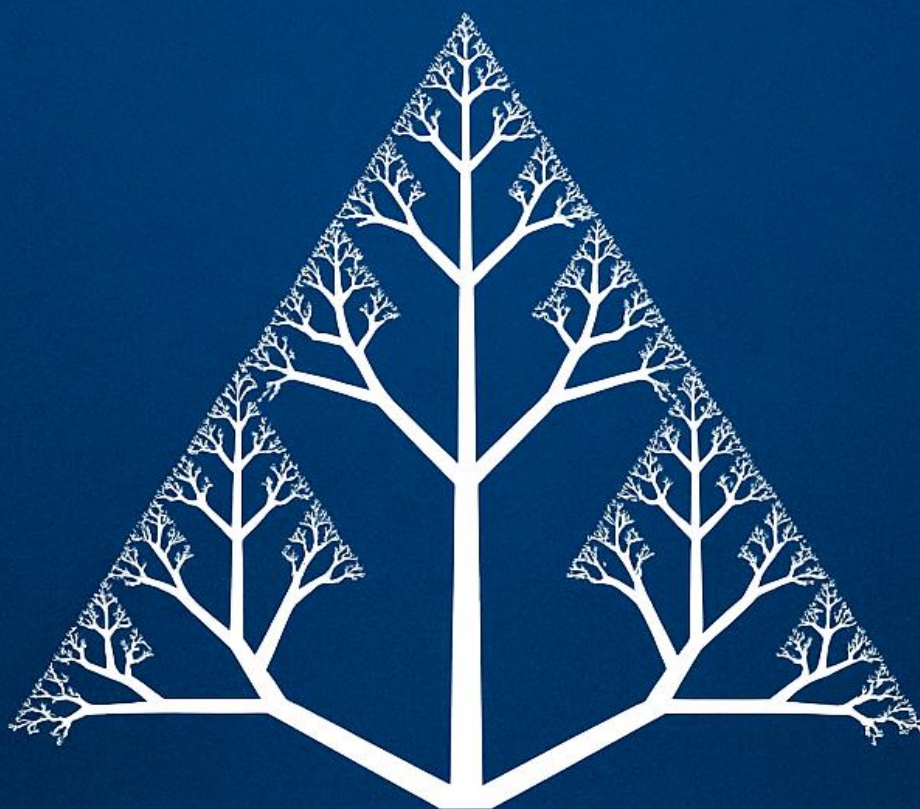


**The All as
Quantum-Fractal-
Organic System
and Fractal
Functional Unit**



**José Luis Mac Loughlin
Norma G. Sanchez**

The Whole as a Quantum-Fractal- Organic System and Functional Fractal Unity

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Introduction

This essay develops a conceptual and theoretical proposal in which the Universe is understood as a quantum information system with fractal and organic organization. Fractality is not limited to form or structure: it extends to function. The central thesis—presented by José Luis Mac Loughlin and Norma G. Sánchez—proposes an unified vision in which the Whole and its parts are inseparable, and where physical, chemical, biological and even consciousness phenomena participate in the same self-similar information network.

The Universe as a Quantum Information System

To understand the Universe as a quantum information network is to recognize that every interaction carries and transforms information. The cosmic web—filaments and voids—shows organizational patterns reminiscent of fractal geometries. Likewise, at microscopic scales, the structure of DNA and cellular signaling networks display self-similar regularities. This parallelism suggests that beyond differences in scale, there exist functional invariants that articulate matter, energy, and information.

