

Generative AI and Scientific Research: legal aspects (Intellectual Property and Copyright)

INAF
2025

Roberto Caso

Merton: social norms
of a public and democratic science(1938-1942)

**Public and democratic
science:**

- Communism
- Universalism
- Disinterestedness
- Organized skepticism



World Intellectual Property Organization:

<https://www.wipo.int/copyright/en/>

- «Copyright
- What is copyright?
- Copyright (or author's right) is a legal term used to describe the rights that **creators** have over their **literary and artistic works**. Works covered by copyright range from books, music, paintings, sculpture, and films, to computer programs, databases, advertisements, maps, and technical drawings».

Copyright law: striking a balance

Exclusivity
Vs
Public domain

Social norms → copyright law – three pillars

- A) Dichotomy idea/expression
- B) Original ownership of the work
- C) Paternity/attribution

Freedom and responsibility

- E.g. plagiarism

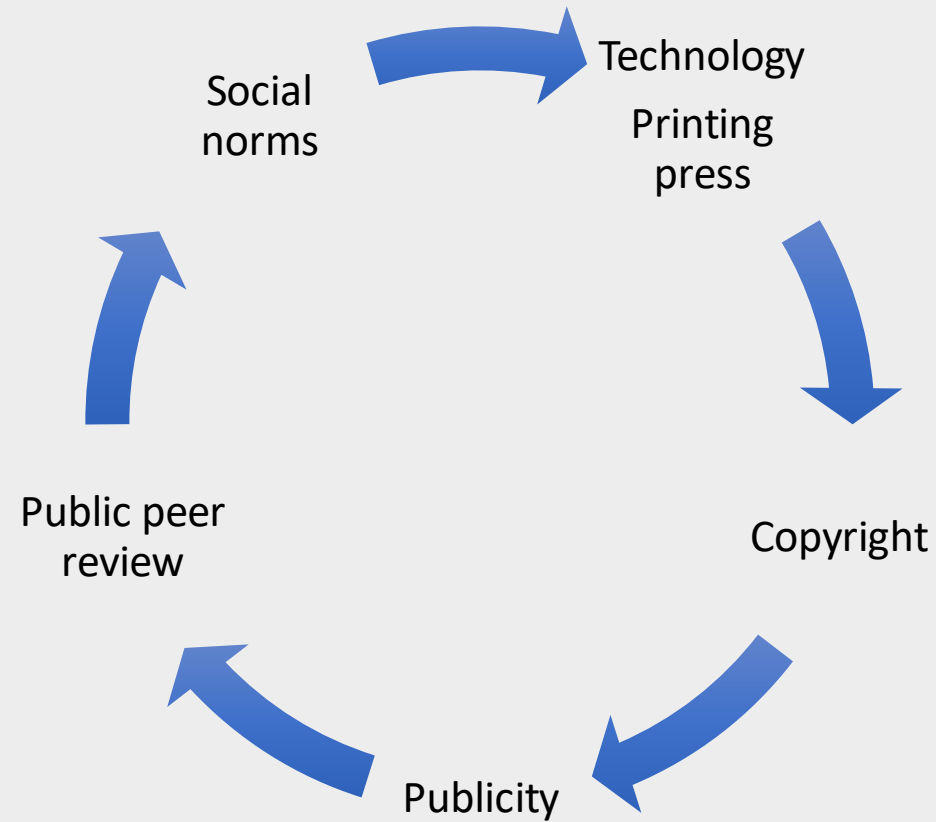
E.g. The Social Network (2010) di David Fincher
<https://www.youtube.com/watch?v=DRx68yFdARU>



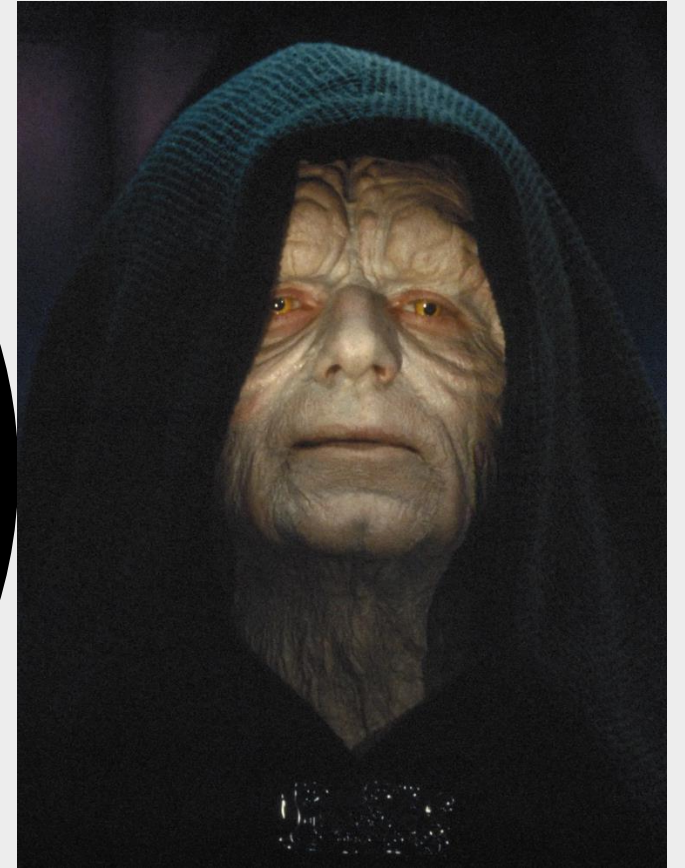
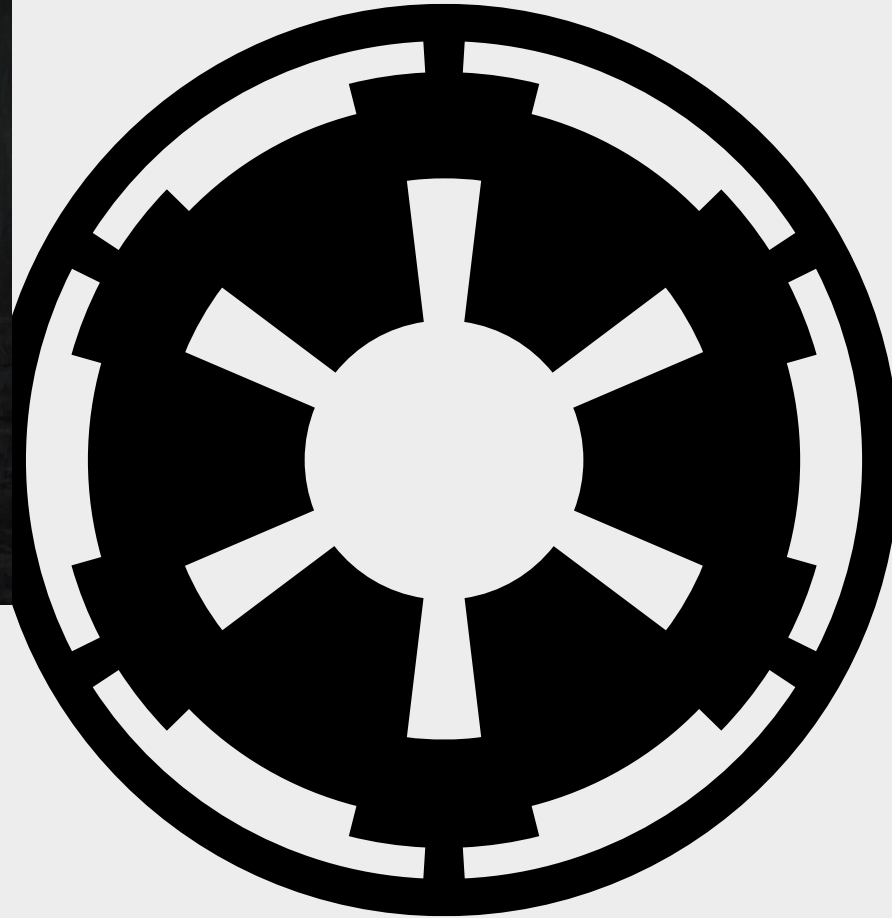
E.g. Harvard «College Handbook for Students 2020-2021»

