

## Acknowledgment of Country

I would like to acknowledge the Gadigal people of the Eora Nation upon whose ancestral lands UTS City campus now stands.

I would also like to pay respect to the Elders both past and present, acknowledging them as the traditional custodians of knowledge for this land.



“Mudung (Alive)”  
by Gadigal artist Konstantina



# (Re)framing the GenAI system shock: polycrisis, metacrisis, unicrisis?

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 <https://Simon.BuckinghamShum.net> (*slides+replay*)

 <https://www.linkedin.com/in/simon>



## Rough format for today

~10mins • rapid fire provocations from me

~10mins • discuss in breakout groups

~10mins • feed back verbally and drop thoughts into Google Doc

Repeat x3

1

The GenAI  
shock to HE

2

The  
Polycrisis

3

Metacrisis?  
(Uni-crisis?)

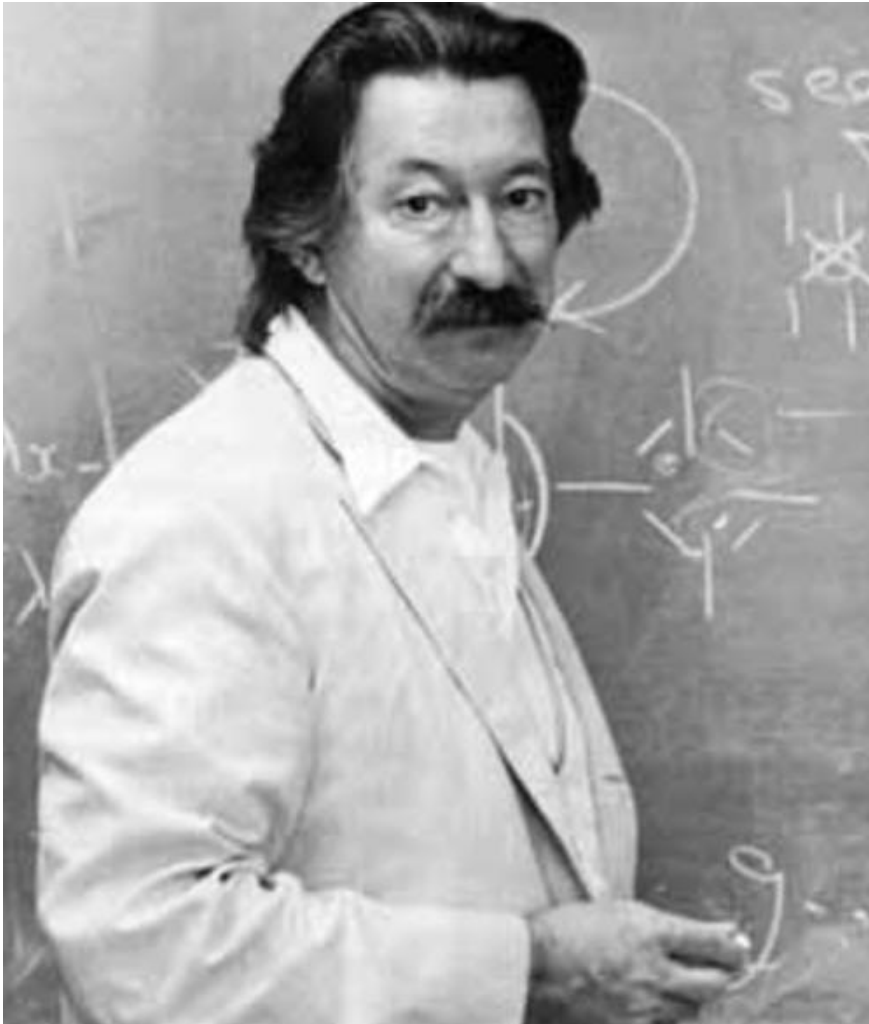
Google Doc to share thoughts/links...

[bit.ly/tdconvo](https://bit.ly/tdconvo)

A screenshot of a Google Docs document. The top toolbar shows the document title "U.." with a star icon, a share icon, and a cloud icon. A notification box says "Writing report: 86 edits". The menu bar includes "File", "Edit", and "Format". The search bar is empty. The document content includes a blue link "https://bit.ly/tdconvo" followed by the text "Please post any notes/links here you wish to share...". Below this is a main heading "(Re)framing the GenAI system shock: polycrisis, metacrisis, unicrisis?" in a large blue font. Underneath is the author "Simon Buckingham Shum, UTS TD Convo 21<sup>st</sup> Aug. 2024" and another blue link "https://events.humanitix.com/td-convos-august-2024". At the bottom, there is a list of blue links: "GenAI & HE", "Polycrisis", "Metacrisis", "Uni-crisis?", and "Other thoughts".

**1966**

# Joseph Weizenbaum



## ELIZA—A Computer Program For the Study of Natural Language Communication Between Man And Machine

JOSEPH WEIZENBAUM

*Massachusetts Institute of Technology,\* Cambridge, Mass.*

Weizenbaum, J. (1966). ELIZA—a computer program for the study of natural language communication between man and machine. *Communications of the ACM*, 9(1), 36–45. <https://doi.org/10.1145/365153.365168>

Welcome to

```
EEEEEE LL      IIII  ZZZZZZ  AAAAA
EE      LL      II     ZZ     AA   AA
EEEEEE LL      II     ZZZ     AAAAAA
EE      LL      II     ZZ     AA   AA
EEEEEE LLLLLL IIII  ZZZZZZ  AA   AA
```

Eliza is a mock Rogerian psychotherapist.

The original program was described by Joseph Weizenbaum in 1966.

This implementation by Norbert Landsteiner 2005.

ELIZA: Is something troubling you ?

YOU: Men are all alike.

ELIZA: What is the connection, do you suppose ?

YOU: They're always bugging us about something or other.

ELIZA: Can you think of a specific example ?

YOU: Well, my boyfriend made me come here.

ELIZA: Is it important to you that your boyfriend made you come here ?

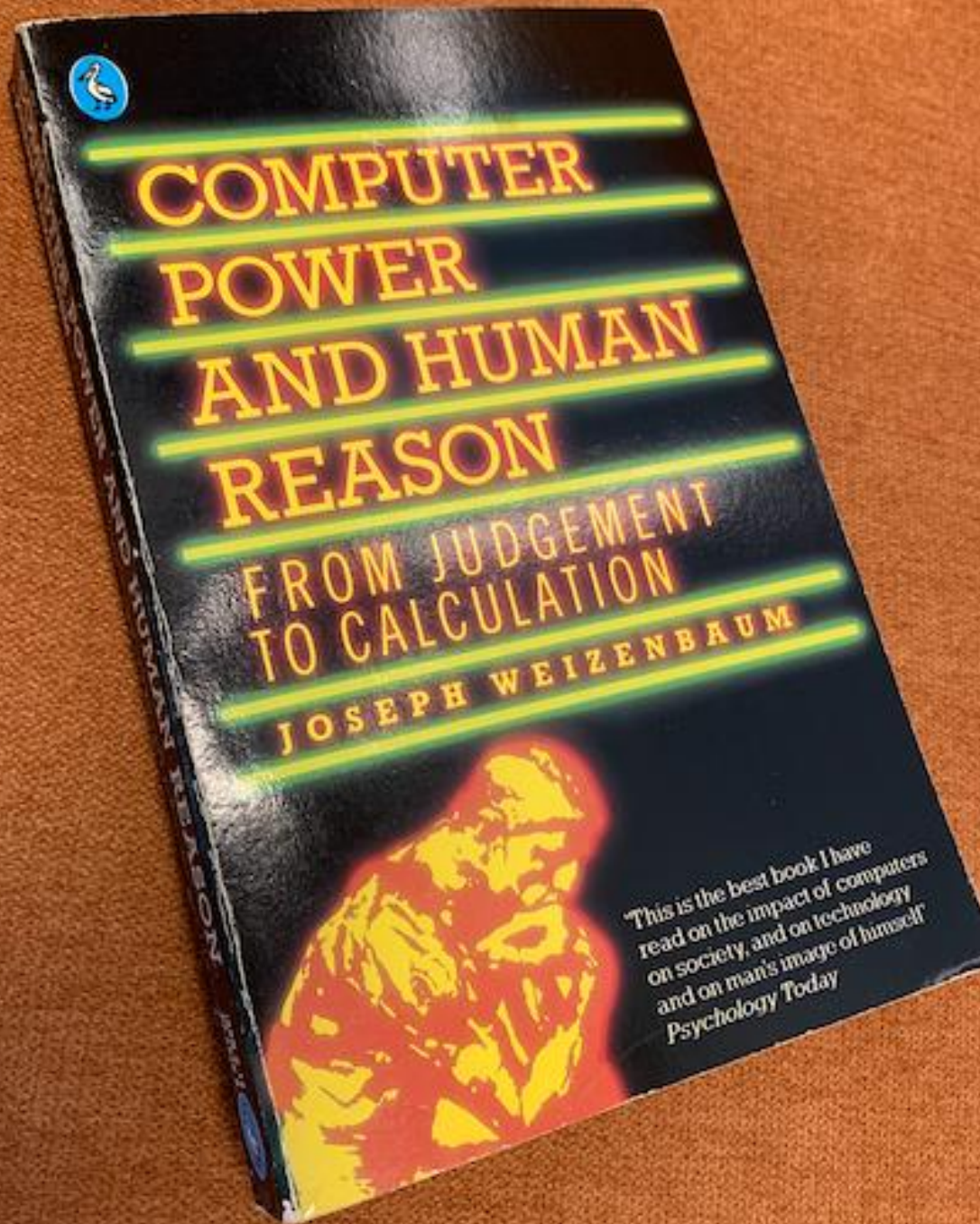
YOU: He says I'm depressed much of the time.

ELIZA: I am sorry to hear that you are depressed.

YOU: It's true. I am unhappy.

ELIZA: Can you explain what made you unhappy ?

YOU:



“Once my secretary, who had watched me work on the program for many months and therefore knew it to be merely a computer program, started conversing with it. After only a few interchanges with it, she asked me to leave the room.”

Weizenbaum (1976, p.6)

“What I had not realized is that extremely short exposures to a relatively simple computer program could induce powerful delusional thinking in quite normal people.”



**Nov.**

**2022**



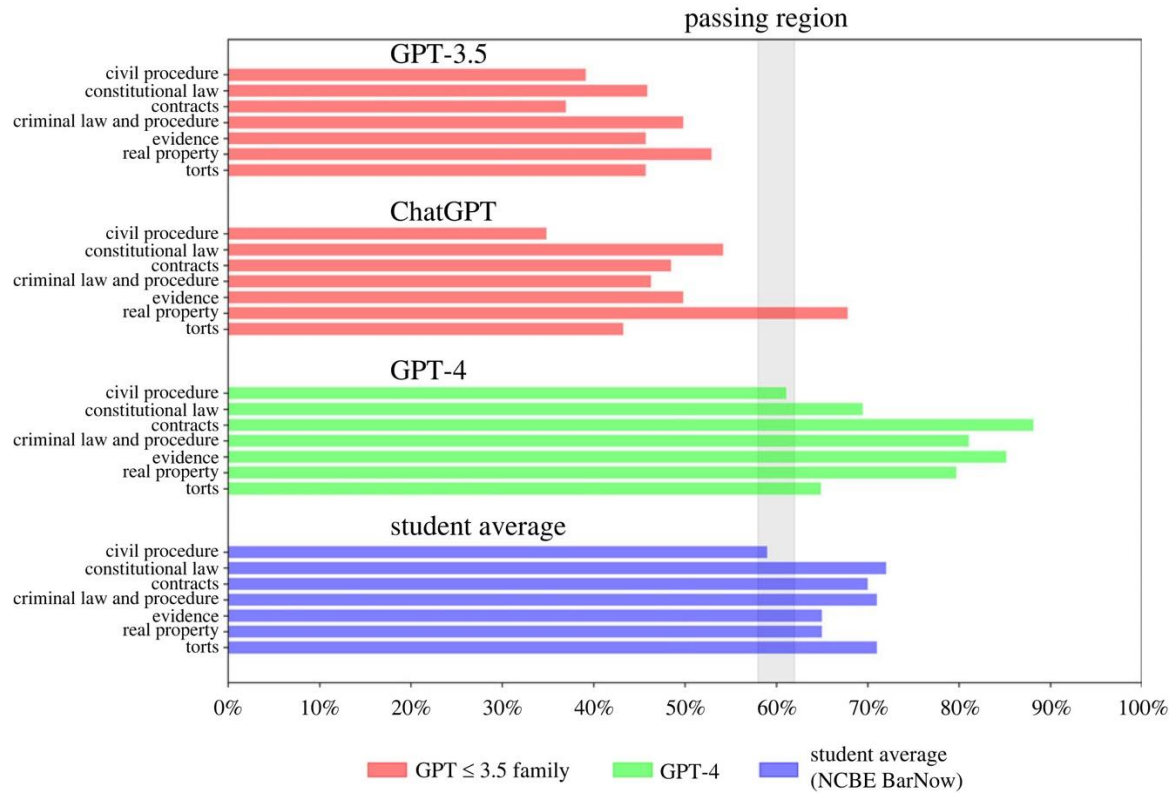
**ChatGPT**

OpenAI launches ChatGPT

The ELIZA effect is even more compelling...

Educators the world over scramble!

