

September 8, 2026

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Ideas and opinions expressed here do not represent the views of the ODSS, NCATS, NIH or the US government.

Housekeeping

- You have my consent to use quotes or tag me online if you find anything useful:

- LinkedIn: hosseinimohammad

- Bluesky: @mhmdhsini

- AI means many things today, I will talk about generative AI
- Open science has many definitions; I use UNESCO's 2021 definition: "an inclusive construct that combines various movements and practices aiming to make multilingual scientific knowledge openly available, accessible and reusable for everyone, to increase scientific collaborations and sharing of information for the benefits of science and society, and to open the processes of scientific knowledge

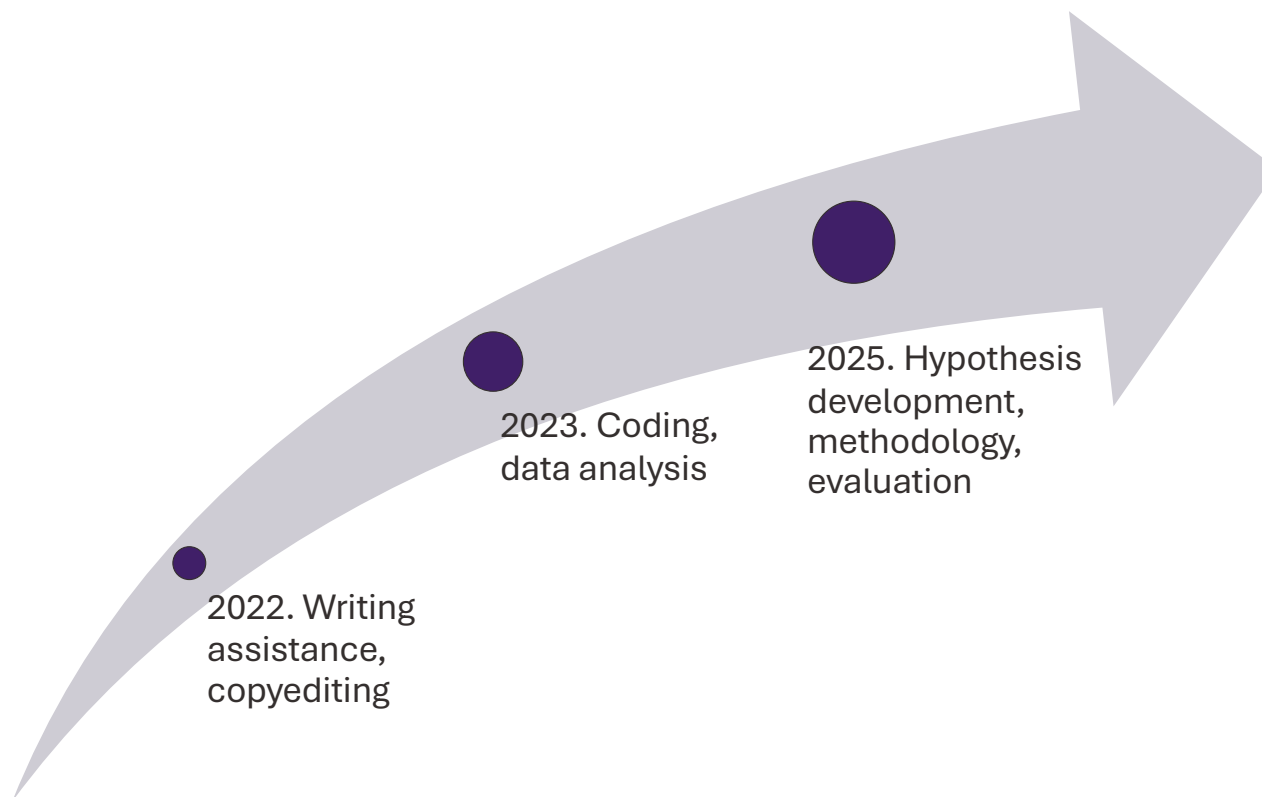
Agenda

- GenAI use in research and publications
- GenAI impacts on open science
- Mertonian norms of science
- Organized skepticism as a conceptual tool to explore negative impacts of GenAI
- Recommendations and closing thoughts

How Do Researchers Currently Use GenAI?

- Writing
- Reviewing
- Hypothesizing
- Communicating
- Summarizing the literature
- Data analysis/curation/cleaning

How Do Researchers Currently Use GenAI?



