Hydropsychism: A Water of Mind

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Abstract

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1 Abstract

The mystery of consciousness has baffled philosophers for centuries, yet Hard Problems remain. Current computational models rely on a strong emergentist dualism, treating mind as a mathematical abstraction with no causal effect on natural selection. Panpsychist models are elegant but fail to explain how subjective experience integrates into unified selves.

This paper proposes **hydropsychism** - the hypothesis that **the self is simply the water around neurons**. This view is a simple panpsychist model that explains evolution of mind from the earliest stages, lacks paradoxes, matches observation and leads to testable predictions. This opens up the door to building conscious machines.

2 Metaphysics

Cogito, ergo sum was a decent starting point, but Descartes didn't go far enough; there are some other things that I am[1]. I'm in a location, I experience my surroundings and the passage of time, I feel, and more importantly - I choose how to move; I have will. And sometimes, the will to think.

Monists, idealists and panpsychists successfully applied Occam's razor to the thinking part, and reasonably concluded that there's no need for two different mind and matter stuffs. Matter is what mind looks like from a distance, or, when extra generous with the blade, it is the totality of existence itself[2]. And yet there's still much more for a reductionist to slice away. An objective reality can emerge from a web of subjective interactions, and having experienced both of those directly it is rational to consider the objective world a second-order effect. Space can be framed so that distance is a relative compatability of the things within it - the likelihood of interactions between them - rather than a boundless and ghostly container. And as importantly as before, we know that choice is the cause of our actions, and so without evidence to the contrary, we should assume other stuff is its own first-mover.

If choice rather than commandment is the cause of actions, then physical laws are nothing more than our own observations; all we can observe is the aggregate preference of mind-stuff, statistically.

Having left the concept of natural laws behind, and looking back from a distance, they resemble a cognitive bias at the heart of scientific tradition; the quest to discover the laws of a rule-giver it has long forsaken[3]. This path leads us to a model of an entirely subjective, relative reality, one where not only a creator and His laws are unknowable, but one without need for a physical realm at all.

In this new model, mind-stuff is the only knowable stuff, and it acts according to its will; it is and it does as it feels.

3 Evolution of Mind

This position of "doing as it feels" reveals a simple mechanism by which mind can evolve, and from this vantage point we can see all the way back to abiogenesis.

When stuff chooses how to act based on what's around it, its actions then change its surroundings, which in turn changes its preferences. This simple process provides a feedback loop where structure, feeling and action can be naturally selected. With selection pressures able to act directly on feelings and choices, they can evolve structurally, step by step - a process that is required for sapient life to emerge[4].

[1] René Descartes, *Meditations on First Philosophy*, 1641. Available at gutenberg.org.

[2] Paul Budnik, *Justifying and Exploring Realistic Monism*, 2001. Available at philpapers.org.

[3] Gareth Davidson, *Musings on Cargo Cult Consiousness*, 2024. Available at lesswrong.org.

[4] Charles Darwin, *On the Origin of Species by Means of Natural Selection*, 1859. Available at gutenberg.org.

Through this process, the simplest molecules with the weakest preferences can be honed, through their survival, into complex systems with staunch opinions and a powerful force of will.

If we lived in a realm of experience and agency, we would expect to see no boundary where they emerge. No matter how hard we look, or how strongly we believe there is one, agency should extend all the way to the bottom. The will to move would be present (though less coordinated) in not just organisms without nervous systems, but also within their cytoplasm. An amoeba's pseudopods should extend and retract with an apparent intent, and white blood cells might chase invaders with apparent urgency[5]. If Brownian motion is choice, then we should not be surprised to see the inner workings of cells show an eerie similarity to creatures at larger scales[6]. And it should apply across the scale of time too; viewed at high speed, plants might writhe and thrash around like animals struggling to survive[7]. Such anthropomorphisms do not meet the high bar of scientific proof, yet these observations provide clues that once seen, are very difficult to unsee.

