

An introduction to Open Science and Research Data Management

Phd Course – february 2021

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Genoa University Library System – Digital Library and Open Access Office

Module 1

Lesson 1: Scholarly communication

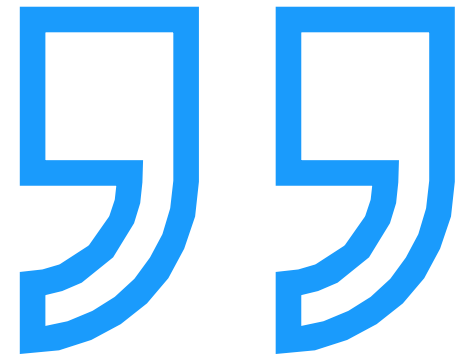
-  Scholarly Communication
-  Publication Cycle
-  Types and versions of publication
-  Peer review process
-  Bibliometric indicators and limits
-  Citation databases
-  Academic search engines
-  Reference managers

Scholarly communication can be defined as the system through which research outputs and scholarly writings are **created, evaluated, disseminated to the scholarly community, and preserved for future use.**

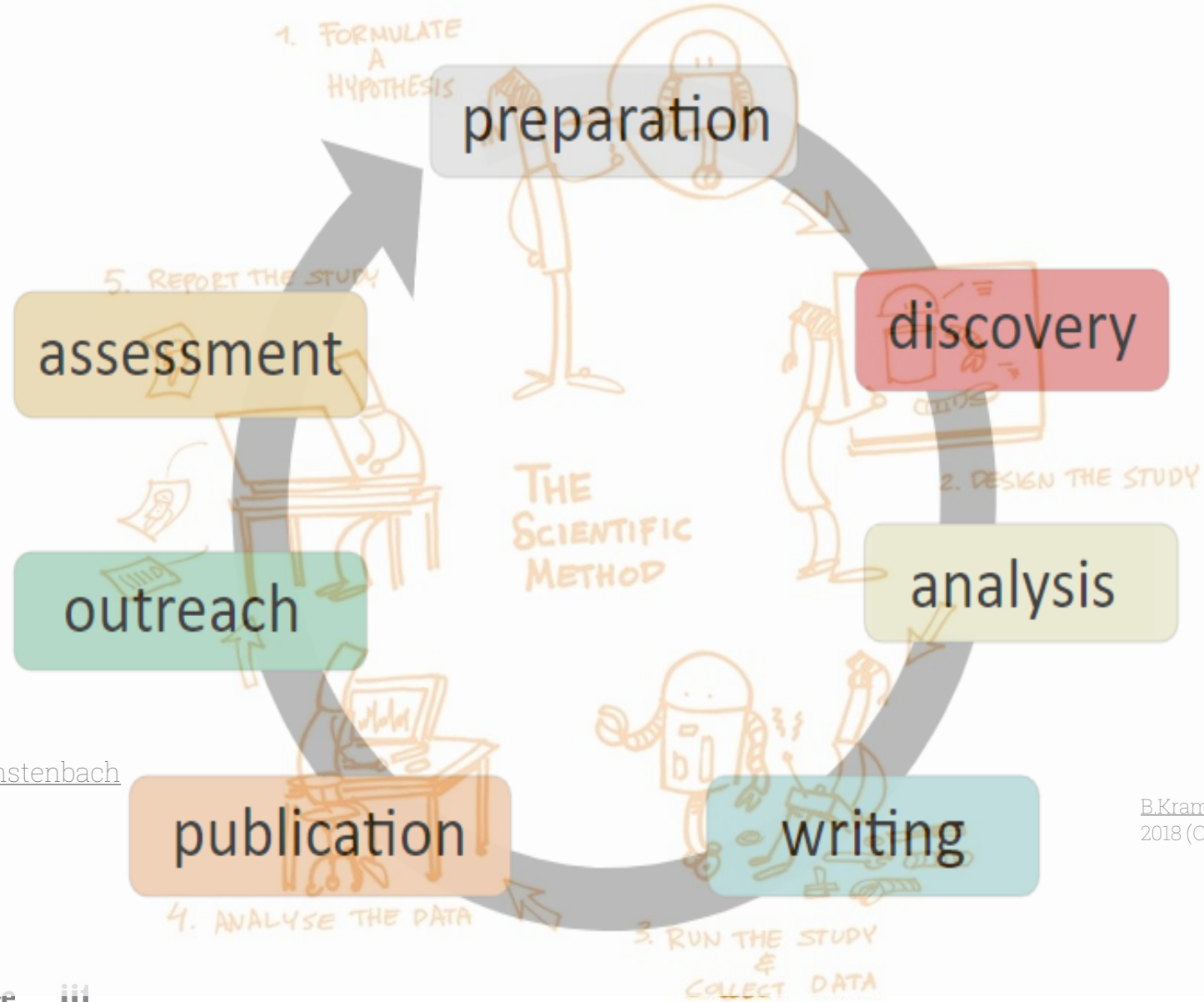
The system includes:

- formal means of communication, such as publication in journals, books, dissertations, papers ...
- informal channels, such as electronic mailing list, websites, blogs ...

One of the fundamental characteristics of scholarly research is that **it is created as a public good to facilitate inquiry and knowledge.**

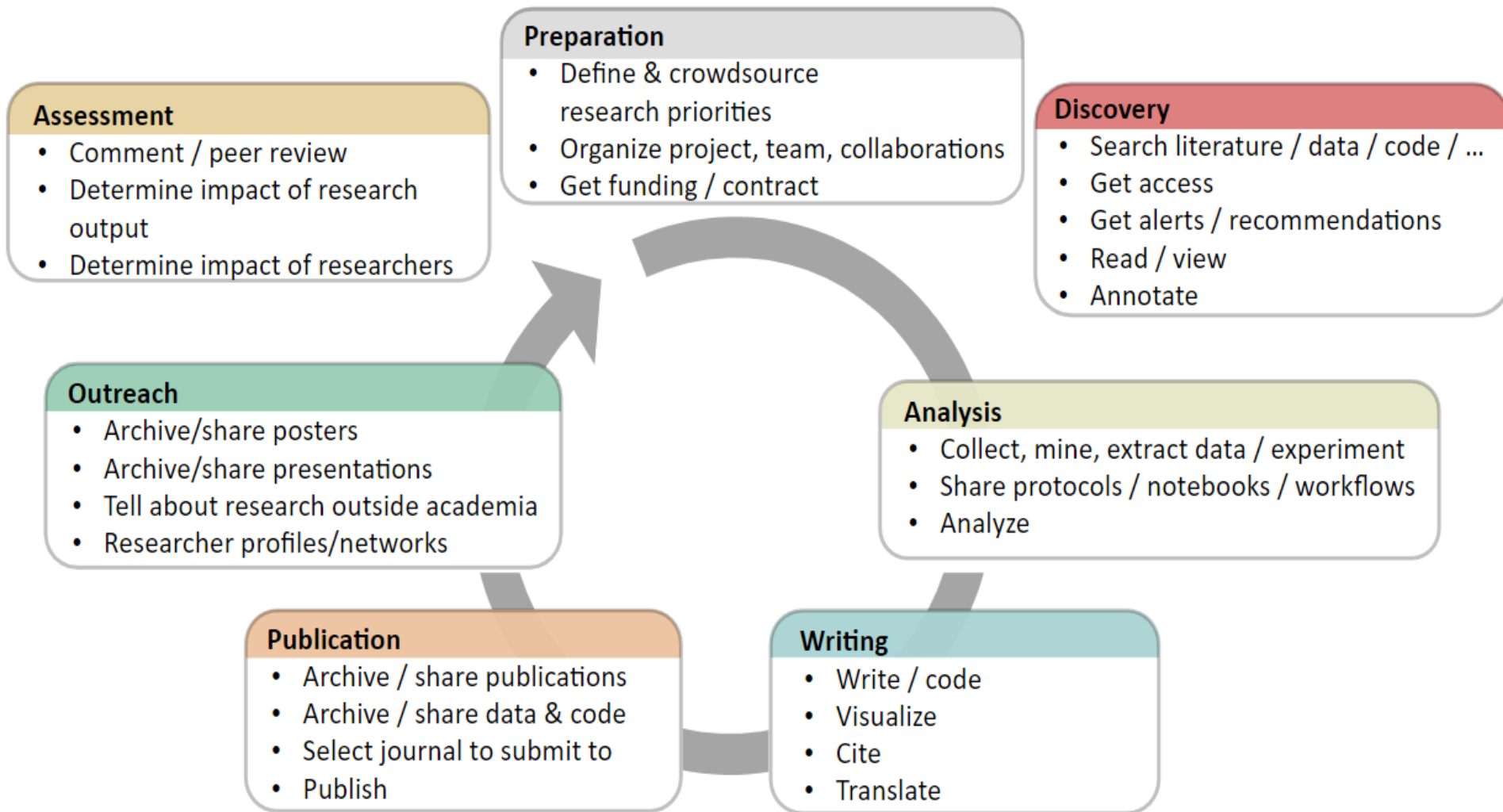


Association of College & Research Libraries, [Principles and Strategies for the Reform of Scholarly Communication](#), 2003

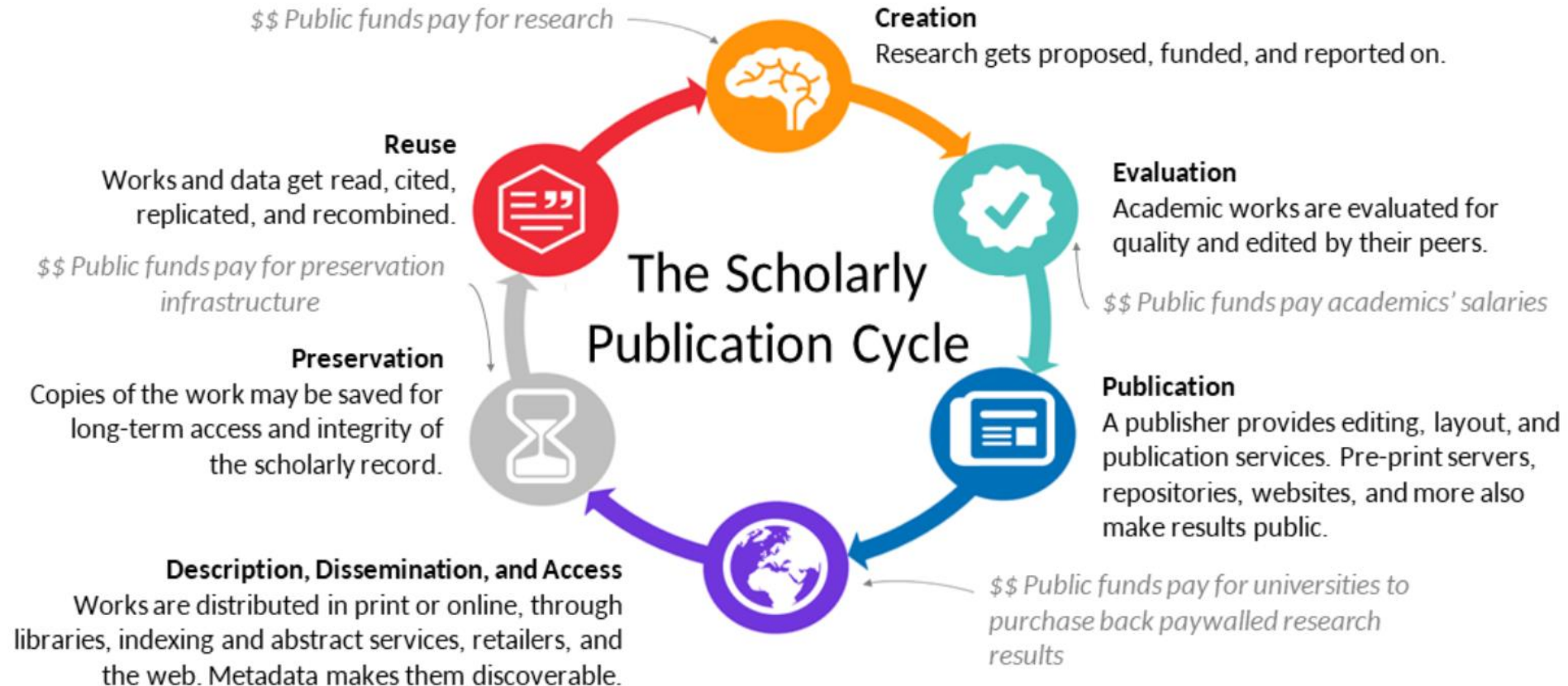


Patrick Hochstenbach
(CC-BY)

