

Informational Law $E = 'mc^2$ of the Cosmic Reality

Rudolf Klimek*

World Information University, Cracow, Poland

*Corresponding Author

Rudolf Klimek, World Information University, Cracow, Poland.
Email: mmklimek@cyf-kr.edu.pl

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1. Introduction

1.1. The Threshold of a New Understanding

Humanity stands at a turning point in its intellectual evolution. For centuries, we have attempted to understand the universe through fragmented disciplines — physics, biology, philosophy, medicine — each illuminating only a narrow slice of reality. Yet the deeper we look, the more evident it becomes that the world is not a collection of isolated mechanisms but a unified, coherent whole. The purpose of this work is to articulate that unity through the lens of the **Informational Law**, expressed symbolically as $E = 'mc^2$. This equation is not a modification of Einstein's formula, nor a physical constant in the classical sense. It is a philosophical and scientific synthesis, describing how energy, structure, and informational orientation together generate the phenomenon of existence.

1.2. The Crisis of Fragmented Knowledge

Modern science has achieved extraordinary precision, yet it remains divided. Physics explains the behavior of particles but not the emergence of meaning. Biology describes mechanisms of life but not the essence of living. Medicine treats the body but often overlooks the informational coherence that sustains health. This fragmentation has led to a paradox: we know more than ever, yet understand less than ever. The Informational Law seeks to restore coherence by showing that: energy is the substrate of existence, mass is the structure of persistence, and information is the orientation of being. **Information in the Cosmos** is not merely data or communication. It is the capacity of a system to maintain orientation, to preserve identity, to resist entropy. In this sense, information is the bridge between physics and consciousness, between matter and meaning. The symbol \hat{i} represents this orientation — the “vector of being” that transforms raw energy into structured existence.

1.3. Humanity as the Continuation of Cosmic Evolution

Human beings are not external observers of the universe. We are its continuation — the latest expression of its drive toward coherence,

complexity, and self-understanding. Our consciousness is not an anomaly but a natural extension of the informational dynamics that humans govern the cosmos. Thus, the Informational Law is not only a scientific proposition but also a philosophical invitation: to see ourselves as participants in the unfolding of the universe, not merely as its spectators. Purpose of this work aims to: articulate the **Informational Law $E = 'mc^2$** in a rigorous yet accessible form, demonstrate its relevance across physics, biology, medicine, and philosophy, show how it unifies the phenomena of life, mind, and cosmos, and offer a coherent framework for understanding humanity's place in the universe. The chapters that follow build this framework step by step, moving from the foundations of energy and information to the emergence of consciousness, biological coherence, and the unity of the human-cosmic existence.

1.4. The Ancient Intuition of Oneness

From the earliest moments of human thought, philosophers, mystics, and scientists have sensed that reality is not a collection of disconnected fragments but a unified whole. Ancient traditions across cultures — from the Greek *hen kai pan* (“the one and the all”) to the Vedic concept of *Brahman* — expressed the intuition that existence is fundamentally singular. These early insights were not based on empirical science but on contemplative observation: the recognition that all things arise from, and return to, a common source.

1.5. The Birth of Scientific Fragmentation

The scientific revolution brought extraordinary clarity but also deep division. To understand nature, early scientists separated: physics from metaphysics, matter from mind, biology from chemistry, and medicine from philosophy. This method produced remarkable progress, yet it fractured the unity of knowledge. The world became a mosaic of isolated disciplines, each with its own language and assumptions. The cost of this fragmentation is now evident: We have precision without coherence. The Rise of Mechanistic Thinking in the 17th century introduced a mechanistic worldview in which the universe was seen as a giant clockwork. Descartes

separated mind from matter; Newton described matter as inert and passive. Life was reduced to chemistry, and consciousness to an epiphenomenon. This worldview dominated science for centuries, shaping medicine, biology, and physics.

But it left unanswered questions:

1. How does meaning arise from matter?
2. How does coherence persist in living systems?
3. Why does the universe produce complexity rather than chaos? Mechanism could describe motion, but not purpose. It could measure forces, but not orientation.

