

Edge of Chaos: The Mind of God

Stephen Hawking famously said that if we were to discover a complete theory of the universe, we would know “the mind of God”. By this, he meant that understanding the fundamental laws of nature would reveal the deepest truths of existence.



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The Mind of God

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Rattigan's theory of dynamic symmetry has inspired conferences at the British Museum and Balliol College Oxford, an academic journal, and a book (*The Language of Symmetry*, Routledge) written by an interdisciplinary team of Oxford academics.

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I. The Mind of Man

The universe, in its infinite complexity, operates through a delicate equilibrium - a principle we term dynamic symmetry. This concept, which frames existence as a fluid negotiation between order and chaos, is not a novel invention of contemporary thought. Across millennia, ancient civilisations articulated this balance through myth, philosophy, and ritual, constructing cosmologies that mirrored the interplay of forces now quantified by chaos theory and quantum mechanics. From the banks of the Tigris to the Ganges, from the Nile to the Yellow River, humanity's earliest thinkers perceived a universal truth: that creation and dissolution, structure and spontaneity, are not opposing forces but complementary aspects of a single, dynamic reality. We trace how these insights, encoded in symbolism and sacred narrative, anticipated modern understandings of complex systems, culminating in the provocative idea of a collective consciousness - an emergent phenomenon ancient traditions might have recognised as 'God'.

In Mesopotamia, the *Enuma Elish* - the Babylonian creation epic - painted the cosmos as the offspring of primordial conflict. Tiamat, the saltwater goddess of chaos, and Marduk, the god of order and storms, engaged in a cosmic struggle that ended with Marduk cleaving Tiamat's body to form heaven and earth. Yet this victory was not annihilation; Tiamat's essence persisted as the raw material of creation, her chaos channelled into cosmic order. This mythic duality finds startling resonance in modern cosmology. Scientists describe the early universe as a quantum foam of fluctuations, where gravitational instabilities sculpted galaxies from formless energy - a process echoing Marduk's imposition of structure on Tiamat's chaos. The Mesopotamians intuited what physics now confirms: order emerges not by eradicating chaos, but by harnessing its generative potential.

Egyptian philosophy centred on *Ma'at*, the goddess embodying truth, balance, and cosmic harmony. Pharaohs, as her earthly stewards, ensured the Nile's floods nourished crops, seasons cycled predictably, and societal hierarchies remained just. *Ma'at* was not abstract idealism but a lived framework integrating nature, morality, and divinity. When droughts or invasions destabilised

kingdoms, priests interpreted these crises as Ma'at's disruption - a failure to uphold equilibrium. This worldview anticipated modern systems theory, where ecosystems or economies collapse when feedback loops falter. The annual Opet Festival, which ritually "renewed" Ma'at, parallels contemporary strategies to restore ecological balance, such as reintroducing keystone species to degraded habitats. Both ancient and modern approaches recognise that stability demands active stewardship of dynamic relationships.

In China, Taoist sages framed cosmic order through *yin* and *yang*-complementary forces whose interplay generated existence. The iconic symbol, a circle bisected by swirling halves, encapsulates dynamic symmetry: darkness cradles a seed of light; stillness pulses with latent movement. Texts like the *Daodejing* advised rulers to practise *wu wei* (non-action), advocating governance that "flows" with natural rhythms rather than imposing rigid control. This principle mirrors adaptive management in modern environmental science, where policymakers allow wildfires to renew forests or floods to reshape riverbeds, intervening only to guide inherent processes. Similarly, machine learning algorithms employ *wu wei*-like strategies, exploring solution spaces through controlled randomness before converging on optimal outcomes. The Taoist vision of a self-regulating cosmos, balancing autonomy and interdependence, finds uncanny parallels in today's complex systems research.