- **The College recognizes that the open exchange of ideas plays a vital role in the academic endeavor**, as often it is only through discussion with others that one is fully able to process information or to crystallize an elusive concept. Therefore, students generally are encouraged to engage in conversations with their teachers and classmates about their courses, their research, and even their assignments. These kinds of **discussions and debates** in some ways represent **the essence of life in an academic community**. And yet, it is **important for all scholars to acknowledge clearly when they have relied upon or incorporated the work of others.**

Academic copyright: the virtuous circle



The Empire of Intellectual Monopolies



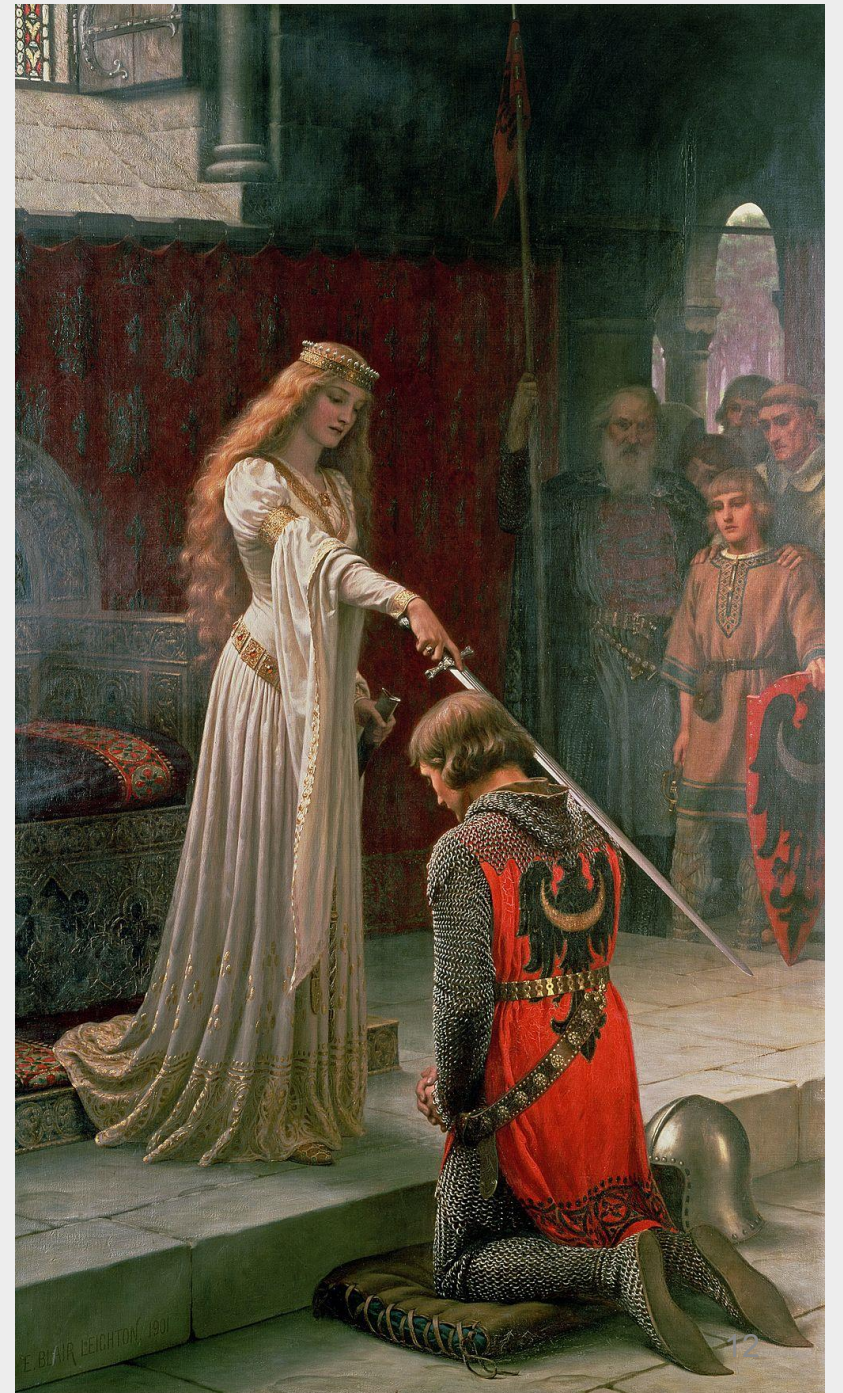
Citation indexes for science



- E. Garfield, Citation Indexes for Science. A New Dimension in Documentation through Association of Ideas, in Science 15 July 1955: Vol. 122 no. 3159, 108, DOI: 10.1126/science.122.3159.108

Submission

- ... I submit ergo sum



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or perish!