Some Negative Side Effects

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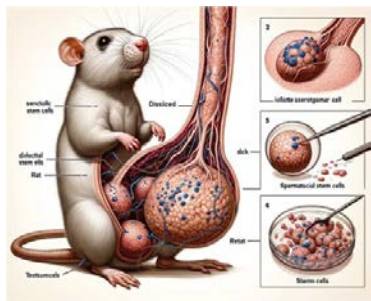
NEWS | 11 March 2026

AI can 'same-ify' human expression — can some brains resist its pull?

Emerging evidence suggests that LLM outputs can shape the text and thoughts of human users.

By Jenna Abart

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Retraction Watch

Tracking retractions as a window into the scientific process

As Springer Nature journal clears AI papers, one university's retractions rise drastically

Neurosurgical Review has begun retracting scores of commentaries and letters to the editor after getting inundated by AI-generated manuscripts. At the top of the affiliations list: Saveetha University in Chennai, India, an institution that, as we reported with *Science* in 2023, engages in aggressive self-citation.



At publication time, *Neurosurgical Review* had retracted 129 papers so far this year. The journal, a Springer Nature publication, paused acceptance of letters to the editor and commentaries last fall.

Low-quality papers based on public health data are flooding the scientific literature

The appearance of thousands of formulaic biomedical studies has been linked to the rise of text-generating AI tools.

By Miryam Naddaf

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The New York Times

Trump Administration **LIVE** Updates 17m ago Domestic Policy Bill Tracking the Layoffs Approval Ratings

White House Health Report Included Fake Citations

A report on children's health released by the Make America Healthy Again Commission referred to scientific papers that did not exist.

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Some Side Effects of GenAI on Open Science

Open Science at the generative AI turn: An exploratory analysis of challenges and opportunities

Mohammad Hosseini ✉, Serge P. J. M. Horbach , Kristi Holmes , Tony Ross-Hellauer 



[> Author and Article Information](#)

Quantitative Science Studies (2025) 6: 22–45.



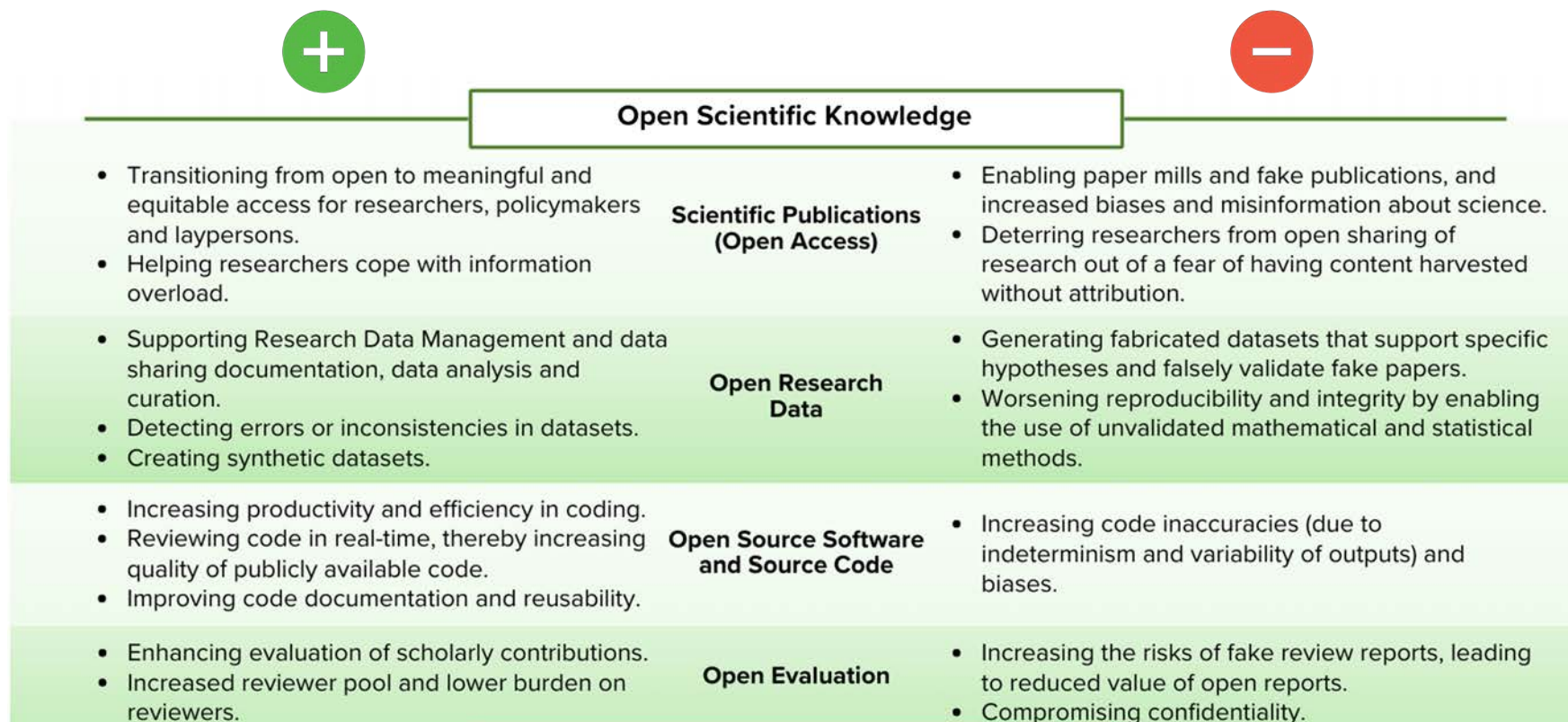
Some Side Effects of GenAI on Open Science



