



More Open, better Science

Gina Pavone - SupraChem Days -14 October 2021

Gina Pavone

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- Research focus: Open Science and Open Access; Research Data Management
- OpenAIRE National Open Access Desk (NOAD) for Italy
- My background: data journalism



Our trip together today

1

Why

How to improve our contribution to science?

3

The problem

What are we evaluating?

2

What

What is Open Science?

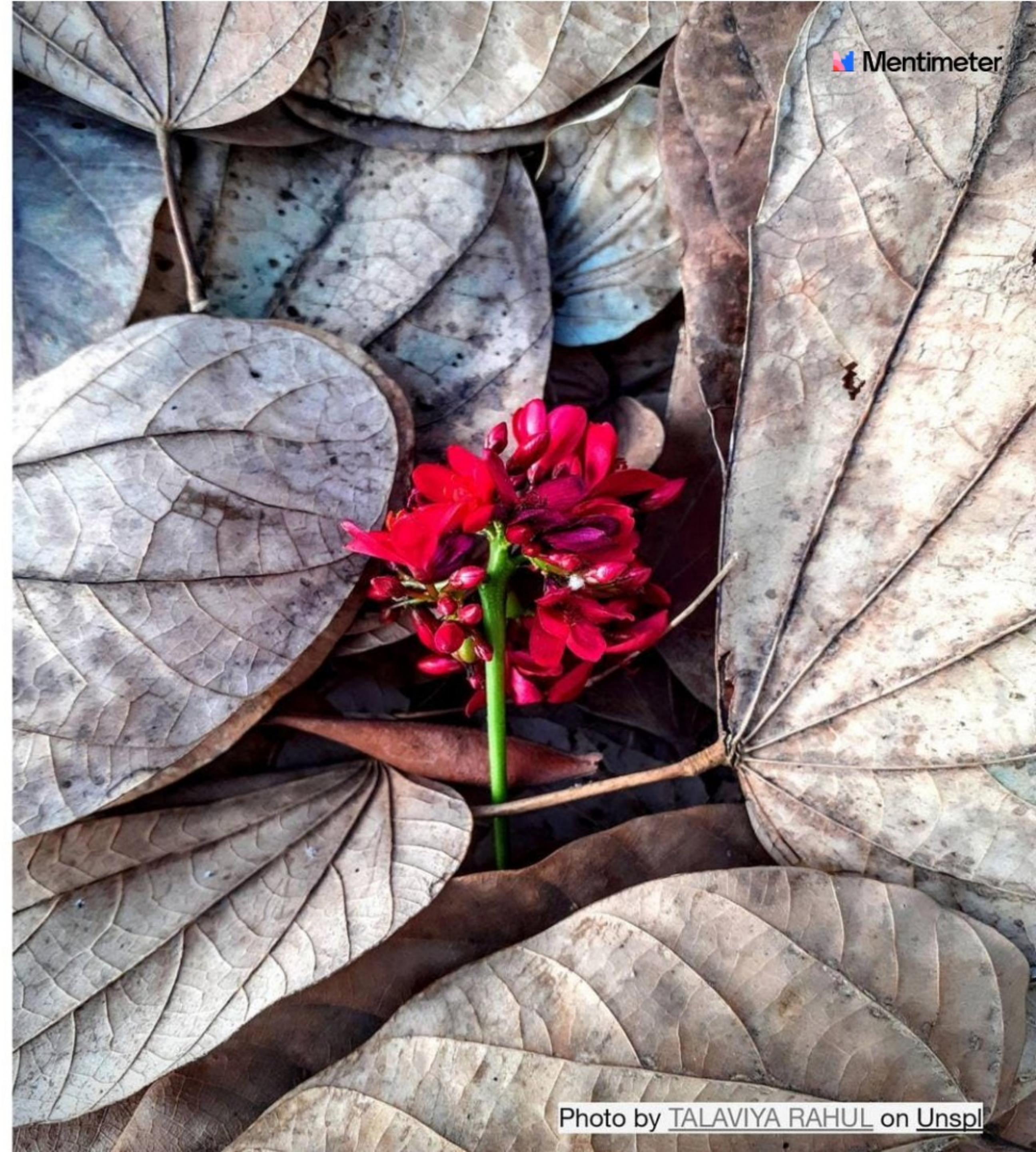
4

The solution(s)

Ideas at work!

We want good Science!

- robust
- collaborative
- transparent
- reproducible
- in good relation with society



What does the word 'publication' mean?

Nije znao šta bi pre uradio, darovao ili kazao. Trčao je preko doksata i kroz mušepke vikao onima u avliji:

— Kolo! Kolo!

I tek što je to izgovorio, strčao bi u avliju i sam. Prolazeći pored Mejre, doviknuo bi joj da već jednom ide iz njegove kuće, ali bi je odmah zaboravio, hvatao se u kolo i tu dipao nevešto i preterano.

Kad je bilo vreme, Huso je izvadio svoj srebrni sat iz nedara, vdeo da su dva sata blizu, još jednom oprčao sve i vratio se u Konak kako je i došao, da teži i razveseljava potištenog i brižnog Jusufa, svoga čuvara.

Kako je za tri dana Huso izlazio iz zatvora i sat u ruci, ali je njegov sat bio drugi. I pored toga, Huso je bio isti. I pored toga, Huso je bio isti. I pored toga, Huso je bio isti.

A uz pratnju svirke iz Kokošareve avlije, odmah do njegove kuće, Aprovizacija je svakog dana nastavljala svoj čudni ples, nastojeći da sa neko-

Dve kuće dalje od Aprovizacije držao je dućan Salihaga Meduselac. Duševan i veseo čovek, negda jak trgovac i dobar gazda, sad je bio upropačen ovim ratom. Dve su mu kuće izgorele za vreme borbi i u dva maha su mu vojske pljačkale dućan i magaz. Sad je sedeo u dućanu gotovo bez robe i mušterija. Bio je omršaveo i posedeo, ali uvek čist, sa nasmelijanim očima.

Na njegovom dućanu bi ugledniji ljudi sedeli i čekali kad imaju neki posao u Konaku ili Aprovizaciji. I sad sede dva postarija Turčina. Puše, ali kafe nemaju, i razgovaraju sa Salihagom. Kao ceo svet, i oni govore o Husi i njegovoj svadbi. Pređu na druge razgovore, ali ciganska svirka i dernjava vraćaju ih opet na to.

Došlo vrijeme da čaršija nastavi i da se cijeli svijet vrati na svoje. Svi su se vratili na svoje. Svi su se vratili na svoje. Svi su se vratili na svoje.

— Eiraun k'o eiraun. Opet će ti njega vidit' — kaže prvi gost.

— Pa baš to bismo i hteli da od vas čujemo. Mladac ne odgovori: ništa. Misliti da ga je pokušao, debeli čovek nastavi samouvereno razgovor slogove.

— Dakle, molim vas!

To je bilo rečeno još tvrde i surlje, na neki ton način, sa prizvukom nestripljenja i pretnje.

BENITO MUSOLINI

Hvata ga dremež. Kao da zemlja struji pod a to strujanje ga uspavljuje. Naslonjen na stropu starog graba, seljak spava i sanja. Sa i strazito, kao i svi ljudi dobrih živaca, i su snovi retki.

Neko dobro vreme nastalo u Dika voljevo, širina, svaki blagoslov i obilje, noću prijatno, nije za sve seljake, njega i njegovu kuću. U kući nema zaludnih ruku ni neposlušnih sinova mlad i zdrav kao nekad. Ono malo što se, proširilo i zaokruglilo, kad ni u koga ne rodi. Čuje se mir ne zna gdje šta ima.

Svuda na svetu se događa da se istaknute ličnosti i stvari od opće važnosti izobličuju i uveličavaju po novinskim člancima i zagrejanim mogovima dokone provincije, koja tako voli da drugima pripisuje svojstva kojih samag nema. U Italiji izgleda da je to redovan slučaj: dobre ljudi i događaji vrlo često postaju legende, a ne nego što i udu u istoriju.

— Stani! Znaš li ti da iz da se za krv ide u Vidin il' n — Ne znam ništa. Ubij i jaanim glasom.

Mlinar je tada govorio r ljiivo, po svoj prilici sasvim p mah zatim čulo se otimanje, i — Ne! Ubij ga, pa...

Tu se ponesoše preko vod manju, a kraja na kraj. U d se njihovi glasovi i postajali lajući se sa muklim rsk.

Tek tada se trgnuo d odvojio od vrelih dasaka i stoh. Česti kak

sjesti kako treba. U toj mucu sam zaboravio i nerazumljivi razgovor iz mlina. Sta dijete neće zaboravit? Ali sam dugo zaziro od vodenice i klonio se toga kraja. Mlad sam bio i lud, i nisam znao ono što ću tek dočnije, prolazeći svijetom i po narodu, razabrati: da taj davo melje, kuška i šapuče po cijelom svijetu, svukud pomaio, a ne samo u mlinu spod Graovika.



publication

/ˌpʌblɪˈkeɪʃ(ə)n/

noun

the preparation and issuing of a book, journal, or piece of music for public sale.

"the publication of her first novel"

Similar:

issuing

announcement

publishing

printing

notification

reporting



- the action of making something generally known.

"the publication of April trade figures"

- a book or journal issued for public sale.

plural noun: **publications**

"scientific publications"

Similar:

book

volume

hardback

paperback

title

work

tome

opus



What is a scientific publication intended for?

To share improvements in a specific field

Sharing of results and, above all, how they are achieved

It's intended to share knowledge and discovery with the world

sharing knowledge with the others

It aims at sharing a scientific progress to the world community

Sharing knowledge with the other scientists

Something that can give us information, application and most important guidelines to assess reproducibility (a pillar of scientific method)


World View | [Published: 29 September 2021](#)

How positioning students in the professional physics community leads to a more inclusive community

[Martha-Elizabeth Baylor](#) 

[Nature Reviews Physics](#) (2021) | [Cite this article](#)

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Perspective | [Published: 28 September 2021](#)

Visualizing big science projects


[Katy Börner](#) , [Filipi Nascimento Silva](#) & [Staša Milojević](#)

[Nature Reviews Physics](#) (2021) | [Cite this article](#)

39 [Accesses](#) | **8** [Altmetric](#) | [Metrics](#)

Abstract

The number, size and complexity of ‘big science’ projects are growing – as are the

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Sections

[Figures](#)

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[Abstract](#)

[Code availability](#)

[References](#)

And in an increasingly international and cross-disciplinary context?