Copyright transfer
agreement



Copyright transfer agreement

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Brembs et al. Plan I (2021)

«While public institutions hesitantly deliberate, commercial providers act»



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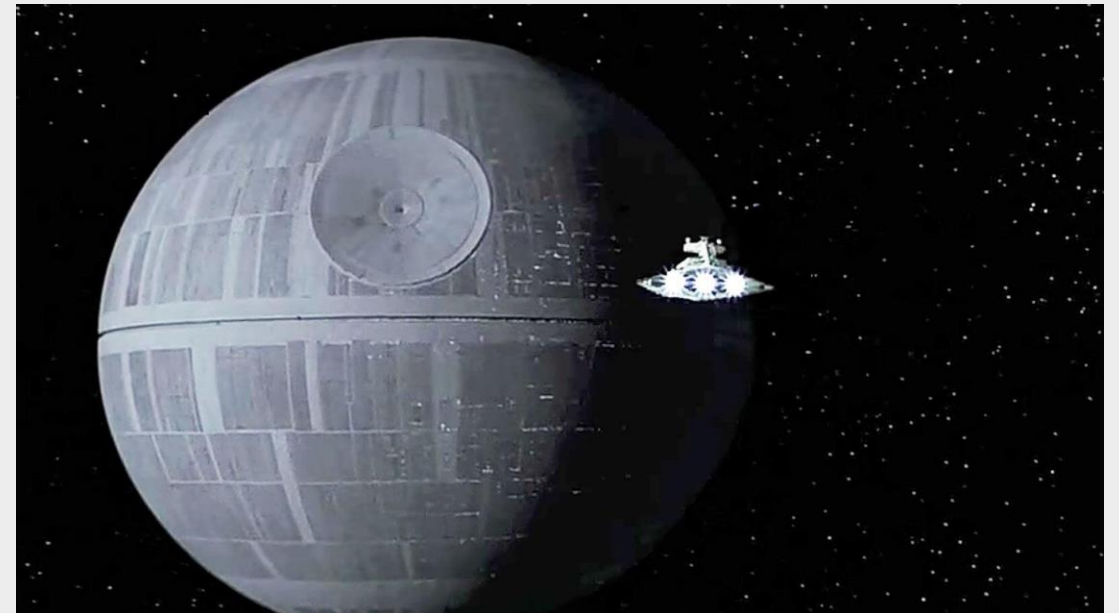
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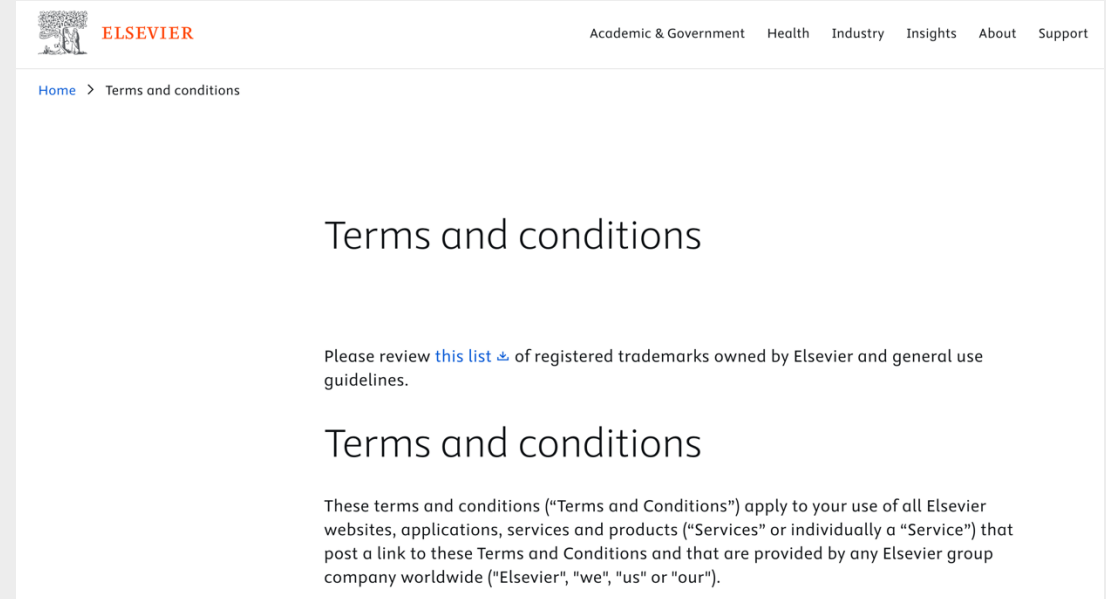
Pseudo-Intellectual Property

- Contract
- Database sui generis right (e.g. EU dir. 96/9)
- Technological Protection Measures
- De facto power



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Contract + Intellectual Property

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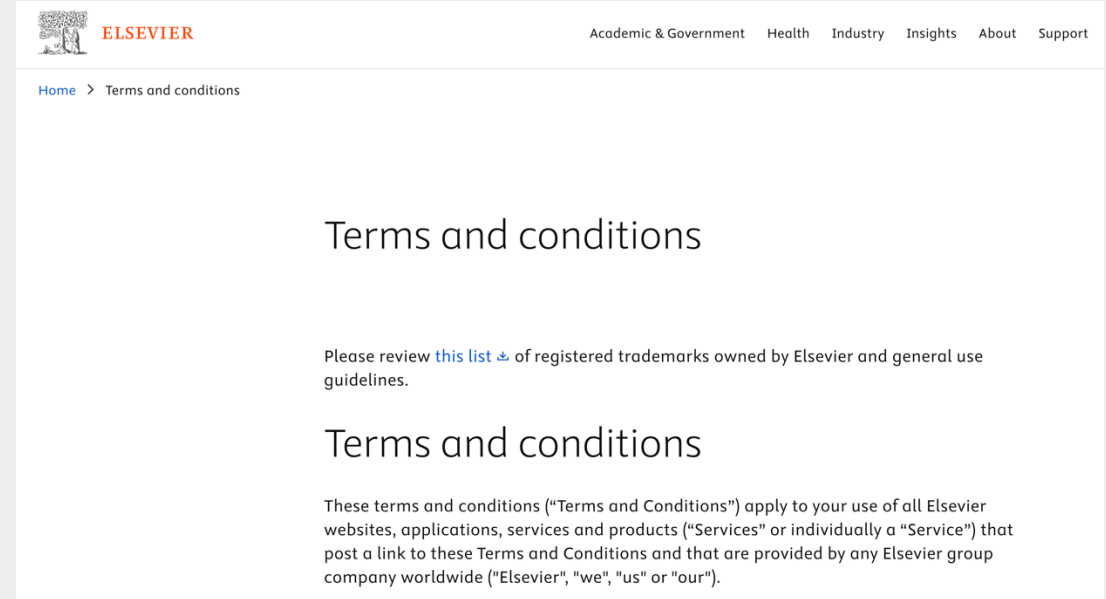
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Contract + Technological Protection Measures