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

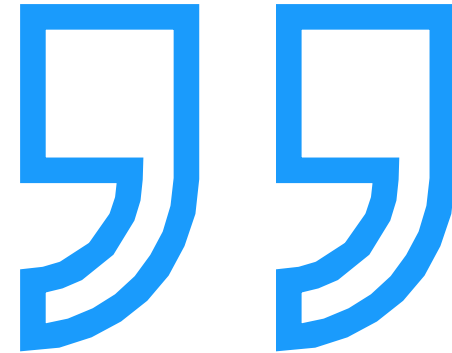


[B.Kramer & J. Bosman](#), 2018 (CC-BY)



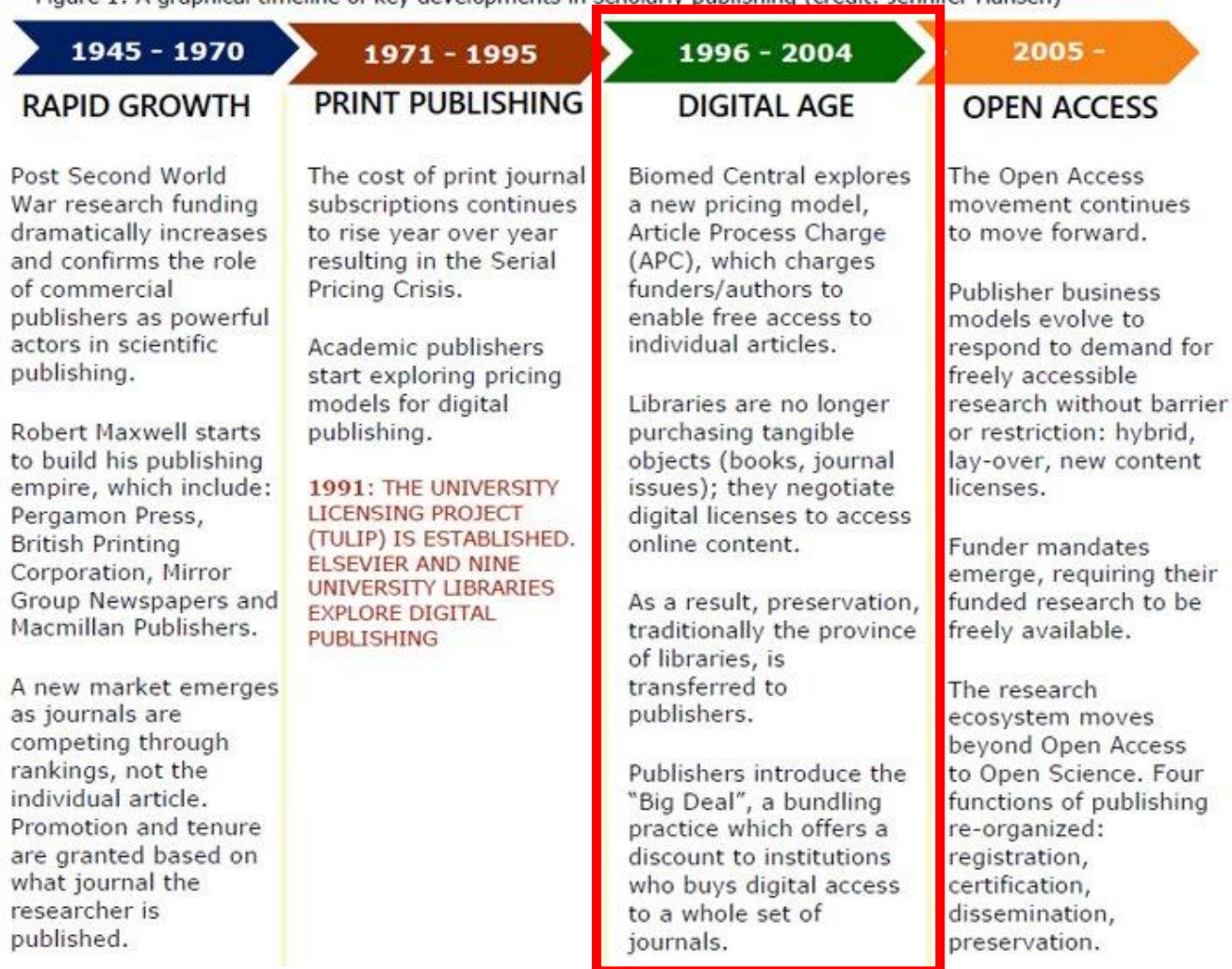
[The University of Winnipeg Library](#)

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.

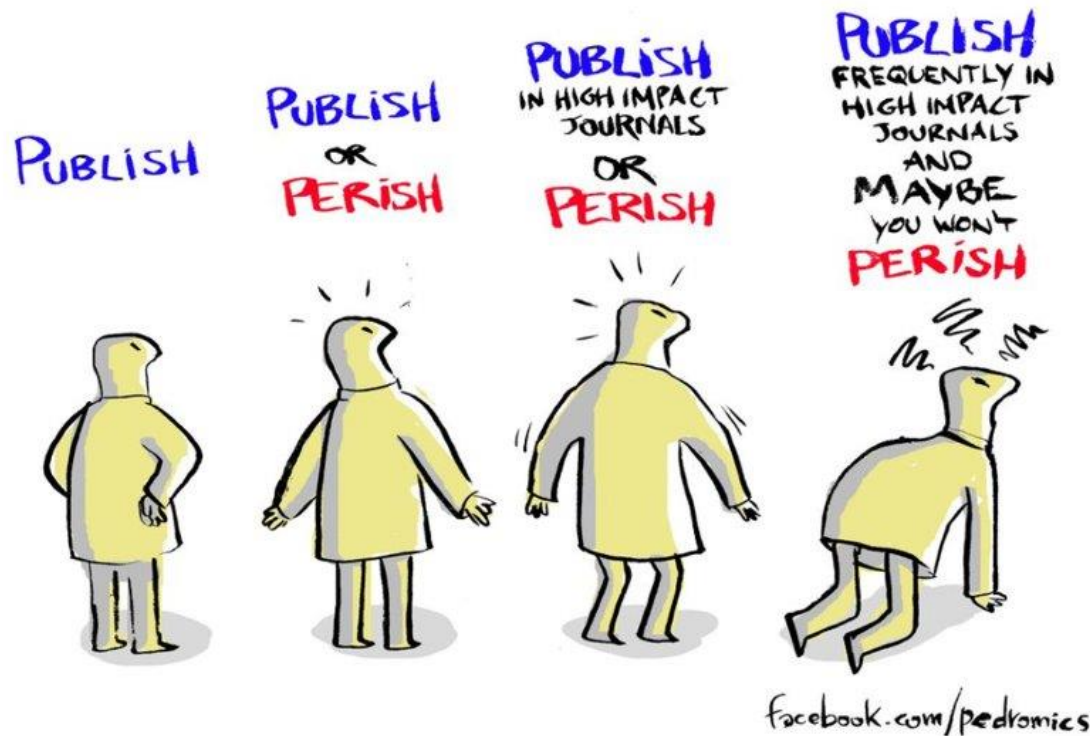


Robert Kiley, [Open access: how COVID-19 will change the way research findings are shared](#), 2020

Figure 1: A graphical timeline of key developments in scholarly publishing (credit: Jennifer Hansen)

European Commission, [Future of Scholarly Publishing and Scholarly Communication](#), 2019

THE EVOLUTION OF ACADEMIA



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



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 (the author does everything ...)

Access vs ownership

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

Paywall

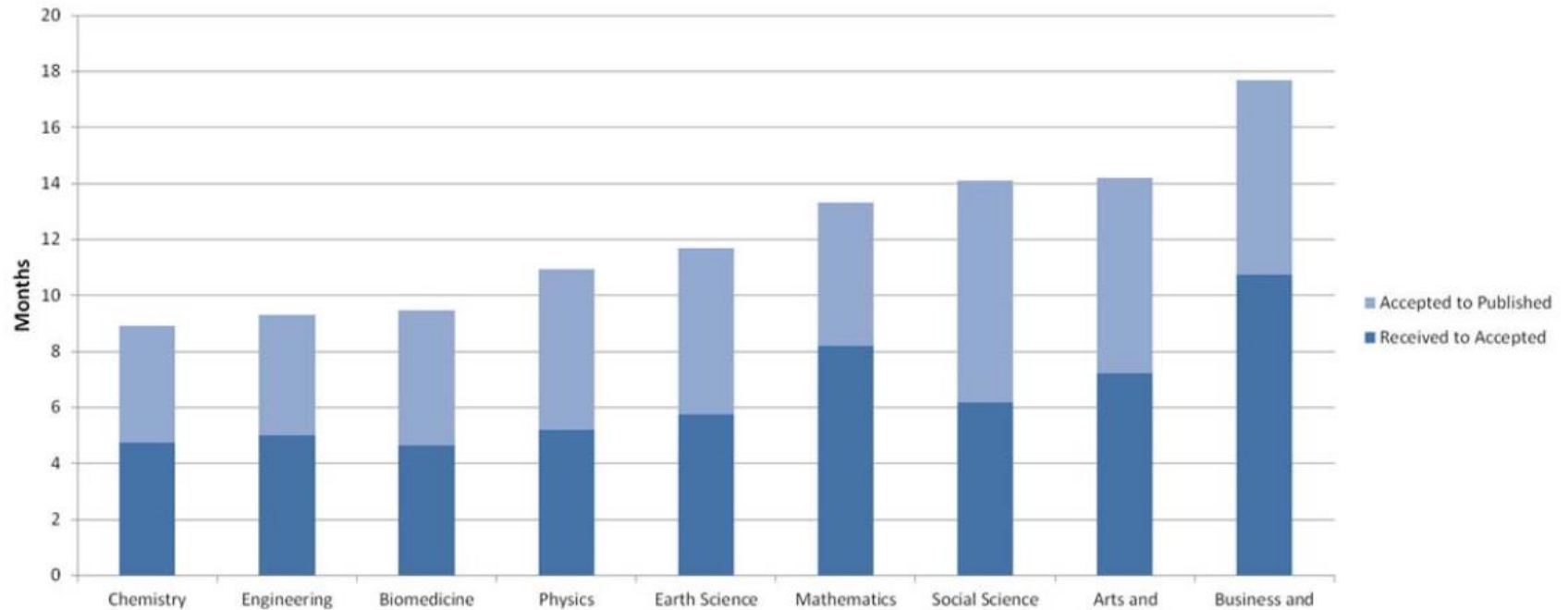
“We spend 1/3 of the total global research budget on publishing & communicating results that 99% of people cannot access.”

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

Double (...quadruple...) dipping

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





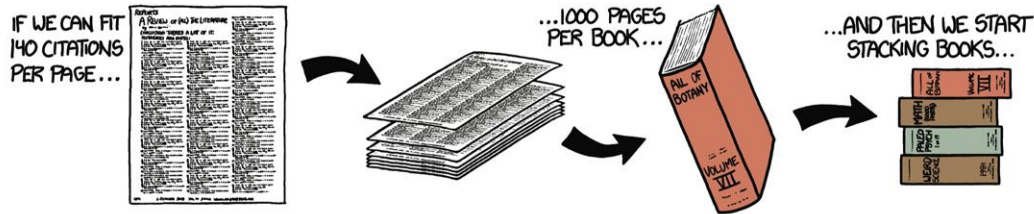
Publishing in scholarly peer reviewed journals usually entails **long delays from submission to publication**. In part this is due to the **length of the peer review process** and in part because of the dominating **tradition of publication in issues** [...].