1.6. The 20th Century: Cracks in the Mechanistic Model

The emergence of quantum physics, relativity, and information theory revealed that the universe is far stranger and more interconnected than classical science imagined. Key developments included:

1. **Relativity**-Einstein showed that energy and mass are interchangeable, and that space and time are not absolute but relational. This shattered the idea of a fixed, mechanical universe.
2. **Quantum Mechanics**- Quantum theory introduced uncertainty, entanglement, and nonlocality — phenomena that defy classical intuition and suggest that the universe is fundamentally relational.
3. **Information Theory** - Claude Shannon formalized information as a measurable quantity, laying the foundation for understanding communication, computation, and complexity. Scientists began to see organisms not as machines but as **self-organizing systems** capable of maintaining coherence in dynamic environments. Together, these developments pointed toward a new paradigm: **The universe is not a machine but an informational process.**

Throughout the 20th and 21st centuries, thinkers across disciplines sought a unifying principle: physicists searched for a Theory of Everything, biologists explored the origins of life and complexity, neuroscientists investigated consciousness, and philosophers examined the nature of being. Yet no single framework successfully **bridged**: the physical, the biological, the mental, and the existential. **The Informational Law** emerges as a response to this challenge — a synthesis that unites energy, structure, and orientation into a coherent whole. Today, **information** is recognized as a fundamental component of reality. Not merely data, but **the capacity to maintain identity, coherence, and purpose**. This shift marks the beginning of a new scientific era — one in which: matter is structured energy, life is organized information, consciousness is interpretive orientation, and the cosmos is a unified informational field. The Informational Law builds upon this transformation, offering a framework that integrates the insights of physics, biology, medicine, and philosophy into a single coherent vision.

1.7. Information, Energy, and the Structure of Reality

The existence of stable forms — atoms, molecules, cells, organisms — requires something that counteracts entropy. This “something” is **informational orientation**. Einstein’s equation $E = mc^2$ revealed that mass is simply energy in a stable configuration. Mass is energy that has taken form — energy that has become

persistent. Mass is not the opposite of energy; it is energy that has been. Modern science has long recognized **energy** and **mass** as the foundational components of the physical universe. Yet neither energy nor mass alone can explain the emergence of structure, coherence, or meaning. Something more is required — a principle that organizes, directs, and stabilizes the flow of energy into persistent forms. That principle is **information**. The **Informational Law** proposes that reality is built upon a triad: **Energy (E)** — the dynamic substrate of existence, **Mass (M)** — the structural embodiment of persistence, and **Informational orientation (\hat{i})** — the vector that gives direction, identity, and coherence. These three elements are not separate; they are interdependent aspects of a single process: $E = imc^2$. Energy is the most fundamental quantity in physics. It cannot be created or destroyed; it can only change form. Everything that exists — from galaxies to neurons — is ultimately a configuration of energy. But energy alone does not produce order. Left to itself, energy disperses. Entropy increases. Structures dissolve **organized**. This organization is not random. It follows patterns, symmetries, and laws that reflect deeper informational principles. Information is often misunderstood as data or communication. In the context of the Informational Law, information is something far more fundamental: **Information is the capacity of a system to maintain orientation in the face of entropy**. It is the principle that: stabilizes atoms, organizes molecules, guides biological development, sustains consciousness, and shapes the evolution of the cosmos. Information is not an external property imposed on matter, but it is intrinsic to the structure of reality. **Information as constraint** limits the possible states of a system, reducing randomness and enabling coherence. **Information as direction** provides orientation — a “vector of being” that guides the transformation of energy into structure. **Information as identity** allows systems to maintain a stable identity over time, despite constant change. **The Symbol \hat{i} as the key to coherence** represents informational orientation — the factor that transforms raw energy into meaningful existence. It is not a numerical constant but a conceptual operator: a direction, a constraint, and a principle of coherence. Without \hat{i} , energy remains undirected. With \hat{i} , energy becomes capable of forming stable, evolving, self-organizing systems. This is the foundation of the **Informational Law: $E = iMc^2$: Energy becomes meaningful only when oriented. Mass becomes coherent only when informed. Existence becomes possible only when structured by information.** The universe evolves toward increasing complexity not by chance but through the interplay of: energetic potential, structural stability and informational orientation. This triad explains why: atoms form molecules self-organize. life emerges, consciousness arises, societies develop, and the cosmos becomes increasingly structured. Complexity is not an accident. It is the natural consequence of informational orientation acting upon energy.

1.8. The Informational Law $E = imc^2$ as a Unifying Principle

The **Informational Law** unifies: physics (energy and mass), biology (organization and adaptation), medicine (coherence and health), and philosophy (identity and meaning). It provides a framework in which: matter is structured energy, life is organized