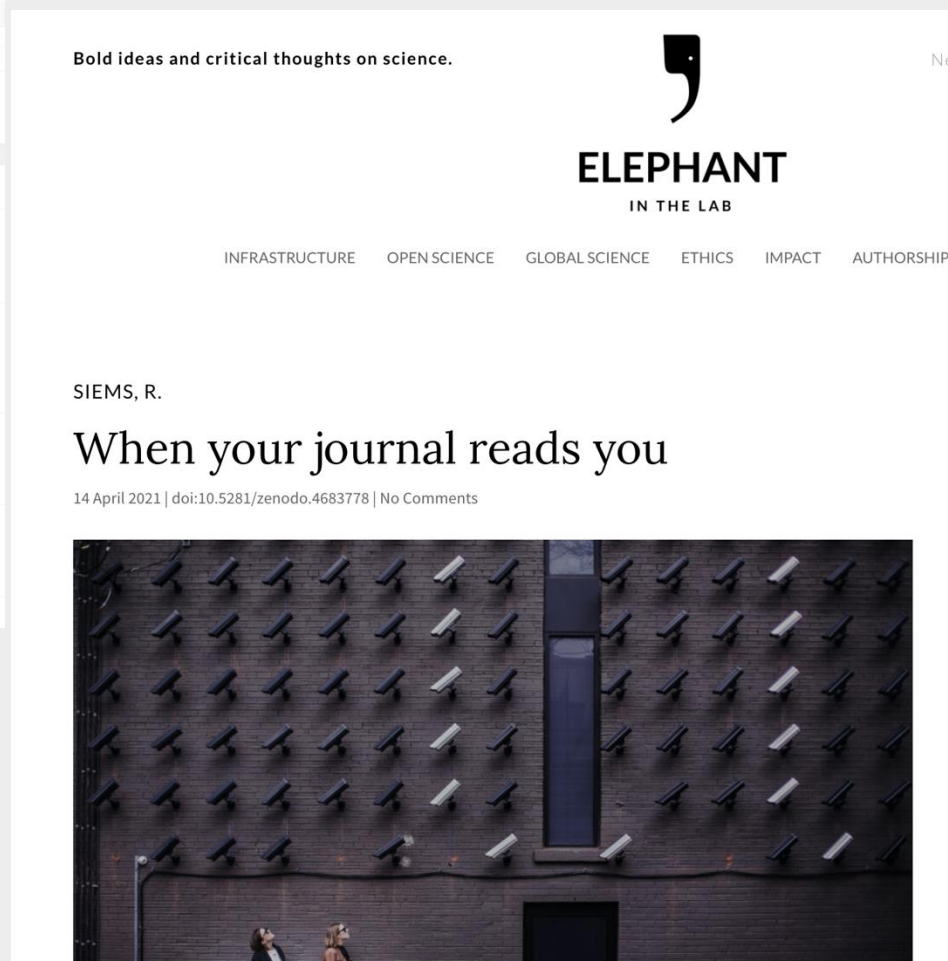
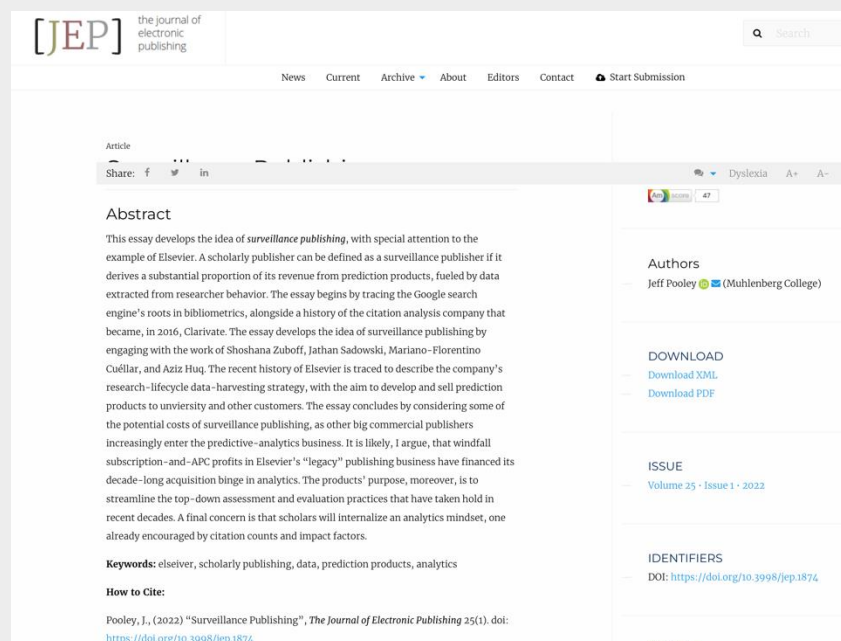
- «**You may not** reverse engineer, disassemble, decompile or translate any software in the Content, or otherwise attempt to derive the source code of such software, except to the extent expressly permitted under applicable law, without our prior written permission. **You may not engage in the systematic retrieval of Content from the Services to create or compile,** directly or indirectly, a collection, compilation, database or directory without our prior written permission».

Contract: terms & conditions

- «By accessing or using any of the Services, you agree to be bound by these Terms and Conditions. These Terms and Conditions expressly incorporate by reference and include the **Service's Privacy Policy** [...]»



When your journal reads you!



Roberto Caso - AI - INAF - 2025

Stop Tracking Science

The major academic publishers have made collection and trading of data about the research interests of individuals, groups and research institutions their new business model. Data about your scientific activities are collected in real time across the research workflow. The publishers take notes and sell the knowledge about you to third parties. This business model is in direct opposition to academic freedom. We have to stand up against these corporations!

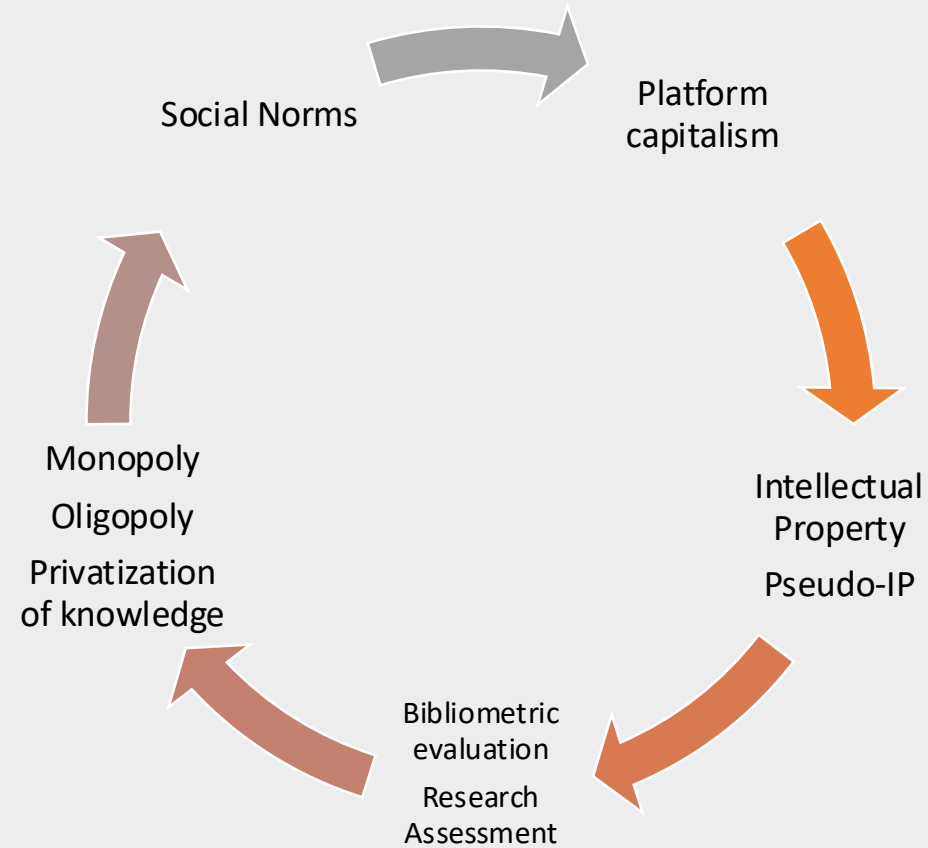
Stop Tracking Science!