Indian philosophy, particularly within Shaivism, envisioned the cosmos as the dance of Nataraja - an embodiment of Shiva as cosmic architect. Nataraja's poised stance, one foot crushing the dwarf Apasmara (ignorance), symbolises the integration of chaos into cosmic order. The deity's flames represent destruction, his drum creation, and his raised hand preservation - a triad reflecting the universe's cyclical nature. At CERN, a Nataraja statue underscores this metaphor's relevance to particle physics: quantum collisions, like Shiva's dance, generate and annihilate matter, sustaining cosmic equilibrium through perpetual flux. The sculpture's silent eloquence bridges spiritual intuition and scientific inquiry, suggesting that chaos, when skilfully channelled, becomes the engine of innovation.

Greek thinkers, though later in chronology, enriched this global dialogue. Heraclitus declared, "Strife is justice," positing that conflict between opposites-fire and water, day and night-generated cosmic harmony. Pythagoras sought order in mathematical ratios, discerning musical harmonies in planetary orbits. Though fragmented, their ideas prefigured chaos theory's "sensitive dependence on initial conditions" and fractal geometry's self-similar patterns. The Greeks' dual emphasis on conflict and proportion resonates in modern economics, where market stability arises from competing interests, and in urban design, where fractal-like layouts optimise traffic and resource flow.

These ancient systems, though geographically and culturally distinct, converged on a shared insight: reality thrives through the synthesis of opposing forces. This understanding finds its apex in the concept of collective consciousness - an emergent phenomenon ancient traditions might have personified as 'God'. Vedic *Brahman*, the Taoist *Dao*, and Platonic *Anima Mundi* all envisioned a universal mind arising from, yet transcending, individual awareness. Modern neuroscience tentatively echoes this notion, proposing that consciousness itself may be an emergent property of neural networks operating at the "edge of chaos". Studies of group dynamics reveal that crowds, markets, and online communities exhibit intelligence surpassing individual capabilities - a phenomenon termed "swarm logic".

The Upanishads' declaration, "Thou art that" (*Tat Tvam Asi*), encapsulates this vision: the individual self is both distinct from and one with the cosmic whole. In dynamic symmetry terms, personal consciousness arises from neural chaos-order interplay, while collective awareness emerges from societal interactions. This duality mirrors quantum entanglement, where particles remain correlated across distances, suggesting a universe inherently interconnected.

Whether framed as divine unity or emergent complexity, the concept challenges reductionist paradigms, proposing that 'God' is not a distant ruler but the sum of cosmic self-organisation - a collective consciousness born of dynamic symmetry. As artificial intelligence and global connectivity accelerate humanity's integration, this ancient-modern synthesis offers an ethical compass: to steward the balance between autonomy and unity, innovation and tradition, ensuring our dance of order and chaos sustains, rather than consumes, the web of life.

II. The Mind of God

Here we explore the application of dynamic symmetry principles to consciousness and cognition, proposing a perspective that challenges traditional understanding of the mind-brain relationship. It suggests that consciousness is an emergent phenomenon arising from the complex interplay of order and disorder across multiple scales of neural activity, rather than a fixed property of neural tissue. The paper examines how this perspective aligns with recent neuroscientific research, offers insights into altered states of consciousness and mental health disorders, and raises questions about enhancing cognitive abilities. It also discusses controversial implications, including the potential persistence of consciousness beyond physical death and the concept of a collective consciousness, which might be termed 'God', as an emergent phenomenon. The essay concludes by exploring potential avenues for future research and the broader implications of this perspective for our understanding of mind, brain, and reality.

The concept of dynamic symmetry, when applied to consciousness and cognition, questions our traditional understanding of the mind and its relationship to the brain. This emerging view suggests that consciousness is not a fixed property of neural tissue, but rather an emergent phenomenon arising from the complex interplay of order and disorder across multiple scales of neural activity.

Dynamic symmetry in consciousness proposes that our subjective experience emerges from the delicate balance between structured neural patterns and more chaotic, unpredictable neural activity. This balance allows the brain to operate at a critical point between order and disorder, enabling maximum flexibility and adaptability in cognition. Just as complex systems in nature exhibit self-organisation and emergent properties, our conscious experience may be viewed as an emergent property of the brain's dynamic processes.