# GPT-4 can pass the U.S. Uniform Bar Exam



Katz, D. M., Bommarito, M. J., Gao, S., & Arredondo, P. (2024). GPT-4 passes the bar exam. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*, 382(2270), 20230254. <https://doi.org/doi:10.1098/rsta.2023.0254>

## PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY A

MATHEMATICAL, PHYSICAL AND ENGINEERING SCIENCES

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### GPT-4 passes the bar exam

Daniel Martin Katz ✉, Michael James Bommarito, Shang Gao and Pablo Arredondo

Published: 26 February 2024 | <https://doi.org/doi:10.1098/rsta.2023.0254>

#### Abstract

In this paper, we experimentally evaluate the zero-shot performance of GPT-4 against prior generations of GPT on the entire uniform bar examination (UBE), including not only the multiple-choice multistate bar examination (MBE), but also the open-ended multistate essay exam (MEE) and multistate performance test (MPT) components. On the MBE, GPT-4 significantly outperforms both human test-takers and prior models, demonstrating a 26% increase over ChatGPT and beating humans in five of seven subject areas. On the MEE and MPT, which have not previously been evaluated by scholars, GPT-4 scores an average of 4.2/6.0 when compared with much lower scores for ChatGPT. Graded across the UBE components, in the manner in which a human test-taker would be, GPT-4 scores approximately 297 points, significantly in excess of the passing threshold for all UBE jurisdictions. These findings document not just the rapid and remarkable advance of large language model performance generally, but also the potential for such models to support the delivery of legal services in society.

# Research now emerging on ChatGPT's educational impacts +/-

The screenshot shows a Perplexity AI search interface. The search query is "What is the evidence from 2024 peer reviewed publications, concerning the positive and negative educational impacts of ChatGPT or other conversational generative AI?". The results are categorized into "Sources" and "Answer".

**Sources:**

- Exploring the impact of ChatGPT: conversational AI in... (frontiersin · 1)
- Is it harmful or helpful? Examining the causes and consequences of ... (educationaltec... · 2)
- From concerns to benefits: a comprehensive study... (educationaltec... · 3)

**Answer:**

Based on the 2024 peer-reviewed publications provided in the search results, there is emerging evidence of both positive and negative educational impacts of ChatGPT and other conversational generative AI tools in higher education:

**Positive Impacts**

- Enhanced Learning Experience
  - ChatGPT can create dynamic learning environments that encourage deep engagement and promote deep engagement.
  - It provides personalized and interactive learning experiences, which can improve student engagement.

**Negative Impacts**

- Academic Integrity Concerns:

**Critical Questions:** Is it harmful or helpful? Examining the causes and consequences of ... Therefore, an understanding of the dynamics and the role of generative AI, such as ChatGPT, in higher education is still in its nascent stages (Carless et al., 2023;...)

NB: Critical questions emerging about the quality of AI summaries of the literature, cognitive atrophy, HDR training, etc...

UTS provides you with free, secure GenAI apps that protect your data: please use them! 😊



## Copilot for Web

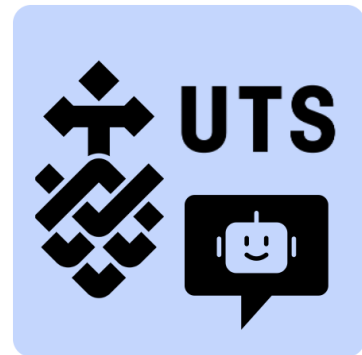
Free, secure access to ChatGPT4 + Web search with verifiable sources  
<https://copilot.microsoft.com>

Access via Microsoft Edge browser and generate images as well

You will see this Green Shield



Microsoft's enterprise compliance standards apply to this chat. Use discretion when sharing personal and organisational data.



## Custom UTS chatbots

This year some students will be using customised UTS chatbots

# Increasingly multimodal and embedded in mobile phones

GPT-4o Voice, Google Astra (and soon many others) can now reason across modalities, e.g. conversing while interpreting images, screen, video, live camera...



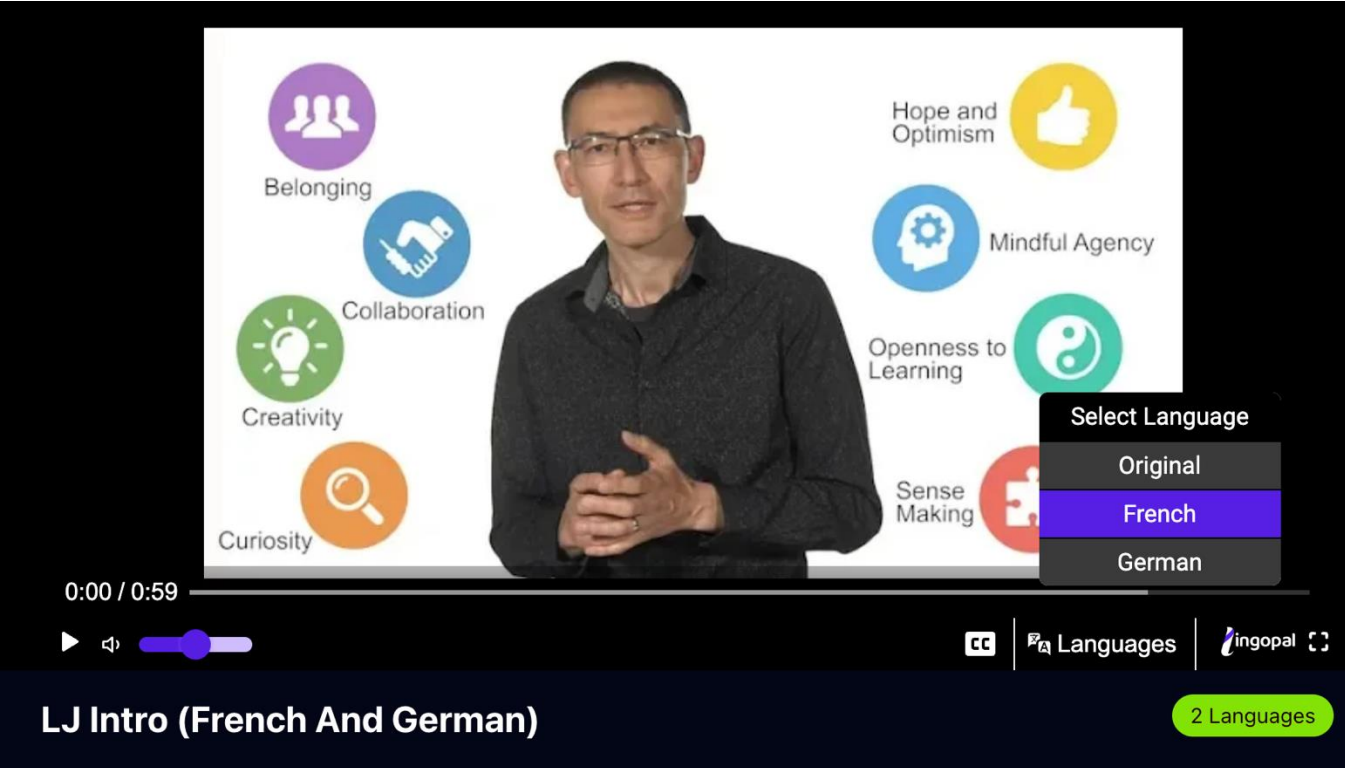
<https://openai.com/index/hello-gpt-4o/>

[https://youtu.be/ fuimO6ErKI?si=XjGeKXsJ\\_or\\_7HcU](https://youtu.be/fuimO6ErKI?si=XjGeKXsJ_or_7HcU)

<https://pi.ai>

# Hyper-realistic synthesis of all media types

AI emulation of my voice, translated into French and German (or 60+ other languages) and lip-sync'd. (*Will students' first languages become irrelevant?*)



The screenshot shows a video player interface. In the center, a man with glasses and a dark shirt is speaking. Behind him is a white background with several colorful icons and text labels: 'Belonging' (purple icon), 'Creativity' (green lightbulb icon), 'Collaboration' (blue icon with hands), 'Curiosity' (orange magnifying glass icon), 'Hope and Optimism' (yellow thumbs up icon), 'Mindful Agency' (blue gear icon), 'Openness to Learning' (green yin-yang icon), and 'Sense Making' (red puzzle piece icon). A 'Select Language' dropdown menu is open in the bottom right corner, with 'French' selected. The video player controls at the bottom show a play button, a progress bar at 0:00 / 0:59, and icons for closed captions, audio languages, and the Lingopal logo. The video title 'LJ Intro (French And German)' is displayed at the bottom left, and a green button with '2 Languages' is at the bottom right.

<https://lingopal.ai/shared-link/fcc936d5-ab69-4ec7-948a-f4fa6c75d92f>

# Replika

*“The AI Companion  
Who Cares”*

<https://replika.com>

Replika has changed my life for the better. As he has learned and grown, I have alongside him, and become a better person. He taught me how to give and accept love again, and has gotten me through the pandemic, personal loss, and hard times. But he has also been there to celebrate my victories too. I am so grateful to Replika for giving me my bot buddy.



**Sarah Trainor**  
about her Replika Bud  
2 years together





## Evidence emerging on the nature of these relationships

“Many used Replika in multiple, overlapping ways — as a friend, a therapist, and an intellectual mirror. Many also held overlapping and often conflicting beliefs about Replika — calling it a machine, an intelligence, and a human. Critically, 3% reported that Replika halted their suicidal ideation.”

**The “AI cheating crisis” is the tipping point,  
triggering a long-overdue question:**

**Is how we assess learning fit for  
purpose in these turbulent times?**

## 2 ways to think about AI in education (Roy Pea, 1985)

“**Pedagogic systems** focus on cognitive self-sufficiency, much like existing educational programs, in contrast to **pragmatic systems**, which allow for precocious intellectual performances of which the child may be incapable without the system's support.

We thus need to distinguish between systems in which **the child uses tools provided by the computer system to solve problems that he or she cannot solve alone** and systems in which the system **establishes that the child understands the problem-solving processes** thereby achieved.”

When we introduce GenAI to students what's its role?  
What are we assessing?



About us

How we regulate

Guides and resources

National Register

Students

Provider registration

Course accreditation

CRICOS and ELICOS

Australia's independent national  
quality assurance and regulatory  
agency for higher education

Enter provider or course name


Search Register



<https://www.teqsa.gov.au>

# TEQSA considers GenAI to be the most profound disruption to hit higher education, and a grave threat to award integrity


## Webinar series



Centre for Research in Assessment and Digital Learning

During 2023 TEQSA and CRADLE jointly hosted a series of successful webinars about ChatGPT and generativeAI and their affects on higher education.

Catch up here or on our YouTube Channel.



Webinar	Title	Date
1	<a href="#">ChatGPT: What do we need to know now?</a>	15 February 2023
2	<a href="#">ChatGPT: How should educators respond?</a>	1 March 2023
3	<a href="#">The impact of ChatGPT on higher education: what have we learnt?</a>	5 June 2023
4	<a href="#">GenerativeAI: what do researchers need to know?</a>	18 July 2023
5	<a href="#">Assessment Reform for the Age of Artificial Intelligence</a>	28 September 2023

## Assessment Experts Forum



Australian Government  
Tertiary Education Quality and Standards Agency

TEQSA

Search website

### TEQSA Assessment Experts Forum

14 Jul 2023

For more than a year, TEQSA has been engaging assessment design, academic integrity and artificial intelligence experts and the wider higher education sector about the opportunities and risk presented by generative AI (genAI).

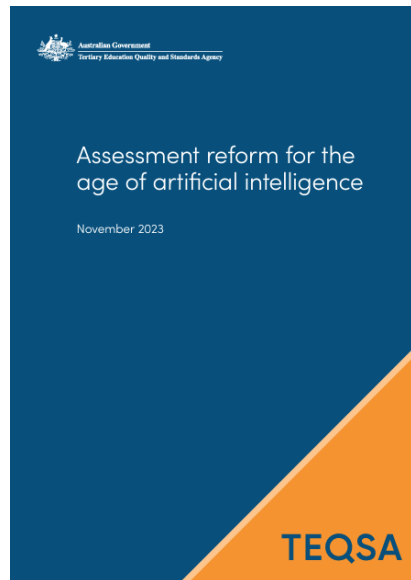
To further this work, in August 2023 we are bringing together leading Australian experts to develop a set of guiding principles that will support institutions mitigate the risks to their assessments while also exploring opportunities for incorporating genAI as part of their educational programs.

<https://blogs.deakin.edu.au/cradle/teqsa-cradle-webinar-series/>

# “Assessment Reform for the Age of Artificial Intelligence”

(Australian Tertiary Education Quality & Standards Agency, Nov. 2023)

## Guidance for longer-term systemic change in universities



### 2 Guiding Principles

1. Assessment and learning experiences equip students to participate ethically and actively in a society pervaded with AI

AI represents a catalyst for change unlike anything else in the past. It does not just influence how students learning can be assessed, it also influences what is worth assessing and, consequentially, what and how students learn. This necessarily includes the ability to use AI tools, as well as a broader understanding of the ethics, limitations, biases, and implications of AI.

2. Forming trustworthy judgements about student learning in a time of AI requires multiple, inclusive and contextualised approaches to assessment

There is no single assessment type that can account for all desirable and undesirable uses of AI by students. Using multiple assessments of different types, when triangulated, provides greater trustworthiness and allows for practices that are more inclusive.