3.1 Supernatural Selection

There's no reason why animals with brains couldn't evolve in a deterministic universe, digital simulations suggest that they would[8]. But in such systems - ones without free will - there are no selection pressures to ratchet up the complexity of mind, the richness of subjective experience. So what would evolve is control-calculation organs rather than feeling-about-moving ones. And while a sufficiently complex chooser may choose to calculate, there is no type of calculator that can calculate to choose.

Deterministic models like computationalism and mathematical functionalism are free from will, and so offer no causal mechanism through which mind can evolve. Until one can be demonstrated, these symbolic dualisms are functionally indistinguishable from evolution denial[9].

4 Informational Awareness

When described in terms of mass and electromagetism, of particles and forces, we can describe and predict the behaviour of stuff, but this cannot explain the cause of its behaviour. By definition, a subjective experience cannot be measured objectively, so how another system feels will be forever beyond empiricism's reach. This tautology cannot be escaped even if we invent technology to connect other systems to our brains, as a shared experience is no longer an entirely subjective one. With this in mind, we should consider that subjectivity itself is unlikely to be absolute, like all other things it's relative and unevenly distributed - a matter of perspective.

Choices give some insight into the degree of preference or ignorance of a chooser, though how much of each are involved is anyone's guess. We could say that atoms on the surface of a gold bar are unaware of the call of the sky, or strongly prefer to stay where they are. Neutrinos could be said to be either fickle or free, with no way to know which.

[5]Unknown, *A neutrophil chasing Staphylococcus aureus*. Available at youtube.com.

[6]Harvard University, XVIVO, *The Inner Life of the Cell Animation*, 2006. Available at xvivo.com.

[7]BBC Studios, *The Private Life of Plants*, 2007. Clip available at youtube.com.

[8]Karl Sims, *Evolving 3D Morphology and Behavior by Competition*, 1994. Available at Karl Sims' website.

[9]Gareth Davidson, *Computationalism is Evolution Denial*, 2024. Available at bitplane.net

This somewhat absurd framing grants an insight: if stuff is and does as it feels, then in one sense or another it feels little about what it *doesn't* do.

This "actions as interaction choices" stance also provides a useful framing for both quantum physics and information theory. Randomness and unknowableness are functionally equivalent, and we know that unknowableness exists; randomness itself does not survive the razor. These and entropy can be described as limits to possible awareness, as a minimum possible experiential distance from an observer. Both superposition and entanglement can be framed as an experiential exclusion from a decision chain. And if forces themselves are preferences, then their carriers are decisions rather than particles.

The more options a system can express, the less predictable it will be. So knowing what something can do puts bounds on its capacity for either agency or awareness. So, without assuming all men are Socrates, it's quite reasonable to expect fluids to be far more aware - or at least have far more capacity for awareness - than solids, which by comparison express no opinion.

5 Hydropsychism

Life evolved on Earth through action, and if action is choice then water played the lead role. This makes life's story less one about chemicals stumbling upon awareness and more one of taming the ocean's will - dividing, conquering, and having it drag itself onto land. It's the water that flows and moves, it folds and unfolds the proteins by pulling them together and pushing them apart. Hydrophobic and hydrophilic forces give all cells their structure, but it's liquids not lipids that express philias and phobias. Water is the solvent of all enzymes, the medium that transcribes our DNA[10], and its the fluidity of water through which ribozymes mediate reactions, having far less of their own. Fish don't realize they're in water. The same can be said of organic chemistry.

Our throne of mind was built one drip at a time as nature slurped its way up the gradient of complexity. This model's seat of consciousness is one of fluid dynamics rather than quantum ones, one made of ordinary physical processes that we refer to as physical law. It does not rest on the eternal Platonic forms of symbolic dualism, nor the ignorance of complexity. No need to *mind the gap*[11], it's just plain old wet stuff, whatever stuff is anyway.

So, aside from determinism being functionally equivalent to evolution denial, the central point is that neurons don't provide consciousness, they manipulate the fluid around them, changing the texture of a liquid mind-stuff that pre-dates evolution.

There are two obvious mechanisms that could lead to this, the most simple - and the one taken so far - is that fluids as a whole have experience. A less direct one is that water's hexagonal structure, when put under pressure from sodium ions rushing into gates along neural axons force a decison on its movement, causing it to become aware of the shape of the neuron's outer surface, and by extension the network as a whole.