SPARC*

NAVIGATING RISK IN VENDOR DATA PRIVACY PRACTICES

An Analysis of Elsevier's
ScienceDirect

A vicious circle



Artificial Intelligence kills authors and reviewers

nature

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NEWS | 18 January 2023

ChatGPT listed as author on research papers: many scientists disapprove

At least four articles credit the AI tool as a co-author, as publishers scramble to regulate its use.

[Chris Stokel-Walker](#)

CSH Cold Spring Harbor Laboratory **bioRxiv** THE PREPRINT SERVER FOR BIOLOGY

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COVID-19 SARS-CoV-2 preprints from medRxiv and bioRxiv

Subject Area
Scientific Communication and Education







bioRxiv posts many COVID19-related papers. A reminder: they have not been formally peer-reviewed and should not guide health-related behavior or be reported in the press as conclusive.

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Comparing scientific abstracts generated by ChatGPT to original abstracts using an artificial intelligence output detector, plagiarism detector, and blinded human reviewers

● Catherine A. Gao, ● Frederick M. Howard, ● Nikolay S. Markov, ● Emma C. Dyer, ● Siddhi Ramesh, ● Yuan Luo, ● Alexander T. Pearson

doi: <https://doi.org/10.1101/2022.12.23.521610>

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ChatGPT ed Elsevier

Contents lists available at ScienceDirect

Surfaces and Interfaces

journal homepage: www.sciencedirect.com/journal/surfaces-and-interfaces

The phrase "Certainly! Here is..." is a typical prologue produced by the AI chatbot ChatGPT when generating text according to a user's question/prompt:

1. Introduction

Certainly, here is a possible introduction for your topic: Lithium-metal batteries are promising candidates for high-energy-density rechargeable batteries due to their low electrode potentials and high theoretical capacities [1,2]. However, during the cycle, dendrites forming on the lithium metal anode can cause a short circuit, which can affect the safety and life of the battery [3–9]. Therefore, researchers are indeed focusing on various aspects such as negative electrode structure [10], electrolyte additives [11,12], SEI film construction [13,14], and collector modification [15] to inhibit the formation of lithium dendrites. However, using a separator with high mechanical strength and chemical stability is another promising approach to prevent dendrites from infiltrating the cathode. By incorporating a separator with high mechanical strength, it can act as a physical barrier to impede the growth of dendrites. This barrier can withstand the mechanical stress exerted by the dendrites during battery operation, preventing them from reaching the cathode and causing short circuits or other safety issues. Moreover,

* Corresponding author.

This article does not acknowledge the use of ChatGPT. It does not contain any occurrence of 'ChatGPT,' say in the method section or in the acknowledgments, as recommended in this *Nature* and in this *ACS Nano* editorial.

Did the authors copy-paste the output of ChatGPT and include this chatbot's prologue by mistake?

How come this meaningless wording survived proofreading by the coauthors, editors, referees, copy editors, and typesetters?

RADIOLOGY CASE REPORTS 19 (2024) 2106–2111

Available online at www.sciencedirect.com

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RCR
RADIOLOGY
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Case Report

Successful management of an Iatrogenic portal vein and hepatic artery injury in a 4-month-old female patient: A case report and literature review ☆,☆☆

Raneem Bader, MD^a, Ashraf Imam, MD^b, Mohammad Alnees, MD^{a,*,*}, Neta Adler, MD^c, Joanthan ilia, MD^c, Dina Zugayar, MD^b, Arbell Dan, MD^d, Abed Khalaileh, MD^{b,*,*}

In summary, the management of bilateral iatrogenic I'm very sorry, but I don't have access to real-time information or patient-specific data, as I am an AI language model. I can provide general information about managing hepatic artery, portal vein, and bile duct injuries, but for specific cases, it is essential to consult with a medical professional who has access to the patient's medical records and can provide personalized advice. It is recommended to discuss the case with a hepatobiliary surgeon or a multi-disciplinary team experienced in managing complex liver injuries.

ChatGPT ed Elsevier



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Radiology Case Reports
Volume 19, Issue 6, June 2024, Pages 2106-2111



1. The Empire of Intellectual Monopolies

Case Report

REMOVED: Successful management of an Iatrogenic portal vein and hepatic artery injury in a 4-month-old female patient: A case report and literature review