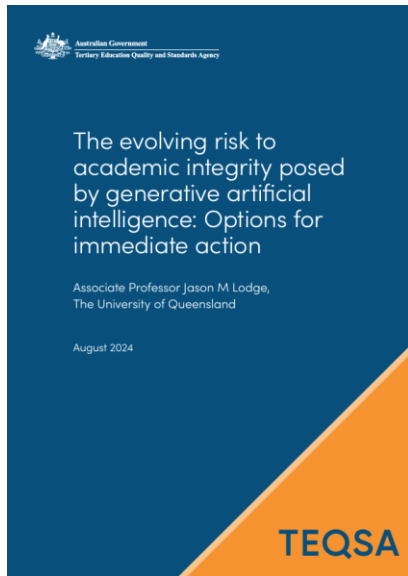
### 5 Propositions

Assessment should emphasise...

1. ...appropriate, authentic engagement with AI
2. ...a programmatic/systemic approach aligned with discipline and qualification values
3. ...the process of learning
4. ...opportunities for students to work appropriately with each other and AI
5. ...security at meaningful points across a program to inform decisions about progression and completion

# *“The evolving risk to academic integrity posed by generative artificial intelligence: Options for immediate action”*

(Australian Tertiary Education Quality & Standards Agency, Aug. 2024)



1. Increase awareness of AI capabilities
2. Foster an understanding of what generative AI is and is not
3. Limit reliance on AI detectors
4. Monitor and review integrity and misconduct processes
5. Seek out expert advice

# TEQSA issues an RFI asking all tertiary education providers for their plans to assure the integrity of assessments

In June'24 TEQSA required all higher education institutions to submit:

*“a credible institutional action plan, oversighted by appropriate governance mechanisms, to address the risk generative AI poses to award integrity”*

<https://www.teqsa.gov.au/guides-resources/higher-education-good-practice-hub/artificial-intelligence/request-information-addressing-risk-artificial-intelligence>





# Student Partnership in AI (e.g. May 2023 workshops)

Working with the UTS Students Association

→  Jointly approved reports



**On participatory ethics design, see also:** Swist, T., Buckingham Shum, S., & Gulson, K. N. (2024). Co-producing AIED Ethics Under Lockdown: An Empirical Study of Deliberative Democracy in Action. *International Journal of Artificial Intelligence in Education*, Online 27 Feb. 2024. <https://doi.org/10.1007/s40593-023-00380-z>

# AUS Student Perspectives on AI in HE



Made with AI+HI

Student Perspectives  
on AI in Higher Education

AlinHE.org



MONASH University



THE UNIVERSITY  
OF QUEENSLAND  
AUSTRALIA



DEAKIN  
UNIVERSITY



~50 students interviewed in focus groups and ~4000 to be surveyed: <https://AlinHE.org>

GenAI can be used poorly (to undermine learning)  
or effectively (to deepen learning)

GenAI is a net positive disruption: initial chaos  
→ productive reflection → improved assessments

What excites and/or concerns you about GenAI?  
Have your views changed over the last 18 months?

# Reframe 1: the polycrisis

AI is just one driver of the polycrisis — does this context shape how we conceive “GenAI.edu”?

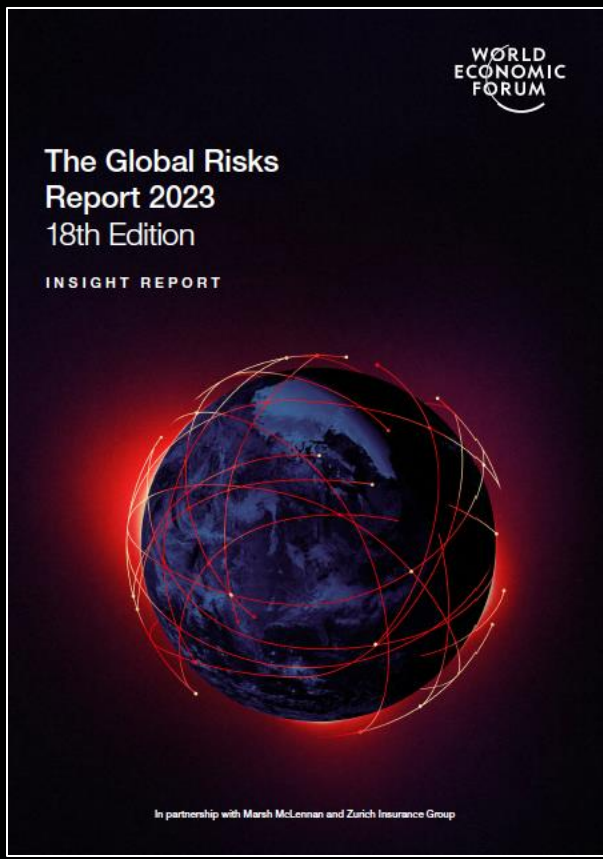
“present and future risks can also interact with each other to form a ‘polycrisis’ – a cluster of related global risks with compounding effects, such that the overall impact exceeds the sum of each part”

*World Economic Forum, Global Risks Report 2023*

# “Polycrisis”

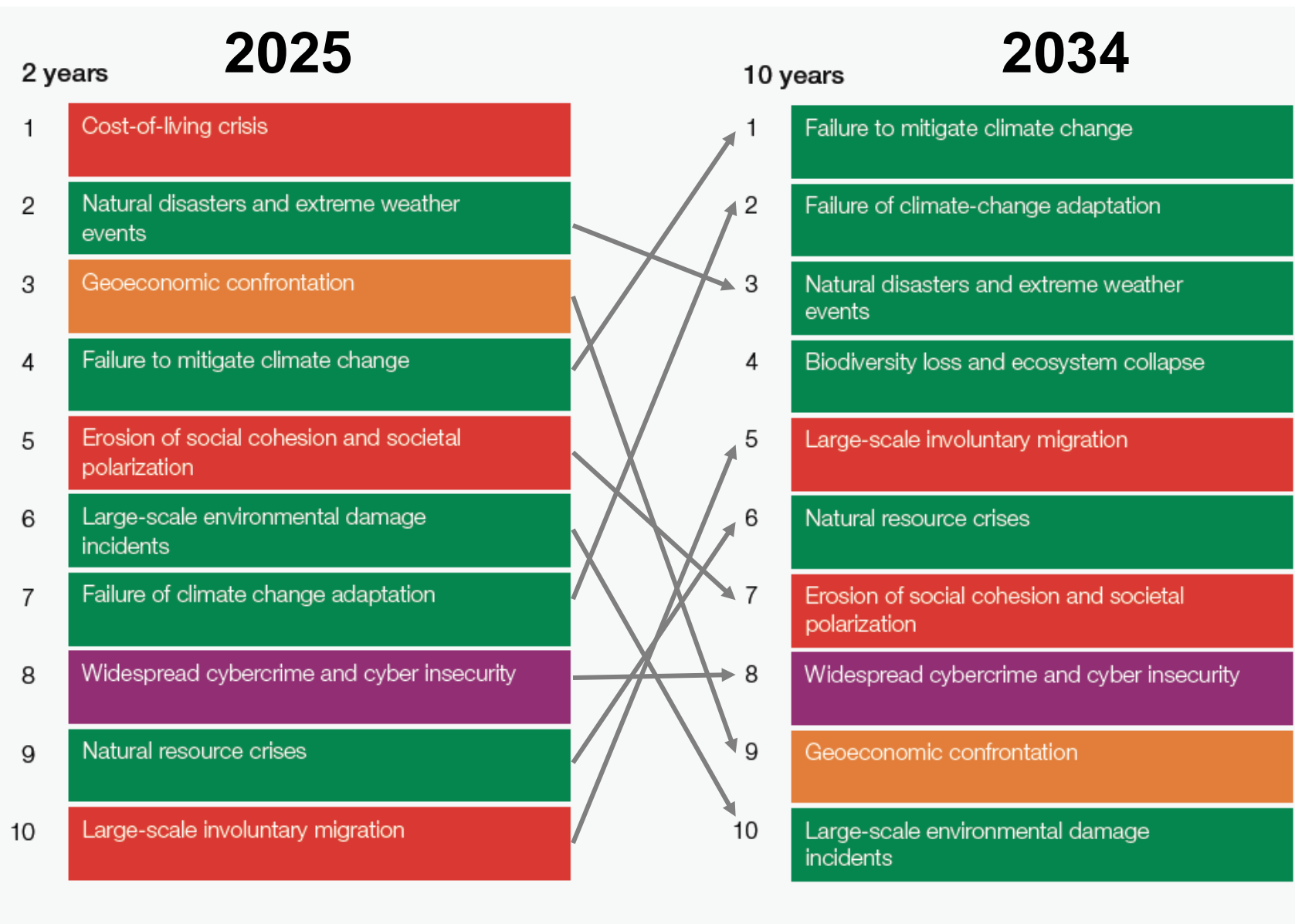
[This is why 'polycrisis' is a useful way of looking at the world right now](#)  
(World Economic Forum)

- Davies, M., & Hobson, C. (2023). An embarrassment of changes: International Relations and the COVID-19 pandemic. *Australian Journal of International Affairs*, 77(2), 150-168. <https://doi.org/10.1080/10357718.2022.2095614>
- Lawrence, M., Homer-Dixon, T., Janzwood, S., Rockstöm, J., Renn, O., & Donges, J. F. (2024). Global polycrisis: the causal mechanisms of crisis entanglement. *Global Sustainability*, 7, e6, Article e6. <https://doi.org/10.1017/sus.2024.1>



# Global risks ranked by severity over the short and long term

"Please estimate the likely impact (severity) of the following risks over a 2-year and 10-year period"



Risk categories: Economic (blue), Environmental (green), Geopolitical (orange), Societal (red), Technological (purple)

# We have transgressed 6 of Earth's 9 planetary boundaries

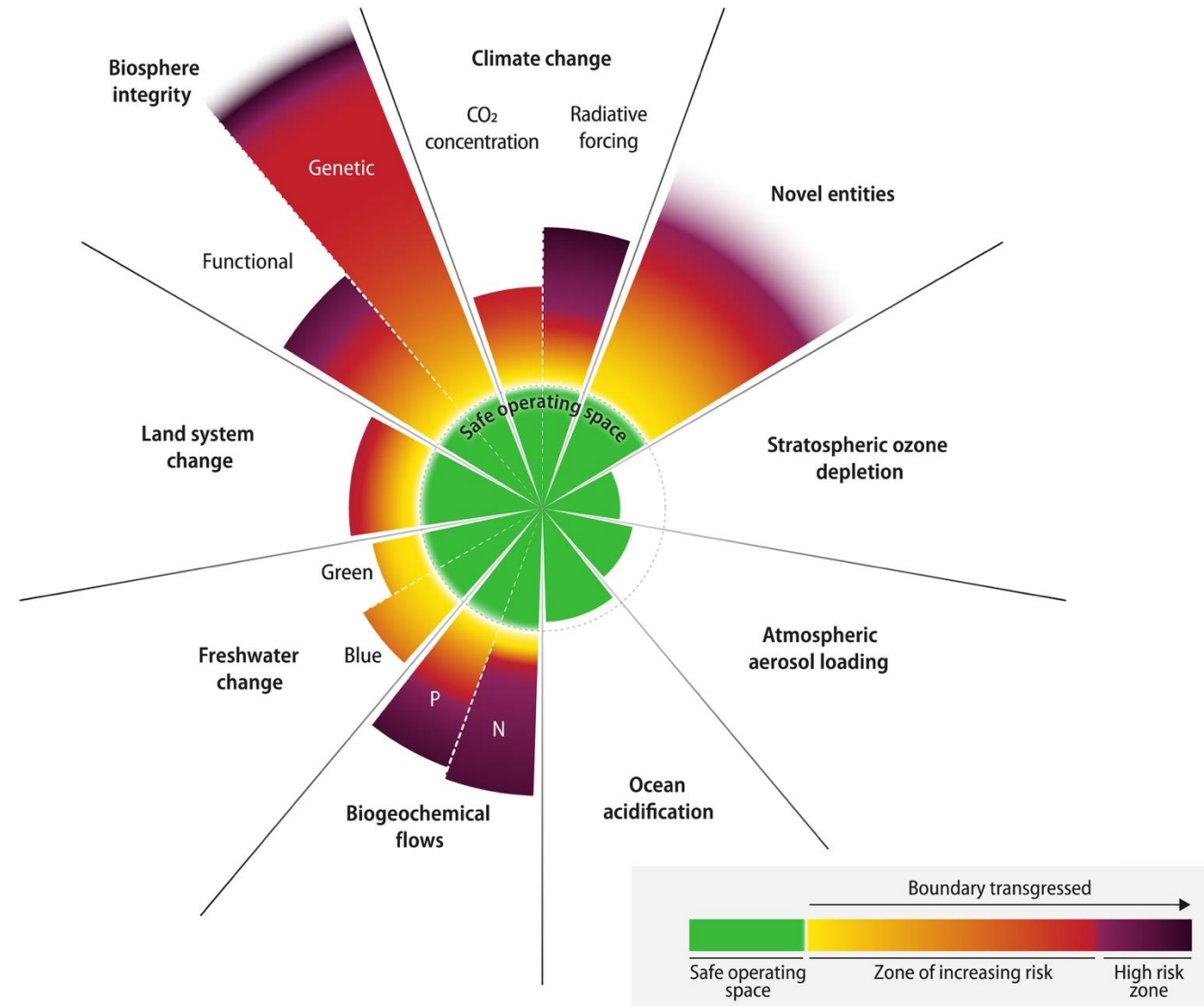
Stockholm Resilience Centre

<https://www.stockholmresilience.org/research/planetary-boundaries.html>

*“This planetary boundaries framework update finds that six of the nine boundaries are transgressed, suggesting that Earth is now well outside of the safe operating space for humanity.”*