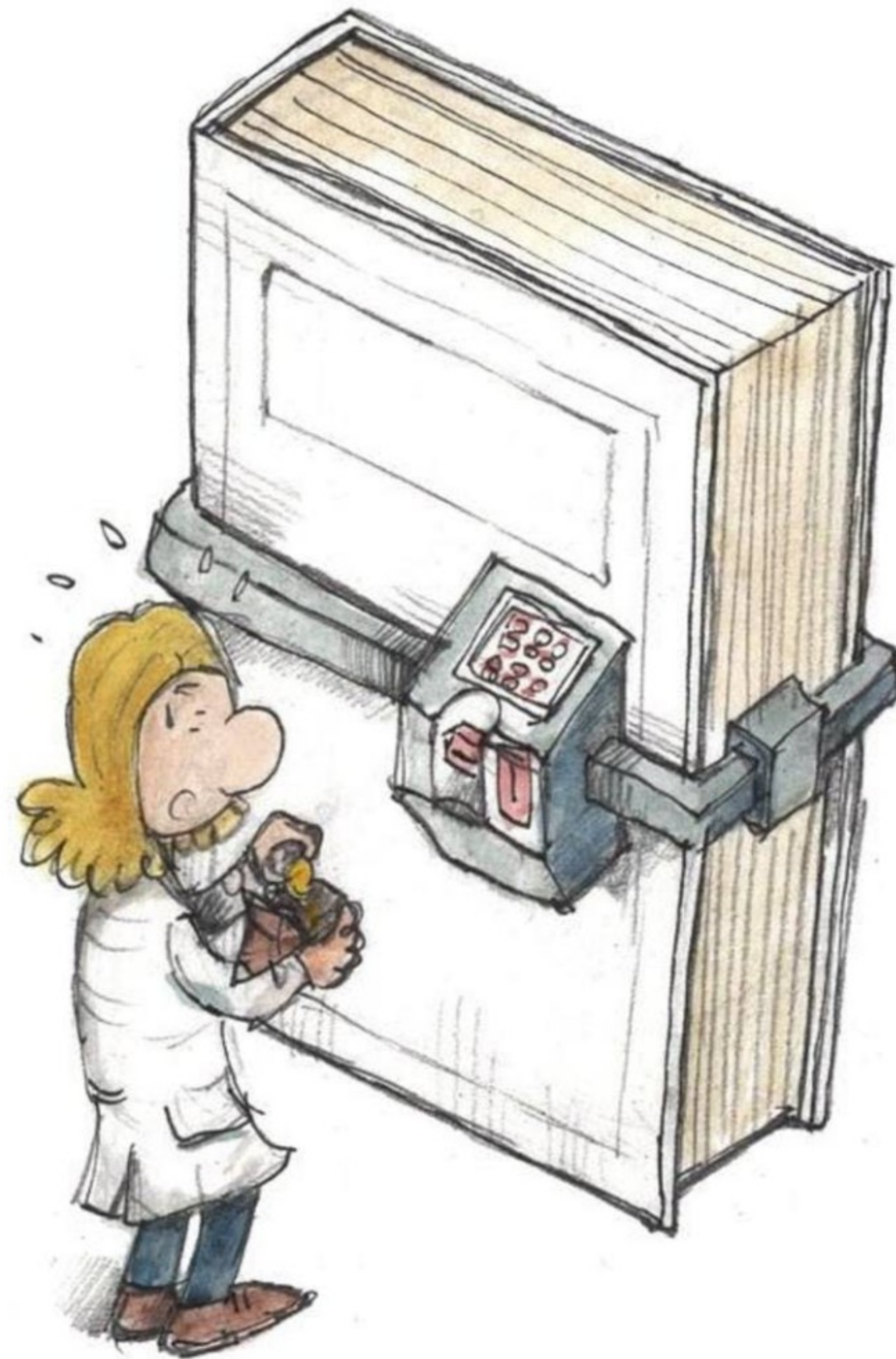
10 billion \$

the estimate of the global
annual spending on
academic journals
throughout the world.

https://pure.mpg.de/pubman/faces/ViewItemOverviewPage.jsp?itemId=item_2148961

Knowledge, behind a paywall

One of the problems of the
traditional scholarly
communication system



$$\sum_{n=0}^{\infty} \int_0^1 \frac{(-1)^n x^{2n}}{n!} dx = \sum_{n=0}^{\infty} \frac{(-1)^n}{n!} \left. \frac{x^{2n+1}}{2n+1} \right|_0^1$$
$$= \sum_{n=0}^{\infty} \frac{(-1)^n}{n! (2n+1)}$$

numerisch berechnen!

Es gilt: $\int_0^1 e^{-x^2} dx = \sqrt{\pi} \quad (\text{Laplace 1782})$

$$\sum_{n=0}^{\infty} \int_0^1 \frac{(-1)^n x^{2n}}{n!} dx = \sum_{n=0}^{\infty} \frac{(-1)^n}{n!} \left. \frac{x^{2n+1}}{2n+1} \right|_0^1$$
$$= \sum_{n=0}^{\infty} \frac{(-1)^n}{n! (2n+1)}$$

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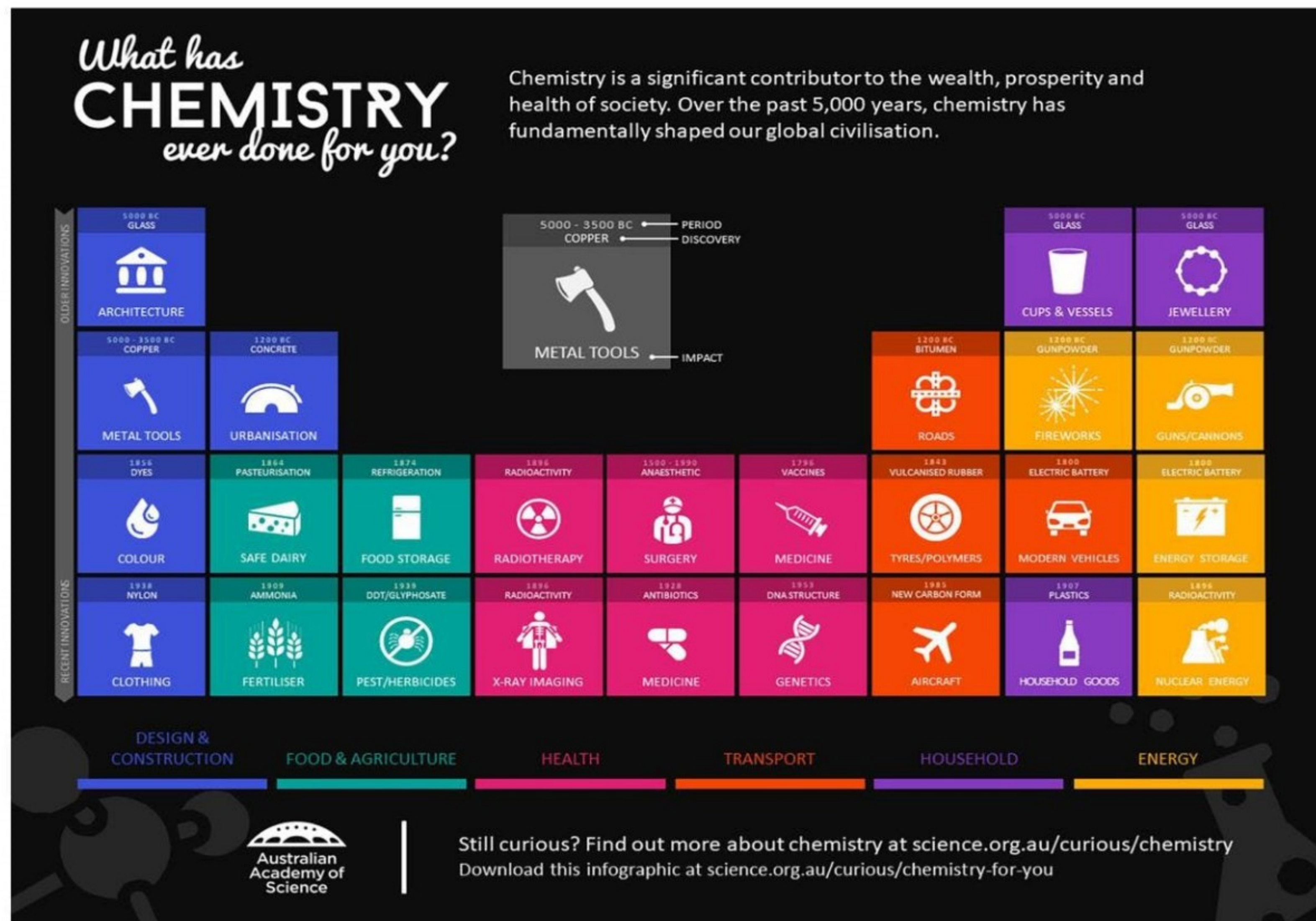
Evidence:
think on **University**

Where do resources come from?

- Most part of the resources for science are publicly funded
- Science is in society and is intended for society...



Science is all around in society



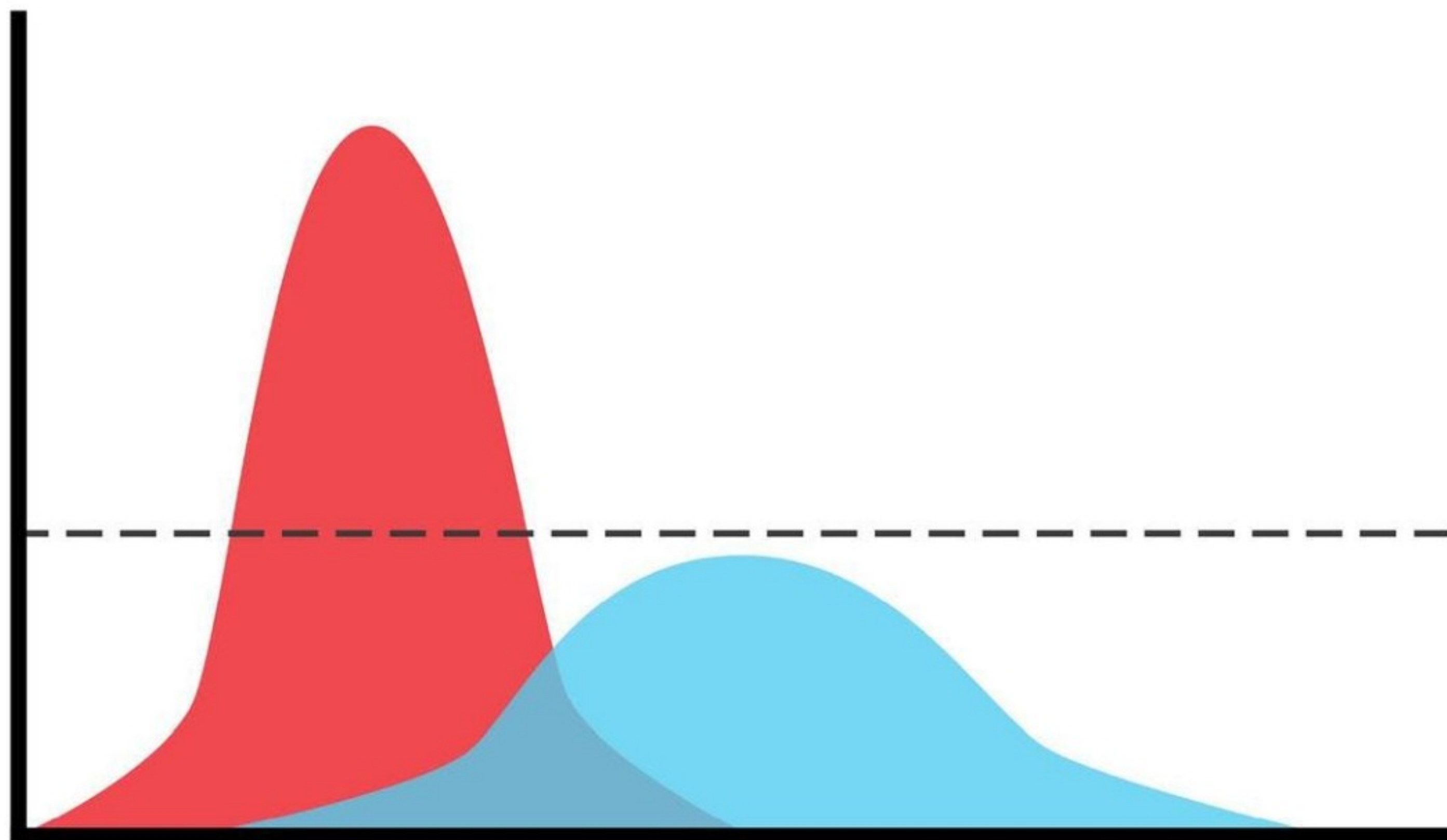
<https://www.science.org.au/curious/chemistry-for-you>

The case of the pandemic



hangzhou jianggan, Zhejiang, China - Getty Images

Curves, data, models...everyday life also for non experts!



