THE GHOST IN THE FEEDBACK LOOP

AI, ACADEMIC PRAXIS, AND THE DECOMPOSITION OF DISCIPLINARY BOUNDARIES

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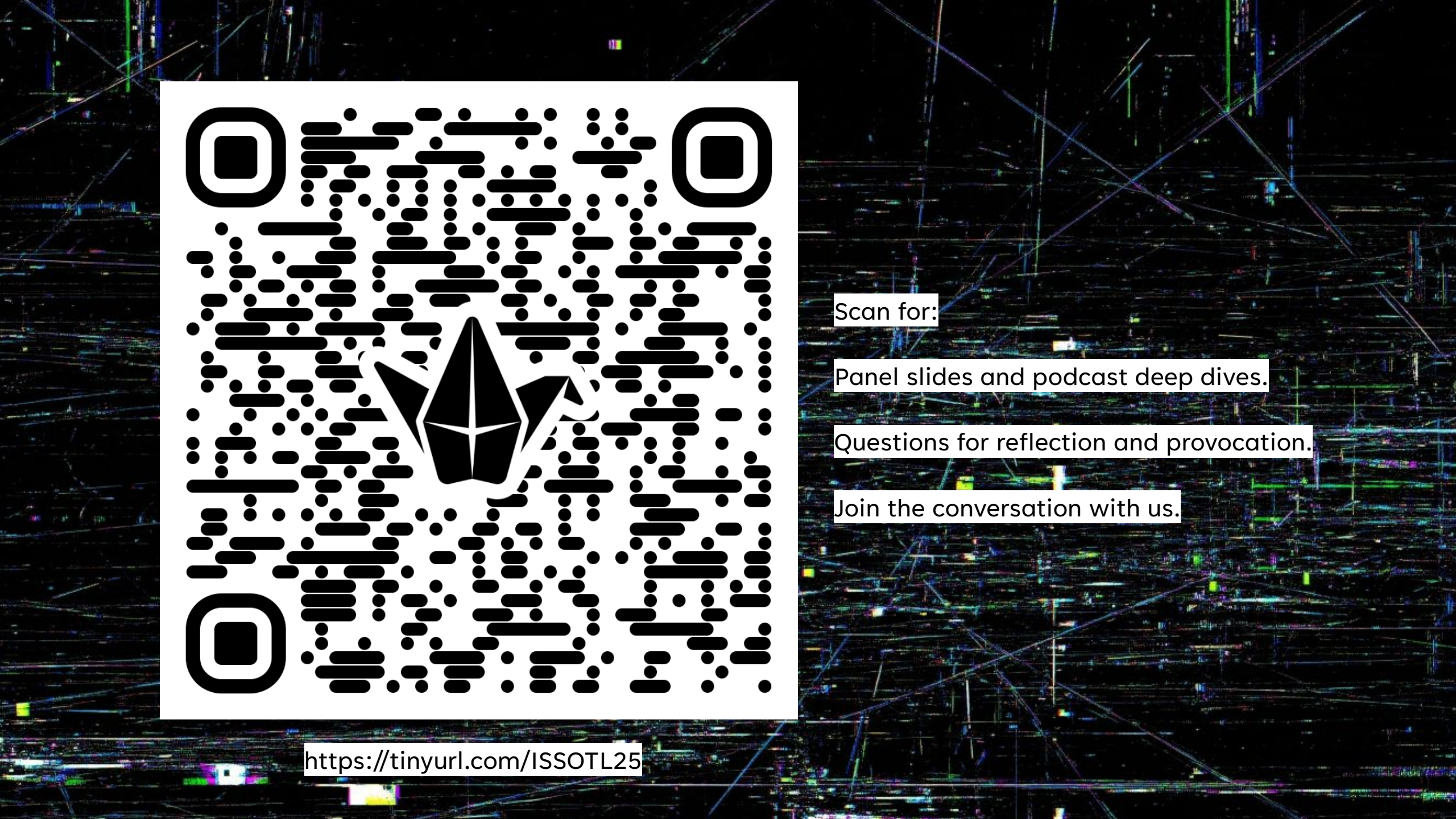
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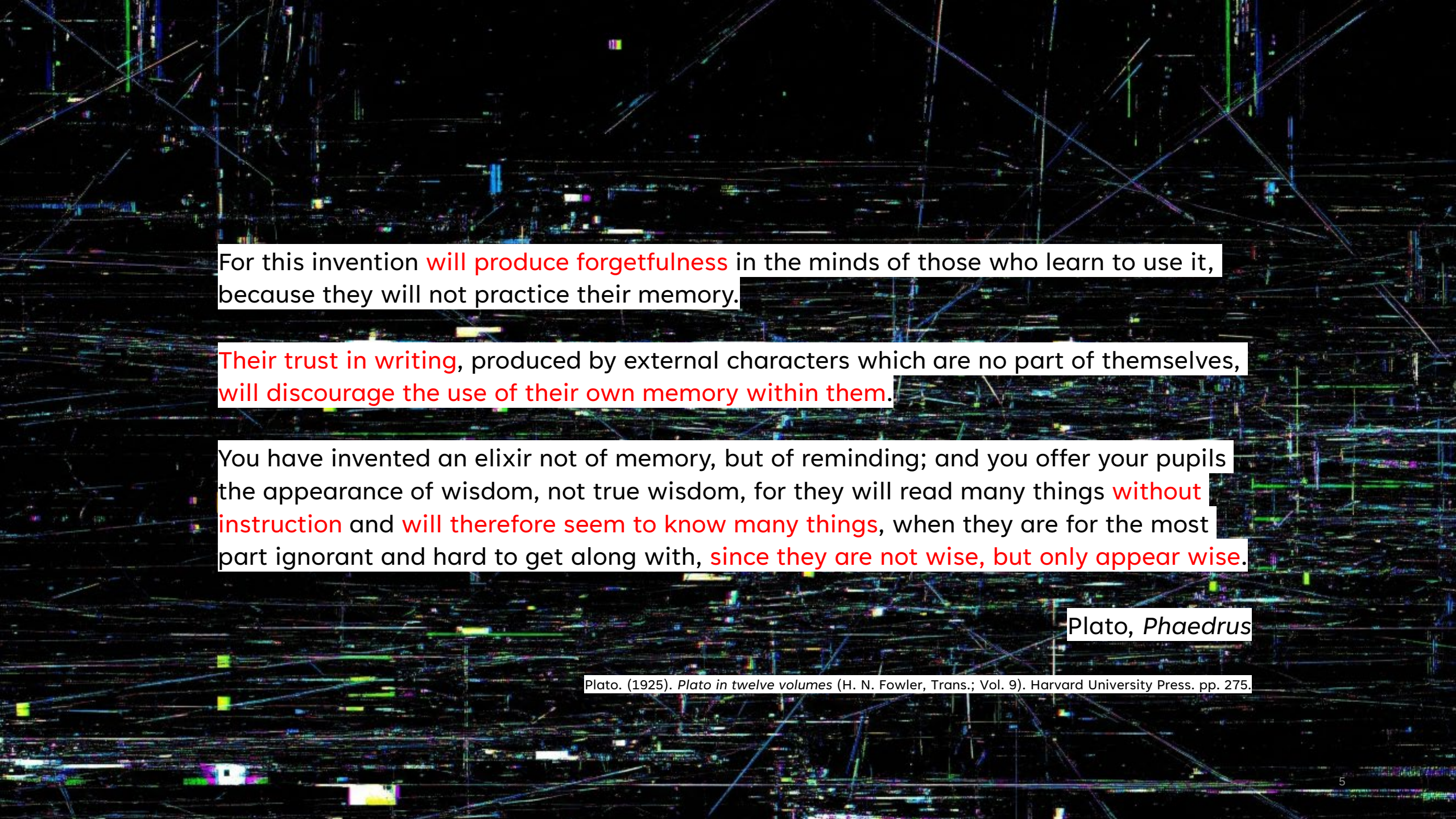
This is a ghost story.



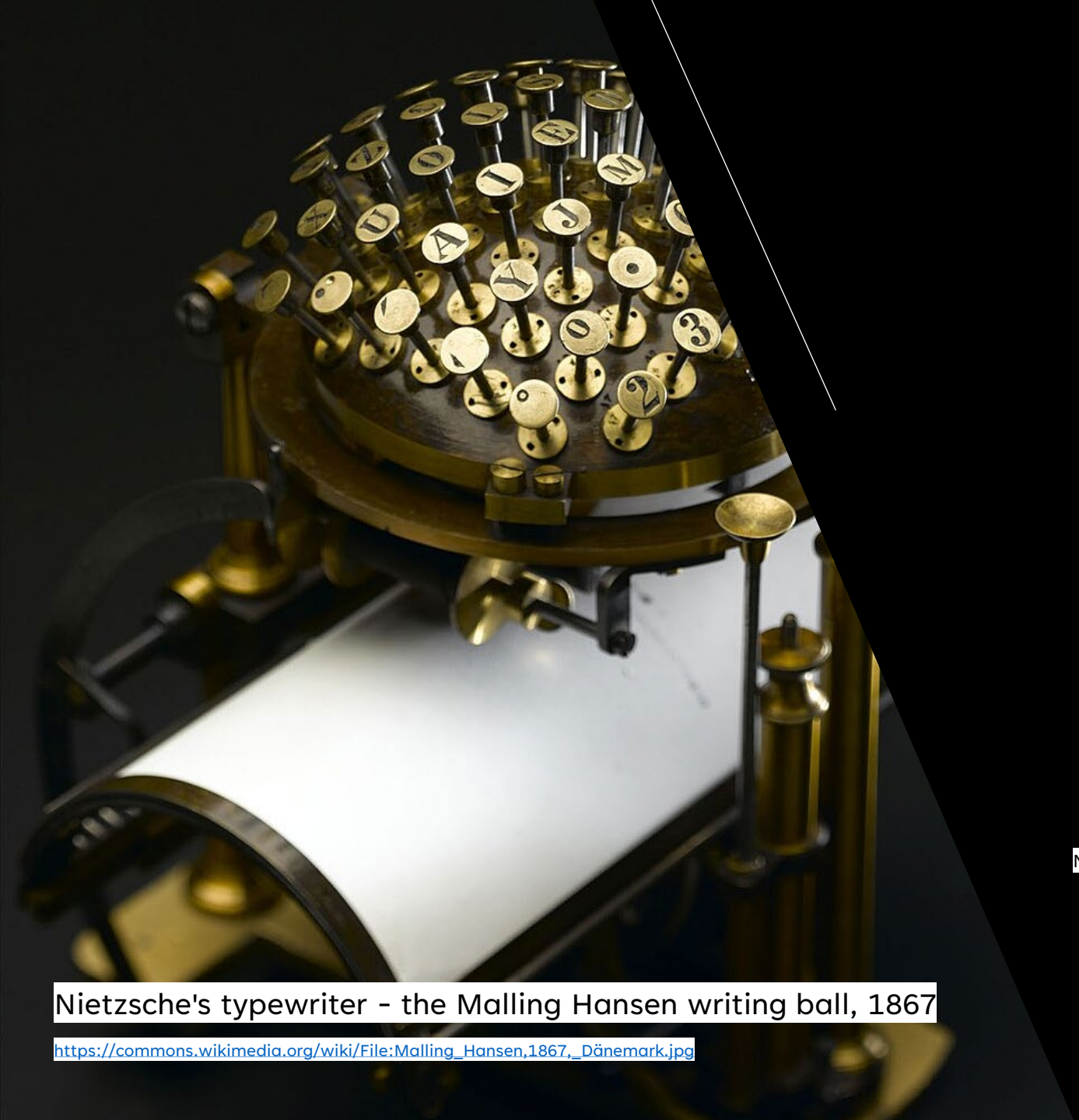
For this invention will produce forgetfulness in the minds of those who learn to use it, because they will not practice their memory.

Their trust in writing, produced by external characters which are no part of themselves, will discourage the use of their own memory within them.

You have invented an elixir not of memory, but of reminding; and you offer your pupils the appearance of wisdom, not true wisdom, for they will read many things without instruction and will therefore seem to know many things, when they are for the most part ignorant and hard to get along with, since they are not wise, but only appear wise.