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

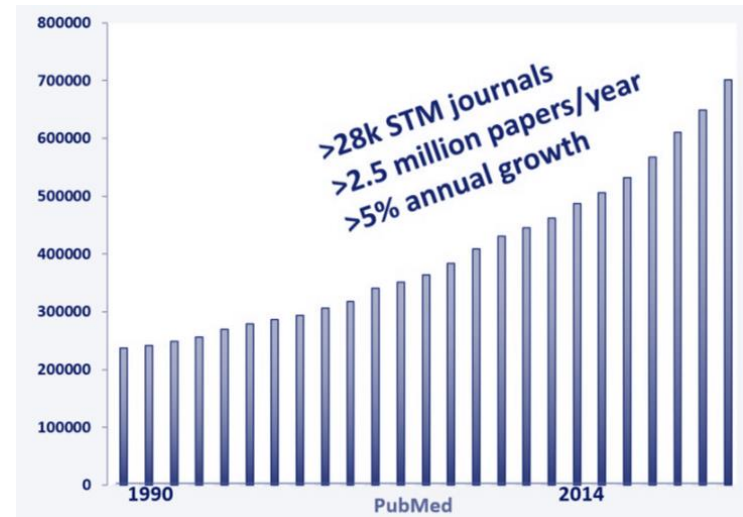
HOW MUCH SCIENCE IS THERE?

SCIENTIFIC PUBLISHING HAS BEEN ACCELERATING—A NEW PAPER IS NOW PUBLISHED ROUGHLY EVERY 20 SECONDS. LET'S IMAGINE A BIBLIOGRAPHY LISTING *EVERY* SCHOLARLY PAPER EVER WRITTEN. HOW LONG WOULD IT BE?



Most papers have more authors than readers

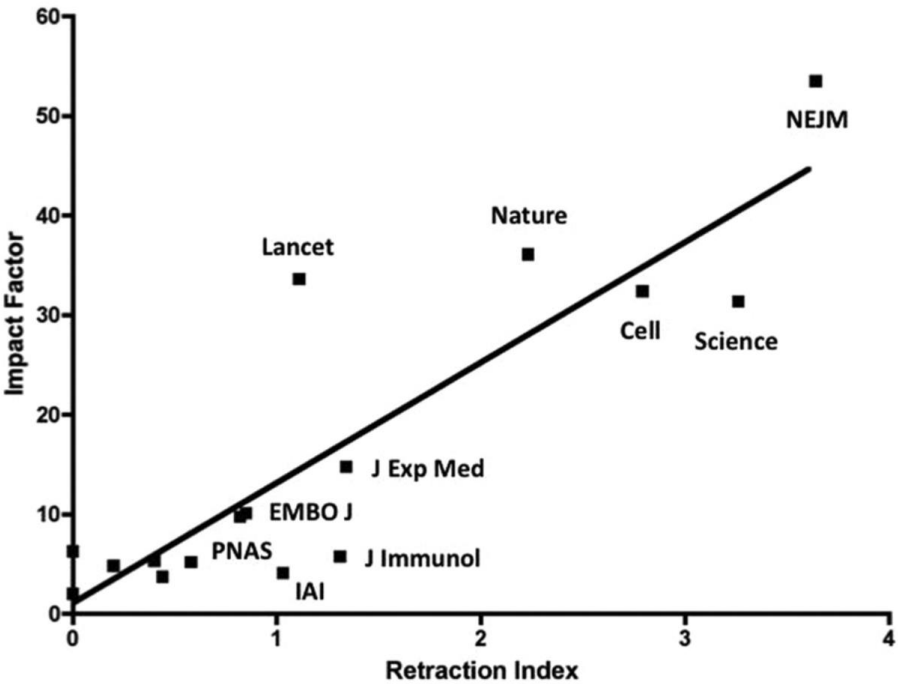
Half the literature is never cited



STM report, 2018

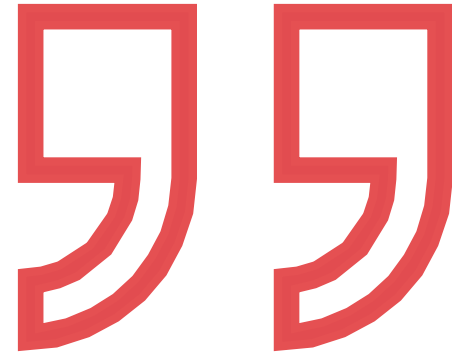
Correlation between impact factor and retraction index.

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)

Publications for professional communities

- guide or professional manual
- textbook material
- company information
- government publications
- professional conference proceedings
- research report or technical report
- working paper
- examination papers
- ...

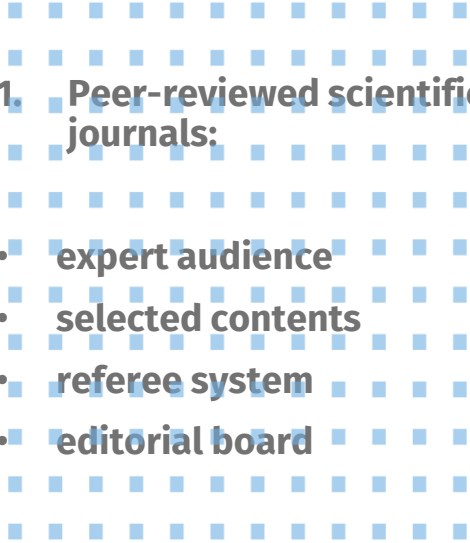
Grey Literature, others

- theses and dissertations
- patents and invention disclosures
- standards
- statistics
- video, image and sound resources
- Web resources
- database
- ...

Books (monographs)

- **book**
- **edited book**
- **conference proceedings**
- **special issue of a journal**

Journal article, book section or chapter



1. Peer-reviewed scientific journals:

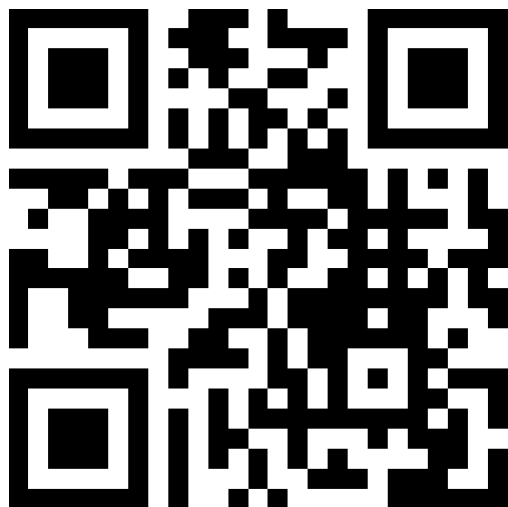
- **expert audience**
- **selected contents**
- **referee system**
- **editorial board**

2. Non-refereed scientific magazines:

- **non-expert audience**
- **scientific disclosure**
- **no referee system**
- **no editorial board**

Can you list the versions of a publication?

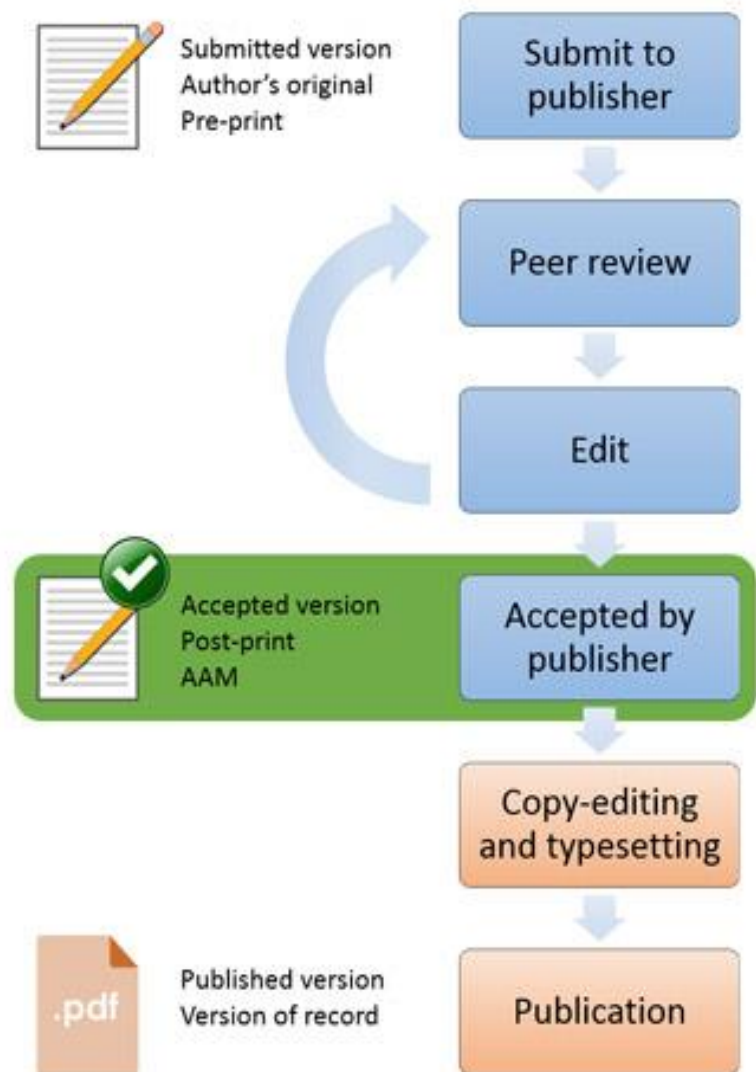
Go to www.menti.com and use the code
90 68 10 8





Can you list the versions of a publication?





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]

NISO-RP-R-8-2008

Pre-print

Any version of a journal article that is considered by the author to be of sufficient quality to be submitted for formal peer review by a second party.

The author accepts full responsibility for the article. [...] **Content and layout as set out by the author.**

It is also known as *Author's Original (AO), Submitted Version, Author's Manuscript*

Accepted
Manuscript

The version of a journal article that has been accepted for publication in a journal, after some review process.

A second party (the “publisher”) **takes permanent responsibility** for the article.

Content and layout follow publisher's submission requirements.

It is also known as *Author Accepted Manuscript (AAM), Post-print, Referred Version, Proof*

Final
version

A fixed version of a journal article that has been made available by any organization that **acts as a publisher by formally and exclusively declaring the article “published”**.

This includes any “early release” article [...], as long as it is citable via some permanent identifier(s). [...]

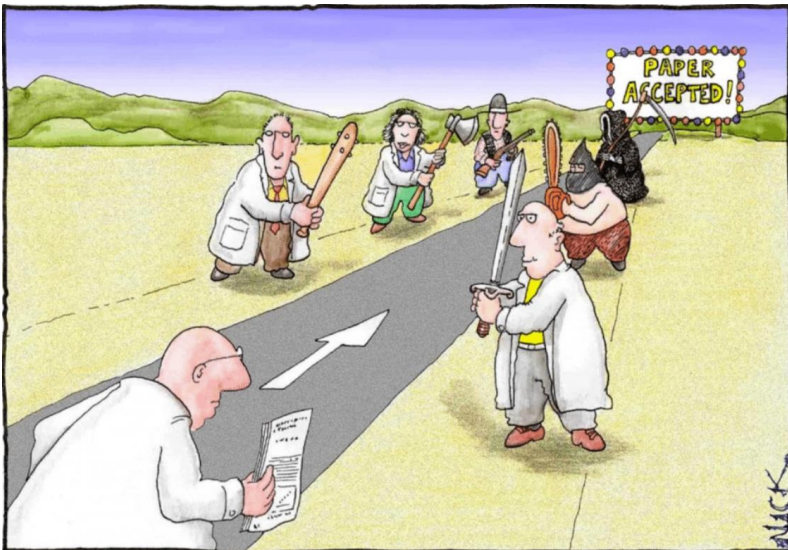
It is also known as *Version of Record (VoR), Publisher's Version.*

Scholarly communication > Peer Review

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.