The urgency to open research results

Press release | 16 March 2020

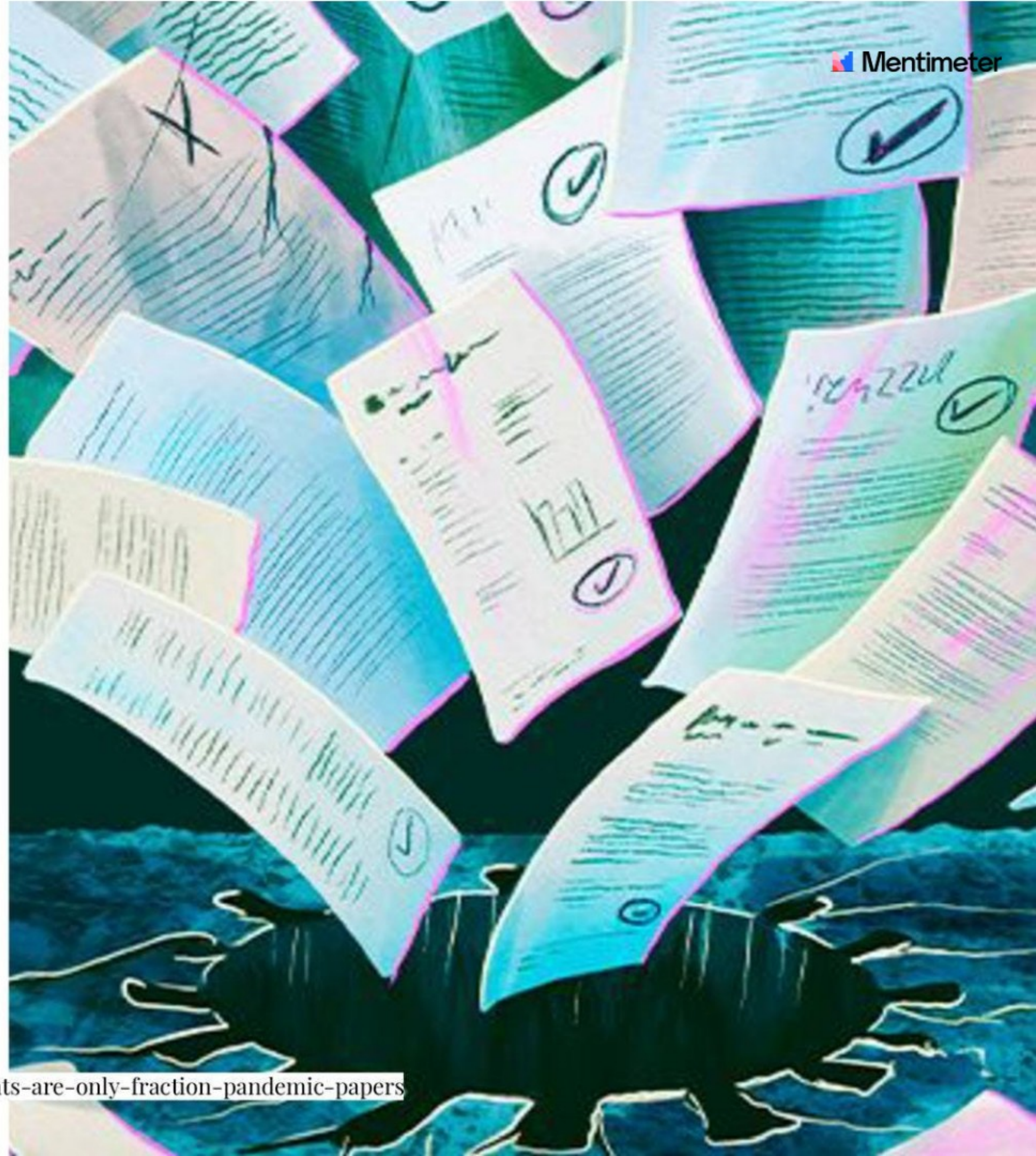
Publishers make coronavirus (COVID-19) content freely available and reusable

More than 30 leading publishers have committed to making all of their COVID-19 and coronavirus-related publications, and the available data supporting them, immediately accessible in PubMed Central (PMC) and other public repositories. This will help to support the ongoing public health emergency response efforts.

<https://wellcome.ac.uk/press-release/publishers-make-coronavirus-covid-19-content-freely-available-and-reusable>

**“But nearly 2 years later,
hopes for a wholesale
revolution are fading.”**

- Much of that literature is still available for free, but access to the underlying data is spotty.
- In September 2021 some articles are no longer free to read.



Why open is not the default mode?



Scientific journals are
subscription-based

Your institution pays for:

- your work (as an author)
- your work (as reviewer)
- access to the results of your work
(you do not own anything!)





Researchers relinquish their copyright to publishers/journals

An industry like no other

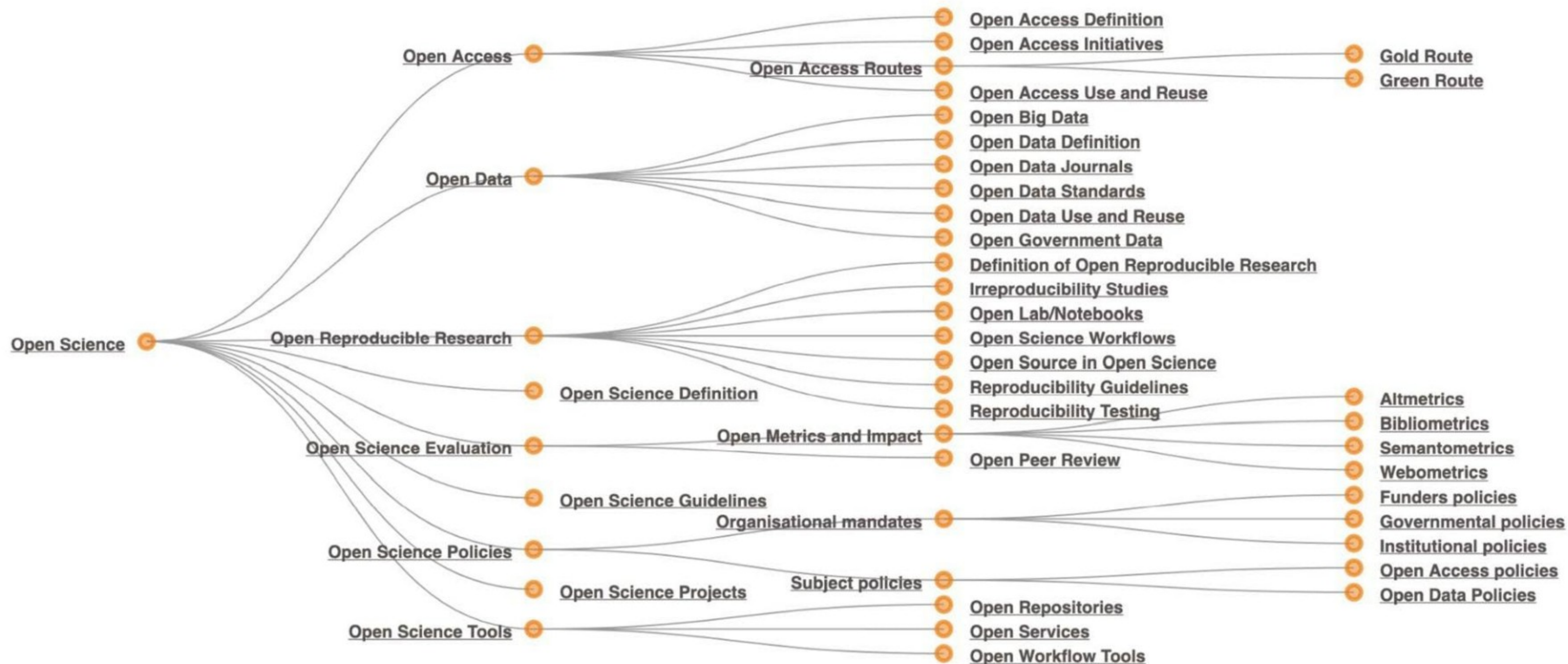
In 2010, Elsevier's scientific publishing arm reported profits of £724m on just over £2bn in revenue. It was a **36% margin** – higher than Apple, Google, or Amazon posted that year.



What is Open Science?

Well, many many things...

