



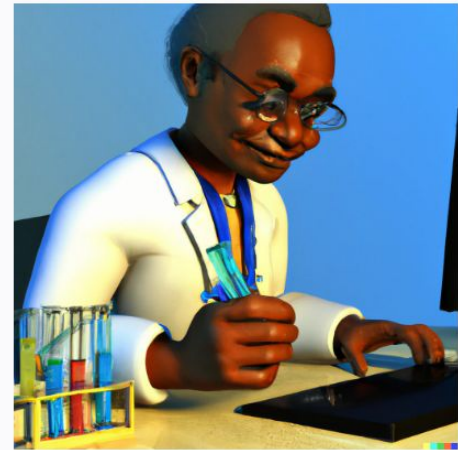
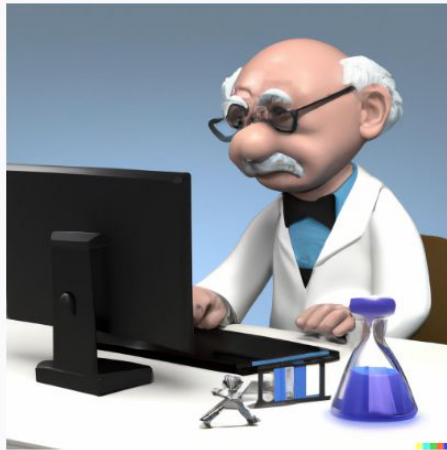
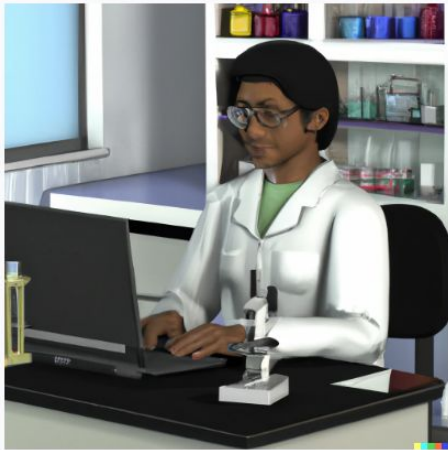
Přírodovědecká  
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Univerzita Palackého  
v Olomouci

# Ethics in Science – personal notes of Ethics Committee members of the Faculty of Science of the Palacký U

Ethics Committee members of the Faculty of Science of the Palacký U Olomouc  
doc. Ivan H. Tuf a dr. Jiří Kvita

FZÚ AV ČR  
19.10.2023



# Annotation

Ethics is an integral part of science, from the responsibility to the society of the scientific community paid from public resources or in the deepening of human knowledge for future generations. What are the ethical limits in data processing, authorship or journal publication policies? What could be the motivation and techniques in breaching or pushing these limits? How to keep one's integrity, how to recognize issues in data manipulation, falsification or fabrication, or softer issues in data presentation “helping” to a “scientific” publication?

# About us



Přírodovědecká  
fakulta

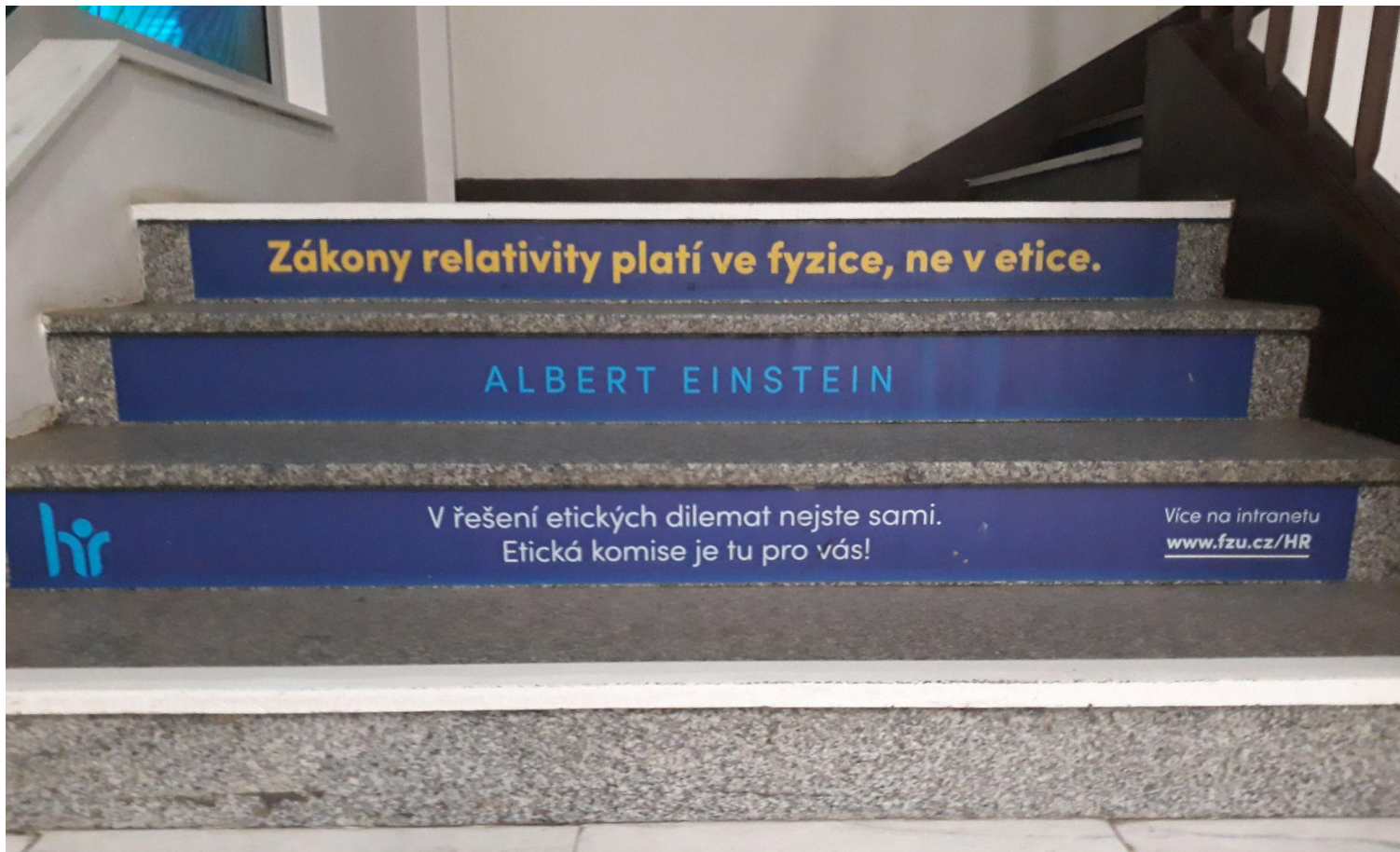
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v Olomouci

**doc. Ivan Hadrián Tuf** studied zoology, ecology and psychology at the Palacký U in Olomouc. He is staff at the Department of Ecology and environmental sciences at the Faculty of science. Besides the study of fauna in siol he is interest in decision mechanisms in animals and humans. From the respect to the society which funds him he popularizes sciences in the Vesmír journal which he also enjoys.

**dr. Jiří Kvita** studied experimental particle physics at the faculty of mathematics and physics of the Charles U. He is staff at the Joint laboratory of optics at the Faculty od Science PU taking part in particle and neutrino physics with ATLAS and Hyper-Kamiokande experiments, enjoying popularization of physics and science in general, also through the Badatel Project at the PU.



# Plan



# Disclaimer

- This is a personal view of natural scientists who were elected to the Ethics committee of the Faculty of science PU as nominated by the academic community and elected by the faculty senate.
- We are not experts in ethics per se!
- Not even experts in ethics in natural sciences or science itself.
- We have had the opportunity to deal with several cases and topics and we shall share some experience gained in solving some dilemmas.
- We do not attempt to cover the topic in full complexity.

# Ethics – The Good Place

- Chidi Anagonye, Professor of Ethics and Moral Philosophy, teaching Eleonor
- [https://harvardpress.typepad.com/hup\\_publicity/2020/01/ethics-101the-good-place-a-reading-list.html](https://harvardpress.typepad.com/hup_publicity/2020/01/ethics-101the-good-place-a-reading-list.html)
- <https://www.yahoo.com/entertainment/10-lessons-learned-good-place-182549757.html>



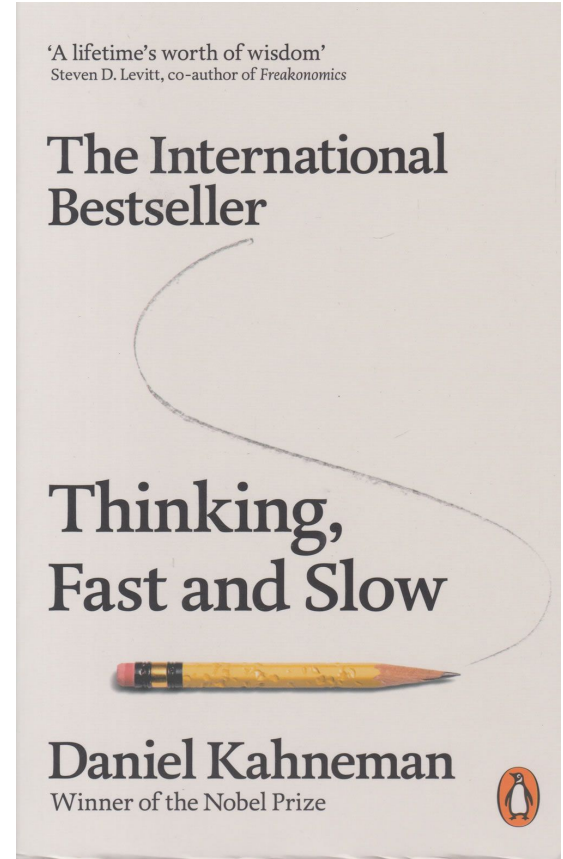
**(Auto) Pitfalls  
(Ethical) Judgements  
Cognitive Ease and Biases**

...an equal danger to editors and authors:)



# Confirmation Bias

- **Daniel Kahneman: Thinking Fast and Slow:**  
“A deliberate search for confirming evidence, known as a positive test strategy... Contrary to the rules of philosophers of science, who advice testing hypotheses by trying to refute them, people (and scientists, quite often) seek data that are likely to be compatible with the beliefs they currently hold.”
- Careful about the choice in data which would “confirm” subjectively preferred hypothesis.
- Blind results till finalizing the selection and checks on a control sample.
- Results reproducibility vs. publication of a fluctuation.



# (Subjective) Data Selection

## Oil drop experiment, elementary charge

<https://onlineethics.org/cases/ethics-science-classroom/millikan-case-discrimination-versus-manipulation-data>

An examination of Millikan's own papers and notebooks reveals that he picked and chose among his drops. That is, he exercised discrimination with respect to which drops he would include in published accounts of the value of  $e$ , leaving many out. Sometimes he mentioned this fact, and sometimes he did not. Of particular concern is the fact that in his 1913 paper, presenting the most complete account of his measurements of the charge on the electron, **Millikan states "It is to be remarked that this is not a selected group of drops but represents all of the drops experimented upon during 60 consecutive days."** However, Millikan's notebook shows that of 189 observations during the period in question, only 140 are presented in the paper.

## The Nobel Prize in Physics 1923

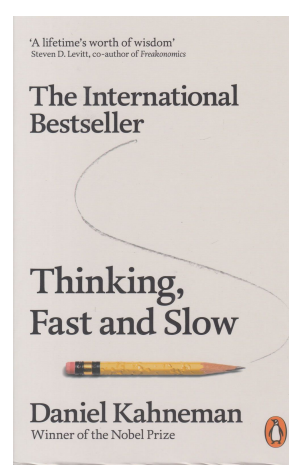


Photo from the Nobel  
Foundation archive.  
Robert Andrews  
Millikan  
Prize share: 1/1

The Nobel Prize in Physics 1923 was awarded to Robert Andrews Millikan "for his work on the elementary charge of electricity and on the photoelectric effect"

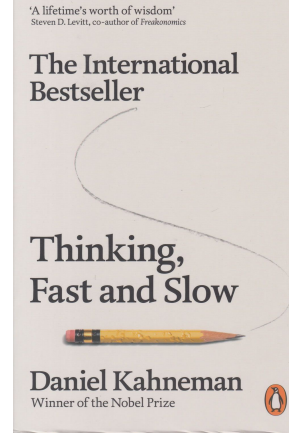
# Halo Effect, Framing

- **Daniel Kahneman: Thinking Fast and Slow:**  
Alan: intelligent, industrious, impulsive, critical, stubborn, envious  
Ben: envious, stubborn, critical, impulsive, industrious, intelligent
- Correlated judgement and errors.
- Framing effect [https://en.wikipedia.org/wiki/Framing\\_effect\\_\(psychology\)](https://en.wikipedia.org/wiki/Framing_effect_(psychology))
  - 90% survived vs. 10% died
- “She knows nothing about this person’s management skills. All she is going by is the halo effect from a good presentation.”
- “They did not want more information to spoil their story.”