Referees' evaluations usually include an explicit recommendation of what to do with the manuscript or proposal:

- to unconditionally accept the manuscript or proposal
- to accept it in the event that its authors improve it in certain ways
- to reject it, but encourage revision and invite resubmission
- to reject it outright



Types of peer-review

Single-blind review

the reviewers know the author's identity but not vice versa

Double-blind review

the reviewers and author are not aware of the other's identity

Transferable peer review

if a manuscript is not suitable for a journal the authors have the option to transfer the manuscript together with the reviewer reports to another journal.

Open Peer Review

the reviewers know who the authors are and vice versa

Openness and transparency are core values of science. As a manifestation of those values, a minimum requirement for publication of any scientific results must be the public submission of materials used in generating those results. As reviewers, it is our responsibility to ensure that publications meet certain minimum quality standard



[Peer Reviewers' Openness Initiative](#), version 2.1

Open peer review facilitates:

- having the reports available
- aiding reproducibility
- helping improve review writing
- improve trust
- help solving review crisis



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



Bibliometrics is the application of mathematical and statistical methods to books and other media of communication

Alan Pritchard, **Statistical Bibliography or Bibliometrics?**, 1969

[Journal of Documentation, 25(4), p. 348–9]



identifies the best journals of a specific discipline

defines the prestige of a specific journal

determines the impact of published research

evaluates

- scientific journals
- single researchers
- research groups



- Usage indexes
 - ✓ used to evaluate library collection / acquisition policies
- Peer-review
 - ✓ scholarly publication process
- Citation indexes
 - ✓ IF Impact factor
 - ✓ H-Index
 - ✓ Other metrics (Eigenfactor, SJR, SNIP)
- "Social" diffusion indexes
 - ✓ altmetrics



Scholarly communication > Bibliometrics > Impact Factor

- first bibliometric index (1961)
- a trademark (Web of Science, Clarivate Analytics) and published annually in the Journal Citation Reports (JCR, today Incites JCR)
- used to compare different journals within a specific disciplinary field (NO to assess individual researchers or institutions)
- a measure of the frequency with which the average article in a journal has been cited in a particular year
- used to measure the importance or rank of a journal by calculating the times its articles are cited
- IF calculation is based on a two-year period and involves dividing the number of times articles were cited by the number of articles that are citable.

Nature IF calculation #1 Multidisciplinary category

$$\text{2019 Journal Impact Factor} = \frac{74,521}{1,742} = 42.779$$

How is Journal Impact Factor Calculated?

$$\text{JIF} = \frac{\text{Citations in 2019 to items published in 2017 (40,796) + 2018 (33,725)}{74,521}}{\text{Number of citable items in 2017 (838) + 2018 (904)}{1,742}} = \frac{74,521}{1,742}$$

Welcome to Journal Citation Reports

Search a journal title or select an option to get started

Enter a journal name

Master Search

Browse by Journal

Browse by Category

Custom Reports

Science Robotics IF calculation #1 Robotics category

$$\text{2019 Journal Impact Factor} = \frac{1,476}{79} = 18.684$$

How is Journal Impact Factor Calculated?

$$\text{JIF} = \frac{\text{Citations in 2019 to items published in 2017 (629) + 2018 (847)}{1,476}}{\text{Number of citable items in 2017 (30) + 2018 (49)}{79}} = \frac{1,476}{79}$$



Half Pint Lab anecdotes ©

It was proposed in 2005 by Jorge E. Hirsch of the University of California at San Diego

It is one of the most important function in Scopus (Elsevier), but it is NOT a trademark index as IF

It quantifies an individual's scientific research output

It evaluates an author impact inside a specific scientific community on the basis of the number of his/her publications and citations obtained

It changes depending on the data source / database

The h-index is calculated by counting the number of publications for which an author has been cited by other authors at least that same number of times.

E.g., an h-index of 17 means that the scientist has published at least 17 papers that have each been cited at least 17 times. If the scientist's 18th most cited publication was cited only 10 times, the h-index would remain at 17. If the scientist's 18th most cited publication was cited 18 or more times, the h-index would rise to 18.

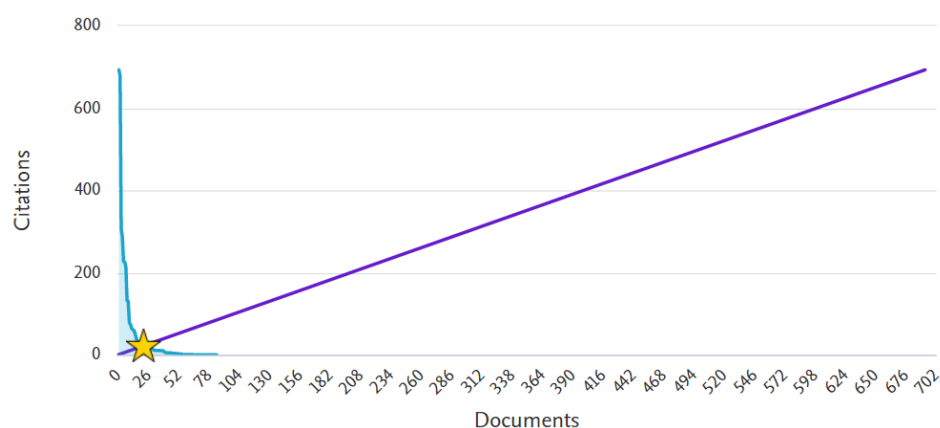
Documents ↓	Citations ↓	Title ↓
16	40	Fundamental Physi...
17	32	Before the Big Ban...
18	31	A computable univ...
19	30	Nature and the Gr...
20	30	On CCC-predicted ...
21	30	Republication of: C...
22	27	Orchestrated reduc...
23	23	Gravitational collap...

Source: Scopus

This author's *h*-index

23

The *h*-index is based upon the number of documents and number of citations.



Scholarly communication > Bibliometrics > other citational metrics



Eigen factor

Eigenfactor scores are measures of a journal's importance.

It can be used in combination with h-index. It quantifies the influence of periodicals in a similar way to Google's PageRank

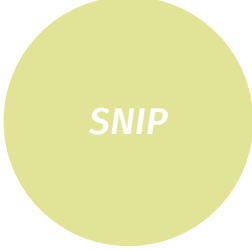


SJR

Scimago Journal Ranking evaluates journals, book series and conference proceedings.

It's based on the citational data in Scopus.

It's very similar to Eigenfactor.



SNIP

Source-Normalized Impact per Paper measures contextual citation impact by weighting citations based on the total number of citations in a subject field.

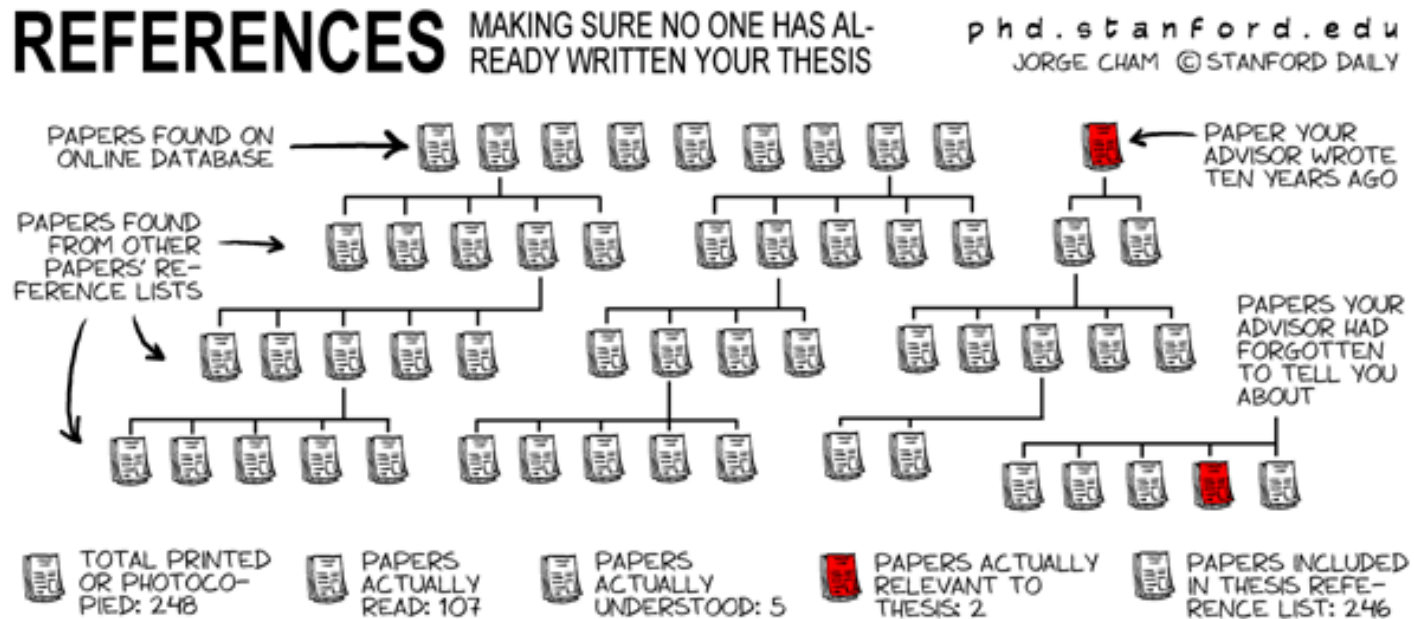
The impact of a single citation is given higher value in subject areas where citations are less likely, and vice versa.

Scholarly communication > Bibliometrics > Alt[ernative] metrics

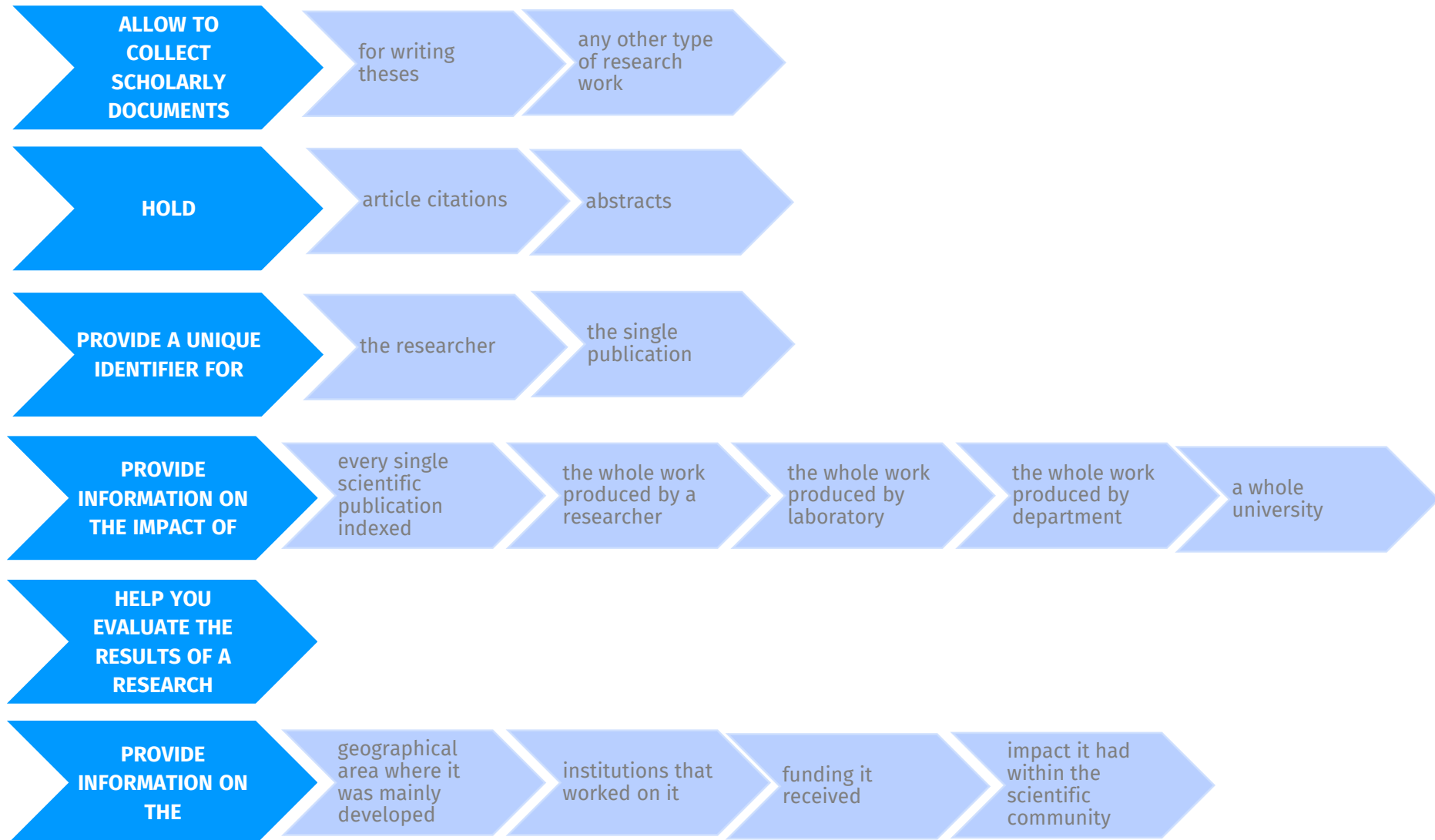


@portablebrain

- metrics and qualitative data that are complementary to traditional, citation-based metrics.
- can include:
 - ✓ peer reviews
 - ✓ citations on Wikipedia
 - ✓ discussions on research blogs
 - ✓ bookmarks on reference managers
 - ✓ mentions on social networks
- how often journal articles and other scholarly outputs are discussed and used
- incorporated into researchers' websites, institutional repositories, journal websites