Open Science is an “umbrella word”



Open Science components

Open as much as possible
each step of the research
activity

[Unesco Open Science brochure](#)



Components of Open Science

Open Access

Research Outputs are available to anyone without costs or any other access barrier



The benefits of Open Access

- Improving reach of research
- Helping to provide evidence for impact
- Improved reputation for researchers and their host institution through increased citations
- Improved quality of research through open, transparent and reproducible research practices




CC-BY Danny Kingsley & Sarah Brown

<https://www.jisc.ac.uk/guides/an-introduction-to-open-access>

Roads to Open Access

Green Open Access

- Through the accepted manuscript (post peer review, without editorial layout/formatting)
- Deposit this version in a trusted repository (institutional, disciplinary or generalist, i.e. Zenodo)
- Beware to copyright and embargo periods of the publisher/journal:
<https://v2.sherpa.ac.uk/romeo/>

Gold Open Access

- Immediate, unrestricted access to the published article
- Open Access Journal - no fee or any type or restriction to read, download, share
- Usually no copyright transfer and use of CC licence
- In 26% of OA journals authors pay APCs (article processing charges)

Research Integrity

- Transparency
- Collaboration
- Inclusion

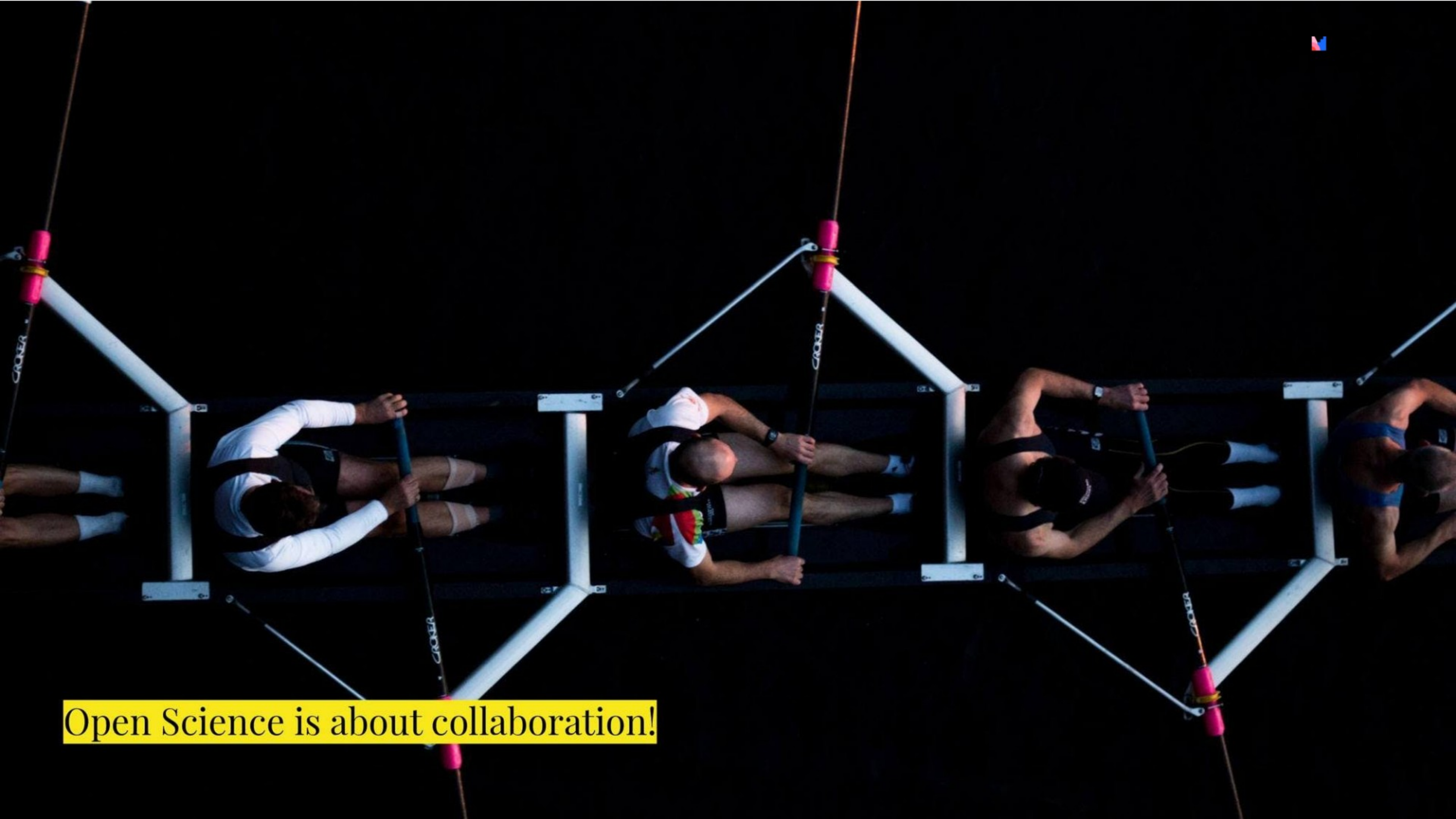


Image by [Gerd Altmann](#) from [Pixabay](#)

Openness to diversity

- Recognize the diversity of knowledge system and epistemologies
- Adhere to principles of non discrimination
- Availability of knowledge also for non wealthy countries





Open Science is about collaboration!

Not only publications

Science is also:

- data
- software
- protocols
- negative results
- and much more...



PUBLICATIONS AND DATA

This is what I have been working on the last weeks...

Registries overlap analysis

File Modifica Visualizza Inserisci Formato Dati Strumenti Componenti aggiuntivi Guida Accessibili

100% £ % .0 .00 123 Predefinito... 10 B I S A

C4 fx FAIRsharing_attributes.subjects

	A	B	C	D	E
1	INSTRUCTIONS				
2	1) select partition				
3	dup_across		FAIRsharing		re3data
4	2) select columns to inspect ==>	FAIRsharing_id	FAIRsharing_attributes.subjects	re3data_orgldentifier	re3data_subject
100	94	[]	[]	[r3d100012596]	[[{'name': '1 Humanities and Social Sci', 'scheme': 'DFG'}, {'name': '2 Life Sciences', 'scheme': 'DFG'}, {'name': '4 Sciences', 'scheme': 'DFG'}]]
101	95	[]	[]	[]	[]
102	96	['3092']	[[['Environmental Science', 'Chemistry', 'Engineering Science', 'Earth Science', 'Social Science', 'Life Science', 'Health Science']]]	[r3d100013165]	[[{'name': '1 Humanities and Social Sci', 'scheme': 'DFG'}, {'name': '111 Social Sciences', 'scheme': 'DFG'}, {'name': 'Social and Behavioural Sciences', 'scheme': 'DFG'}, {'name': 'Life Sciences', 'scheme': 'DFG'}, {'name': '31 Chemistry', 'scheme': 'DFG'}, {'name': '3 Natural Sciences', 'scheme': 'DFG'}]]
103	97	[]	[]	[]	[]
104	98	[]	[]	[]	[]

26 billion €
are going lost **every year** in
Europe for not managing the
data properly

Where do you store you data?

Cloud (me and supervisor)

in my hard disk and on google drive

Cloud storage, PC, hard disk

Cloud

I have them in a cloud and in a hard disk

cloud

pc hard drive, external hard drive, cloud, USB memory stick

lab PC and external HD

Usually on hard drives. Cloud just for very important data

Where do you store you data?

Cloud and hard disk

To cope with emerging problems
(climate change answers, green
chemistry)

The possibility to find something
useful for the world

How nature works, the thrill of
understanding complicated yet
elegant mechanism

“Publishing research
without **data** is simply
advertising, not
science”

Graham Steel

What happens if...

We do not manage and share research data in the correct way?



Data can be lost...

JAMA journal retracts paper when author can't produce original data

In July 2017, a *JAMA* journal called for an investigation into a 2013 paper it had published after concluding that the article had “scientific and ethical concerns.” Now the journal, *JAMA Otolaryngology – Head & Neck Surgery*, is retracting the paper.

The article, “Dexamethasone for the prevention of recurrent laryngeal nerve palsy and other complications after thyroid surgery: a randomized double-blind placebo-controlled trial,” came from a group in Italy led by Mario Schietroma, of the Department of Surgery at the University of L'Aquila, in Abruzzo, Italy. Schietroma, who in December admitted to us that a retracted 2015 paper of his in the *Journal of the American College of Surgeons* suffered from “misinterpretation of the statistical data,” now has four retractions.



Neither [the original dataset and the approved protocol] have been provided by Dr Schietroma, and the university has informed us that “without those pieces of information the results of the papers under investigation cannot be validated.”

<https://retractionwatch.com/2018/10/25/jama-journal-retracts-paper-when-author-cant-produce-original-data/>

The importance of depositing research data

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nature

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Carlisle has kept going. This year, he warned about dozens of anaesthesia studies by an Italian surgeon, Mario Schietroma at the University of L'Aquila in central Italy, saying that they were not a reliable basis for clinical practice⁶. Myles, who worked on the report with Carlisle, had raised the alarm last year after spotting suspicious similarities in the raw data for control and patient groups in five of Schietroma's papers.



Bottled oxygen, used by anaesthetists during surgery. Credit: Mark Thomas/Alamy

The challenges to Schietroma's claims have had an impact in hospitals around the globe. The World Health Organization (WHO) cited Schietroma's work when, in 2016, it issued a recommendation that anaesthetists should routinely boost the oxygen levels they deliver to patients during and after surgery, to help reduce infection. That was a controversial call: anaesthetists know that in some procedures, too much oxygen can be associated with an increased risk of complications – and the recommendations would have meant hospitals in poorer countries spending more of their budgets on expensive bottled oxygen, Myles says.

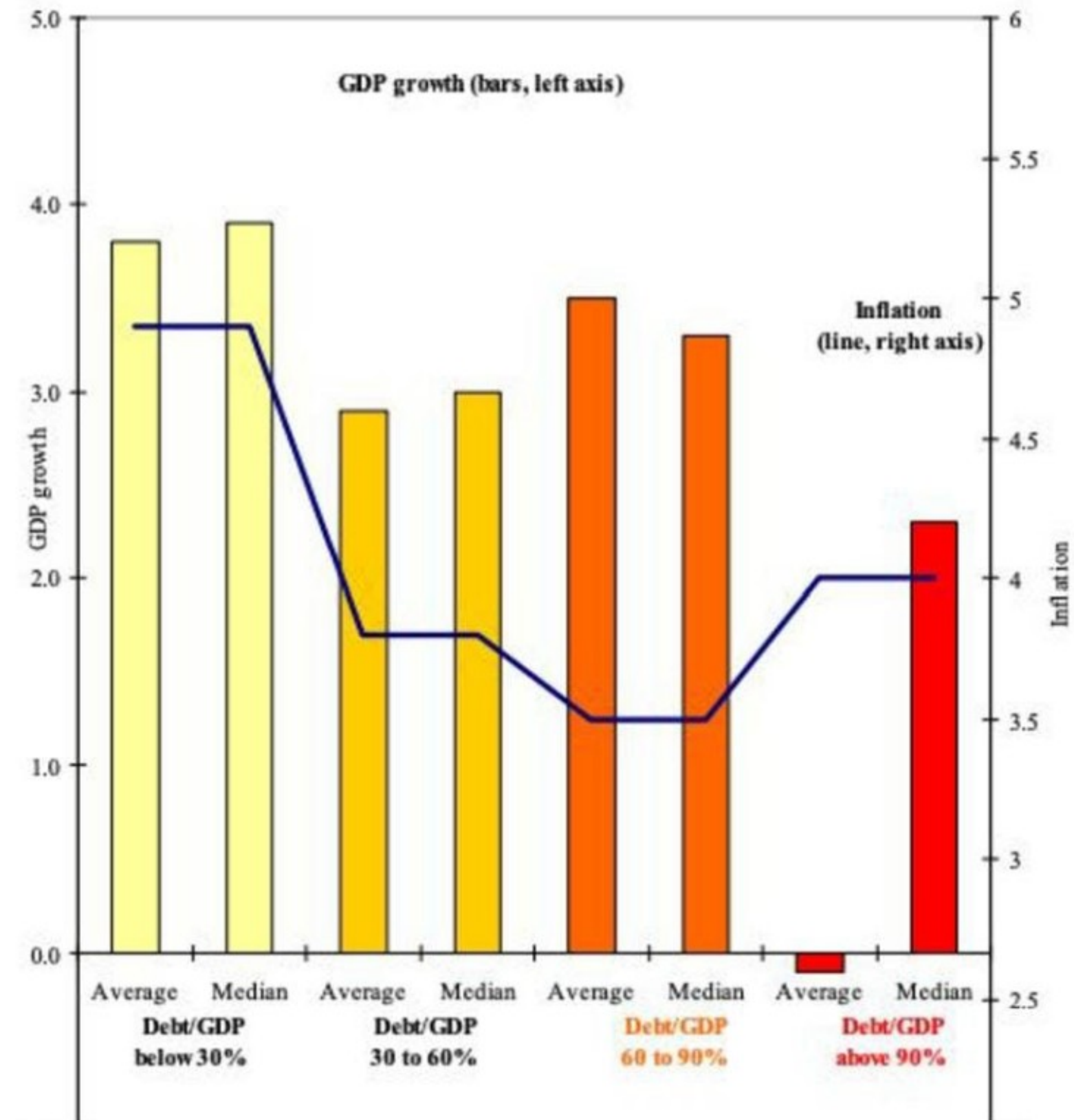
The five papers Myles warned about were quickly retracted, and the WHO revised its recommendation from 'strong' to 'conditional', meaning that clinicians have more freedom to make different choices for various patients. Schietroma says his calculations were assessed by an independent statistician and through peer review, and that he purposely selected similar groups of patients, so it's not surprising if the data closely match. He also says he lost