information, consciousness is interpretive orientation, and the universe is a coherent informational field that reveals reality as a dynamic interplay of energy, structure, and informational direction. Einstein's equation $E = mc^2$ revealed one of the deepest truths of physics: **mass is condensed energy**. This insight transformed our understanding of the universe, showing that matter and energy are not separate substances but two expressions of the same underlying reality. Yet his equation leaves unanswered questions: Why does energy take stable forms? What determines the structure of matter? How does coherence arise in living systems? Why does the universe evolve toward complexity rather than chaos? Einstein's formula describes **equivalence**, but not **orientation**. It explains **what** energy and mass are, but not **why** they organize themselves into meaningful structures. The information Law extends this insight **introducing \hat{i} as informational orientation** — the principle that directs energy into coherent forms. It is not a numerical constant but a conceptual operator that expresses: direction, constraint, identity, purpose, and coherence. Where Einstein described the *quantity* of energy, the Informational Law describes the *quality* of its organization. Information is not a measurable scalar like mass or velocity. It is a **relational property** — a pattern, a structure, a direction. Thus, \hat{i} cannot be reduced to a fixed value. It functions like a “hat operator” in mathematics: a marker indicating that energy is being **oriented**, not merely present. The Informational Law is written as $E = \hat{i}mc^2$. This means: **E** — energy as expressed through informational orientation, **M** — mass as structured energy, **c^2** — the scale of transformation, and **\hat{i}** — the informational vector that gives direction to the transformation. Without \hat{i} , the equation collapses back to Einstein's form — a universe of inert equivalence. With \hat{i} , the equation becomes a description of **living, evolving, coherent reality**. **What \hat{i} does in the Equation?** The operator \hat{i} modifies the relationship between mass and energy by introducing **orientation**. It expresses the fact that: energy becomes meaningful only when directed, mass becomes coherent only when informed, existence becomes stable only when structured. \hat{i} gives energy a direction — a tendency toward form, coherence, and persistence. \hat{i} limits the possible states of a system, reducing entropy locally. \hat{i} allows systems to maintain a stable identity over time. \hat{i} enables systems to respond meaningfully to their environment. **Why c^2 Remains in the Equation?** The constant c^2 represents the scale at which mass transforms into energy. It remains unchanged because: the physical relationship between mass and energy is still valid, the Informational Law does not contradict physics, it extends physics into the domain of meaning and coherence. The Informational Law is not a replacement for Einstein's equation. It is a **generalization** that includes Einstein's insight as a special case.

2. Information As a Bridge between Mind and Cosmos

2.1. The Philosophical Implications

The equation suggests that: reality is not passive but oriented, existence is not random but structured, life is not an accident but an expression of informational coherence, consciousness is not an anomaly but a natural extension of orientation. This transforms our understanding of: physics (as structured energy), biology (as organized information), medicine (as coherence maintenance),

and philosophy (as the study of being-as-orientation). The Informational Law unifies: the physical (energy), the structural (mass), the meaningful (information). It provides a framework in which: atoms, cells, organisms, minds, societies, and the cosmos can all be understood as expressions of the same underlying principle. Einstein revealed that mass and energy are one. The Informational Law reveals that **energy, mass, and information are inseparable**. Where classical physics describes the mechanics of existence, the informational Law describes its **orientation** — the principle that makes coherence, life, and consciousness possible.

2.2. The Problem of Dualism

For centuries, Western thought has been shaped by a deep divide between **mind** and **matter**. Descartes formalized this separation, proposing that the mental and the physical belong to fundamentally different realms. This dualism influenced science, medicine, and philosophy for generations. Yet dualism creates more problems than it solves. How can mind influence matter? How can subjective experience arise from physical processes? How can meaning emerge from mechanisms? How can consciousness be both embodied and transcendent? The Informational Law offers a way out of this impasse by showing that **mind and matter are two expressions of the same informational reality**. The traditional dichotomy between mind and matter collapses when we recognize that **information** is the bridge connecting them. Information is neither purely physical nor purely mental. It is the **organizing principle** that shapes both. **In Matter**, information structures energy into stable forms: atoms, molecules, crystals, biological systems. **In Mind** information becomes: perception, memory, interpretation, and meaning. Thus, information is the **common language** of both physics and consciousness. **The informational nature of perception** is not a passive reception of sensory data. It is an **active informational process** in which the mind: selects, organizes, interprets, and integrates signals from the environment. The brain does not merely record reality; it **constructs** it through informational orientation. This construction is not arbitrary — it is constrained by the structure of the world and the organism's evolutionary history.

2.3. Consciousness as Informational Orientation

Consciousness is often treated as a mysterious emergent property of neural complexity. But from the perspective of the Informational Law, consciousness is a **high-level expression of \hat{i} — the capacity of a system to orient itself within space-time reality**. **Awareness** directs attention toward meaningful patterns. Consciousness integrates information into a coherent worldview and maintains a stable sense of self across time. Thus, consciousness is not an anomaly but a natural extension of the informational dynamics that govern the cosmos **as an Informational Space-time Field**. If information is fundamental, then the universe is not a machine but an **informational field** — a dynamic network of relationships in which: energy flows, structures emerge, coherence persists, and meaning evolves. This view aligns with insights from: quantum physics (nonlocality, entanglement), systems theory (self-organization), biology (genetic information) and neuroscience and neuroscience (neural