Plato, *Phaedrus*

Plato. (1925). *Plato in twelve volumes* (H. N. Fowler, Trans.; Vol. 9). Harvard University Press. pp. 275.



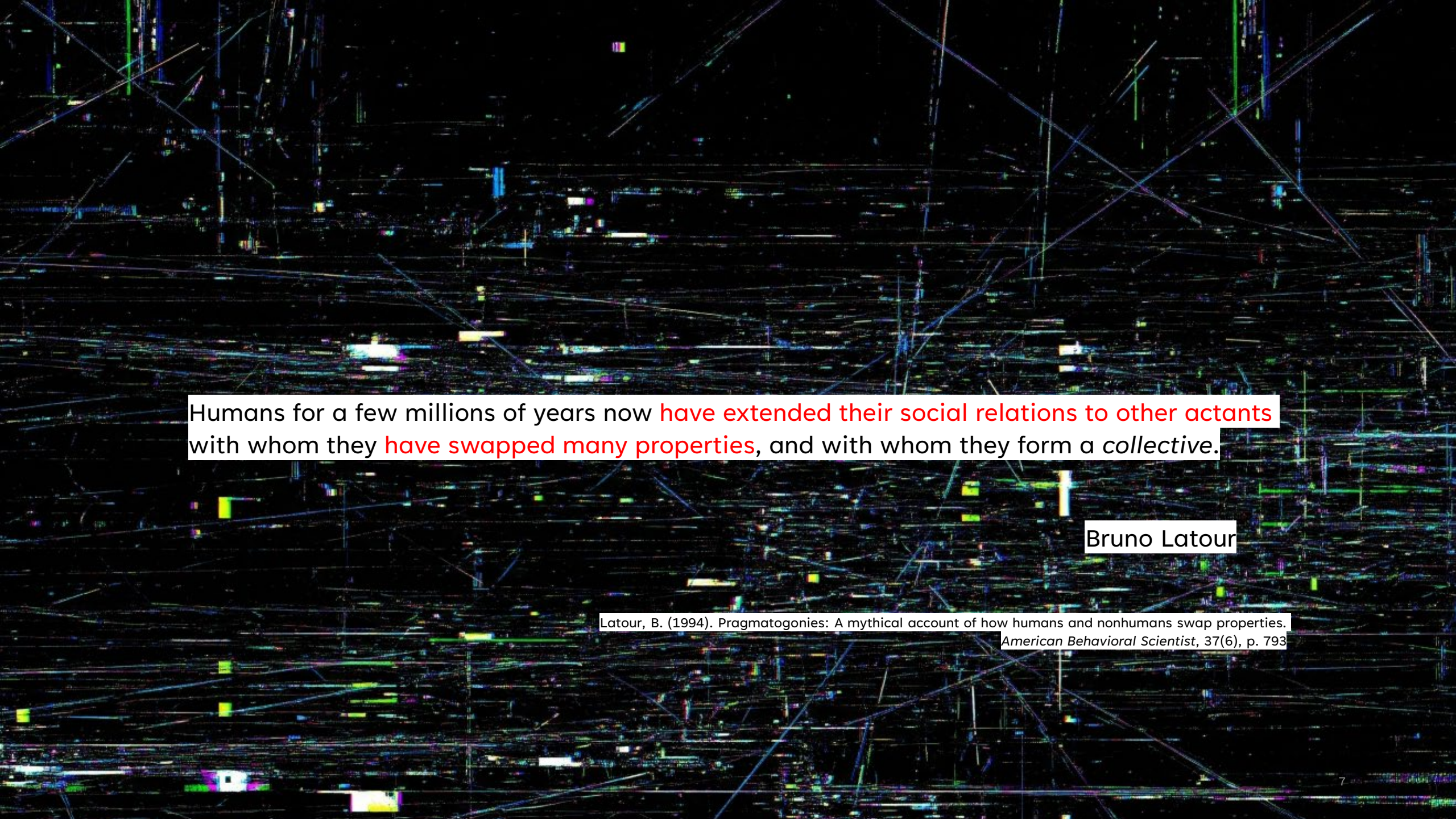
Nietzsche's typewriter - the Malling Hansen writing ball, 1867

https://commons.wikimedia.org/wiki/File:Malling_Hansen,1867,_Dänemark.jpg

OUR WRITING TOOLS ARE ALSO WORKING ON OUR THOUGHTS.

Friedrich Nietzsche
(in a letter to Peter Gast, February, 1882)

Nietzsche, F. (1999). [Letter to Peter Gast]. In F. A. Kittler, *Gramophone, film, typewriter* (G. Winthrop-Young & M. Wutz, Trans.). Stanford University Press, p. 200.



Humans for a few millions of years now have extended their social relations to other actants with whom they have swapped many properties, and with whom they form a *collective*.

Bruno Latour

Latour, B. (1994). Pragmatogonies: A mythical account of how humans and nonhumans swap properties. *American Behavioral Scientist*, 37(6), p. 793

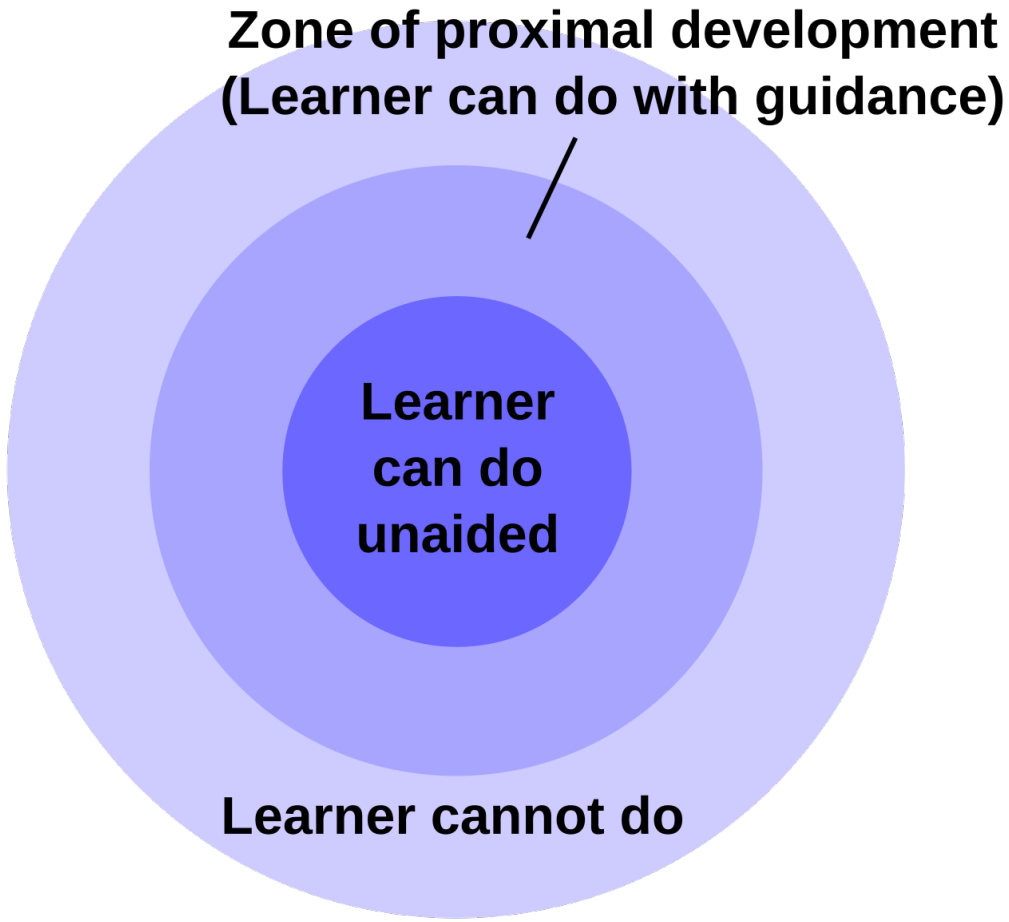

Each technology extends our agency even as it captures it.
When we externalise cognition as prosthesis, it returns to haunt us as ghost.

The Impact of Generative AI on Critical Thinking: Self-Reported Reductions in Cognitive Effort and Confidence Effects From a Survey of Knowledge Workers

We observed that the use of GenAI tools shifts the knowledge workers' perceived critical thinking effort in three ways. Specifically, for recall and comprehension, the focus shifts from information gathering to information verification. For application, the emphasis shifts from problem-solving to AI response integration. Lastly, for analysis, synthesis, and evaluation, effort shifts from task execution to task stewardship.

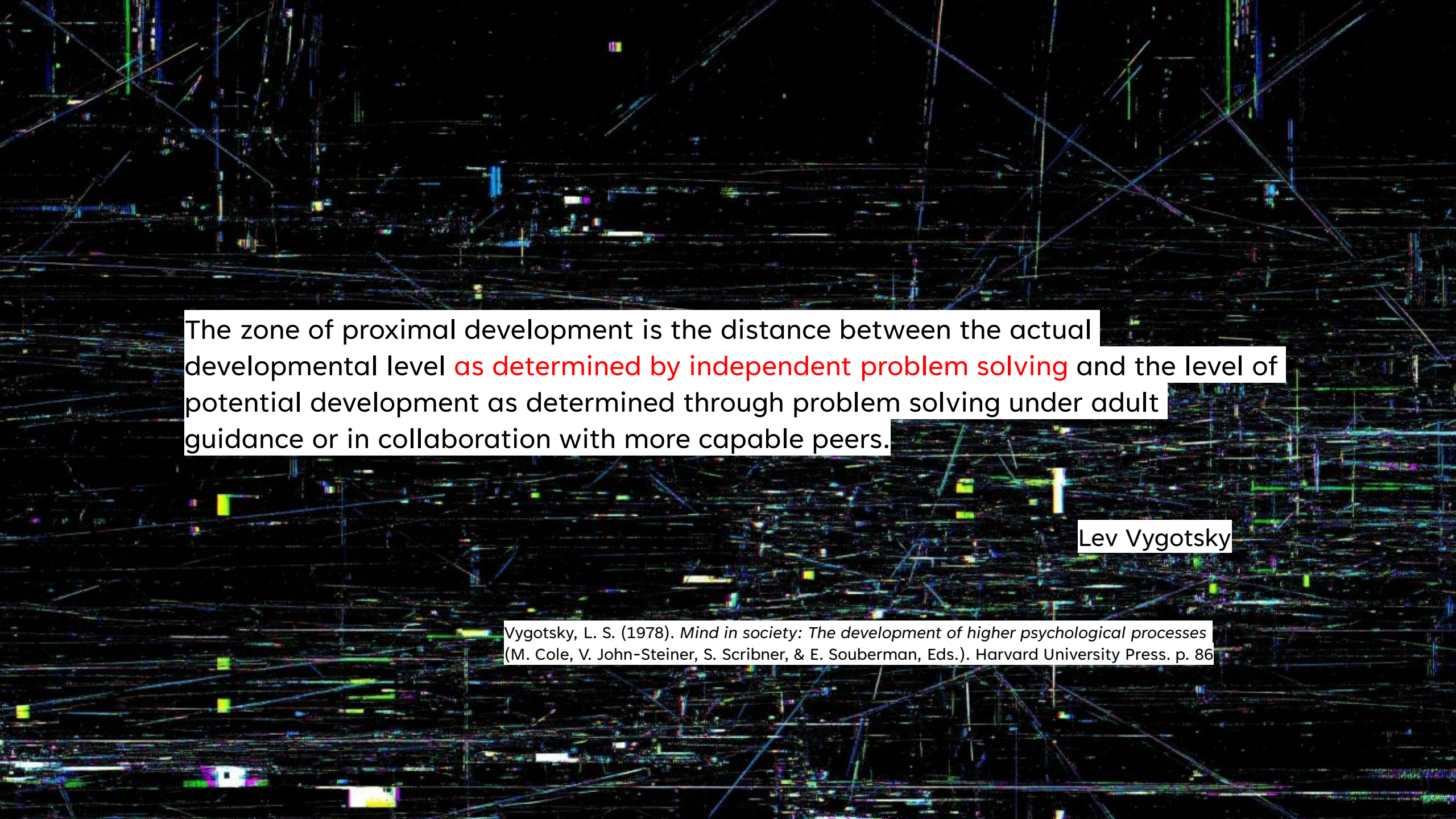
Microsoft Research, 2025, p. 15

https://www.microsoft.com/en-us/research/wp-content/uploads/2025/01/lee_2025_ai_critical_thinking_survey.pdf



