

What to know before publishing

an introduction to open science

CYBO 2025 - February 07

Anna Maria Pastorini

Genoa University Library System – Integrated systems for libraries and Open Science Office

Housekeeping rules

- You'll have to answer a few questions via *wooclap.com*. Keep your smartphone ready!
- You can ask questions raising your hands
- State your questions briefly and in English
- Where not explicitly credited, images are by Patrick Hochstenbach (CC-BY)
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What we'll talk about



- Open science
- Scholarly communication
- Open access to publications

Infodemic

An infodemic is too much information including false or misleading information in digital and physical environments during a disease outbreak. It causes confusion and risk-taking behaviours that can harm health



World Health Organization, [3rd virtual global WHO Infodemic Management conference](#), 2020

Write the words that impressed you the most

Go to wooclap.com and use the code **GTZYHU**



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© UNESCO

[UNESCO Recommendation on Open Science](#), 2021

Write the words that impressed you the most

Go to wooclap.com and use the code **GTZYHU**



Open Science opens up the **research lifecycle**, from the concept of an idea and the collection of relevant material (papers, data, etc.) to the publication, archiving and re-use of the research outcomes, including metadata and research data.

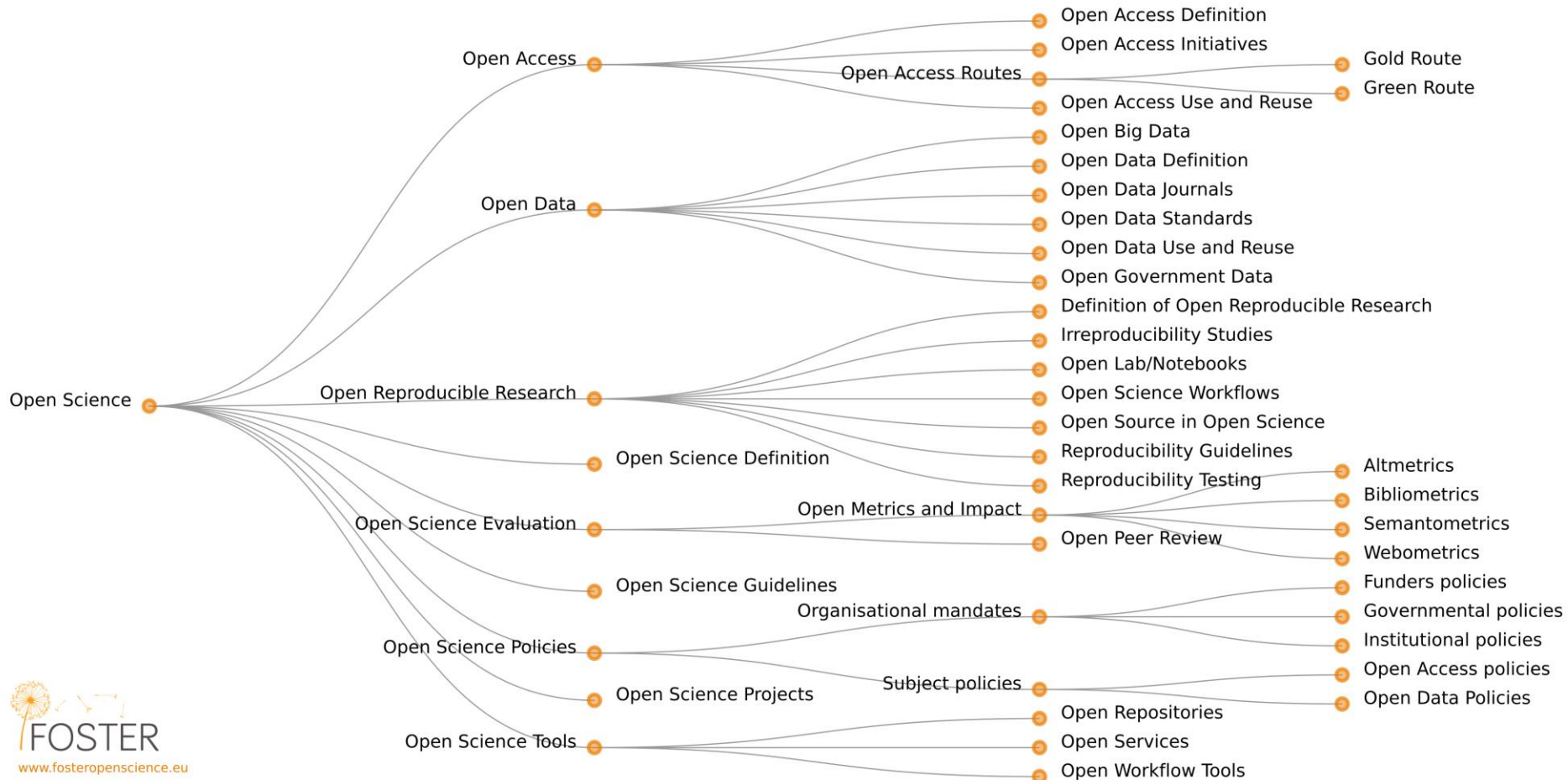


It creates a **new modus operandi for science**, where all stakeholders are involved and research is organized, linked, verified, facilitated by new technologies and enhanced with collaborative and coordinative activities.

European Commission, [Open Innovation](#), [Open Science](#), [Open to the world](#), 2018

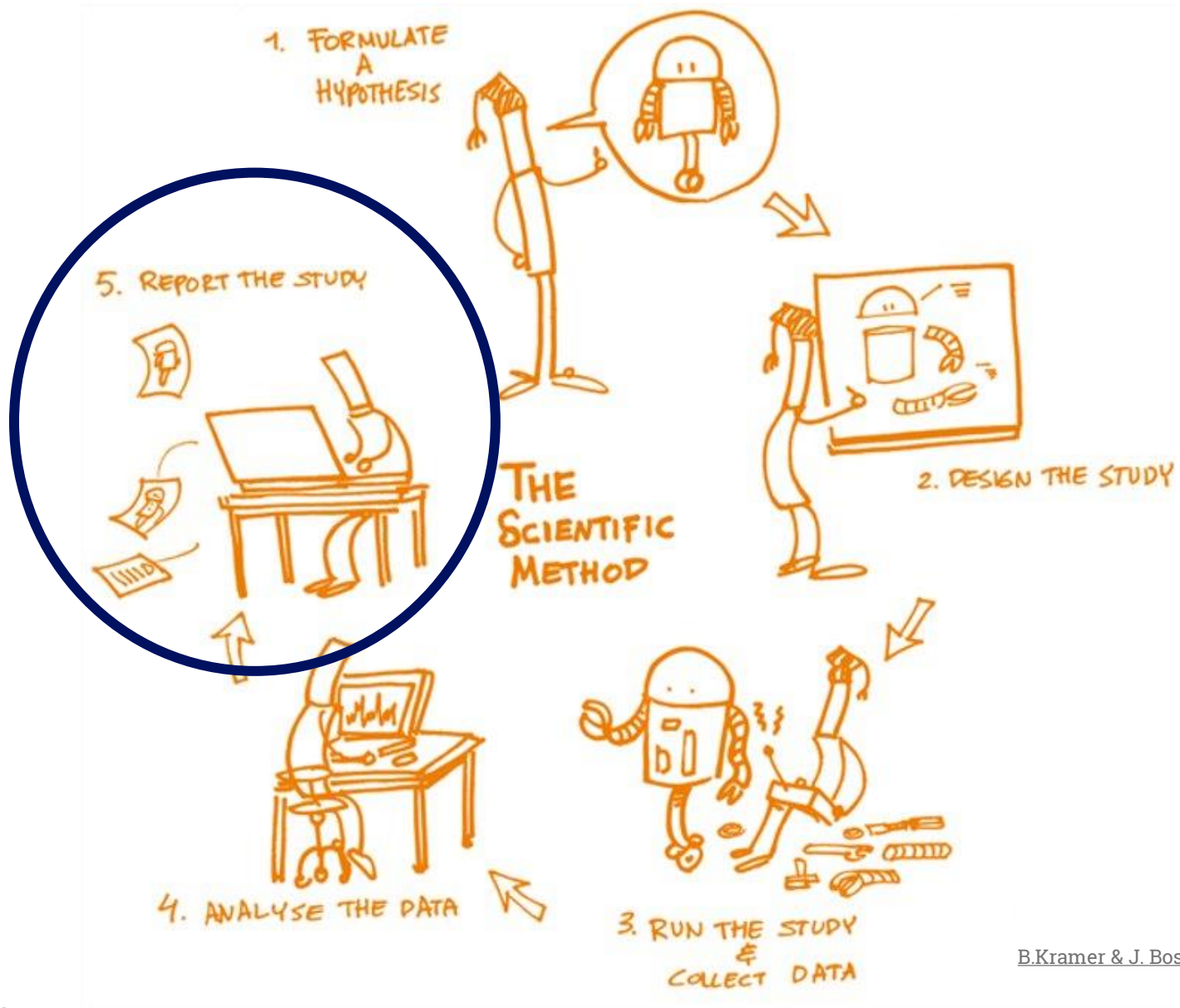
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Open Science Taxonomy