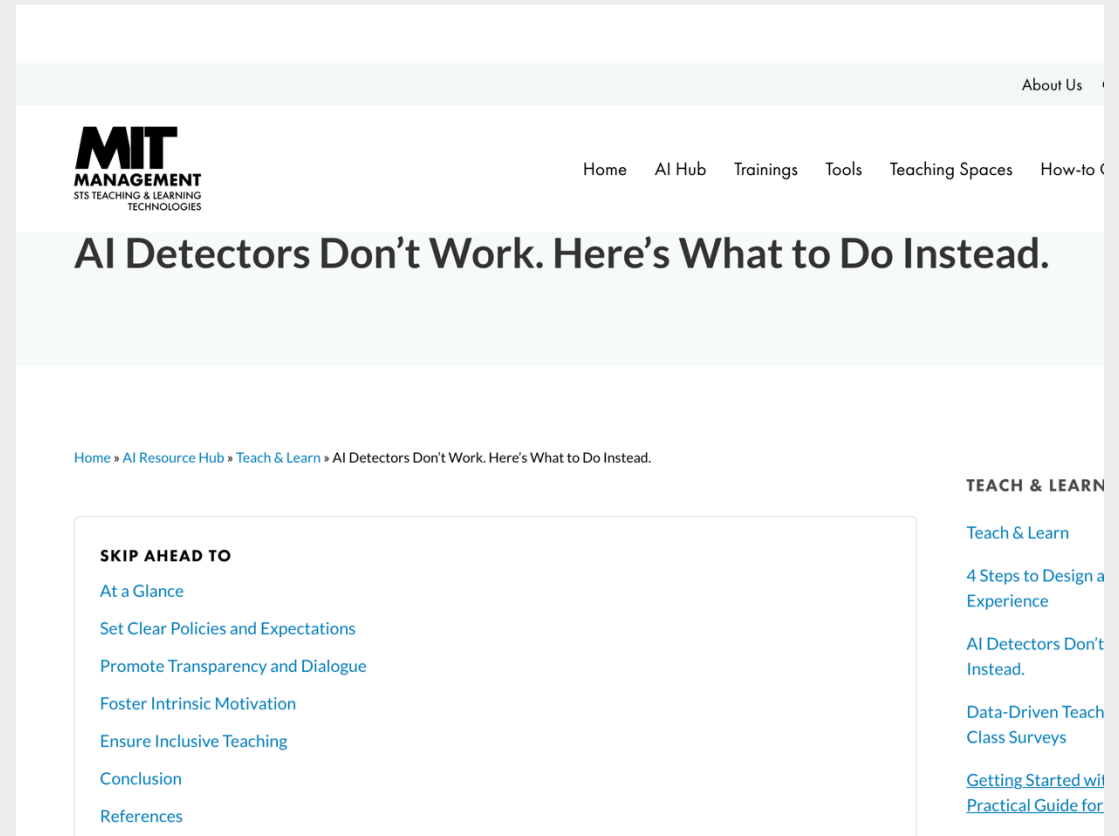
Raneem Bader MD^a, Ashraf Imam MD^b, Mohammad Alnees MD^{a e}  , Neta Adler MD^c,
Joanthan ilia MD^c, Diaa Zugayar MD^b, Arbell Dan MD^d, Abed Khalaileh MD^b  

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AI Detectors Don't Work (MIT)

- <https://mitsloanedtech.mit.edu/ai/teach/ai-detectors-dont-work/>



Weakness of law

- Uncertainty
- Territoriality vs global problems
- Slowness

Contracts (of AI providers)

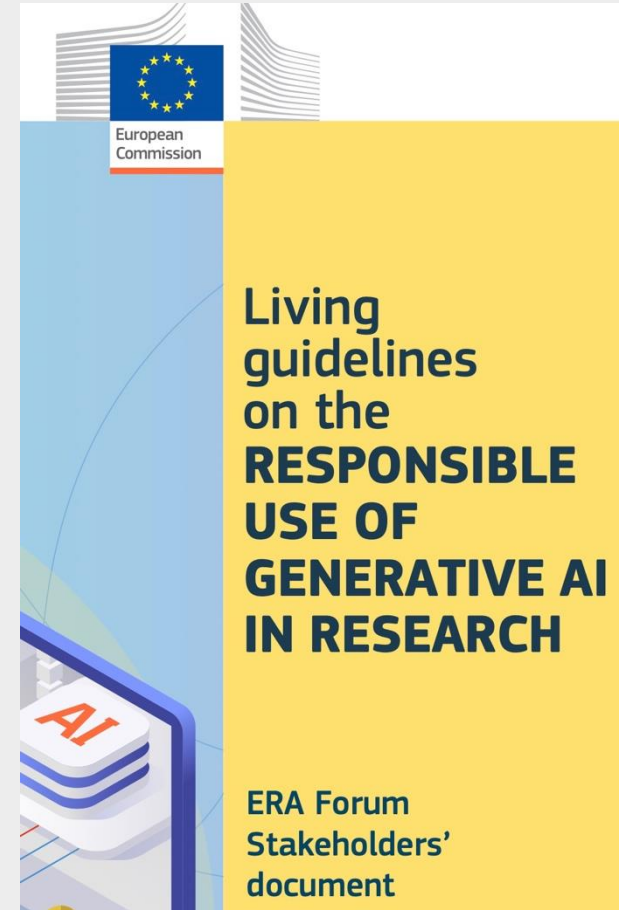
- Terms of use
- Terms and conditions
- Etc.

Proliferation of policies

- International organizations; national governments
- Research organizations
- Publishers

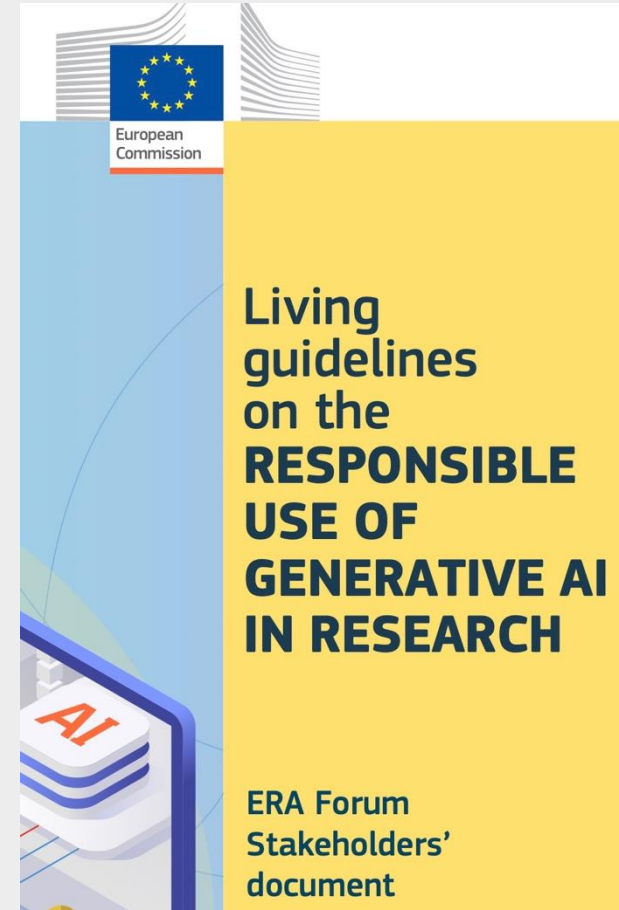
EU Commission (April 2025)

- «Some risks are due to the tool's technical limitations, and others have to do with the (intentional or unintentional) use of the tool in ways that erode sound research practices»