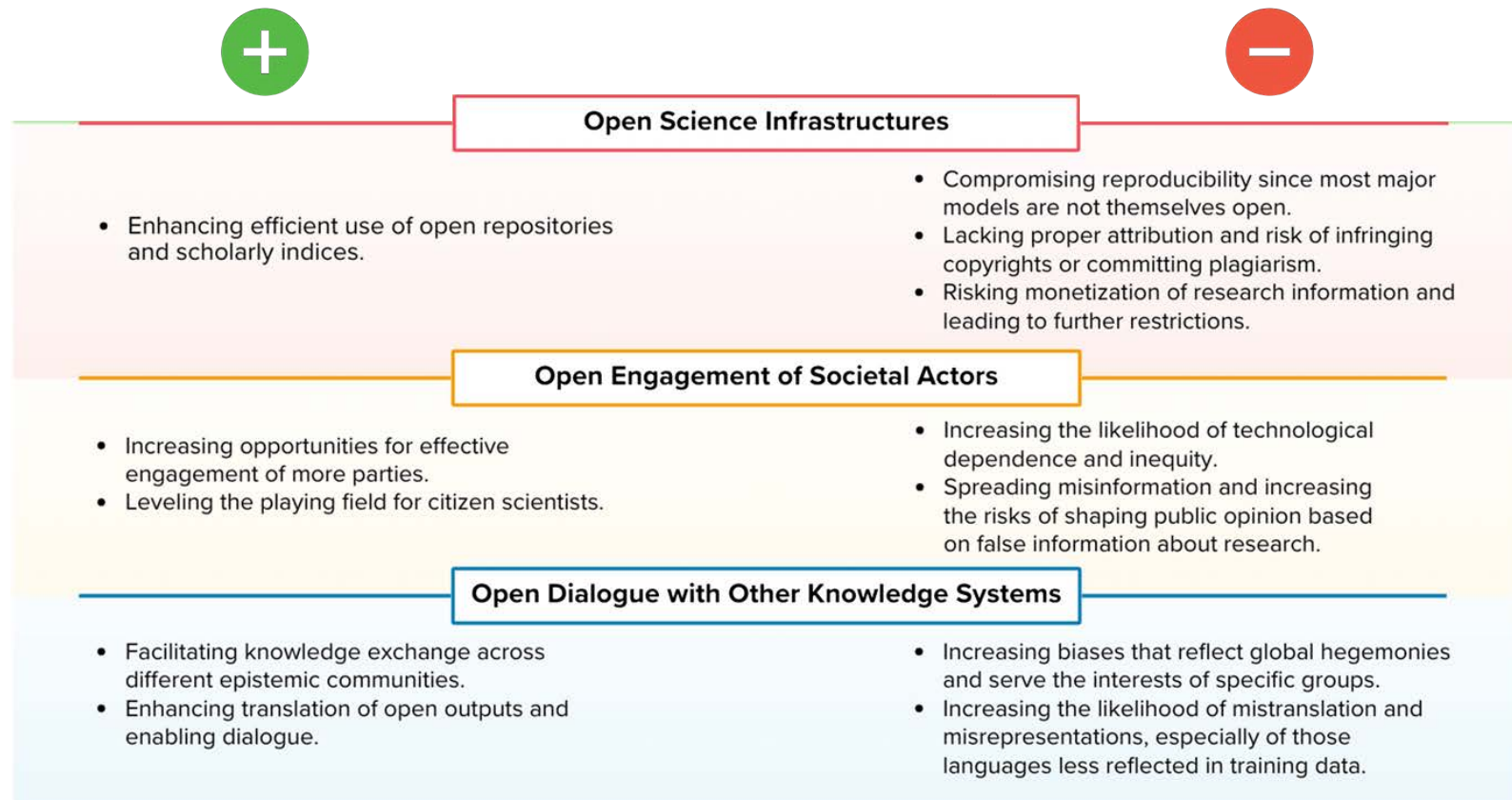
Open Scientific Knowledge

- | | |
|---|--|
| <ul style="list-style-type: none">• Transitioning from open to meaningful and equitable access for researchers, policymakers and laypersons.• Helping researchers cope with information overload. | Scientific Publications
(Open Access) |
| <ul style="list-style-type: none">• Supporting Research Data Management and data sharing documentation, data analysis and curation.• Detecting errors or inconsistencies in datasets.• Creating synthetic datasets. | Open Research
Data |
| <ul style="list-style-type: none">• Increasing productivity and efficiency in coding.• Reviewing code in real-time, thereby increasing quality of publicly available code.• Improving code documentation and reusability. | Open Source Software
and Source Code |
| <ul style="list-style-type: none">• Enhancing evaluation of scholarly contributions.• Increased reviewer pool and lower burden on reviewers. | Open Evaluation |

Some Side Effects of GenAI on Open Science



Some Side Effects of GenAI on Open Science



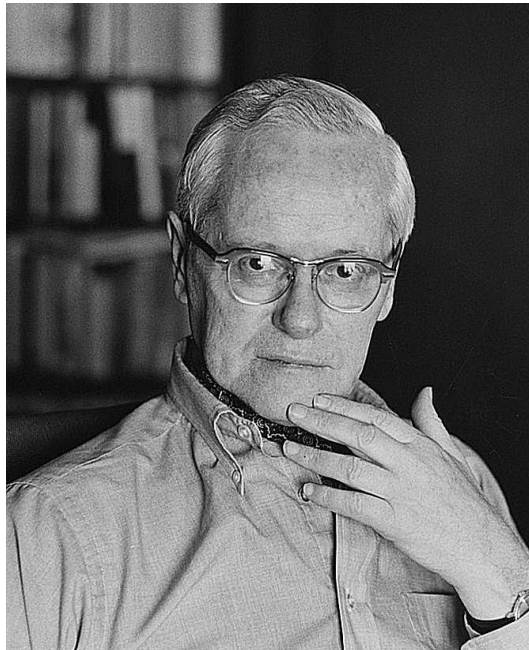
Knowing Side Effects Is Not Enough

We need

- More than a list of benefits, risks, and unintended consequences.
- Principles for deciding what practices to preserve, question, and change.
- Rather than inventing those principles from scratch, we can return to norms suggested by Robert K. Mertonian and use them as a compass.

Mertonian Norms (first introduced in 1942)

- Universalism
- Communalism
- Disinterestedness
- Organized skepticism



Mertonian Norms and Open Science

- Open science (as an organized movement) started much later than Mertonian norms were introduced. There is still a lot to explore at the intersection of the two.
- Merton's “extension of certified knowledge requires dissemination and access to various resources”.



**Accountability in Research** >
Ethics, Integrity and Policy
Volume 31, 2024 - [Issue 5](#)
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Research Article
Messing with Merton: The intersection between open science practices and Mertonian values
[Mohammad Hosseini](#)  , [Enric Senabre Hidalgo](#) , [Serge P.J.M. Horbach](#) , [Stephan Güttinger](#)  & [Bart Penders](#) 
Pages 428-455 | Accepted author version posted online: 27 Oct 2022, Published online: 06 Nov 2022
[Cite this article](#) <https://doi.org/10.1080/08989621.2022.2141625> [Check for updates](#)

What is Organized Skepticism?

