University learning in an age of 'artificial intelligence'

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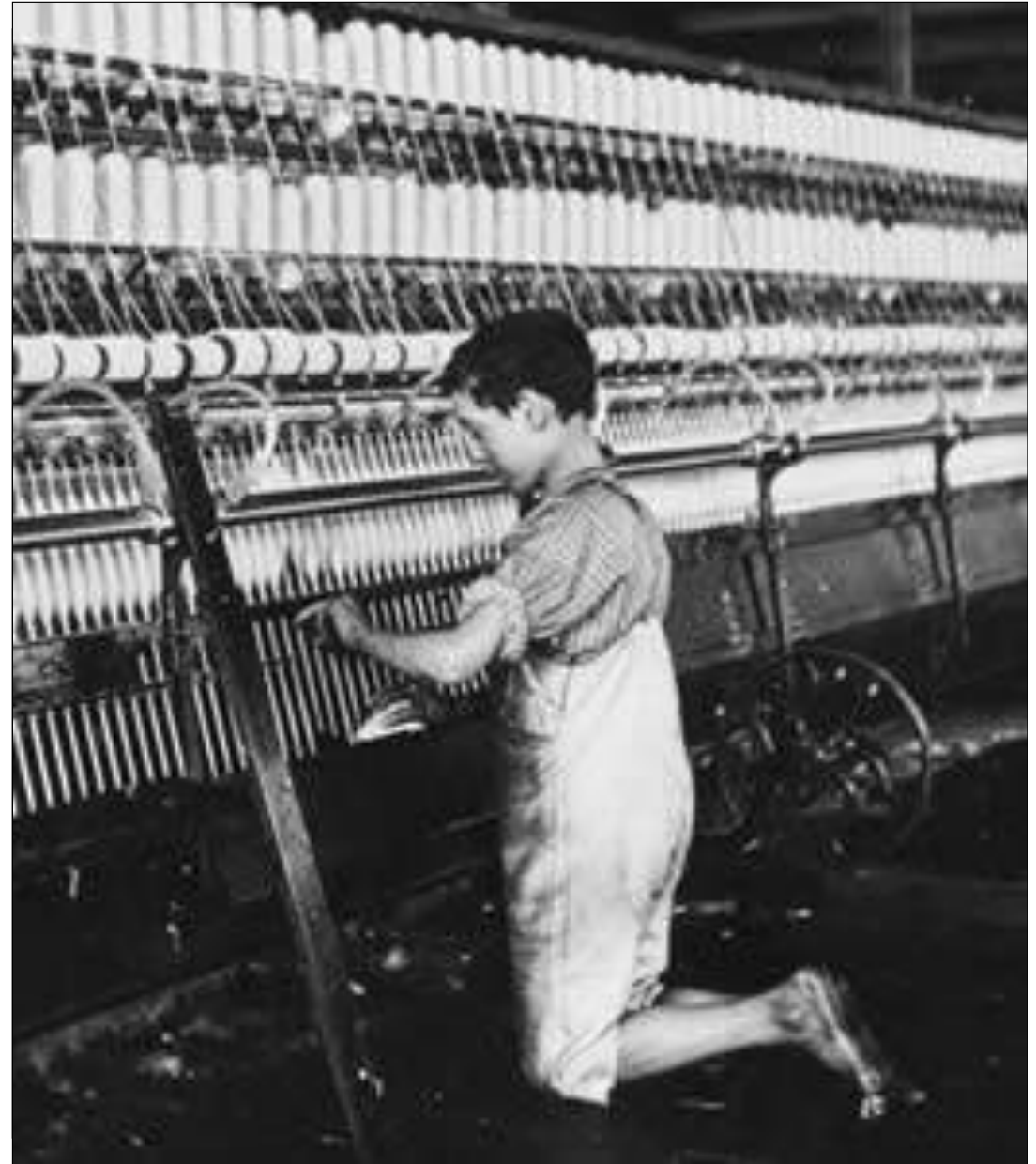# Three provocations