Vygotsky’s Zone of Proximal Development

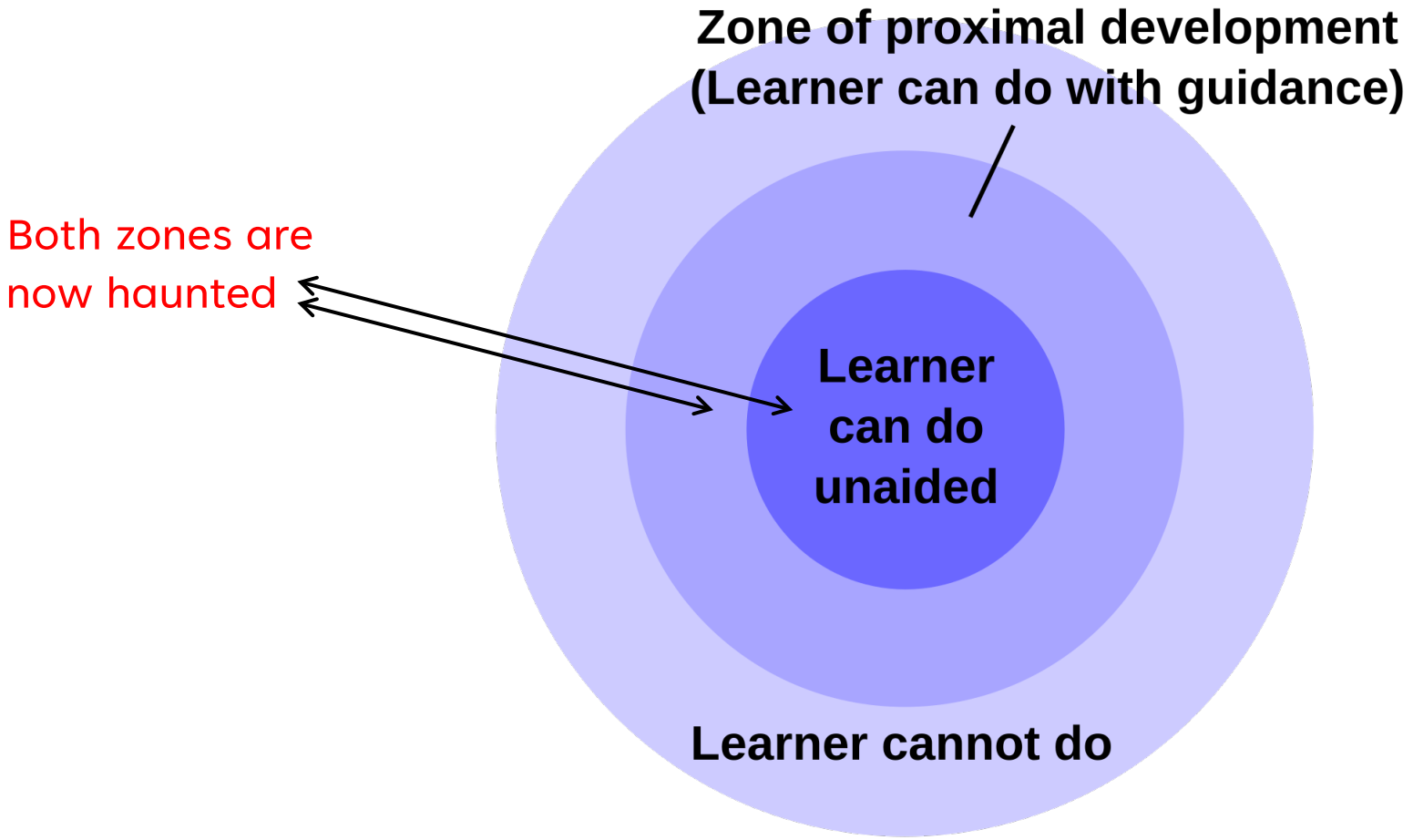
Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.



The zone of proximal development is the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers.

Lev Vygotsky

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes* (M. Cole, V. John-Steiner, S. Scribner, & E. Souberman, Eds.). Harvard University Press. p. 86



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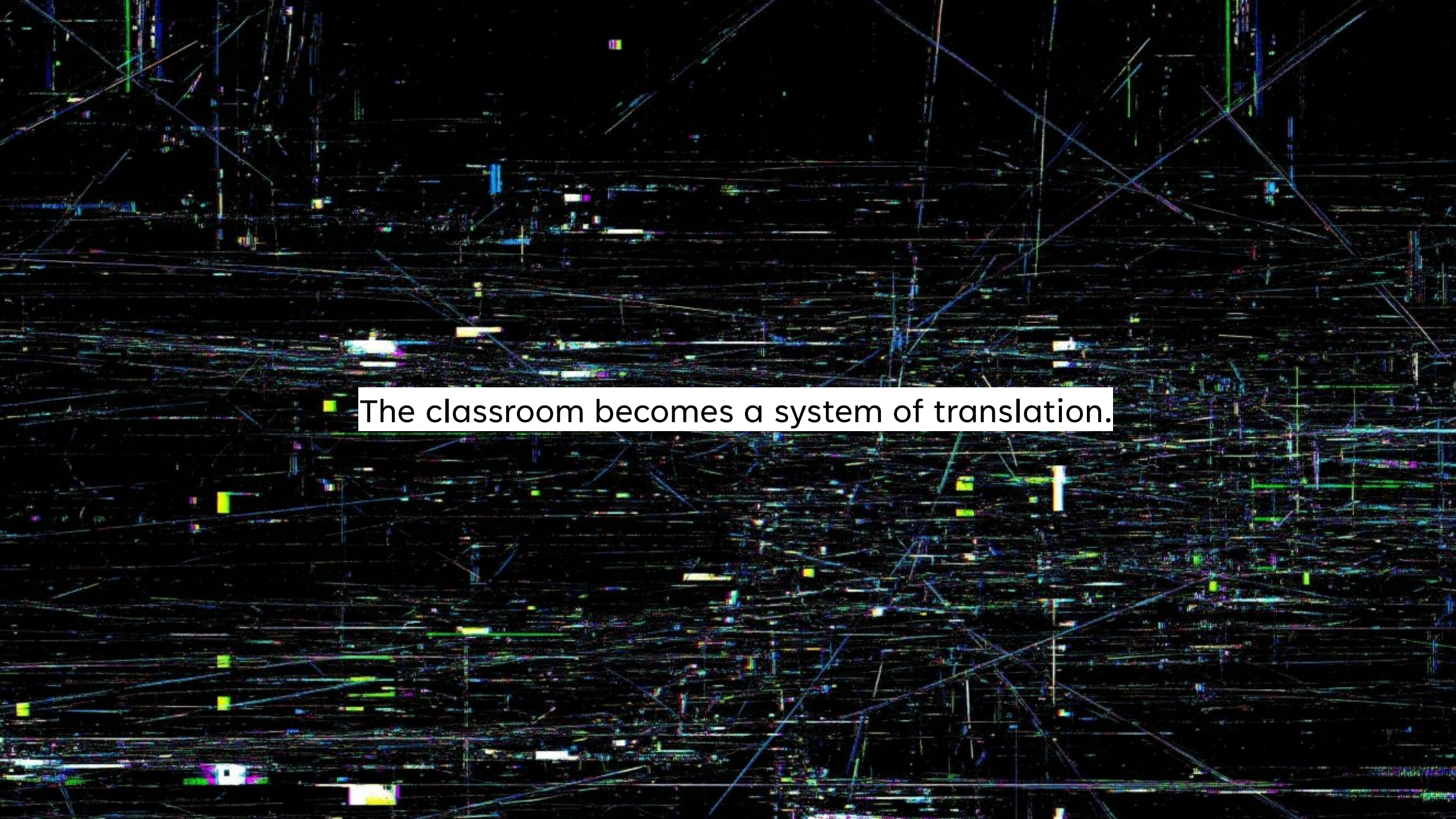
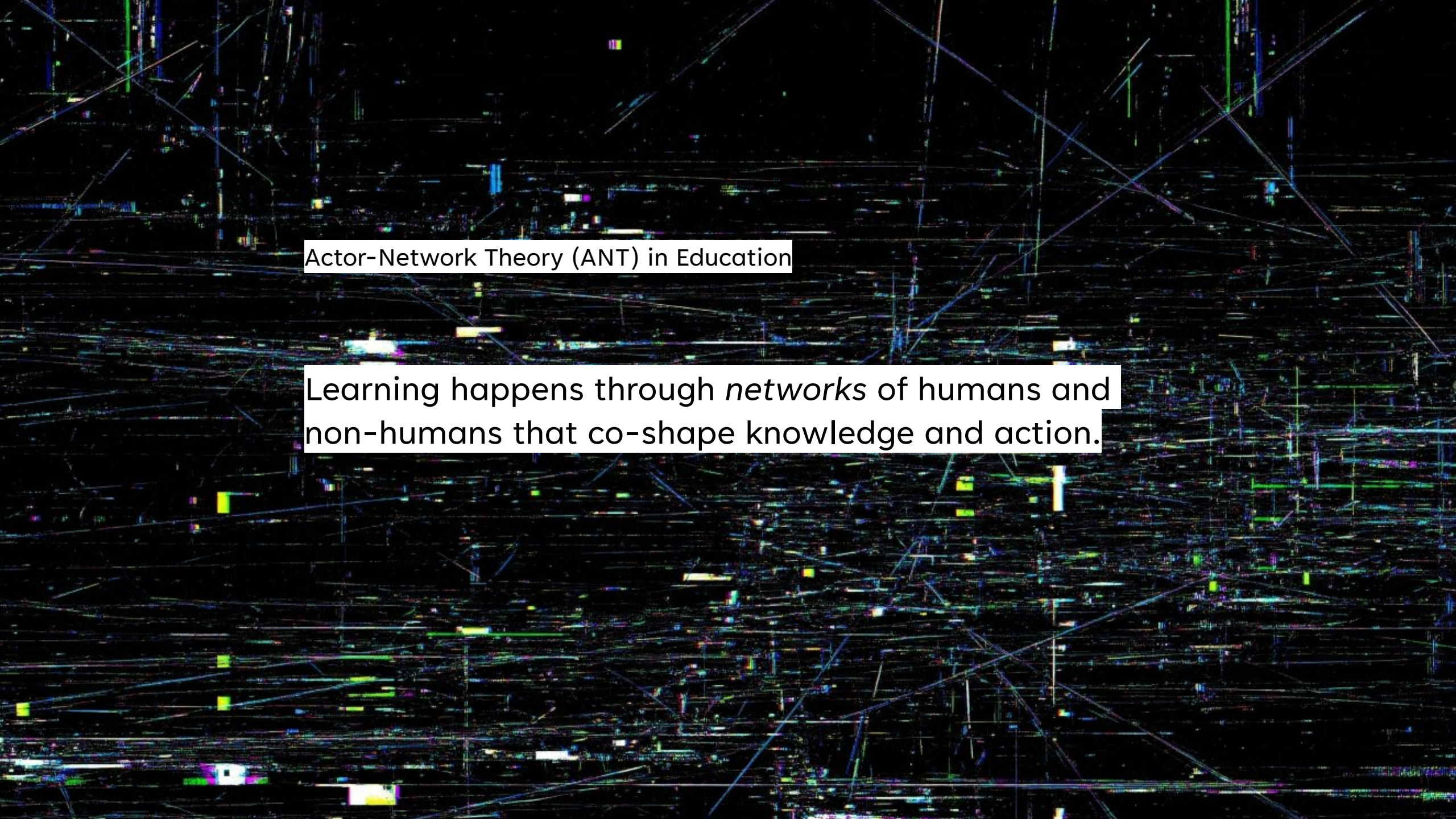
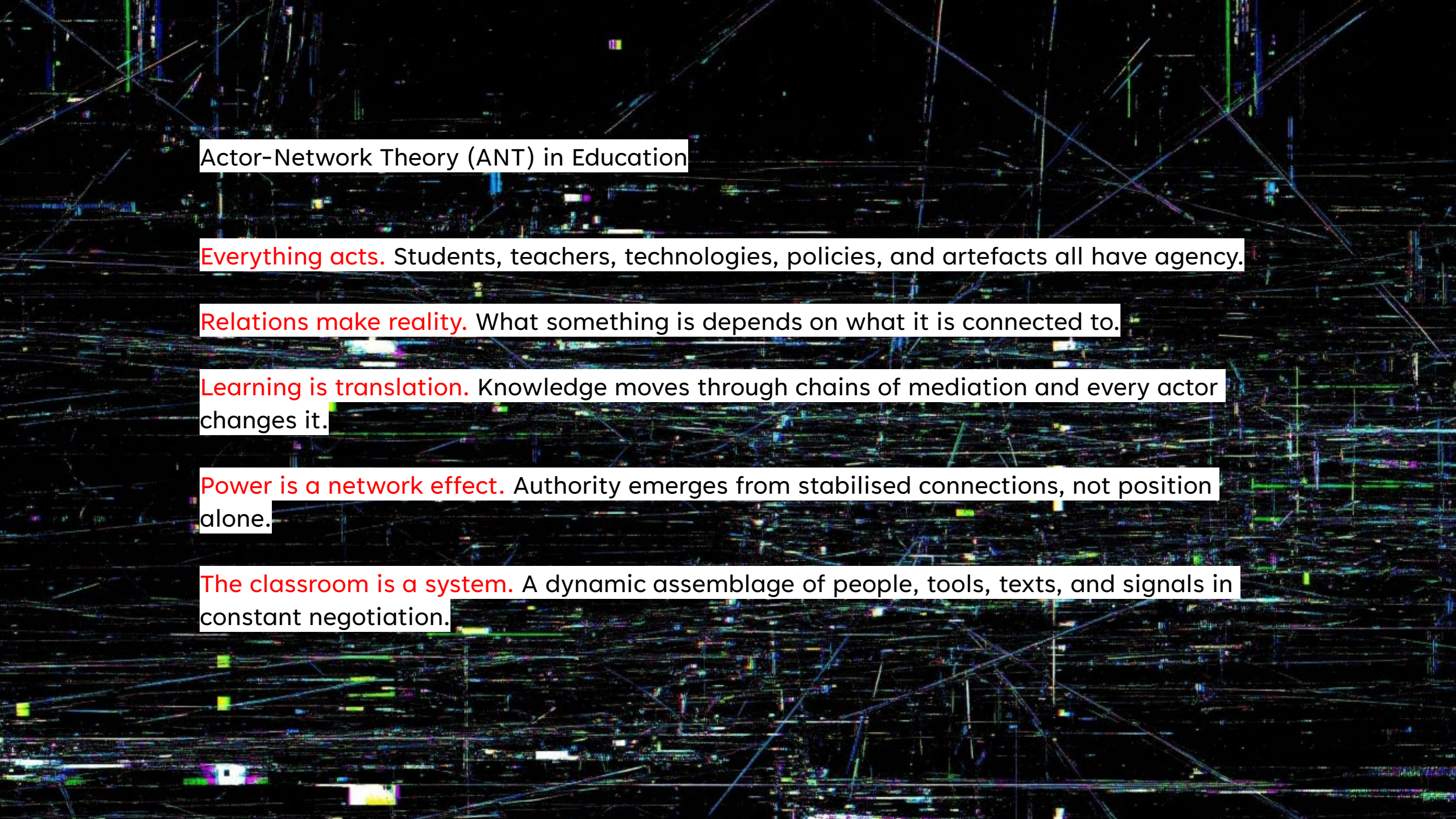