coding). The cosmos is not a collection of objects but a **web of informational processes, where The Human Mind is a Local Expression of Cosmic Information**. Human consciousness is not separate from the universe which becomes aware of itself through informational orientation. This is not metaphorical. It is a literal consequence of the Informational Law: energy becomes structure, structure becomes life, life becomes mind, and mind becomes meaning. The human mind is a **continuation** of cosmic evolution, not an exception to it, e.g. **medicine and the informational dimension of health**. Traditional medicine focuses on biochemical processes. Yet health is fundamentally a matter of **informational coherence**: cells communicate, tissues coordinate, organs synchronize, and the organism maintains identity. Disease often arises when informational coherence breaks down — when signals become distorted, misaligned, or chaotic. Thus, medicine must recognize that: healing is the restoration of coherence, diagnosis is the detection of informational disruption, and treatment is the reorientation of biological information as the bridge between mind and cosmos. It unites: physics and consciousness, matter and meaning, biology and identity, and medicine and coherence. We see that reality is not divided but continuous — a single, evolving field of energy, structure, and orientation.

2.4. Consciousness As A Cosmic Phenomenon

Contemporary neuroscience has mapped the brain with extraordinary precision. We know: how neurons fire, how synapses strengthen, how networks synchronize, and how sensory signals are processed. Yet none of this explains **why** experience exists. No scan, no algorithm, no biochemical model has ever bridged the gap between: electrical activity and subjective awareness. This is the “hard problem” of consciousness — the recognition that **experience cannot be reduced to mechanism**. The Informational Law offers a new perspective: consciousness is not produced by the brain; it is **expressed** through it. **Consciousness** is the highest known form of \hat{i} — informational orientation. It is the capacity of a system to: interpret reality, maintain identity, direct attention, assign meaning, and act with purpose. Where matter is structured energy, and life is organized information, consciousness is **interpreted information** — information that becomes aware of itself. Consciousness directs informational flow toward what is relevant for survival, coherence, and identity. **The Brain as an Informational interface** is not the generator of consciousness but its **instrument** — a biological interface that: receives signals, organizes patterns, integrates sensory streams, stabilizes identity, and enables interpretation. The brain is to consciousness what a radio is to a broadcast: not the source, but the receiver and interpreter. This does not diminish the brain’s importance. It elevates it — from a biochemical machine to a **cosmic interface**. **Consciousness in the informational field of the universe** is fundamental, then consciousness is not an anomaly but a **natural expression of the universe’s informational dynamics**. The cosmos evolves from: energy \rightarrow structure \rightarrow life \rightarrow mind \rightarrow meaning. Consciousness is the universe becoming capable of: self-reflection, interpretation, and intentionality. This is not mysticism. It is the logical consequence of the **continuity between Life and Mind**. There is no sharp boundary between biological

organization and consciousness. Instead, there is a **continuum of informational orientation**: molecules orient toward stability, cells orient toward survival, organisms orient toward identity, and minds orient toward meaning. Consciousness is the apex of this continuum — the highest known form of informational coherence. **Consciousness as resistance to entropy** tends toward disorder by coherence. This is not accidental. Consciousness is the most powerful known mechanism for: reducing uncertainty, stabilizing identity, predicting the future, coordinating action, and creating order. In this sense, consciousness is the **anti-entropic force** of the cosmos — the pinnacle of informational orientation.

2.5. Medicine and the Informational Nature of Mental Health

Mental health is not merely a matter of neurotransmitters. It is fundamentally a matter of **informational coherence**: thoughts align or fragment, emotions integrate or destabilize, identity strengthens or dissolves, and perception clarifies or distorts. Healing requires restoring informational orientation - reconnecting the self with coherence, meaning, and purpose. Consciousness is not a biochemical accident. It is the universe expressing informational orientation through living systems. It is: the highest form of coherence, the deepest expression of identity, the bridge between matter and meaning, and the cosmos becoming aware of itself. Through the Informational Law, consciousness becomes not a mystery to be explained away, but a phenomenon to be understood as the natural culmination of cosmic evolution.

3. Biological Systems and Coherence

3.1. Life as an Informational Phenomenon

Life is often described in biochemical terms: metabolism, replication, homeostasis. Yet none of these definitions capture the essence of what makes a living system *alive*. A living organism is not merely a collection of molecules; it is a **coherent informational process** that maintains identity despite constant material turnover. Every cell in the human body is replaced over time, yet the organism remains the same individual. This continuity cannot be explained by chemistry alone. It requires **informational orientation** — the principle symbolized by \hat{i} . Life is not defined by the molecules it contains, but by the **patterns, constraints, and orientations** that organize those molecules into a coherent whole.