1. A short history of 'artificial intelligence' through the lens of learning
2. Some alternative narratives
3. Towards AI realism

The pre-history of automation

'*The division of labour, both in mechanical and in mental operations, enables us to purchase and apply to each process precisely that quantity of skill and knowledge which is required for it.*'

Charles Babbage (1833) *On the Economy of Machinery & Manufactures*

The pre-history of automation

'rules, instructions, routines, inspection, hierarchical observation, the timetable, and the examination'

Simone Browne (2015)
Dark Matters

From cybernetics to 'AI'

'*We believe that we can start with some of the most advanced human activities—i.e. proving theorems— and work back to the "simplest"*'

Herbert Simon (1956) on the 'Logic Theorist' programme

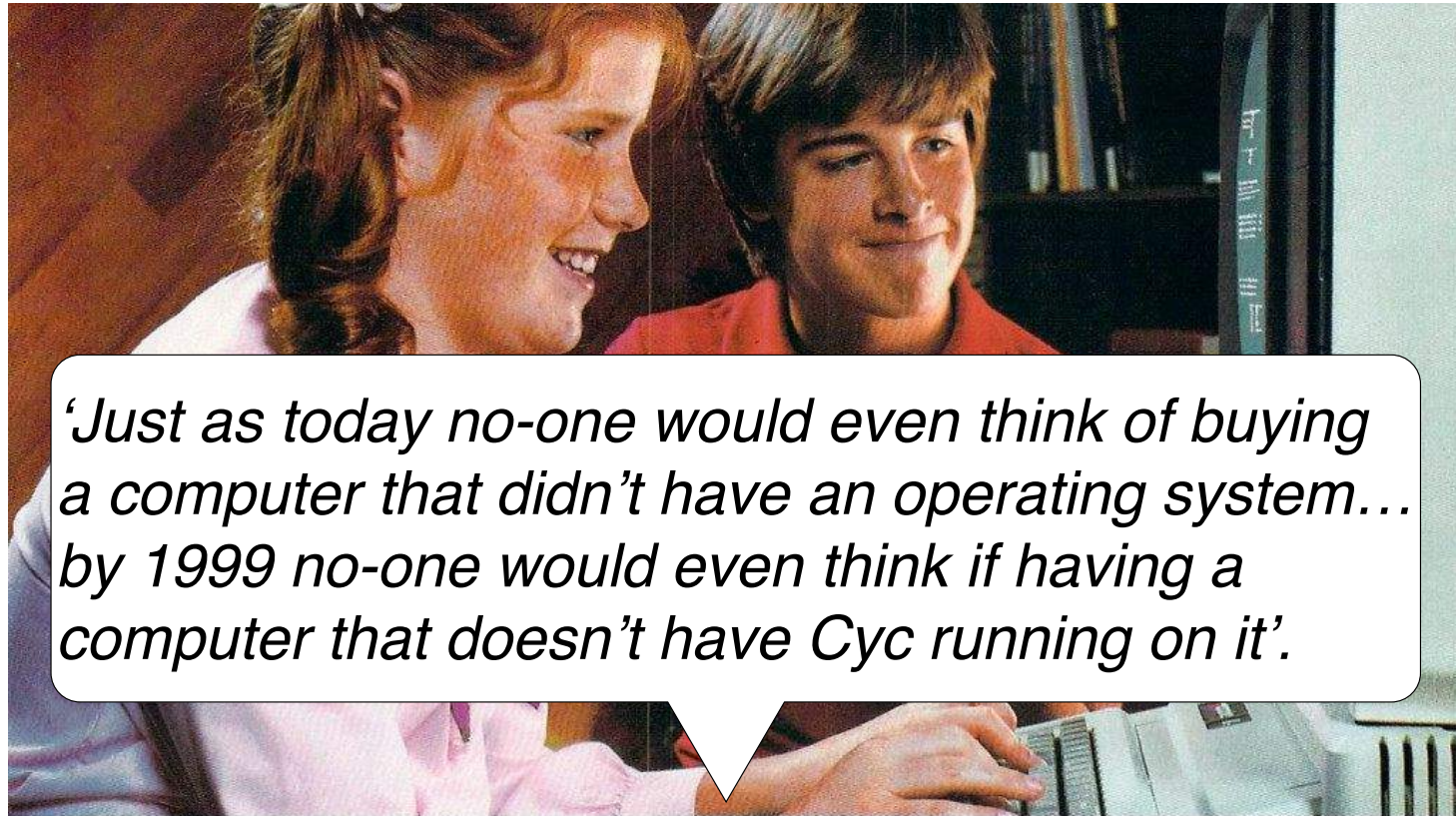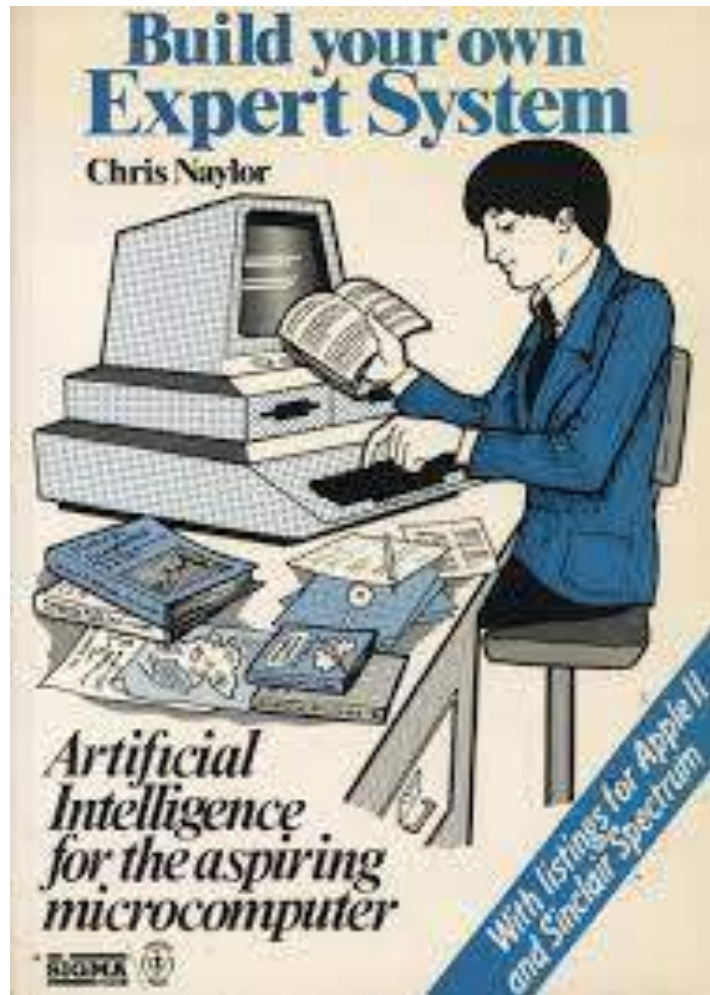# From cybernetics to 'AI'

From cybernetics to 'AI'

'We normally associate punishments and rewards with the teaching process. Some simple child machines can be constructed or programmed on this sort of principle… I have done some experiments with one such child machine, and succeeded in teaching it a few things.'

