Integral Scientific Paradigm

Collective Cognition as the Missing Level of Modern Science

written by Prof. Ephraim Eliav

TOPIC AND QUESTION

Why does modern science, despite its precision, struggle to grasp the whole of reality?

This chapter explores the limits of fragmented knowledge and introduces an integral scientific framework in which collective cognition becomes a necessary level of inquiry.

ANNOTATION

This chapter argues that the issue lies not in science itself, but in its underlying paradigm. The fragmentation of knowledge has made it difficult to understand complex systems — such as consciousness, society, and civilization — within isolated disciplines.

The author introduces an integral scientific framework in which information is treated as a universal level of description, and “desire” is understood as the directionality of processes across physical, biological, and social domains.

A key shift in the text is the introduction of collective cognition as a necessary level of scientific inquiry. Understanding complex systems becomes possible not at the level of the individual observer, but through coordinated group interaction functioning as a unified cognitive system.

This chapter is especially valuable for readers seeking new foundations for scientific thought and for those open to viewing science as an evolving system moving toward collective intelligence.

Chapter Sample

This article advances a sweeping interdisciplinary argument: that humanity's survival and flourishing depend upon recognizing the limits of scientific materialism and embracing a deeper reality grounded in consciousness, infinity, and collective intelligence. Beginning with the inherently circular nature of scientific observation — where theory derives from measurement, and measurement from theory — the author argues that natural selection has disposed humanity toward accepting the simplest sufficient model of reality as complete, producing recurring blind spots across the history of science.

The paper traces this problem through the ancient paradoxes of Zeno of Elea, demonstrating that calculus and modern physics only appeared to resolve them; quantum entanglement, gravitomagnetic instantaneity, and related phenomena have reopened these foundational wounds. Drawing on the simulation hypothesis, Penrose-Hameroff Orchestrated Objective Reduction (Orch OR), and Donald Hoffman's Multimodal User Interface theory, the author argues that spacetime itself is better understood as an emergent construct of conscious agents rather than an ultimate substrate of reality.

From this foundation, the article develops an evolutionary account of consciousness — from quantum protoconsciousness within tubulin microtubules, through cellular and multicellular organization, to human collective intelligence — proposing that natural selection drives systems toward ever-higher unified consciousness. Crucially, the author contends that no final theory of everything is possible; paradigm shifts are structurally inevitable and represent the encounter of finite models with the infinite.

The article concludes with a practical vision: humanity must consciously cultivate collective intelligence through structured group methodologies combining wisdom-of-the-crowd and Delphi-method approaches, as proposed by the IHUD framework. This is presented not merely as an intellectual or organizational preference, but as an existential imperative — the only viable path to guiding artificial intelligence safely and ensuring humanity's continued evolution toward a unified superorganism.

About the Author

Prof. Ephraim Eliav holds an MS (1985) and PhD (1988) in Quantum Mechanics from St. Petersburg State University, Department of Quantum Mechanics. He is currently a KAMEA Research Professor at Tel Aviv University, Department of Chemistry, specializing in atomic physics and relativistic quantum chemistry.

His work focuses on high-precision theoretical calculations of physical and chemical properties of heavy atomic and molecular systems, contributing to the testing of fundamental physcal theories as well as applications in chemistry. He has published over 130 papers in leading scientific journals.

Prof. Eliav has been awarded more than 25 international grants and prizes and has served as a visiting professor at leading universities in the United States, Canada, Japan, Europe, and China. His work contributes to the development of integrative scientific understanding within the SmartBook framework.

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