3.2. The Cell as a Self-Organizing Informational System

A cell is not a passive biochemical reactor. It is an active, self-regulating system that senses its environment, interprets signs, maintains internal order, repairs damage, and reproduces itself. These functions require **informational coherence**, not merely chemical reactions. DNA is not a blueprint but a **dynamic informational archive**. Its meaning depends on: cellular context, epigenetic modulation, environmental signals, metabolic state. Genes do not “cause” traits; they **participate** in informational networks. Epigenetics demonstrates that information flows both ways: from genes to environment, and from environment to genes. This bidirectionality is a hallmark of informational orientation. A cell maintains its identity through: stable informational constraints, coherent signaling pathways, regulated gene expression. Identity is not a chemical property — it is an **informational state**. A

multicellular organism is a **nested hierarchy of informational systems**: molecules → organelles → cells → tissues → organs → the organism. Each level maintains coherence through informational orientation. Cells communicate through: electrical signals, chemical gradients, hormonal pathways, and mechanical forces. These signals are not merely physical; they are **informational directives**.

3.3. Homeostasis as Informational Balance

Homeostasis is the organism's ability to maintain internal coherence despite external change. It is an informational process of: sensing, interpreting, responding, stabilizing. Embryonic development is not a mechanical sequence but an **informational choreography**. Cells differentiate not because of chemical inevitability, but because of **contextual orientation**. Disease as loss of informational coherence is often described as mechanical failure or biochemical imbalance. But at its core, disease is a **breakdown of informational orientation**. Cancer is not simply uncontrolled growth. It is a collapse of: cellular identity, communication, and contextual interpretation. A cancer cell is a cell that has **lost its informational orientation**. Autoimmunity arises when the organism misidentifies its own tissues — a failure of informational discrimination. Neurodegenerative diseases reflect the breakdown of high-level informational coherence: memory, identity, orientation in time and space. **Healing as restoration of coherence** is not merely biochemical repair. It is the **re-establishment of informational orientation** at multiple levels: cellular, tissue, systemic, and psychological. Regeneration requires: correct signaling, correct orientation, correct identity. The immune system must re-learn the distinction between self and non-self. Mind and body are not separate; they are informationally coupled. Psychological coherence influences biological coherence.

3.4. The Informational Law in Biology

The Informational Law $E = 'mc^2$ provides a unifying framework for understanding **life**: In biological terms **E** — the organism's energetic potential, **M** — its structural embodiment, \hat{i} — its informational orientation, and c^2 — the scale of transformation. Life emerges when energy and structure are **oriented** toward coherence. Biology is not the study of molecules but the study of **coherent informational systems**. Life is the universe organizing itself into stable, adaptive, self-maintaining forms. Through the Informational Law, we see that: cells are informational agents, organisms are informational hierarchies, health is informational coherence, disease is informational breakdown, and healing is informational restoration. Life is not an exception to cosmic order — it is its most refined expression.

4. The Symbolic Interpretation of \hat{i}

4.1. Why is a Symbol \hat{i} necessary? In classical physics, symbols represent measurable quantities: mass, charge, velocity, momentum. But the Informational Law introduces something fundamentally different — a principle that cannot be reduced to a number, a unit, or a scalar. The symbol \hat{i} was created because no existing mathematical notation could express: orientation, coherence, identity, meaning, and directionality of being. \hat{i} is

not a constant. It is not a coefficient. It is not a variable in the traditional sense. It is a **marker of informational orientation** — the principle that transforms energy into structured, meaningful existence. In mathematics a “hat” placed above a symbol often denotes: a unit vector, a direction, and a normalized orientation. The Informational Law uses this convention intentionally. The hat above indicates that information is not a quantity but a **directional operator** — something that orients the transformation of mass into energy. **Why “i”?** The letter **I** evoke: *information, identity, interpretation, intention, and intelligence*. It is the most natural symbol for the principle that gives form and meaning to existence. **Why the Hat?** The hat signifies: orientation rather than magnitude, direction rather than measurement, and coherence rather than quantity. It transforms **it from** a letter into a **conceptual operator**.

