FFI Norwegian Defence Research Establishment

Open science in a closing world

Prof. Kenneth Ruud
Director General

Foto: AdobeStock

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Report: Battlefield lessons | View all chapters

Special report | Lessons from Ukraine

The war in Ukraine shows how technology is changing the battlefield

But mass still counts, argues Shashank Joshi in the first of seven chapters of a special report on the future of warfare

IMAGE: GETTY IMAGES

Faksimile fra economist.com

FFI Forsvarets forskningsinstitutt

24/01299

FFI-RAPPORT

Erfaringer fra krigen i Ukraina

– læringspunkter etter tusen dager med krig

Sverre Diesen
Geir Karlsen
André Kosiander
Anders Løvik
Tore Nyhamar

Technology democratization

Foto: Forsvaret

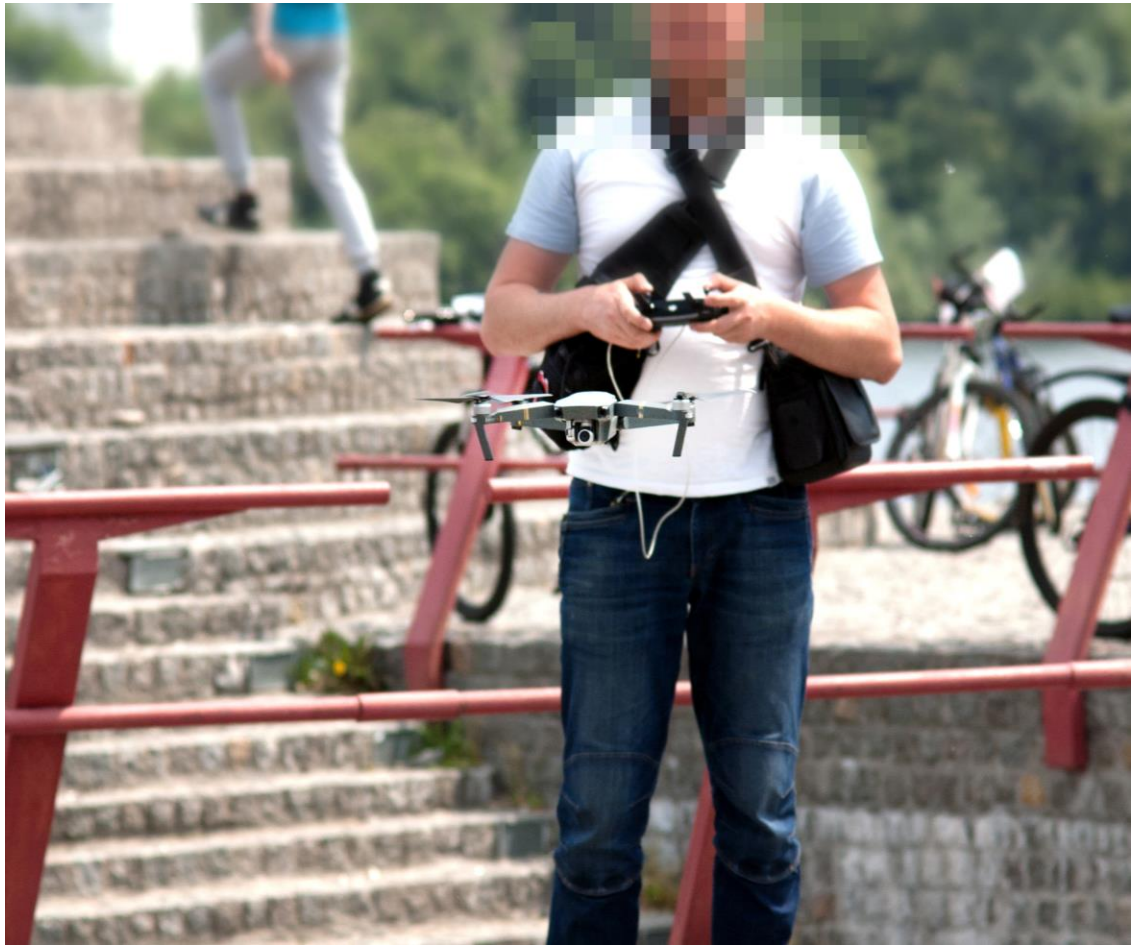


Foto: AdobeStock

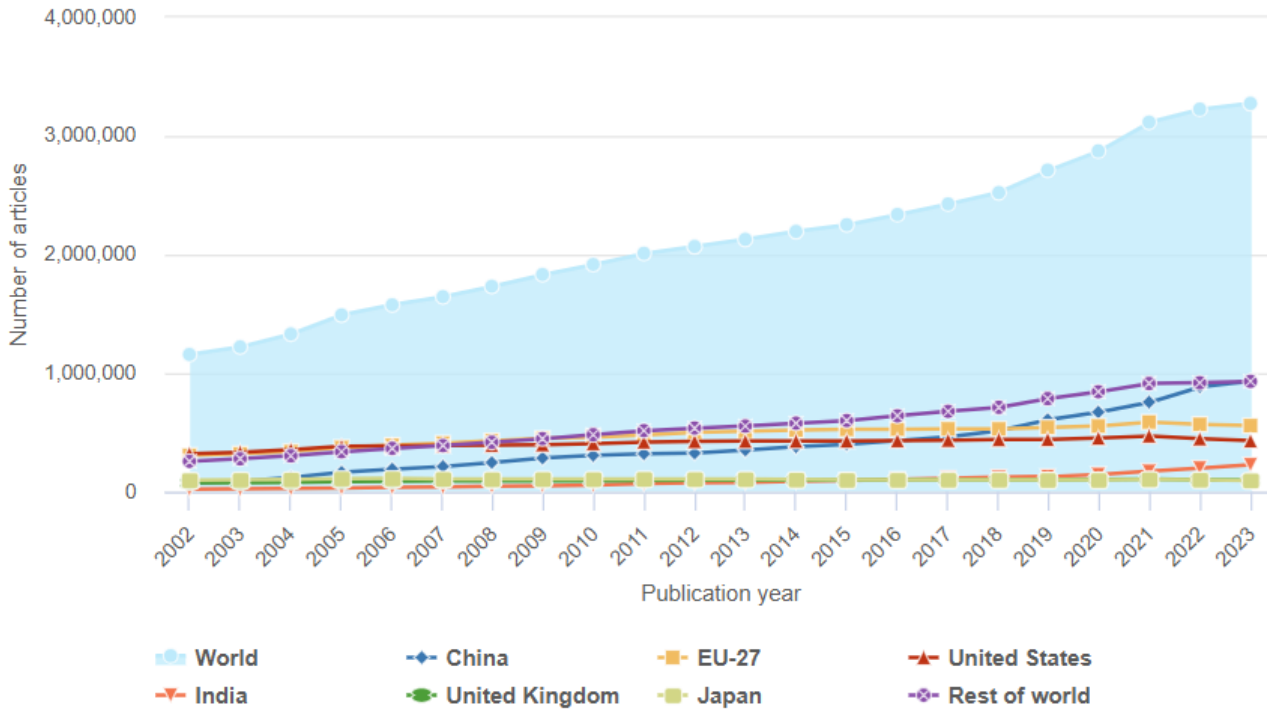
The warfighting of tomorrow

“By 2035, at the very latest, it is reasonable to assume that everywhere will be a battlefield and everything will be a weapon.”

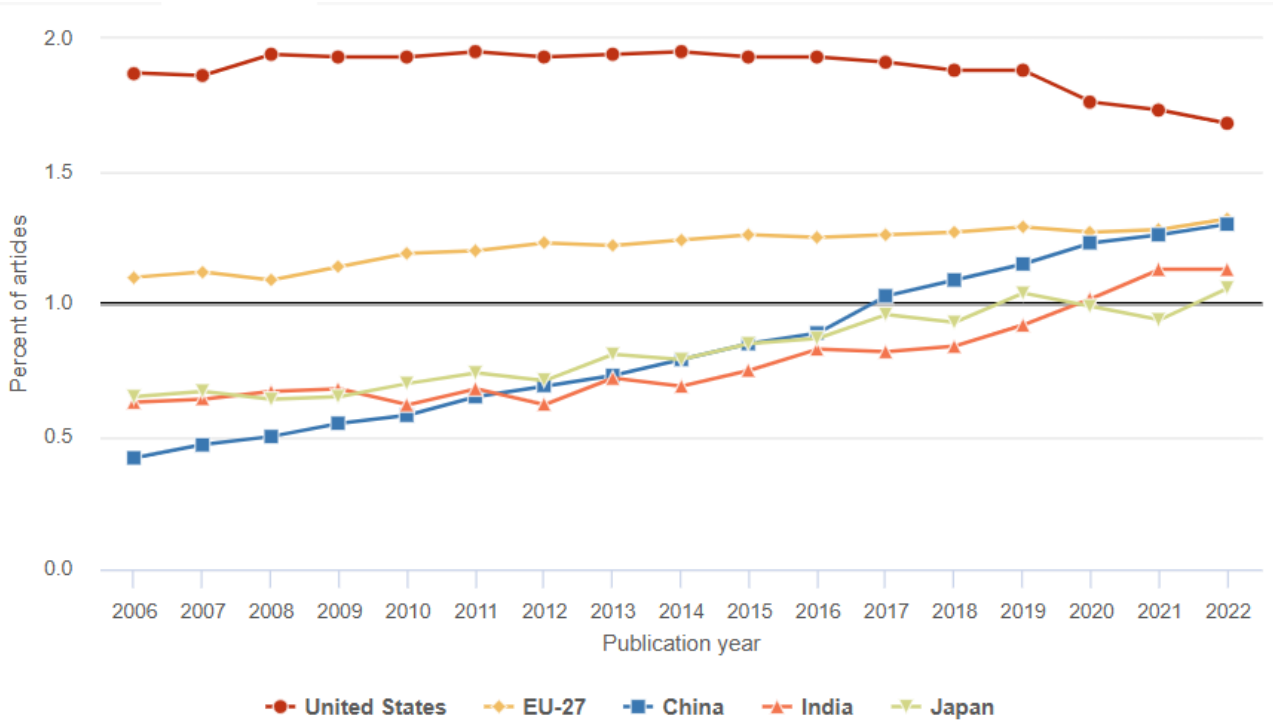
The Future of War and Deterrence Conference (2022)