Linked with the other three values, Merton considered scrutiny of beliefs as

- An institutional and methodological mandate.

He postulates a relationship between organized skepticism and other values, implicitly assigning a *nexus* role to it.

Let's Deconstruct Organized Skepticism

Scientific knowledge should be open to the organized scrutiny of the community.

“Organized”

- Techniques, tools and the idea of effective self-organization of science
- Formal (conferences, peer-review), or informal (mentoring/meetings) processes

“Skepticism”

- Is a critical thinking attitude, based on an implicit agreement between peers about what is “believed right and good”
- Guarantees scientific progress and prevents dogma

What Does GenAI Do To the “*Organized*” Part?

- Discussing/criticizing research by more actors
- Communication modes are experiencing a disruptive growth, in diverse formats and extremely quick successions
- Need for more AI involvement
- The rise of respectful but inauthentic communication
- Increased noise to signal ratio, repetitive, biased and vapid communication/content
- Sam-ified expressions

What Does GenAI Do To the “*Skepticism*” Part?

- Diversity of actors and effective communication *could* enable multidisciplinary skepticism
- GenAI can help scientists improve their methods, sparring partner
- Oscillating between harsh and watered-down criticism, opaque methods
- De-skilling and never-skilling

What Does GenAI Do To Organized Skepticism

Accelerates organized skepticism through

- Lowered cost and bar for entry
- Increased productivity (mostly for those with more resources)

Hampers organized skepticism due to

- Improper attributions
- Accountability gap
- Lack of openness
- Undermining scientists' independence and the human spirit of science

How Can Organized Skepticism and GenAI-Enabled Science Co-Exist?

1. Open science values as our northern star

- UNESCO: “open science as a way to make science a public good”
- Science be accessible to everybody and benefit everybody
- Advocate for true openness of model and data
- Increase investment in AI literacy across the world
- Build public and open infrastructure
- Develop ethical guardrails and responsible governance

How Can Organized Skepticism and GenAI-Enabled Science Co-Exist?

2. Emphasize and tag “distinctly human contributions”



Volume 35

2026

(In Progress)

JOURNAL ARTICLE

Generative AI can and should accelerate research evaluation reform to better recognize ‘distinctly human contributions’

Mohammad Hosseini , Brian D Earp, Sebastian Porsdam Mann, Kristi Holmes

Research Evaluation, Volume 35, 2026, rvag020,

<https://doi.org/10.1093/reseval/rvag020>

Published: 11 April 2026



Distinctly Human Contributions

- Maintain the peer review as a human activity
- Identify distinctly human contributions in various contexts
- Give more weight to human relationships, testimonies and views
- Encourage honesty and authenticity

How Can Organized Skepticism and GenAI-Enabled Science Co-Exist?

3. Considering GenAI as a member of open science scholarly commons

Under-Review



Mohammad Hosseini



Bart Penders



Tony Ross-Hellauer



Kristi Holmes

What Is Commons?

A set of objects (tangible or otherwise) that exists outside of private ownership and can be used (in certain ways) by members of the community connected to it.



What Does Open Science Commons Consist Of?

Open Science Commons is based on three core pillars*:

- 1) The e-Infrastructure Commons (digital service ecosystem);
- 2) The Open Data Commons (data access and reuse); and
- 3) The Knowledge Commons (shared knowledge ownership, co-developed software, and technical support).

* Open Ecosystem for Research and Innovation. (2025, September 1). *Engaging the EGI Community towards an Open Science Commons* | EGI-Engage | Project | Fact Sheet | H2020. European Commission. CORDIS | European Commission. <https://doi.org/10.3030/654142>

Considering Scholarly GenAI Tools as Members of Open Science Commons

Encourage skepticism toward GenAI through:

- Preventing GenAI from becoming another unnoticed infrastructure supporting research (e.g., the Internet).
- Adjusting the scholarly infrastructure to mitigate negative impacts.
- Requiring enforceable evaluation, transparency, and auditability obligations tied to GenAI development, deployment, and use.
- Requiring mandatory documentation and ongoing monitoring of training data provenance, versioning, update cycles, performance limitations and risks.

Closing Thoughts

- Organized skepticism was never a brake on science; it is what makes science trustworthy.
- We either must build organized skepticism around GenAI now or retrofit it later. The sooner we do it the better.
- Open science and GenAI can co-exist, if we carry the norms with us and apply them.



Thank you

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