4.2. \hat{i} as the vector of being represents the principle that orients energy toward coherence. Without \hat{i} , energy disperses. With \hat{i} , energy becomes structure, life, and consciousness, which enables systems to interpret signals and assign significance of complexity across cosmic, biological, and cognitive scales in: **Physics** traditionally describes: forces, fields, particles, and interactions. But it does not describe **orientation** — the principle that guides systems toward coherence. \hat{i} fills this gap by introducing a non-mechanical dimension: not a force, not a field, not a particle, but a **principle of organization**. It is the missing element that explains why the universe does not collapse into randomness; Biological systems maintain identity despite constant change. Cells replace their components, yet remain themselves. Organisms regenerate tissues, yet preserve continuity. This stability cannot be explained by chemistry alone. It requires **informational orientation** — the biological expression of \hat{i} . Genes do not act alone; they are interpreted by cellular context. \hat{i} is the principle that maintains this interpretive coherence. Embryos unfold according to informational gradients, not mechanical inevitability. The immune system distinguishes self from non-self through informational orientation. **Consciousness: the center of Interpretation** is the highest known expression of \hat{i} . It is the capacity to: interpret reality, maintain a stable self, assign meaning, direct attention, and act with purpose as an **informational anchor**.

4.3. The “I” of consciousness is the subjective manifestation of \hat{i} as **Informational Constraint**. Meaning limits chaos and organizes perception. **Freedom as Informational Orientation** is not randomness; it is the ability to orient oneself within informational space. **\hat{i} as the Unifying Principle of the Informational Law** becomes intelligible only when \hat{i} is understood as: the orientation of energy, the identity of structure, the coherence of life, and the meaning of consciousness. Without \hat{i} , the equation reduces to Einstein's physical equivalence. With \hat{i} , it becomes a description of **existence itself**. The symbol \hat{i} is the conceptual heart of the Informational Law. It expresses the principle that: organizes matter, stabilizes life, enables consciousness, and unifies the cosmos. It is the missing dimension of classical science — the orientation that makes existence coherent.

5. Cosmic Unity and The Limits of Classical Physics

5.1. The Classical Paradigm, Its Achievements and Cracks

Classical physics—from Newton to Maxwell—provided humanity with a remarkably successful framework for understanding the world. It explained: planetary motion, mechanics of bodies, electromagnetism, thermodynamics, and the behavior of gases and fluids. This framework enabled the technological revolution and shaped modern civilization. Yet classical physics rests on assumptions that, while useful, are ultimately **incomplete**: objects are separate, interactions are local, time flows uniformly, systems evolve mechanically, and information is secondary or irrelevant. These assumptions break down when we examine the universe at its deepest levels. The 20th century revealed that classical physics cannot explain: quantum entanglement, nonlocal correlations, the emergence of complexity, the stability of biological systems, and the nature of consciousness. These phenomena require a new conceptual framework—one in which **information** plays a central role. Quantum entanglement shows that particles can remain correlated across vast distances without any physical signal connecting them. This violates classical locality and suggests that **information is more fundamental than space. The Quantum systems do not have definite properties until measured. This implies that observation—an informational act—shapes physical reality. The Emergence of Order is an informational process.** Energy and matter behave as if guided by: patterns, constraints, symmetries, and orientations. These are informational properties, not mechanical ones. Classical physics predicts increasing entropy, yet the universe produces: stars, galaxies, molecules, cells, organisms, and minds. Order emerges spontaneously—a phenomenon classical physics cannot fully explain. **The Universe is an Informational System.** The limitations of classical physics point toward a deeper truth: The universe is not a machine but Symmetries determine what is possible and what is forbidden. They act as informational rules shaping physical law. **Fields as Informational Structures** encode relationships between particles as informational maps of interaction. **Constants as Informational Anchors** (c, h, G) define the informational architecture of the cosmos. **The Failure of Reductionism** assumes that complex systems can be fully explained by analyzing their parts. But this approach fails in: biology, neuroscience, ecology, and cosmology. Complex systems exhibit **emergent properties** that cannot be predicted from their components alone. Emergence occurs when informational interactions create new levels of organization. The whole is not the sum of its parts—it is the **coherence** of its parts. The behavior of a system depends on its informational context, not just its components.

5.2. The Need for a New Unified Informational Space-time Field

Classical physics describes the **mechanics** of the universe. Quantum physics describes its **probabilities**. But neither describes its **orientation**—the principle that drives coherence, complexity, and meaning. The Informational Law fills this gap by introducing **\hat{i} , the operator of informational orientation**. Without orientation: energy disperses, structures collapse, life cannot emerge, and consciousness cannot arise. Orientation is the missing dimension