Data may contain errors

The case with austerity theory.

- The thesis: economic growth slows down dramatically when the size of a country's debt exceeds 90% of gross domestic product.
- The results shown in the paper were used to support public austerity policies during the recent economic crisis.
- But some considerations were based on wrong calculations.

Figure 2. Government Debt, Growth, and Inflation: Selected Advanced Economies, 1946-2009



Errors and miscalculations

The screenshot shows a news article on a website. At the top, there is a red banner with the text "Help us put experts at the heart of the fight against coronavirus disinformation" and a "Donate now" button. Below this is the "THE CONVERSATION" logo. The main headline is "The Reinhart-Rogoff error - or how not to Excel at economics" with a sub-headline "April 15, 2013 6:44pm GMT". The article text begins: "Last week we learned a famous 2010 academic paper, relied on by political big-hitters to bolster arguments for austerity cuts, contained significant errors; and that those errors came down to misuse of an Excel spreadsheet. Sadly, these are not the first mistakes of this size and nature when handling data. So what on Earth went wrong, and can we fix it? Harvard's Carmen Reinhart and Kenneth Rogoff are two of the most respected and influential academic economists active today. Or at least, they were. On April 16, doctoral student Thomas Herndon and professors Michael Ash and Robert Pollin, at the Political Economy Research Institute at the University of Massachusetts Amherst, released the results of their analysis of two 2010 papers by Reinhart and Rogoff, papers that also provided much of the grist for the 2011 bestseller *Next Time Is Different*. Reinhart and Rogoff's work showed average real economic growth slows (a 0.21 decline) when a country's debt rises to more than 90% of gross domestic product (GDP) - and this 90% figure was employed repeatedly in political arguments over high-profile austerity measures. During their analysis, Herndon, Ash and Pollin". Below the article is a "NEWS" section with a sub-headline "Reinhart, Rogoff... and Herndon: The student who caught out the pros" and a "Top Stories" section with "US coronavirus cases top 15 million".

Does High Public Debt Consistently Stifle Economic Growth? A Critique of Reinhart and Rogoff

Thomas Herndon* Michael Ash Robert Pollin

April 15, 2013

[Herndon, 2013](#)

JEL CODES: E60, E62, E65

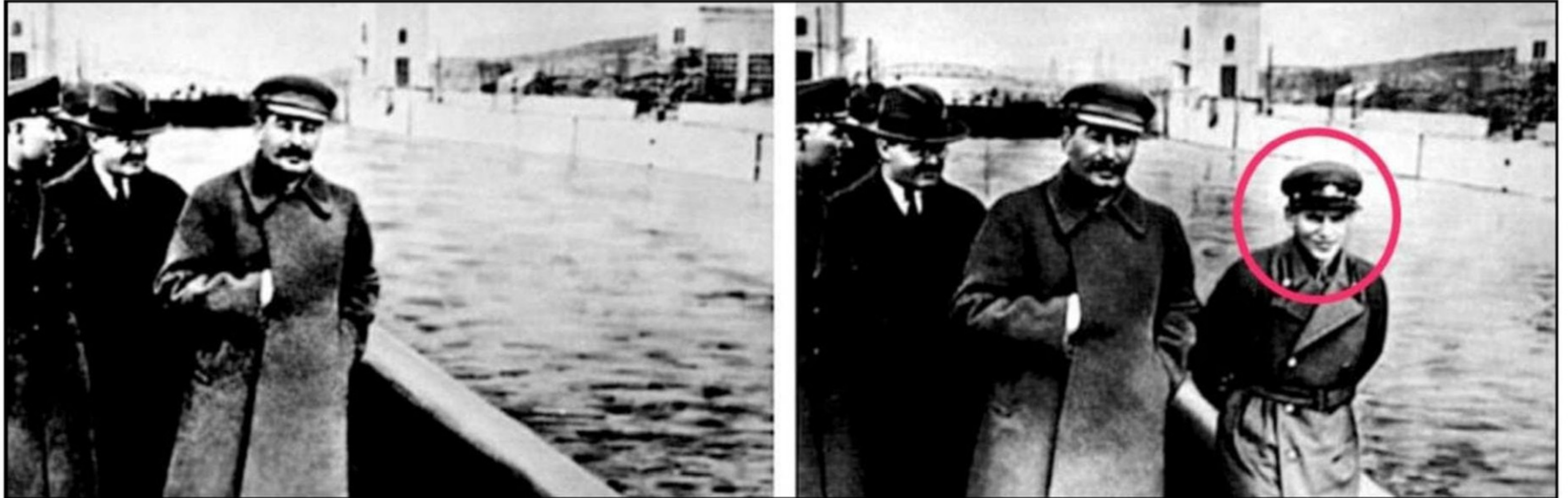
Abstract

We replicate Reinhart and Rogoff (2010a and 2010b) and find that coding errors, selective exclusion of available data, and unconventional weighting of summary statistics lead to serious errors that inaccurately represent the relationship between public debt and GDP growth among 20 advanced economies in the post-war period. Our finding is that when properly calculated, the average real GDP growth rate for countries carrying a public-debt-to-GDP ratio of over 90 percent is actually 2.2 percent, not -0.1 percent as published in Reinhart and Rogoff. That is, contrary to RR, average GDP growth at public debt/GDP ratios over 90 percent is not dramatically different than when debt/GDP ratios are lower.

We also show how the relationship between public debt and GDP growth varies significantly by time period and country. Overall, the evidence we review contradicts Reinhart and Rogoff's claim to have identified an important stylized fact, that public debt loads greater than 90 percent of GDP consistently reduce GDP growth.

Data can be manipulated

Nikolai Ivanovich Yezhov was a Soviet secret police official under Joseph Stalin who was head of the NKVD from 1936 to 1938, during the height of the Great Purge. After he fell from Stalin's favour he was executed. Among art historians, he also has the nickname "**The Vanishing Commissar**" because after his execution, his likeness was retouched out of an official press photo; he is among the best-known examples of the Soviet press making someone who had fallen out of favour "disappear".



The Newseum (1 September 1999). "The Commissar Vanishes" in The Vanishing Commissar".

Archived from the original on 8 February 2007.

https://en.wikipedia.org/wiki/Nikolay_Yezhov

Research Integrity: we have a problem

REPORT

Coping with Chaos: How Disordered Contexts Promote Stereotyping and Discrimination

Diederik A. Stapel^{1,*}, Siegwart Lindenberg^{1,2,*}

[+ See all authors and affiliations](#)

Science 08 Apr 2011:
Vol. 332, Issue 6026, pp. 251-253
DOI: 10.1126/science.1201068

Article

Figures & Data

Info & Metrics

eLetters

 PDF

This article has been retracted. Please see:

[Is retracted by - December 02, 2011](#)

Abstract

Being the victim of discrimination can have serious negative health- and quality-of-life-related consequences. Yet, could being discriminated against depend on such seemingly trivial matters as garbage on the streets? In this study, we show, in two field experiments, that disordered contexts (such as litter or a broken-up sidewalk and an abandoned bicycle) indeed

58 articles published by **Diederik Stapel** were withdrawn because they were based on **invented data**.

His papers had been published in scientific journals considered prestigious (very high IFs!).

Following reports from three doctoral students, the Dutch university for which he worked had started an investigation. Stapel then admitted that he had fabricated the data on numerous occasions.

If he had shared his data before, he probably wouldn't have been able to fabricate fakes for so long.

This case led the Netherlands become one of the pioneer countries in Open Science policy and practices



Reproducibility crisis

Availability of raw data
underlying scientific
publications
falls by 17% per year


[https://www.cell.com/current-biology/fulltext/S0960-9822\(13\)01400-0](https://www.cell.com/current-biology/fulltext/S0960-9822(13)01400-0)

REPORT | VOLUME 24, ISSUE 1, P94-97, JANUARY 06, 2014

The Availability of Research Data Declines Rapidly with Article Age

Timothy H. Vines   • Arianne Y.K. Albert • Rose L. Andrew • ... Jean-Sébastien Moore • Sébastien Renaut • Diana J. Rennison • Show all authors

Open Archive • Published: December 19, 2013 • DOI: <https://doi.org/10.1016/j.cub.2013.11.014>

 Check for updates

PDF (462 KB) Figures

Highlights

Summary

Reprints

Comments







Highlights

- We examined the availability of data from 516 studies between 2 and 22 years old
- Policies mandating data archiving at publication are clearly needed