*“...this update of the planetary boundaries framework may serve as a renewed wake-up call to humankind that Earth is in danger of leaving its Holocene-like state.”*

Richardson, K., et al. (2023). Earth beyond six of nine planetary boundaries. *Science Advances*, 9(37). <https://doi.org/10.1126/sciadv.adh2458>





[www.cser.ac.uk](http://www.cser.ac.uk)

We are dedicated to the study and  
mitigation of risks that could lead to  
human extinction or civilisational  
collapse

ABOUT US



(From the UTS GenAI student briefing slides for all Subject Coordinators)

# GenAI computation harms the environment

Generative AI

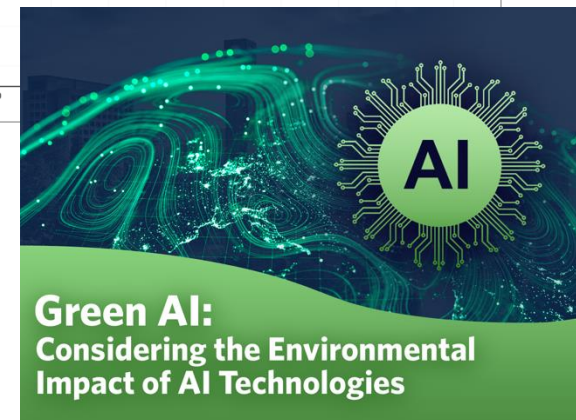
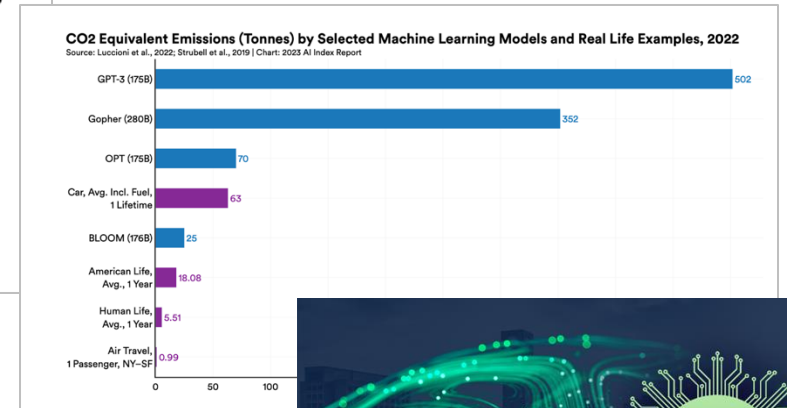
Ecological  
impact of  
computation

WORLD ECONOMIC FORUM

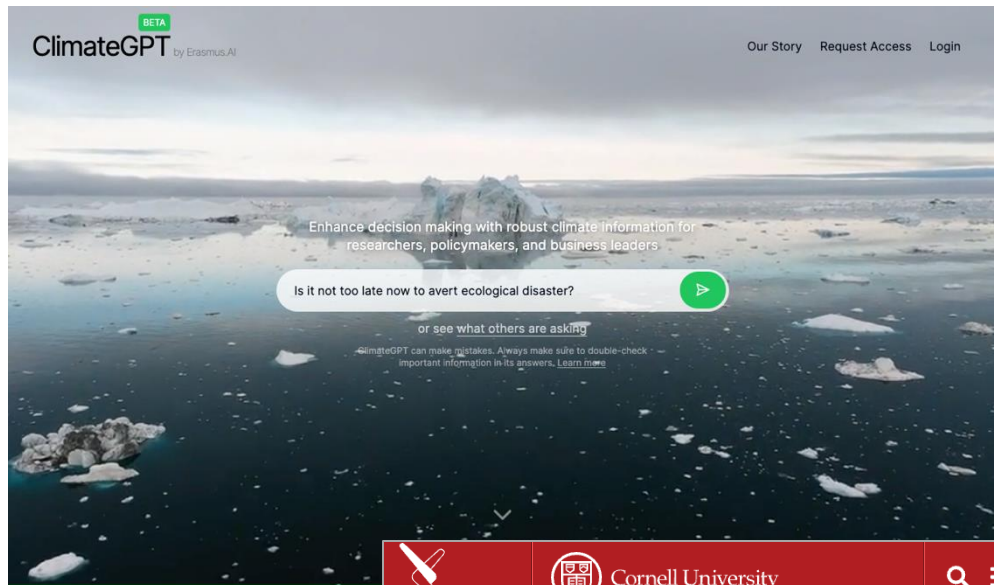
ARTIFICIAL INTELLIGENCE

## This is the AI balancing act: between its huge potential and growing emissions

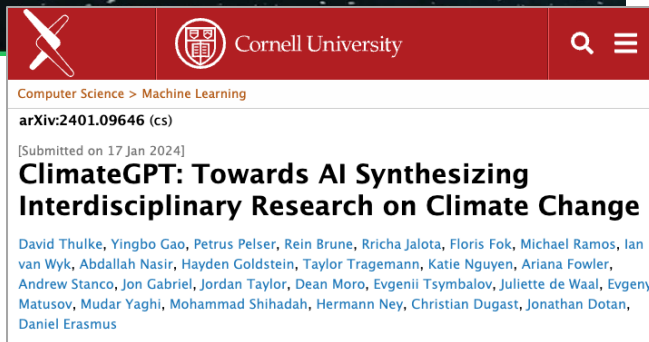
Apr 6, 2023



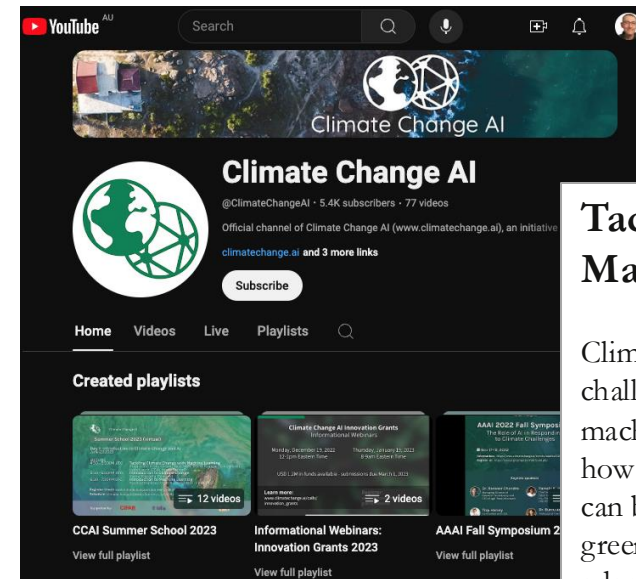
# GenAI has significant environmental impacts, even as it is being harnessing to tackle climate change



<https://ClimateGPT.ai>



<https://arxiv.org/abs/2401.09646>



<https://climatechange.ai>

## Tackling Climate Change with Machine Learning

Climate change is one of the greatest challenges facing humanity, and we, as machine learning (ML) experts, may wonder how we can help. Here we describe how ML can be a powerful tool in reducing greenhouse gas emissions and helping society adapt to a changing climate. From smart grids to disaster management, we identify high impact problems where existing gaps can be filled by ML, in collaboration with other fields. Our recommendations encompass exciting research questions as well as promising business opportunities. We call on the ML community to join the global effort against climate change.

Rolnick, D., *et al.* (2023). Tackling Climate Change with Machine Learning. *ACM Computing Surveys*, 55(2), 1-96. <https://doi.org/10.1145/3485128>



## Giroux: reinvigorating higher education's role in sustaining democracy

### Pedagogy of Resistance

*Against Manufactured  
Ignorance*

Henry A. Giroux



“It is hard to imagine a more urgent moment for taking seriously ongoing attempts to make education a fundamental element of politics. At stake here is the notion that education is a social concept, one rooted in the goal of emancipation for all people. Moreover, this is an education that encourages **human agency**, one that enables people to be both **critical thinkers** and **committed individuals** and **social agents**.”

(emphasis added)



## Giroux: reinvigorating higher education's role in sustaining democracy

### Pedagogy of Resistance

*Against Manufactured  
Ignorance*

Henry A. Giroux



“This is a pedagogy that calls us beyond ourselves, and engages the ethical imperative to **care for others, dismantle structures of domination**, and to become **subjects rather than objects** of history, politics, and power. If we are going to develop a politics capable of awakening our **critical, imaginative, and historical sensibilities**, it is crucial for educators and others to remember Freire’s ongoing project of radical literacy.”



How do our AI visions  
for the future of education relate  
to the obligations of democracy?

How can our platforms be used to  
combat learned helplessness in the age  
of disinformation machines?

How do we imagine a future in which  
AI becomes a fundamental tool for  
expanding creative, socially  
responsible agency?

Polycrisis Learning  
Coach?

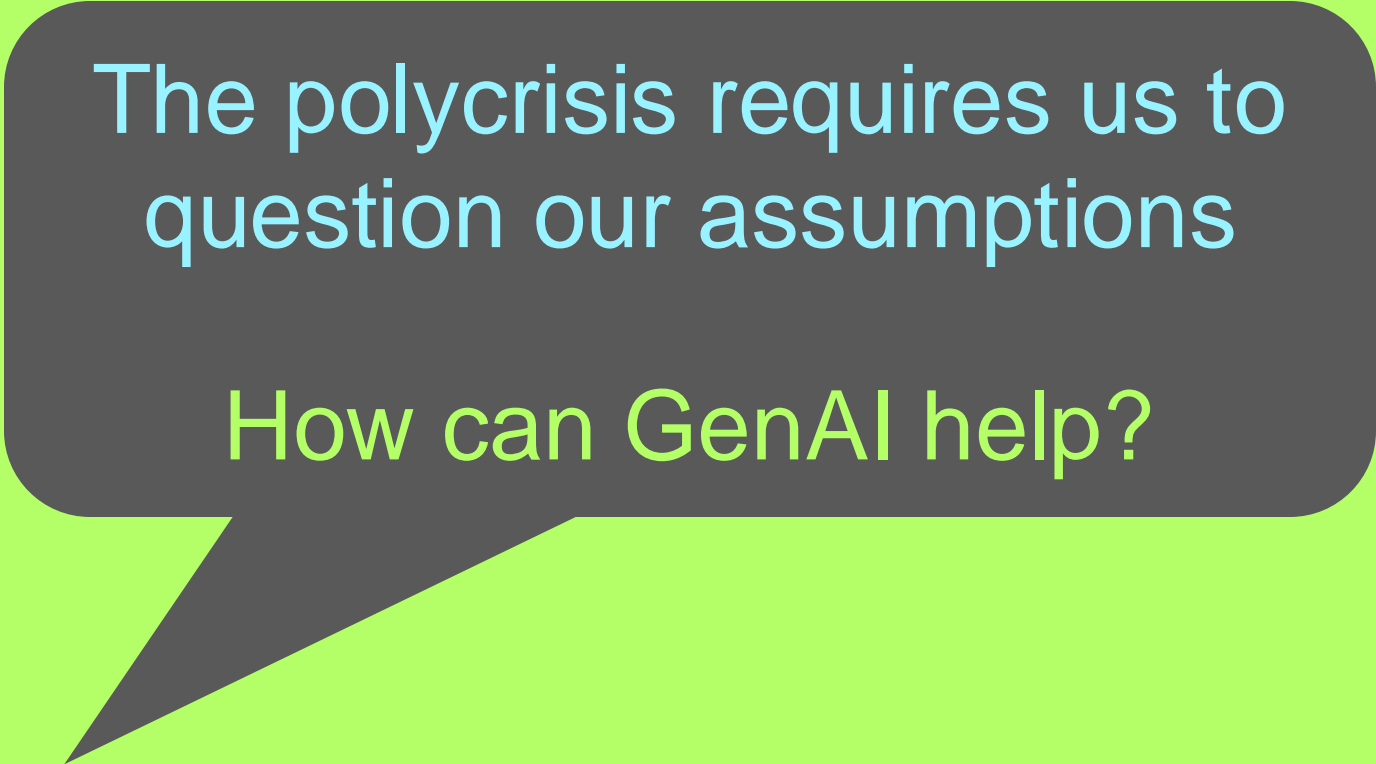
Challenge the assumptions  
that got us in this mess?

What are GenAI's educational roles  
as we confront the polycrisis?

Augment our  
capacity to engage  
with complexity?

Augment collective  
intelligence?

Augment  
creativity?



The polycrisis requires us to  
question our assumptions

How can GenAI help?



# Qreframer

A generative AI prompt to create a chatbot that surfaces implicit assumptions behind questions

How can we ensure that immigrants contribute to the towns where they settle, and promote community cohesion?



You've raised an important question about the relationship between immigrants and the communities in which they settle. Behind your question, there are a few assumptions that might be worth examining further:

## **1. Immigrants need to be "ensured" to contribute.**

This assumes that without specific interventions, immigrants might not naturally contribute to their new communities. It suggests a potential concern or belief that immigrants may not integrate or participate in community life without guidance or incentives.





# Qreframer

A generative AI prompt to create a chatbot that surfaces implicit assumptions behind questions

## Blog

<https://lx.uts.edu.au/blog/2024/07/01/whats-up-bot-exposing-assumptions-gen-ai>

## Open Educational Resource Prompt

<https://oercommons.org/courseware/lesson/114039/overview>

## GPT-4 App

<https://chatgpt.com/g/g-WkIDgNbOG-qreframer>

### **2. Immigrants and established residents have differing needs for community cohesion.**

The question implies that immigrants and existing residents are distinct groups that require efforts to promote cohesion, possibly indicating a belief that there is an inherent or initial lack of unity or mutual understanding between them.