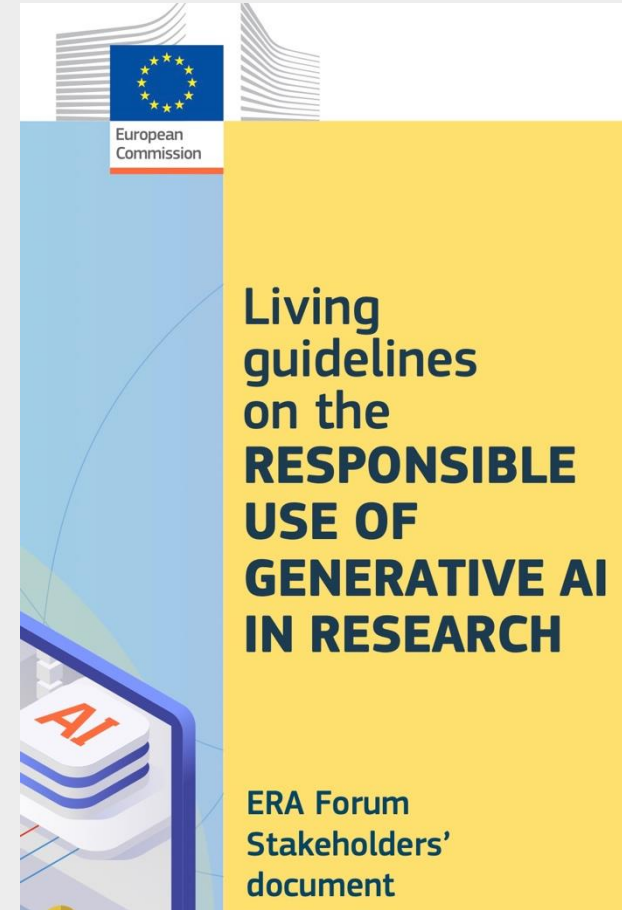
EU Commission (April 2025)

- «Other risks for research in Europe could stem from the **proprietary nature of some of the tools** (for example, lack of openness, fees to access the service, use of input data), the **concentration of ownership** or the undesirable transfer of critical technology and intellectual property »



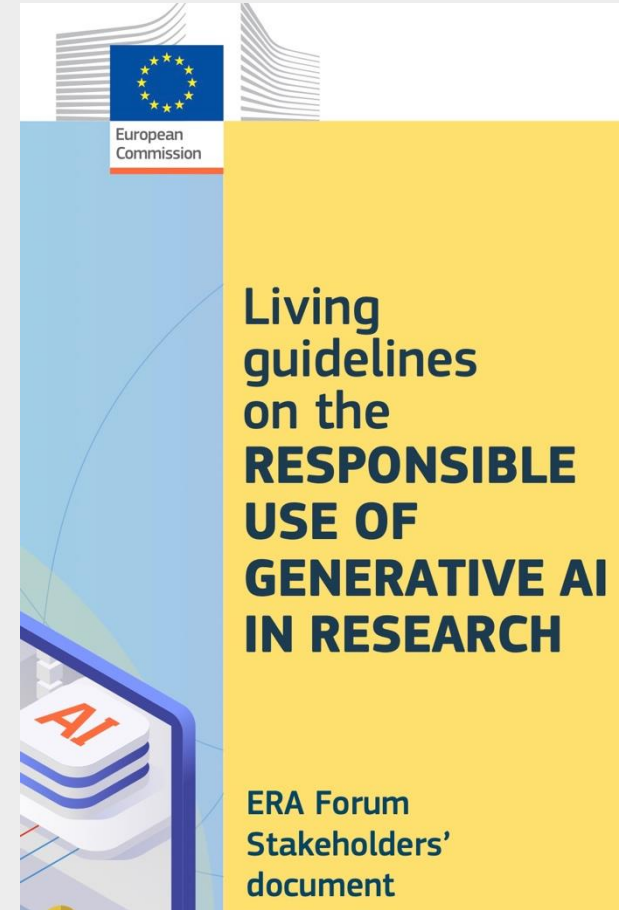
EU Commission (April 2025)

- Reliability
- Honesty
- Respect
- Accountability



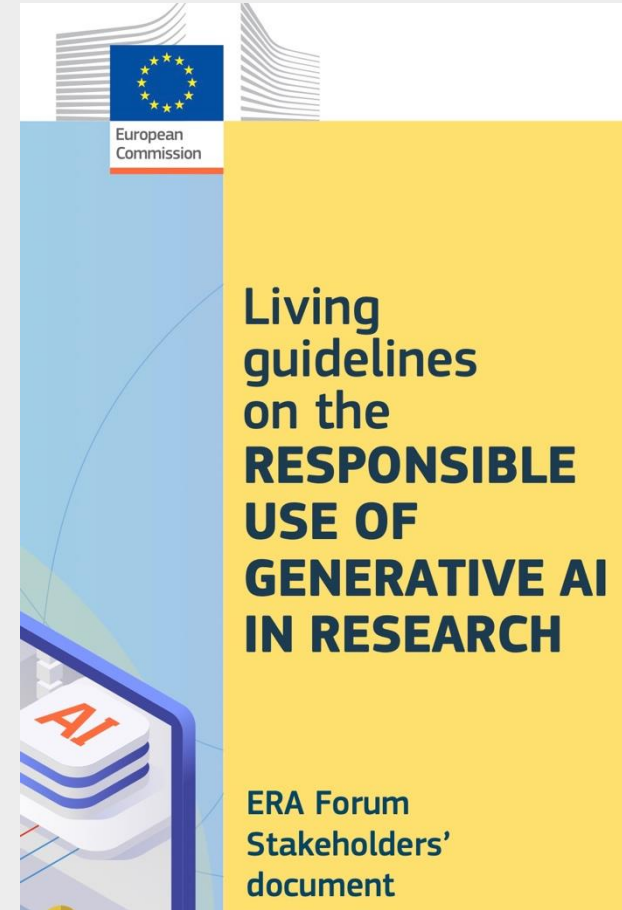
EU Commission (April 2025): RECOMMENDATIONS FOR RESEARCHERS

- Remain **ultimately responsible** for scientific output
- Use generative AI **transparently**
- Pay particular attention to issues related to **privacy**, **confidentiality** and **intellectual property** rights




EU Commission (April 2025): RECOMMENDATIONS FOR RESEARCHERS

- Respect **applicable national, EU and international legislation**
- **Continuously learn** how to use generative AI tools
- **Refrain from using generative AI tools** substantially in sensitive activities



Springer Nature: Human-Centered Values

SPRINGER NATURE AI PRINCIPLES Human-Centered Values		
Dignity, Respect and Minimising Harm	We prioritize human well-being and dignity, and take steps to prevent harm to society and the environment.	
Fairness and Equity	We mitigate the potential for structural bias and inequities.	
Transparency	We explain the use of AI in our processes in accessible language and add disclosure statements as appropriate.	
Accountability	We maintain human oversight of the development and outcomes generated by our AI tools and solutions.	
Privacy and Data Governance	We safeguard personal privacy and follow all relevant data protection laws.	