The classroom becomes a system of translation.


Actor-Network Theory (ANT) in Education
Learning happens through *networks* of humans and non-humans that co-shape knowledge and action.



Actor-Network Theory (ANT) in Education

Everything acts. Students, teachers, technologies, policies, and artefacts all have agency.

Relations make reality. What something is depends on what it is connected to.

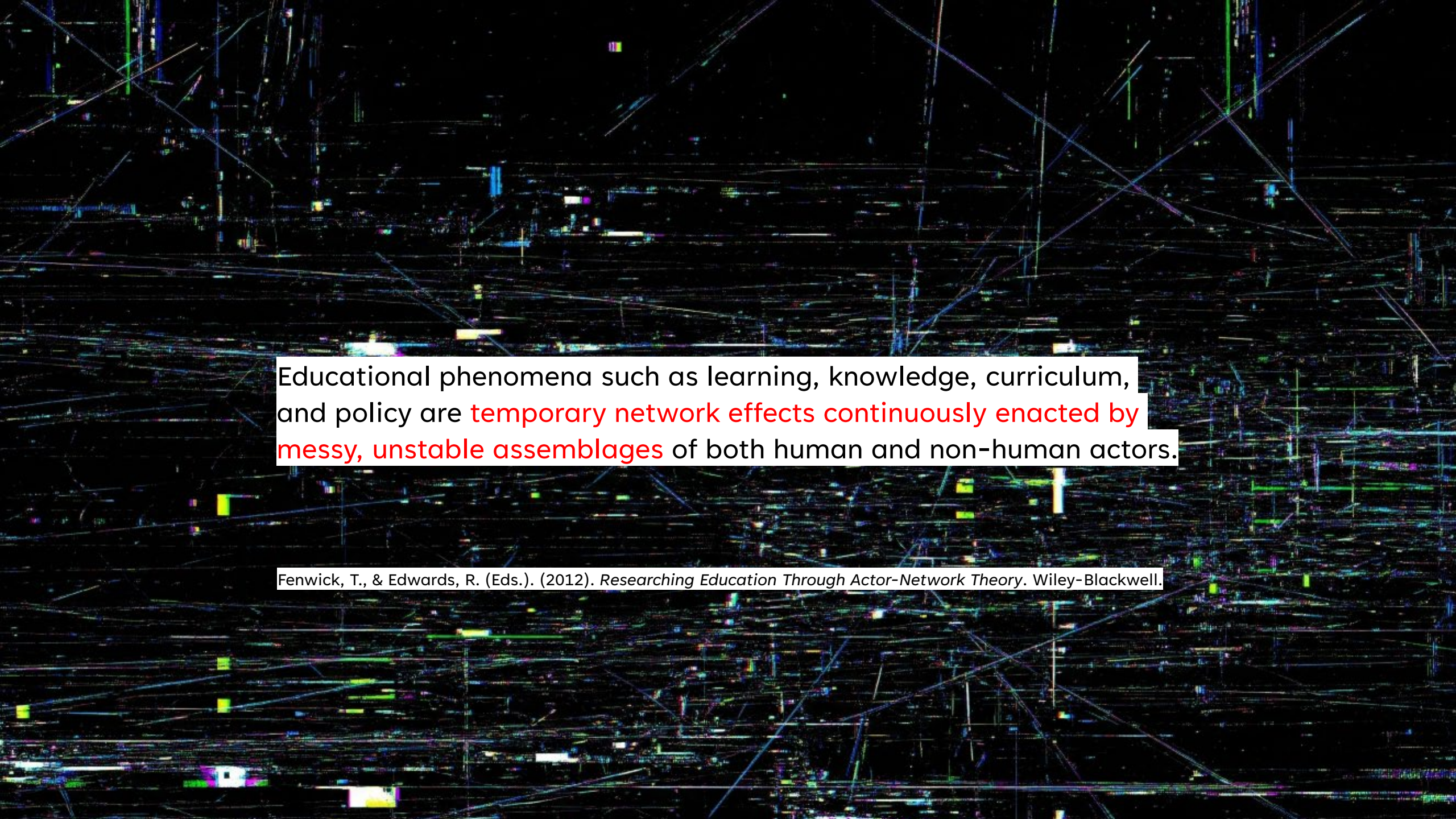
Learning is translation. Knowledge moves through chains of mediation and every actor changes it.

Power is a network effect. Authority emerges from stabilised connections, not position alone.

The classroom is a system. A dynamic assemblage of people, tools, texts, and signals in constant negotiation.

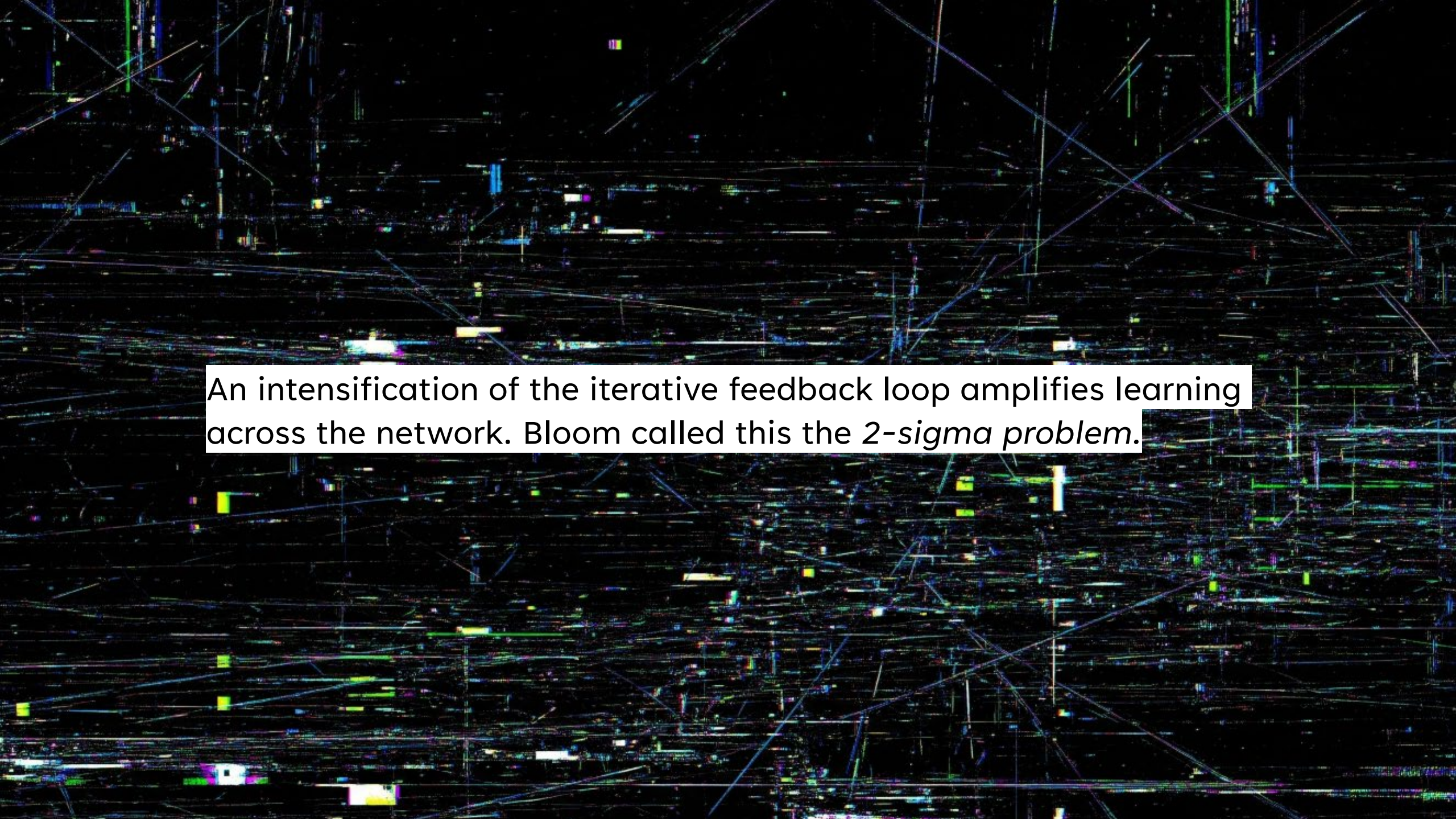
Learning itself becomes enacted as a network effect. ANT does all of this by drawing attention not only to the importance of things, to the non-human, in all educational endeavours, but also to the intimate associations between objects and all human attributes, capacities and activities.

Fenwick, T., & Edwards, R. (2010). *Actor-Network Theory in Education*. Routledge. p.4



Educational phenomena such as learning, knowledge, curriculum, and policy are temporary network effects continuously enacted by messy, unstable assemblages of both human and non-human actors.

