Irresistible proxies? Peer review and (mainstream or alternative) bibliometric

Maria Chiara Pievatolo

Università di Pisa - Dipartimento di Scienze politiche

pievatolo@dsp.unipi.it

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Summary

The lords of (meta)data

Metadata: a sociological theory of knowledge
"Traditional" bibliometric indices
The research evaluation spell
"Alternative" bibliometric indices?

Open access - moderate or radical?
Basic concepts
From the CERN to ArXiv
Open access routes (green, gold - red)
Moderate Open access: let’s tame the commercial publishers!
Radical Open Accesso: let’s go past the age of printing!
Overlay Journal: Gowers
SJS: more than an archive, better than a journal
Peer-to-peer review
The very concept of a journal is losing its meaning
OA for the unresolved: open archives and preprints servers

Micro-bibliography
Elsevier presents Scival

How are you performing compared to your peers?

In 4 easy steps SciVal enables you to:

1. Search for your Scopus profile
2. Find your aspirational peers
3. Select the metrics
4. Benchmark yourself to demonstrate research excellence

Learn more >
SPARC Landscape Analysis 2019

Academic publishing is undergoing a major transition as some of its leaders are moving from a content-provision to a data analytics business. This is evidenced by a change in the product mix that they are selling across higher education institutions, which is expanding beyond journals and textbooks to include research assessment systems, productivity tools, online learning management systems – complex infrastructure that is critical to conducting the end-to-end business of the university.

Through the seamless provision of these services, these companies can invisibly and strategically influence, and perhaps exert control, over key university decisions – ranging from student assessment to research integrity to financial planning. Data about students, faculty, research outputs, institutional productivity, and more has, potentially, enormous competitive value. It represents a potential multi-billion-dollar market (perhaps multi-trillion, when the value of intellectual property is factored in), but its capture and use could significantly reduce institutions’ and scholars’ rights to their data and related intellectual property. A set of companies is moving aggressively to capitalize on this data, often by exploiting the decentralized nature of academic institutions.
Elsevier: the information system supporting research

Four principles of...

...the information system supporting research
B. Brembs: "corporate monopolies controlling our scholarly workflow, owning our data and parasitizing scholarship"
"A huge and unchanged profit margin"

Elsevier profits near £1 billion despite European disputes

The publisher has reported steady growth and profit margins of more than a third but warned of threat to business from open access

February 22, 2019

Elsevier has shrugged off a breakdown in contracts with German and Swedish universities to swell its profits to nearly £1 billion in 2018, its latest financial results reveal.

The Amsterdam-based publisher reported an all but unchanged profit margin of 37.1 per cent.

It made £942 million in profits on revenues of about £2.5 billion, according to financial results released on 21 February.

Academic publishers’ profit margins have long been a bone of contention for critics, who argue that their control over prestigious journals allows them to charge academics and libraries excessively high prices.

The results, contained in a wider financial report from Elsevier’s parent company RELX, appear to show that the publisher has been all but financially unaffected by a series of often acrimonious disputes with universities across Europe, which have sought to negotiate better deals with the publisher on cost and open access.

In spite of some EU and USA cancellations.
Elsevier profits from hybrid Open Access
Elsevier earns a *growing* profit from hybrid Open Access

<table>
<thead>
<tr>
<th>Publisher</th>
<th>APC Earned</th>
<th>Year</th>
<th>Hybrid Status</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elsevier BV</td>
<td>€1,620,539</td>
<td>2018</td>
<td>TRUE</td>
<td>All</td>
</tr>
<tr>
<td>Wiley-Blackwell</td>
<td>€612,311</td>
<td>2018</td>
<td>TRUE</td>
<td>All</td>
</tr>
<tr>
<td>American Chemical Society (ACS)</td>
<td>€198,125</td>
<td>2018</td>
<td>TRUE</td>
<td>All</td>
</tr>
<tr>
<td>AGU</td>
<td>€82,998</td>
<td>2018</td>
<td>TRUE</td>
<td>All</td>
</tr>
<tr>
<td>IOP Publishing</td>
<td>€69,811</td>
<td>2018</td>
<td>TRUE</td>
<td>All</td>
</tr>
<tr>
<td>Oxford University Press (OUP)</td>
<td>€286,881</td>
<td>2018</td>
<td>TRUE</td>
<td>All</td>
</tr>
<tr>
<td>Ovid Technologies (Kluwer)</td>
<td>€69,658</td>
<td>2018</td>
<td>TRUE</td>
<td>All</td>
</tr>
</tbody>
</table>
Elsevier is diversifying its supply [Posada-Chen, 2018]
Elsevier is omniscient and ubiquitous [Posada-Chen, 2018]
The shift of scientific publishers towards oligopoly
[ Larivière et al. 2015]
Digital revolution and scientific publishing concentration [Larivière et al. 2015]
You are a gadget, indeed

