



# It's about what kind of knowledge we want

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Openness is not just synonymous with good science because openness means different things, good science has different values, and there are conflicts about what kind of science we want.

“What kind of science do we want?”

“What can I do right now?”

Reproducibility

Open access

Replicability

Open data

Replication

Open source

Reform

Open peer review

“Open” as marketing



# Open science

partners with the research  
community to empower open science

[Open access](#)[Research data](#)[Science and Society](#)[Position statements](#)[NL Collaboration](#)

Working together, we can achieve a more inclusive, collaborative and transparent world of research. We believe open science can benefit research and society and drive research performance.



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Elsevier partners with the research community to empower open science



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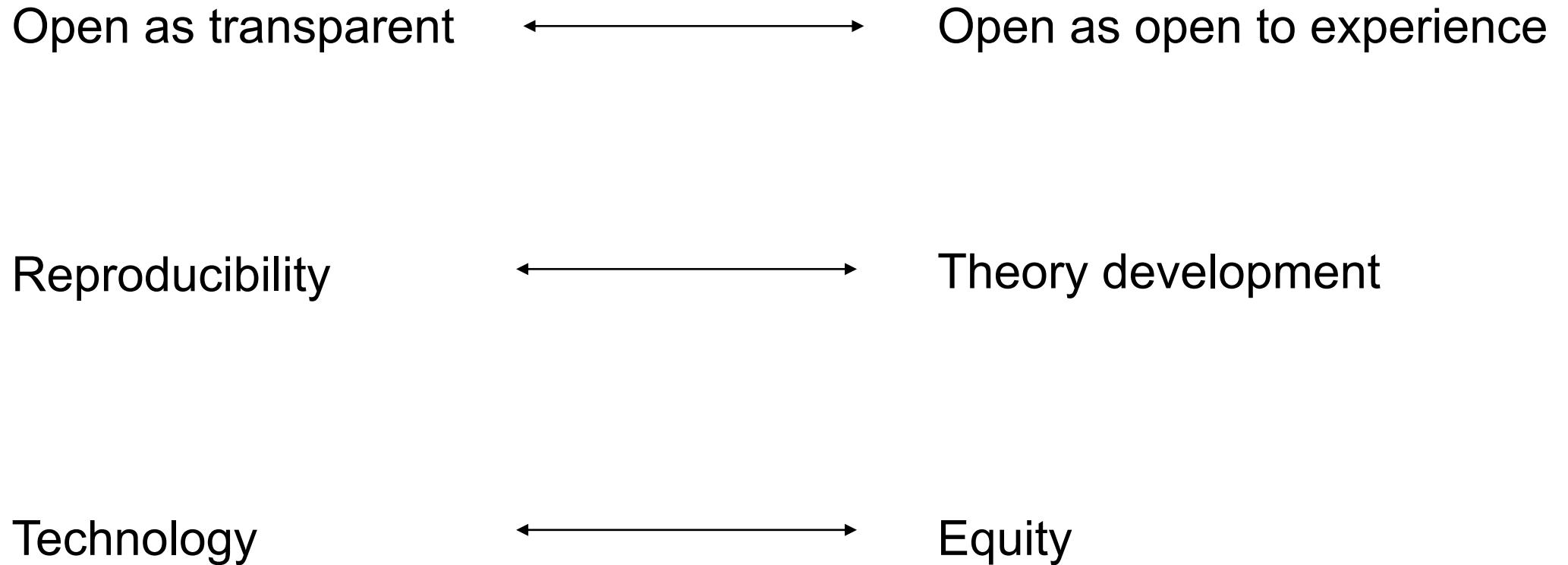
[NL Collaboration](#)

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UNESCO  
pillars of open  
science (2021)

Collective  
learning  
process



“If you can’t reproduce a result, it isn’t science.“

Statistical reproducibility of true and false results  
varies with model assumptions  
(Devezer et al. 2021)

Almost no-one can reproduce anything

CERN

a large-scale genomic result

the 1918 flu pandemic

“Unless peer review is transparent there is no logical reason for the public to trust science.”



This article is a preprint and has not been certified by peer review [what does this mean?].

I can buy a computer for 100,000 SEK on a grant, pay depreciation over 5 years and process a lot of data on it.  
I can't pay for long term storage and dissemination of the full dataset.