Nancy Pontika, [Open Science: what, why and best practices in open research](#), 2018

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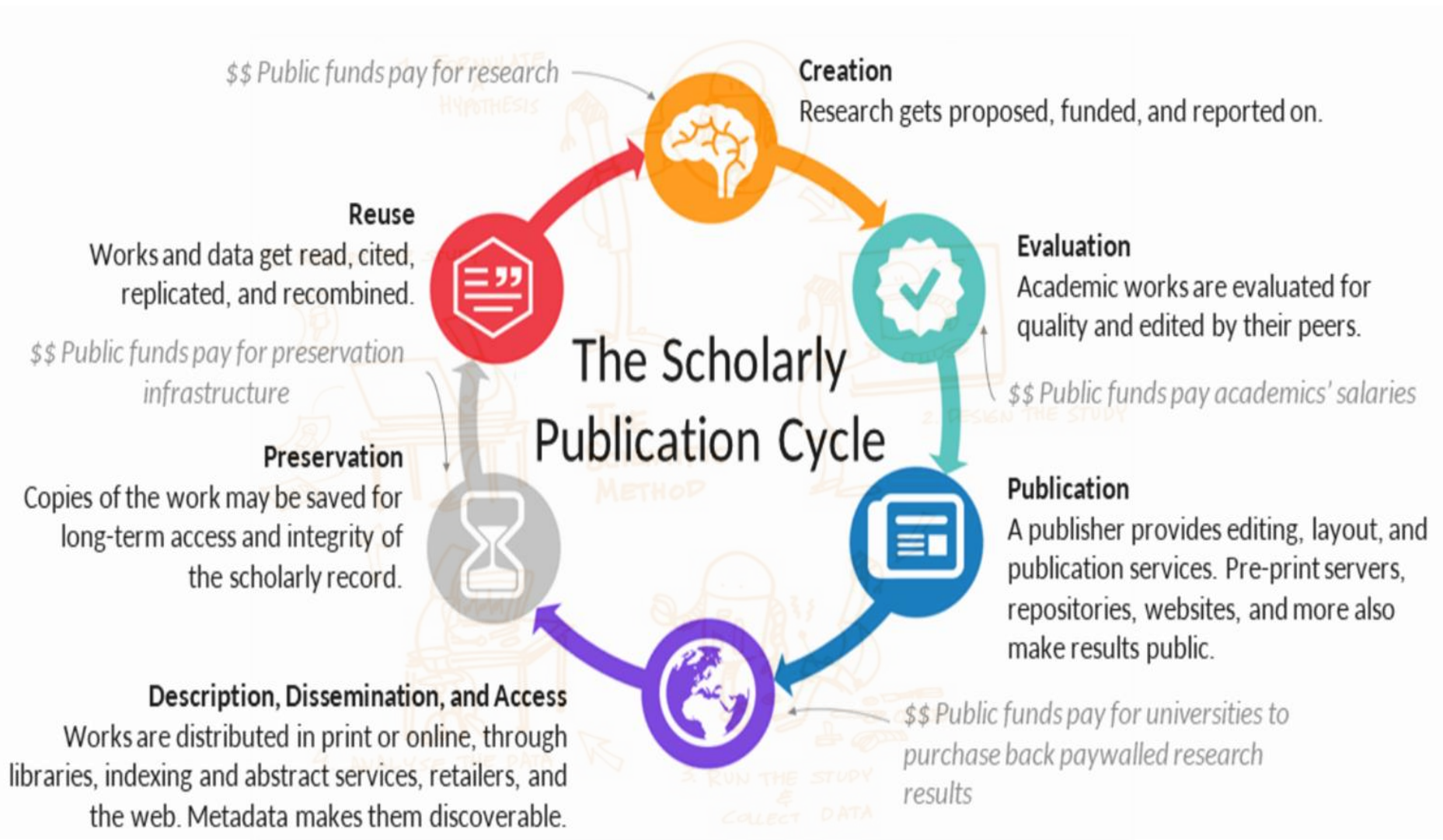
B.Kramer & J. Bosman, 2018 (CC-BY)

Why do you want to publish research articles?

Go to wooclap.com and use the code **GTZYHU**



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B.Kramer & J. Bosman, 2018 (CC-BY)

Subscription publishers have stepped up to respond to this global emergency by **removing paywalls** and **allowing content to be reused**.

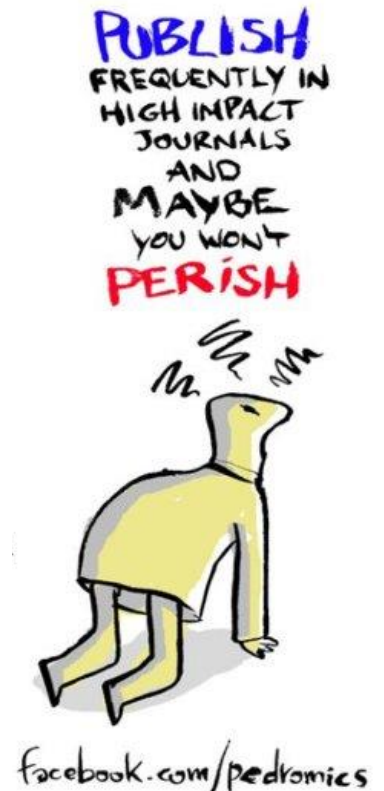
But this has also shone a spotlight on the **shortcomings of the traditional scholarly publishing system**, which is not fit for purpose in the 21st century.



Robert Kiley, [Open access: how COVID-19 will change the way research findings are shared](#), 2020

THE EVOLUTION OF ACADEMIA

- Price increase
- Accessibility crisis
- Publication timing
- Information overload
- Bibliometric crisis
- Reproducibility crisis



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Institutions:

exponential growth in spending

→ subscriptions price up to 250% plus

→ publication costs increase

Publishers:

exponential growth in profits

→ no royalty payments to authors

→ no royalty for the peer-reviewer

→ low editorial costs

Access vs ownership

Library are not longer owner the resources, but negotiate licenses to access

Paywall

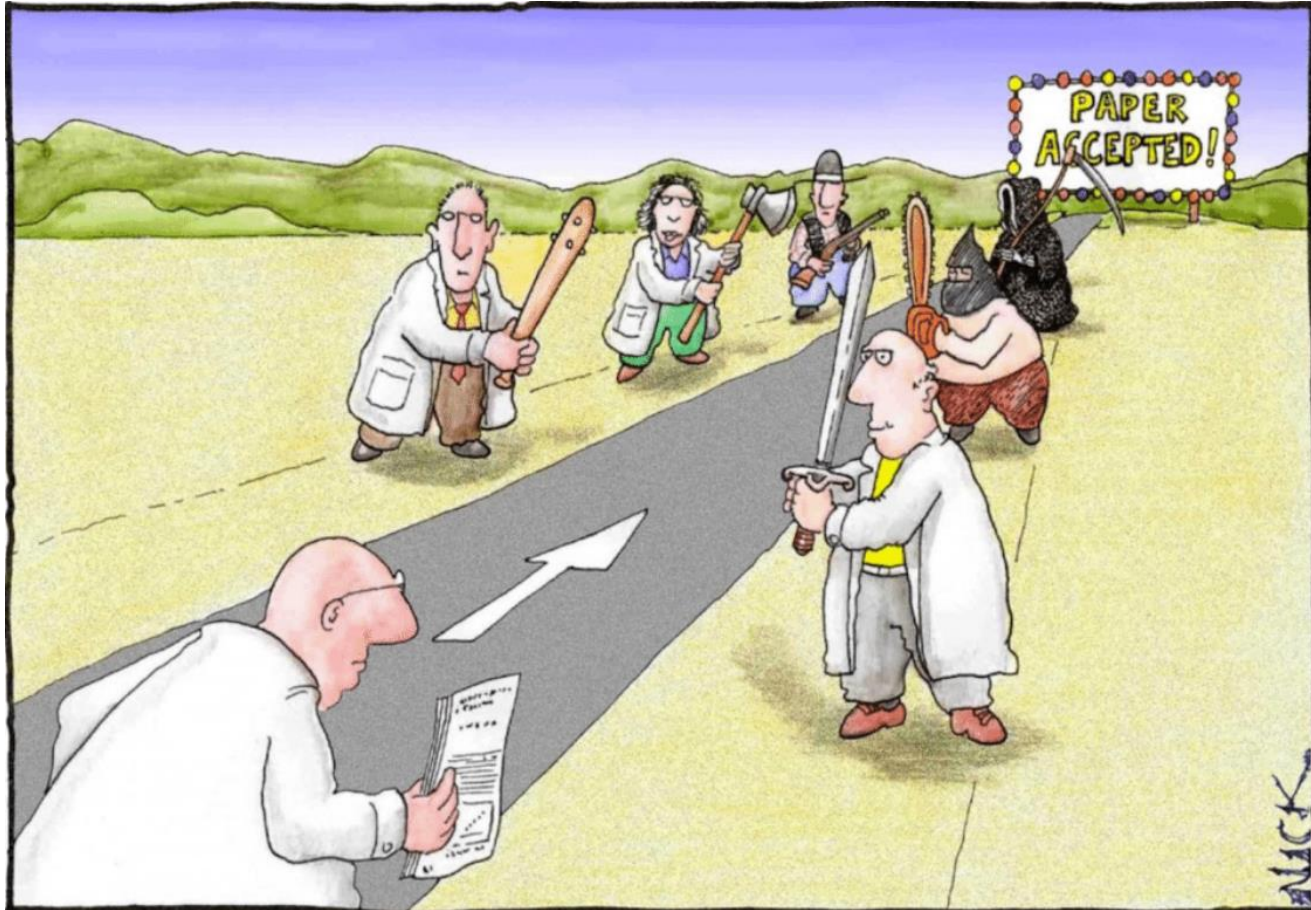
“We spend 1/3 of the total global research budget on publishing & communicating results that 99% of people cannot access.”

[Jon Tennant, [Barriers to Open Science for junior researchers](#)]

Double (...quadruple...) dipping

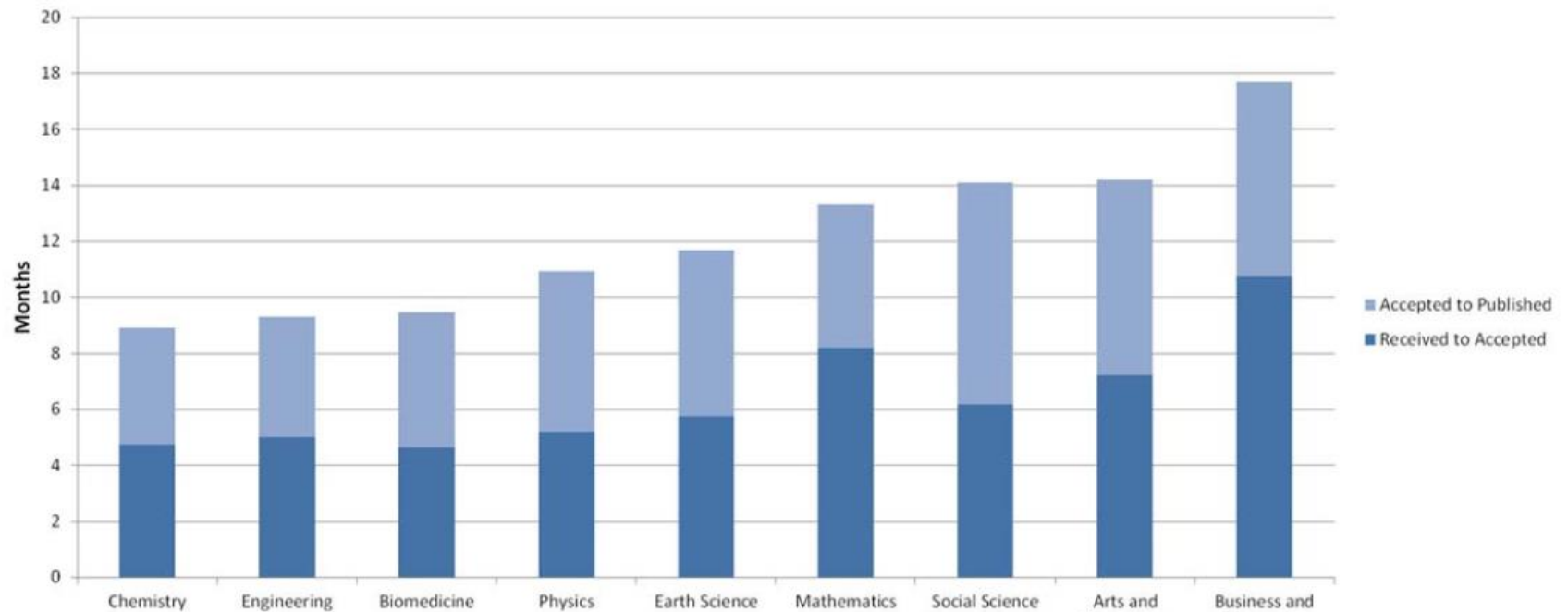
- Academics salaries
- research funds
- costs to "read"
- costs to "publish"





Scholarly peer review is the process of subjecting an author's work or research to the scrutiny of others who are experts in the same field, before a paper describing this work is published in a journal

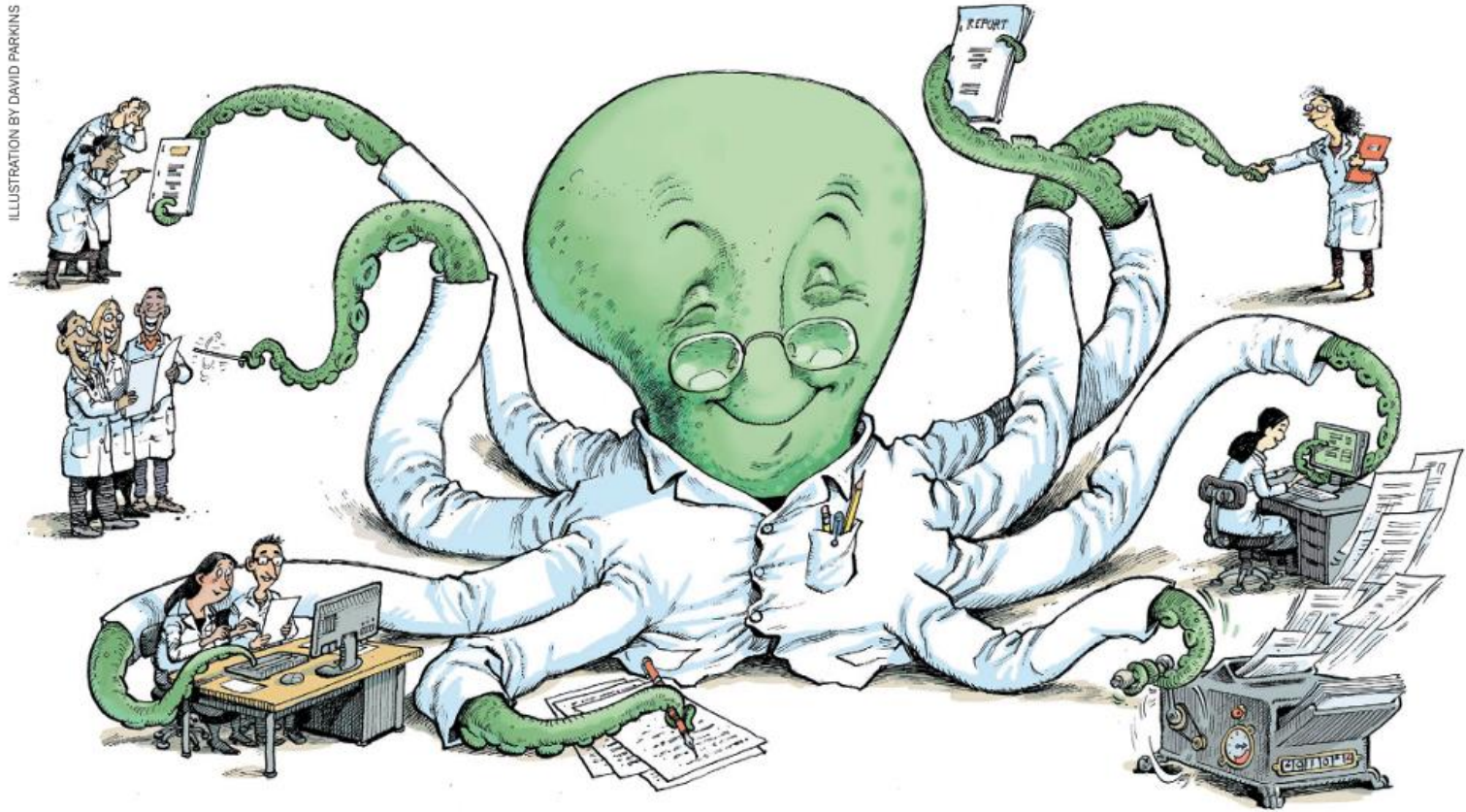
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Publishing in scholarly peer reviewed journals usually entails **long delays from submission to publication**. In part this is due to the **length of the peer review process** and in part because of the dominating **tradition of publication in issues** [...]. The delays slow the dissemination of scholarship and can provide a significant burden on the academic careers of authors.