Summary

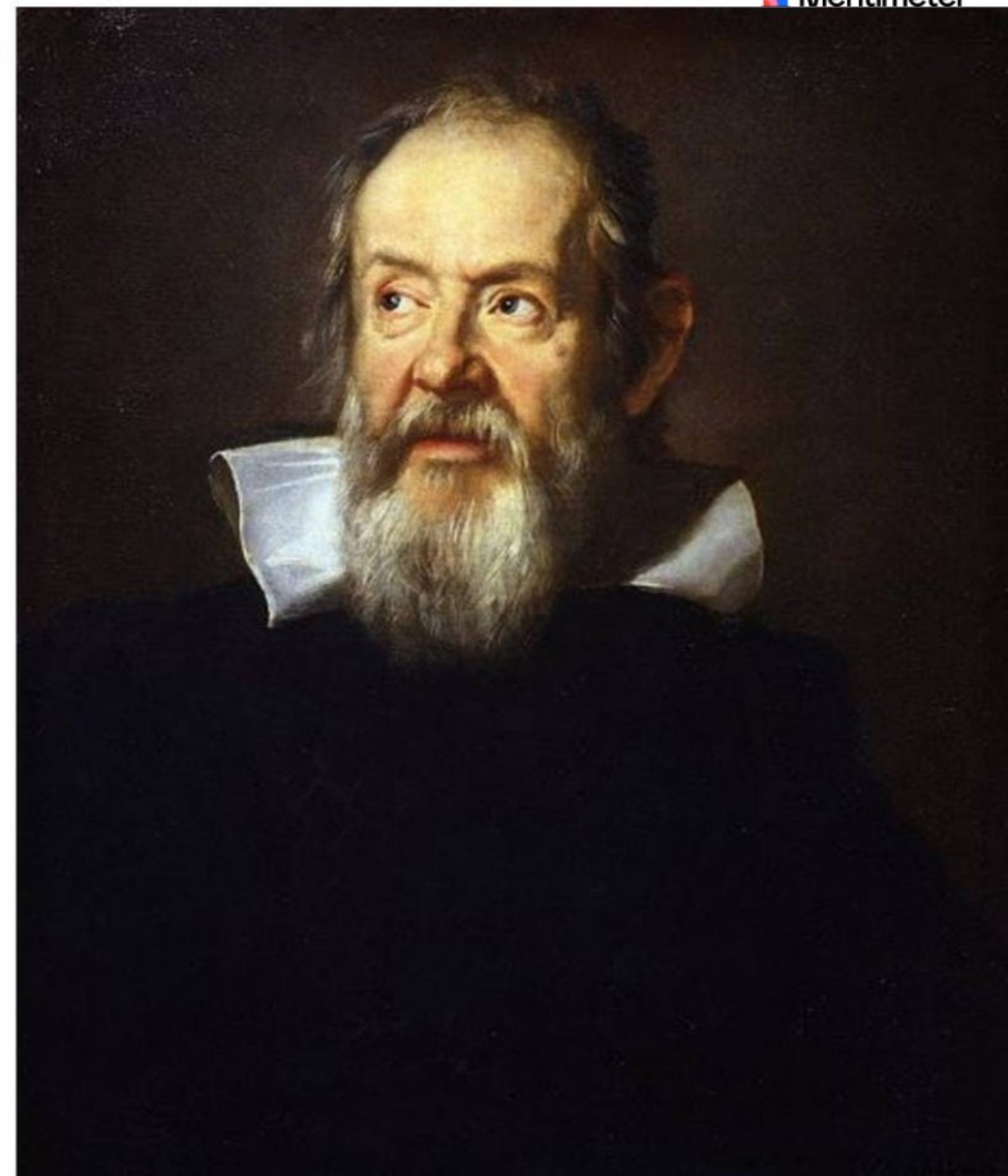
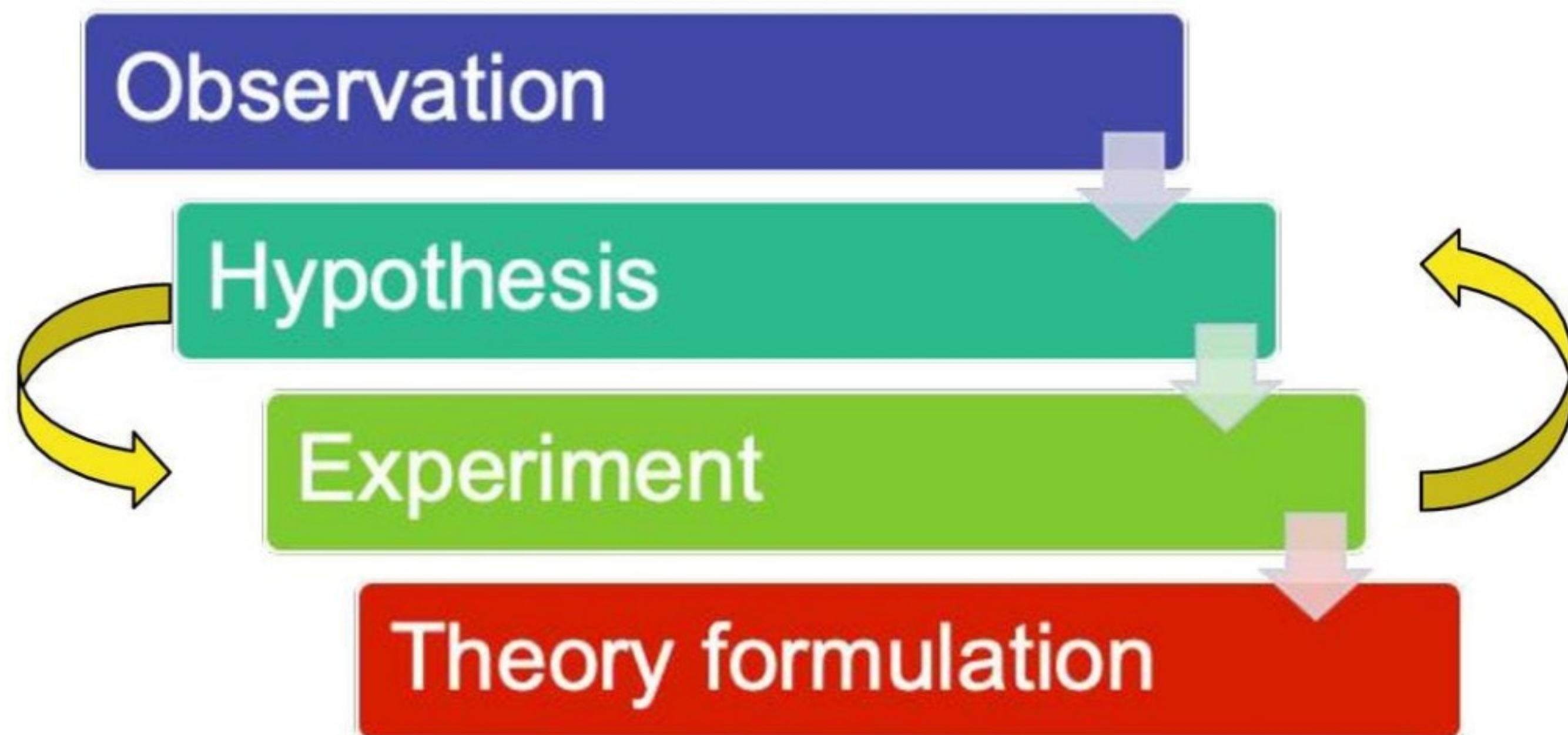
Policies ensuring that research data are available on public archives are increasingly being implemented at the government [1], funding agency [2, 3, 4], and journal [5, 6] level. These policies are predicated on the idea that authors are poor stewards of their data, particularly over the long term [7], and indeed many studies have found that authors are often unable or unwilling to share their data [8, 9, 10, 11]. However, there are no systematic estimates of how the availability of research data changes with time since publication. We therefore requested data sets from a relatively homogenous set of 516 articles published between 2 and 22 years ago, and found that availability of the data was strongly affected by article age. For papers where the authors gave the status of their data, the odds of a data set being extant fell by 17% per year. In addition, the odds that we could find a working e-mail address for the first, last, or corresponding author fell by 7% per year. Our results reinforce the notion that, in the long term, research data cannot be reliably preserved by individual researchers, and further demonstrate the urgent need for policies mandating data

Why should you care?

-  If you manage it, you probably will not **lose** it
-  Organising your data will make your work more **efficient**
-  Some data is **unique and not reproducible** (meteorology, observation from the field) so you should take care of it
-  By correctly managing your data, you can improve **research integrity**
-  By managing your data, you enable **validation and control**
-  Someone else could use it in the future to **advance scientific progress**



The Scientific Method



But, above all,
data is not yours!

Data is not yours



Data is **not** intellectual work, it is fact and information



Copyright protection covers expressions and not ideas, procedures, operating methods or mathematical concepts as such.



Protection is on databases and not on data. Data are protected only and especially when they are collected and organized in a database.



The sui generis property right (only in Europe) covers not only the reproduction and dissemination of the database, but also the extraction and reuse of substantial parts of the database.

Make your data FAIR



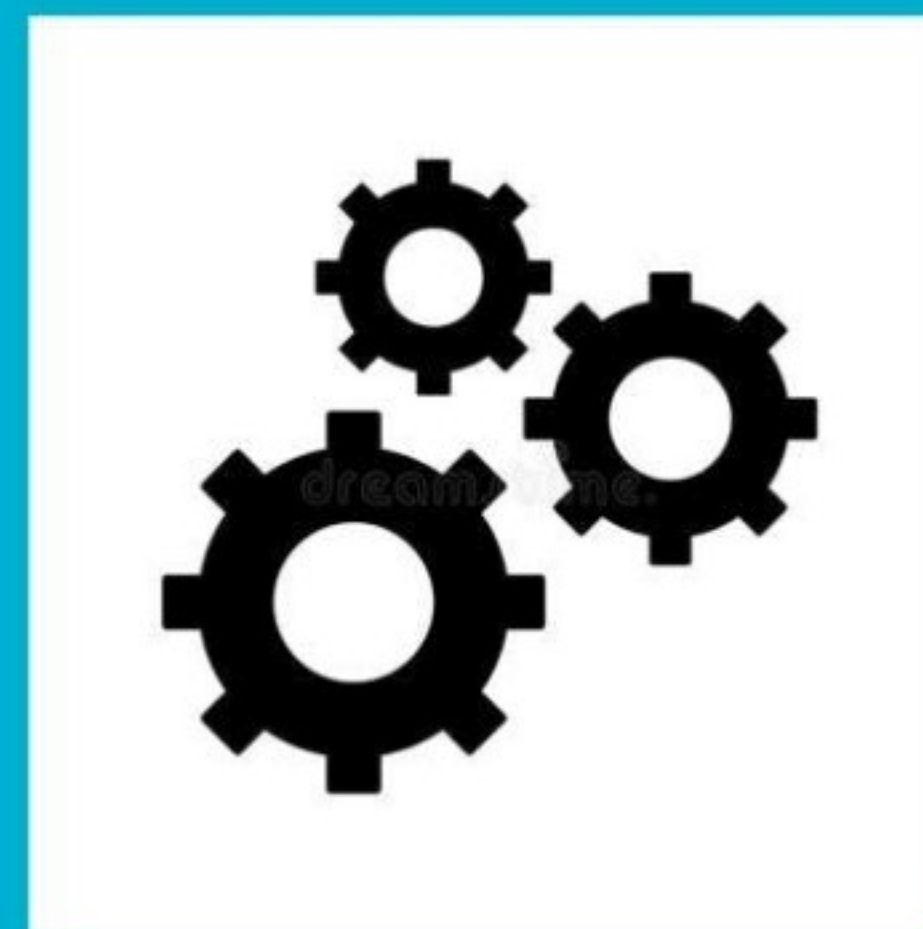
Findable

The data is easy to find



Accessible

It is clear who, when and how can access the data



Interoperable

Data can be integrated with other data and/or they can be easily used and read by machines



Reusable

Data can be reused by others in new research

Why did you decide to get into scientific research?