# Favourite Sports: Jumping to Conclusions

- **Daniel Kahneman: Thinking Fast and Slow:**
- “The standard practice of open discussion gives too much weight to the opinions of those who speak early and assertively, causing other to line up behind them.”
- “We are pleased by the story consistency, not completeness!”
  - “Attention at the first impression, it is often true?”:)
- “We often fail to allow for the possibility that evidence that should be critical to our judgement is missing.”
- “Knowing little makes it easier to fit everything you know into a coherent pattern.”



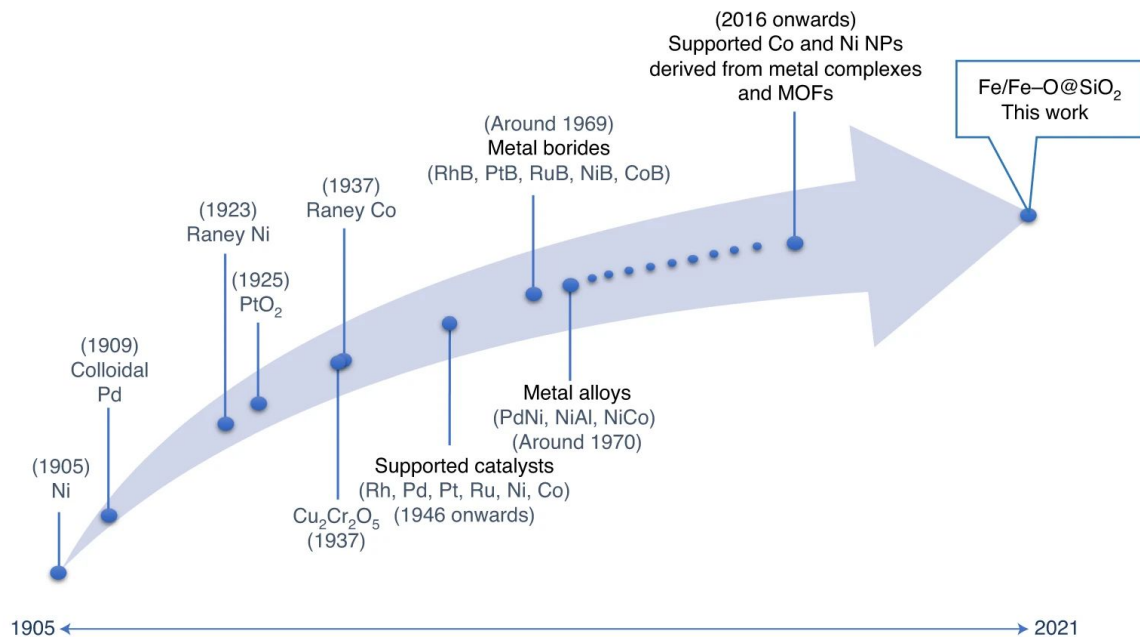
# Thought leader

- Thought leader
  - TEDx Self-proclaimed “thought leader,” Pat Kelly gives his talk on “thought leadership”
  - [https://www.youtube.com/watch?v=\\_ZBKX-6Gz6A&ab\\_channel=BCComedy](https://www.youtube.com/watch?v=_ZBKX-6Gz6A&ab_channel=BCComedy)



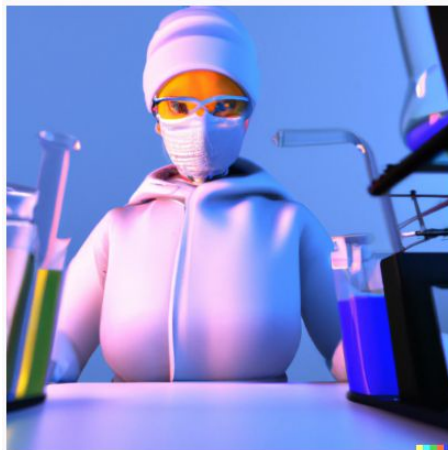
# Halo Effect

<https://www.nature.com/articles/s41929-021-00722-x>



# Papermills

- Citing articles irrelevant to the study, even from different fields, in order to increase citation profile of certain authors.
- Adding authors for a fee.
- <https://forbetterscience.com/2022/10/31/when-im-citing-you-will-you-answer-too/>
- <https://vesmir.cz/cz/casopis/archiv-casopisu/2023/cislo-9/paper-mill-novy-zpusob-kradezi-vedeckych-dat.html>
- <https://forbetterscience.com/category/paper-mills/>
- <https://www.editage.com/insights/how-paper-mills-damage-scholarly-work-and-public-trust-in-science>
- <https://forbetterscience.com/2023/02/28/i-rajender-varma-highly-cited-researcher/>
- <https://blog.mdpi.com/2022/05/09/paper-mills/>





# Prolific Stars

- A publication every 37h...
  - <https://english.elpais.com/science-tech/2023-04-02/one-of-the-worlds-most-cited-scientists-rafael-luque-suspended-without-pay-for-13-years.html>
  - accelerated by the rise of AI!
- <https://forbetterscience.com/2023/02/28/i-rajender-varma-highly-cited-researcher/>

SCIENTIFIC ETHICS >

## **One of the world's most cited scientists, Rafael Luque, suspended without pay for 13 years**

The prolific chemist, who has published a study every 37 hours this year, has been sanctioned by the University of Córdoba over his research work for other institutions in Russia and Saudi Arabia

# Prolific Stars

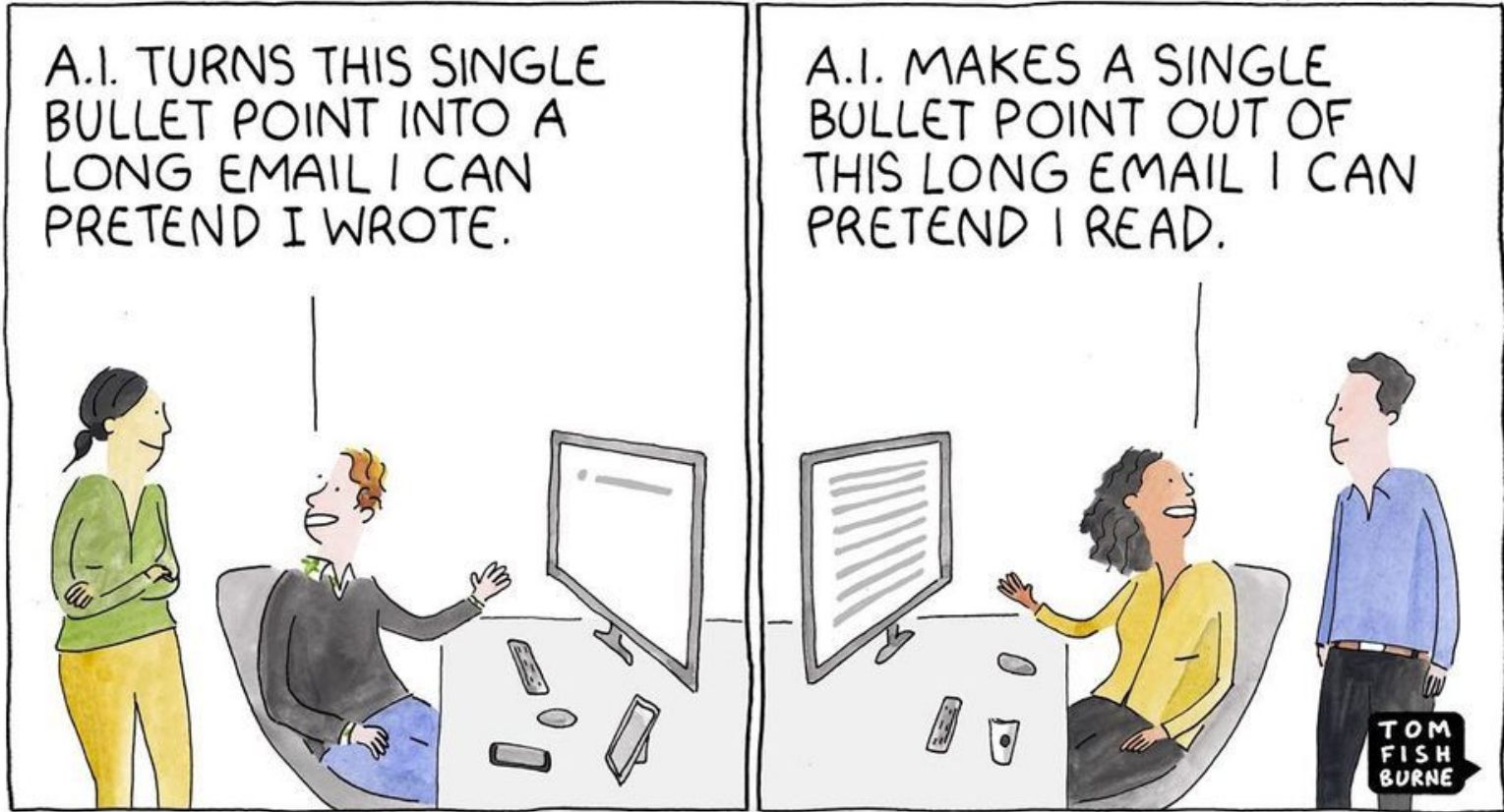
- A publication every 37h...
  - <https://english.elpais.com/science-tech/2023-04-02/one-of-the-worlds-most-cited-scientists-rafael-luque-suspended-without-pay-for-13-years.html>
  - accelerated by the rise of AI!

“Without me, the University of Córdoba is going to drop 300 places [in the Shanghai ranking]. They have shot themselves in the foot,” said Luque, who attributed his suspension to “pure envy.”

Luque is constantly publishing papers. Last year he authored some 110 articles. So far this year he has published 58. The chemist admitted that since December, he has been using the [artificial intelligence program ChatGPT](#) to “polish” his texts. “These months have been quite productive, because there are articles that used to require two or three days and now I do them in one day,” he said. ChatGPT, launched in December, is capable

# Prolific Stars

- 



# Fairness thoughts

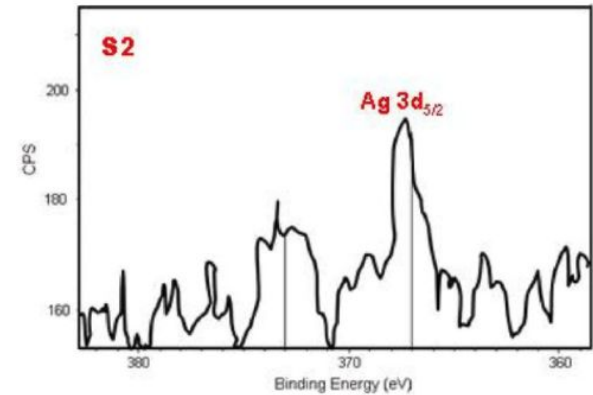
- What if I
  - find a mistake in my analysis?
  - find a mistake just before my paper submission?
  - find a mistake during the review process of my article?
  - find a mistake just before my paper resubmission deadline?
  - find a mistake after my paper is published?
  - find a mistake in a colleague's paper?
  - find an indication of data manipulation in colleague's paper?