Jaron Lanier, *You are not a Gadget*, IV

In the same way, digital Maoism doesn’t reject all hierarchy. Instead, it overwhelmingly rewards the one preferred hierarchy of digital metaness, in which a **mashup is more important than the sources that were mashed**. A blog of blogs is more exalted than a mere blog. If you have seized a very high niche in the aggregation of human expression—in the way that Google has with search, for instance—then you can become superpowerful. The same is true for the operator of a hedge fund. “Meta” equals power in the cloud.
For profit: SCI and JIF [Figà Talamanca, 2002]

The former Institute for Scientific Information (currently: Clarivate Analytics) was a commercial enterprise founded by Eugene Garfield. It sells:

- the Science Citation Index (1964): a bibliography research tool for librarians and science sociologists, on the model of Shepard’s Citations (Lexis-Nexis) [Garfield, 1955];
- from whose data: Journal Impact Factor (1975) assessing the importance of scientific journals from the perspective of librarians

The JIF was not meant to evaluate individual researchers (Garfield, 1998)

"In many countries in Europe, I have found that in order to shortcut the work of looking up actual (real) citation counts for investigators the journal impact factor is used as a surrogate to estimate the count. I have always warned against this use. There is wide variation from article to article within a single journal."
Journal Impact Factor

JIF: a ratio between the number of citations, received in a single year, of articles published in a journal during the two preceding years, divided by the total number of "citable papers" published in that journal during the same two years.

\[
\text{JIF} = \frac{\text{articles cited in the year } X}{\text{citable articles, published in the years } X-1 \text{ and } X-2}
\]
H index (2005), measuring individual researchers’ productivity and citation impact

It needs only two pieces of data:

- the number of published papers
- the number of citations for each paper

Definition

A scholar with an h index has published h articles each of which received at least h citations
The lords of metadata

- Bibliometric scores are calculated from closed and proprietary databases (Clarivate Analytics, Scopus)
- Universities and research institutions using bibliometric for assessment purposes cannot avoid to purchase them and to subscribe to the journals indexed by them,
- Publishers can raise their subscription prices ad libitum
Serials crisis


- Serial Expenditures, 260%
- Serial Unit Cost, 215%
- Monograph Unit Cost, 82%
- CPL 66%
- Monograph Expenditures, 66%
- Serials Purchased, 14%
- Monographs Purchased, 0%

http://www.arl.org/stats/pubdf/arlstat03.pdf
G. Monbiot, *The lairds of learning*, 2011

Capitalism? Nay: feudalism.

- The academic publishers get articles, peer reviewing and much of the editing for free.
- Researchers and university libraries must pay them to get their own work back.
- and/or to have their manuscripts published (APCs) …
- for a symbolic reward, whose meaning depends on the research assessment system.
Even if it were true that citations are the currency of science

Future cannot be judged on the basis of the past without blocking any possible progress.

A system of beliefs - or even an ethos - whose justification depends on its partakers’ free choice cannot be codified in a coercive norm without cutting the root of its very legitimacy.
Reviewers are blinkered by bibliometrics

Paula Stephan¹, Reinhilde Veugelers² & Jian Wang²

26 April 2017

Science panels still rely on poor proxies to judge quality and impact. That results in risk-averse research, say Paula Stephan, Reinhilde Veugelers and Jian Wang.

https://www.nature.com/news/reviewers-are-blinkered-by-bibliometrics-1.21877
**Open science and its tools**

**Metadata**

"Alternative" bibliometric indices’?