I'm curious

Love for science, inter-generation and inter-discipline networking, satisfaction

For the possibility to find something useful for the world

because I think that scientific research is helpful for society

To understand how world works

Because research is challenging

Because and I am curios and I like the idea of finding something new and useful

After having obtained the master degree I was pretty confused about my future and so i have decided to continue my academic journey a little for curiosity and a little to be useful for society

not for the money :)

Publish or perish!

Research evaluation

Based on bibliometric indexes or,
for non-bibliometric sectors, on
selected «fascia A» list of journals

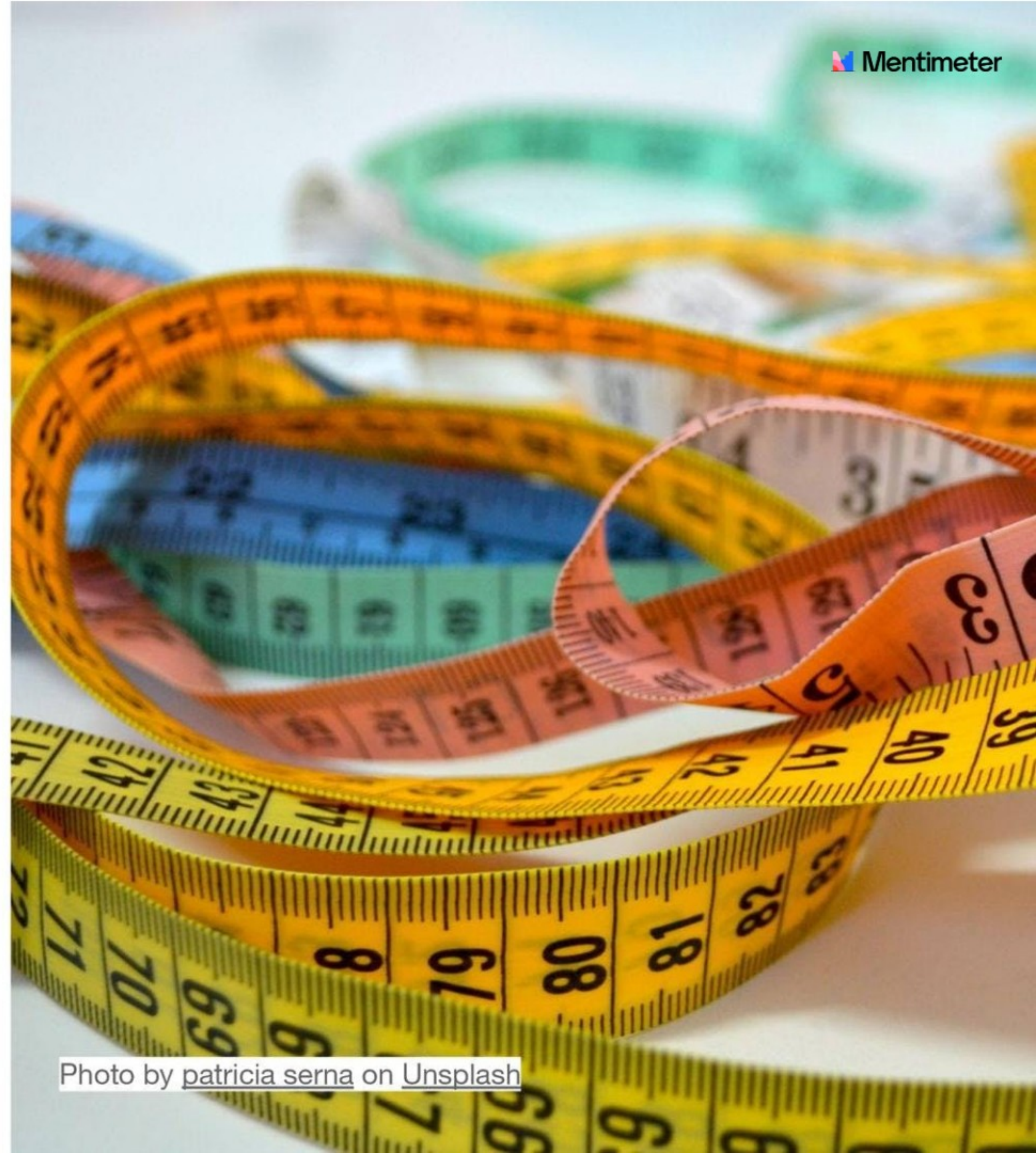


Photo by [patricia serna](#) on [Unsplash](#)

What are we evaluating?

- Researchers are evaluated by looking at the Impact Factors of the Journals where they publish papers
- Commercial publishers are responsible for assessing ranking (Impact Factor) of the Scientific Journals

Researcher's survival kit?

- many many publications
- high citation rate
- “important” venue (read: high IF)

But this does not in itself imply excellence in research!



The two most important bibliometric indexes

Journal Impact Factor

For a given year, the two-year jif is the ratio between the number of citations received in that year for publications in that journal that were **published in the two preceding years** and the total number of "citable items" published in that journal during the two preceding years

$$IF_y = \frac{\text{Citations}_{y-1} + \text{Citations}_{y-2}}{\text{Publications}_{y-1} + \text{Publications}_{y-2}}$$

H-index

For a researcher:

the maximum value of h such that the given author has published h **papers** that have each been **cited** at least h times.

As an example, an h-index of 10 means that among all publications by one author, 10 of these publications have received at least 10 citations each.

Citation index criticism

- **Early career** researchers are penalised
- The citation context is not considered (e.g. **negative** citation)
- They are influenced by the limitation of the citational **databases** (which are all owned by big scientific publishers and not publicly available)
- It can be **manipulated** by both authors and reviewers (self and cross citations)
- It does not take into account the number of authors in a paper and their contribution
- It does not take into account research **multidisciplinarity** (i.e. citation conventions differ widely among different fields)
- It does not facilitate science freedom

DORA, 2013, <https://sfdora.org/read/>

McKiernan, et al, 2019. <https://elifesciences.org/articles/47338>

Niles, et al, 2019. <https://www.biorxiv.org/content/10.1101/706622v1>

Alder, et al, 2008. <https://www.mathunion.org/fileadmin/IMU/Report/CitationStatistics.pdf>

“Researchers will do anything to publish papers in some journals, including even creating fake authors”

“ [...] publishing papers in certain journals is the only way to earn grants, tenure, and promotions”

Not only researchers' fault

A major publisher (Elsevier) buys a well known scientific journal: The Journal of Biological Chemistry (JBC). This is what happens:

- online articles reformatted and images available in low resolution only
- in that type of journal that means less readable, less easy to double-check images
- resistance to correction/retraction



**Yet to many still take
for granted that “prestigious journal = good
paper”**

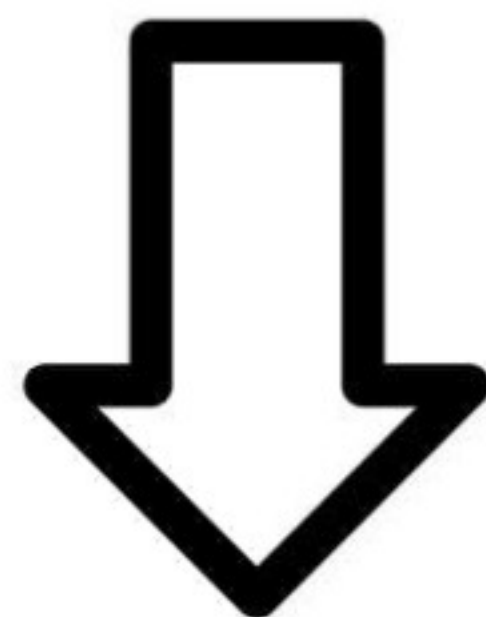
Think on the example of hydroxychloroquine in COVID-19 research: high-profile, peer-reviewed journal articles were retracted!

But....good news!

**Things
are changing!**

A change in the approach

Competition



Collaboration and **sharing**

Many funders are embracing OS

- European Commission
- European Research Council
- In Italy Mur with the National Open Science plan (about to be published)
- Many other across Europe and worldwide



In Horizon Europe the project proposal is evaluated under the Open Science Perspective

What

Results must be managed in line with FAIR principles and as open as possible as closed as necessary







How

Methodology must show Open Science practices are embedded

Who

Single Researchers and Consortium are evaluated for their capacity to support Open Science practices

Open Science practices in Horizon Europe

-  **early and open sharing** of research (i.e. preregistration, registered reports, pre-prints, or crowd-sourcing)
-  **research output management** including research data management
-  measures to ensure **reproducibility** of research outputs
-  **open access** to research outputs (e.g. publications, data, software, models, algorithms, and workflows) through deposition in trusted repositories
-  participation in **open peer-review**
-  **involving all relevant knowledge actors** including citizens, civil society and end users in the co-creation of R&I agendas and contents (such as citizen science)

Open Access to scientific publications in HE - 1

Beneficiaries must **ensure** OA to peer-reviewed scientific publications relating to their results. In particular, they must ensure:

- at the latest upon publication, **deposition** of the AAM or VoR in a **trusted repository** + **immediate open access via the repository** under CC BY or equivalent (CC BY-NC/CC BY-ND are allowed for long-text formats)
- **information** via the repository about any research output/tools/instruments needed to **validate the conclusions of the scientific publication**

Metadata must be open under CC 0 or equivalent, **in line with the FAIR principles** and provide information about the licensing terms and persistent identifiers, amongst others.

Trusted repository

- Certified repositories (e.g. CoreTrustSeal, nestor Seal DIN31644, ISO16363) or **disciplinary and domain** repositories commonly used and endorsed by the research communities and internationally recognised.
- **General-purpose or institutional** repositories that:
 - assign **persistent unique identifiers** to contents
 - contents are accompanied by **quality metadata** to enable discovery, reuse and citation (ie provide information about provenance and licensing; metadata are machine- actionable and standardized).
 - facilitate **mid- and long-term preservation** of the deposited material.

Open Access to scientific publications in HE - 2

- Beneficiaries (or authors) must retain sufficient intellectual **property rights** to comply with the OA requirements
- Publication in venue of choosing but publication fees are reimbursable only if publishing venue is full open access (**publication fees in hybrids not reimbursed**)



Open Research Europe



Powered by
F1000 Research

Open Research Europe (ORE)

Public Procurement – 5.8 Million EUR contract signed in March 2020 with F1000 Research for 4 years

Global Young Academy, LIBER and **Eurodoc** as collaborators/subcontractors for communication and sustainability

OpenAIRE are a partner to help with syndication and communication of ORE

<https://open-research-europe.ec.europa.eu>

The screenshot shows the homepage of the Open Research Europe (ORE) platform. At the top left, there is the European Commission logo. To the right is a search bar with a 'Search' button. Below the logo is the text 'Research and Innovation'. The main header is a dark blue bar with 'Open Research Europe' in white. Below this are navigation links: 'How to Publish' and 'About' with dropdown arrows on the left, and 'My Account' and 'Sign In' with dropdown arrows on the right. The main content area features the heading 'Rapid & Transparent Publishing' followed by the text: 'Fast publication and open peer review for research stemming from Horizon 2020 funding across all subject areas.' At the bottom left is a blue button that says 'SUBMIT YOUR RESEARCH'. At the bottom right is the text 'Powered by F1000Research'.