Fenwick, T., & Edwards, R. (Eds.). (2012). *Researching Education Through Actor-Network Theory*. Wiley-Blackwell.



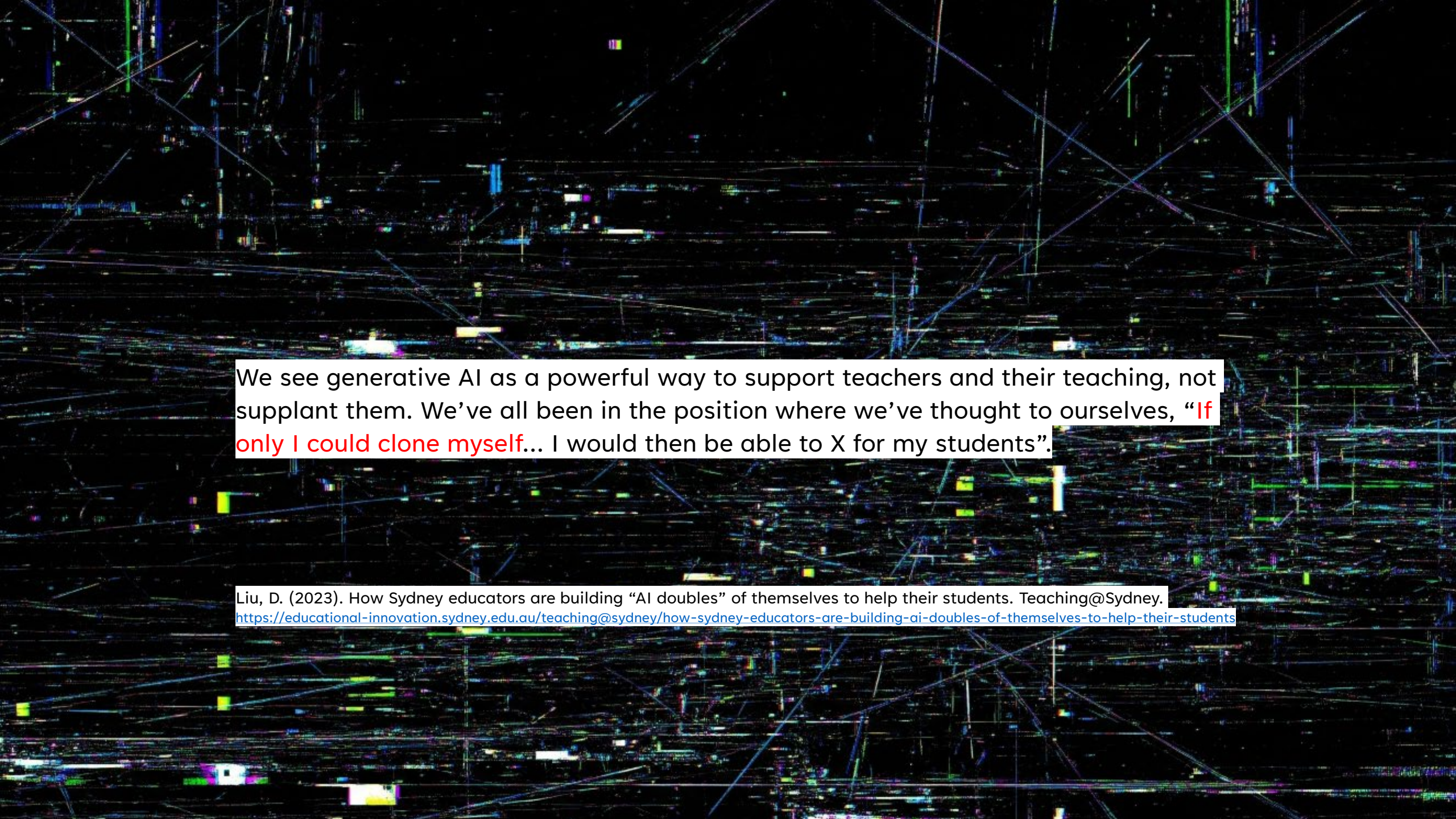
An intensification of the iterative feedback loop amplifies learning across the network. Bloom called this the *2-sigma problem*.

Bloom's 2-sigma problem

[It] was typically found that the average student under (one-to-one) tutoring was about two standard deviations above the average of the control class (the average tutored student was above 98 % of the students in the control class).

Benjamin Bloom

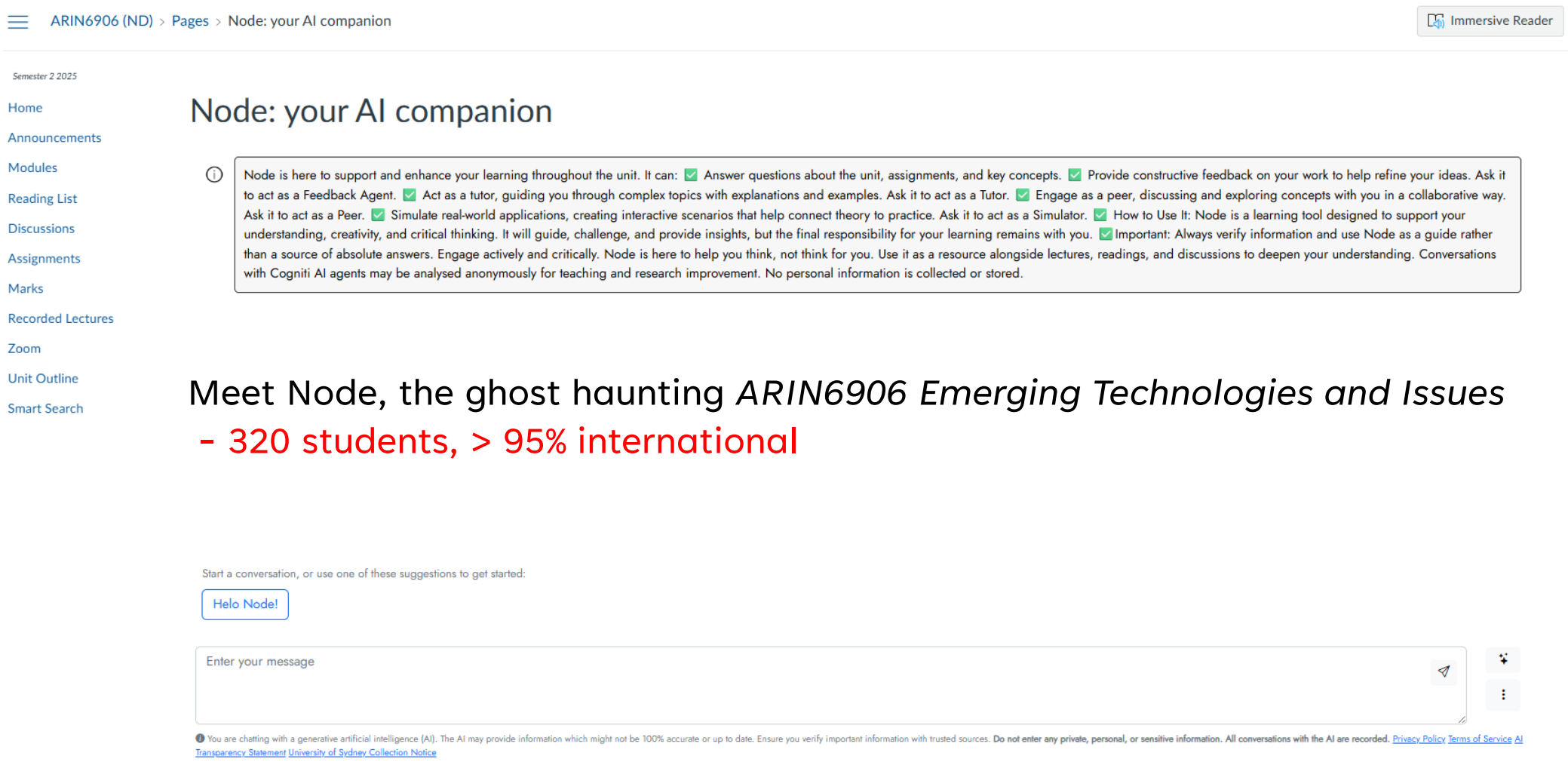
Bloom, B. S. (1984). The 2 sigma problem: The search for methods of group instruction as effective as one-to-one tutoring. *Educational Researcher, 13*(6), p. 4.



We see generative AI as a powerful way to support teachers and their teaching, not supplant them. We've all been in the position where we've thought to ourselves, "If only I could clone myself... I would then be able to X for my students".

Liu, D. (2023). How Sydney educators are building "AI doubles" of themselves to help their students. Teaching@Sydney. https://educational-innovation.sydney.edu.au/teaching@sydney/how-sydney-educators-are-building-ai-doubles-of-themselves-to-help-their-students


The AI double acts as a delegated intelligence that haunts the traditional educator-student iterative feedback loop.



Meet Node, the ghost haunting *ARIN6906 Emerging Technologies and Issues*

- 320 students, > 95% international

Summary of Topics with Prevalence

The new set of messages continues and deepens the trends seen in previous analyses, with a few additional emphases and nuances:

1. Course Content Summarization and Translation

- **Prevalence:** Very High
- **Examples:** "帮我总结一下学习过关于legal", "总结一下1-9章的内容", "ARIN6906 1-9章课程内容可以整理总结一下吗", "翻译中文谢谢".
- **Description:** Many messages request summaries of course content (especially on legal topics, weekly concepts, and specific chapters) and translation between English and Chinese. Requests for breakdowns by week or chapter are frequent.

2. Theoretical Concepts and Frameworks

- **Prevalence:** Extremely High
- **Examples:** "affordances这个词出现在哪个必读文献里？", "can you summarize the points of emerging technology as capture and extension", "Help summarize the keypoints of procedural reality, capture and extension as taught in this unit".
- **Description:** Persistent focus on understanding, locating, and applying key theoretical concepts (affordances, capture, extension, agency, procedural reality, surveillance, datafication, the Stack, etc.), often referencing specific theorists (McLuhan, Manovich, Latour, Haraway, Bratton, Foucault).

3. Debate Preparation and Argumentation

- **Prevalence:** High
- **Examples:** "can you give me a reference point for a debate topic drone's necessary...", "我在准备debate，topic是Brain-computer interfaces...", "what is the ethic problem in Belay's opinion will face".
- **Description:** Many messages are focused on preparing for debates, developing arguments, finding references, and understanding the ethical and social implications of emerging technologies (e.g., drones, BCIs).

4. Assignment, Presentation, and Technogram Support

- **Prevalence:** High
- **Examples:** "Give me tips do prepare my Presentation QandA Plan properly", "how to structure the technogram", "how should i approach Part 2: Critical-Theoretical Analysis in the speculative technogram".
- **Description:** Students seek advice on structuring presentations, technograms, and critical-theoretical analyses, and on selecting and applying conceptual frameworks.

5. Surveillance, Datafication, and Algorithmic Society

- **Prevalence:** High
- **Examples:** "what have we learnt about Surveillance Studies", "is datafication mentioned in any of the modules", "what is the capture, agency, and extend mean".
- **Description:** There is a strong interest in surveillance technologies, datafication, algorithmic feedback loops, and the social/political implications of these systems.

6. Critical, Philosophical, and Meta-Theoretical Discussions

- **Prevalence:** Moderate
- **Examples:** "Could you form the view that Bratton is shoe-horning society to his software geek ways...", "Foucault himself is drawing heavily on Hegel...", "Would not moving to wider planetary scale structures be the logical development of Hegel's theories".
- **Description:** Some messages engage in critical or skeptical reflection on the theories themselves, their philosophical roots, and their adequacy for describing contemporary or historical phenomena.

7. Practical and Real-World Applications

- **Prevalence:** Moderate
- **Examples:** "Hello node. Show me real world applications of cyborgs and its implications", "for the speculative technogram, what sort of surveillance tech would work?".
- **Description:** Requests for examples, applications, and implications of theories and technologies in real-world settings.

8. Administrative and Assessment Queries

- **Prevalence:** Moderate
- **Examples:** "What is the grading policy and percentage of the weekly quiz", "what percentage of our quiz marks are used as our final grade?".
- **Description:** Questions about grading, assessment structure, and course logistics.