<https://www.linkedin.com/pulse/facilitating-fairness-workplace-leslie-speas-ma-sphr-shrm-scp-cpc/>



# Data issues

- **Missing primary data**
  - negligence, intended
  - cannot preprocess the data
- Selected data – need to describe how and why
- **Falsified data**
  - Manipulated data in an unethical / non-scientific way
- **Fabricated data**
  - made-up data
- Data presentation in a non-exact / non-transparent way
- There can be some other reason for all the above
  - mistake in entering a figure, data sequence to a graph
    - different accidents have different credibility, hard to judge
    - there is never a 100% certainty in what happened
- **Plagiarism**

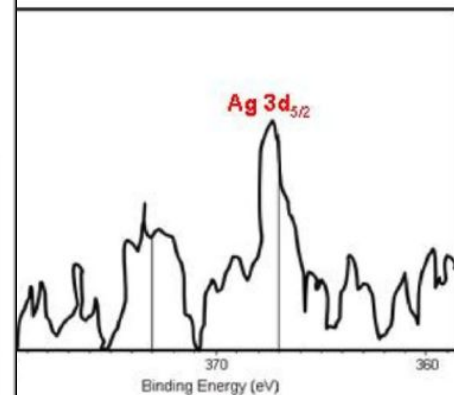
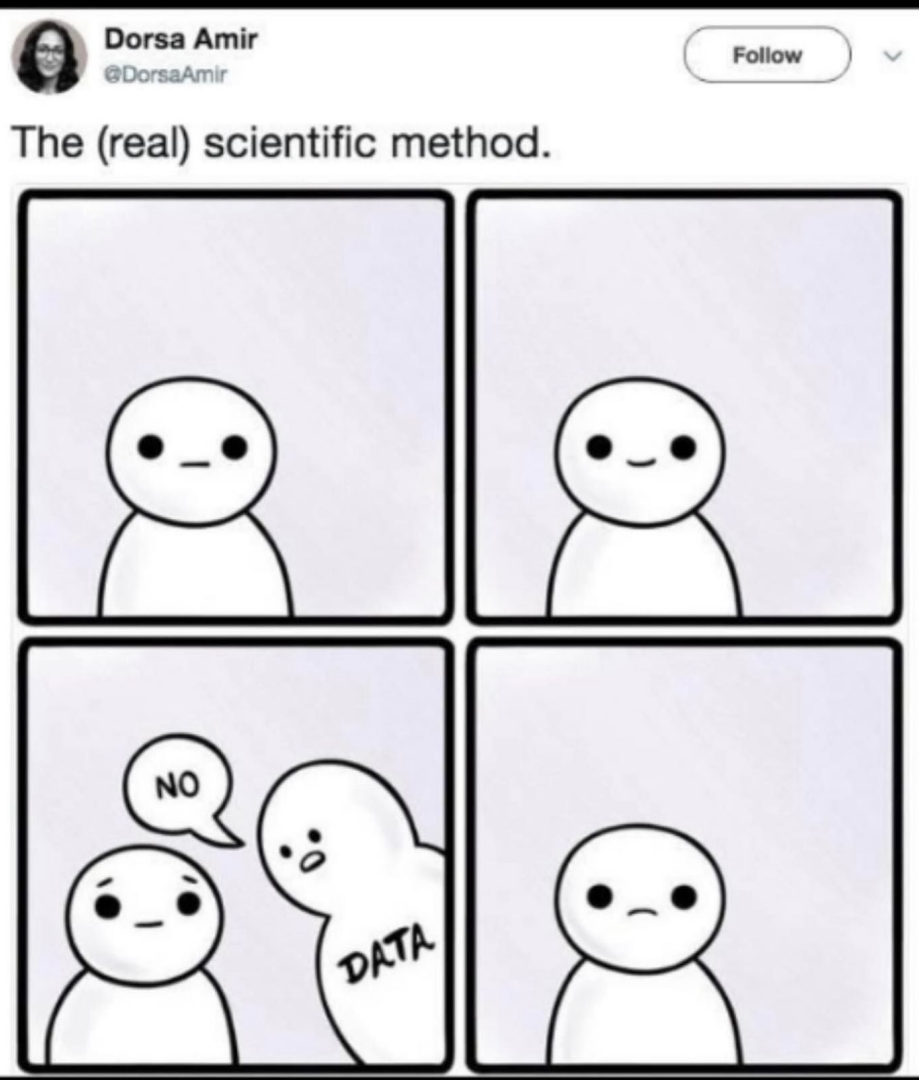


<https://www.springer.com/gp/authors-editors/editors/data-fabrication-data-falsification/4170>

# Data issues

- Missing primary data
  - negligence,
  - cannot reproduce
- Selected data – data dredging
- Falsified data
  - Manipulated
- Fabricated data
  - made-up data
- Data presentation
- There can be some errors
  - mistake in error bars
    - different
    - there is
- Plagiarism

<https://www.sp>



<https://www.sp>-falsification/4170

# Retrakce

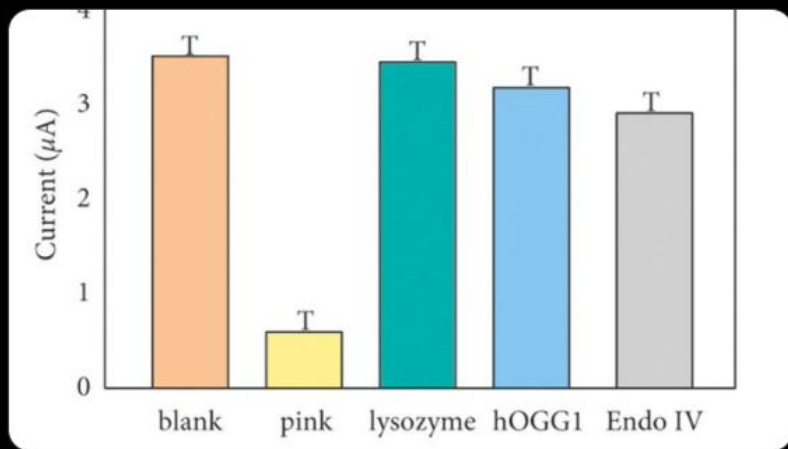
- <https://retractionwatch.com/2022/12/05/a-paper-used-capital-ts-instead-of-error-bars-but-wait-theres-more/>
- <https://retractionwatch.com/2022/12/22/that-paper-with-the-t-error-bars-was-just-retracted/>



Josemari Feliciano  
@jmtfeliciano

Wait a second, these are not real error bars ... the author literally just put the letter “T” above the bar graphs 😬

Přeložit post



11:22 odp. · 28. 11. 2022



541



6 078



53,7 tis.

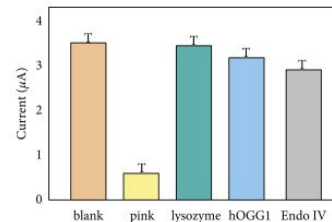


1 649



## That paper with the ‘T’ error bars was just retracted

Remember the paper that made the rounds on Twitter after readers discovered that the error bars in one of its figures were really just capital Ts?



Well, it’s now been retracted, with the notice citing “concerns about the article’s scientific reliability.”

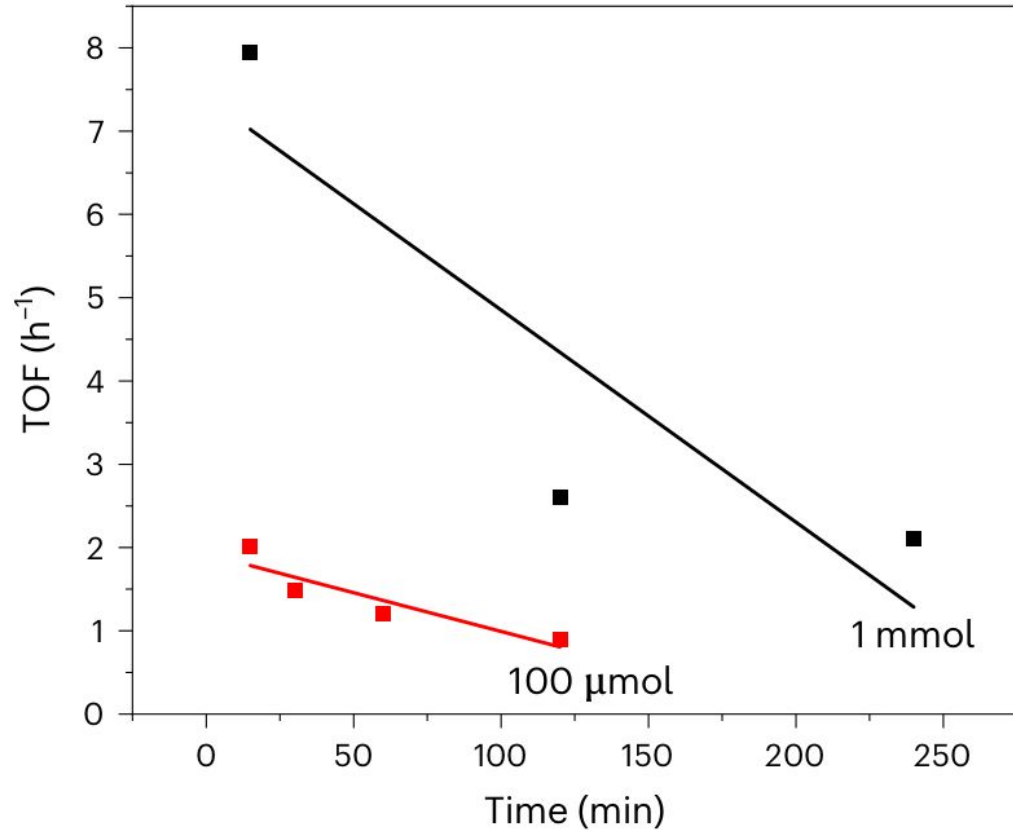
# Conflict of / Competing interests

- Often must be sincerely declared when inserting the manuscript into the publisher's system.
  - Declaration that author has no personal interest...
    - in e.g. owning a company producing the material, specimen
      - the published article could increase company's income and reputation
      - pending patent request
  - ...or a clash of interests
    - e.g. knowing a reviewer, editorial board members, and vice versa!
  - Individual authorship roles and responsibilities
    - not to avoid any contributing authors
  - Funding declaration
    - grants, gifts, sponsors
    - companies with an interest in the field, technology...
  - <https://www.biomedcentral.com/getpublished/writing-resources/competing-interests>
  - <https://www.nature.com/nature-portfolio/editorial-policies/competing-interests>
  - [https://www.youtube.com/watch?v=MI0XQLQEqAc&ab\\_channel=CambridgeUniversityPress](https://www.youtube.com/watch?v=MI0XQLQEqAc&ab_channel=CambridgeUniversityPress)
  - [https://www.youtube.com/watch?v=auePL3pYRb0&ab\\_channel=McCombsSchoolofBusiness](https://www.youtube.com/watch?v=auePL3pYRb0&ab_channel=McCombsSchoolofBusiness)
- could affect, or could be ***perceived*** to affect,



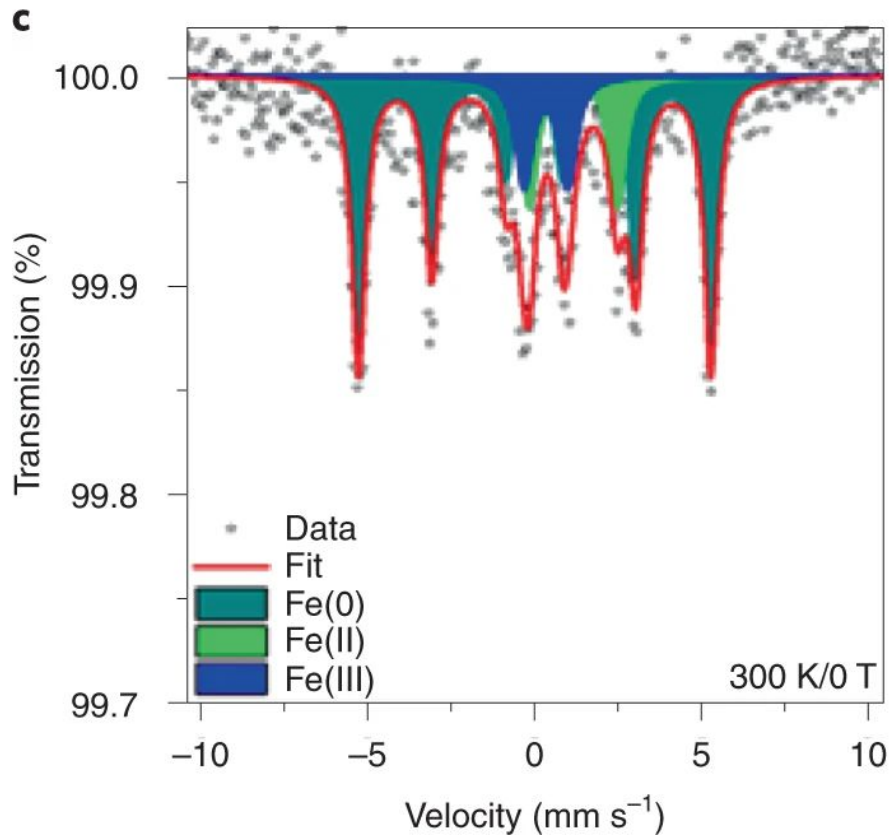
# Spectra...