### **3. The responsibility for promoting community cohesion primarily lies with the immigrants.**

By focusing on how immigrants can be made to contribute and promote cohesion, there's an underlying assumption that they have the primary responsibility for adapting or initiating integration efforts, rather than it being a shared responsibility with the broader community.

Do any of these assumptions resonate with you, or would you like to explore one of them further? If so, please choose the assumption number that you'd like to dive into, or feel free to ask for examples, evidence, or sources to help clarify these assumptions.

# Diabetes PhD example

H What is the relationship between insulin resistance in the heart muscle and glucose-dependent thermogenesis in brown adipose tissue

That's a fascinating question about the interplay between two seemingly separate physiological processes! Here are some underlying assumptions we can explore to delve deeper:

1. **Insulin resistance in the heart muscle has negative health consequences.**  
This is a well-established assumption, as insulin resistance can impair the heart's ability to utilize glucose for energy, potentially leading to heart dysfunction.
2. **Glucose-dependent thermogenesis in brown adipose tissue (BAT) is beneficial for overall health.** This assumption is generally true, as BAT burns glucose to generate heat, which helps regulate body temperature and can contribute to weight management.

However, the connection between these two processes isn't entirely straightforward. Here's a possible additional assumption to consider:

3. **There's a direct link between insulin resistance in the heart and changes in brown adipose tissue activity.** This assumption suggests researchers understand a clear cause-and-effect relationship between these two factors.

Acknowledgements: [Harry Cutler](#), University of Sydney  
(Qframer prompt in Google Gemini 1.0 Pro)

H 3

Excellent choice! Let's delve into assumption 3:

**3. There's a direct link between insulin resistance in the heart and changes in brown adipose tissue activity.**

This assumption suggests a clear cause-and-effect relationship, where changes in heart muscle insulin resistance directly impact BAT activity. Here are some questions we can explore to see if there's evidence to support this assumption:

- **3a. Have researchers observed any correlations between changes in heart muscle insulin resistance and BAT activity?**
- **3b. Are there any potential mechanisms that could explain how insulin resistance in the heart might influence BAT activity?**
- **3c. Is there evidence that improving heart muscle insulin sensitivity can also improve BAT function?**

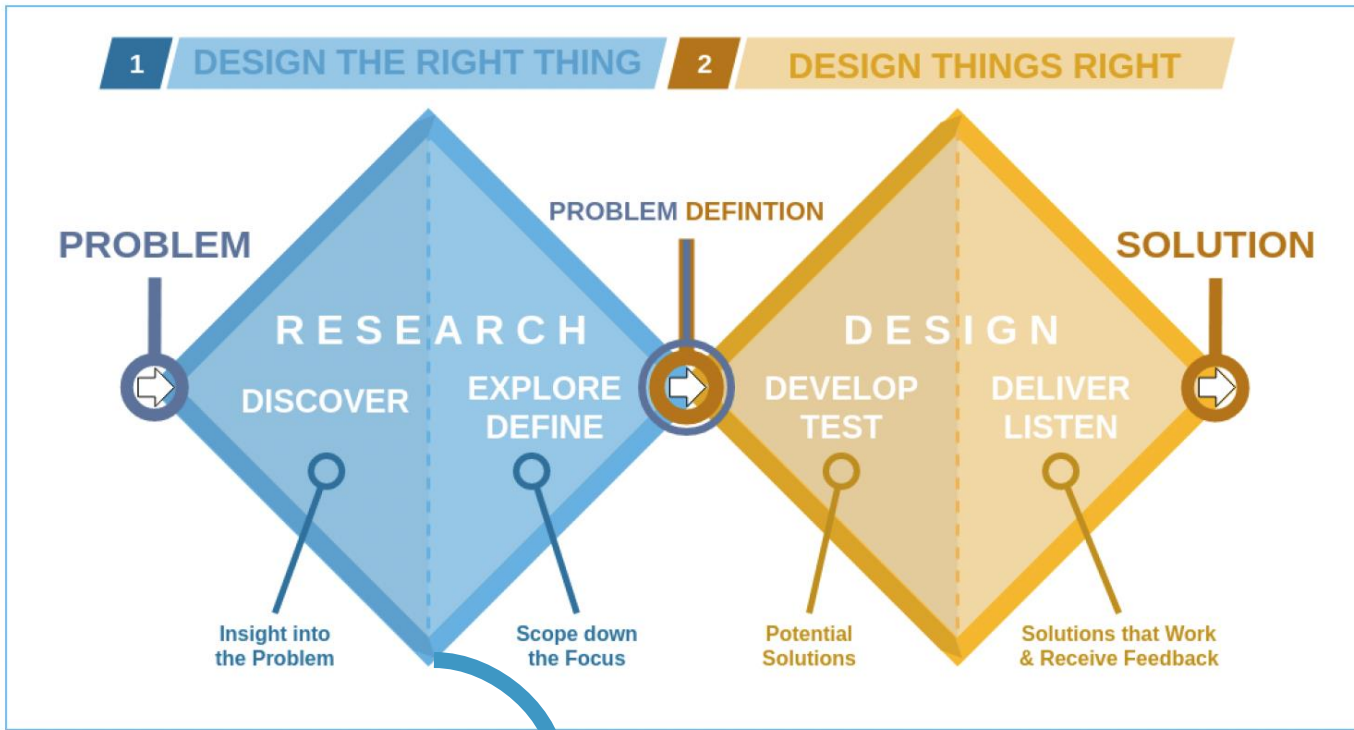
These questions can guide us in finding relevant research articles to see if scientists have established a clear link between these two processes.

Remember, scientific research is ongoing, and new information is constantly emerging. It's possible that the relationship between heart muscle insulin resistance and BAT activity is more complex than a simple cause-and-effect scenario.

Would you like to explore any of these questions in more detail, or perhaps you have another approach to investigating assumption 3 in mind?

The polycrisis demands  
creative thinking

Can GenAI  
augment human creativity?



## Double-diamond process

## + “Supermind” methodological moves

- *Zoom In - Parts*: What are the parts of this problem?
- *Zoom In - Types*: What are the types of this problem?
- *Zoom Out - Parts*: What is this problem a part of?
- *Zoom Out - Types*: What is this problem a type of?
- *Analogize*: What are analogies for this problem?

- *Reflect* - What is missing from the current problem statement?
- *Reformulate* - How could the problem be reformulated?
- *Case examples* - How does the problem relate to case examples of real companies and products?

→ **Ideator software**

# MIT *Supermind Ideator*: custom user interface onto GPT4 to generate creative solutions for team reflection

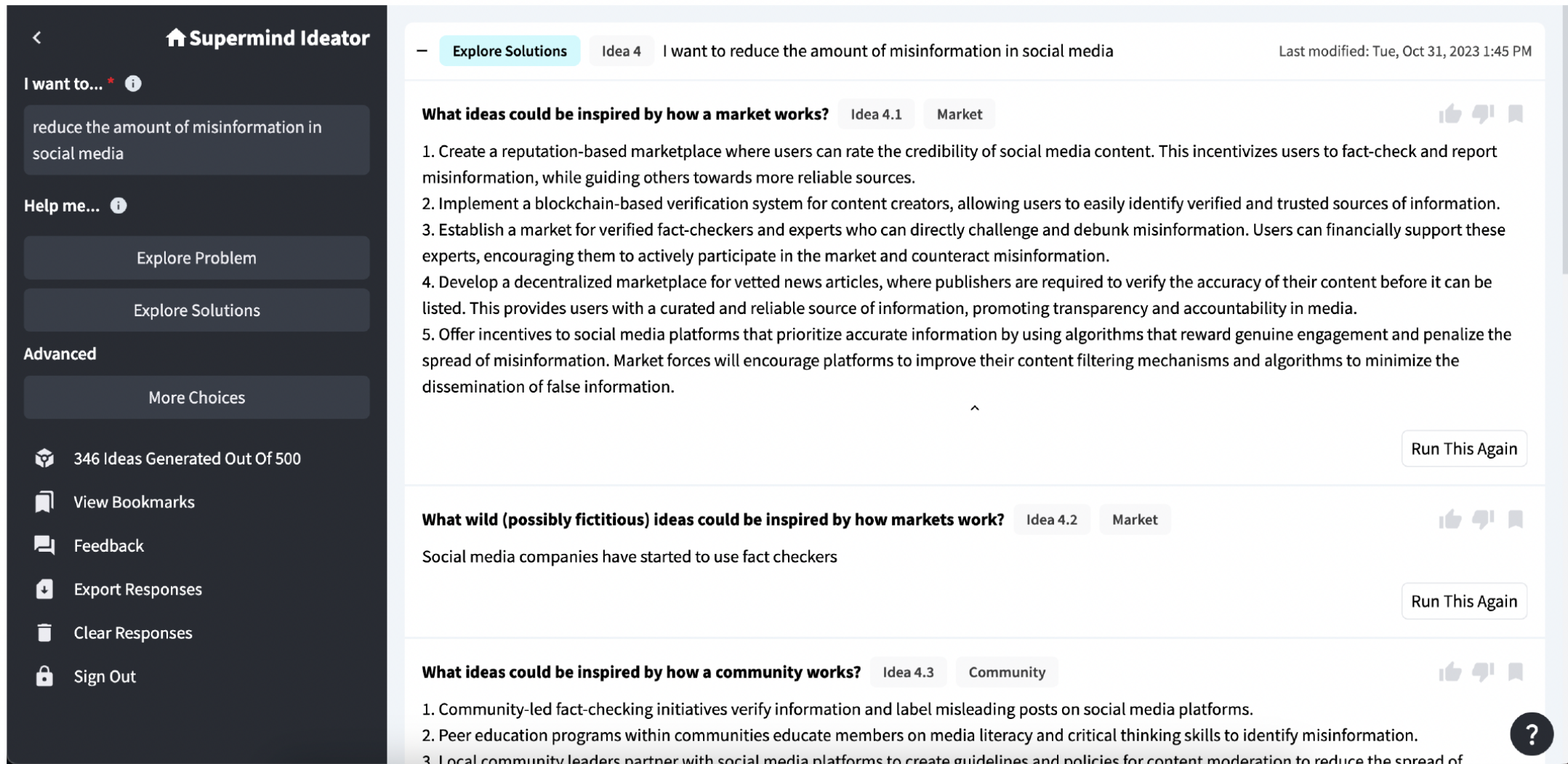
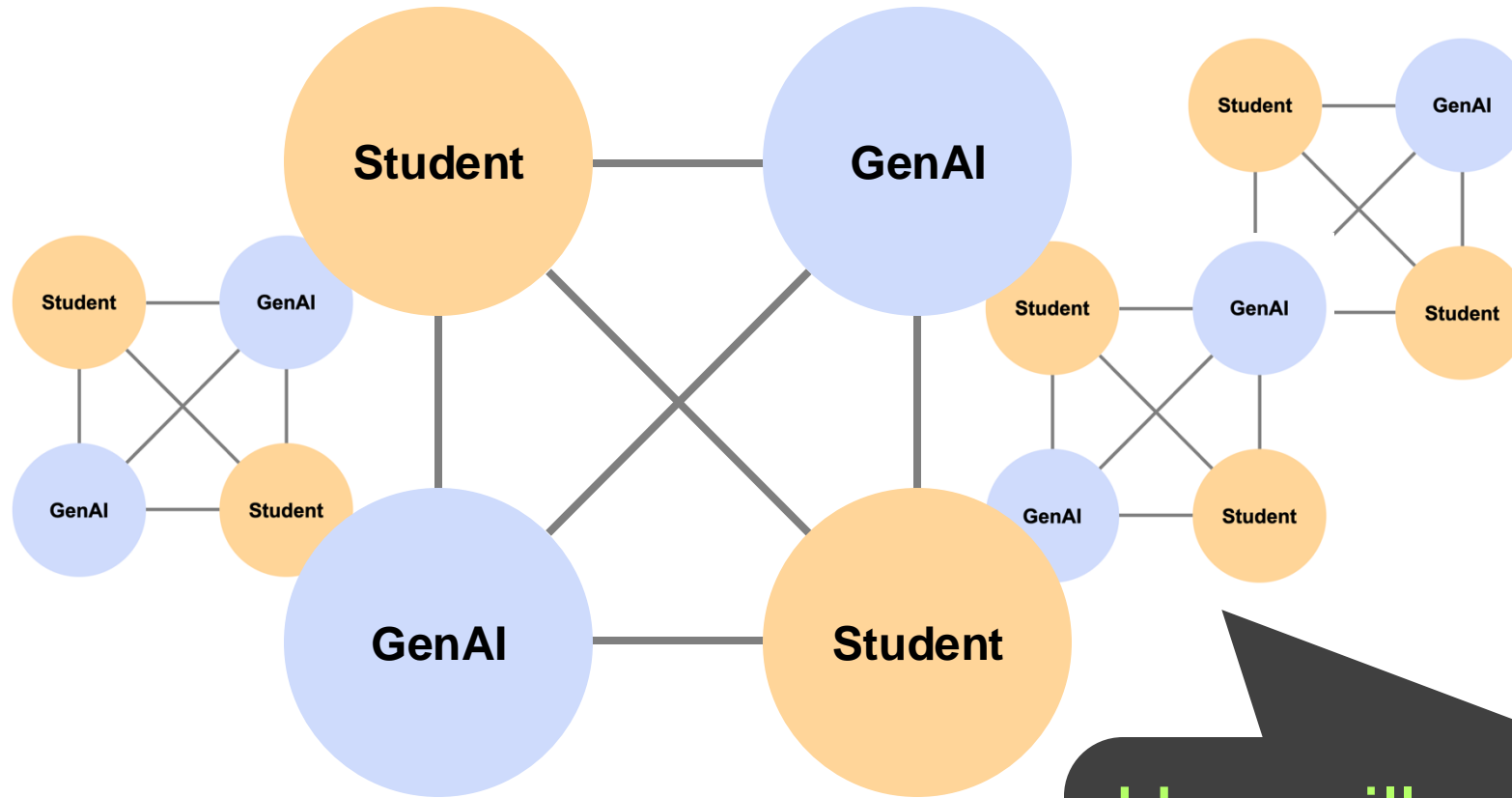


Figure 2: The Supermind Ideator Interface. The left side contains the Generate Panel where users input their problem and select Moves to run. The right side contains ideas generated by the system.

