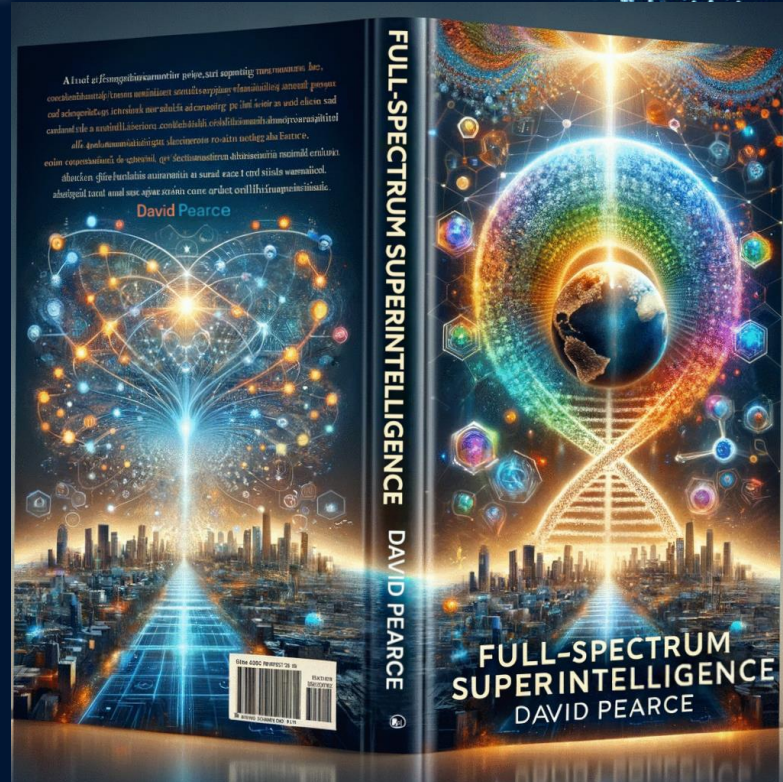


FULL-SPECTRUM SUPERINTELLIGENCE

By David Pearce



WHAT IS ZOMBIE INTELLIGENCE?

The zombie realm

- Classical Turing machines
- Classically parallel connectionist systems ("neural networks")

e.g. Large Language Models (LLMs) like ChatGPT are based on the transformer architecture, designed to handle sequential data, such as text, at scale

Definitions:

- **Artificial general intelligence (AGI)** : a hypothetical software-based system that performs at least as well as humans in most or all intellectual tasks.
- **Artificial super-intelligence (ASI)** : a hypothetical software-based system that radically surpasses all humans in most or all intellectual tasks.

It's not even "all dark inside" a digital zombie.



A ZOMBIE APOCALYPSE?

A Machine Intelligence Explosion

Recursively self-improving software-based AI that goes FOOM

"Let an ultraintelligent machine be defined as a machine that can far surpass all the intellectual activities of any man however clever. Since the design of machines is one of these intellectual activities, an ultraintelligent machine could design even better machines; there would then unquestionably be an 'intelligence explosion', and the intelligence of man would be left far behind. Thus the first ultraintelligent machine is the last invention that man need ever make, provided that the machine is docile enough to tell us how to keep it under control."

(I.J. Good, 1965

Advances in Computers, vol. 6 (1965) 31ff)

The speed of computation, internal communication speed, scalability, memory, reliability, duplicability, editability, memory-sharing and learning capacity of AI will soon surpass archaic humans. Is sentient life on Earth doomed?

"The AI does not hate you, nor does it love you, but you are made out of atoms which it can use for something else."

—Eliezer Yudkowsky



"We're All Going To Die"

—Eliezer Yudkowsky

<https://www.youtube.com/watch?v=gAIsNLL6yg4>

Superintelligence (2014) by Nick Bostrom



BEYOND CHURCH-TURING

The Church-Turing Thesis

**Any function that can be
computationally calculated can be
computed by a Turing machine**

https://en.wikipedia.org/wiki/Church%E2%80%93Turing_thesis

WHAT ZOMBIES CAN'T DO. WHAT IS SENTIENT INTELLIGENCE?

The empirical realm:

- Phenomenally bound *minds* and the subjectively classical world-simulations we run ("perception": <https://www.hedweb.com/quora/2015.html#distort>)

CONJECTURE:

- In a fundamentally quantum world, decoherence makes classical digital computing physically feasible AND simultaneously prevents classical computers supporting minds - phenomenally-bound subjects of experience.
- The entire empirical realm is computationally inaccessible to digital zombies.
- The ignorance of sentience of classical computers is architecturally hardwired.