These two viewpoints result in very different outcomes. The former needs no special quantum behaviour, being pure fluid-dynamics it can be explained in terms of classical physics. A mind propagating in a geometric fashion is a strong deviation from it traversing the network itself, leading to many interesting predictions and a larger space

[10]Martin Egli et al., "Neutrons take a deep dive into water networks surrounding DNA," *Nucleic Acids Research*, 2021. Available at phys.org

[11]Read as if Dawkins or Chalmers had a side hustle as safety announcers for the London underground.

for experimentation. It's also simple and broadly accessible, both to laypeople and to the components that formed the earliest stages of life.

In the latter, mind flows along the neurons themselves in the usual way, but relies on unexplained quantum wierdness; collective behaviour in transition state of structured water under pressure. This is enticing and leads to implications in physics, but is far more difficult to observe and to reason about. For this reason, I will focus mostly focus on the low hanging fruit.

6 Predictions for a Fluid Dynamic Model

A fluid-dynamic model of consciousness is the most falsifiable one, but as a lay-hacker-philosopher rather than a trained neurologist, I can only offer intuition-based tests rather than highly technical ones. Regardless, I expect at least some of the the following to be empirically testable.

Let's assume that neuron activation disturbs the fluid physically, amplifying and dampening waves through interference patterns at different frequencies. That the neural network's signals are the mechanism of vibration, but also compute and transmit information about where to excert these pressures.

6.1 Geometric Propagation

Mind ought to be affected by processes that extend beyond the speed of neural activations alone, which can only exert force laterally from the axons. While neural signals propagate at known speeds, we might expect to also observe manifestations of awareness that involve interactions occurring at speeds approaching that of sound waves in saline, rather than purely electrochemical propagation[12].

Network regions that provide high-resolution perceptual experiences ought to be either denser or more structured[13], and we may expect to see evidence of tightly synchronized areas[14] that are closer by sea than by land.

Neurons should fire in rhythmic patterns[15], with lower frequency waves having broader and more global effects on perception[16]. Lower frequency oscillations, such as alpha waves (˜8–12 Hz), are associated with large-scale neural synchrony and modulate distant brain regions[17], whereas higher frequency oscillations, like gamma waves (˜30–100 Hz), are linked to localized sensory processing[18].

[12]Quentin Barthelemy & Thibaud Proix, *Large-scale brain modeling links fluid dynamics to brain responsiveness and resting-state activity*, 2023. bioRxiv. https://doi.org/10.1101/2023.04.18.537321

[13]F. Akbari et al., *Increasing electrode density improves speech decoding accuracy in neural recordings*, 2023. Nature Communications. https://www.nature.com/articles/s41467-023-42555-1

[14]T. A. Melloni et al., *Neural synchronization distinguishes conscious perception from unconscious processing*, 2019. PMC. https://pmc.ncbi.nlm.nih.gov/articles/PMC6672558/

[15]György Buzsáki, *Rhythms of the Brain*, 2006. Oxford University Press. ISBN:9780195301069.

[16]Wolfgang Klimesch, *EEG alpha and theta oscillations reflect cognitive and memory performance: a review and analysis*, 1999. Brain Research Reviews. https://doi.org/10.1016/S0165-0173(98)00056-3

[17]Gregor Thut et al., *Alpha-band electroencephalographic activity over occipital cortex indexes visuospatial attention bias and predicts visual target detection*, 2006. Journal of Neuroscience. https://doi.org/10.1523/JNEUROSCI.0875-06.2006

[18]Pascal Fries, *A mechanism for cognitive dynamics: neuronal communication through neuronal coherence*, 2005. Trends in Cognitive Sciences. https://doi.org/10.1016/j.tics.2005.10.011

We should expect learning processes like memory formation to reshape geometric areas as well as network connections[19]. These changes aren't just a by-product of chemical signals leaking into the fluid but an active mechanism of memory itself[20]. The brain's extracellular matrix (ECM) provides more than scaffolding—it dynamically regulates synaptic plasticity, influencing how memories form and persist[21]. Memory isn't just a network effect; it's a structural shift in the brain's landscape.