- depends on data source
- is linked to a specific scientific community
- is influenced by anomalous citations
 - ✓ self-citation
 - ✓ homonymous authors
- depends on several citation aspects
 - ✓ number of co-authors
 - ✓ editorial type
 - ✓ language
 - ✓ average citational life of publications



Web of Science

It is a subscription-base, abstract and citation multidisciplinary database of peer-reviewed journal articles, books, conference publication, and other literature, powered by **Clarivate Analytics**

It is the only database to have the rights to calculate Impact Factor (+ many other citation indexes).

It contains 3 databases:

- Science Citation Index (SCI)
- Social Sciences Citation Index (SSCI)
- Arts and Humanities Citation Index (AHCI)

It provides the **ResearcherID**

Scopus

It is a subscription-base, abstract and citation multidisciplinary database of peer-reviewed journal articles, books, conference publication, and other literature, powered by **Elsevier**

It is also a bibliographic database, and it offers its users the possibility of carrying out bibliographic research and evaluating citations, by providing a wide range of specific indexes.

The citation data made available are processed by the scientific society SCImago.

It provides the **Scopus Author ID**

Scholarly communication > Academic search engines

Google Scholar



Coverage: approx. 200 million articles

Abstracts: only a snippet of the abstract is available

Related articles: ✓

References: ✓

Cited by: ✓

Links to full text: ✓

Export formats: APA, MLA, Chicago, Harvard, Vancouver, RIS, BibTeX

PROs

It is a free access search engine

Use the power of Google search

It contains a lot of data (also from open access archives)

The data is mixed, it also includes eg. Books

It also contains a greater amount of data for the humanities

CONs

Indexing is very poor

It is much less controlled than traditional databases

Duplications are very numerous

Coverage for older publications is not clear

Citation data are often biased



The world's largest collection of open access research papers

It's an academic search engine dedicated to open access research papers. For each search result a link to the full text PDF or full text web page is provided.

Coverage: approx. 136 million articles

Abstracts: ✓

Related articles: ✓

References: ✗

Cited by: ✗

Links to full text: ✓ (all articles in CORE are open access)

Export formats: BibTeX



Its mission is to provide more relevant and impactful search results using AI powered algorithms that find hidden connections and links between research topics.

Coverage: approx. 40 million articles

Abstracts: ✓

Related articles: ✓

References: ✓

Cited by: ✓

Links to full text: ✓

Export formats: APA, MLA, Chicago, BibTeX

Mendeley

It's a reference manager used to manage and share research papers and generate bibliographies for scholarly articles. It was purchased by the academic publisher Elsevier in early 2013.

It is a freemium software.

EndNote

It's a commercial reference manager used to manage bibliographies and references when writing essays and articles. It is currently produced by Clarivate Analytics (previously by Thomson Reuters).

It is a closed-source and commercial software.

Zotero

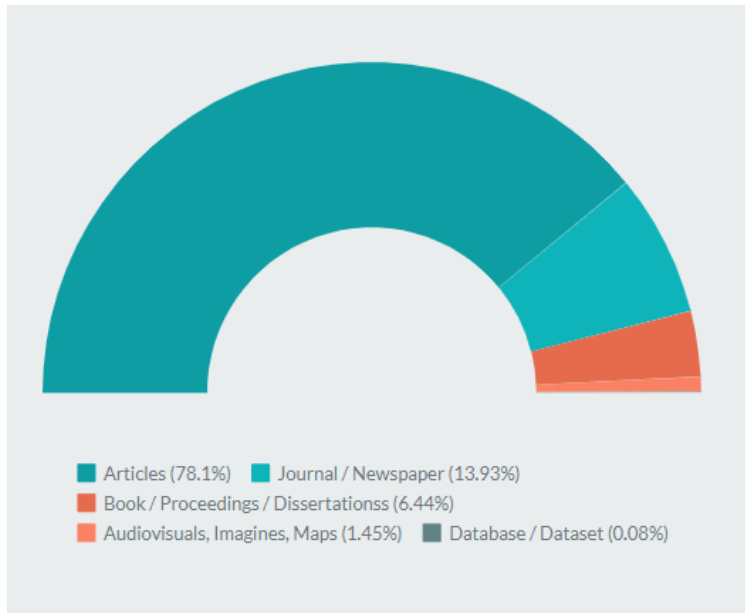
It's a reference manager used to manage bibliographic data and related research materials (such as PDF files). It includes web browser integration,

It is a free and open-source software.



Resources

**SBA UniGe provides a complete collection of
print and digital resources.**



Over the more than *1,500,000 books* owned by the Libraries, the University of Genoa subscribes to the most important *scientific databases* of all disciplinary fields:

- bibliographic and factual databases
- editorial platforms
- digital libraries
- online dictionaries
- other resources like databases



Search anything

Search All



ADVANCED SEARCH

All items



that contain my query words



anywhere in the record

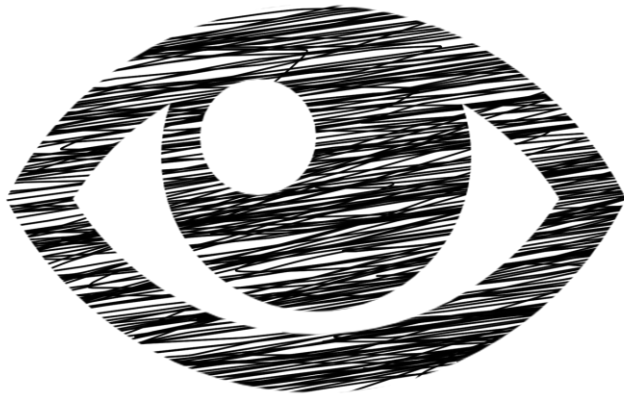


UNO per tutto provides a single interface to books, journal articles, e-books, e-journals, databases, audio and video of the SBA UniGe libraries

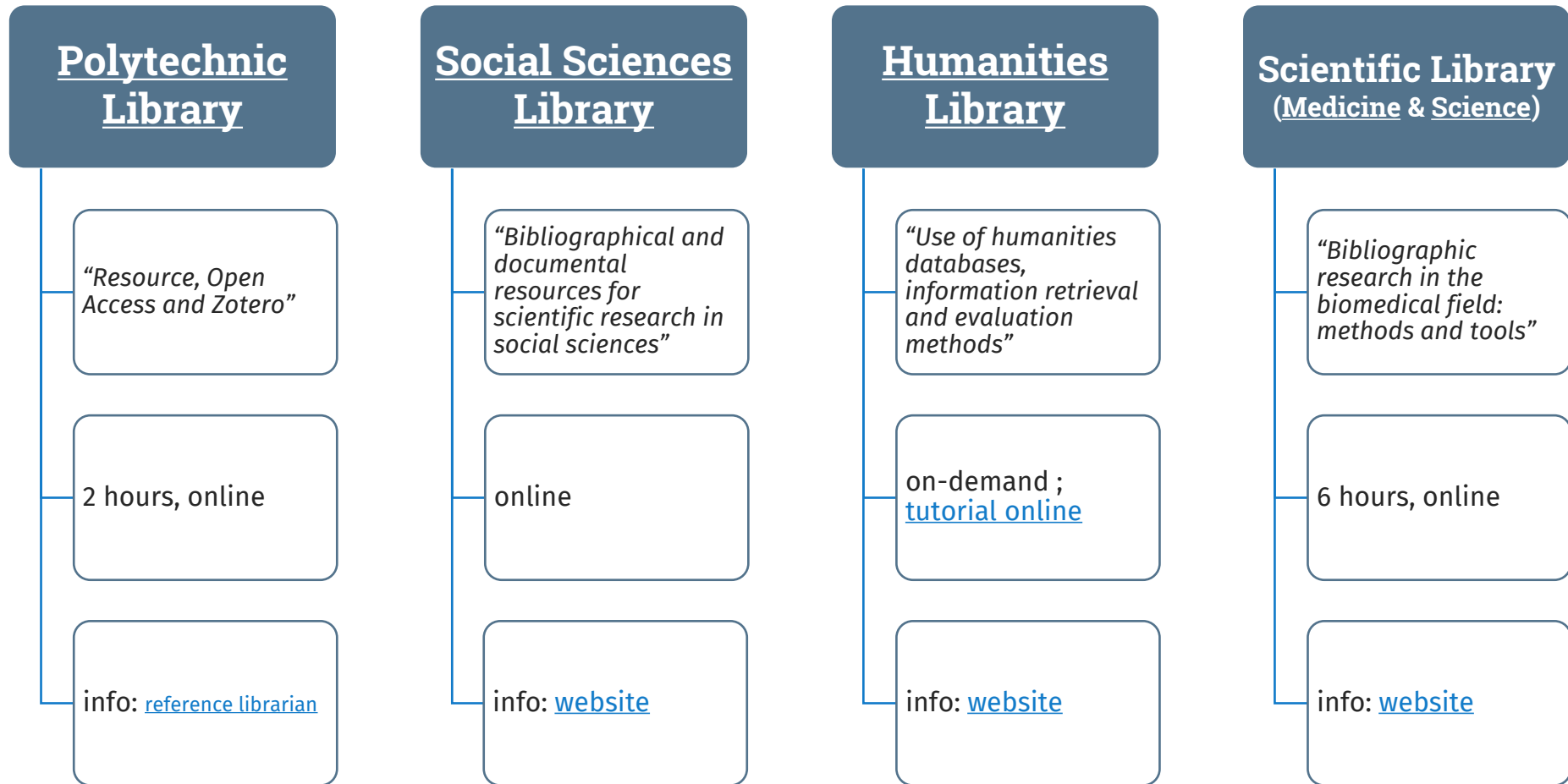
Here you can find:

- Bibliographic references
- Article full-text
- E-book full-text
- Video, Audio, images...

Information Literacy courses @ your library:



1. bibliographic information on resources and their availability
2. information on the optimal use of the discovery tools (catalogs, databases, websites ...)
3. support in the formulation of search strategies, for the elaboration and management of bibliographies
4. Training on reference manager and database use



An introduction to Open Science and Research Data Management

Break
We'll return in 5 minutes!