- Different standards in different fields?
- Any uncertainty in the data and fit?
  - what is the fit good for
  - what do students think?
- <https://www.nature.com/articles/s41565-023-01353-y>



# Spectra...

- Different standards in different fields?
- Vector graphics vs bitmap?
- Why?
- <https://pubpeer.com/publications/0B0501B4B3DD813637924814CA3209#3>



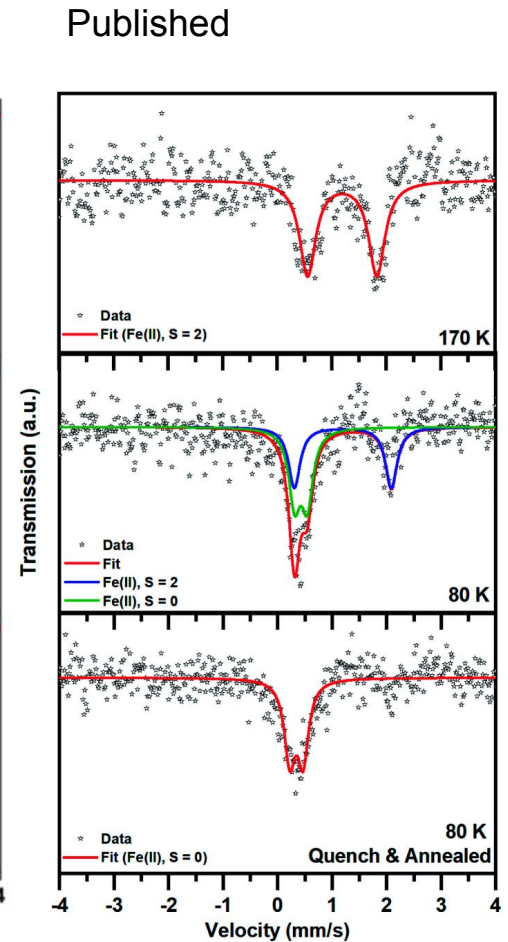
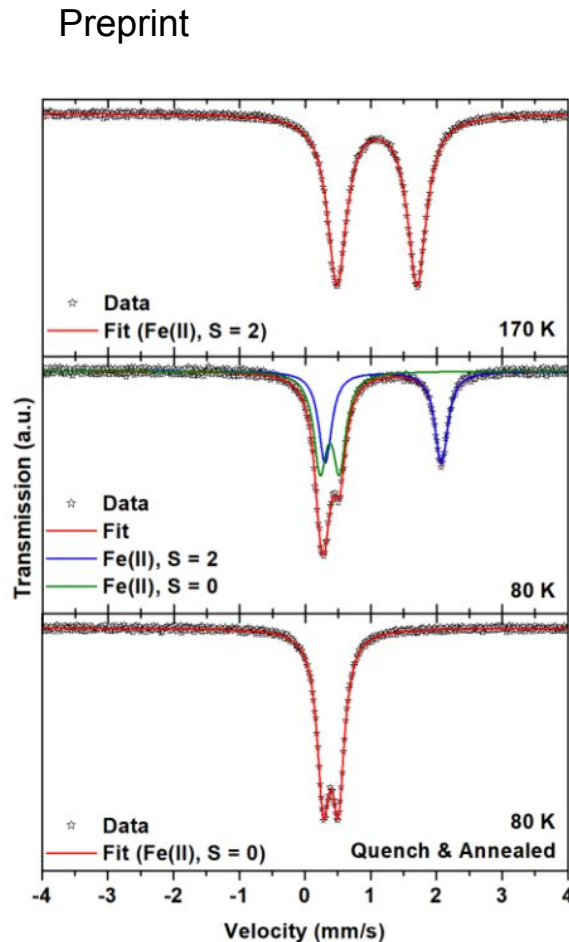
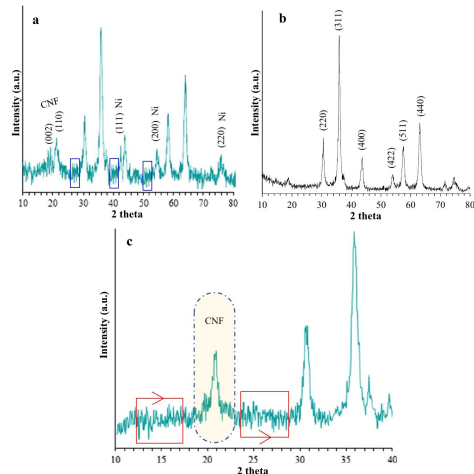
<https://www.nature.com/articles/s41929-021-00722-x/figures/5>

Nature Catalysis (Nat Catal) ISSN 2520-1158 (online)

# Spectra...

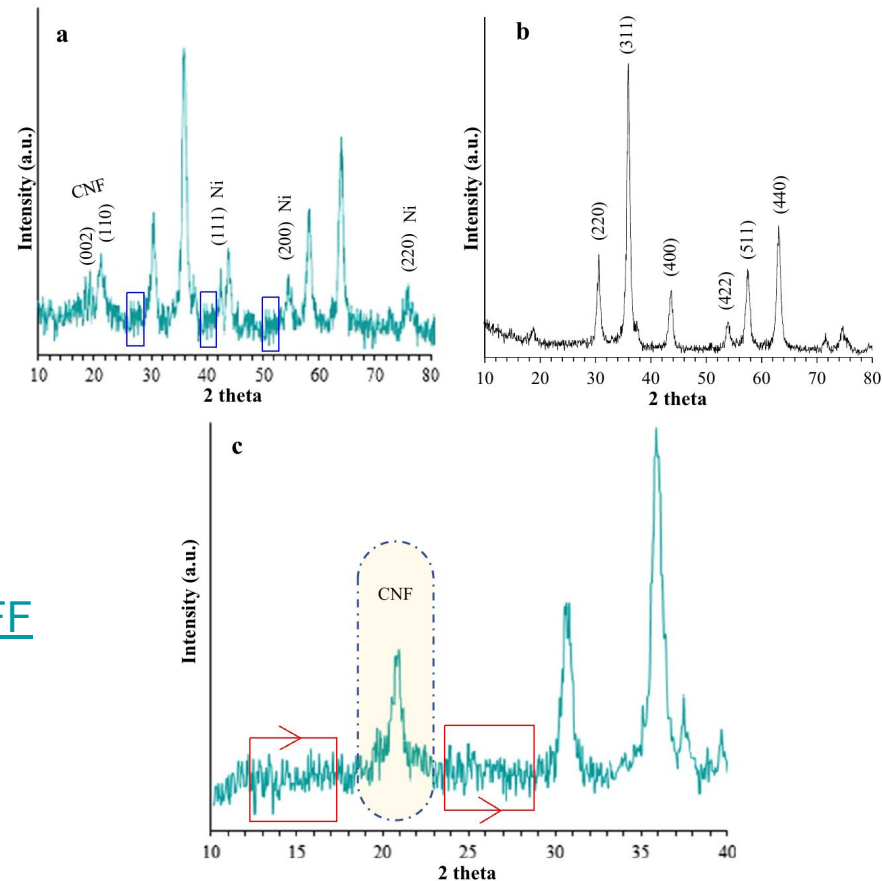
- Preprint vs. published versions of the same (?) spectra.
- Why?
- <https://pubpeer.com/publications/5E8F10828DD327F0FA62B3B528EDEA#7>

Fig. 7 Comparison XRD pattern of Fe<sub>3</sub>O<sub>4</sub>@CNF@Ni nanocomposite (a, and c: zoom) and Fe<sub>3</sub>O<sub>4</sub> (b)



# Spectra...

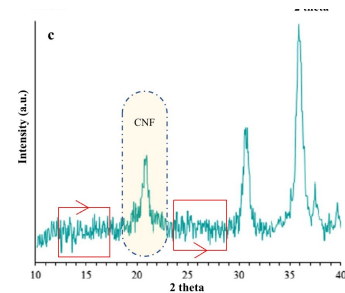
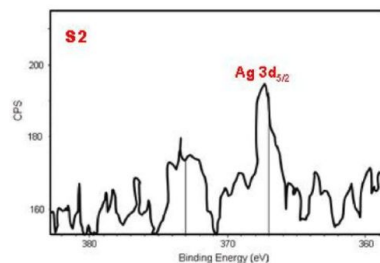
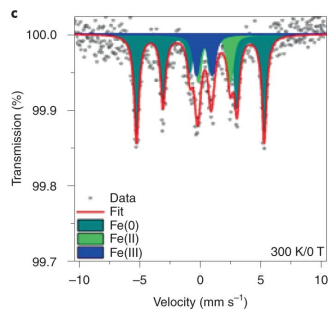
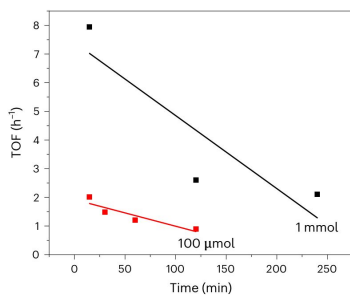
**Fig. 7** Comparison XRD pattern of  $\text{Fe}_3\text{O}_4$ @CNF@Ni nanocomposite (a, and c: zoom) and  $\text{Fe}_3\text{O}_4$  (b)



- Repeated “noise”
- mirrored data...
- <https://pubpeer.com/publications/157B95A7FF17F9AA5B9E2E2EC91E51>

# How come all this goes through the peer review?

- Several exp. methods, not enough reviewers, not experts on all methods.
- Small communities in very specialized fields.
- Difficulties finding reviewers, process then suffering from their quality and critical attitude.
- “An attractive story”, potential grounds-breaking etc prevailing over data quality; framing effect, reviewer confirms his good first god impression and may not seek issues.
- Personal ties between authors and referees, a possible unethical trade...
- A crisis in some field?
- Growing number of journal, lowering quality.
- Still, a large number of quality journals rejecting many manuscripts!



# Roles of ethics committees

- Evaluate ethical aspects of
  - data processing and storage
  - work with experimental subjects, humans, animals.
- Committees should oversee
  - respect to publication ethics, authorship, first/corresponding author roles and their responsibility.
  - honesty in declaration of interests in publication procedure (conflict on interests, personal interests, close persons in boards etc.)



# COPE = Committee on Publication Ethics

<https://publicationethics.org/>

<https://publicationethics.org/guidance/Case>

[Home](#) / [About COPE](#)

## About COPE

[☰](#) [Governance](#) [Strategy](#) [Trustees](#) [Council](#) [COPE team](#) [History](#)

COPE (Committee on Publication Ethics) is committed to educating and supporting editors, publishers, universities, research institutes, and all those involved in publication ethics. COPE aims to move the culture of publishing towards one where ethical practices become a normal part of the culture itself. Our approach is firmly in the direction of influencing through education, resources and support of our members, alongside the fostering of professional debate in the wider community.

# How the committees usually work?

- Can decide only based on information gathered from authors, experts.
- We can we all be wrong, but always try to decide collectively and based on the evidence.
- Often cannot reconstruct the process of manipulation or unethical behaviour, hard to find motivation.
- The committees are not police nor a judge or a courte.
- They often limit to statements whether an ethical codes was broken or not.

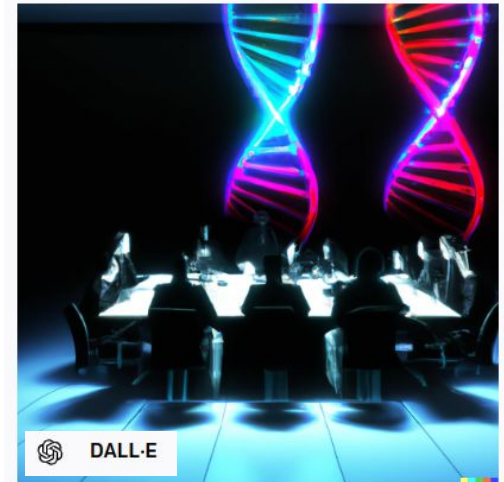
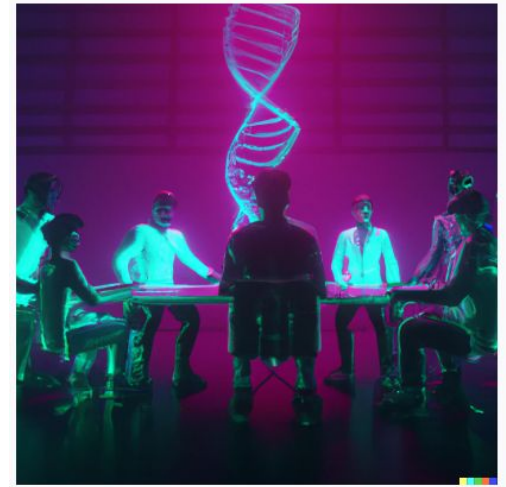


 DALL-E



# How the committees usually work?

- Usually advisory bodies to rector, dean, senate, head of institute.
- The committee
  - tries to build the picture, talks to people involved, ask experts for opinion.
  - makes a recommendation based on evidence, testimonies, expert judgements.
- The resolution is an opinion, usually carrying recommendations for a remedy, suggest protection rules to avoid the situation in future.
- Not an executive body.