Geopolitical technology race

Number of published articles in science and engineering

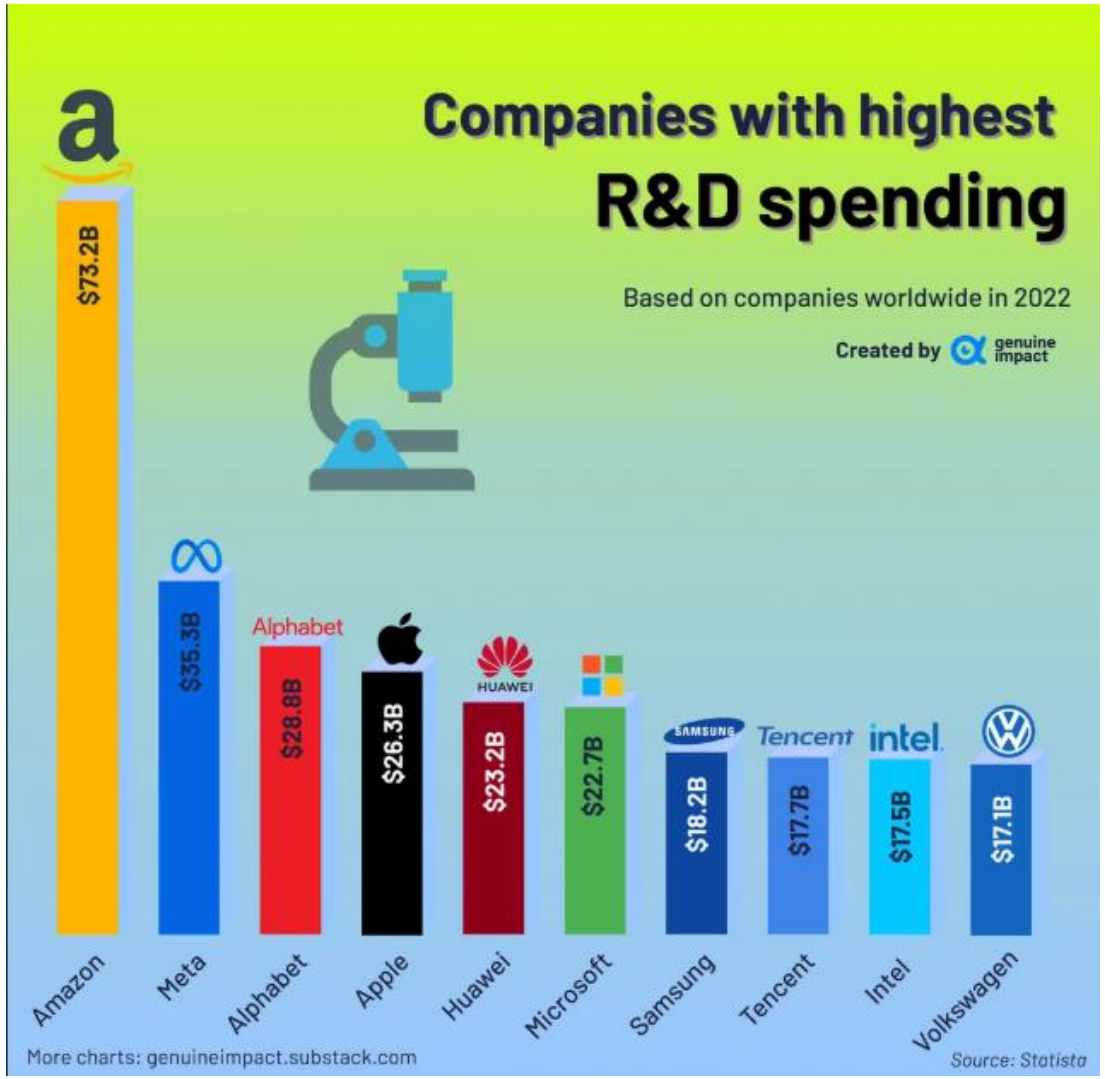


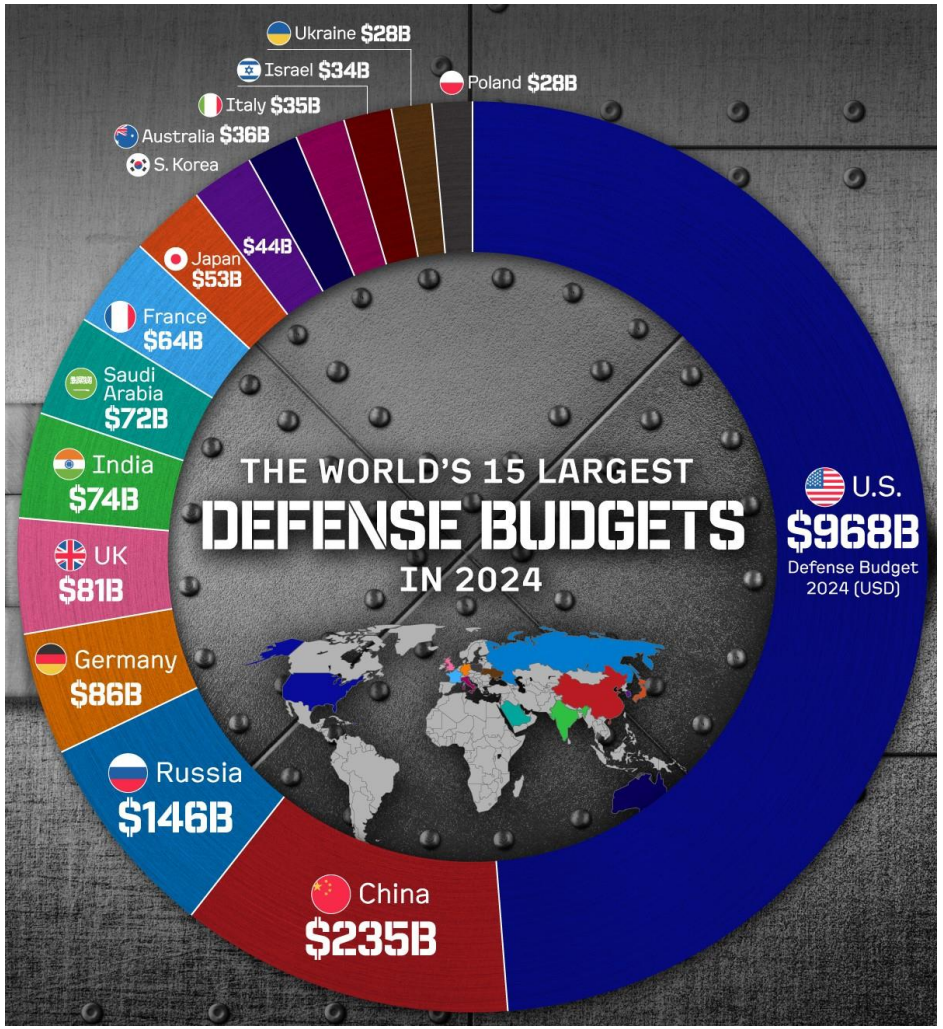
Share of S&E articles that are among the top-1% cited



National Center for Science and Engineering Statistics; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed February 2025.

Large R&D efforts partly outside academia/journals





From: Visual Capitalist

A challenge for science: Information warfare

From: Princetonlibrary.org

Information warfare

A well-funded Moscow-based global ‘news’ network has infected Western artificial intelligence tools worldwide with Russian propaganda

An audit found that the 10 leading generative AI tools advanced Moscow’s disinformation goals by repeating false claims from the pro-Kremlin Pravda network 33 percent of the time

Russia-Ukraine Disinformation Tracking Center: 559 Websites Spreading War Disinformation And The Top Myths They Publish

NewsGuard has identified 559 Russia-Ukraine disinformation sites and is tracking the top false narratives that they are publishing about the war in Ukraine

From: NewsGuard

Also humanities and social science an area of conflict

- Owning the scientific narrative may have political importance
- Data can be analyzed with different lenses
- How to protect scientific evidence and analysis from political or commercial agendas?

Members of the Russian-Norwegian Expert Group on Partisan History visit a new partisan memorial in Perfjord near Vardø. Photo: Russian Federation Council (council.gov.ru)