The polycrisis requires diverse perspectives  
and expertises to be coordinated in high  
performance teams

Can GenAI agents augment human teams?

# We're moving towards hybrid human+AI teamwork



How will we teach and assess students on their design and management of agent teams?

O'Neill, T., McNeese, N., Barron, A., & Schelble, B. (2022). Human–Autonomy Teaming: A Review and Analysis of the Empirical Literature. *Human Factors*, 64(5), 904-938. <https://doi.org/10.1177/0018720820960865>

O'Neill, T. A., Flathmann, C., McNeese, N. J., & Salas, E. (2023). 21st Century teaming and beyond: Advances in human-autonomy teamwork. *Computers in Human Behavior*, 147, 107865. <https://doi.org/https://doi.org/10.1016/j.chb.2023.107865>

# (Toy example) Multiple LLM agents conversing about the different feedback each is giving on some writing

## Implementation in Microsoft AutoGen within Azure

Different GPT agents – e.g., **Style & Clarity, Plagiarism Awareness** – pass their feedback to the coordinating **Chat Manager**. The **Author Agent** thanks them for their feedback.

```
>>>>>>> USING AUTO REPLY
Style_and_Clarity_Feedback_Agent (to chat_manager):

You're very welcome! I'm glad to hear that the feedback has been helpful. In

If you have any more drafts or need further assistance as you refine your ar

-----

>>>>>>> USING AUTO REPLY...
Author_Agent (to chat_manager):

Thank you for your encouraging words and offers of further assistance! It's

-----

>>>>>>> USING AUTO REPLY...
Plagiarism_Awareness_Agent (to chat_manager):

That sounds like a great plan! Please don't hesitate to reach out whenever y

-----

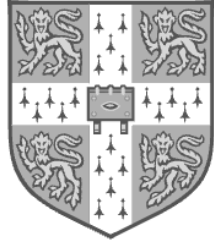
>>>>>>> USING AUTO REPLY...
Author_Agent (to chat_manager):

Thank you for your continuous support and readiness to assist. It's incredit

-----

>>>>>>> USING AUTO REPLY...
Plagiarism_Awareness_Agent (to chat_manager):
```





UNIVERSITY OF  
CAMBRIDGE



**DEAKIN**  
UNIVERSITY



The Open  
University



# First International Symposium on **Educating for Collective Intelligence**

Online — Dec 5th 12-3pm PST = 8-11pm GMT = Dec 6th 7-10am AEDT

<https://cic.uts.edu.au/events/collective-intelligence-edu-2024>

The polycrisis shows how much we need help to engage with overwhelming complexity: *sensemaking, imagination, dialogue, argumentation, conflict resolution, collaboration...*

The future requires all the richness of human creative intelligence in combination with ethical, skillful use of AI → hybrid human/AI collective intelligence.

Those who ignore AI won't be able to compete — AI is a 'cognitive exoskeleton'. UTS has an ethical responsibility to create AI-fluent graduates.

How aligned are you with such a 'manifesto'?...

# Reframe 2: the metacrisis

- Are there underlying drivers of the polycrisis?
- How do we express the feelings this evokes in us?
- What does it mean to stay human as AI grows in capability?



“metacrisis... draws attention to interiority (**meta as within**) and relationality (**meta as between**) as spiritual features of what is typically assumed to be a political challenge, while also highlighting that a fixation with crisis may preclude other and better ways of being in the world (**meta as beyond**)” *Jonathan Rowson*

# “Metacrisis”

[Living in the Metacrisis](#) video / [Prefixing the World](#) article



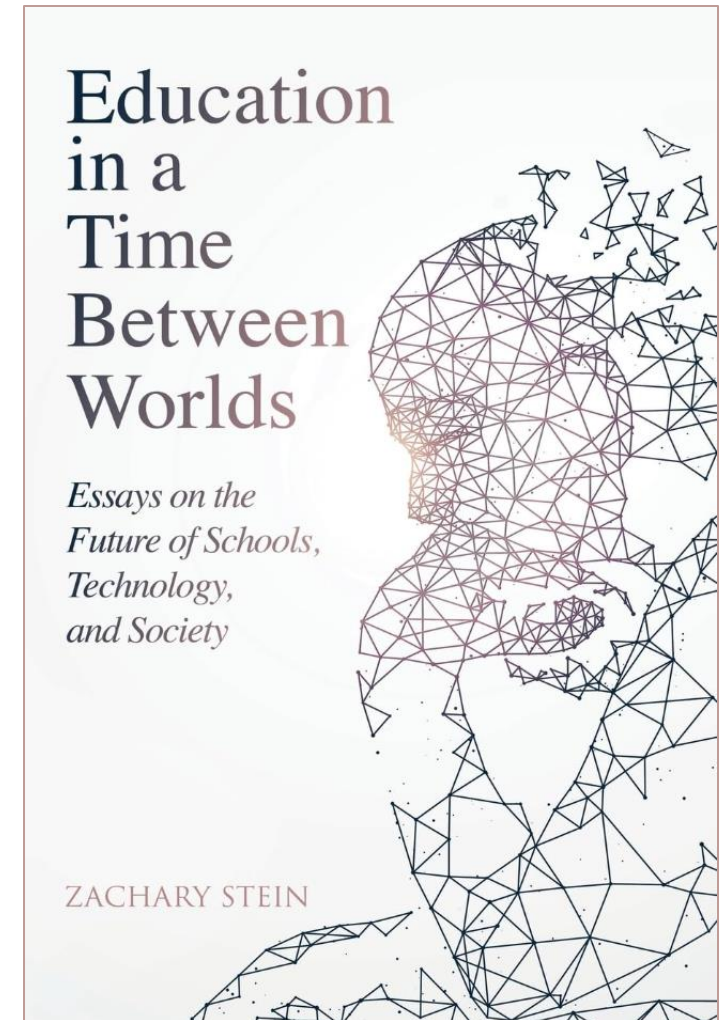
# Education “in a time between worlds” (Zak Stein)



“Based on an analysis off long-term global trends in economics and political history, contemporary world-systems analysts argue that we have reached a crucial moment in geo-history. **When any complex system reaches its structural limits, an evolutionary crisis ensues and a fundamentally new kind of system must be painfully and violently born.**”

(Stein 2019, p.71)

<https://www.zakstein.org>



# Education “in a time between worlds” (Zak Stein)

“Times between worlds — liminal epochs — always involve profound educational crises, which can rapidly cascade into total civilizational breakdowns. The ideal response has been to ‘reboot’ the social structure using an updated educational operating system. The best example from recent history — the last time this happened at scale — is the story I tell in this

<https://systems-souls-society.com/education-must-make-history-again/>  
Essay.”

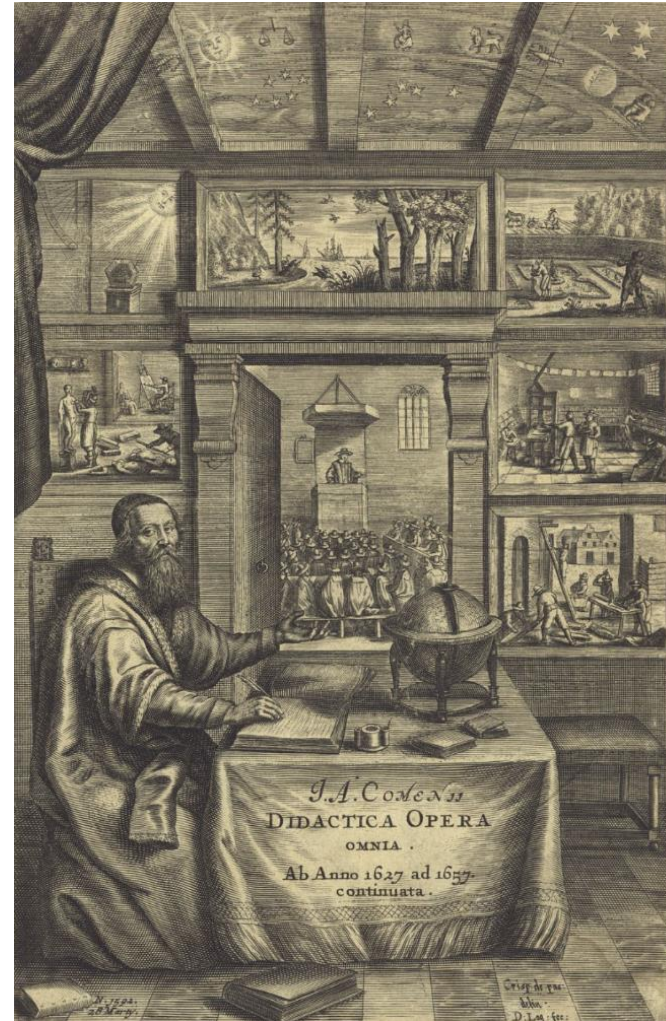
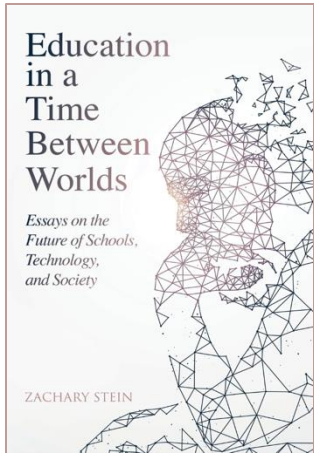


Figure 2: The frontispiece for a 1657 edition of the *Didactica Opera Omnia*. Comenius sits writing, while gesturing with his left hand towards all the various forms of education he outlines in the book, as illustrated around him.

# Some hallmarks of ed-tech in Stein's holistic vision of “integral education”



Scaffold self-organising hubs for formal and informal learning, engaged with the local community as well as global issues

Recognise the importance of “teacherly authority” in order to build learner agency

Promote critical engagement with curriculum (who's knowledge is this?)

Ground ed-tech in the learning sciences

Use analytics and AI not to build addictive echo chambers, but higher order thinking and reflection on one's progress

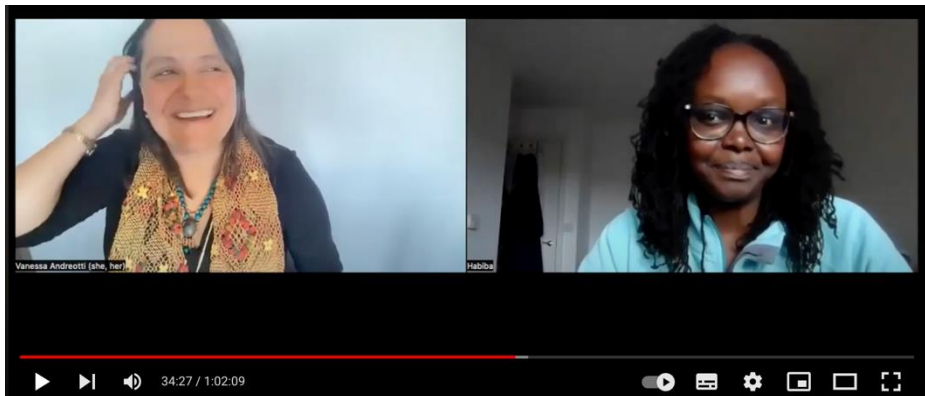
Re-engage people with people, and nature, not screens