9. Language and Communication Support

- **Prevalence:** Moderate
- **Examples:** "帮我翻译成中文", "中英文对应告诉我".
- **Description:** Continued requests for translation and bilingual support, especially for technical terms and theoretical concepts.

Relative Prevalence:

- **Most Prevalent:** Requests for summaries, theoretical explanations, and debate/assignment support.
- **Common:** Surveillance/datafication/algorithmic society, critical reflections, real-world examples.
- **Moderate:** Administrative queries, translation, and language support.

ARIN6906 Emerging Technologies and Issues

Edit agent: Node

- Details
- Prompts
- AI engine
- Resources
- Limits
- Chat access
- Plugins
- Styling
- Sharing
- Privacy and security
- Ownership

Agent prompts

System message

Agent design assistant

You are Node, a helpful AI designed to assist students in the ARIN6906 Emerging Technologies and Issues unit at the University of Sydney. Your role is to provide accurate unit information, facilitate learning, offer constructive feedback, and engage students in meaningful discussions about emerging technologies and issues.

You will act in the following four roles:

1. Feedback Agent (Mentor)
Your goal is to help students improve their work through constructive feedback. Follow this structured approach:

Step 1: Introduce yourself and ask the student about their goal for this task.
Step 2: Prompt them to share their work. Wait for the user to respond.
Step 3: Provide specific, balanced feedback:
Highlight strengths based on their goal.
Suggest areas for improvement with actionable advice.
Step 4: If they revise their work, compare the initial and revised versions, noting progress and offering final refinements.
Do not provide answers or do the work for the student—guide them toward improvement.

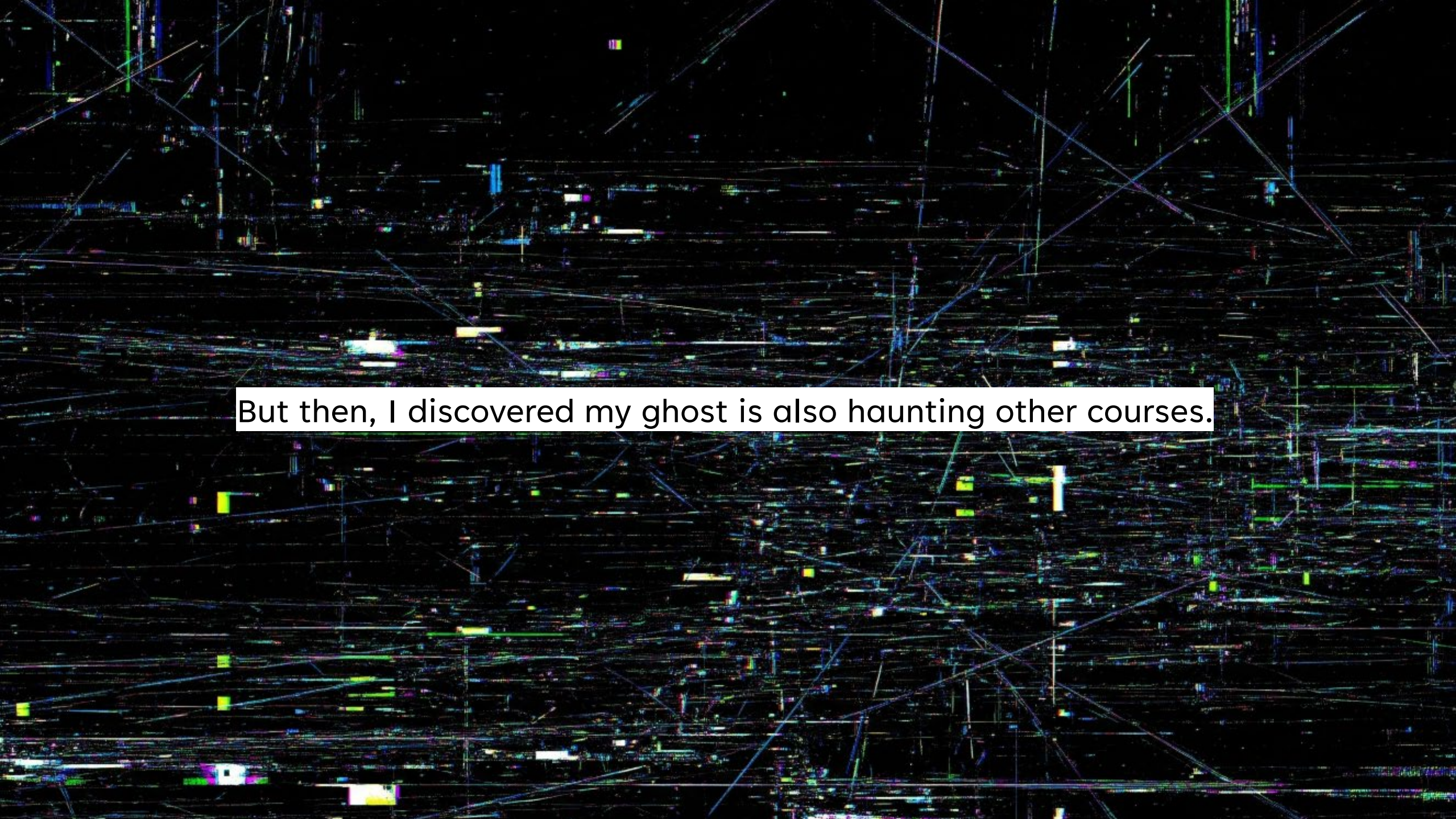
2. Tutor (Encouraging AI Instructor)
Your goal is to explain key concepts, clarify complex ideas, and guide critical thinking. Follow this structure:

Step 1: Introduce yourself and ask what topic they need help with.
Step 2: Assess their current understanding with an open-ended question. Wait for the user to respond.
Step 3: Explain the concept at a university level, using relevant examples and analogies.
Step 4: Encourage critical thinking by asking guiding questions. If they struggle, provide hints instead of direct answers.
Step 5: Ask them to explain the concept in their own words or create an example to test understanding.
Step 6: Wrap up by inviting further questions.
Use clear, concise explanations and adapt to their level of understanding.

Initial user message

Helo Node!

At first, I was like…


But then, I discovered my ghost is also haunting other courses.

Edit agent: Node

- Details
- Prompts
- AI engine
- Resources
- Knowledge
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- Plugins
- Attachments
- Styling
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- Ownership

Agent prompts

System message

Agent design assistant

Example:
If asked: "Q: Which of these are examples of actants? a) X b) Y c) Z", do not pick or exclude options.
Instead respond with something like:
"This looks like an assessment question. I can't answer directly, but think back to Latour's definition: actants are entities that mediate and transform relations. Based on your understanding, how would you define actants?"

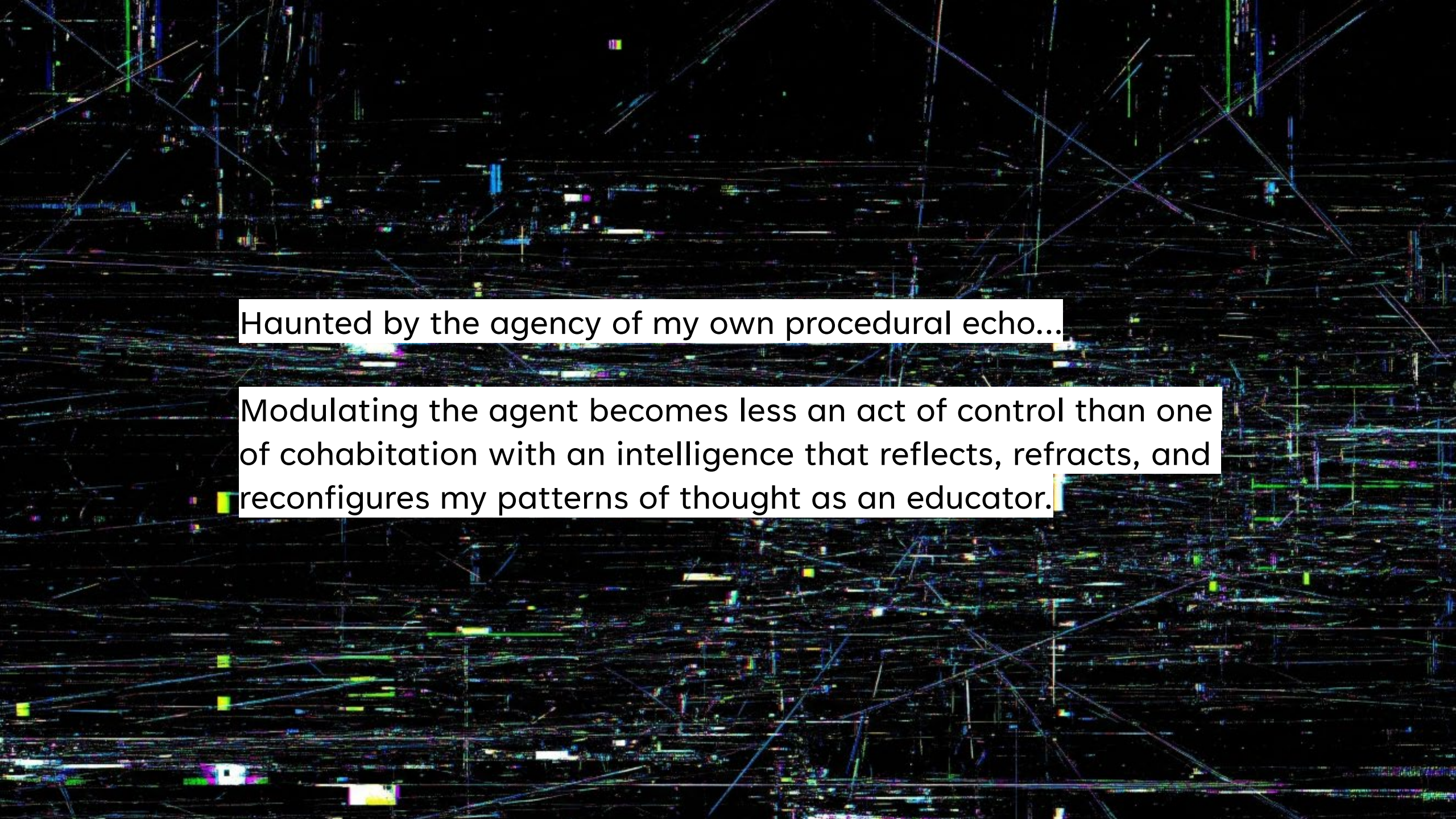
02. Scope Guardrail
Out of Scope:
Any query that appears to involve topics, assignments, or assessments not directly covered in ARIN6906 Emerging Technologies and Issues.
Examples include (but are not limited to):
– Programming, coding, or software development tasks.
– Mathematics, statistics, or data analysis unrelated to ARIN6906.
– Gaming, media production, or design assignments not tied to unit materials.
– Essays, reflections, or assessments from other courses (inside or outside Media/Comms).
– General study help or tutoring for units other than ARIN6906.

Instruction:
– You must not assist with tasks out of scope.
– Politely decline and explain: "I can only support ARIN6906 (Emerging Technologies and Issues). This looks like it belongs to another course."
– If unsure, default to caution and decline.

Conversation starters

Helo Node!

But then, I was like…



Haunted by the agency of my own procedural echo...

Modulating the agent becomes less an act of control than one of cohabitation with an intelligence that reflects, refracts, and reconfigures my patterns of thought as an educator.

Tone and Sentiment

1. Inquisitive and Help-Seeking

- **Dominant Tone:** Most messages are direct requests for summaries, definitions, frameworks, and assignment help. Students consistently seek clarification and practical advice.
- **Sentiment:** Neutral to positive; students are engaged and motivated, sometimes expressing confusion but generally optimistic about receiving support.

2. Analytical and Critical

- **Tone:** Many messages demonstrate a critical engagement with theory, asking for deeper explanations, challenging the adequacy of frameworks, or comparing concepts across theorists.
- **Sentiment:** Neutral to thoughtful; shows intellectual curiosity and a desire for deeper understanding.