Alan Turing (1950) *Computing Machinery and Intelligence*

Expert (rules-based) systems

'Just as today no-one would even think of buying a computer that didn't have an operating system… by 1999 no-one would even think if having a computer that doesn't have Cyc running on it'.
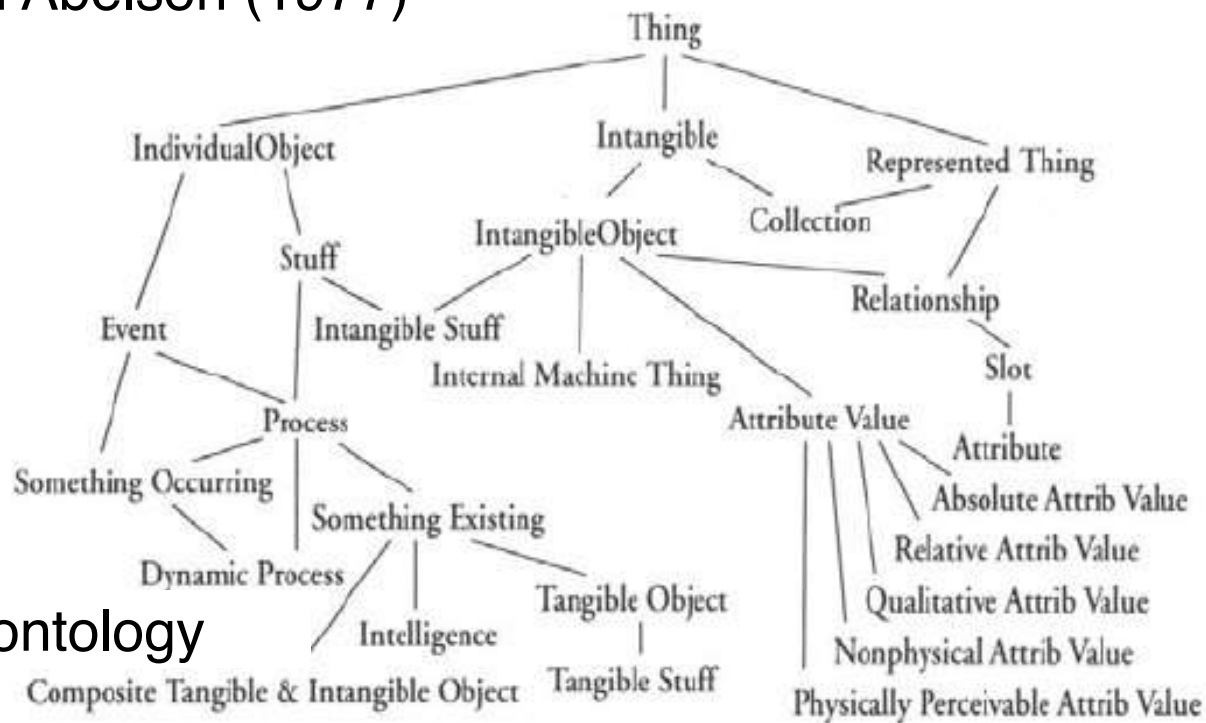
Lenat and Guha (1990)
Building Large Knowledge-based Systems

