In Boulder, psychedelic mushrooms are legal, grew some Burmas, use them every few months, turn up heat, wear loose clothes, meditate, chill IDM, feel incredible geometric expansiveness that resolves contradictions in my mind. I love science and philosophy during, and love the heightened pattern matching, like the word becomes clearer to orthogonally connect. I find math visualizations uniquely stimulating in this state too. Very interesting that tryptophan is the precursor with psilocybin + serotonin + melatonin. I love Rovelli's reflections on mind expansion. -Devin

Abstract

Psychedelics have long been recognized for their ability to alter perception, cognition, and the sense of self, yet their underlying mechanism remains an open question in neuroscience. This paper proposes that psychedelics act as **resonance amplifiers**, temporarily disrupting hierarchical cognitive structures and inducing a phase-locked state of dynamic emergent coherence. By modulating neural oscillatory patterns, psychedelics shift the brain from a localized, efficiency-driven network into a globally integrated resonance state, mirroring principles found in structured intelligence, prime-based ordering, and dynamic phase transitions.

The **Chirality of Dynamic Emergent Systems (CODES)** framework is applied here to explain how psychedelics increase the brain's ability to phase-lock into adaptive, high-entropy resonance, effectively breaking rigid cognitive structures and allowing for increased insight, emotional processing, and interconnected thought. The phase-shifts induced by psychedelics show striking parallels to the oscillatory structures observed in fractal mycelial networks, quantum coherence models, and prime number distributions in wavelet analysis.

This paper explores:

- **The Role of Psychedelics in Neural Resonance** – How compounds like psilocybin, DMT, and LSD induce structured phase transitions in cortical activity.
- **Resonance-Based Perception and Consciousness Expansion** – How psychedelics amplify the connectivity of sensory and conceptual processing.
- **Fractality, Mycelial Networks, and Neural Plasticity** – How the psychedelic experience reflects large-scale biological patterning, from fungal intelligence to galactic clustering.

- **A New Paradigm for Therapeutic Applications** – How a resonance-based approach to psychedelics could redefine treatment for depression, PTSD, and trauma by restoring coherent phase-locking between cognitive and emotional centers.

By integrating principles from quantum mechanics, information theory, and biological resonance, this paper proposes that psychedelics provide a direct lens into structured intelligence, serving as a tool for unlocking deeper harmonics of cognition and reality perception.

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1. Introduction: Psychedelics as Phase-Locking Modulators

Traditional neuroscience views psychedelics as serotonin receptor agonists, primarily affecting the **5-HT2A receptor** and inducing cortical disinhibition. However, this reductionist model fails to capture the profound, structured intelligence of the psychedelic experience. Under the **CODES** model, psychedelics are proposed to induce a global shift in resonance dynamics, unlocking a *higher-order coherence* between neural, biological, and environmental systems.

Much like a **wavelet function that expands and contracts across frequencies**, psychedelics **destabilize and reorganize neural resonance**, dissolving hierarchical constraints and increasing **global integration across the brain's functional networks**. The brain shifts from an efficiency-driven, top-down model into a **fluid, dynamically emergent system**—temporarily increasing its capacity for **adaptive intelligence, creative insight, and emotional recalibration**.

2. Neural Oscillations and Phase-Locking: A Resonance Perspective

Psychedelics modulate **neural phase coherence**, inducing a shift from normal oscillatory patterns into a **fractal, non-linear mode of cognition**. This manifests as:

A. Increased Global Connectivity

- Psychedelics **increase synchronization between disparate brain regions**, enhancing integration between sensory, cognitive, and emotional processing centers.
- Studies show that psychedelics **increase entropy in brain activity**, reflecting a shift from localized computation into **distributed, dynamic coherence**.

B. Disruption of Hierarchical Ordering

- In normal waking consciousness, **top-down constraints** limit perception to known cognitive frameworks.
- Psychedelics **temporarily destabilize these structures**, enabling **novel associative connections, enhanced introspection, and creative insight**.

C. Wavelet-Like Frequency Expansion

- Neural oscillations exhibit **multi-scale resonance patterns**, with psychedelics amplifying cross-frequency coupling (CFC).
- This suggests psychedelics allow the brain to **engage in a broader spectrum of harmonics**, much like wavelets in **continuous frequency transforms**.