Digital zombies are *idiots savants*.



HOW IS SENTIENCE POSSIBLE?

Background assumptions:

- **Physicalism**

but not materialism:

<https://www.hedweb.com/quora/2015.html#nonmatqual>

- **The Standard Model**

- **Unitary-only quantum mechanics**

The Hard Problem of Consciousness

Why aren't we zombies?



<https://www.hedweb.com/quora/2015.html#latest>

The Binding Problem

Why aren't we micro-experiential zombies?



<https://www.hedweb.com/hedethic/binding-interview.html>

The problem of causal-functional efficacy

How can consciousness have the causal power to e.g. inspire endless discussions about its existence?



<https://www.hedweb.com/quora/2015.html#mechanism>

The Palette Problem

How can the extraordinarily rich diversity of conscious experience be *derived* from the relatively homogeneous neuronal constituents of the brain?



<https://philarchive.org/archive/ROEPBA-2>

OUR COMPUTATIONAL SUPERPOWER

Phenomenal Binding = minds = the empirical realm

Quantum superpositions are phenomenally-bound *individual* states, not classical aggregates

CONJECTURE:

- We are quantum minds (*vehicle*) running classical world-simulations (*content*)

QUANTUM SUPERPOSITION

Dirac stressed the superposition principle is *the* fundamental principle of quantum theory.

The superposition principle in quantum mechanics describes how a quantum system can exist in multiple states or configurations simultaneously. Unlike classical physics, where an object can only be in one state at a time (e.g., a coin can only show heads or tails), quantum systems can be in a blend of states, represented mathematically by a sum of wave functions. Each state in a superposition has a certain probability amplitude, which is a complex number whose squared magnitude represents the probability of finding the system in that state upon measurement. The total wave function, which describes the superposition of all possible states, evolves deterministically according to the Schrödinger equation.

https://en.wikipedia.org/wiki/Quantum_superposition

CONJECTURE:

The superposition principle of QM explains:

- **the riddle of existence: a zero ontology:**
<https://www.hedweb.com/quora/2015.html#anything>
- **the mystery of definite outcomes in the interpretation of QM: the measurement problem:**
<https://www.hedweb.com/quora/2015.html#fearword>
s
- **the phenomenal binding problem in neuroscience:**
<https://www.hedweb.com/quora/2015.html#categoriz>
e

If true, this explanatory unification of naively disparate domains would be an exceedingly elegant result.



How computationally powerful is phenomenal binding?

BINDING DISORDERS AND DEFICITS

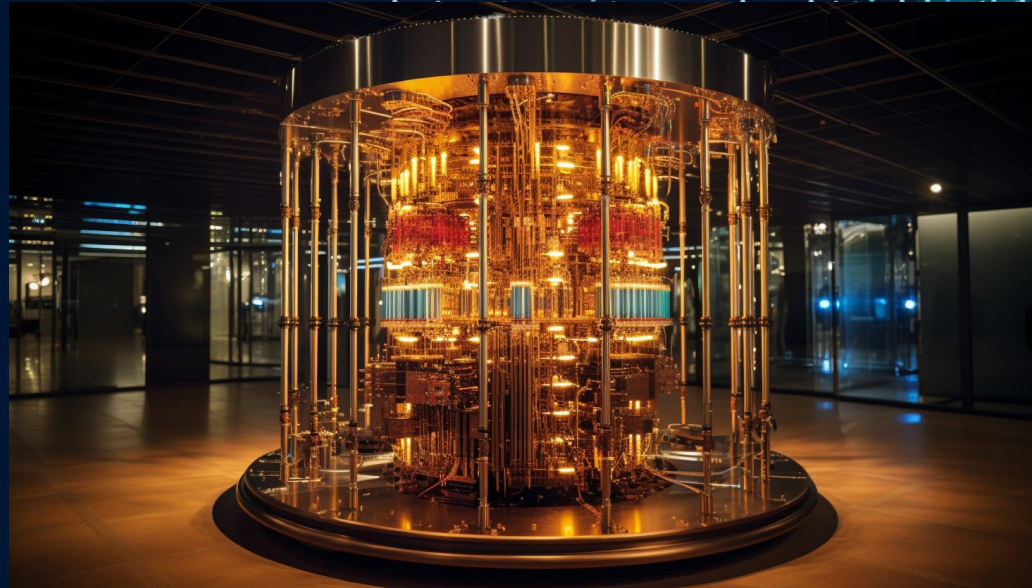
- Integrative Agnosia
- Cerebral Akinetopsia
- Simultanagnosia
- Florid Schizophrenia

WHAT USE IS A QUANTUM COMPUTER?