This view aligns with recent neuroscientific research that highlights the importance of both synchronised neural activity and stochastic processes in brain function. Structured neural patterns, such as oscillations in specific frequency bands, provide a framework for information processing

and integration. Simultaneously, elements of randomness and noise in neural firing patterns contribute to the brain's ability to explore different states and generate novel solutions to problems. The interplay between these ordered and disordered elements may give rise to the rich web of conscious experience.

One fascinating implication of this perspective is that consciousness might not be localised to specific brain regions or neural circuits, but rather distributed across multiple scales of brain organisation. This multi-scale nature of consciousness aligns with the scale-invariant properties observed in other complex systems exhibiting dynamic symmetry. Just as fractal patterns in nature repeat at different scales, aspects of consciousness might manifest at various levels of neural organisation, from individual neurons to large-scale brain networks.

This multi-scale view of consciousness could explain why attempts to identify a single "seat of consciousness" in the brain have been largely unsuccessful. Instead, consciousness may emerge from the coordinated activity of multiple brain regions and processes, each contributing different aspects to our subjective experience. This distributed nature of consciousness also suggests that it might be more resilient to localised brain damage than previously thought, as the system could potentially reorganise to maintain conscious experience even in the face of significant neural disruption.

The dynamic symmetry perspective on consciousness also offers new insights into altered states of consciousness, such as those experienced during meditation, psychedelic experiences, or certain neurological conditions. These states might represent shifts in the brain's dynamic balance between order and disorder. For example, meditative states could involve a heightened degree of neural synchronisation, leading to experiences of unity and transcendence. Conversely, psychedelic experiences might involve a temporary increase in neural entropy, allowing for novel connections and insights to emerge.

This framework could have significant implications for our understanding and treatment of mental health disorders. Rather than viewing these conditions as fixed chemical imbalances or structural abnormalities, we might conceptualise them as disruptions in the brain's dynamic symmetry. Depression, for instance, might involve an overly rigid neural state with reduced capacity for adaptive change. Anxiety disorders could represent an excess of neural entropy, leading to an overabundance of possible threat scenarios. By understanding these conditions from the perspective of dynamic symmetry, we might develop more nuanced and effective treatment approaches that aim to restore the optimal balance between order and disorder in neural activity.

The dynamic symmetry perspective on consciousness also raises intriguing questions about the potential for enhancing cognitive abilities. If consciousness emerges from the interplay

between order and disorder in neural activity, it might be possible to modulate this balance to enhance creativity, problem-solving abilities, or other cognitive functions. This could lead to new approaches in education and cognitive enhancement that focus on optimising the brain's dynamic properties rather than simply increasing neural efficiency or capacity.

One of the most profound and controversial implications of the dynamic symmetry view of consciousness is its potential bearing on the question of consciousness persisting after physical death. Traditional materialist views of consciousness assert that subjective experience is inextricably linked to the physical brain and ceases when brain function ends. However, the dynamic symmetry perspective suggests a more nuanced possibility.

If consciousness is indeed an emergent property arising from the complex interplay of order and disorder across multiple scales, it is conceivable that some aspect of this emergent phenomenon could persist even after the physical substrate of the brain is no longer functional. This persistence might not take the form of individual, ego-bound consciousness as we typically experience it, but rather a more fundamental aspect of the dynamic patterns that gave rise to our subjective experience.

One way to conceptualise this is to consider consciousness as a complex information pattern that emerges from, but is not entirely reducible to, the physical processes of the brain. In the same way that the information contained in a computer program is distinct from the physical hardware it runs on, the informational patterns of consciousness might have some degree of independence from the neural substrate that generates them.

This is not to suggest a dualistic view of mind and body, but rather to propose that consciousness might be better understood as a process or pattern of information flow that can potentially transcend its original physical medium. In this view, what we experience as individual consciousness during life might be a localised manifestation of a more fundamental and pervasive property of the universe – the tendency for complex systems to give rise to emergent, self-organising patterns.

The question then becomes: if consciousness is such an emergent pattern, what happens to it when the brain that generated it ceases to function? While we cannot make definitive claims, the dynamic symmetry perspective opens up intriguing possibilities. One hypothesis is that the informational patterns that constitute our consciousness might be absorbed back into the broader fabric of the universe, contributing to a kind of universal field of potentiality from which new instances of consciousness can emerge.