Bo-Christer Björk & David Solomon, [The publishing delay in scholarly peer-reviewed journals](#), 2013

ILLUSTRATION BY DAVID PARKINS

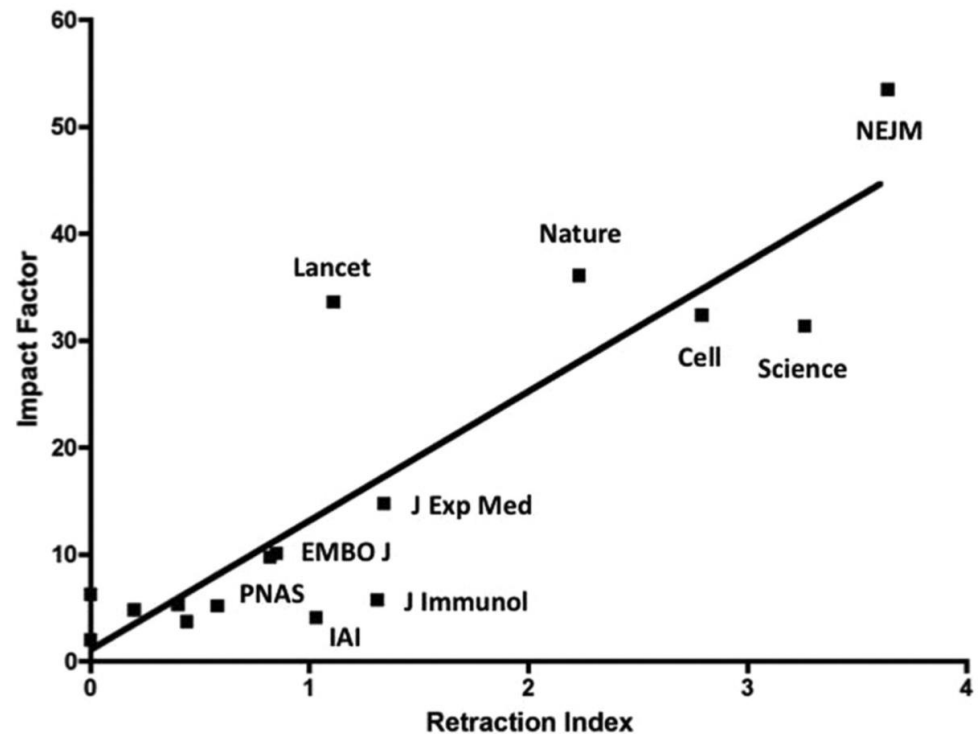


The scientists who publish a paper every five days

John P. A. Ioannidis, Richard Klavans and Kevin W. Boyack, [Thousands of scientists publish a paper every five days](#), Nature, 2018
Illustration by David Parkins

Correlation between impact factor and retraction index.

The 2010 journal impact factor is plotted against the retraction index as a measure of the frequency of retracted articles from 2001 to 2010



Ferric C. Fang & Arturo Casadevall, [Retracted Science and the Retraction Index](#), 2011

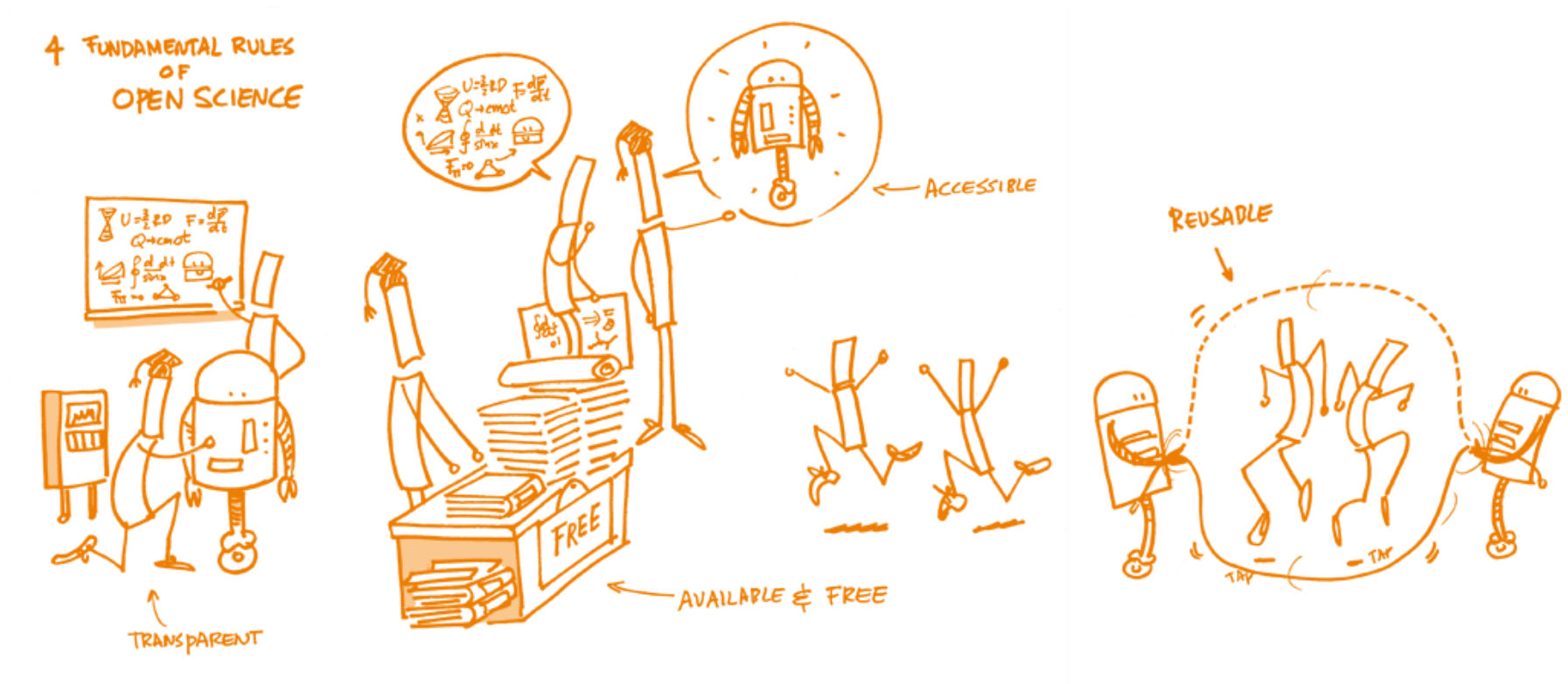
More than 70% of researchers have tried and **failed to reproduce** another scientist's experiments, and more than half have failed to reproduce their own experiments.

The survey asked scientists what led to problems in reproducibility. More than 60% of respondents said that each of two factors — **pressure to publish** and **selective reporting** — always or often contributed.



Monya Baker, [1,500 scientists lift the lid on reproducibility](#), Nature 533, 452-454 (26 May 2016)

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What is the difference between open science and good science?