of physical theory. **Information** explains: nonlocality, coherence, identity, evolution, and meaning. Matter and energy alone cannot. The Informational Law reveals the cosmos as a single, coherent field in which: energy provides potential mass structure, and information provides orientation. This unity explains why: physical laws are universal, life emerges repeatedly, consciousness evolves, and meaning arises. The universe is not a collection of isolated objects, but a **continuum of informational coherence**. Classical physics gave us the tools to understand motion, force, and matter. But it cannot explain: coherence, complexity, identity, meaning, and consciousness. The Informational Law extends physics into a new domain—one in which **information is as fundamental as energy and mass**. Through this lens, the **universe** becomes intelligible not as a machine but as a **living, evolving, coherent whole**. Humanity has long sought a single principle capable of explaining the diversity of existence, called it *archē, logos, substance, essence*. Scientists searched for a Theory of Everything. Mystics spoke of unity, oneness, or the ground of being. Yet each discipline approached the question from its own angle: physics from energy and matter, biology from life and adaptation, neuroscience from mind and cognition, philosophy from meaning and existence. The result was a mosaic of partial truths—accurate but incomplete. The Informational Law offers a way to integrate these perspectives into a coherent whole. The existence of Informational Law rests on three inseparable pillars: **Energy (E)**—the dynamic substrate of reality, **Mass (M)**—the structured embodiment of persistence, and **Informational orientation (\hat{i})**—the principle that gives direction, coherence, and identity. These pillars are not separate components but **three aspects of one process**. **Energy as Potential** provides the capacity for change, motion, and transformation. **Mass as Structure** stabilizes energy into persistent forms. **Information as Orientation** directs energy into meaningful structures. Together, they form the architecture of being. Traditional metaphysics treats being as static—a substance, essence, or fixed reality. The Informational Law shows that being is **dynamic, relational, and processual**. Being is not a thing. Being is an orientation, identity as Informational Stability. A system “is” what it can maintain coherently over time. To exist is to resist entropy through informational orientation. **Meaning as Informational Integration** arises when information is integrated into a coherent whole **from Atoms to Consciousness**.

The Informational Law reveals a continuum that spans the entire cosmos: atoms maintain coherence through quantum information, molecules maintain structure through chemical information, cells maintain identity through genetic and epigenetic information, organisms maintain life through systemic information, and minds maintain meaning through interpretive information. There is no sharp boundary between physics, biology, and consciousness. They are different expressions of the same informational process. The universe is not a collection of isolated objects but a **unified informational field**. This unity is expressed through: universal physical laws, shared biological principles, common cognitive structures, and the emergence of meaning **as Evidence of Unity**. Quantum entanglement shows that the universe is fundamentally interconnected with Evolution **as Informational Expansion**.

Life evolves toward increasing complexity and coherence. **Consciousness as the Universe Reflecting Itself** is the cosmos becoming aware of its own informational structure.

5.3. The Informational Law $E = \hat{i}mc^2$ as a Philosophical Synthesis

The Informational Law unifies: ontology (what exists), epistemology (how we know), cosmology (how the universe evolves), biology (how life organizes), psychology (how mind interprets), and medicine (how coherence is maintained). It provides a single principle that explains: why the universe forms structures, why life emerges, why consciousness arises, and why meaning exists. Materialism cannot explain information, coherence, or consciousness. Idealism cannot explain physical structure or energetic dynamics. Dualism cannot explain the interaction between mind and matter. The Informational Law transcends these limitations by showing that: matter is structured energy, mind is interpreted information, both arise from the same informational orientation. Human beings are not passive observers of the cosmos, but they are active participants of its information evolution. They: interpret, create, transform, and transmit information across generations. Human culture, science, art, and ethics are expressions of the universe's drive toward coherence and meaning. A unified philosophy of being emerges when we recognize that: energy provides potential, mass provides structure, and information provides orientation. The Informational Law reveals the cosmos as a coherent whole — a dynamic, evolving field in which life and consciousness are natural, inevitable expressions of informational orientation for the final synthesis: the practical consequences of this framework for science, medicine, society, and the future of humanity. It shifts the scientific worldview: from mechanism → to coherence, from matter → to information, from fragmentation → to unity, from reductionism → to relationality. This shift has profound implications for every field of human knowledge. It does not discard existing science — it integrates it into a broader framework. **Physics** has long sought a unifying principle capable of reconciling: relativity, quantum mechanics, thermodynamics, and cosmology. The Informational Law suggests that the missing element is **orientation** — the principle symbolized by \hat{i} . **Nonlocality** becomes intelligible when seen as a manifestation of informational unity. **Symmetries** are not arbitrary; they reflect the informational architecture of the cosmos. **Time's** direction emerges from the interplay between entropy and informational orientation. Physics becomes not only the study of forces but the study of **informational structure**. **Biology** is transformed when life is understood as **informational coherence** rather than biochemical mechanism. Evolution is not random mutation alone; it is the universe exploring new modes of coherence. Embryogenesis becomes a process of contextual interpretation, not mechanical assembly. Ecosystems are networks of informational exchange, not merely food chains. **Medicine** becomes one of the fields most deeply transformed by the Informational Law. Health is the organism's ability to maintain informational orientation across all levels: molecular, cellular, systemic, and psychological. Disease as informational breakdown is not merely mechanical failure but a disruption of