# Outputs, collaboration, usage, social impact [EUA, 2019]

<table>
<thead>
<tr>
<th>Measure</th>
<th>Based on</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Conventional metrics</strong></td>
<td>Research output</td>
<td>Number of publications and number of citations, based on bibliometric databases, e.g. Web of Science, Scopus, Google Scholar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Journal Impact Factor (JIF), h-index, field normalised citation index, Eigenfactor, SCo2, SJR, Source Normalized Impact per Paper (SNIP), CiteScore, etc.</td>
</tr>
<tr>
<td><strong>Usage-based metrics</strong></td>
<td>Collaborations</td>
<td>Co-authorship</td>
</tr>
<tr>
<td></td>
<td>Usage, i.e. uptake and attention</td>
<td>Number of views or downloads of an item</td>
</tr>
<tr>
<td><strong>Alternative metrics</strong></td>
<td>Social outreach</td>
<td>Social media (Twitter, blogs, etc.) and scientific social networks (ResearchGate, Mendeley, etc.)</td>
</tr>
<tr>
<td><strong>Next-generation metrics</strong></td>
<td>Yet to be developed “open metrics” going beyond alternative metrics</td>
<td></td>
</tr>
</tbody>
</table>
Usage based metrics: an example

The Oligopoly of Academic Publishers in the Digital Era

Vincent Lariviére, Stefanie Haustein, Philippe Mongeon

Published: June 10, 2015 • https://doi.org/10.1371/journal.pone.0127502
EUA: looking for responsible metrics

"What is the point of research evaluation if it doesn’t actually leave us with a better research system than the one we started with?"

- metrics are proxy values measuring research productivity and visibility, but not necessarily its quality
- the alternative metrics (altmetrics) measure its usage and social impact, but share the limitations of the former (even their data are closed!)
- the next generation metrics should be open and complementary to human decisions [LERU, 2018]
An example: the proposal of a Journal Transparency Index

**TOP GUIDELINES**

**TRANSPARENCY AND OPENNESS PROMOTION**

Transparency, open sharing, and reproducibility are core values of science, but not always part of daily practice. Journals, funders, and societies can increase research reproducibility by adopting the TOP Guidelines.

<table>
<thead>
<tr>
<th>MODULAR STANDARDS</th>
<th>MODULAR STANDARDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CITATION STANDARDS</td>
<td>DATA TRANSPARENCY</td>
</tr>
<tr>
<td>Cite shared data to incentivize their publication</td>
<td>Disclose, require, or verify shared data</td>
</tr>
<tr>
<td>ANALYTICAL METHODS TRANSPARENCY</td>
<td>RESEARCH MATERIALS TRANSPARENCY</td>
</tr>
<tr>
<td>Disclose, require, or verify shared code</td>
<td>Disclose, require, or verify shared materials</td>
</tr>
<tr>
<td>DESIGN AND ANALYSIS TRANSPARENCY</td>
<td>PREREGRISTRATION OF STUDIES</td>
</tr>
<tr>
<td>Sets standards for research design disclosures</td>
<td>Specification of study details before data collection</td>
</tr>
<tr>
<td>PREREGRISTRATION OF ANALYSIS PLANS</td>
<td>REPLICATION</td>
</tr>
<tr>
<td>Specification of analytical details before data collection</td>
<td>Encourages publication of replication studies</td>
</tr>
</tbody>
</table>

**ACROSS 3 TIERS**
Open Access

Peter Suber, A definition

Open-access (OA) literature is digital, online, free of charge, and free of most copyright and licensing restrictions. What makes it possible is the internet and the consent of the author or copyright-holder.
From the CERN to ArXiv, and beyond