This concept aligns with certain philosophical and spiritual traditions that posit a fundamental unity underlying all of existence. It suggests that individual consciousness, while appearing distinct during life, might be more accurately understood as a temporary localisation of a more pervasive consciousness that permeates the cosmos.

This brings us to the question of whether human consciousness can be described as part of a collective consciousness, something that might be termed "God". The dynamic symmetry perspective offers an interesting framework for considering this possibility. If consciousness is indeed an emergent property arising from the complex interplay of order and disorder across multiple scales, it's conceivable that this phenomenon doesn't stop at the level of individual human minds but extends to larger, more encompassing systems.

Just as individual consciousness emerges from the collective activity of billions of neurons, a form of collective consciousness might emerge from the interactions of billions of individual minds. This collective consciousness would not be a simple aggregation of individual thoughts and experiences, but rather a higher-order emergent phenomenon with its own unique properties and dynamics.

In this view, what we might call "God" could be understood as the highest level of emergent consciousness, arising from the totality of conscious entities and processes in the universe. This would not be a personal deity in the traditional sense, but rather a cosmic field of consciousness that encompasses and transcends all individual instances of awareness.

This concept of God as emergent collective consciousness aligns with certain panpsychist and panentheist philosophical traditions, which propose that consciousness is a fundamental aspect of reality, present to some degree in all matter and energy. The dynamic symmetry perspective adds to this by suggesting how such a universal consciousness might arise and operate through the principles of self-organisation and emergence that we observe in other complex systems.

Interestingly, this view of collective consciousness doesn't necessarily negate the experiences of individual consciousness that we're familiar with. Just as the consciousness of an individual human doesn't negate the distinct functions of their component neural networks, a cosmic collective consciousness wouldn't erase the unique experiences of individual beings. Instead, it might provide a unifying context within which individual consciousness operates and evolves.

This perspective also offers a potential bridge between scientific and spiritual worldviews. It suggests that what many spiritual traditions have described as divine or cosmic consciousness might be understood in terms of emergent properties of complex systems, without losing its profound significance or experiential reality.

Moreover, the dynamic symmetry view of consciousness as an emergent phenomenon offers a new way of thinking about human potential and our place in the cosmos. If our individual consciousness is indeed part of a larger, collective field of awareness, it suggests that we might have access to broader realms of knowledge and experience than we typically realise. Practices like meditation, which often aim to transcend individual ego-bound consciousness, could be seen as methods for integrating more fully with this collective consciousness.

Future research in this area might involve developing more sophisticated models of brain dynamics that can capture the multi-scale nature of neural activity and its relationship to subjective experience. Advanced neuroimaging techniques, combined with complex systems analysis, could provide insights into how different scales of brain organisation contribute to consciousness. Studies of altered states of consciousness, near-death experiences, and meditation might offer valuable data on the flexibility and potential transcendent aspects of conscious experience.

Additionally, interdisciplinary collaboration between neuroscientists, physicists, philosophers, and researchers in artificial intelligence could help to refine and test these ideas. As we develop more advanced AI systems, we might gain new insights into how consciousness emerges from complex information processing, potentially shedding light on the nature of biological consciousness.

In conclusion, the application of dynamic symmetry principles to consciousness offers a profound and potentially transformative perspective on the nature of mind, its relationship to the brain, and its place in the broader cosmos. This view suggests that consciousness is not a fixed property of neural tissue, but an emergent phenomenon arising from the complex interplay of order and disorder across multiple scales of neural activity. This perspective has far-reaching implications, challenging our understanding of individual consciousness, its potential persistence beyond physical death, and its relationship to concepts of collective or cosmic consciousness.

While many questions remain and much research is needed to validate these ideas, the dynamic symmetry approach to consciousness opens up exciting new avenues for exploration. It offers a framework that could potentially bridge scientific and spiritual understandings of mind and reality, suggesting that the deepest mysteries of consciousness might be understood through the same principles that govern other complex systems in nature.

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