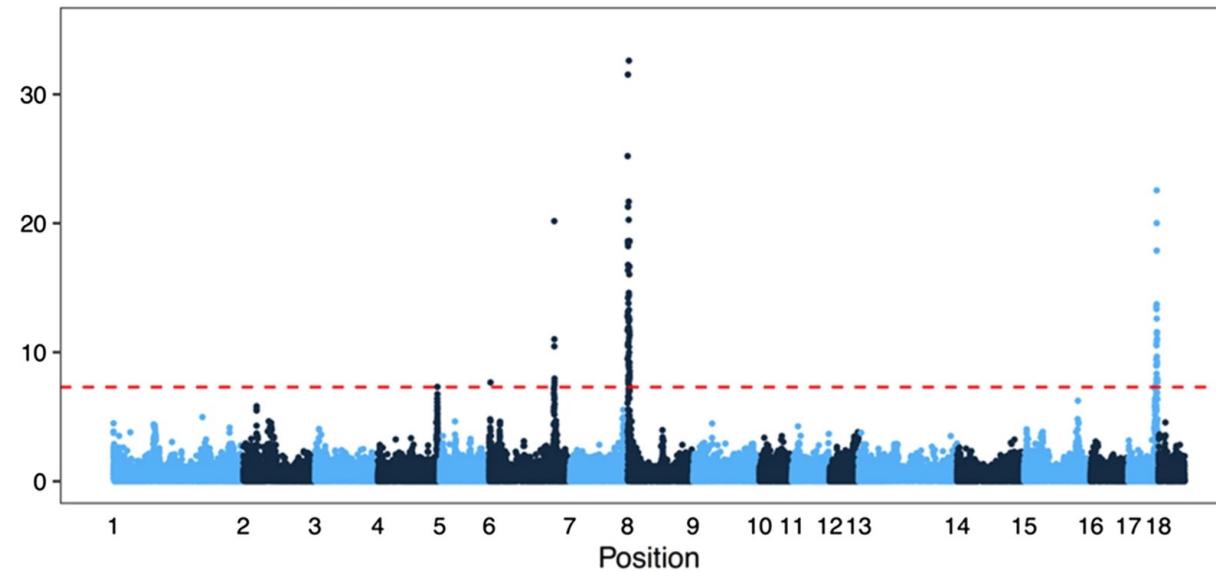
Non-open data:

secret (industry collaborations)

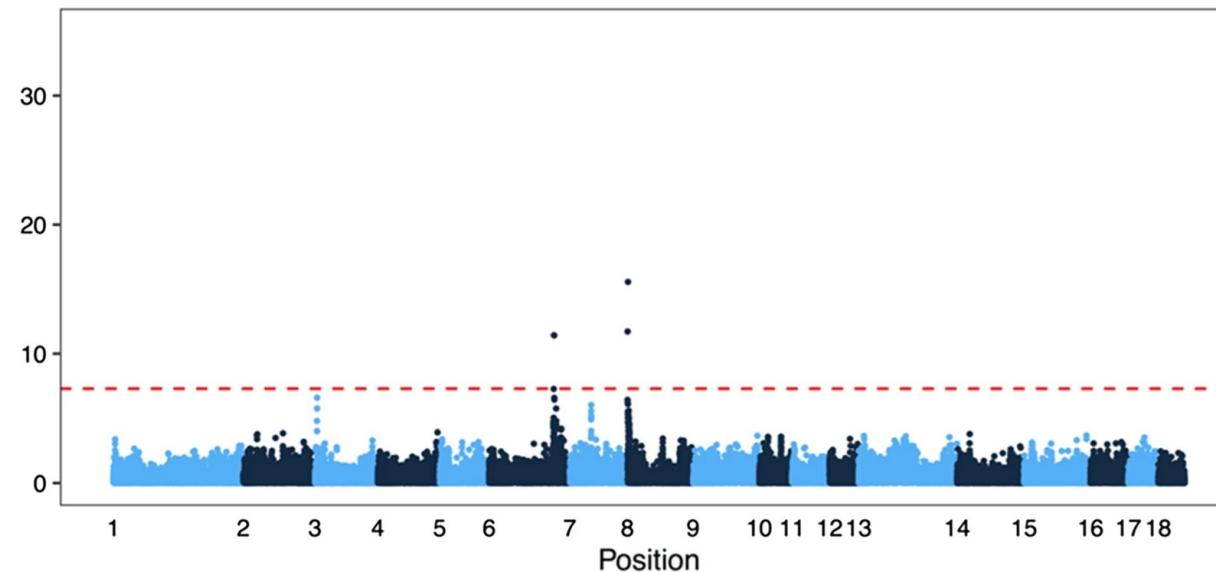
sensitive (about people)

dodgy (machine learning)

Female meta-analysis



Male meta-analysis



Genetic analysis of  
recombination rate based  
on ~150,000 pigs

(Johnsson et al. 2021)



Could you please give me a pithy tweet-length text that explains how AI is both inevitable and potentially dangerous?