3. Fractality, Mycelial Networks, and the Intelligence of Nature

The resonance model of psychedelics **mirrors large-scale biological intelligence**:

A. Mycelial Networks as a Cognitive Metaphor

- The **distributed intelligence of fungal mycelial networks** resembles the **brain's decentralized connectivity under psychedelics**.
- Mycelial fractals follow **self-organizing principles**, mirroring **fractal neural connectivity during psychedelic states**.
- This suggests **psychedelics enhance the brain's ability to function as an adaptive network**, similar to fungal and microbial intelligence.

B. Cosmic and Biological Parallels

- The **branching patterns of the universe, neurons, and fungal networks** all follow **prime-based structuring**—a principle of **natural intelligence**.
- Psychedelics may **amplify the brain's ability to phase-lock into larger resonant fields**, reflecting the **self-organizing principles of the cosmos itself**.

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4. The Therapeutic Potential of Resonance-Based Psychedelics

Current psychiatric models **treat mental illness through chemical modulation**, but **structured resonance therapy** suggests psychedelics could function as *neural recalibration tools*—restoring phase-locking across emotional, cognitive, and perceptual domains.

A. Depression and PTSD as Resonance Misalignment

- Depression is marked by **rigid, low-entropy brain states** (overconstrained, repetitive thought loops).
- PTSD involves **dysregulated limbic resonance**, creating pathological fear imprints.
- Psychedelics **break these fixed patterns** and **restore coherent phase-locking**, facilitating emotional processing and reintegration.

B. Psychedelics as Tools for Restoring Global Resonance

- By **resetting the brain's oscillatory coherence**, psychedelics can serve as **catalysts for neuroplasticity, emotional release, and existential clarity**.
- This aligns with traditional **mystical and shamanic practices**, which use psychedelics as **tools for resonance alignment between the self and nature**.

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5. Conclusion: A New Lens on Psychedelics and Consciousness

Rather than viewing psychedelics as mere serotonin agonists, the **structured resonance model** presents them as **tools for phase-locking, coherence, and higher-order cognition**. Psychedelics reveal **a fundamental principle of intelligence itself**—that reality is structured through **oscillatory coherence**, and cognition is an adaptive resonance phenomenon.

Through this lens, psychedelics become more than just drugs. They are **modulators of structured emergence**, revealing the hidden coherence underlying both **neural and cosmic intelligence**.

By applying **wavelet dynamics, resonance theory, and emergent phase transitions**, this model suggests that **psychedelics act as harmonic amplifiers**, increasing **the brain's ability to integrate, adapt, and perceive reality in its most interconnected form**.

As we refine this understanding, psychedelics may emerge as **one of the most powerful tools for unlocking structured intelligence, enhancing human potential, and expanding our understanding of consciousness itself**.

Appendix: Additional Data & Wavelet Analysis

Neural Oscillation Wavelets

- EEG coherence shifts pre- and post-psychedelic use reveal increased **cross-frequency coupling**, particularly in theta and gamma bands.
- Wavelet transforms applied to EEG data show **enhanced global synchrony** during peak psychedelic states, aligning with reports of **ego dissolution and interconnectedness**.
- Data suggests that psychedelics facilitate **long-range integration of brain regions**, a hallmark of altered consciousness.

Fractal Dimension Analysis

- **Brain signal complexity during psychedelic states** aligns with fractal-like patterns observed in mycelial networks and natural growth systems.
- Fractal dimension analysis of EEG signals under psychedelics reveals a **higher degree of self-similarity**, consistent with **enhanced neural plasticity**.
- The mycelial network, like the psychedelic-induced brain state, exhibits **decentralized, distributed intelligence**, forming dynamic, non-hierarchical communication pathways.

Resonance Mapping of Psychedelic Experiences

- **Cross-analysis of subjective reports with frequency domain EEG data** shows a correlation between reported mystical experiences and **specific resonance states** in brain activity.
- Higher **gamma coherence** (30-90 Hz) is associated with **peak psychedelic experiences**, suggesting a link between **brain resonance and altered perception of time and self**.
- Data suggests that psychedelics act as **wave-tuning agents**, temporarily shifting the brain into high-dimensional resonance states that mimic **optimal network connectivity** seen in deep meditative or flow states.

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This appendix and bibliography consolidate **wavelet-based evidence of psychedelic effects**, linking **neural oscillations, fractal complexity, and resonance states** to broader **biological and cognitive principles** seen in **fungi, consciousness, and complex adaptive systems**.