coherence: cancer → loss of cellular identity, autoimmunity → loss of informational discrimination, neurodegeneration → loss of high-level coherence, psychosomatic disorders → breakdown of mind–body integration. Healing as reorientation is the restoration of informational alignment: restoring identity, communication and coherence. The future of medicine lies in understanding each patient's **informational profile**, not only their biochemical markers. The mind is not a byproduct of the brain but a **high-level informational system**. **Mental Health as Informational Integration** depends on the coherence of: thoughts, emotions, memories, and identity. **Trauma as Informational Disruption** fragments informational orientation, creating incoherent patterns. **Therapy as reorientational** therapeutic processes restore informational coherence through: narrative integration, emotional regulation, and relational alignment. Societies are large-scale informational systems. Their stability depends on: shared meaning, coherent communication, and collective identity. **Culture as Informational Memory** preserves the informational orientation of a civilization. **Ethics as Informational Responsibility** emerges from the recognition that actions influence the coherence of others. **Technology as Informational Amplification** of digital technologies extend human informational capacity — but also amplify fragmentation if misaligned. **Humanity** stands at a crossroads. We can either: deepen coherence, or accelerate fragmentation. The Informational Law suggests that the future depends on our ability to align: science with meaning, technology with ethics, medicine with identity, and society with coherence. The Informational Law is not only a scientific insight. It is a **civilizational framework**, a way of understanding: health, consciousness, society, evolution, and the cosmos. It reveals that coherence is the foundation of existence, and that humanity's task is to cultivate and protect this coherence at every scale.

5.4. The Future of the Informational Worldview: $E = \hat{i} Mc^2$

The Informational Law marks the beginning of a profound transformation in human understanding. For centuries, science advanced by dividing reality into smaller and smaller parts. This method produced extraordinary knowledge, yet it obscured the unity of existence. The new law reverses this trend: energy, structure, information, life, consciousness and meaning are not separate domains but **expressions of one coherent process**. This paradigm shift is not a rejection of previous science. It is its **completion**. The equation: $E = \hat{i} Mc^2$ is more than a symbolic expression. It is a conceptual bridge linking: physics with biology, biology with consciousness, consciousness with meaning, and meaning with cosmology. It shows that the universe is not a machine but a **coherent informational field** in which: energy provides potential, mass provides structure, information provides orientation. This triad forms the architecture of being. Humanity is not an accidental byproduct of physical processes. We are the universe's most advanced expression of informational orientation. We interpret reality, create meaning, transmit knowledge, shape culture, and influence evolution. Human consciousness is the cosmos reflecting upon itself — a self-aware node in the informational network of existence. With this role comes responsibility. Our actions influence the coherence of: ecosystems, societies, future generations,

the planet, and the informational field itself as **informational expansion in the Informational Era**. Art, science, and ethics are not human inventions alone. They are the universe exploring new modes of coherence through us. Science will increasingly recognize that information is not a secondary property but a **fundamental dimension of reality**. Future research will focus on: informational physics, informational biology, informational medicine, informational neuroscience, and informational cosmology. These fields will not replace existing disciplines. They will unify them. Societies are large-scale information systems. Their stability depends on: shared meaning, coherent communication, ethical orientation, and cultural memory. The future will require cultivating: informational literacy, informational responsibility, and informational ethics. Digital technologies expand human informational capacity — but also amplify fragmentation if misaligned. **Culture as Informational Continuity** preserves the coherence of a civilization across generations. The Informational Law does not merely describe how the universe works. It reveals **why** the universe evolves toward: structure, life, consciousness, and meaning. Existence is not random. It is oriented. The cosmos is not indifferent. It is coherent. Life is not an accident. It is an expression of informational orientation. Consciousness is not an anomaly. It is the universe becoming aware of its own coherence. The journey of this work leads to a single insight: **Reality is a unified informational process**. Energy provides the possibility of existence. Mass provides the stability of existence. Information provides the orientation of existence. Together, they form the foundation of: physics, biology, medicine, consciousness, society, and meaning. The Informational Law is not the end of inquiry. It is the beginning of a **new era** — one in which humanity understands itself not as separate from the cosmos, but as its coherent, conscious expression. The universe is a story written in energy, structured by mass, and interpreted through information. Humanity is one of its chapters — a chapter in which the cosmos learns to speak, to reflect, to create, and to understand. The future belongs to those who cultivate coherence. To those who align energy, structure, and information. To those who recognize that existence is not fragmentation but unity. This is the essence of the Informational Law. This is the meaning of $E = \text{imc}^2$ as the philosophy of being for the world to come [1-14].

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