If geometry plays a role beyond just topology, then altering the physical position of neurons - without changing network connections - could have perceptual effects[22]. While traditional models focus on connectivity alone, emerging research suggests that spatial positioning influences neural signaling, potentially shaping perception[23]. This remains an open question but offers a testable hypothesis for future research.

6.2 Interference Mechanisms

If awareness, or the cause of it, propagates outwards from the axons rather than just along the network, then there must be control mechanisms to perturb the patterns precisely, and lots of them since they evolved by chance.

We should expect certain ratios to be present to support this functionality, such as factors and co-prime relationships between the speed of waves, neuron activations, and node distances[24]. Harmonic relationships between oscillations, like simple integer ratios (e.g., 1:2), facilitate synchronization and efficient communication between different brain regions[25]. Ways to dampen, support, reflect, focus, constrain, and promote propagation should be built into the spatial arrangement of the network.

These effects would likely be moderated by chemical and structural compositions and densities[26]. They may be most noticeable at boundaries of regions we know to be responsible for specific perceptual effects, where differences in tissue composition and structure alter signal dynamics[27].

The importance of spatial positioning and firing rhythms should have more local importance to higher frequency and higher density waves. Effects that reach further ought to need less synchronization and allow greater margin for error[28]. Highly textured

[19] *Brain Structure and Function: Insights from Chemical Neuroanatomy*, 2023. PMC. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10142941/

[20] *Brain Extracellular Matrix in Neurodegeneration*, 2009. PMC. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2742568/

[21] William Mau, Michael E. Hasselmo, Denise J. Cai, *The brain in motion: How ensemble fluidity drives memory-updating and flexibility*, 2020. eLife. https://doi.org/10.7554/eLife.63550

[22] H. K. Chklovskii et al., *Cortical geometry and the evolution of brain wiring*, 2002. Nature Neuroscience. https://doi.org/10.1038/nn1016

[23] J. D. Murray et al., *Influence of cortical geometry on local and global dynamics in the brain*, 2014. Journal of Neuroscience. https://doi.org/10.1523/JNEUROSCI.0753-14.2014

[24] M. A. Kramer et al., *Rhythmic coordination of local field potentials in the human brain predicts memory formation*, 2019. Journal of Neuroscience. https://www.jneurosci.org/content/39/32/6291

[25] A. O. Tarankova et al., *Influence of spatial neuronal connectivity on network dynamics*, 2023. Physical Review Research. https://link.aps.org/doi/10.1103/PhysRevResearch.5.013005

[26] *Brain Structure and Function: Insights from Chemical Neuroanatomy*, 2023. PMC. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10142941/

[27] J. M. Kennedy et al., *V1 neurons are tuned to perceptual borders in natural scenes*, 2023. PNAS. https://www.pnas.org/doi/10.1073/pnas.2221623121

[28] B. Zhang et al., *Widespread theta synchrony and high-frequency desynchronization underlies enhanced cognition*, 2017. Nature Communications. https://www.nature.com/articles/s41467-017-01763-2

experiences might use tightly synchronized, denser structures that increase resolution through phase relationships[29].

We'd expect some forms of activity to be muted or shielded, like when a neuron is used to route signals to another area without disturbing the local fluid. Neural backpropagation provides an example of this, where A-type potassium channels regulate returning action potentials to prevent interference with local processing[30]. Similarly, patterns of neurons may exist to force ripples along a certain path while dampening them along others, a mechanism resembling 'communication through coherence' (CTC), where oscillatory synchronization ensures selective signal transmission[31].

6.3 Physical Effects on Perception

Ultrasound or other methods of inducing high frequency vibrations should cause cognitive effects[32]. Beta and alpha waves would also feel smooth and sharp respectively[33].

Brain pressure changes might be destructive to consciousness itself rather than just the brain[34]. Perceptual awareness ought to be more robust than cognitive function; the neural fibres that mediate complexity of experience have no bearing on its physical existence[35].