If research papers are inaccessible, with no code or data, cherry picked results, inability to even attempt to reproduce, is that really even science? Science without openness is more anecdote and faith than science.

[Jon Tennant @Protohedgehog](#), 21 set 2018

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Author's Original/Preprint

is the version of the article before peer review or editing, as submitted by an author

Accepted Manuscript

is the version of the article accepted for publication including all changes made as a result of the peer review process but excluding any other editing or typesetting made by the publisher

Final Published Version

is the peer reviewed, edited, formatted and typeset version of the article, also including any post publication changes [*Version of Record*]

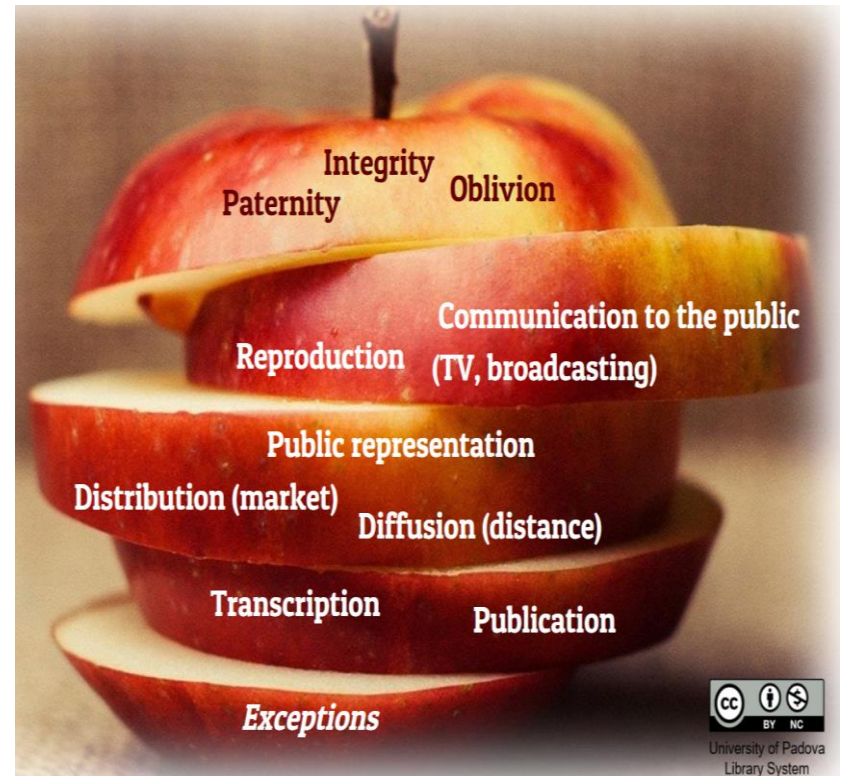
- Copyright protects **the form** given to an idea
- Copyright gives the creator of an original work **exclusive rights** to it, usually, for a limited time.
- Copyright applies also to scientific works and to **theses and dissertations**, as well

Moral Rights

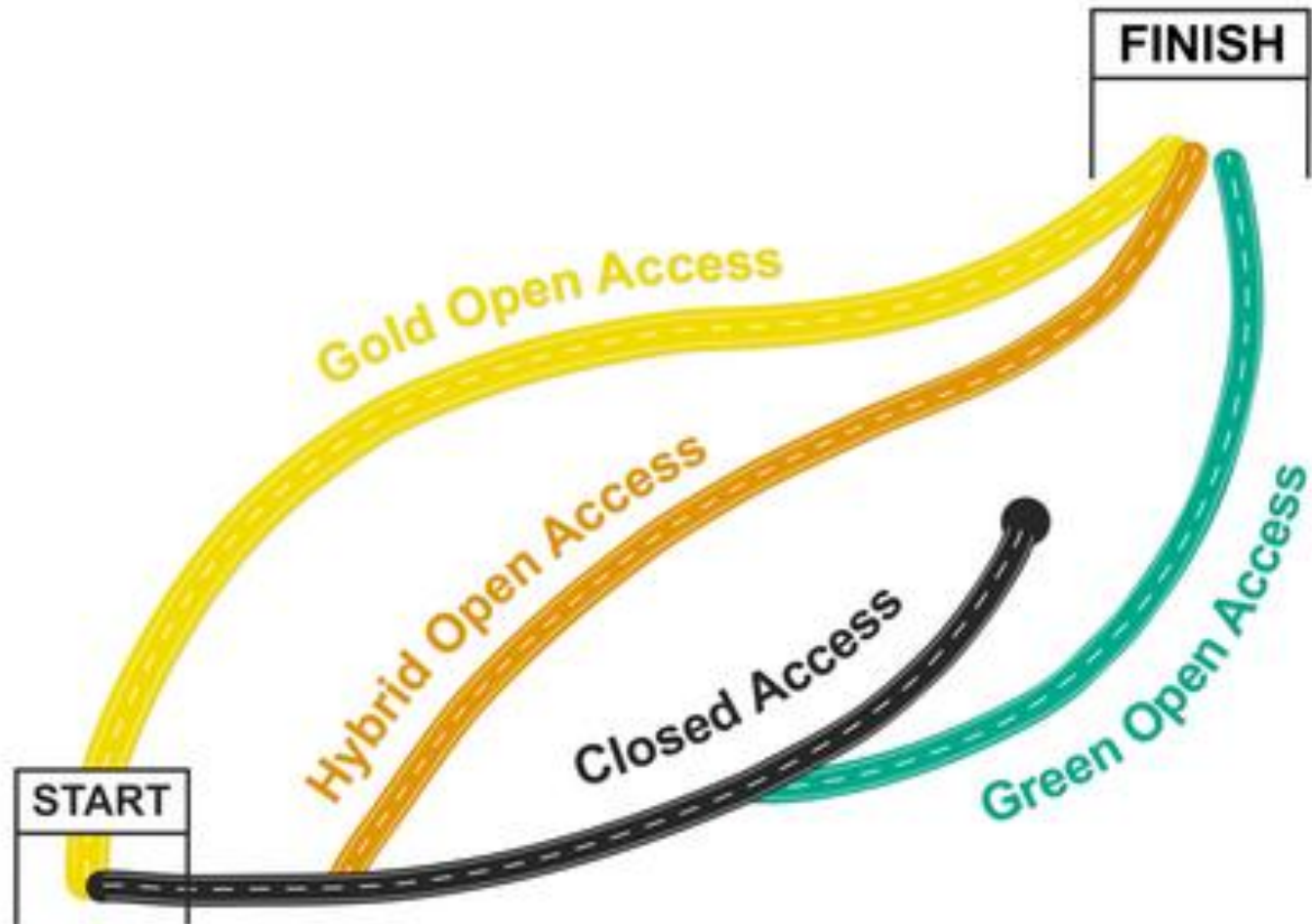
- exclusive rights of the author
- inalienable
- cannot be transferred
- perpetual
- protect creator's personality which is expressed through the work

Economic Rights

- exclusive rights of the author (but)
- alienable
- can be transferred
- have a time limit (life + 70y)
- allow the author to economically use his work in any form and way