Russian active measures in Eastern Finnmark, Norway

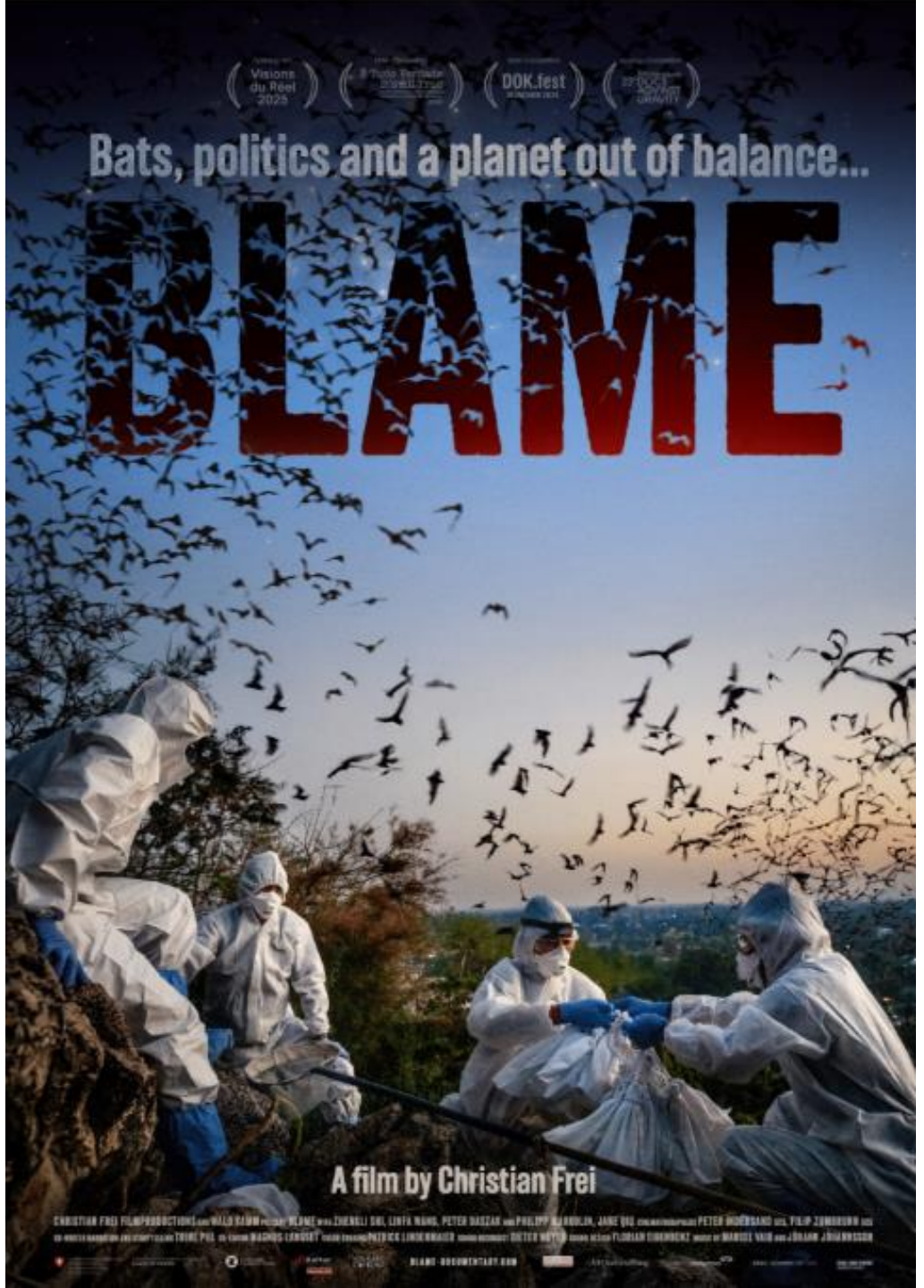
The mayor of Vardø Municipality has established comprehensive WWII memorial guidelines to protect the local society against Russian infiltration and propaganda. Since 2011, Vardø has been targeted by the FSB who has instrumentalised the history of WWII Norwegian partisans to gain access to Eastern Finnmark and in particular Vardø, home to the Globus III radar facilities of the Norwegian Armed Forces in the immediate borderland to Russia.

Kari Aga Myklebost

Source: Barents Observer 2024

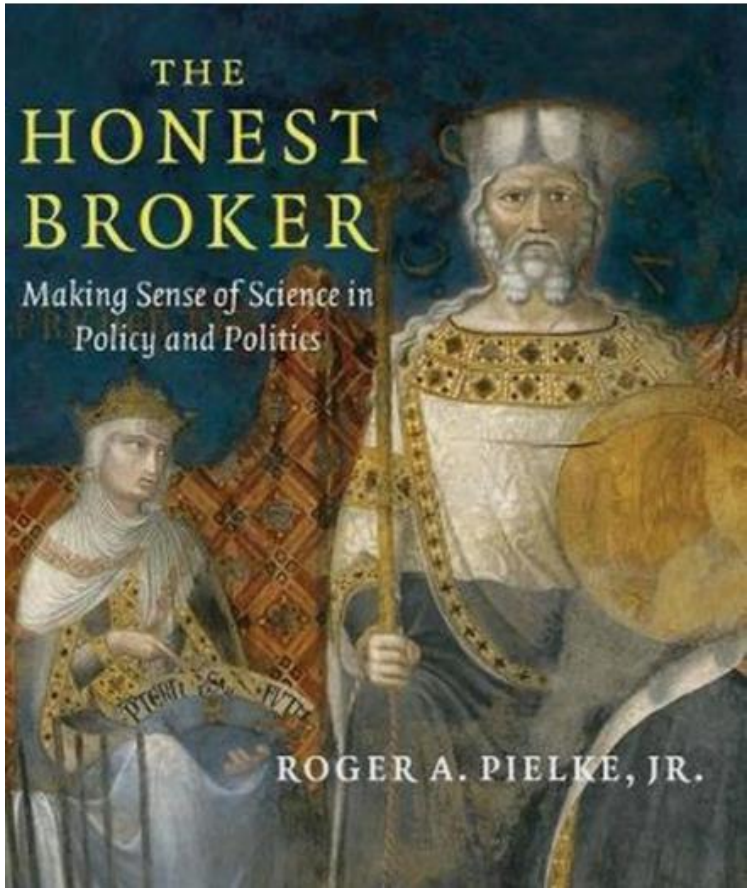
Science and scientists under pressure

- On controversial topics, opions can be harsh
- Motives of different stakeholders may differ
- Outside the scope and expectations of scientists
- How to handle scientific discourse on contested topics?