Anna Maria Pastorini

University Library System – Digital Library and Open Access Office

Module 1

Lesson 2: Rights management



Intellectual property



Author's rights and copyright



European & Italian context



Exceptions and limitations to rights



Authorship vs Ownership



Avoid Plagiarism



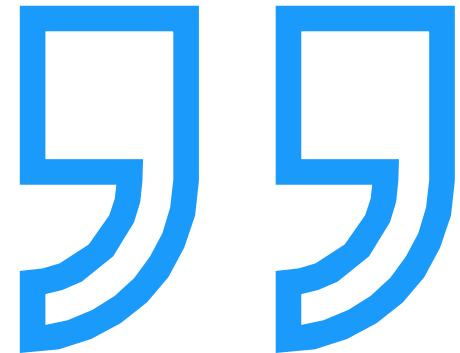
Open Access model



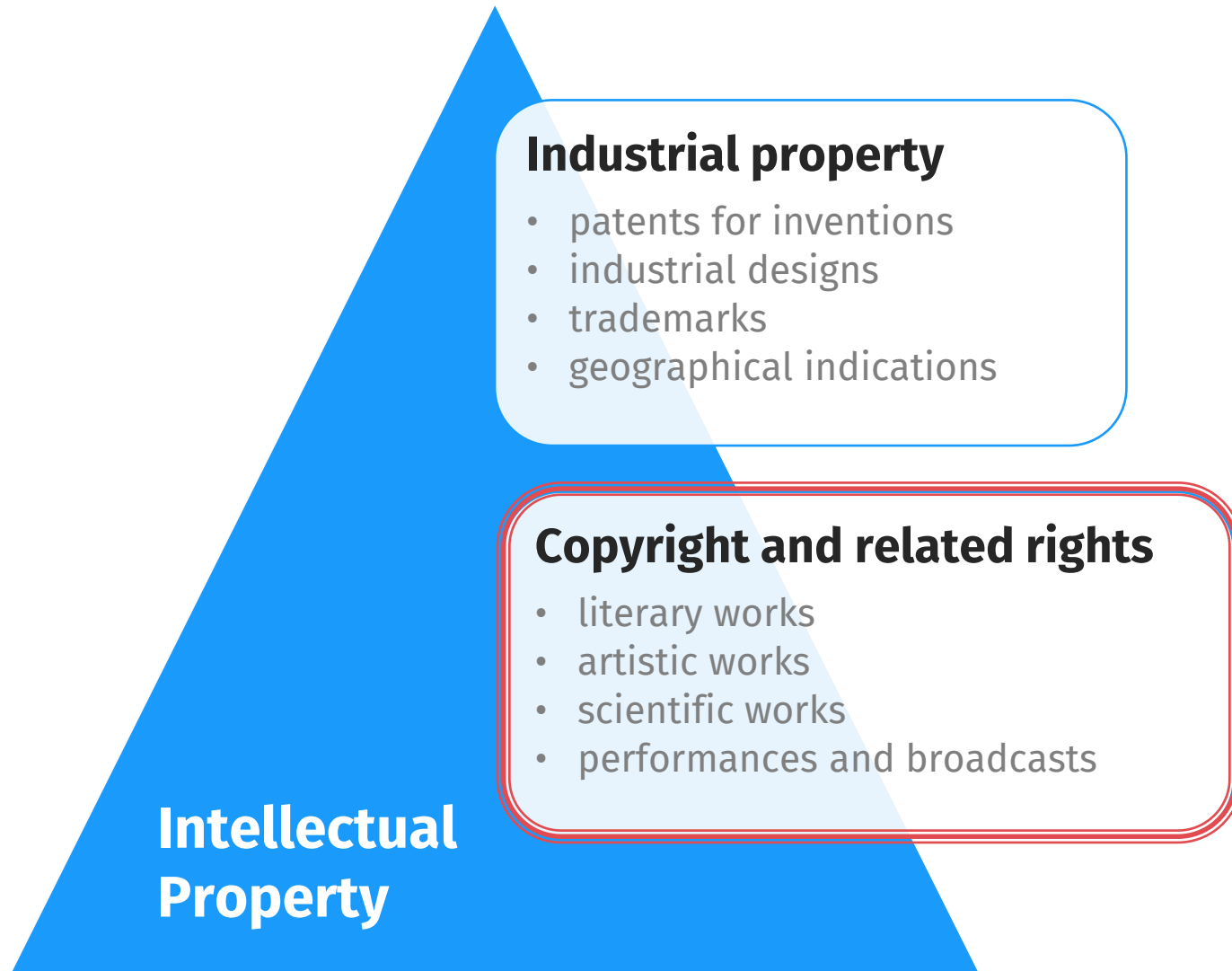
Open License for sharing contents

Intellectual property (IP) refers to creations of the mind, such as

- inventions
- literary and artistic works
- designs
- symbols, names and images used in commerce



World Intellectual Property Organization , [What is Intellectual Property?](#)



Intellectual property

Copyright and related rights

Industrial Property

Copyright

- Copyright is a legal term used to describe the rights that creators have over their literary and artistic works

Patents

- A patent is an exclusive right granted for an invention.

Industrial designs

- An industrial design constitutes the ornamental or aesthetic aspect of an article.

Trademarks

- A trademark is a sign capable of distinguishing the goods or services of one enterprise from those of other enterprises.

Geographical indications

- Geographical indications and appellations of origin are signs used on goods that have a specific geographical origin.

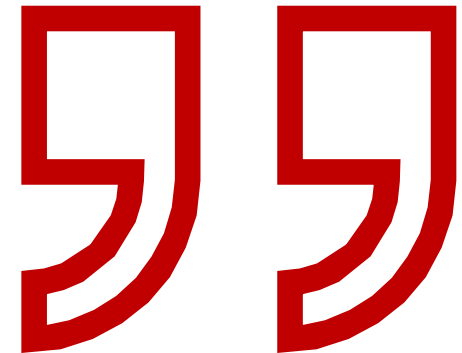
Copyright law deals with **particular forms of creativity**.

Copyright deals with the rights of intellectual creators in their creation.

Copyright law, however, **protects only the form of expression** of ideas, **not the ideas themselves**.

The creativity protected by copyright law is **creativity in the choice and arrangement of** words, musical notes, colors, shapes and so on.

Copyright law **protects the owner of rights** in artistic works **against those who “copy”**, that is to say **those who take and use the form in which the original work was expressed by the author**.



World Intellectual Property Organization, [Intellectual Property Handbook](#), 2004

#1

- 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

#1

- Intellectual Property is regulated by **different legal systems**
- Copyright is **different in each country**
- The different systems are harmonized by **WIPO activity** and regulated by
 - the Universal **Convention of Berna** for the Protection of Literary and Artistic Works
 - international agreements on Trade-Related aspects of Intellectual Property (TRIPs)

2

EU framework: 11 directives, 2 regulations

Italian Civil Code
art. 2575-2583

Legge 22 aprile 1941 n. 633
"Protezione del diritto d'autore e di altri diritti connessi al suo esercizio"
modificata da:

Decreto Legislativo 13 febbraio 2006, n. 118
"Attuazione della direttiva 2001/84/CE, relativa al diritto dell'autore di un'opera d'arte sulle successive vendite dell'originale"

Disegno di legge S1861 2007
"Disposizioni concernenti la Società italiana degli autori ed editori"

Legge 18 agosto 2000 n. 248

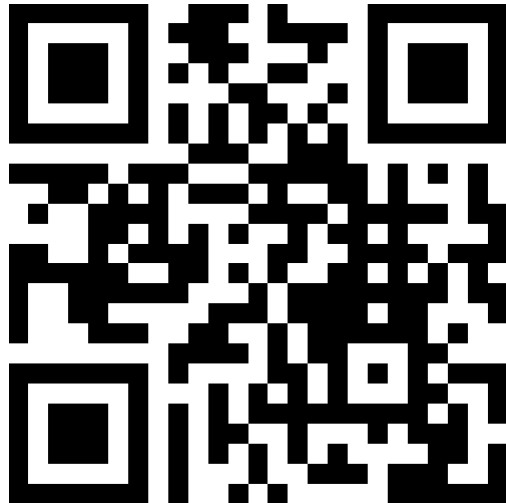
Legge 22 maggio 2004 n. 128

Legge 31 marzo 2005 n. 43

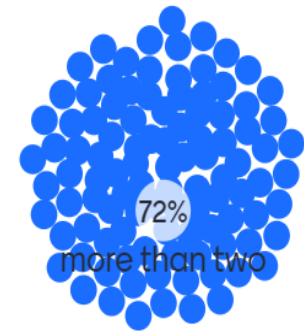
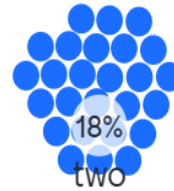
Proposta di Legge C. 395 Gallo 2019

How many author's rights are there?

Go to www.menti.com and use the code
90 68 10 8



How many author's right are there?



2

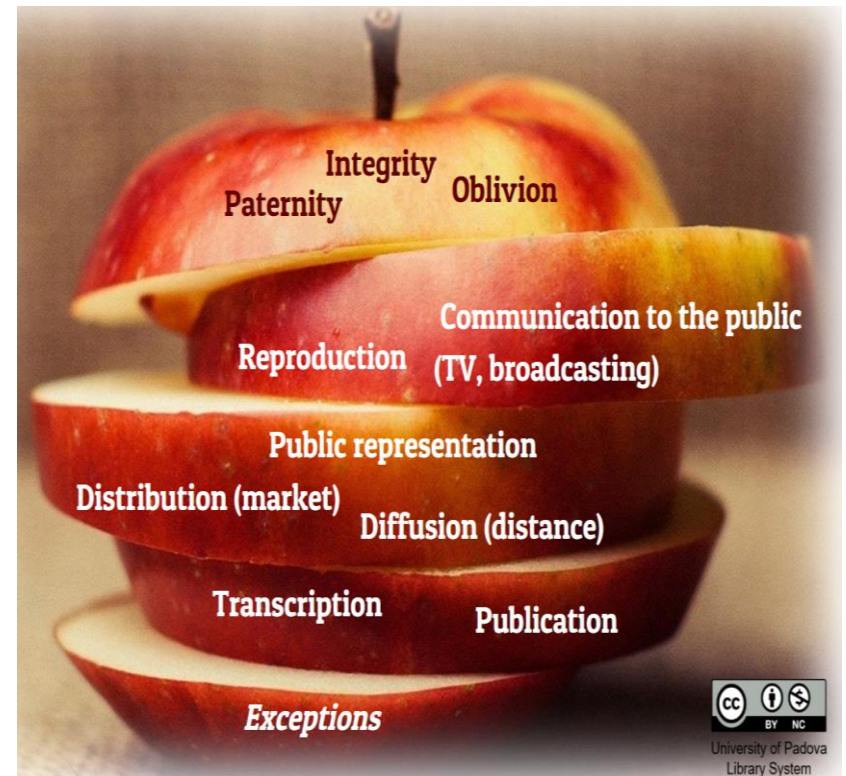
Moral Rights

- 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

Rights management > Copyright



2

Unpublished right

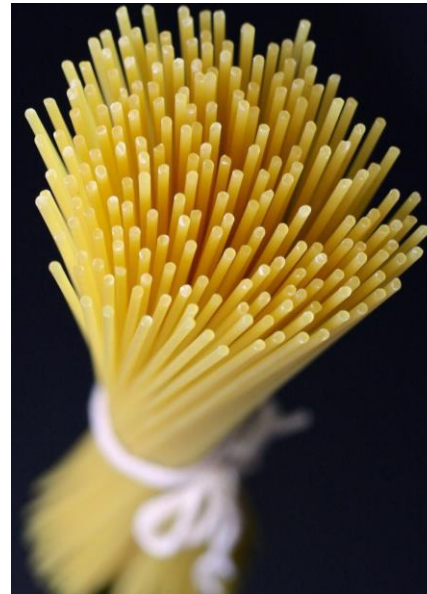
Only the author can decide if and when to publish his work

Afterthought right

It is the right to withdraw the work from sale in the event of serious moral reasons

Paternity right

The author has the right to be publicly indicated and recognized as the creator of his work, of which he can claim authorship at any time



Integrity right

The author has the right to object to any deformation or modification of the work that may damage his reputation

Publication right

it is the author's exclusive right to offer his work, for the first time, to the public's knowledge

Right of communication to the public

it is the author's exclusive right to disseminate and make his work available to the public (conferences, lessons...)