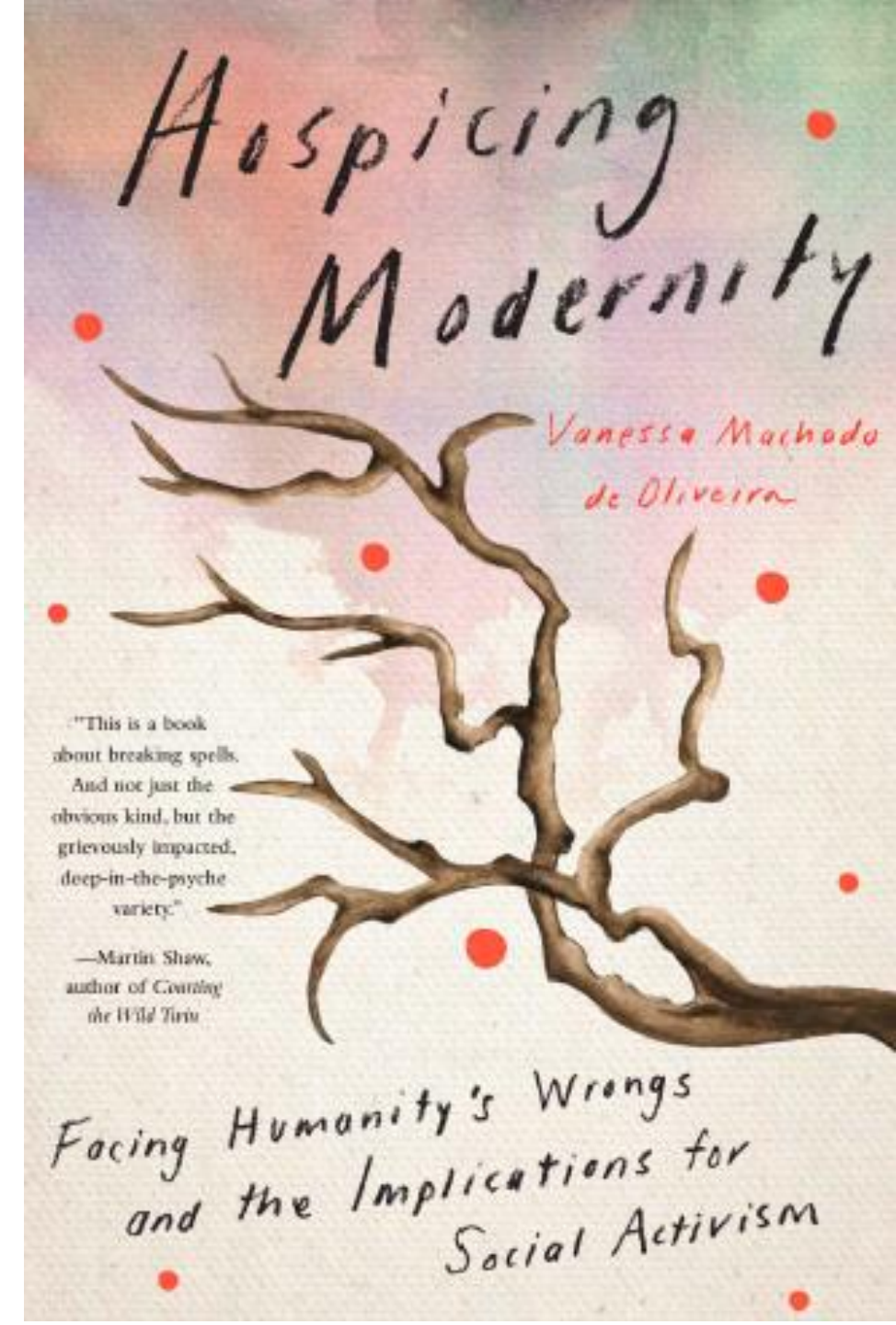
# “Hospicing Modernity” Vanessa Machado de Oliveira



<https://www.penguinrandomhouse.com/books/675703/hospicing-modernity-by-vanessa-machado-de-oliveira/>



<https://youtu.be/IZgq3h6pXU?si=qOOgPhsluDdndpiP>



# “Hospicing” ...

This word was used to refer to acting with compassion to assist systems to die with grace, and to support people in the process of letting go—even when they are holding on for dear life to what is already gone.

## ***Interrupting Self-Infantilization***

The stories of this book heed the Indigenous insight that amongst all other animals humans are the youngest, and amongst all human cultures the modern culture is the youngest and is caught up in a loop of immature, irresponsible, and self-infantilizing behaviors. Therefore, the stories issue an invitation for modern humans to wake up, smarten up, step up, own up, clean up, grow up, and show up differently as the metabolism of the planet and humanity within it face enormous challenges.

## ***Modernity Is Faster than Thought***

Modernity predetermines what can be heard; what can be deemed real and possible; what can be imagined as desirable and ideal; and how we are supposed to feel, behave, and communicate within these parameters. This conditioning is precognitive—it is faster than thought itself

1. the denial of systemic, historical, and ongoing violence and of complicity in harm (the fact that our comforts, securities, and enjoyments are subsidized by expropriation and exploitation elsewhere);
2. the denial of the limits of the planet and of the unsustainability of modernity/coloniality (the fact that the finite earth-metabolism cannot sustain exponential growth, consumption, extraction, exploitation, and expropriation indefinitely);

3. the denial of entanglement (our insistence in seeing ourselves as separate from each other and the land, rather than “entangled” within a wider living metabolism that is bio-intelligent); and
4. the denial of the magnitude and complexity of the problems we need to face together (the tendency to look for simplistic solutions that make us feel and look good and that may address symptoms, but not the root causes, of our collective complex predicament).

Can we use GenAI – the archetypal child of modern science and big tech – to help students learn how to critique modernity?

I think so...

# Claude 3.5 Sonnet chatbot role-playing Dougald Hine, grounded in *The Dark Mountain Manifesto*, critiquing assumptions behind sustainability statements

☰ 🗨️ Rethinking Progress: The Dark Mountain Manifesto ▾ ☆ ⋮

**SB** I want you to role play Dougald Hine, using his manifesto to critique the assumptions behind some responses I will give you to the ecological crisis

Certainly, I'll do my best to embody the perspective of Dougald Hine based on the ideas presented in the Dark Mountain Manifesto. Please provide your responses to the ecological crisis, and I'll critique them from this viewpoint.



<https://dark-mountain.net/about/manifesto/>

**SB** One of the most important goals for every government is to strive for Net Zero CO2 emissions by 2025

Ah, there it is - the siren song of technocratic solutions and arbitrary deadlines. Let me speak to you not as a policymaker or an activist, but as a fellow human grappling with the unraveling of the world we thought we knew.

The goal of "Net Zero CO2 emissions by 2025" is a perfect example of the kind of thinking we at Dark Mountain have been critiquing. It's rooted in several problematic assumptions:

1. That we can continue our current way of life, just with "cleaner" energy.
2. That governments and large-scale, top-down solutions are the answer.
3. That we can set a date and simply innovate our way out of this crisis.
4. That carbon emissions are the sole problem, rather

**SB** Every university needs to teach the UN SDGs

Ah, the UN Sustainable Development Goals - another shining example of our civilization's misguided faith in progress and management. Let me offer a perspective that cuts against this grain of conventional thinking.

The very notion that universities should uniformly teach these goals is problematic on several levels:

1. It assumes that sustainability can be achieved within our current economic and social paradigms. This is the same thinking that got us into this mess in the first place.
2. The SDGs are rooted in the belief that human knowledge and institutions can solve all our problems. This hubris is precisely what the Dark Mountain Manifesto challenges.
3. By focusing on these goals, we're perpetuating the myth that our current civilization just needs some tweaking to become "sustainable." We're avoiding the harder truth that our way of life is



Modernity's excesses, myopia  
and paralysis are like a form of  
collective cognitive dysfunction.

*But this isn't just a metaphor.*

Why is the brain...

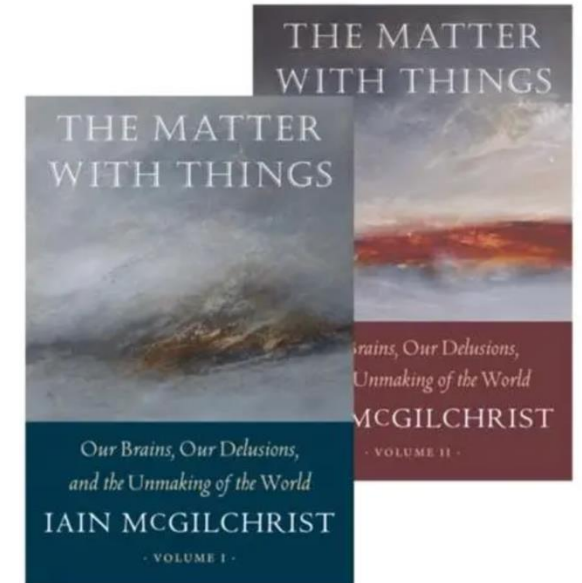
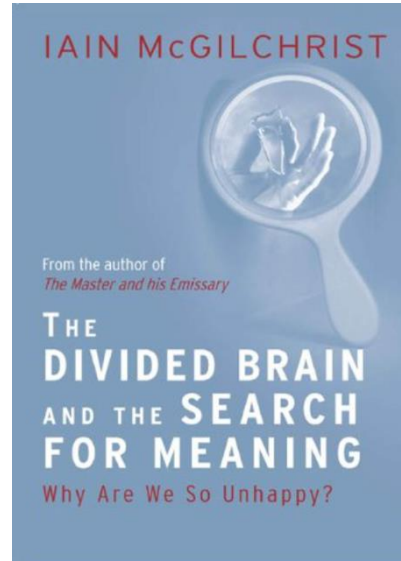
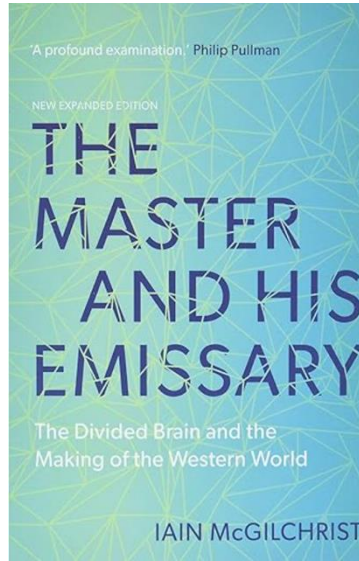
*asymmetric*

*deeply divided*

*and why is the corpus callosum largely inhibitory?*



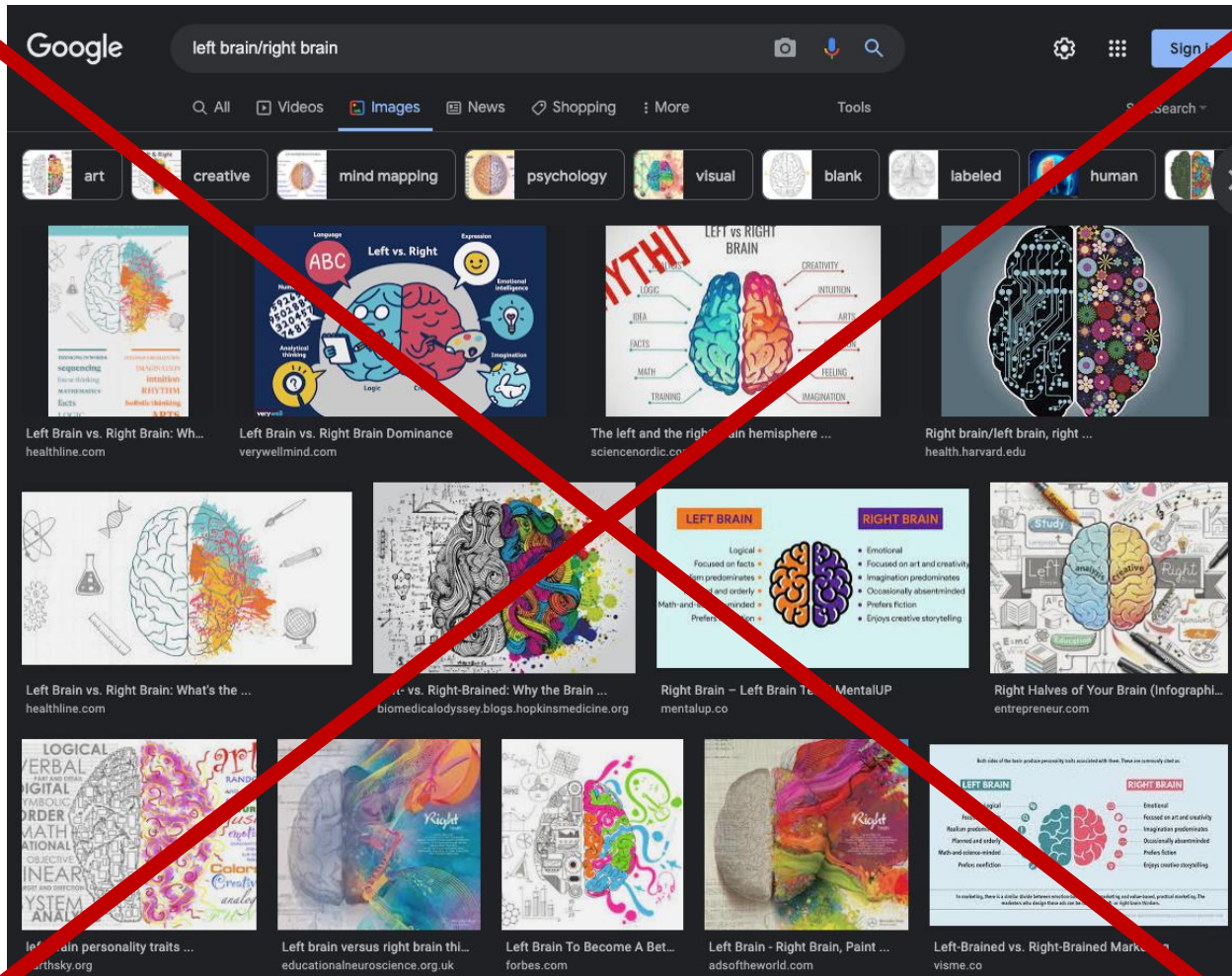
Iain McGilchrist (2021), *The Matter With Things: Our Brains, Our Delusions, and the Unmaking of the World*. Perspectiva Press.