- Cern, 1989: invention of the web (T. Berners-Lee)
- Santa Fe, 1999: Open Archives Initiative
- OAI-PMH v. 1.0, 2001 e v. 2.0, 2002
- Budapest 2002: Open Access Initiative
- Bethesda 2003: Statement on Open Access Publishing
- Berlino 2003: Berlin declaration on Open Access to Knowledge in the Sciences and Humanities
The Berlin Declaration

It was a commitment

1. to open the licenses
2. to set up open archives
3. to encourage researchers to choose the open access way of publishing
4. to advocate that open access publication be recognized in promotion and tenure evaluation.
The ways of Open Access

- **Self-archiving** (green route): the full text of academic publications is deposited in repositories either institutional (such as Openaire) or disciplinary (such as the ArXiv)
- **Overlay journals (content curation)**
- **Open publishing** (golden route): full open access journals (Plos, Directory of Open Access Journals)
- Red route (predatory OA) - for predatory researchers
Business models: who pays, who don’t

<table>
<thead>
<tr>
<th>Who pays</th>
<th>Who accesses</th>
<th>By which route</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Authors</td>
<td>2. Open access</td>
<td>2. Golden route, red route</td>
</tr>
<tr>
<td>3. Institutions</td>
<td>3. Open access</td>
<td>3. Platinum route</td>
</tr>
</tbody>
</table>
Plan S

A plan supported by the research institutions (like the INFN) and funders gathered in Coalition S

“With effect from 2021, all scholarly publications on the results from research funded by public or private grants provided by national, regional and international research councils and funding bodies, must be published in Open Access Journals, on Open Access Platforms, or made immediately available through Open Access Repositories without embargo.”
Taking the digital revolution sensuously

- Printing: filter, then publish $\Rightarrow$ closed peer review
- Internet: publish, then filter $\Rightarrow$ open peer review, texts and data curation, TDM
Experimenters

▶ T. Gowers: let’s cut the cost of knowledge, let’s emancipate ourselves from the publishers
▶ M. Bon: let’s rebuild a science open, transparent and communitarian
▶ K. Fitzpatrick: let’s reconnect humanities to human beings, by opening their texts
▶ M. Eisen: with 30,000 scientific journals, the very idea of journal is losing its meaning
Discrete Analysis

“I want to be aggressively modern. I want to use the internet properly – when you’ve got something, you post it”

▶ an ArXiv overlay journal
▶ with no charge for authors and readers
Gowers: long-term goals

- opening all the processes of science, from discovery to debate

- go beyond commercial journals and publishers: scientist do not need them to criticize (peer-review) their colleagues :-)}
Science needs a public reason

Publishing should be public [Bon, 2015]

I suggest that all shortcomings in the current publication system are rooted in the fact that it has drifted away from Science ethics, with publication – peer review, evaluation and dissemination – being privatized. A process whose rationale is to be open, transparent, and community-wide has become trapped in editors’ mailboxes. The validity and value of a scientific work are both decided once and for all time, by two or three people in a process that is confidential, private, anonymous, undocumented, and with short deadlines. Here, I use the term “privatization” not mean that the process is conducted by private companies, but to imply it concentrated in a few hands. Whilst some may consider that private publishers charge exorbitant (and unaffordable) prices for their journals, my arguments still stand if the current system was entirely run by public institutions, learned societies or any non-profit organization.
The Self Journals of Science

Transparent, communitarian, esplorabile

- an open archive
- an open peer review
- a distributed overlay curation
 Principles of the Self-Journal of Science: bringing ethics and freedom to scientific publishing
Commentpress - a Wordpress plugin
We need to go beyond the traditional closed (peer?) review, because

- it hinders the circulation of ideas
- excludes authors from the debate

Open, post-publication peer review

- is transparent, acknowledges the reviewers’ work, connects authors to their scholarly community but ... 
- requires a cooperative community of knowledge
OPR module for D-space, EU funded

This is the site for the Open Peer Review Module. Project financed by OpenAIRE 2020, EU-Horizon2020 Grant ID 643410, with the following partners: Open Scholar CIC, UK DIGITAL-CSIC repository, Consejo Superior de Investigaciones Científicas Spain; Artificial Intelligence Research Institute, IIIA-CSIC; Department of Computer Science and Artificial Intelligence, Spain; OpenAIRE

https://github.com/arvoConsultores/Open-Peer-Review-Module
"The very existence of a journal as a concept itself is somewhat nonsensical“ [Sanders, 2019]