Why a publishing platform?

- High-quality, reliable and efficient publishing venue for Horizon research
- High scientific standards, and swift and transparent processes
- Expert Scientific Advisory Board
- No cost to authors/beneficiaries i.e. non-APC platform
- Optional, venue where grantees can publish post-grant the results of their work, while respecting their open access obligations

The platform as a publishing service

- Original peer-reviewed articles first posted as preprints
- Stemming from Horizon 2020-funded research (and later, Horizon Europe)
- Immediate open access
- With content licensed for re-use
- Open peer review
- Open reviewer identities, published reviews, post-publication comments
- Connected to the scholarly ecosystem
- PIDs, connection to repositories, open data and software, interoperable technologies, preservation of content, TDM, etc.

The platform as a publishing service





- New generation metrics
- Each article will have a dedicated metrics page
- Explicit, accessible and **transparent** on business processes and publication policies
- All published on the site for everyone to see
- Aligned with the EC policy and principles
- Takes the burden off researchers as it is fully compliant
- Following example of other funders, such as the Wellcome Trust (Wellcome Open Research) and others

ORE Open Peer Review Example

Home » Browse » Silent myelin-weighted magnetic resonance imaging

METHOD ARTICLE [EDIT VERSION](#) [Check for updates](#)

REVISED Silent myelin-weighted magnetic resonance imaging [version 2; peer review: 2 approved, 2 approved with reservations]

Tobias C. Wood ¹, Nikou L. Damestani¹, Andrew J. Lawrence², Emil Ljungberg ¹, Gareth J. Barker ¹, Ana Beatriz Solana³, Florian Wiesinger^{1,3}, Steven C.R. Williams ¹

[Author details](#)

Abstract

Background: Inhomogeneous Magnetization Transfer (ihMT) is an emerging, uniquely myelin-specific magnetic resonance imaging (MRI) contrast. Current ihMT acquisitions utilise fast Gradient Echo sequences which are among the most acoustically noisy MRI sequences, reducing patient comfort during acquisition. We sought to address this by modifying a near silent MRI sequence to include ihMT contrast.

Methods: A Magnetization Transfer preparation module was incorporated into a radial Zero Echo-Time sequence. Repeatability of the ihMT ratio and inverse ihMT ratio were assessed in a cohort of healthy subjects. We also investigated how head orientation affects ihMT across subjects, as a previous study in a single subject suggests this as a potential confound.

Results: We demonstrated that ihMT ratios comparable to existing, acoustically loud, implementations could be obtained with the silent sequence. We observed a small but significant effect of head orientation on inverse ihMTR.

Conclusions: Silent ihMT imaging is a comparable alternative to conventional, noisy, alternatives. For all future ihMT studies we recommend careful positioning of the subject within the scanner.

Keywords

ALL METRICS

419
VIEWS

52
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


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



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Open Peer Review

Reviewer Status     [i](#)

Reviewer Reports

	Invited Reviewers			
	1	2	3	4
Version 2 (revision) 13 Aug 20	 read		 read	
	↑		↑	
Version 1 21 Apr 20	 read	 read	 read	 read

- Richard Dortch , Barrow Neurological Institute, Phoenix, USA
- Olivier Girard , Aix-Marseille University, Marseille, France
Lucas Soustelle , Aix-Marseille Univ, CNRS, CRMBM UMR 7339, Marseille, France; SATT Sud-Est, Marseille, France
- Douglas Dean , University of Wisconsin-Madison, Madison, USA; University of Wisconsin-Madison, Madison, USA; University of Wisconsin-Madison, Madison, USA
- Gunther Helms , Lund University, Lund, Sweden

Alongside their report, reviewers assign a status to the article:

APPROVED

The paper is scientifically sound in its current form and only minor, if any, improvements are suggested

APPROVED WITH RESERVATIONS

Key revisions are required to address specific details and make the paper fully scientifically sound

NOT APPROVED

Fundamental flaws in the paper seriously undermine the findings and conclusions

Visibility & credit for reviewers:

- Co-reviewing
- ORCID ids
- DOIs for reports

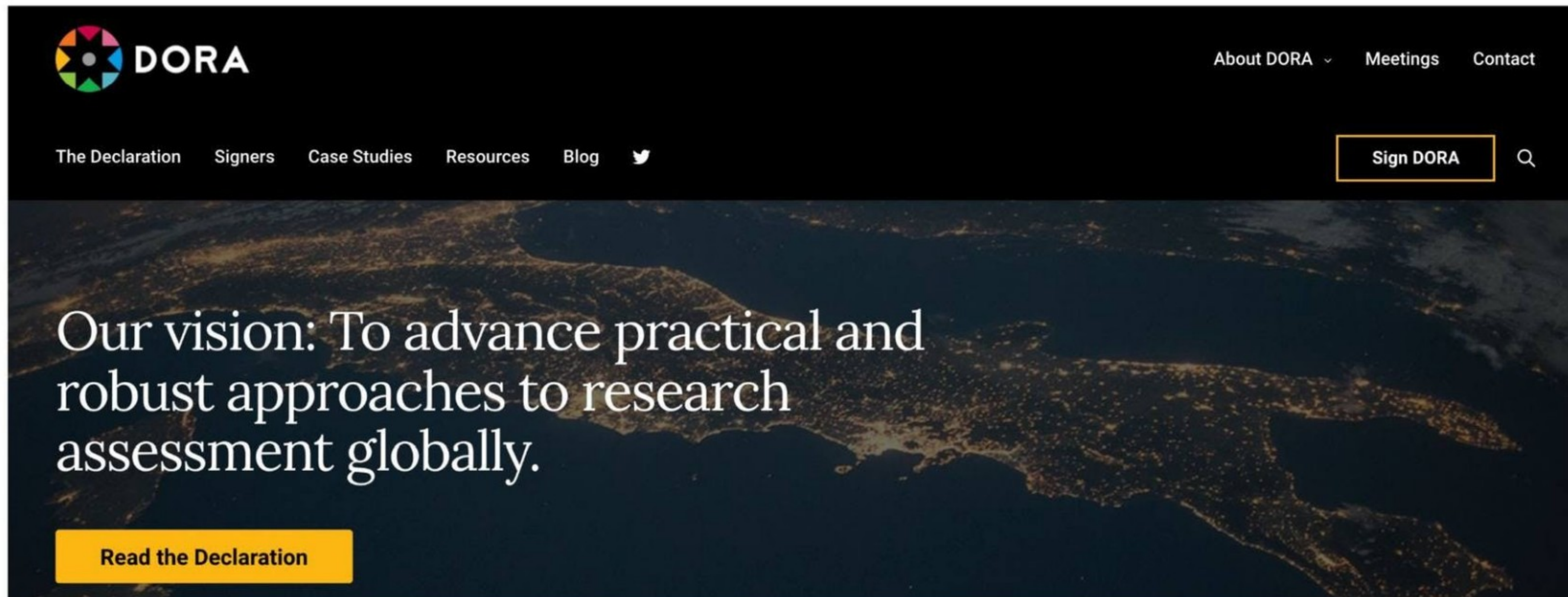
Plan S and Coalition S

- “Plan S aims for full and **immediate Open Access** to peer-reviewed scholarly publications from research funded by public and private grants.
- “Transition to a scholarly publishing system characterised by immediate, free online access to, and largely unrestricted **use and re-use (full Open Access)** of scholarly publications.
- cOAlition S is the coalition of research **funders** that have committed to implementing Plan S.

Three routes of compliance with Plan S

	Open Access publishing venues (journals or platforms)	Subscription venues (repository route)	Transition of subscription venues (transformative arrangements)
Route	Authors publish in an Open Access journal or on an Open Access platform.	Authors publish in a subscription journal and make either the final published version (Version of Record (VoR)) or the Author's Accepted Manuscript (AAM) openly available in a repository.	Authors publish Open Access in a subscription journal under a transformative arrangement.
Funding	cOAlition S funders will financially support publication fees.	cOAlition S funders will not financially support 'hybrid' Open Access publication fees in subscription venues.	cOAlition S funders can contribute financially to Open Access publishing under transformative arrangements.

The Declaration on Research Assessment (DORA)



The screenshot shows the homepage of the Declaration on Research Assessment (DORA). The header is dark with the DORA logo (a colorful starburst) and the text 'DORA' on the left. On the right, there are navigation links for 'About DORA', 'Meetings', and 'Contact'. Below the header, there is a horizontal menu with links for 'The Declaration', 'Signers', 'Case Studies', 'Resources', and 'Blog', followed by a Twitter icon. A prominent yellow button labeled 'Sign DORA' is highlighted with a white border. To the right of this button is a search icon. The main content area features a dark background with a satellite-style image of Earth at night, showing city lights. Overlaid on this image is the text: 'Our vision: To advance practical and robust approaches to research assessment globally.' At the bottom left of this section is a yellow button labeled 'Read the Declaration'.

<https://sfdora.org/>

“There is a **pressing need** to improve the ways in which the output of scientific research is evaluated by funding agencies, academic institutions, and other parties”.














Basic principles of DORA recommendations:

- the need to eliminate the use of journal-based metrics, such as Journal Impact Factors, in funding, appointment, and promotion considerations;
- the need to assess research on its own merits rather than on the basis of the journal in which the research is published;

And again...
good news!

The DORA case studies: a list of institutions that have already introduced changes in academic career assessment

<https://sfdora.org/dora-case-studies/>

	Open University UNITED KINGDOM	15 April, 2021
	The European Molecular Biology Laboratory FRANCE · GERMANY · ITALY · SPAIN · UNITED KINGDOM	26 March, 2021
	The Latin American Forum for Research Assessment ARGENTINA	12 March, 2021
	Tampere University FINLAND	4 November, 2020
	University College London UNITED KINGDOM	2 November, 2020
	University of Nottingham Ningbo China CHINA	29 October, 2020
	Ghent University BELGIUM	20 October, 2020
	Universities Norway NORWAY	13 October, 2020
	The Dutch Recognition & Rewards Programme NETHERLANDS	13 October, 2020
	Open University of Catalonia CATALONIA (SPAIN)	7 October, 2020
	University of Bath UNITED KINGDOM	6 October, 2020
	Responsible Research Network, Finland FINLAND	5 October, 2020
	University Medical Center Utrecht NETHERLANDS	29 September, 2020

All these things are becoming the new normal

Do not lag behind!

Join Open Science :)



Many thanks for your attention!

Gina Pavone - gina.pavone@isti.cnr.it

Emma Lazzeri and Francesca di Donato contributed to these slides: thanks to them too!



Comments and Discussion