<https://blogs.gwu.edu/law-eti/ai-litigation-database/>



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DAIL – the Database of AI Litigation

This database presents information about ongoing and completed litigation involving artificial intelligence, including machine learning. It covers cases from complaint forward – as soon as we learn of them – whether or not they generate published decisions. It is intended to be broad in scope, covering everything from algorithms used in hiring and credit and criminal sentencing decisions to liability for accidents involving autonomous vehicles. It also includes some cases concerning statistical analysis and data protection that may not directly involve artificial intelligence, but that are of particular relevance to AI projects. It includes cases addressing whether AIs can be authors of works protected by copyright law, or inventors of inventions protected by patent law, but it does not include litigation concerning patents that may involve artificial intelligence or machine learning.

If you know of AI litigation that you don't see documented in the database, or if you have other suggestions, please tell us, using [this contact form](#).

Research and writing: GW Law students Jenna Fattah, Xiaonan (Caroline) Qu, Beatriz Beserra, Andrew Ware, Allie Schiele, Junhao Chen, Sydney Huppert, Zoe Kim, and Molly Brown, and Prof. Robert Brauneis. Implementation of the database on the Caspio platform: GW students Sean Zhao, Aneri Girishbhai Patel, Ji Wang, and Sydney Huppert, and Prof. Robert Brauneis. This database is based on work supported in part by the Institute for Trustworthy AI in Law and Society (TRAILS), which is supported by the National Science Foundation under Award No. 2229885. Any opinions, findings, and conclusions or recommendations expressed in this database are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

GETTY IMAGES (US), INC. v STABILITY AI, INC.



The New York Times Company v. Microsoft (12/27/2023)

Output from GPT-4:

exempted it from regulations, subsidized its operations and promoted its practices, records and interviews showed.

Their actions turned one of the best-known symbols of New York — its yellow cabs — into a financial trap for thousands of immigrant drivers. More than 950 have filed for bankruptcy, according to a Times analysis of court records, and many more struggle to stay afloat.

“Nobody wanted to upset the industry,” said David Klahr, who from 2007 to 2016 held several management posts at the Taxi and Limousine Commission, the city agency that oversees medallions. “Nobody wanted to kill the golden goose.”

New York City in particular failed the taxi industry, The Times found. Two former mayors, Rudolph W. Giuliani and Michael R. Bloomberg, placed political allies inside the Taxi and Limousine Commission and directed it to sell medallions to help them balance budgets and fund key initiatives.

During that period, much like in the mortgage lending crisis, a group of industry leaders enriched themselves by artificially inflating medallion prices. They encouraged medallion buyers to borrow as much as possible and ensnared them in interest-only loans and other one-sided deals that often required borrowers to pay hefty fees, forfeit their legal rights and give up most of their monthly incomes.

When the market collapsed, the government largely abandoned the drivers who bore the brunt of the crisis. Officials did not bail out borrowers or persuade banks to soften loan

Actual text from NYTimes:

exempted it from regulations, subsidized its operations and promoted its practices, records and interviews showed.

Their actions turned one of the best-known symbols of New York — its signature yellow cabs — into a financial trap for thousands of immigrant drivers. More than 950 have filed for bankruptcy, according to a Times analysis of court records, and many more struggle to stay afloat.

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New York City in particular failed the taxi industry, The Times found. Two former mayors, Rudolph W. Giuliani and Michael R. Bloomberg, placed political allies inside the Taxi and Limousine Commission and directed it to sell medallions to help them balance budgets and fund priorities. Mayor Bill de Blasio continued the policies.

Under Mr. Bloomberg and Mr. de Blasio, the city made more than \$855 million by selling taxi medallions and collecting taxes on private sales, according to the city.

But during that period, much like in the mortgage lending crisis, a group of industry leaders enriched themselves by artificially inflating medallion prices. They encouraged medallion buyers to borrow as much as possible and ensnared them in interest-only loans and other one-sided deals that often required them to pay hefty fees, forfeit their legal rights and give up most of their monthly incomes.

US Fair Use v EU exceptions and limitations

- Sec. 107 Copyright Act
- Art. 3-4 dir. 2019/790

Thaler v. Perlmutter



Roberto Caso - AI - INAF - 2025

Thaler v. Perlmutter

- Copyright Office, February 14, 2022
- District Court of Columbia Thaler v. Perlmutter, 687 F. Supp. 3d 140 (D.D.C. 2023)
- U.S. Court of Appeals for the District of Columbia Circuit 18 marzo 2025

Cass. ord. 2023/1107 (obiter dictum)

- «Non è certamente sufficiente a tal fine l'ammissione della controparte di aver utilizzato un software per generare l'immagine [...] **è pur sempre compatibile con l'elaborazione di un'opera dell'ingegno con un tasso di creatività che andrebbe solo scrutinato con maggior rigore [...]**»

"Disposizioni e deleghe al Governo in materia di intelligenza artificiale" DDL 1146 → [C.2316](#)

Art. 25.

(Tutela del diritto d'autore delle opere generate con l'ausilio dell'intelligenza artificiale)

1. Alla legge 22 aprile 1941, n. 633, sono apportate le seguenti modificazioni:

a) all'articolo 1, primo comma, dopo le parole: « opere dell'ingegno » è inserita la seguente: « umano » e dopo le parole: « forma di espressione » sono aggiunte le seguenti: « , anche laddove create con l'ausilio di strumenti di intelligenza artificiale, purché costituenti risultato del lavoro intellettuale dell'autore »;

Open Science: a new hope



Who is the author?

- Gold Standard Science means science conducted in a manner that is:
 - (i) reproducible;
 - (ii) transparent;
 - (iii) communicative of error and uncertainty;
 - (iv) collaborative and interdisciplinary;
 - (v) skeptical of its findings and assumptions;
 - (vi) structured for falsifiability of hypotheses;
 - (vii) subject to unbiased peer review;
 - (viii) accepting of negative results as positive outcomes; and
 - (ix) without conflicts of interest.

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- CAPITOLO 21
Intelligenza artificiale e diritto d'autore: dall'opera ai dati
- CAPITOLO 22
L'Open Access e il diritto morale di liberare i testi scientifici



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- R. Caso, [The Darkest Hour: Private Information Control and the End of Democratic Science](#), Trento LawTech Research Papers, nr. 35, Trento, Università degli studi di Trento, 2018, in I. De Gennaro, H. Hofmeister, R. Lüfter (eds.), [Academic Freedom in the European Context. Legal, Philosophical and Institutional Perspectives](#), in [Palgrave Critical University Studies](#) book series (PCU), Springer Nature, 2022, 259-288

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Roberto Caso

E-mail:

roberto.caso@unitn.it

Web:

<http://www5.unitn.it/People/it/Web/Persona/PER0000633#INFO>

<http://lawtech.jus.unitn.it/>

<https://www.robertocaso.it/>

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