Michael Eisen, co-founder of PLOS and editor di "E-life":

▶ closed access is just one among the pathologies of publishing, legacy of the age or printing
▶ 30.000 scientific journals are too many to be point-of-references
▶ Outsourcing to journals decisions about who academic recruitment and tenures costs us billions of dollars
▶ and outsources our research choices to commercial publishers as well
A public European infrastructure for Open Science? [Fecher et al., 2017]
Before "publishing", make your manuscripts actually public :-) [Sarabipour et al., 2019]
Institutional and disciplinary archives

- https://arpi.unipi.it/
- https://zenodo.org/
- https://www.openaccessrepository.it/
- http://repec.org/
- https://asapbio.org
ResearchGate and Academia.edu are not open access archives!

<table>
<thead>
<tr>
<th></th>
<th>Open access repositories</th>
<th>Academia.edu</th>
<th>ResearchGate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supports export or harvesting</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Long-term preservation</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Business model</td>
<td>Nonprofit (usually)</td>
<td>Commercial. Sells job posting services, hopes to sell data</td>
<td>Commercial. Sells ads, job posting services</td>
</tr>
<tr>
<td>Sends you lots of emails (by default)</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Wants your address book</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Fulfills requirements of UC’s OA policies</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

http://creativecommons.org/licenses/by/4.0/ University of California OSC
Metrics are not magic: use them in a responsible way!

https://www.metrics-toolkit.org/
Lindsay Ellis (2019)  
*Elsevier’s Presence on Campuses Spans More Than Journals. That Has Some Scholars Worried.*  
https://www.chronicle.com/article/Elsevier-s-Presence-on/246048

Alejandro Posada, George Chen (2018)  
*Inequality in Knowledge Production: The Integration of Academic Infrastructure by Big Publishers*  
https://hal.archives-ouvertes.fr/hal-01816707

Alessandro Figà Talamanca (2002)  
*The "impact factor" in the evaluation of research*  

*The Oligopoly of Academic Publishers in the Digital Era*  
https://doi.org/10.1371/journal.pone.0127502

Eugene Garfield (2006)  
*The History and Meaning of the Journal Impact Factor*  
http://www.garfield.library.upenn.edu/papers/jamajif2006.pdf

Eugene Garfield (2006)  
*Citation indexes for science. A new dimension in documentation through association of ideas*  
https://doi.org/10.1093/ije/dyl189

R.K. Merton (1942)  
*The Normative Structure of Science*  
in *The Sociology of Science. Theoretical and Empirical Investigations, 1973*  
https://www.panarchy.org/merton/science.html
Open science and its tools

Micro-bibliography

On the value of preprints: An early career researcher perspective
https://doi.org/10.1371/journal.pbio.3000151

EUA Briefing (2019)
Reflections on University Research Assessment. Key concepts, issues and actors

LERU (2018)
Open Science and its role in universities: A roadmap for cultural change

Michael Bon (2015)
Principles of the Self Journal of Science: bringing ethics and freedom to scientific publishing
http://www.sjscience.org/article?id=46

Kathleen Fitzpatrick (2009)
Planned Obsolescence
http://mcpress.media-commons.org/plannedobsolescence/

Robert Sanders (2019)
New eLife editor Michael Eisen wants to shake up scientific publishing
https://news.berkeley.edu/2019/04/04/new-elife-editor-michael-eisen-wants-to-shake-up-scientific-publishing/

Fecher, Benedikt; Friesike, Sascha; Peters, Isabella; Wagner, Gert G. (2017)
Rather than simply moving from “paying to read” to “paying to publish”, it’s time for a European Open Access Platform
https://blogs.lse.ac.uk/impactofsocialsciences/2017/04/10/rather-than-simply-moving-from-paying-to-read-to-paying-to-publish-its-time-for-a-european-open-access-platform