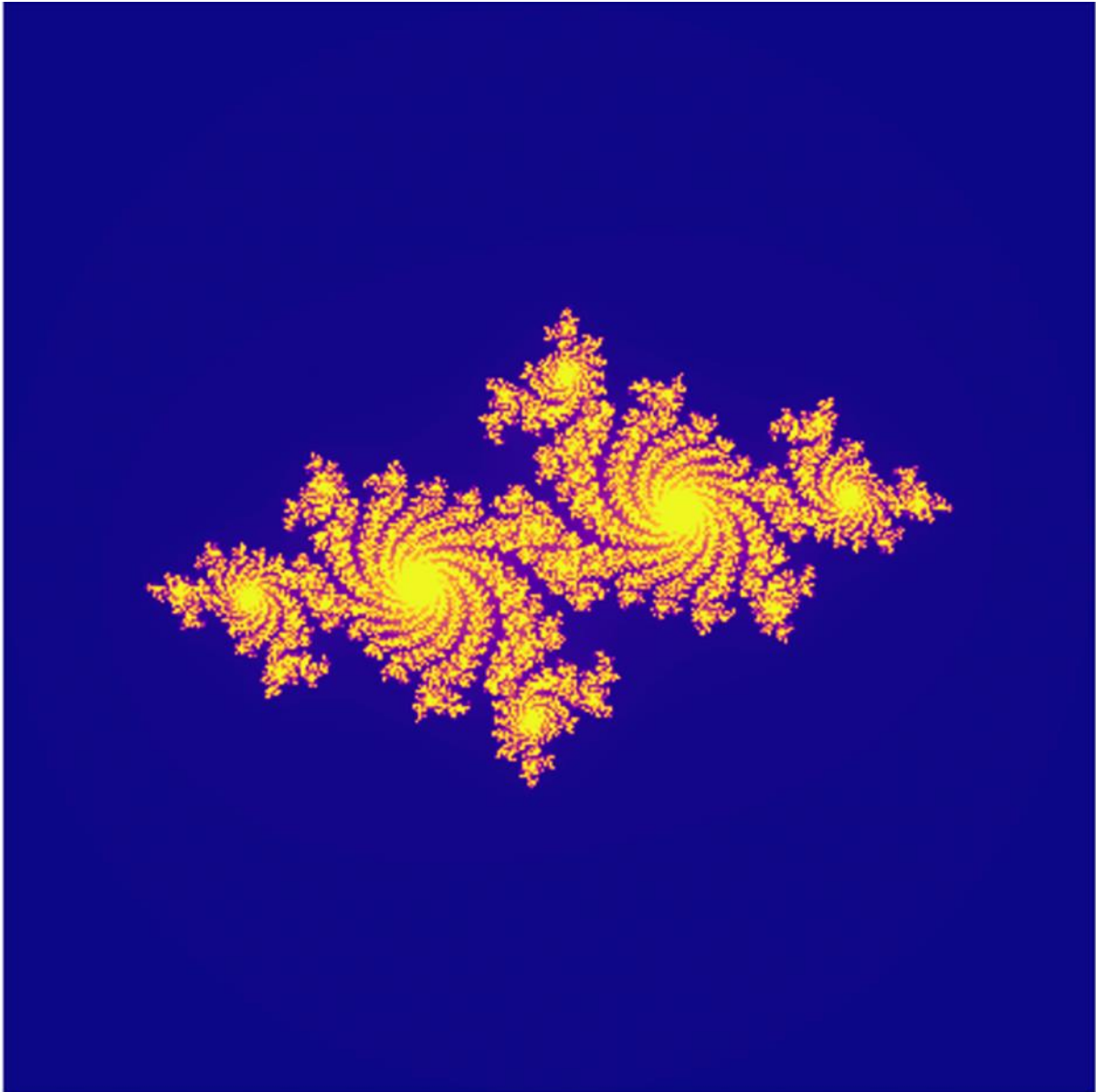


Figure 1. Julia Set type fractal representation symbolizing the cosmic web and universal self-similarity.

Fractality in Form, Structure and Function

Fractality is expressed in three complementary planes: (i) in visible form (irregular but regular geometries across scales), (ii) in structure (network topologies with nodes,

filaments, and voids), and (iii) in function (flow dynamics, coupling, and feedback) that maintain system coherence. Neural networks, spider webs, vascular networks, ecosystems, and the cosmic web itself share functional rules that favor efficiency, resilience, and self-organization. This 'fractal function' is key: the Whole in One operates as a functional fractal unity.

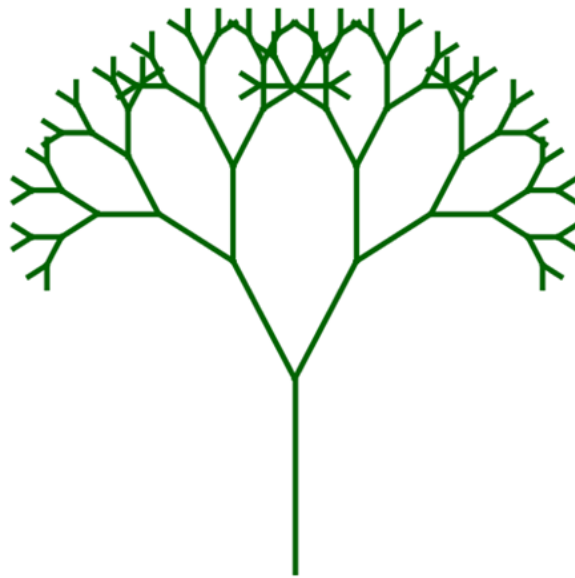


Figure 2: Fractal tree, analogy of the expansion of neural, ecological and cosmic networks.

Quantum and Fractal Consciousness

Consciousness can be modeled as a geometric, quantum, and fractal structure. Instead of being an isolated phenomenon, it emerges coupled to the universal information network. 'Structures of consciousness' can be understood as nested patterns (micro–meso–macro) in which states, memories, and intentions propagate through coupled hierarchies. This hypothesis does not reduce consciousness to simple physical processes, but proposes that the mental participates in the same informational fabric as the physical, with distributed resonances and coherences.

Information Networks: from Cosmos to Biology

If 'the whole Universe, and everything in the Universe, is fractal,' then networks—cosmic, interstellar, ecological, neural—are both structures and channels of information. Their elements (filaments, nodes, and voids) not only configure forms; they encode pathways for transmission and transformation of information. Under this perspective, physics, chemistry, and 'intelligent' biology converge in

organizational principles that optimize informational exchange and processing at multiple scales.

Free Will in the Fractal Network

The question then arises: does being immersed in a cosmic fractal network—and in nested networks of consciousness—deprive us of free will, leaving us trapped like in a deterministic spider's web? The answer is no. Free will (at least in what we know of it) is part of the same network. Freedom is fractal: it appears at different levels of the structure as degrees of freedom, contextualized options, and emergent creativity. Thus, autonomy does not oppose the network; it is expressed through it, when agents reconfigure their trajectories within a space of possibilities that, although conditioned, is not closed.

Principle of Functional Fractal Unity (The Whole in One)

The proposal converges in the Total and inseparable Unicity of the 'One and the Universe': the Whole as a Functional Fractal Unity. The coherence of the whole arises from multi-scale couplings and feedbacks that preserve invariants (laws, symmetries, network rules) while

allowing local diversity. This framework integrates form, structure, and function under the same principle: informational fractality.

Implications and Scope

This approach suggests new routes for the modeling of complex phenomena (from cosmos to mind), for the engineering of networks (artificial intelligence, synthetic biology), and for an epistemology that recognizes the relational character of reality. Freedom as a fractal property invite us to rethink the space-time, the surroundings at all scales, and agency in interdependent systems.

Conclusion

Conceiving the Whole as a quantum–fractal–organic system reveals the inseparability of the One and the Universe. Fractality—in form, structure, and function—operates as a unifying principle of physical, biological, and consciousness processes. Within this framework, free will does not disappear: it unfolds fractally as a legitimate expression of the universal information network.

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