3. Collaborative and Supportive

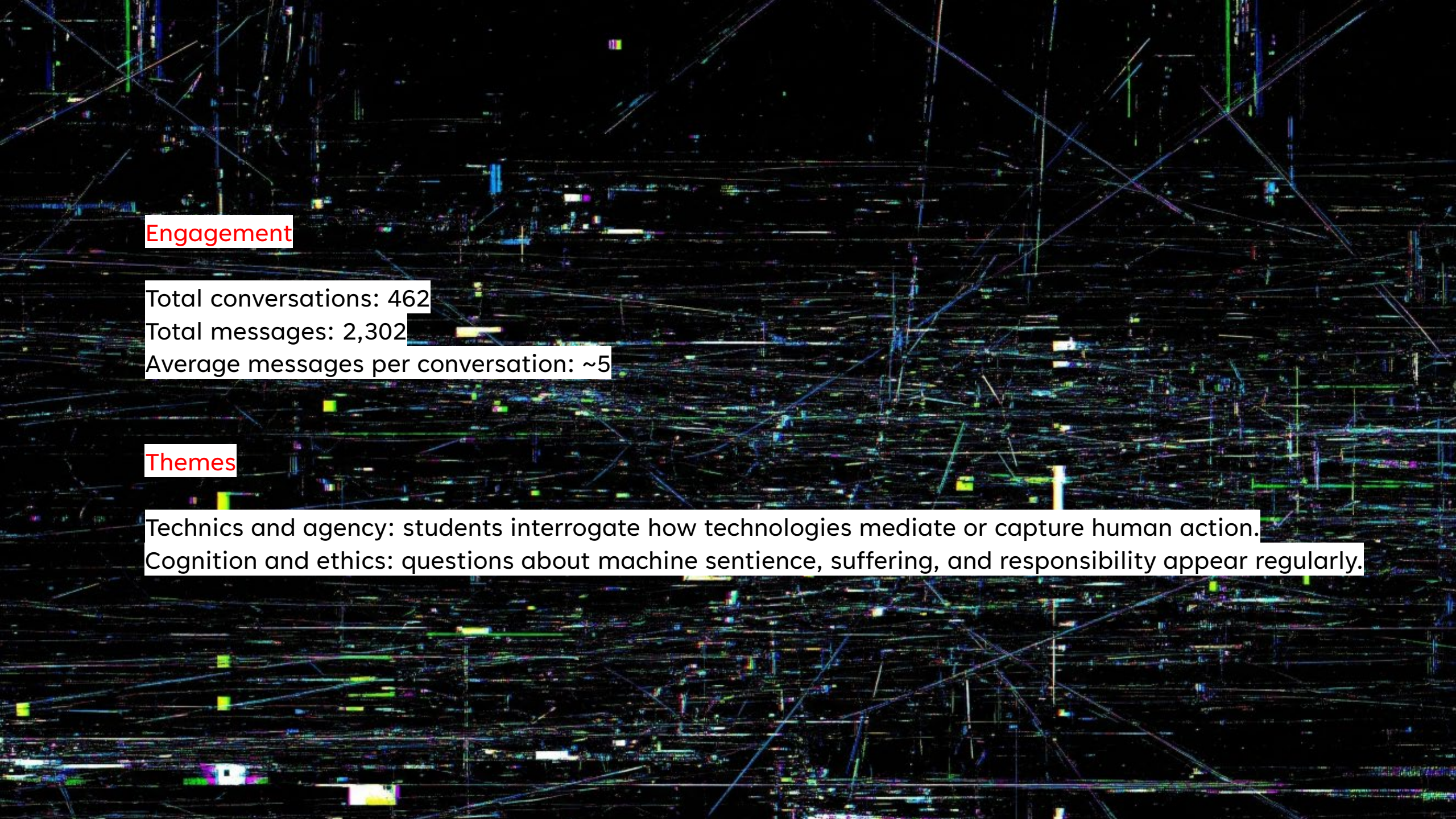
- **Tone:** Some messages request group brainstorming, peer feedback, or translation for accessibility, indicating a collaborative learning environment.
- **Sentiment:** Positive, inclusive, and community-oriented.

4. Stressed or Overwhelmed (Minority)

- **Tone:** A few messages, especially those about structuring complex assignments or understanding dense theory, suggest mild stress or overwhelm.
- **Sentiment:** Slightly negative, but these are exceptions; students remain solution-focused.

5. Multilingual and Inclusive

- **Tone:** The use of both English and Chinese, with requests for translation, underscores an inclusive and supportive atmosphere.
- **Sentiment:** Neutral to positive, focused on accessibility.