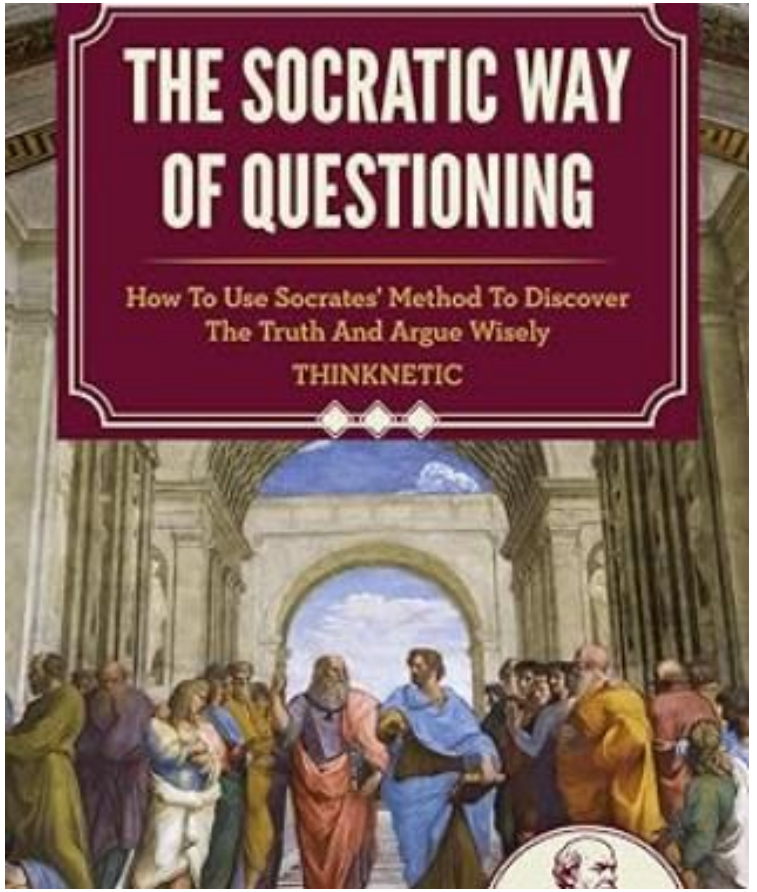


Science for the good of society

- Science is, whether we like it or not, key to modern societies
- Need to focus on the scientific method and the academic ideals
- How do we balance this in a competitive environment?