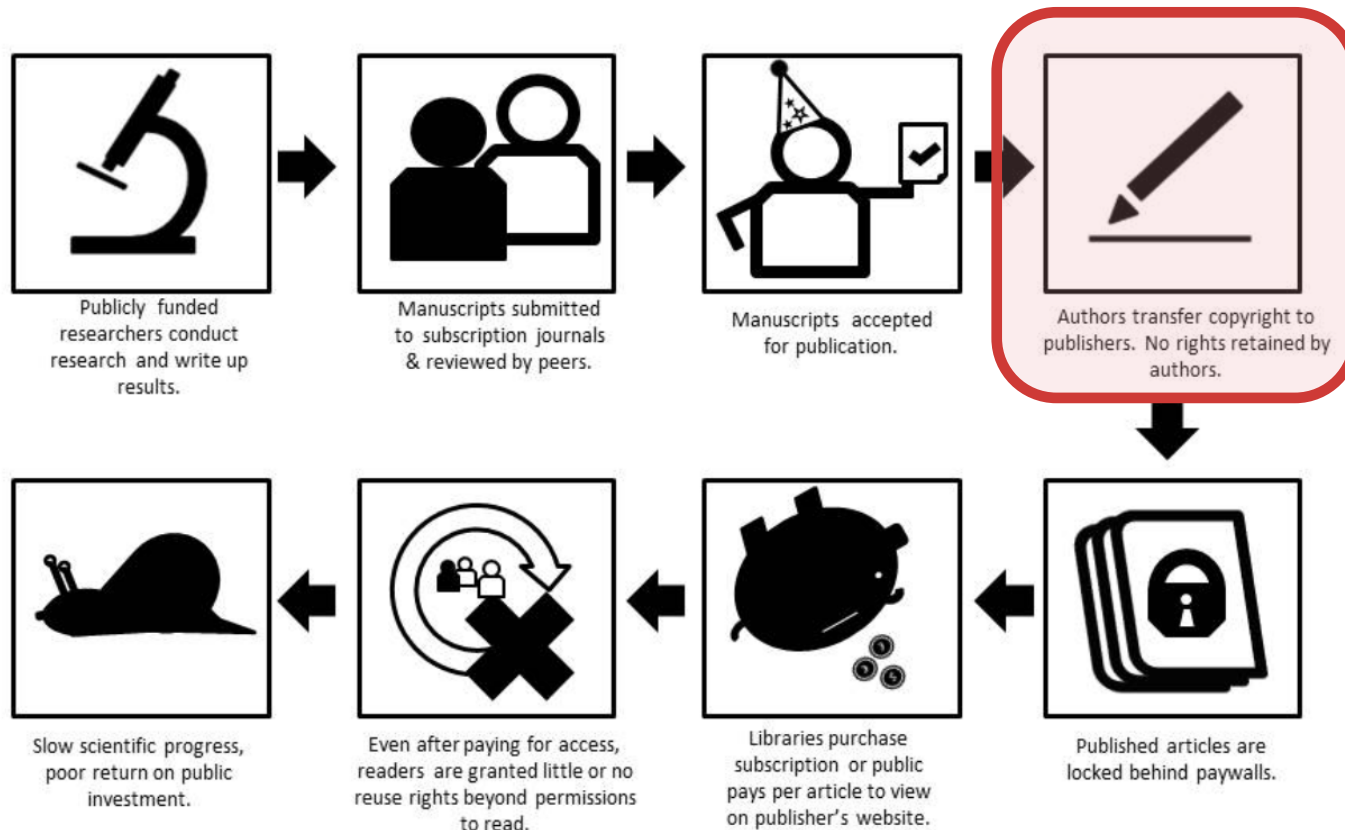
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[Open Access Network](#)

TRADITIONAL SUBSCRIPTION PUBLISHING

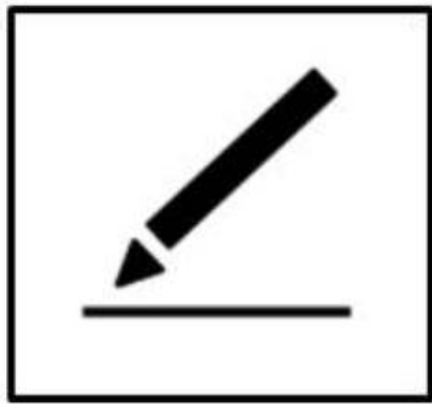
limited dissemination, economic efficiency & social impact



Model and text adapted from Timothy Vollmer and Teresa Sempere Garcia "Research article cycles" http://wiki.creativecommons.org/File:Research_articles_cycles.jpg



Paula Callan & Sarah Brown, QUT 2014 CC-BY 4.0



Authors transfer copyright to publishers. No rights retained by authors.

No [economic] rights retained by authors

The **traditional business model** of academic publishers is to archive and disseminate works whose authors **have transferred exclusive publication rights to the publisher.**



“We hand control over
the results to
businesses that believe
that their revenue and
survival depend on
limiting access”

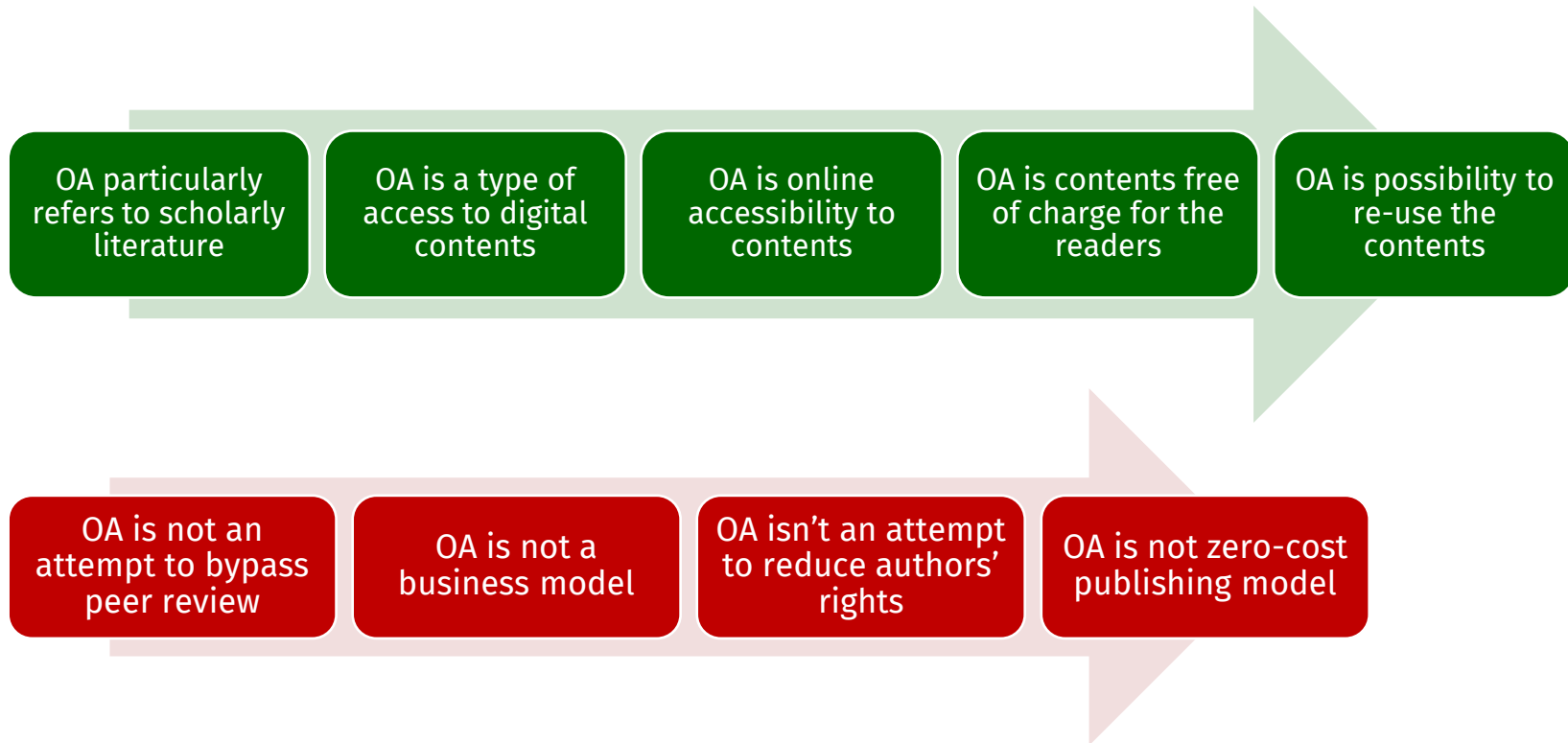
Peter Suber, [Open Access](#), MIT Press, 2012 (CC BY)



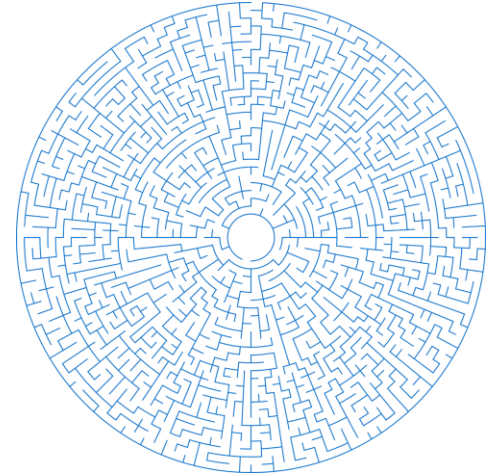
- new types of documents, technologies and editorial policies
- self-publishing and cooperative text sharing
- more dynamic revision processes
- self-archiving
- reduction of printing and distribution costs for publishers
- easy access to documents, interoperability, and reuse of content for readers

Open access (OA) literature is digital, online, free of charge, and free of most copyright and licensing restrictions.