"AI's inexorable rise holds boundless promise, but its unchecked potential also conceals lurking perils. #AllInevitableDanger"

“We faced a significant number of hardware failures in our compute cluster while training OPT-175B. In total, hardware failures contributed to at least 35 manual restarts and the cycling of over 100 hosts over the course of 2 months. During manual restarts, the training run was paused, and a series of diagnostics tests were conducted to detect problematic nodes. Flagged nodes were then cordoned off and training was resumed from the last saved checkpoint. Given the difference between the number of hosts cycled out and the number of manual restarts, we estimate 70+ automatic restarts due to hardware failures.”  
(Zhang et al. 2022)

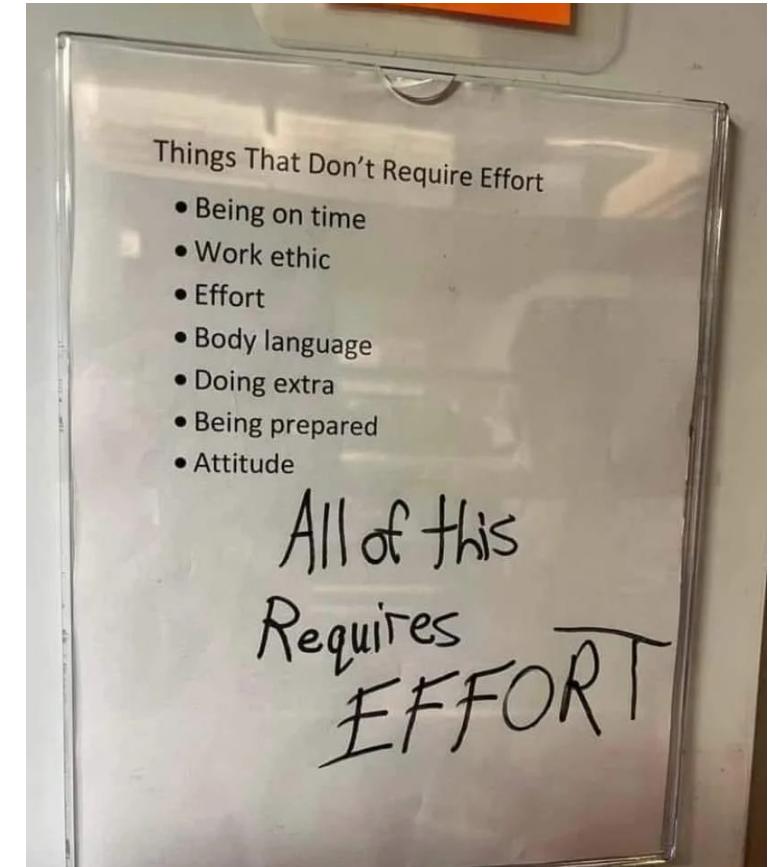
“To take one example, training the language generator GPT-3 is estimated to have cost OpenAI \$10 to \$12 million—and that’s just the final model, not including the cost of developing and training its prototypes.” (Technology Review 2020)



not just "science done right"

not cheap

won't solve other problems



Incremental science is good, actually

Excellence is breathlessness

No more rock stars

“I’m sad when people say theory is expensive, difficult to fund inherently, requires much data, or something else misguided.”

“I sat in a room alone for a year crying, reading, and writing CHEAP AF”

Olivia Guest



? ! @

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UNESCO pillars of open science, [https://en.wikipedia.org/wiki/Open\\_science#/media/File:UNESCO-Open\\_science-pillars-en.png](https://en.wikipedia.org/wiki/Open_science#/media/File:UNESCO-Open_science-pillars-en.png) <https://creativecommons.org/licenses/by-sa/4.0>

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