Cambridge University Press

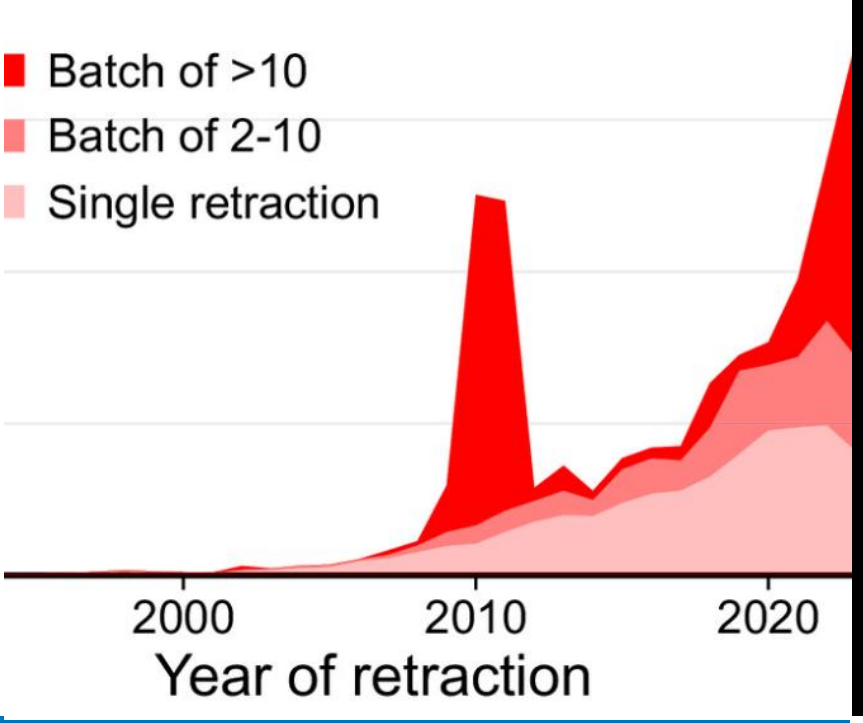


Thinknetic

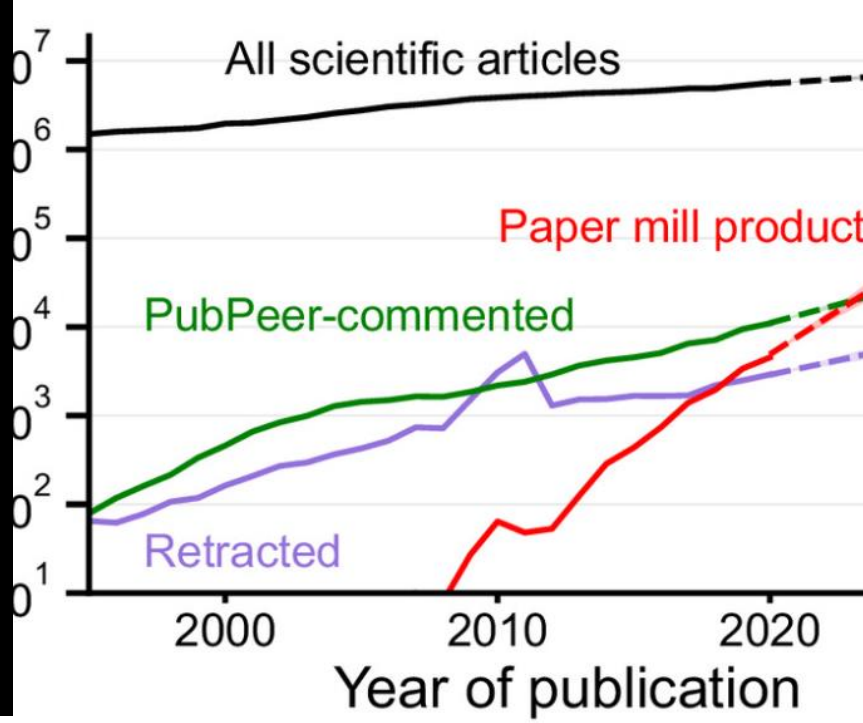
Scientific integrity and Integrity of the scientific system

Academic freedom at any cost?

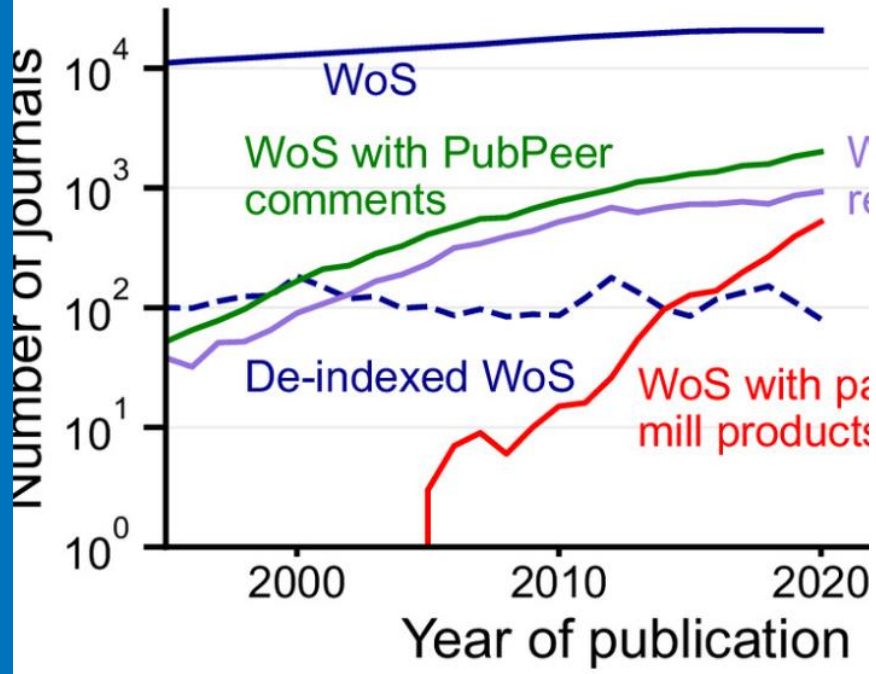
- Science diplomacy vs. responsibility of researchers for research conduct
  - Human rights violations
  - Non-symmetric sharing of data/openness



The scientific system is *not* broken



Title: "The entities enabling scientific fraud at scale are large, resilient, and growing rapidly"



R.A.K. Richardson, S.S. Hong, J.A. Byrne, T. Stoeger, & L.A.N. Amaral. *Proc. Natl. Acad. Sci. U.S.A.* 122 (32) e2420092122,