Hallucinogenics of different types would likely have perceptual textures that are experiences of the structure of the brain's volume, rather than its neural network[36].

Some types of anesthetics may inhibit consciousness physically, through effects on fluid dynamics[37], as should chemicals to do with feelings such as pleasure and pain. We might expect that chemicals related to strong feelings to be similarly disruptive to liquids.

The experiences of being human should feel fluid, rather than jittery, discrete firings of neurons. We would expect there to be no specific seat of consciousness if it were fluid[38]. It should be possible to measure consciousness and unconsciousness vibrationally, and by applying vibrations in the right places, it ought to be possible to invoke wakefulness[39], and with enough control, even directly create complex subjective experiences[40].

[29]T. Staresina et al., *High frequency oscillations in human memory and cognition*, 2021. PMC. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC11370809/

[30]M. Hausser, B. Spruston, & G. Stuart, *Diversity and Dynamics of Dendritic Signaling*, 2000. Science. https://doi.org/10.1126/science.290.5492.739

[31]P. Fries, *Rhythms for Cognition: Communication through Coherence*, 2015. Nature Reviews Neuroscience. https://pmc.ncbi.nlm.nih.gov/articles/PMC3493486/

[32]J. Zachs et al., *Noninvasive ultrasound stimulation of the striatum increases motivation and cognitive performance in primates*, 2022. Nature Neuroscience. https://pubmed.ncbi.nlm.nih.gov/35092823/

[33]*Understanding Alpha and Beta Brain Waves*, 2021. BitBrain. https://www.bitbrain.com/blog/alpha-brain-waves

[34]M. T. Kaye et al., *Intracranial Pressure and Its Effects on Consciousness*, 2021. NCBI Bookshelf. https://www.ncbi.nlm.nih.gov/books/NBK482119/

[35]T. Odegaard et al., *Perceptual awareness and cognitive function: Dissociations and resilience*, 2020. PMC. https://pmc.ncbi.nlm.nih.gov/articles/PMC7326348/

[36]The organic, fluid texture of mind was my own experience, others may disagree.

[37]P. Seelig, *Anesthetic mechanisms: Membrane expansion vs. receptor interactions*, 2016. Journal of Liposome Research. https://www.tandfonline.com/doi/full/10.1080/19420889.2016.1238118

[38]Daniel Dennett, *Consciousness Explained*, 1991. Little, Brown and Co. ISBN: 978-0316180665.

[39]A. Haladjian et al., *Mechanical vibrations enhance sleep quality through closed-loop stimulation*, 2024. Frontiers in Neuroscience. https://www.frontiersin.org/journals/neuroscience/articles/10.3389/fnins.2024.1456237/full

[40]S. R. Maddison et al., *Vibration therapy promotes sleep in humans and animal models*, 2021. PMC. https://pmc.ncbi.nl

7 The Structural Experience of Dimensionality

Given that π can be explained in terms of collision[41], it's reasonable to assume vibration is the cause of space. And it would make sense that directions are only separate quantities for the sake of convenience; unlike directions, one cannot rotate from 4 cats into 4 dogs.

If distance between objects is a proxy to preference, then spacetime does not exist as a continuum but instead emerges from the things "within" it. If so, the hexagonal lattice of water may align with the 3 spatial dimensions themselves, in a way that resonates with, and provides access to, the preferences that we observe as space. This may provide a mechanism whereby pressure waves within water have direct causal effect on the experience and awareness that sits below physical space.

8 Conclusion: Little Bags of Thinking Water

For the past 20 years, I'd assumed that human consciousness the sweet song of a wind of mind whistling through the structure of brains. A mind made of liquid makes this aether material, and something we know to exist.

Pratchett described human beings as "little bags of thinking water held up briefly by fragile accumulations of calcium"[42], and despite us mostly believing we were the bag, it turns out he may have been right all along.

[41] G. Galperin, *Playing Pool with* π. DOI:10.1070/RD2003v008n04ABEH000252

[42] Terry Pratchett, *Pyramids*, 1989. ISBN:9780575044630