Peter Suber, [Open Access](#), MIT Press, 2012 (CC BY)



- What **version** of the article is published?
- Where is the publication made **available**?
- What kind of **business model** does the publisher use?
- When is it published?





Open Access is not a zero-cost publishing model

There are several editorial models compatible with OA, in constant evolution

The OA movement uses the term **gold OA for OA delivered by journals**, regardless of the journal's business model, and **green OA for OA delivered by repositories**.

Self-archiving is the practice of depositing one's own work in an OA repository



Green articles are published in a toll-access journal, but **self-archived** in an **OA archive**.

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Toll-access on the publisher page, but there is a **free copy** in an OA repository



Piwowar et al. (2018), [The state of OA: a large-scale analysis of the prevalence and impact of Open Access articles](#) (CC BY)



- **Which version of the article can be self-archived?**
- Who decides which version can be archived?
- In which OA archives & repositories?



- **Who decides which version can be archived?**

Who owns the economic rights

- the author
- the publisher

Open policy finder

Formerly Sherpa services



“an online resource that aggregates and analyses publisher open access policies from around the world and provides summaries of publisher copyright and open access archiving policies on a journal-by-journal basis”

- PeerJ
- Applied and Computational Harmonic Analysis
- ACS Applied Polymer Materials

Pre-print servers

- are online archives containing early drafts of outputs prior to formal publication
- are common in some scientific communities
- can also be subject specific

Subject repositories

- are open access repositories for outputs related to a specific field or discipline
- outputs can include unpublished working papers, pre-prints, accepted manuscripts and published open access articles

Institutional archives

- are online database for collecting and preserving the intellectual output of an institution
- include research works, theses & dissertations, and other digital academic assets

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PMC &
EPM

- are archives for the biomedical and life sciences
- any output that is published in a journal is eligible for deposit
- both full text and metadata only records are included
- items are deposited directly by the publisher, or also by authors via NIH

openDOAR

- is the quality-assured, global **Directory of Open Access Repositories**.
- hosts repositories that provide free, open access to academic outputs and resources

Zenodo

- is a catch-all repository for EC funded research
- does not impose any requirements on format, size, access restrictions or license (all fields of research, all types of research artifacts)
- is PlanS compliant
- uploads get a DOI
- research outputs are stored safely (CERN)

A social networking site, as ResearchGate or Academia.edu,
IS NOT an Open Access Archive

	Open access repositories	Academia.edu	ResearchGate
Supports export or harvesting	Yes	No	No
Long-term preservation	Yes	No	No
Business model	Nonprofit (usually)	Commercial. Sells job posting, services, sells data.	Commercial. Sells ads, job, posting services, data.
Sends you lots of e-mails (by default)	No	Yes	Yes
Wants your address book	No	Yes	Yes



<http://creativecommons.org/licenses/by/4.0/>

University of California OSC

Articles are published in an **OA journal**, a journal in which all articles are open directly on **the** journal website

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Published in an open-access journal that is **indexed by the DOAJ**



Piwowar et al. (2018), [The state of OA: a large-scale analysis of the prevalence and impact of Open Access articles](#) (CC BY)

The mission of the DOAJ is:

- to curate, maintain and develop a **source of reliable information** about OA scholarly journals
- to verify that entries on the list comply with **reasonable standards**
- to increase the **visibility, dissemination, discoverability and attraction** of OA journals
- to assist publishers to meet reasonable digital publishing standards
- to support the transition of the system of scholarly communication and publishing into **a model that serves science [...]**



- OA increases exponentially
- researchers and scientific institutions advocate OA
- research funders make OA mandatory for the results of research they funded
- new OA publishing models, not always fair and transparent

2005 -

OPEN ACCESS

The Open Access movement continues to move forward.

Publisher business models evolve to respond to demand for freely accessible research without barrier or restriction: hybrid, lay-over, new content licenses.

Funder mandates emerge, requiring their funded research to be freely available.

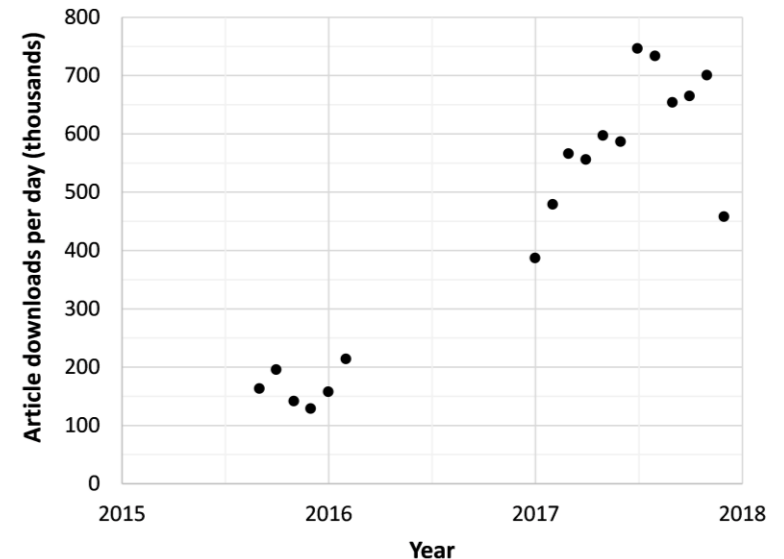
The research ecosystem moves beyond Open Access to Open Science. Four functions of publishing re-organized: registration, certification, dissemination, preservation.

1. Illegal Open Access

“The website Sci-Hub enables users to download PDF versions of scholarly articles, including many articles that are paywalled [...], suggesting the toll access business model may become unsustainable.”

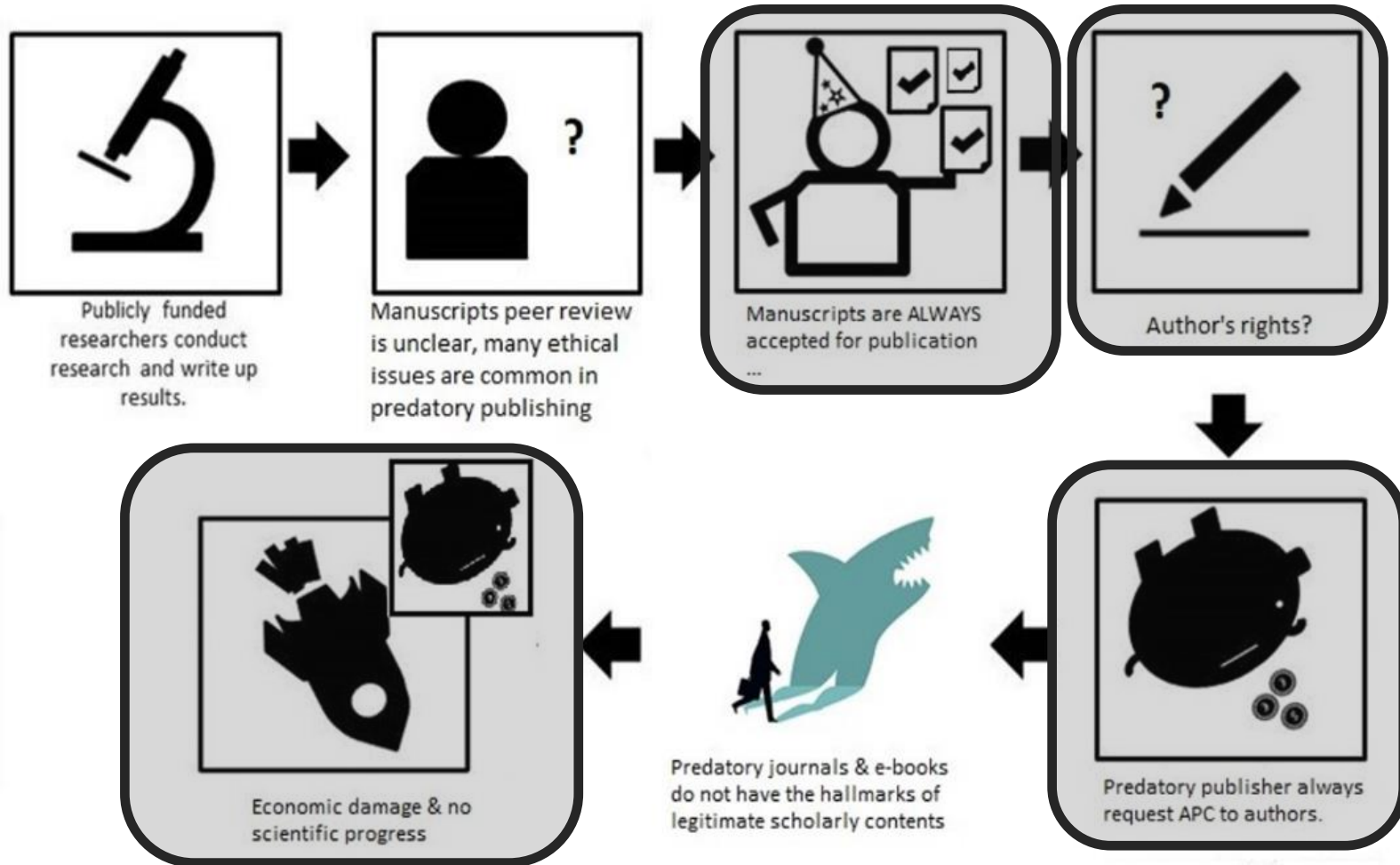
Himmelstein et al., Sci-Hub provides access to nearly all scholarly literature, 2018 [CC-BY]