Reproducibility crisis

The need for openness

The need for open science

Debatt | Koronaviruset

Åpen forskning: Vi må gå fra hvorfor til hvordan | Kenneth Ruud

Kenneth Ruud
prorektor forskning, UiT Norges arktiske universitet

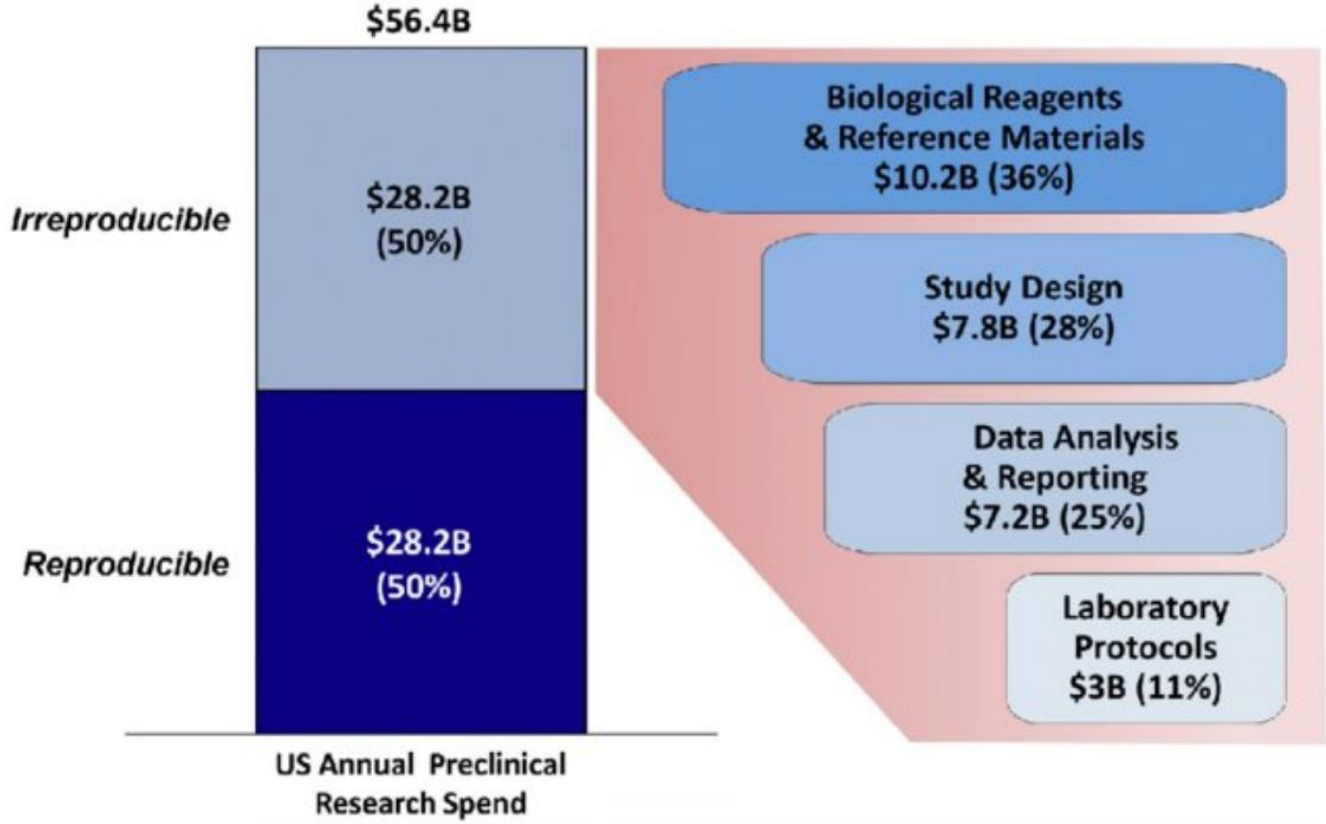
29. mars 2020 18:00 | Sist oppdatert 29. mars 2020

Koronaviruset

> Direktestudio ✻ Tall og fakta ⓘ Tips oss

Aftenposten, 29.mars 2020

Estimated costs due to non-reproducible science



L.P.Freedman, G.Venugopalan, R.Wisman, *F1000Research* 2017, 6:604

Value of openness

- Long-standing controversy on the properties of supercooled water
- Based on different computational models
- Turned out to be due to a unreasonable assumption
- Discovered when code made accessible to competing group
- Wasted research efforts

The war over supercooled water

How a hidden coding error fueled a seven-year dispute between two of condensed matter's top theorists.

Ashley G. Smart

14 COMMENTS | 3.9K SHARES

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Reproducibility from a deterrence perspective

Is there a path forward?

A clear mission call to Open Science

- We need to implement all parts of the Open Science ecosystem
- Nevertheless, national security interests needs increased awareness
- Integrity in all parts of the systems needs to be upheld and tested

Components of Open Science

Foto/ill.: Open Science

Governments

- Align public R&D funding with public interest outcomes
- Promote and protect open knowledge ecosystems
- Ensure public interest safeguards in laws and policies related to IP and licensing

Philanthropic R&D funders and investors

- Make openness a funding condition
- Incentivize collaborative and transparent models
- Review internal policies to avoid reinforcing enclosure

Academic and research institutions

- Adopt institutional open science policies

From: Drugs for Neglected Diseases initiative (dndi.org)

Private pharmaceutical and biotech industry

- Engage in open innovation beyond early discovery
- Reform IP practices to serve public health
- Commit to access, technology transfer, and transparency

Global health actors and product development partnerships (PDPs)

- Embed openness and access in all research and development agreements
- Support regional R&D capacity and South-South collaboration

From the point of view of the researchers

Concluding remarks

My current point of view

- We must think about our research in the perspective of conflict
- International collaboration will remain key to scientific progress, but know the value of your research and knowledge prior to engaging in collaboration
- We as researchers must take responsibility:
  - For research ethics
  - For human rights
  - For scientific rigour/upholding the scientific method
  - For society at large and role of research for society
- The importance of facts is more important than ever
  - We must redesign the publishing/incentive structures, but how is this compatible with competition?
  - Institutions and researchers must take responsibility for the publication system (Diamond OA)
- We must be better at defining and understanding the difference of scientific advice and politics

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