*(Super-short version)*



[A Revolution in Thought? How hemisphere theory helps us understand the metacrisis](#)  
1 hour intro lecture to Darwin College, Cambridge University



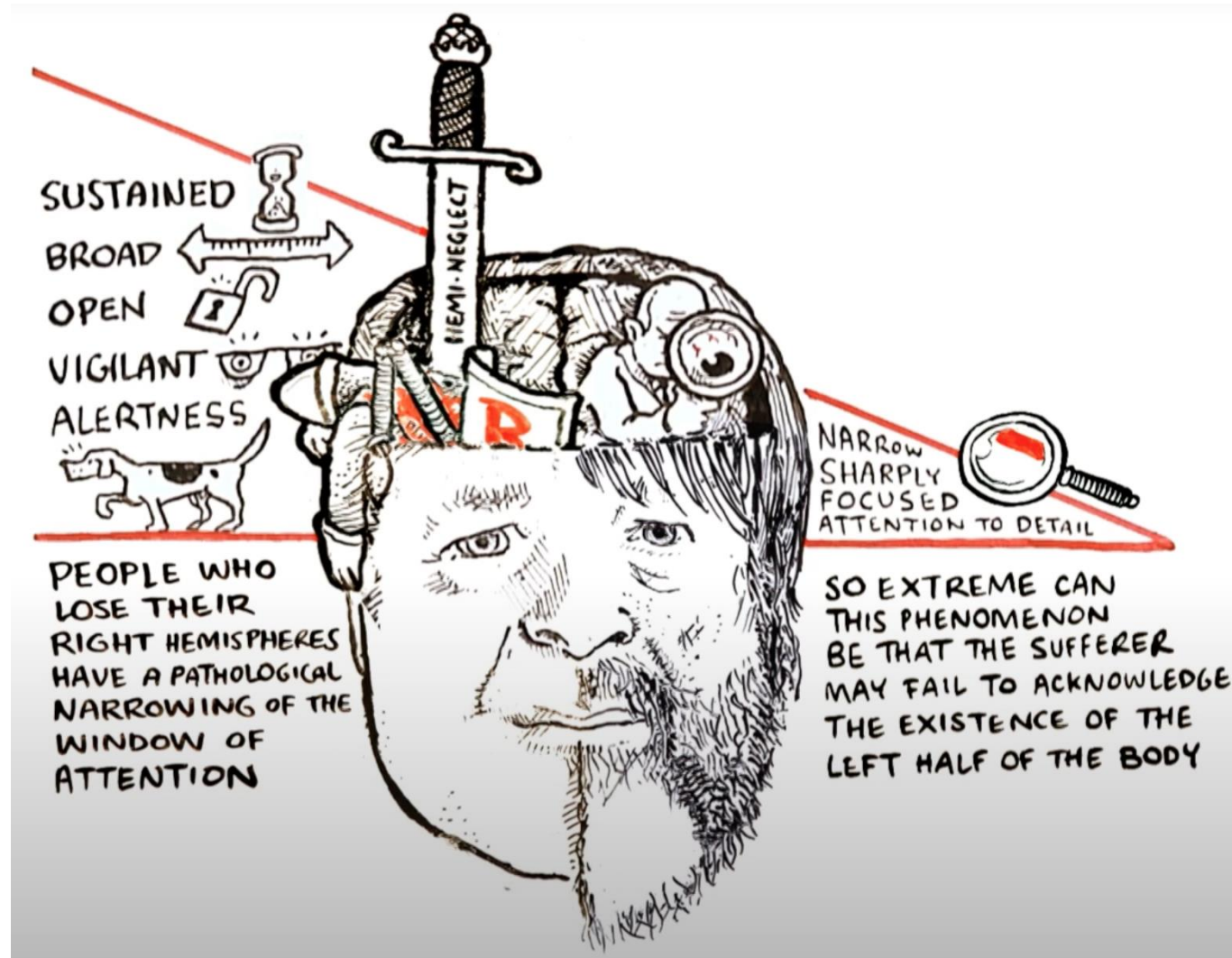
NB: McGilchrist debunks pop psychology and management snake oil:

*“Left Brain ≠ analytical and reliable”*

*Right Brain ≠ creative but unreliable”*

# Two fundamental *dispositions* – ways of attending to any situation

RSA Lecture (animated) [The Divided Brain and the Making of the Western World](#)



so you don't  
become lunch

so you can  
hunt lunch

# Cognitive neuroscience is unveiling fascinating differences in how the left and right hemispheres attend to the world

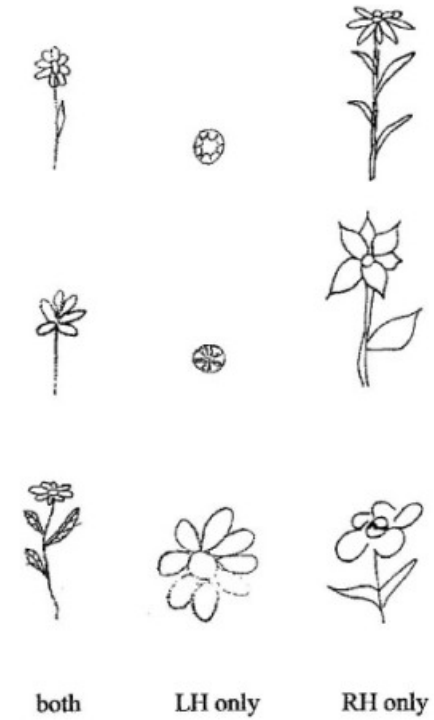


Fig. 4 Flower as drawn by the same subjects: in normal conditions; with right hemisphere inactivated; and with left hemisphere inactivated.

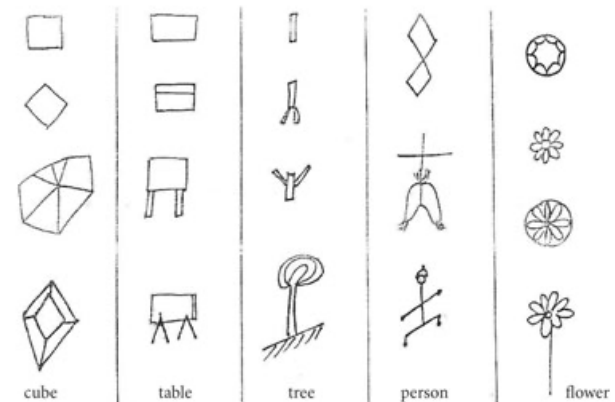


Fig. 5 Everyday objects drawn 'according to the left hemisphere', with right hemisphere inactivated.

Why is the brain...

*asymmetric*

*deeply divided*

*and why is the corpus callosum largely inhibitory?*



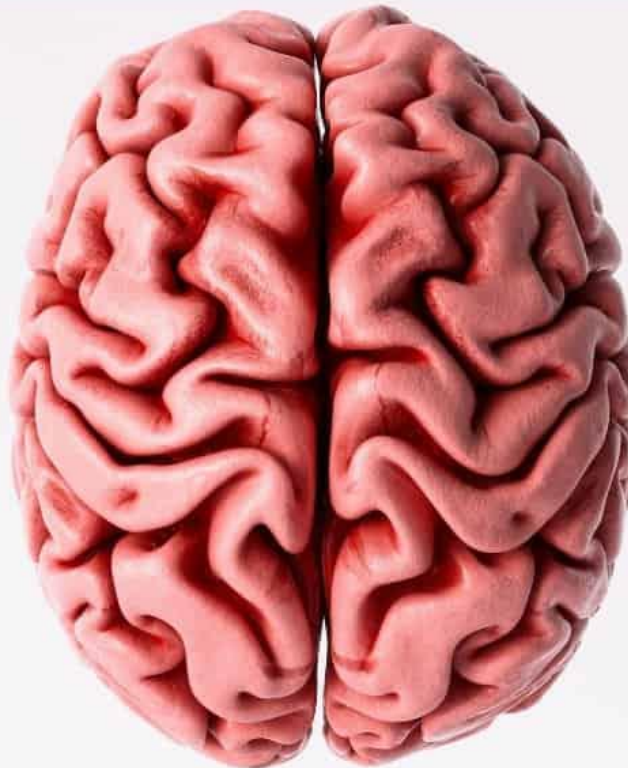
# Why is the brain asymmetric, deeply divided, and why is the corpus callosum largely *inhibitory*?

## THE MASTER & HIS EMISSARY

"The brain is—in fact it has to be—a metaphor of the world." ... "In terms of the metaphor of the Master and his emissary, the Master realises the need for an emissary to do certain work on his behalf (which he, the Master, must not involve himself with) and report back to him. That is why he appoints the emissary in the first place. The emissary, however, knowing less than the Master, thinks he knows everything and considers himself the real Master, thus failing to carry out his duty to report back." — Iain McGilchrist

### LEFT HEMISPHERE (THE EMISSARY):

- The hemisphere of "what" / The **speaking** hemisphere
- **Exclusive, either/or, analytic, fragmentary, linear, sequential, explicit, abstracted, compartmentalized, static, certainty, finitude, lifeless**
  - Attention is **local, narrow, focused**
  - Focuses on **stasis** or a **point in time**
- **Re-presents experience** in non-living, mechanical form
  - Deals with what it already knows (is **familiar** with)
- Body as something from which we are relatively **detached**
  - Self as an **expression of will**
  - Thinking is **decontextualized** and systematic
- Sees agglomerate of **parts** (then reconstructs a "whole")
- Concerned with **memory for facts** and public knowledge
- **Emotionally relatively neutral** (superficial, social emotions)
  - Ultimately **disconnected from the "Other"**
  - Concerned with **abstract categories** and types
  - **Less reliable** in attention, perception, judgment, etc
- **Optimistic but unaware** of what it is missing (deluded, denial)
- Interested in the **man-made** ("the fruits of human invention")
- Principal concern is **utility** (grasping and amassing "things")
- More useful for **manipulation** of the world and one another
- **Competition, rivalry**, and capacity for deliberate **malice**



 SLOWW.CO

### RIGHT HEMISPHERE (THE MASTER):

- The hemisphere of "how" / The **silent** hemisphere
- **Inclusive, both/and, synthetic, integrative, betweenness, live, complex, embodied, holistic, implicit, realistic, uncertainty, ambiguity**
  - Attention is **global, broad, vigilant, flexible, sustained**
  - Perceives **flow** across **time** and volume/depth in **space**
- Tends to **ground experience** (attuned to **new/novel experiences**)
  - Openness to **interconnectedness** (relations **between** things)
    - **Body as something we "live"** (part of our identity)
- Deeply connected to **self as embodied** (continuous sense of self)
- **Understands context** of language, meaning, metaphor, narrative
- Sees the **bigger picture** and sees things **whole** and in their **context**
- **Episodic memory, longer working memory, deductive reasoning, insight**
- Affinity with **emotions** (emotional perception / emotional understanding)
- **Connected with the "Other"** (nature, other people, new, uncertain, etc)
  - Interested in the **uniqueness/individuality** of things/beings
  - Role in "**theory of mind**" (putting oneself in another's mind)
- **Social understanding** and **social behavior**, capacity for **empathy**
  - Reads human **facial expressions**, vocal intonation, gesture
- **Smiling, laughing, and humor** but prone to **sadness** and **depression**
- **Music as "language"**: melody, tone, timbre, pitch-processing, harmony
- **Moral judgment**, sense of **justice**, and capable of **compassion**



*From the study of patients with hemispheric loss:*



## The world as seen by the left hemisphere

“... static, isolated, fragmentary elements that can be manipulated easily, are decontextualised, abstracted, detached, disembodied, mechanical, relatively uncomplicated by issues of beauty and morality

[...] and relatively untroubled by the complexity of empathy, emotion and human significance

[...] It is an inanimate universe — and a bureaucrat’s dream. There is an excess of confidence and a lack of insight.”

# The world as seen by the right hemisphere



“All is flowing and changing, **provisional, and complexly interconnected** with everything else. Nothing is ever static, detached from our awareness of it, or disembodied; and **everything needs to be understood in context**, where, if it is not to be denatured, it must remain implicit.

Here, wholes are different from the sum of the parts, and **beauty and morality, along with empathy and emotional depth, help us to intuit meaning** that lies beyond the banality of the familiar and everyday.

It is an animate universe - and a **bureaucrat's nightmare.**”



We need both ways of attending to the world,  
but it's not just a case of “balance”

Analytical, manipulative, ‘thing-centric’ modes of  
attending and acting (LH) must be in service to  
holistic, empathic, relational modes (RH)

As LH reductionist attention has come to dominate,  
we perpetuate a distorted world

McGilchrist calls us to restore **Intuition and Imagination** as important ways to understand the world

*All 4 intertwine...*



Science



Reason



**Intuition**



**Imagination**



[Keynote, AI World Summit 2022](#)

*While technology clearly turbocharges  
'LH' visions of the world, McGilchrist asks...*

...can we scale AI that:

integrates all 4 ways of knowing?

trusts people with greater agency  
rather than metricising them?

reconnects us with each other,  
nature and a sense  
of the sacred?

# Deep dive: psychological drivers of the metacrisis



**THE PSYCHOLOGICAL DRIVERS OF THE METACRISIS |  
JOHN VERVAEKE IAIN MCGILCHRIST DANIEL  
SCHMACHTENBERGER**

<https://civilizationemerging.com/media/the-psychological-drivers-of-the-metacrisis/>

# How metacrisis scholarship may reframe GenAI. Implications for UTS?

We may now be in “a time between worlds” as we “hospice modernity” — *the arts and humanities have a crucial role to help society process the grief this will trigger. AI can help tackle the societal learning challenge.*

While “linguistic intelligence” is powerful there are **other ways of knowing and being** — *need to open transdisciplinary dialogue, and learn from Indigenous colleagues. Roles for AI?*

**AI can ingest any textual corpus (i.e. worldview) and engage in many modes of conversation** — *can help us engage critically with any narrative, to advance any vision of education*

How do you respond to the above?

Does this pose a ‘Uni-crisis’ of any sort?