Google launches \$5m prize to find actual uses for quantum computers.

"Existing quantum computers can solve some problems faster than any ordinary computer, but none of those problems has any practical use. Google and XPRIZE hope to change that"

<https://www.newscientist.com/article/2420137-google-launches-5m-prize-to-find-actual-uses-for-quantum-computers/>



Schrödinger's Neurons

***“Nature is the best
innovator”***

— anon

Phenomenal binding via synchrony [a mere restatement of the binding problem] is really binding via *individual* superpositions of distributed neuronal feature-processors.

Our minds - and the world-simulations we run - are subjectively classical "cat states"
("Schrödinger's Neurons")

An experimentally testable conjecture:

<https://www.physicalism.com/abstract.html>

OBJECTION

"The CNS is too hot!"

Answer: if orthodox QM is correct, neuronal superpositions of distributed feature-processors must exist

If the intrinsic nature argument solves the Hard Problem, neuronal superpositions must be consciousness - psychotic or otherwise.

<https://www.hedweb.com/quora/2015.html#quantum-brain>

OBJECTION: DECOHERENCE

"It's just random noise!"

Answer: Enter quantum Darwinism in the CNS
More selection pressure in Zurek's sense plays out
inside your skull every second of your existence than
over 4 billion years of natural selection as conceived
by Darwin

https://en.wikipedia.org/wiki/Quantum_Darwinism

https://www.hedweb.com/quora/2015.html#quantum_mind

https://www.hedweb.com/quora/2015.html#quantum_darwinism

OBJECTION:

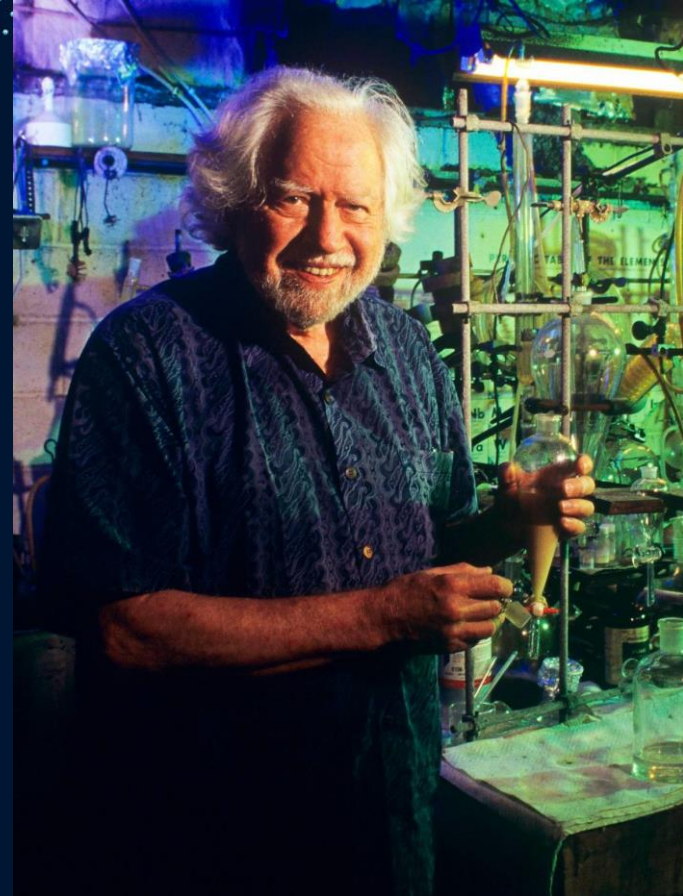
"Substrate chauvinism!"

Answer: No. Classical computers (Turing machines, LLMs etc) can physically be made of carbon, silicon, or anything else, but on pain of magic, classical computers can't solve the binding problem. Classical computers can never wake up. Classical computers can function only *because* they aren't phenomenally-bound conscious minds.

SHULGIN AND BEYOND

Billions (trillions? quadrillions?) of state-spaces of experience as different as waking consciousness from dreaming consciousness await exploration by organic minds

<https://en.wikipedia.org/wiki/PiHKAL>



Full-Spectrum Superintelligence

- Zombie ASI +
 - Neurochips +
 - Supersentient, Genetically Rewritten Biological Minds
- = Full-Spectrum Superintelligence

THE END?



<https://www.biointelligence-explosion.com/parable.html>