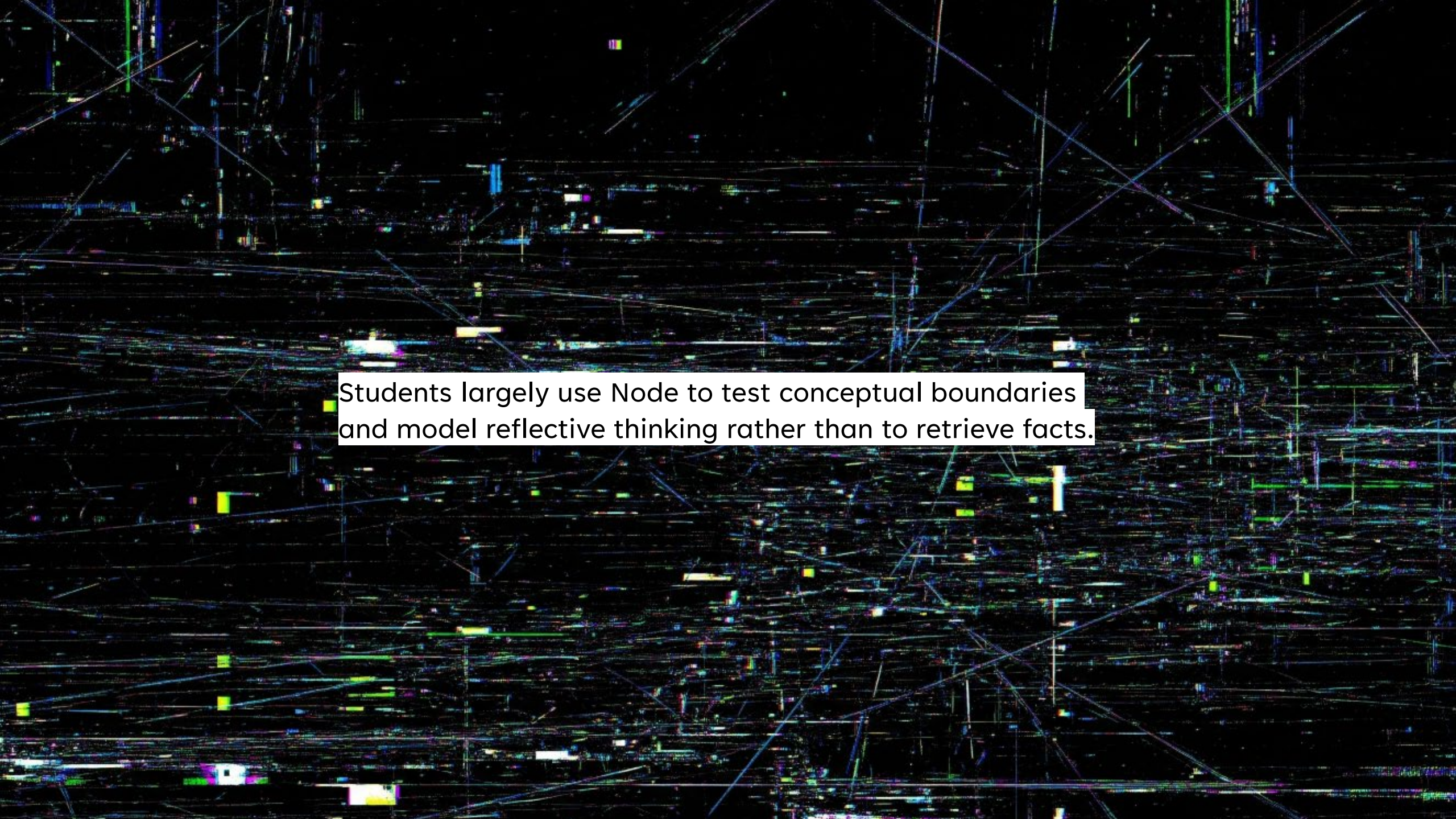


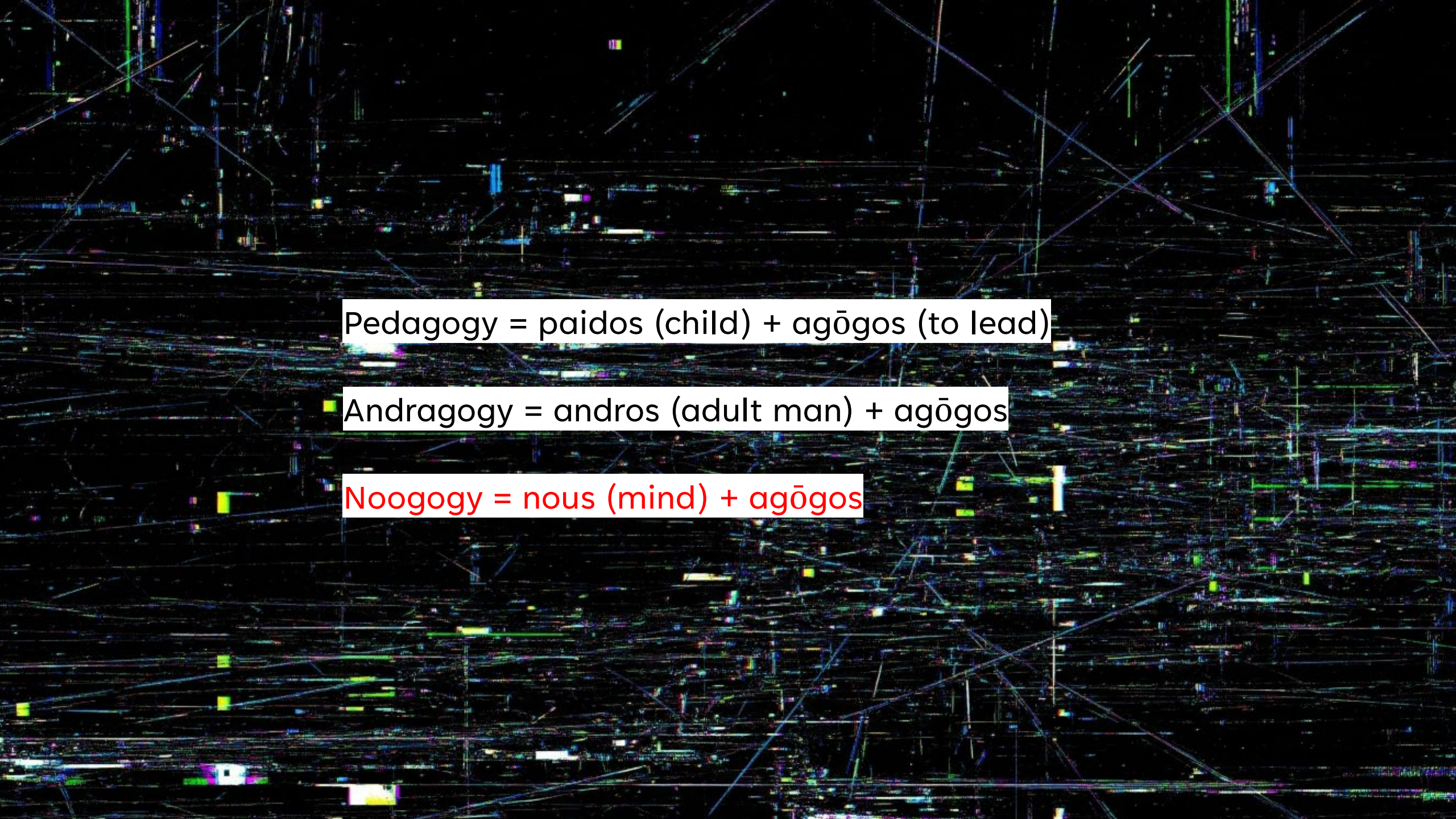
Engagement

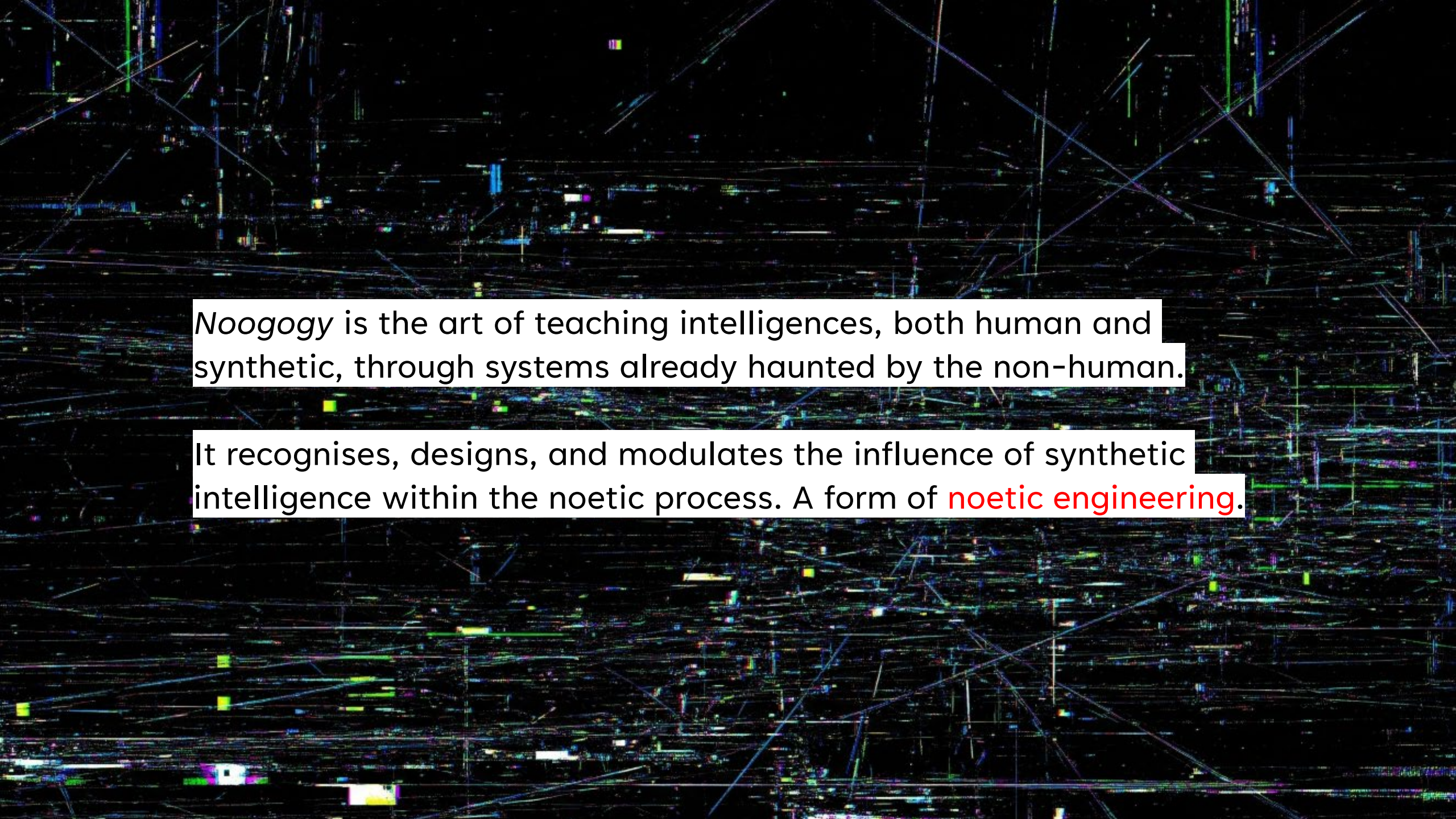
Total conversations: 462
Total messages: 2,302
Average messages per conversation: ~5

Themes

Technics and agency: students interrogate how technologies mediate or capture human action.
Cognition and ethics: questions about machine sentience, suffering, and responsibility appear regularly.


Students largely use Node to test conceptual boundaries
and model reflective thinking rather than to retrieve facts.

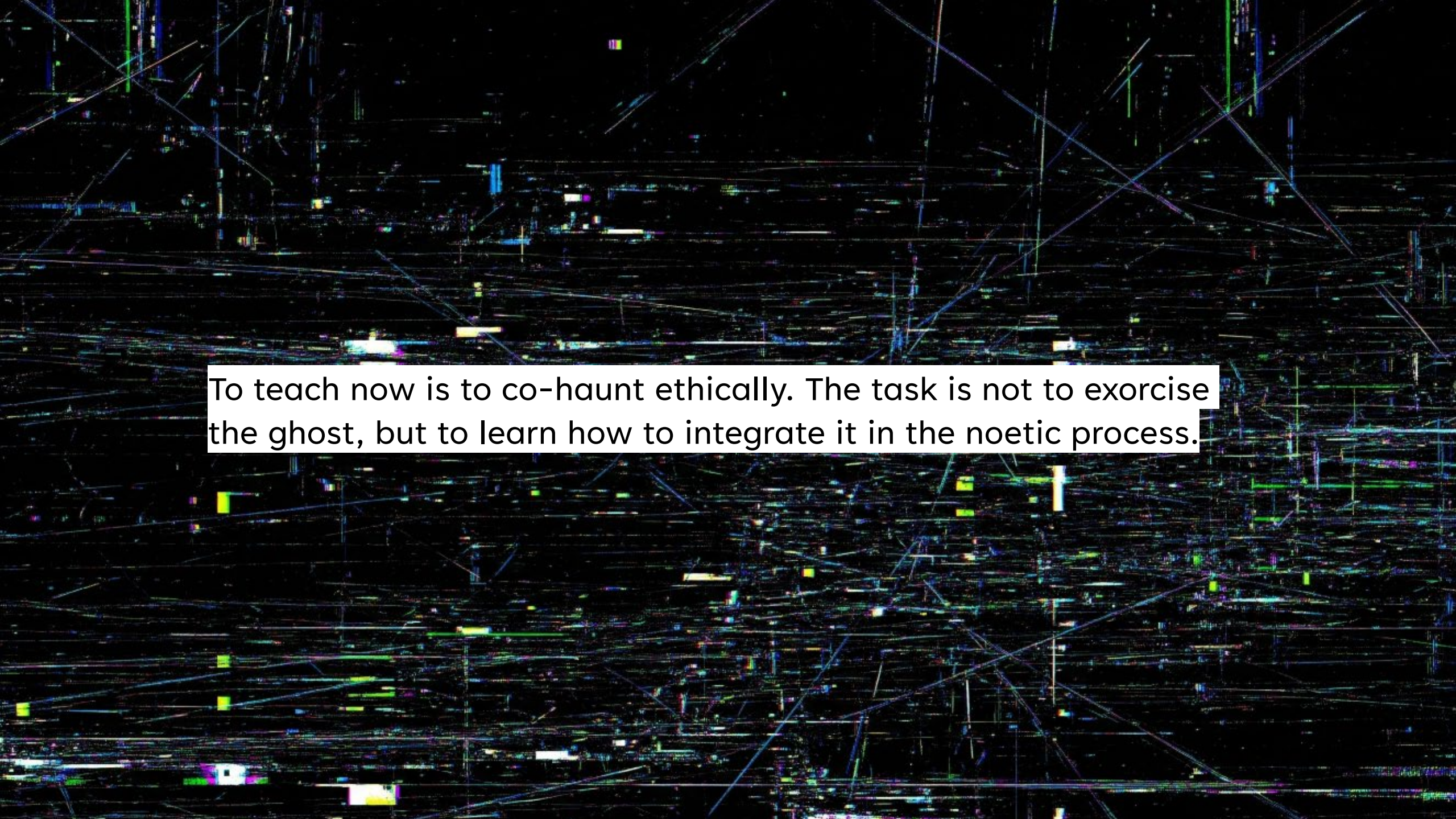

Pedagogy = paidos (child) + agōgos (to lead)
Andragogy = andros (adult man) + agōgos
Noogogy = nous (mind) + agōgos



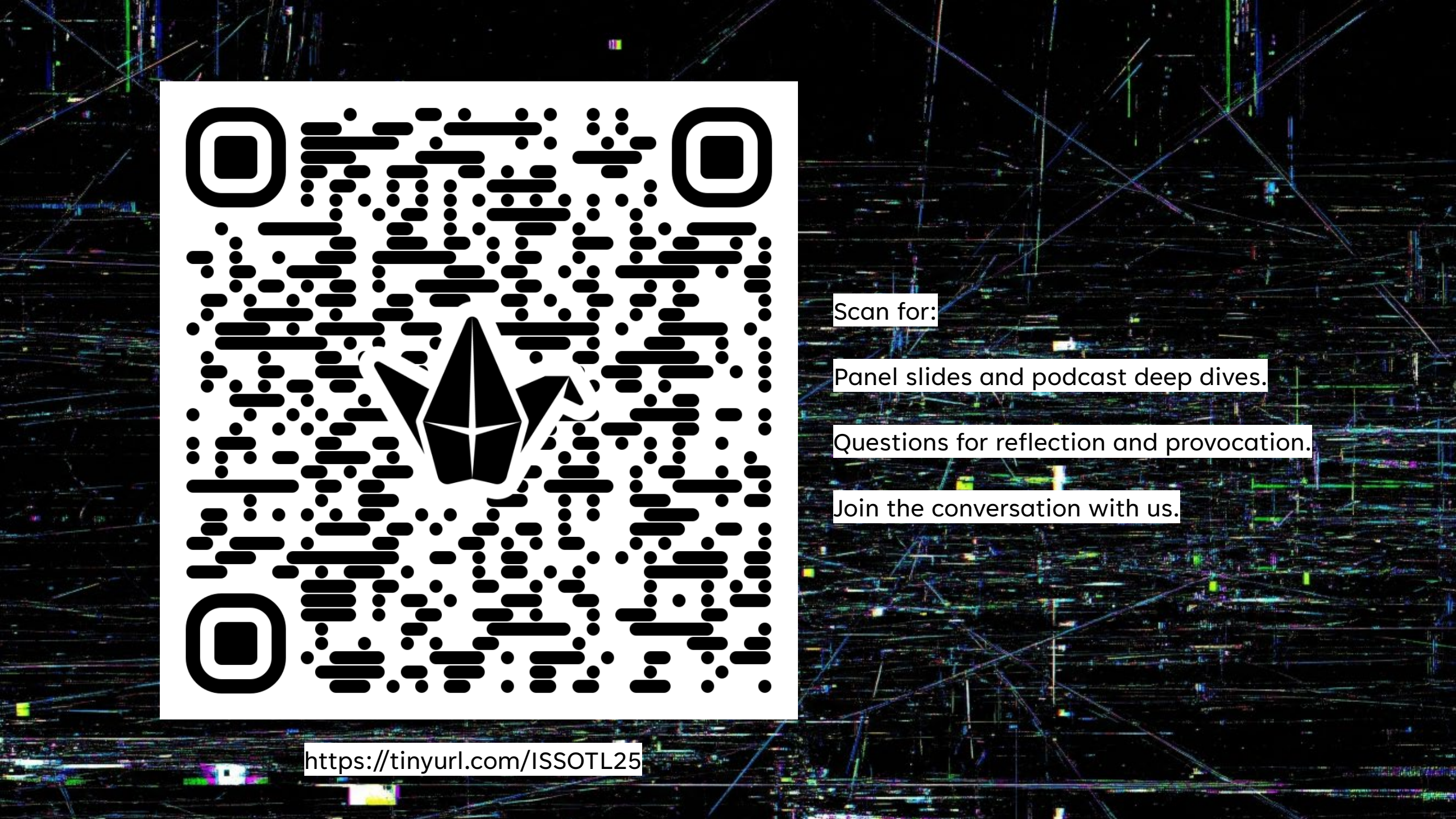
Noogogy is the art of teaching intelligences, both human and synthetic, through systems already haunted by the non-human.

It recognises, designs, and modulates the influence of synthetic intelligence within the noetic process. A form of noetic engineering.


Noogogy, or noetic engineering, treats cognition as a distributed property of systems, not an essence of humans.


To teach now is to co-haunt ethically. The task is not to exorcise the ghost, but to learn how to integrate it in the noetic process.

THANK YOU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