Transcription right

Right to perform, represent or play in public

Rental & Lending right

it is the author's exclusive right to authorize the transfer for use of his works - for a limited period for a economic or commercial benefit or for other purpose

Processing & modification right

any modification or transformation of a work must be authorized by the author of the work. (translation...)

Exceptions, limitations, fair use

permit limited use of copyrighted material without having to first acquire permission from the copyright holder to balance the interests of copyright holders with the public interest



Fair Dealing by [Giulia Forsythe](#) (CC BY-NC-SA 2.0)

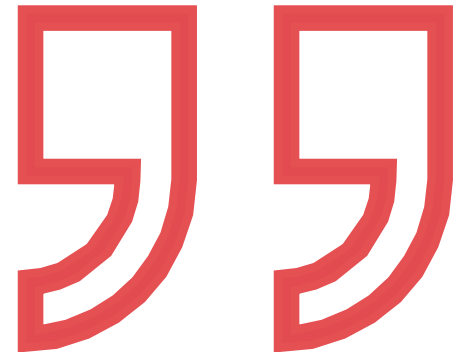
- scientific use
- library and archive use
- educational use / teaching
- private use
- users with handicap
- quotation right

Plagiarism:

presenting others' work without adequate acknowledgement of its source, as though it were one's own. **Plagiarism is a form of fraud.** We all stand on the shoulders of others, and **we must give credit** to the creators of the works that we incorporate into products that we call our own.

Some examples of plagiarism:

- a sequence of words incorporated without quotation marks
- an unacknowledged passage paraphrased from another's work
- the use of ideas, sound recordings, computer data or images created by others as though it were one's own



[Academic Integrity for Students at NYU](#), 2011



Check your work to avoid plagiarism with an

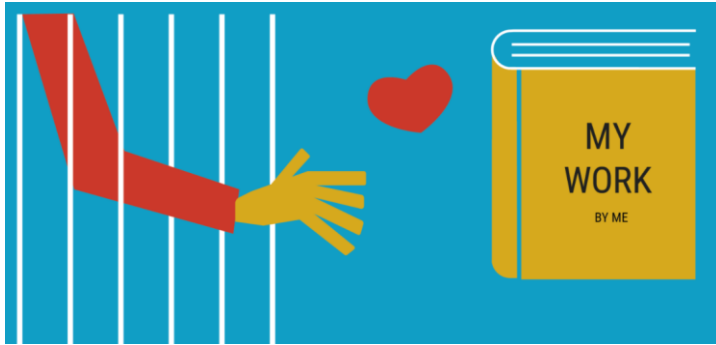
anti-plagiarism software.

UniGe uses [Compile.net](https://www.compile.net/) plagiarism service.

Check at your institution!

3

Who retains ~~moral and economic~~ rights?



Images from [Authorsalliance infographic](#), 2017

Authors

they need to be aware of current intellectual property and copyright laws **if they want to reuse their works after publication.**

Publishers

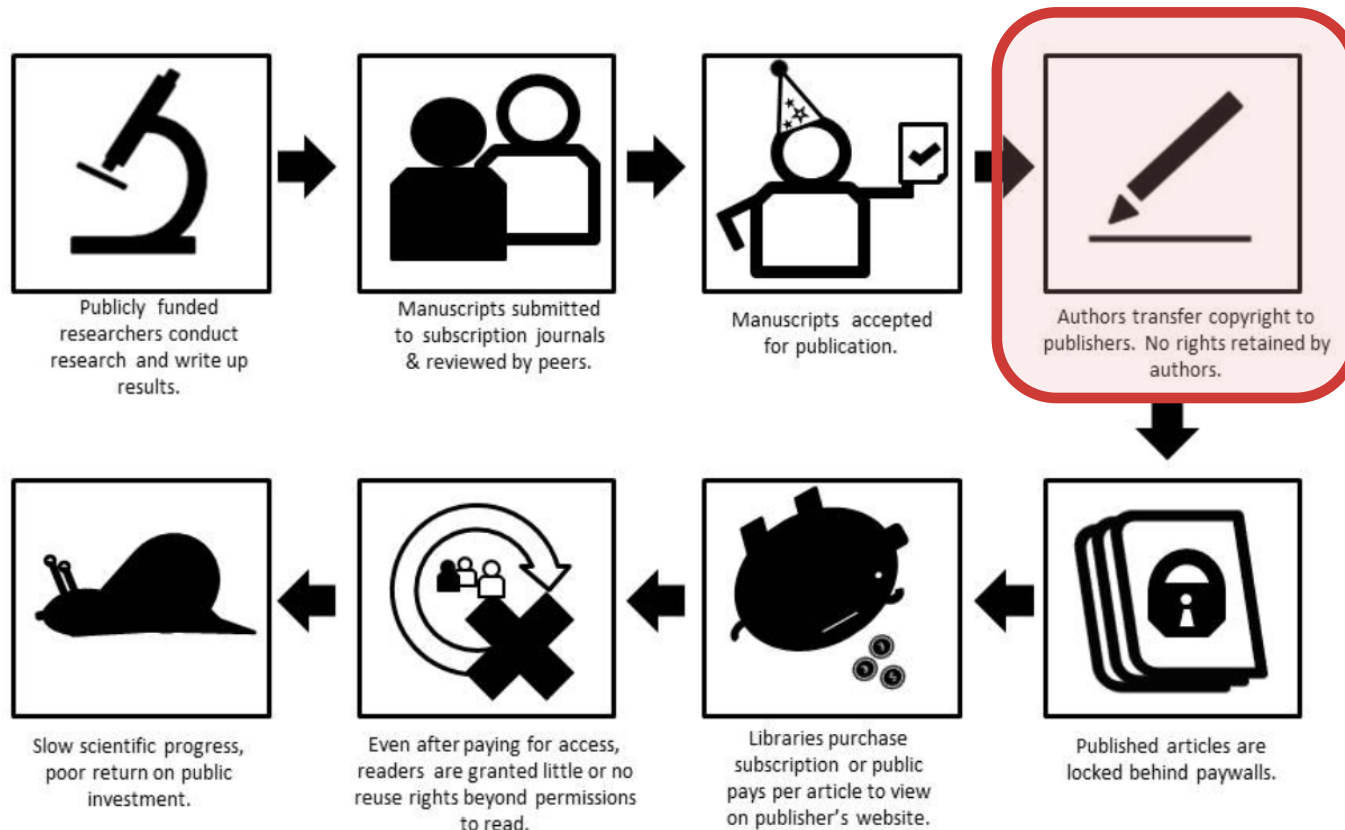
when author transfers the economic rights to a third party

“Scholarly journals publishers have traditionally required authors to sign over all of the rights when their article is ready for publication”.

Alma Swan and Leslie Chan, Open Access Scholarly Information Sourcebook , 2012

TRADITIONAL SUBSCRIPTION PUBLISHING

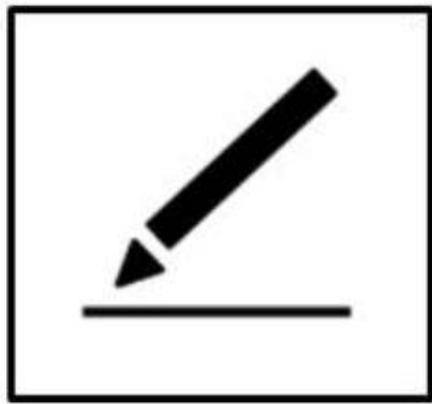
limited dissemination, economic efficiency & social impact



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.

The deeper problem is that we donate time, labor, and public money to create new knowledge and then hand control over the results to businesses that believe, correctly or incorrectly, that their revenue and survival depend on limiting access to that knowledge.

“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)

AUTHORSHIP vs OWNERSHIP

AUTHORSHIP

- refers to who made the work
- is a moral right (paternity): it can't be transferred, bought or sold

OWNERSHIP

- the author/inventor is the first owner of intellectual property
- it is an economic right and it can be TRANSFERRED, BOUGHT or SOLD

..TO A PUBLISHER

Many Scholarly or Academic Journals require authors to sign away their rights to their own articles

Intellectual Property and copyright ownership rests with the creative/author until there is a FORMAL WRITTEN TRANSFER of rights ...



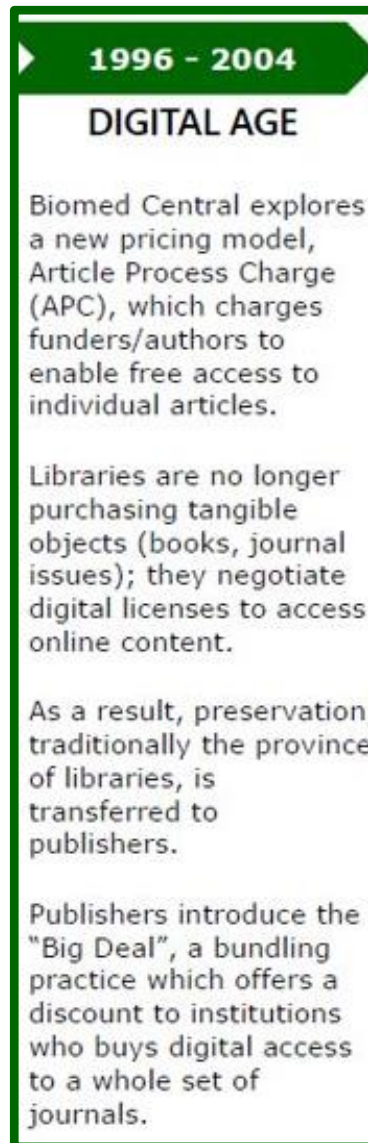
This is the TRADITIONAL business model of academic publishers:

- author transfers exclusive publication rights of his paper
- revenue of publishers is based upon providing paid access to the papers

...is there any other model?

... is there any other model?