# How the committees usually work?

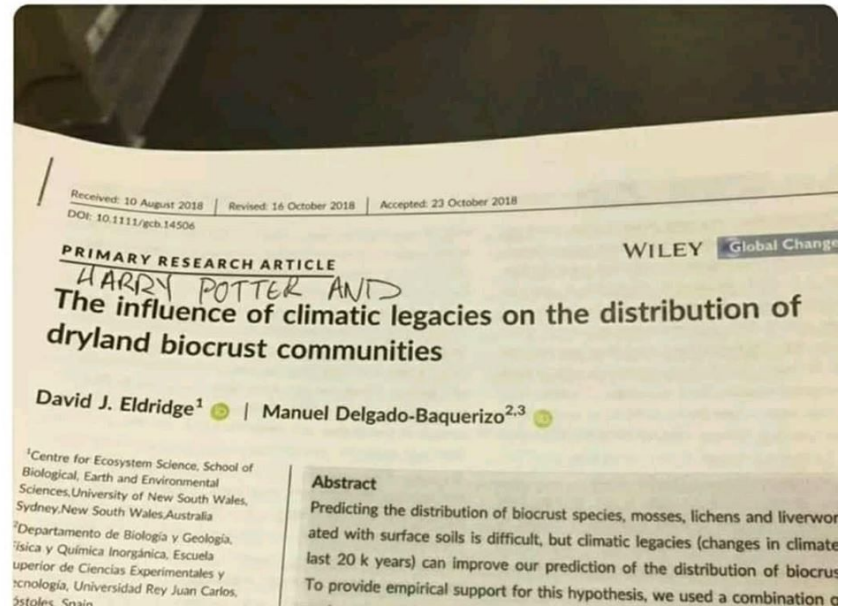
- Also, the committee does not judge the expertise part of the problem
  - not necessarily even the scientific correctness of results, that is on the particular scientific community
  - rather it judges proper application of general attitudes and procedures.
  - it is not an expert committee in the sense of an editorial board or a referee or a reviewer.



Marc W Van Goethem

@marcwvg

Trying to be an adult and read a scientific paper and your wife does this...



# Ethical issues in scientific work?

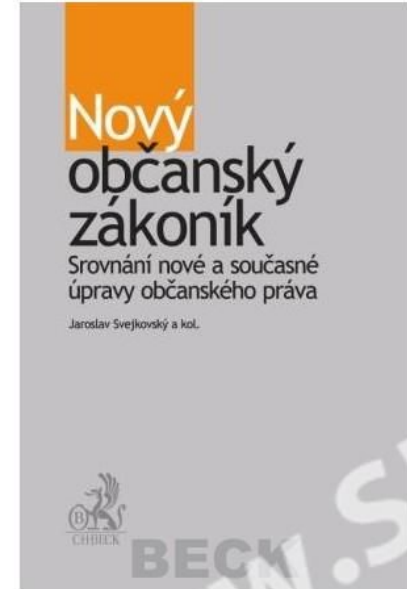
- Always the human factor, also in natural sciences;-)
- Ethics is not a law, rather a principle.
- Often difficult to see or define the limits.
- It is the responsibility of every institute to create environment helping to keep healthy ethics principles and quality research.

<https://www.evscienceconsultant.com/blog/the-7-most-frequent-reasons-for-manuscript-rejection>



# Beyond the scope of the committees

- Personal disputes
- Civil/employment disputes
- Breach of norms, legal code
- Freedom of speech, discussion
- Disciplinary committee
  - Study code
- Ombudsman cases



# Why?

- Possible causes
  - A simple mistake, negligence, overlooked circumstances, limits of methods, missing critical judgement/attitude, chance...
  - Gradual relativisation of methods and their applicability
  - Acting under pressure – employer, community, econom, academic career...

NUMBER OF SEARCH RESULTS ON GOOGLE SCHOLAR

	PHYSICS	CHEMISTRY	BIOLOGY	ENGINEERING	PSYCHOLOGY	THEOLOGY	DENTISTRY
THEORETICAL	3,990,000	445,000	553,000	2,460	15,500	726	41
QUANTUM	478,000	740,000	7,620	21,100	699	447	NONE
HIGH-ENERGY	844,000	9,600	3	119	1	NONE	NONE
COMPUTATIONAL	510,000	599,000	2,910,000	67,400	4,620	40	11
MARINE	3,920	136,000	945,000	108,000	35	6	1
ASTRO-	2,010,000	20,600	226,000	430	64	580	NONE

POTENTIAL RESEARCH OPPORTUNITIES: QUANTUM DENTISTRY,  
HIGH-ENERGY DENTISTRY, ASTRODENTISTRY, AND HIGH-ENERGY THEOLOGY

# Why?

- “Publish or perish”
- Grant / project indicators
- Pressure from project/institutional heads
- Career advance / acceleration
- Improve CV for further grants applications
  - H-index
- Every metric can be misused or become the primary target instead of science itself
- Whenever there is a possibility, there would be someone to try

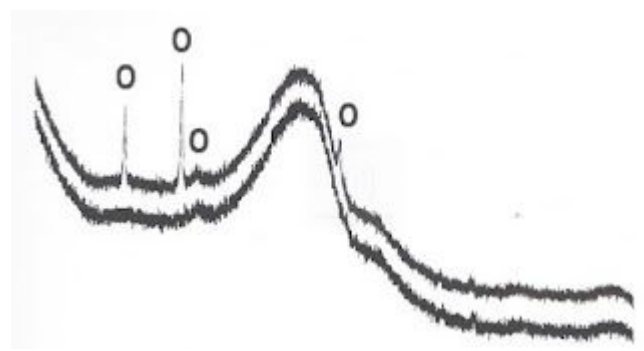
Manuscript  
submitted



Manuscript  
accepted



## Funny excuses



- OK, data is good/wrong/not available/cannot be found.
- We don't have the data but repeated measurement proves the conclusions are correct.
- We cannot provide the data as no one except us would understand them, it is unclear which is which, it is our property and could be misinterpreted.
- Yes, the figure is wrong but excluding it does not change the conclusions.
- Yes, but these co-authors are unknown to me.
- Yes, I am the corresponding author but these data were measured by someone else.

# Possible complication

- Ethical issues concerning a person
  - of respect, titles, carrying and promising grants, cooperation, reputation, ranking growth...
  - active in academic or institute structures, senates or management
  - with a direct effect on students finalization of their study, in academic committees for professorships, scientific boards...



Without me, the University of Córdoba will drop 300 places in the Shanghai ranking. They have shot themselves in the foot

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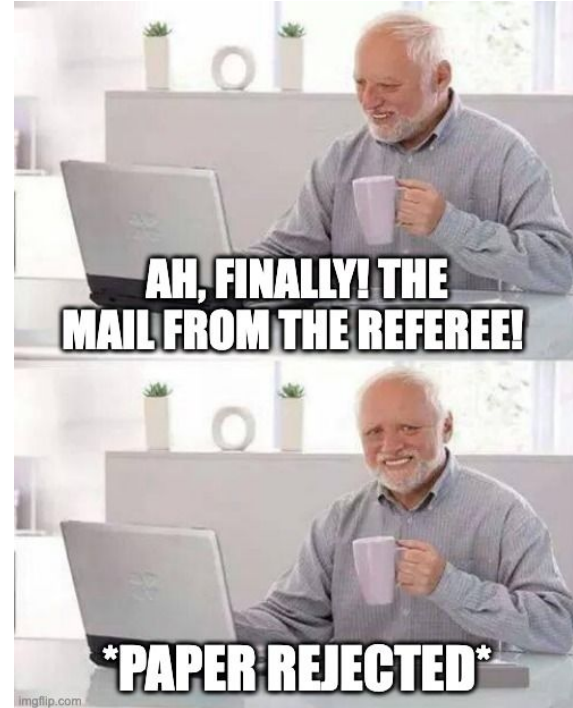
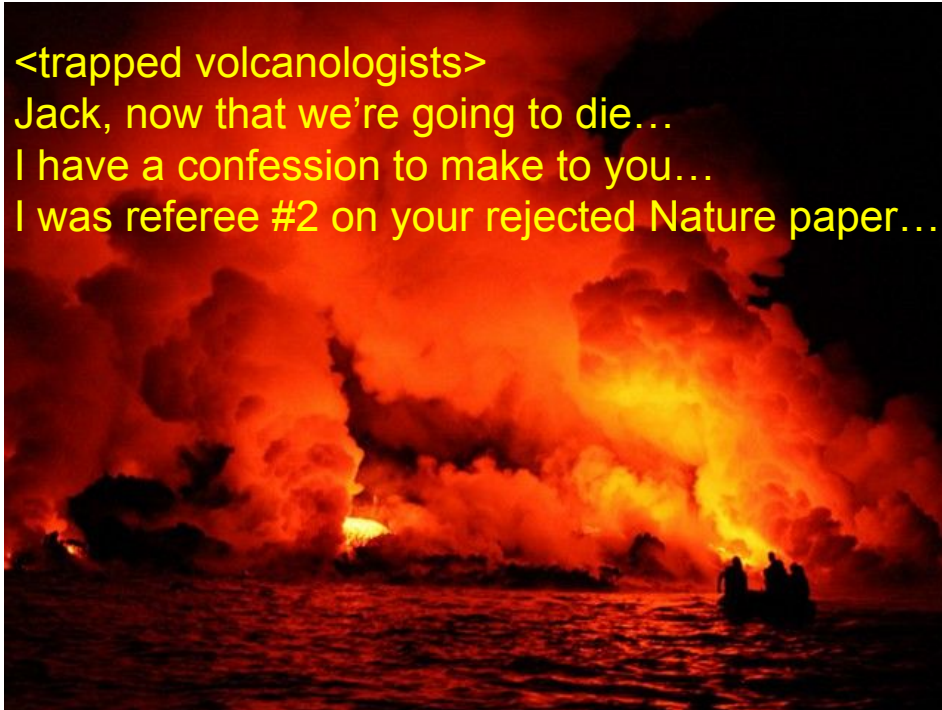
Rafael Luque, chemist



## On the other hand...

- Everyone has right to defend, explain, describe circumstances, procedures
- Beware of prejudices, stereotypes, misjudgement, halo effect, framing, priming...