2. Predatory publisher



Thomas Shafee, Rate for articles on Sci-Hub, CC BY 4.0

BLACK WAY



Predatory publisher

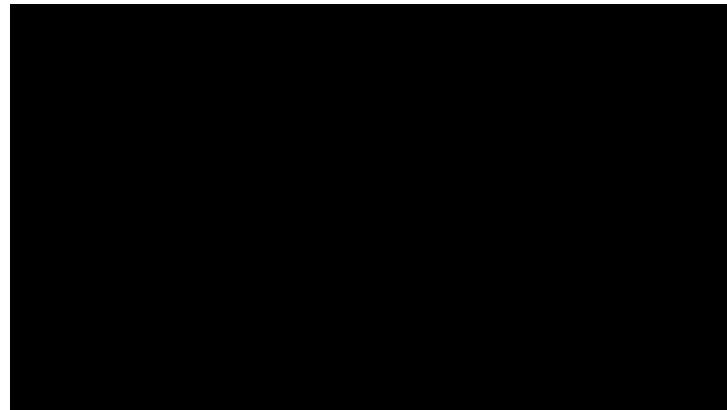
- create digital platforms and enrich them with contents mostly collected from the websites of other publishers
- often the platform boasts dozens of titles of periodicals without accessible content
- sometimes real articles (on which the publisher has no rights) find a place on the platform
- occasionally the attribution of bibliometric indices is highlighted, but they are always fake
- peer review is offered within a very short time (from 48 hours to 10 days)
- there seems to be no publication charges but, soon after publication, the author is asked to pay for management fee





Think, Check, Submit

“helps researchers identify trusted journals and publishers for their research. Through a range of tools and practical resources, this initiative aims to educate researchers, promote integrity, and build trust in credible research and publications”



Compass to publish

“helps you determine the degree of authenticity of open access journals requiring or hiding article processing charges (APCs) using a criteria-based evaluation”

Unpaywall browser extension



- “We used to call the browser extension “Unpaywall”, and the data source behind it “oaDOI.” That got confusing, so now the whole project is just called Unpaywall
- We harvest content directly from over 50,000 journals and open-access repositories from all over the world.
- We harvest content from legal sources, as well as open content hosted by publishers themselves. We do not harvest from sources of dubious legality”



Unpaywall



OA Nerd Mode

Color-code the unlock tab to show whether fulltext is [Green](#), [Gold](#), or [Bronze](#) open access, and see expanded debug info.

Articles **are** published in a **subscription journal** but are immediately **free to read** under an **open license**, in exchange for an article processing charge (APC) paid by authors

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Free under an open license in a toll-access journal



Piwowar et al. (2018), [The state of OA: a large-scale analysis of the prevalence and impact of Open Access articles](#) (CC BY)

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@DGlaucumflecken, [Nature does open access](#), 2022

 **Dr. Glaucomflecken**
@DGlaucumflecken

Nature does open access

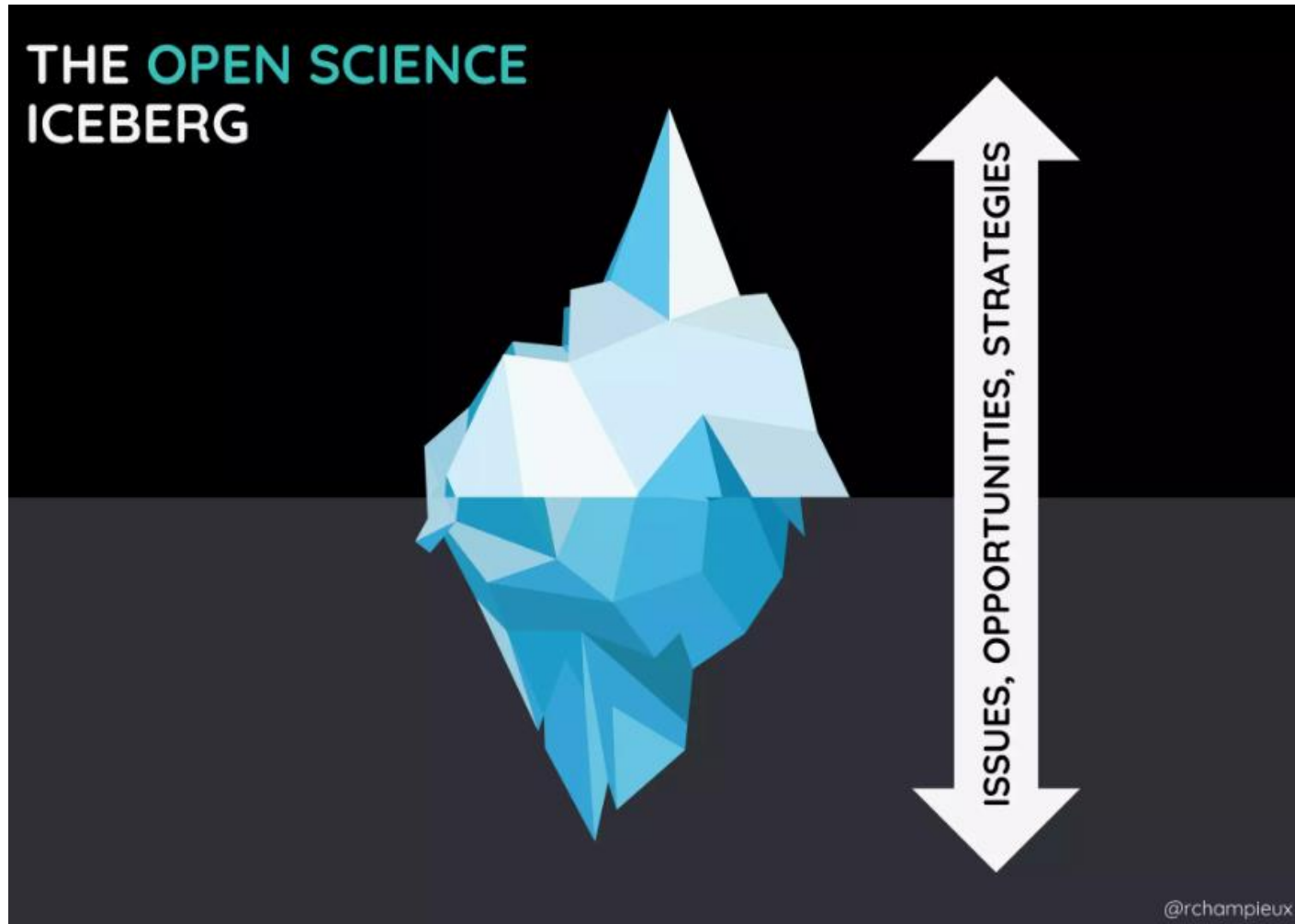
The academic journal
Nature

Hey Tristopher. Yeah, boss what's up?

3 Mln visualizzazioni 0:01 / 1:49

1:10 AM · 22 gen 2022 · Twitter Web App

27.813 Retweet 5.520 Tweet di citazione 86.330 Mi piace



Robin Champieux, [Rooting the Future of Open Research](#), 2017

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