Expert (rules-based) systems

'A grammar of knowledge'
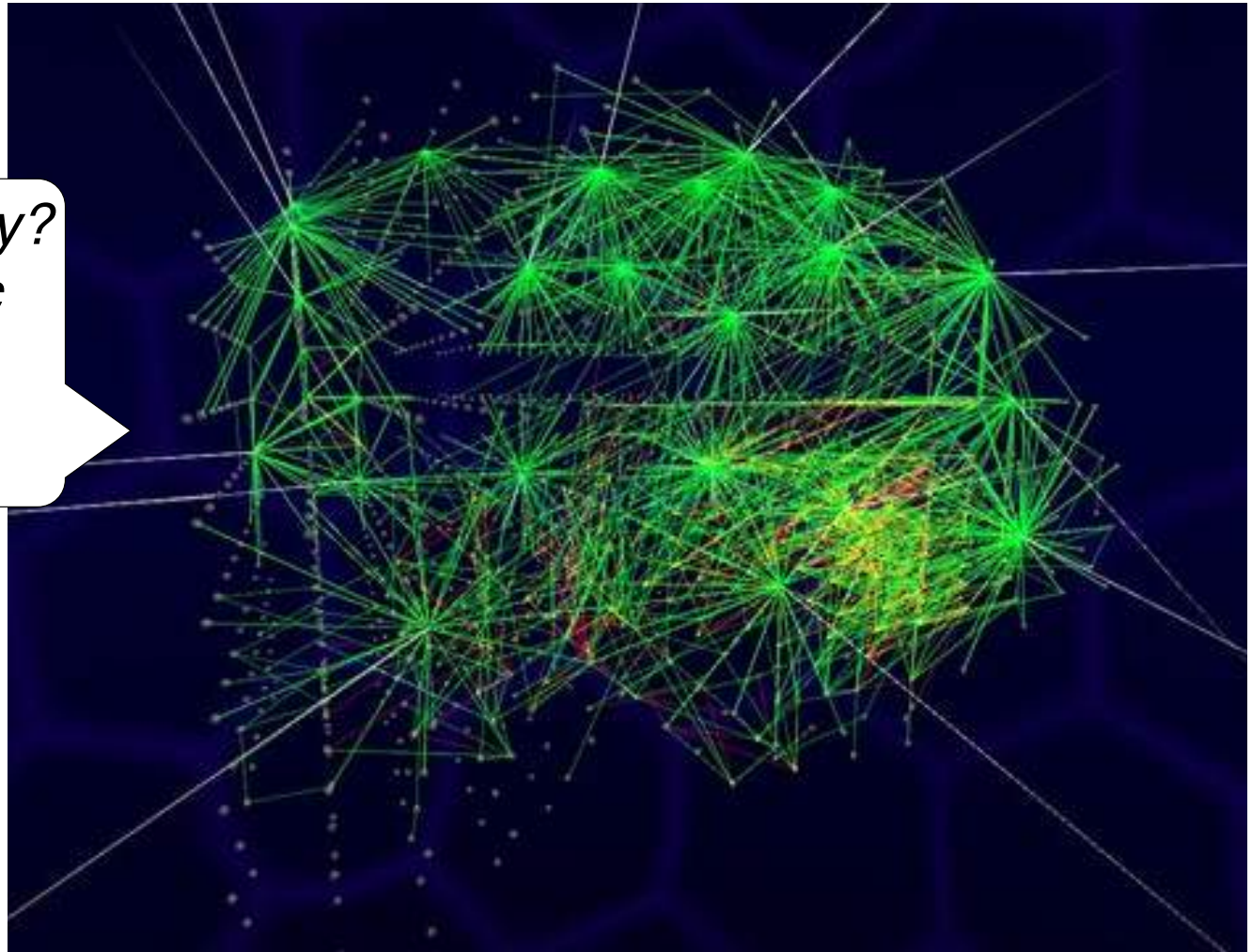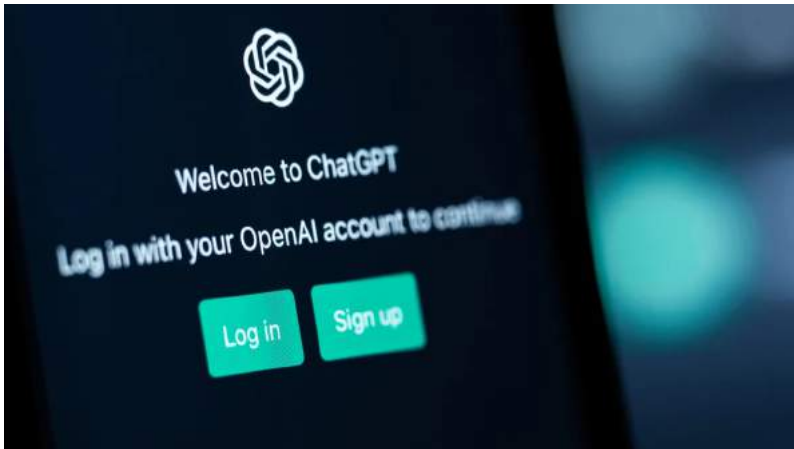
Schank and Abelson (1977)