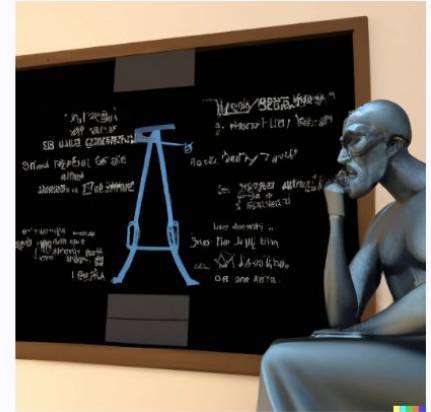
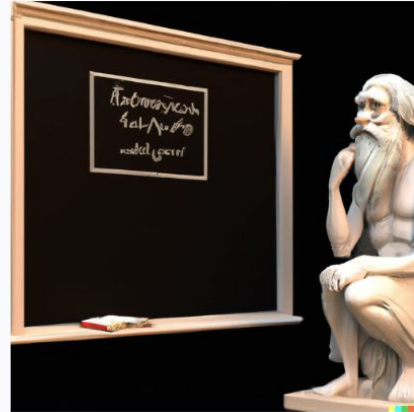
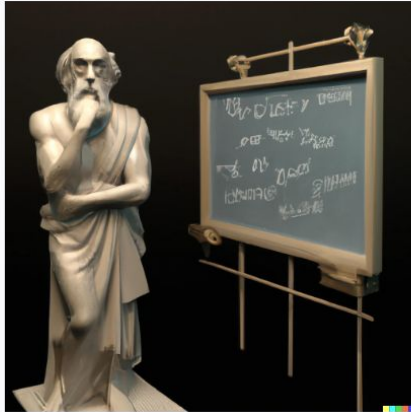
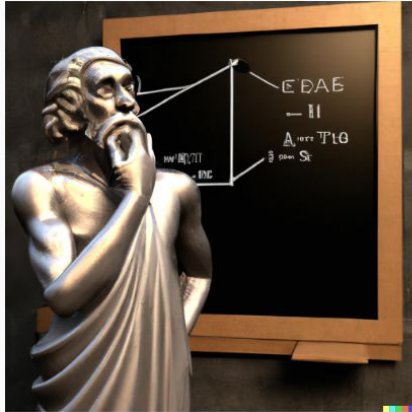
<trapped volcanologists>  
Jack, now that we're going to die...  
I have a confession to make to you...  
I was referee #2 on your rejected Nature paper...



rejected paper meme

# And therefore

- Ethics committees act collectively
  - varied and inclusive in composition, students participation
  - independent, with external members?
  - external expert opinions
  - non-political
  - with possibility to examine any case of any person at the institution



DALL-E

# Replication crisis

- Experiments reproducibility
- Publication of positive outcomes only
- Publish also negative outcomes
- <https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.0020124>
- [https://upload.wikimedia.org/wikipedia/commons/8/8e/loannidis\\_%282005%29\\_Why\\_Most\\_Published\\_Research\\_Findings\\_Are\\_False.pdf](https://upload.wikimedia.org/wikipedia/commons/8/8e/loannidis_%282005%29_Why_Most_Published_Research_Findings_Are_False.pdf)

Open access, freely available online

## Essay

# Why Most Published Research Findings Are False

John P.A. Ioannidis

## Summary

There is increasing concern that most current published research findings are false. The probability that a research claim is true may depend on study power and bias, the number of other studies on the same question, and, importantly, the ratio of true to no relationships among the relationships probed in each scientific field. In this framework, a research finding is less likely to be true when the studies conducted in a field are smaller; when effect sizes are smaller; when there is a greater number and lesser preselection of tested relationships; where there is greater flexibility in designs, definitions, outcomes, and analytical modes; when there is greater financial and other interest and prejudice; and when more teams are involved in a scientific field in chase of statistical significance. Simulations show that for most study designs and settings, it is more likely for a research claim to be false than true.

factors that influence this problem and some corollaries thereof.

## Modeling the Framework for False Positive Findings

Several methodologists have pointed out [9–11] that the high rate of nonreplication (lack of confirmation) of research discoveries is a consequence of the convenient, yet ill-founded strategy of claiming conclusive research findings solely on the basis of a single study assessed by formal statistical significance, typically for a  $p$ -value less than 0.05. Research is not most appropriately represented and summarized by  $p$ -values, but, unfortunately, there is a widespread notion that medical research articles

**It can be proven that most claimed research findings are false.**

is characteristic of the field and can vary a lot depending on whether the field targets highly likely relationships or searches for only one or a few true relationships among thousands and millions of hypotheses that may be postulated. Let us also consider, for computational simplicity, circumscribed fields where either there is only one true relationship (among many that can be hypothesized) or the power is similar to find any of the several existing true relationships. The pre-study probability of a relationship being true is  $R/(R+1)$ . The probability of a study finding a true relationship reflects the power  $1 - \beta$  (one minus the Type II error rate). The probability of claiming a relationship when none truly exists reflects the Type I error rate,  $\alpha$ . Assuming that  $c$  relationships are being probed in the field, the expected values of the  $2 \times 2$  table are given in Table 1. After a research finding has been claimed based on

# The other side :: Predatory journals



- Demand induces the offer...
- Jeffrey Beall: Beall's list <https://beallslist.net/>
- Problematic open access journals with an impact factor
  - but often with a higher fee; and easier and faster peer-review process
  - <https://english.elpais.com/science-tech/2023-10-31/public-funds-being-swby-scientific-journals-with-dubious-articles.html>
- Grey zone: MDPI
  - <https://en.wikipedia.org/wiki/MDPI#Controversies>
  - a broader family of journals with a different degree to be trusted; 6.5k employees...
  - invitations to contribute to a “special issue”
  - invitations to become an editor
  - often complemented with an offer to publish in other issue for a lower fee...
  - Vigilance:
    - careful with simple review processes
    - Emails “dear professor...” inviting to editorial boards, to conferences as an invited speaker...
  - Recommendation: do not hide previous possibly problematic publication, include in CV, do not emphasise but be ready to explain circumstances

# Predatory journals... but also conferences

- Large differences
  - Some charges are just a “processing fee”
  - Some “Article Processing Charge (APC)” include language corrections
  - <https://www.nature.com/nature/for-authors/publishing-options>

The screenshot shows the Nature journal website. At the top, the word "nature" is displayed in a large, bold, black font. To the right of the logo are links for "View all journals", "Search" (with a magnifying glass icon), and "Log in". Below the logo is a navigation bar with links for "Explore content", "About the journal", "Publish with us", and "Subscribe". On the right side of this bar are "Sign up for alerts" (with a bell icon) and "RSS feed". Below the navigation bar is a breadcrumb trail: "nature > for authors > publishing options". On the left side of the page, there is a vertical list of links under the heading "For Authors": "Editorial criteria and processes", "Formatting guide", "Presubmission enquiries", "Initial submission", "Final submission", "Supplementary information", "Forms and declarations", "Matters Arising", "Other types of submissions", "Publishing options", and "Registered Reports". The main content area is titled "Publishing options" in a large, bold, black font. Below the title, a paragraph states: "Authors submitting primary research articles to *Nature* have the option of publishing their research using either:". This is followed by two numbered sections. Section 1 is titled "1 – Traditional subscription publishing model" and describes the process of submitting an article, being assessed by editors, going through Peer Review, and being eligible for publication. Section 2 is titled "2 – Gold Open Access" and describes the same publishing process as above, but with a key difference: "The difference is that when an article is accepted for publication, the author/s or funder/s pay an Article Processing Charge (APC). The final version of the published article is then free to read for everyone. The APC to publish Gold Open Access in *Nature* is €9,750 / \$11,690 / £8,490." This final sentence is enclosed in a red rectangular box.

**nature** [View all journals](#) [Search](#) [Log in](#)

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[nature](#) > [for authors](#) > publishing options

[For Authors](#)

- [Editorial criteria and processes](#)
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- [Other types of submissions](#)
- [Publishing options](#)
- [Registered Reports](#)

## Publishing options

Authors submitting primary research articles to *Nature* have the option of publishing their research using either:

**1 – Traditional subscription publishing model** – an article is submitted and is assessed by our editors. If suitable it will be put through Peer Review, and if successful (subject to amendments), will be eligible for publication. Published articles are made available to institutions and individuals who subscribe to *Nature* or who pay to read specific articles.

**2 – Gold Open Access** – same publishing process as above. The difference is that when an article is accepted for publication, the author/s or funder/s pay an Article Processing Charge (APC). The final version of the published article is then free to read for everyone. The APC to publish Gold Open Access in *Nature* is €9,750 / \$11,690 / £8,490.



[https://www.extralife.cz/fotky/nejbohatsi-filmove-postavy\\_42573/10](https://www.extralife.cz/fotky/nejbohatsi-filmove-postavy_42573/10)

## WHAT IS AN ARTICLE PROCESSING CHARGE?

The Article Processing Charge (APC) is the amount authors are charged when their manuscript is accepted for publication. APCs cover the following:

- **Editorial work:** assess and select the most important research to publish, partner with authors and reviewers to deliver significant improvements to manuscripts through our rigorous and intensive review process, manage peer review, bespoke correspondence with authors, administrative support and journal development.
- **Technical infrastructure and innovation:** development, maintenance and operation of online journal systems and websites.
- **Production of articles:** formatting, lay-out and mark-up of articles, copy editing and inclusion in indexing services.
- **Promotion of journal and content:** making sure readers and authors know about the work published in the journal.
- **Customer service:** responding to the needs of authors and readers.

# The growing inaccessibility of science

nature > commentary > article

MENU ▾

nature

Commentary | Published: 30 April 1992

## The growing inaccessibility of science

Donald P. Hayes

Nature 356, 739–740(1992) | Cite this article

1015 Accesses | 44 Citations | 27 Altmetric | Metrics

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<https://www.nature.com/articles/356739a0>

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## The growing inaccessibility of science

Donald P. Hayes

Nature 356, 739–740 (1992) | Cite this article

102k Accesses | 50 Citations | 222 Altmetric | Metrics

**That science has become more difficult for nonspecialists to understand is a truth universally acknowledged. Here is a measure of the extent of the process.**

### Author information

Authors and Affiliations

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Donald P. Hayes

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<https://www.nature.com/articles/356739a0>



[nature](#) > [articles](#) > article

Published: [01 September 1956](#)

## The Neutrino

[FREDERICK REINES](#) & [CLYDE L. COWAN](#)<sup>jun.</sup>

*Nature* **178**, 446–449 (1956) | [Cite this article](#)

**2805** Accesses | **128** Citations | **60** Altmetric | [Metrics](#)



An [Erratum](#) to this article was published on 08 September 1956

EACH new discovery of natural science broadens our knowledge and deepens our understanding of the physical universe; but at times these advances raise new and even more fundamental questions than those which they answer. Such was the case with the discovery and investigation of the radioactive process termed 'beta decay'. In this process an atomic

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### Editorial Summary


#### The neutrino – the mystery and the discovery

In the 1920s, physicists were confused: the phenomenon of  $\beta$  decay (in which an electron is emitted from the atomic nucleus) seemed to violate conservation laws. The energy spectrum of the electrons, [show all](#)

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**Sci-Hub** is the most controversial project in modern science. The goal of Sci-Hub is to provide **free and unrestricted** access to all scientific knowledge.

# Our responsibility

- Scientists are responsible
  - to the society which supports us
  - to students and next generations of scientists we directly influence, teach and bring up
  - to the field, frontiers of which we are extending
  - results and their applicability and impact on society

<https://www.peerreview.co.nz/post/taking-responsibility>



# Responsibility to students

- We set
  - atmosphere, culture in teams
  - examples of control mechanisms and communication about problems
  - level of critical thinking
  - ways how to solve and report problems in team, department
  - examples how to respect limitations of methods, our own abilities and level of understanding
  - rules for being a co-author



<https://scientificwritingtips.wordpress.com/the-cartoons/>



Tip 6 - Discussion: be frank in acknowledging limitations!

# Authorship

- Prestige, privilege, benefit to the author
- But also a responsibility
  - for the results, conclusions, interpretation
  - fo the data, their processing and availability, e.g. on demand.