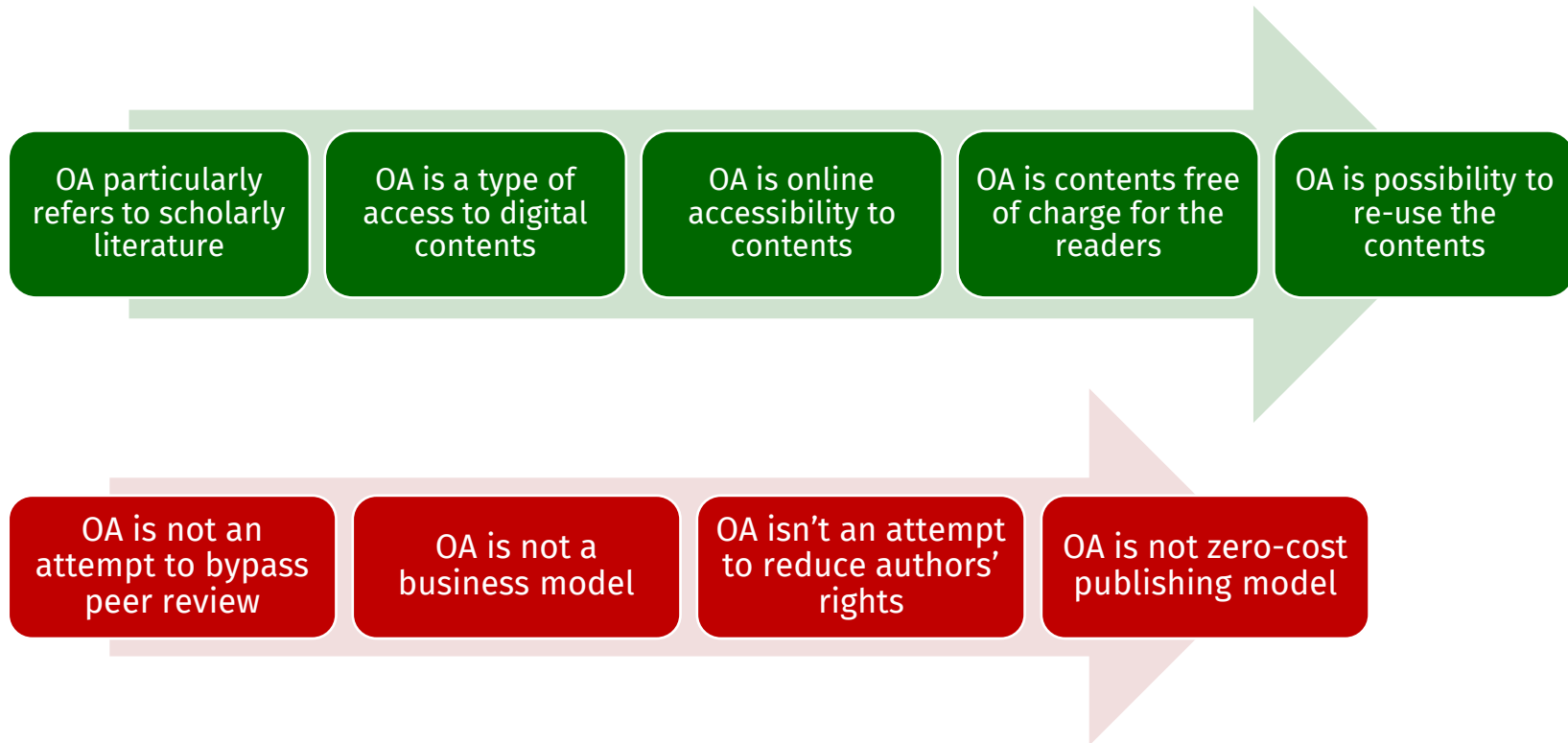
YES

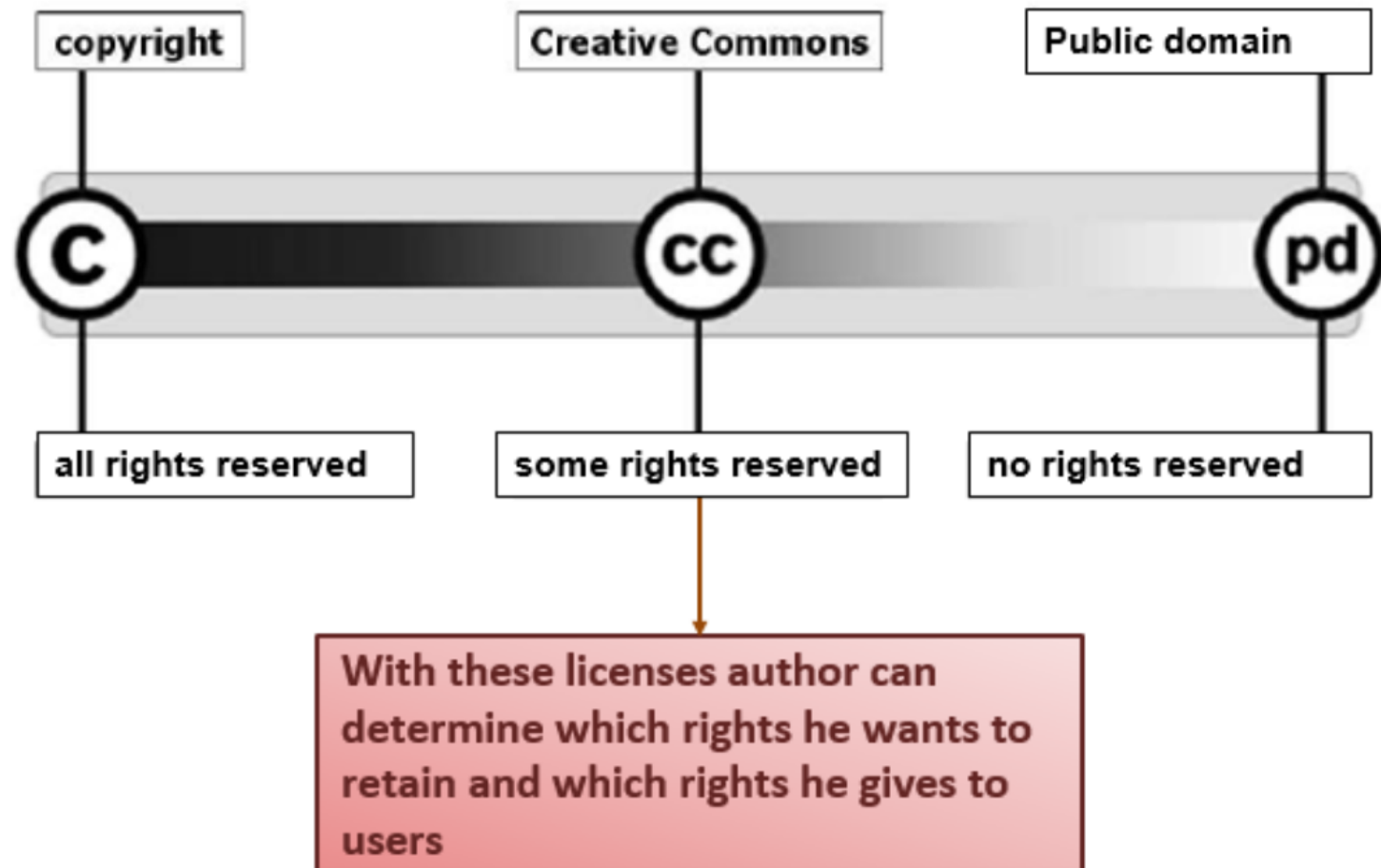


- new types of documents, technologies and editorial policies
- self-publishing and cooperative text sharing
- more dynamic revision processes
- self-archiving
- reduction of printing and distribution costs for publishers
- easy access to documents, interoperability, and reuse of content for readers

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)

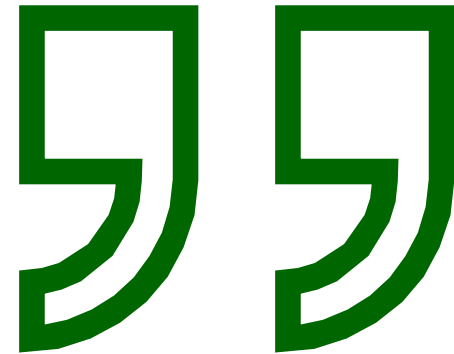




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From the re-user's perspective, the presence of a Creative Commons license on a copyrighted work answers the question, "***What can I do with this work?***"

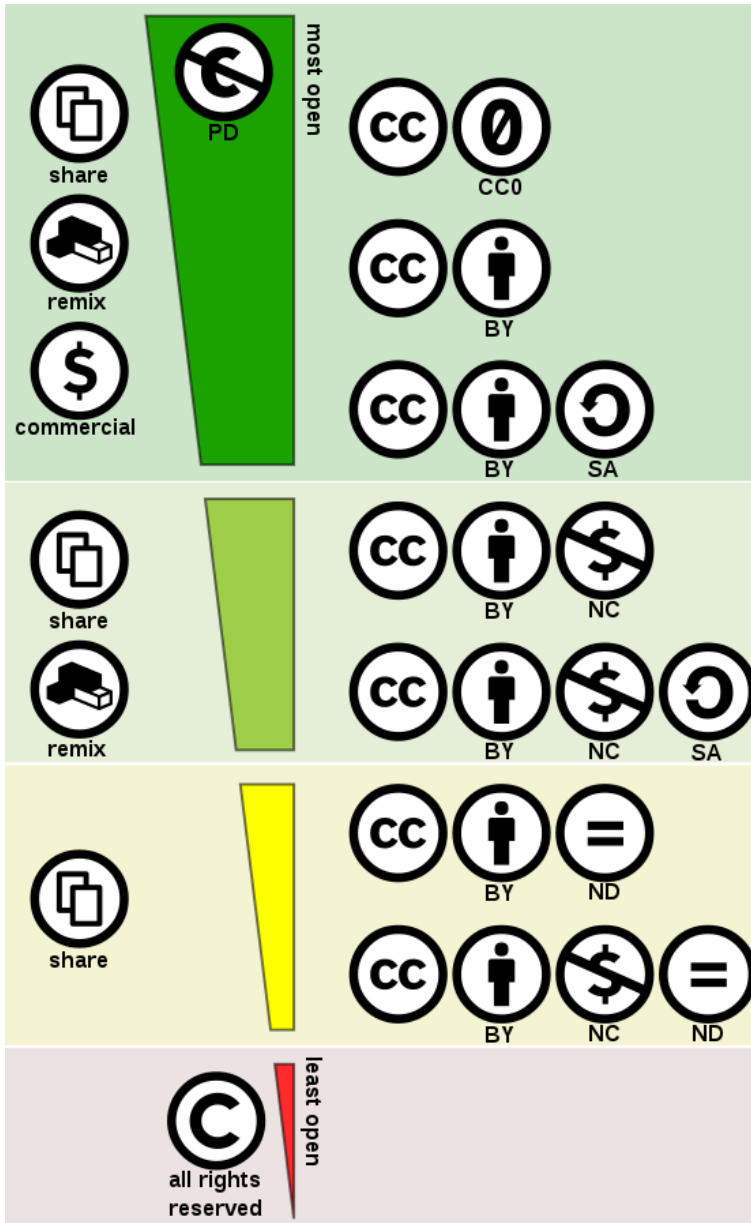


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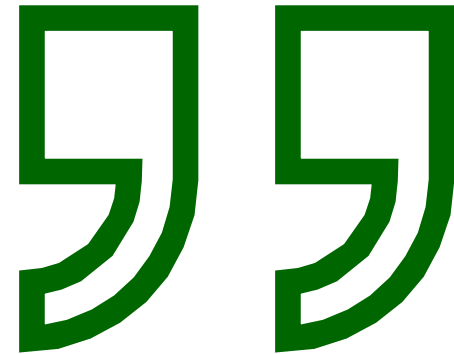


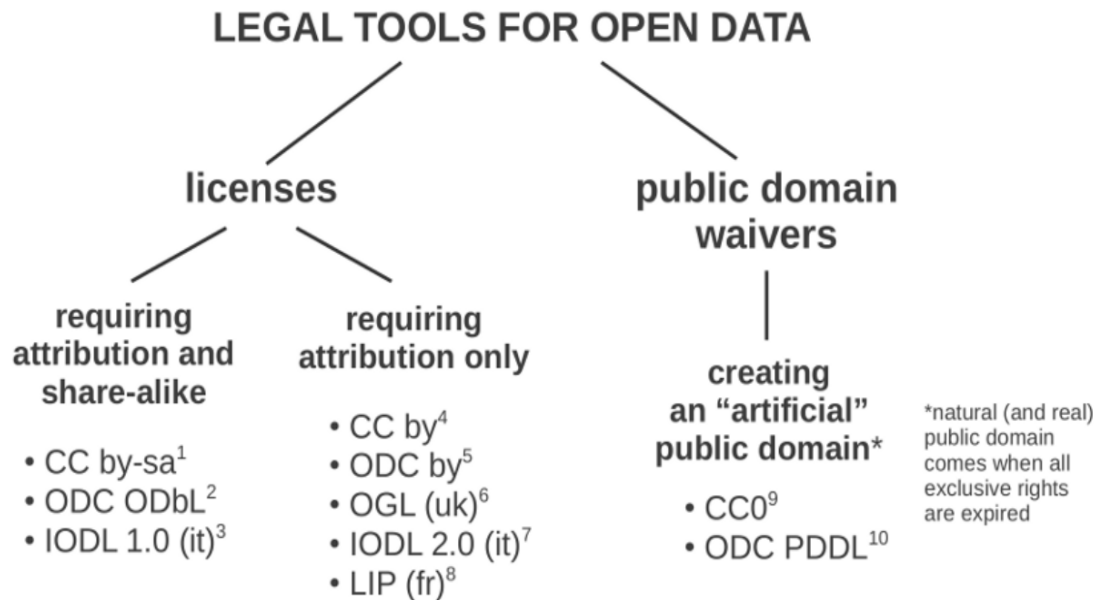
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Simone Aliprandi, [Il fenomeno open data : Indicazioni e norme per un mondo di dati aperti](#),

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