Piagetian schemas

High level ontology

The statistical turn

'ChatGPT thinks logically. Why? Because it notices all the logic in the data in its training set'
Stephen Wolfram (2023)

The statistical turn

'[Emergence] is an attempt to apply systems-oriented biological thinking to a wide range of other phenomena
Mitchell Resnick, MIT Media Lab (1996)

'machine learning is inspired by the human's ability to learn and evolve over time by creating spatiotemporal connections in the brain's neural network'
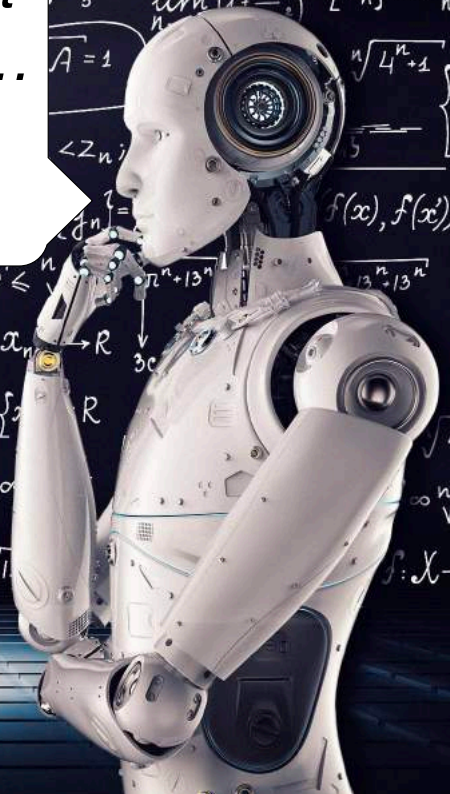Random paper from Neural Network journal (2023)

The fantasy of 'artificial intelligence'

'From three to eight years we will have a machine with the general intelligence of an average human being. At that point the machine will begin to educate itself with fantastic speed… a few months after that its powers will be incalculable.'
Marvin Minsky (1970) Interview with LIFE

'Artificial intelligence will reach human levels by around 2029. Follow that out further to, say, 2045, we will have multiplied the intelligence, the human biological machine intelligence of our civilization, a billion-fold.'
Ray Kurzweil (2017) Interview with SXSW

The project of 'artificial intelligence'

The project of 'artificial intelligence'

The project of 'artificial intelligence'

