorer”.
- **Competition with societies:** Society and university publishers may lose an essential source of revenue.
- **Predatory publishers:** Some researchers are easily duped . . .
- Others?

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# Where to Publish?

- Most researchers publish their work in a wide range of journals, special conference issues, book chapters, etc.
- Grant review and tenure/promotion committees need to evaluate your research **impact** with the help of bibliometric indicators:
  - number of articles
  - number of citations your articles receive
  - JIF of the journals you publish in
  - author h-index ([Hirsch, 2005](#))
  - etc.
- Depending on the field, more (or less) weight is put on such indicators.
- Thankfully, mathematicians place less value on bibliometrics.
- Nonetheless, quantifying impact is still very important, and the journal is a part of this!

# My Modus Operandi

- When choosing a journal, I prefer to “aim high” and publish in the best journal for which I believe it’s appropriate.
- This means I usually run a greater risk of being rejected.
- I aim for longer and more comprehensive articles instead of short “proceedings-style” papers.
- Publishing quality work in quality venues helps to build/maintain a consistently high reputation.
- In my opinion, this is worth the effort, and handily justifies a lower publication rates.
- I think this is also a benefit to *you*!
- I did not sign the “Cost of Knowledge” petition primarily because *J. Comput. Phys.* is with Elsevier.

# Predatory Publishers

- Some academics are driven to publish large numbers of papers in “ISI ranked journals”.
- Sometimes, career and salary incentives are attached to the number of publications and the JIF.
- With all of the money to be made in academic publishing, there are clearly business opportunities.
- Many new open-access publishing houses have arisen that aim to capitalize on this mania by misleading prospective authors!

# Predatory Publishers II

- Jeffrey Beall, a librarian at University of Colorado Denver, has compiled a list of **predatory publishers**.
- This list is not 100% reliable and has generated a lot of controversy.
- Beall has just been threatened with a \$1 billion law suit!

May 15, 2013

## Publisher Threatens to Sue Blogger for \$1-Billion

*By Jake New*

Jeffrey Beall is a metadata librarian at the University of Colorado at Denver, but he's known online for his popular blog [Scholarly Open Access](#), where he maintains a running list of open-access journals and publishers he deems questionable or predatory.

Now, one of those publishers intends to sue Mr. Beall, and says it is seeking \$1-billion in damages.

The publisher, the OMICS Publishing Group, based in India, is also warning that Mr. Beall could be imprisoned for up to three years under India's Information Technology Act, according to a letter from the group's lawyer. Mr. Beall received the letter on Tuesday from IP Markets, an Indian firm that manages intellectual-property rights.



# My Advice

- Stick to well-known journals and publishers.
- If you're wondering about a particular journal:
  - Read the journal "scope".
  - Check the editorial board.
  - Know the audience.
  - Read through a few issues.
  - **Ask** someone you trust.
- If you're averse to big for-profit publishers, then choose a publisher like SIAM or a university press.

# My Advice II

Keep informed by ...

- Reading general science journals like *Nature*, *Science*, *PNAS*.
- Subscribing to academic magazines like *Chronicle of Higher Education*, *University Affairs*.
- Following academic blogs such as *The Scholarly Kitchen*.
- Talking about the issues with your colleagues!

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