<https://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html>



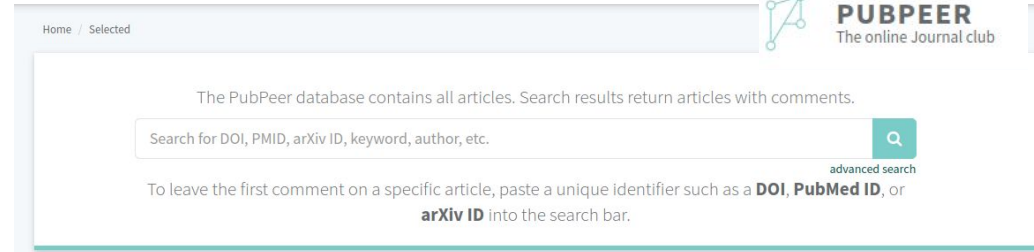
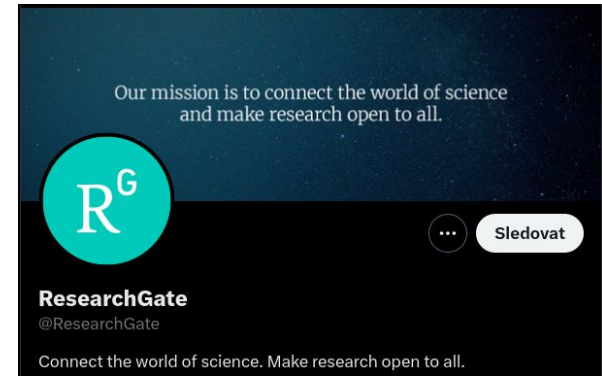
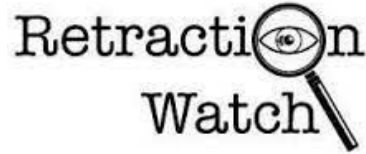
## *2. Who Is an Author?*

The ICMJE recommends that authorship be based on the following 4 criteria:

- Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND
- Drafting the work or reviewing it critically for important intellectual content; AND
- Final approval of the version to be published; AND
- Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

# Sites

- Researchgate
- Sci-hub
- Pubpeer
- Retraction Watch
- For Better Science
- Beall's list



## For Better Science

BY LEONID SCHNEIDER, ON RESEARCH INTEGRITY, BIOMEDICAL ETHICS AND ACADEMIC PUBLISHING

# Learned Society of the Czech Republic (in czech)

- [https://www.youtube.com/live/YK\\_j-fYtBZ4?si=DjisTmGLOiq3al2S](https://www.youtube.com/live/YK_j-fYtBZ4?si=DjisTmGLOiq3al2S)



The image shows a screenshot of a YouTube live stream interface. At the top, the YouTube logo and 'CZ' are visible on the left, and a search bar is on the right. The main content area has a dark red background with white text. The title 'Etika vědecké práce' is prominently displayed. Below it, the date and time 'úterý 15. 9. 2020, 16 h' are shown. A list of speakers follows: 'prof. PhDr. Olga Lomová, CSc.', 'prof. Ing. Jaroslav Petr, CSc.', 'prof. RNDr. Petr Slavíček, Ph.D.', and 'Mgr. et Mgr. Marek Vácha, Ph.D.'. Below the list, it says 'moderuje: RNDr. Ivo Starý, CSc.'. At the bottom, there is a video player control bar with a play button, a progress bar showing '0:06 / 1:58:45', and various icons for volume, closed captions, settings, and full screen.

YouTube<sup>CZ</sup> Search

## Etika vědecké práce

úterý 15. 9. 2020, 16 h

prof. PhDr. Olga Lomová, CSc.  
prof. Ing. Jaroslav Petr, CSc.  
prof. RNDr. Petr Slavíček, Ph.D.  
Mgr. et Mgr. Marek Vácha, Ph.D.

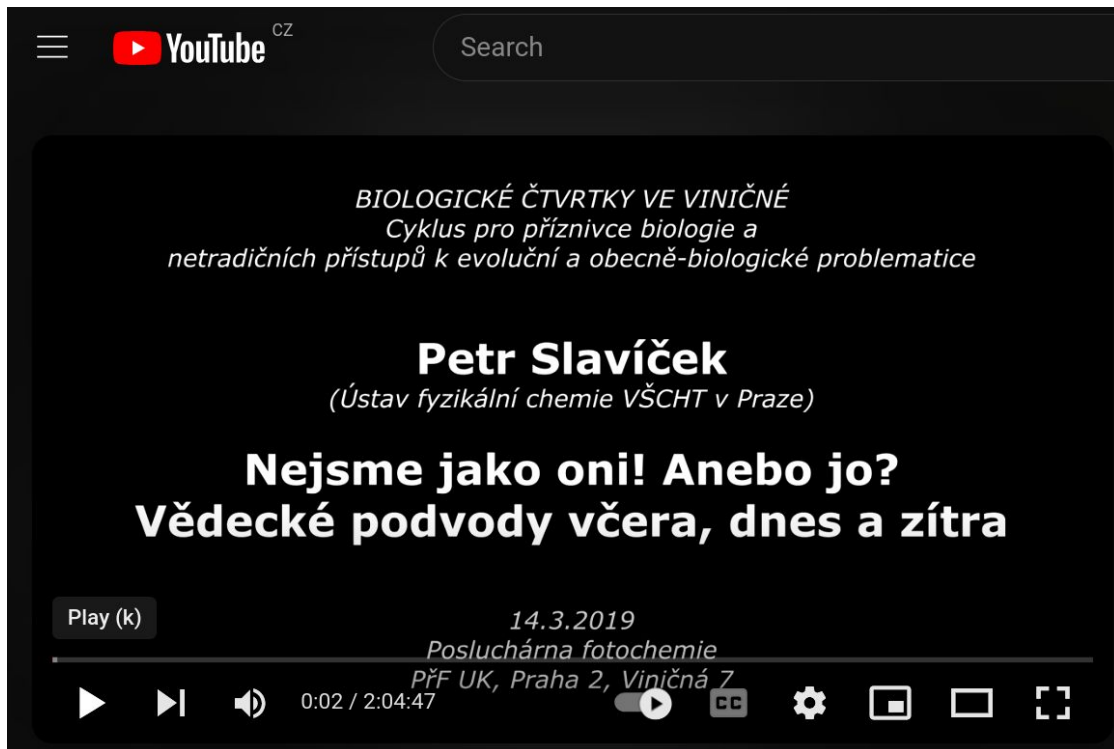
moderuje:  
RNDr. Ivo Starý, CSc.

0:06 / 1:58:45

diskuse Učené společnosti České republiky

# More on ethics in science (czech)

- <https://youtu.be/bkRVdGDaM3I?si=Vhm1EInN284HWCAM>



The image shows a YouTube video player interface. At the top left, there is a hamburger menu icon, the YouTube logo with 'CZ' next to it, and a search bar. The video content area has a black background with white text. The text reads: 'BIOLOGICKÉ ČTVRTKY VE VINIČNÉ' followed by 'Cyklus pro příznivce biologie a netradičních přístupů k evoluční a obecně-biologické problematice'. Below this is the name 'Petr Slavíček' and his affiliation '(Ústav fyzikální chemie VŠCHT v Praze)'. The main title of the video is 'Nejsme jako oni! Anebo jo? Vědecké podvody včera, dnes a zítra'. At the bottom, there is a play button, a volume icon, a progress bar showing '0:02 / 2:04:47', and several control icons including a play button, a settings gear, a full screen icon, and a share icon. The video title and date '14.3.2019' are also visible at the bottom.

YouTube CZ Search

*BIOLOGICKÉ ČTVRTKY VE VINIČNÉ*  
*Cyklus pro příznivce biologie a*  
*netradičních přístupů k evoluční a obecně-biologické problematice*

**Petr Slavíček**  
(Ústav fyzikální chemie VŠCHT v Praze)

**Nejsme jako oni! Anebo jo?**  
**Vědecké podvody včera, dnes a zítra**

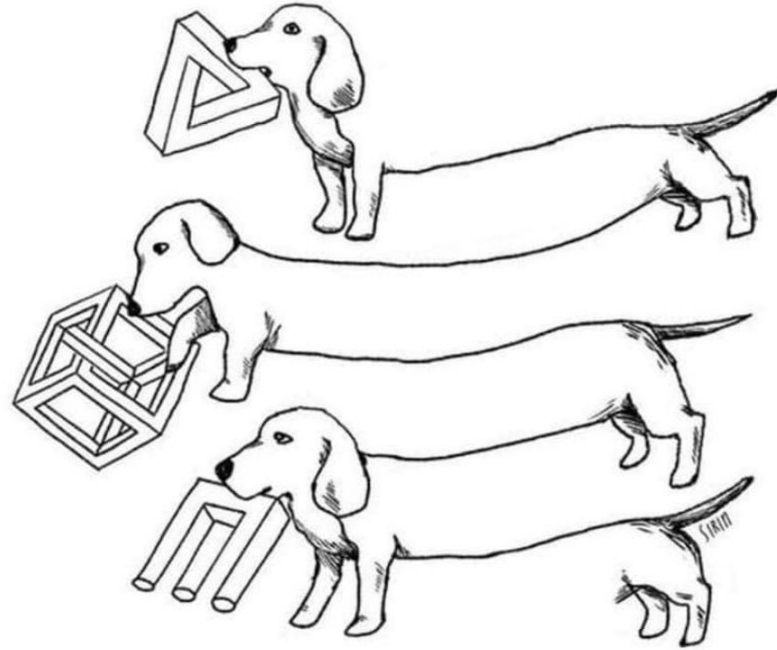
Play (k) 14.3.2019  
Posluchárna fotochemie  
PřF UK, Praha 2, Viničná 7

0:02 / 2:04:47



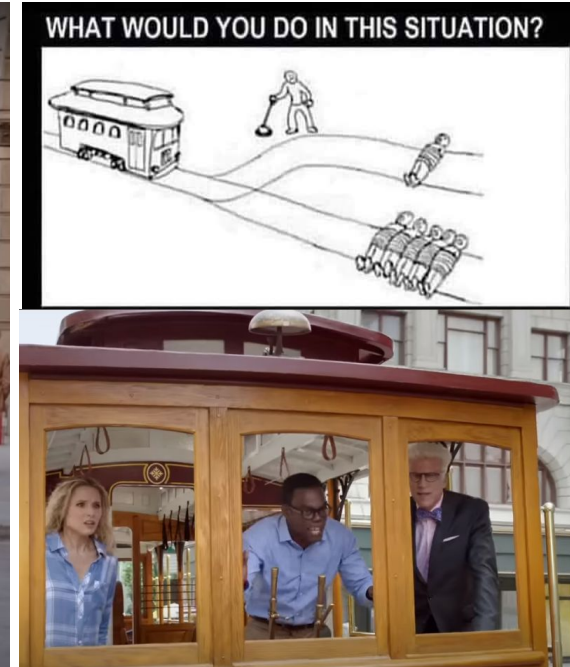
# Ethics

- different possible solutions and interpretations of what is ethically correct or wrong



# Ethics – Trolley Problem

- [https://www.youtube.com/watch?v=DtRhrfhP5b4&ab\\_channel=ComedyBites](https://www.youtube.com/watch?v=DtRhrfhP5b4&ab_channel=ComedyBites)
- different possible solutions and interpretations of what is ethically correct or wrong



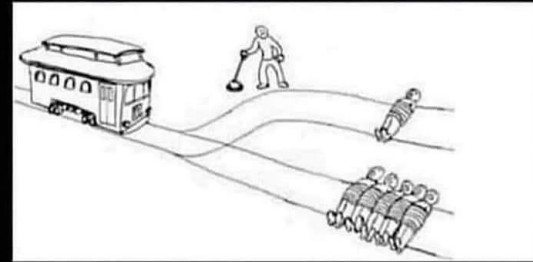
# Ethics – Trolley Problem

- [https://www.youtube.com/watch?v=DtRhrfhP5b4&ab\\_channel=ComedyBites](https://www.youtube.com/watch?v=DtRhrfhP5b4&ab_channel=ComedyBites)
- different possible solutions and interpretations of what is ethically correct or wrong

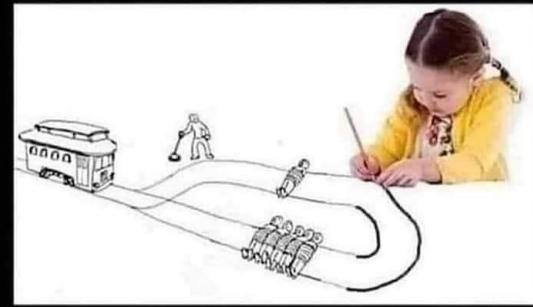
The Trolley Problem | The Good Place | Comedy Bites