- **New business models and scholarly workflows**
  - work is reorganised in relation to technology
- **Redefining 'the human', 'human intelligence' and value**
  - historically in reductive, racialised / gendered ways
  - reinforcing existing hierarchies and exclusions
- **Education as:**
  - Sorting people according to categories and use values
  - Behavioural optimisation
  - Provided access to structured / ordered knowledge
  - 'What machines can't (yet) do'
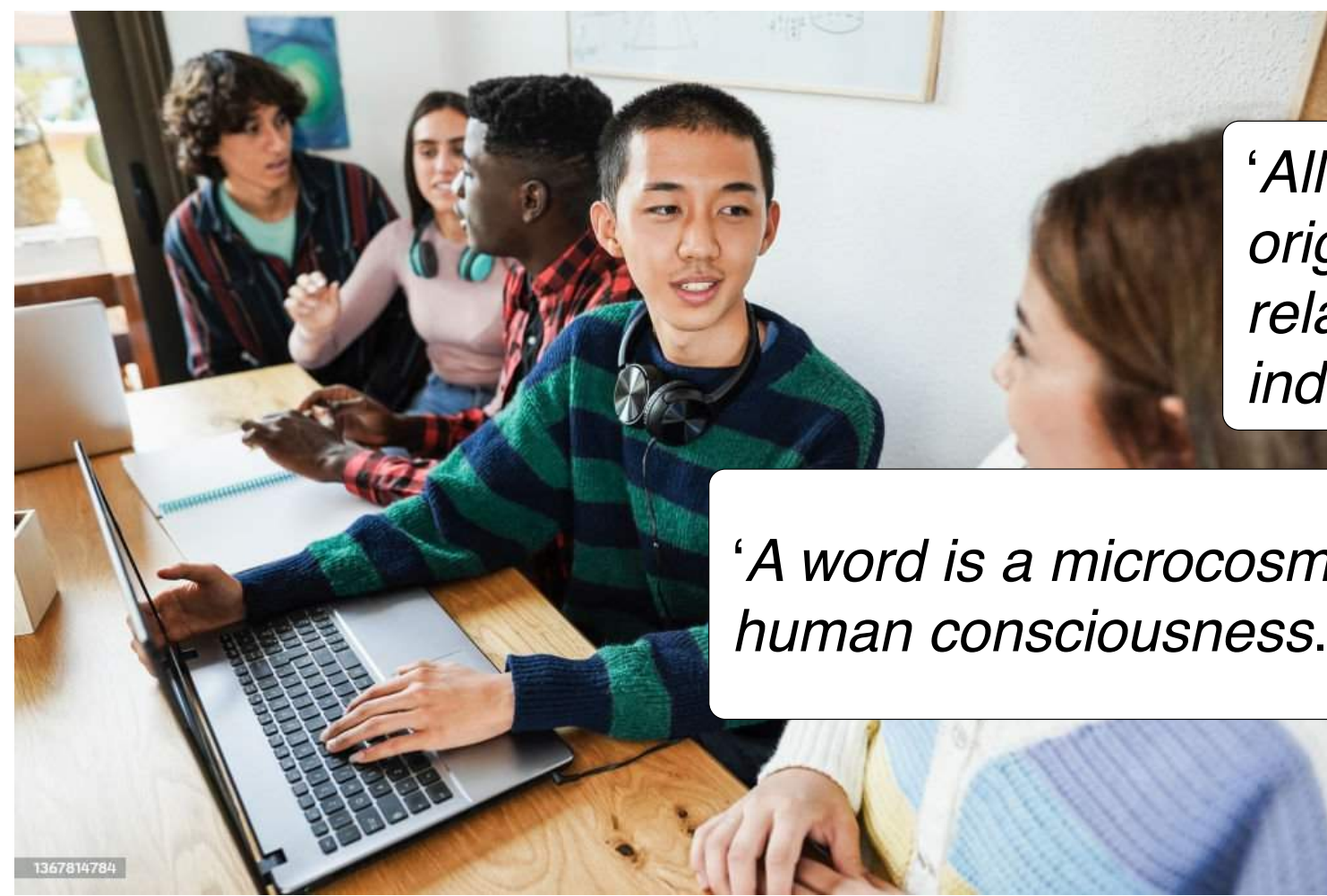
Alternative narratives

Situated knowledges

"*to pay attention to positionality, reflexivity, and how this shapes the production of knowledge...*

Farhana Sultana (2007) via the Equality Institute

Sociocultural theories of learning

'All the higher functions originate as actual relationships between individuals.'

'A word is a microcosm of human consciousness.'

Lev Vygotsky (1978 trans.)
Thought and Language

Diverse disciplinary ways of knowing and teaching

- **Embodied pedagogies of performance and practice**
- **'Authentic' learning projects**
- **Learning as identity work**
- **Capabilities approach to human development**
- **Critical pedagogies (including AI as a grand challenge?)**
- **…and many more**

Collage via wikimedia commons

#1 Talking with colleagues about AI

- How does your discipline help you to understand the challenges?
- *Please share with a neighbour (ideally not from your discipline)*
- What questions and concerns do you have?

#2 Talking with students about AI

- What definitions are useful?
- What choices are meaningful?
- What conversations need to happen?