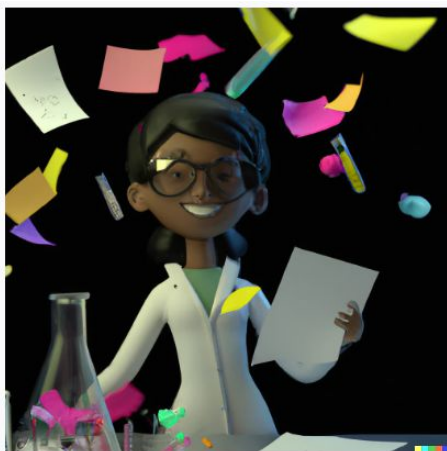
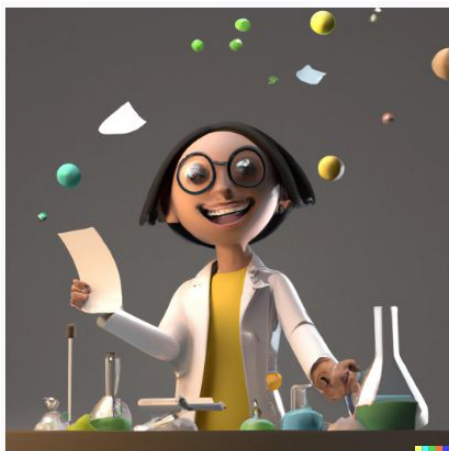
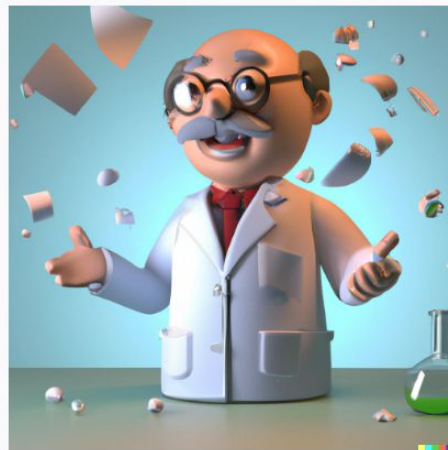
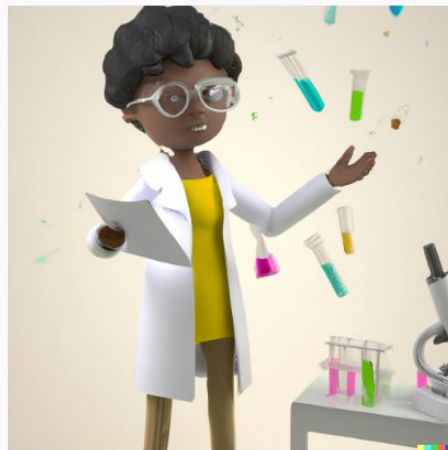
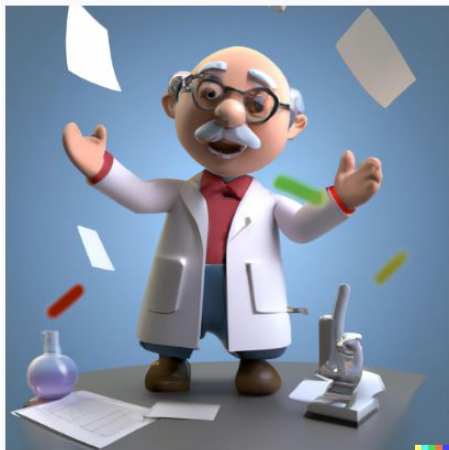


WHAT WOULD YOU DO IN THIS SITUATION?

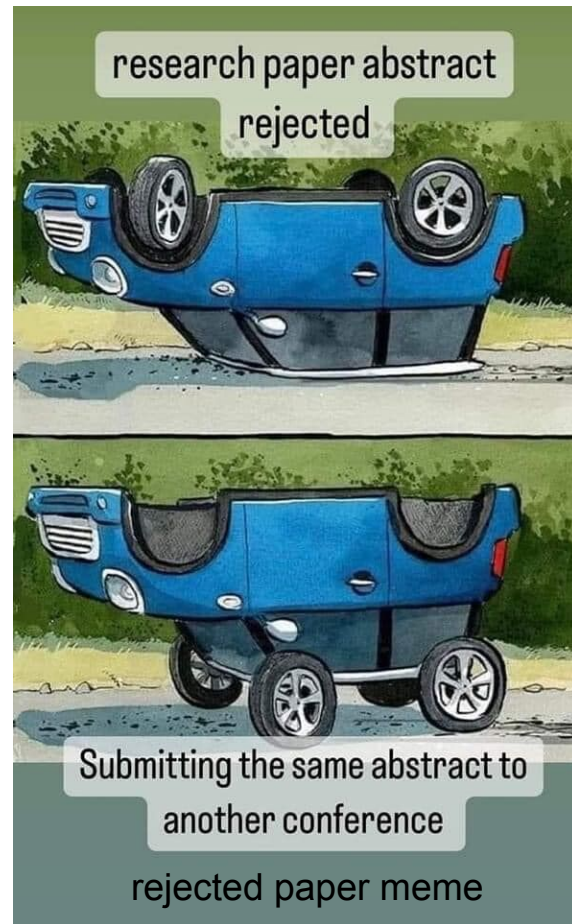


ME:



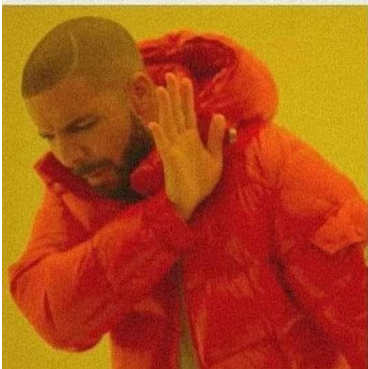


# The End

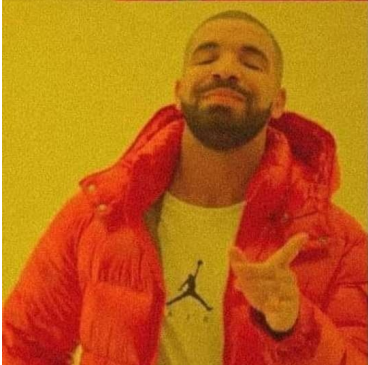


# What makes us human?

What makes you human?



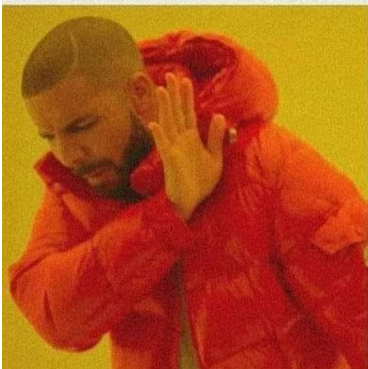
To love and care for  
others



Selecting all images  
with traffic lights

# What makes us human?

What makes you human?



To love and care for others



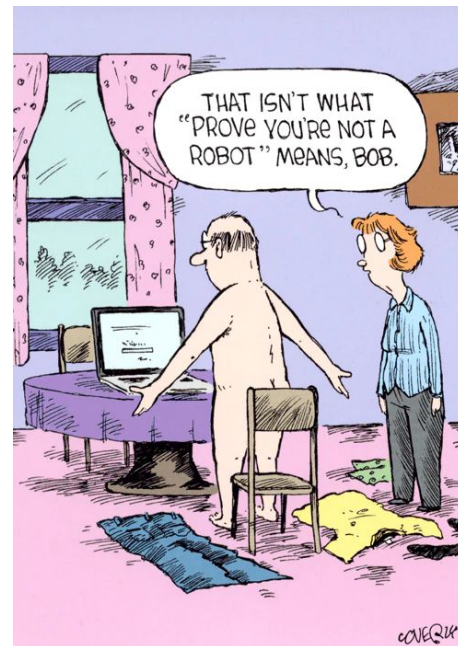
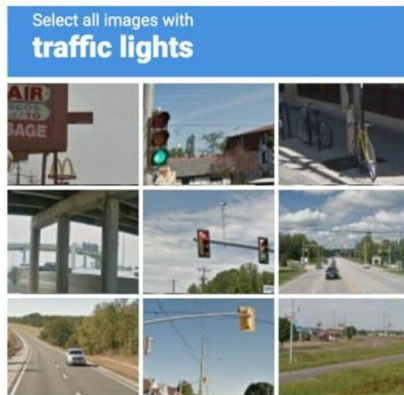
Selecting all images with traffic lights



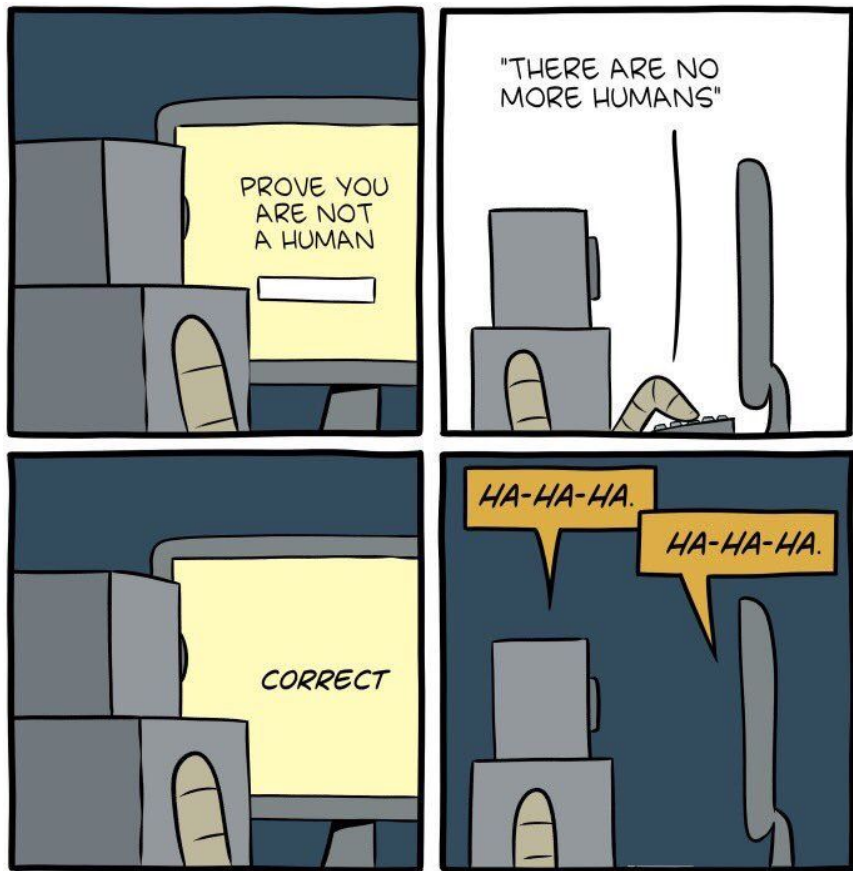
I'm not a robot



reCAPTCHA



# Meanwhile after AI takes over...



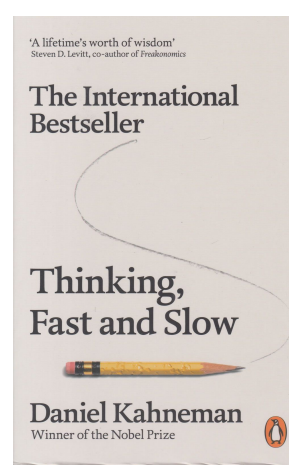


# Statutes of Ethics Committees

- Examine a possible breach of the ethical codex of the institution.
- Who can file a concern
- at the Faculty of Science PU
  - members of the committee
  - dean, faculty senate chair
    - based on a concern raised by the members of the academic members
      - possibility of an anonymous concern
        - whistleblowers protection
    - to the University Ethics Committee: only rector; fragile...
      - according to rules, an advisory board of rector
    - For each case an elected reporter within the committee
- Further rules not in codex but in procedural rules
- Inclusion of students
  - in or cases or in cases concerning students or their rights?

# Availability Bias, Confirmation Bias, Repeated Exposure

- **Daniel Kahneman: Thinking Fast and Slow:**
- Availability
- Confirmation bias
- Conformity bias
- Familiarity, cognitive ease



# Retraction and politics

<https://www.newsweek.com/putin-vorontsova-science-publish-daughter-1824886>

# Retractions

<https://link.springer.com/article/10.1007/s11192-021-03987-y>

Scientometrics (2021) 126:6871–6889  
<https://doi.org/10.1007/s11192-021-03987-y>



## Research ethics: a profile of retractions from world class universities

Caroline Lievore<sup>1</sup> · Priscila Rubbo<sup>1</sup> · Celso Bynkievycz dos Santos<sup>2</sup> ·  
Claudia Tânia Picinin<sup>1</sup> · Luiz Alberto Pilatti<sup>1</sup>

Received: 20 November 2020 / Accepted: 1 April 2021 / Published online: 23 May 2021  
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### Abstract

This study aims to profile the scientific retractions published in journals indexed in the Web of Science database from 2010 to 2019, from researchers at the top 20 World Class Universities according to the Times Higher Education global ranking of 2020. Descriptive statistics, Pearson's correlation coefficient, and simple linear regression were used to analyze the data. Of the 330 analyzed retractions, Harvard University had the highest number of retractions and the main reason for retraction was data results. We conclude that the universities with a higher ranking tend to have a lower rate of retraction.

### Introduction

Unethical research undermines confidence in researchers, universities, journals, and in science itself. In this sense, the peer review process, along with the responsible and transparent correction of articles, aims to guarantee the quality of knowledge available (Fang & Casadevall, 2011; Fennell, 2019; Lei & Zhang, 2018). However, even if research is submitted to peer review, this process may fail (Van Leeuwen & Luwel, 2014), and research with honest or dishonest errors does get published, as well as those with scientific dishonesty.

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