

DEEP BIG HISTORY:

A Living Systems Paradigm

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The Provisional Nature of Paradigms

Before exploring alternative paradigms, it is useful to step back and bring a meta-perspective to this inquiry. A paradigm is a self-consistent pattern of thoughts, concepts, and assumptions about the nature of reality. As a theoretical and philosophical framework, a paradigm provides a useful way of viewing reality as long as its concepts are in accord with what is being described. When our understanding of the nature of reality changes, so too will the paradigm change.

This essay offers a perspective of big history based upon a living systems paradigm. In offering this perspective, I recognize that *all paradigms are provisional* and evolve as our understanding of the universe grows and deepens. Therefore, I consider a living universe paradigm as provisional and open to change as our knowledge of the universe develops.

We are in a time of deep change in how reality is understood and described. Scientific materialism is no longer a fully validated paradigm as some of its underlying assumptions are being questioned by science. Science has become so powerful that it is challenging itself and its own deep assumptions regarding concepts as fundamental as “time,” “space” and “matter.” Likewise, neither is the paradigm of a living universe fully validated as many of its assumptions are also questioned by science. This is a time of exciting discovery and change. Openness to discovery is vital for developing a scientific paradigm that fits most closely with our evolving understanding of the universe. With an appreciation for the developmental and evolving nature of *all* paradigms, let’s explore the worldview of a living universe.

A Living Systems Paradigm for Viewing Big History

This essay offers a view of big history based on decades of research and writing about living systems and human evolution.² To begin, it is helpful to mention briefly several of the basic assumptions of materialism that establish the basic foundation for the current description of big history:³

- Measurable matter is the only reality and is essentially mechanical in its workings.
- At the foundations of existence, matter is without consciousness or subjectivity.
- Because there is no underlying “presence” or awareness, nature has no purpose and evolution has no inherent meaning.
- Consciousness is largely unique to humans, is a by-product bio-chemistry and is confined within the brain.

In contrast with these assumptions, a living systems paradigm views, for example, consciousness as a fundamental property of the universe. The idea of a “living universe” is not a new perspective. More than two thousand years ago, Plato described the universe as a single living creature that encompasses all living creatures within it. In this view, we live within a living system of unfathomable intelligence, subtlety, power, and patience. In turn, we appear to be evolving expressions of that living universe, infused with a knowing capacity or consciousness, and with an existence that is largely non-material in nature.

In what ways does our universe function as if it were a living system? There is not the space in this short essay to do more than gesture toward the beginnings of answers to these provocative questions.⁴ However, summarized below are five attributes of our universe that point to a “living systems” perspective rather than a non-living perspective.

1. A Unified Whole—In physics, non-locality or action at a distance refers to the direct interaction of two objects that are separated in space with no apparent mechanism of connection. In quantum mechanics, physicists stress the fact that two particles can have immediate effects on each other, even when separated by large distances where this should be impossible. Although the idea is counterintuitive, non-locality is now widely accepted by quantum physicists. Even before the development of quantum mechanics, Isaac Newton assumed the universe was a unified whole and this was the basis for his theory of gravitation which assumes that all matter throughout the universe interacts with all other matter. Likewise, Ernst Mach developed the principle of inertia based on the assumption that local physical laws of motion are determined by the large-scale structure of the universe. In different ways, the universe is no longer regarded as a disconnected collection of planets, stars, and fragments of matter. Instead, the powerful tools of science have demonstrated that even, across vast distances, the universe is connected with itself. In the words of the physicist David Bohm, the universe is “*an undivided wholeness in flowing movement.*”⁵ This does not mean that scientists understand how this connectivity works—only that it is real and that, at a fundamental level, the universe is a unified system.

2. Immense Background Energy—Scientists used to think that empty space was essentially “empty” and was characterized by the absence of everything. However, scientists have now discovered there exists an extraordinary amount of background energy permeating the universe, including empty space. Empty space is not empty. David Bohm calculated that a single cubic centimeter of “empty space” contained the energy equivalent of millions of atomic bombs.⁶ Even in a complete vacuum, there exist phenomenal levels of background energy sometimes referred to as “dark energy”—an energy that comprises roughly 73 percent of the known universe and is viewed by many cosmologists as the force responsible for the increasing acceleration in the expansion of the overall universe. We are swimming in an ocean of subtle energy of such immense power that it is virtually incomprehensible.

3. Continuous Creation—The universe is not static—despite outward appearances of solidity and stability, the universe is a completely dynamic system. In the words of the cosmologist Brian Swimme, “The universe emerges out of an all-nourishing abyss not only fourteen billion years ago but in every moment.”⁷ At every moment, the universe is being created as a single orchestration of manifestation. Because nothing is left out of the process of continuous creation, we are participants in a cosmic scale process whether we are conscious of it or not. Even space is not simple “emptiness” but is a dynamically manifesting transparency we call “space-time.” The entirety of this great cosmic body of being, including the fabric of space-time, is continuously created at each instant. Scientists sound like poets as they attempt to describe our cosmos in its process of becoming. Beneath the solid surface of material objects an extraordinary flow of activity is occurring that is almost beyond comprehension. Guy Murchie writes: “Should you glance for just one second, for example, upon an ordinary yellow dress, the electrons in the retinas of your eyes must vibrate about 500,000,000,000,000 times during the interval, registering more oscillations in that second than all the waves that have beat upon the shores of all the earthly oceans in ten million years.”⁸ The mathematician Norbert Wiener expressed it this way, “We are not stuff that abides, but patterns that perpetuate themselves; whirlpools of water in an ever-flowing river.”⁹ Max Born, a physicist who was instrumental in the development of quantum mechanics wrote, “We have sought for firm ground and found none. The deeper we penetrate, the more restless becomes the universe; all is rushing about and vibrating in a wild dance.”¹⁰ If all is in motion at every level, and all motion presents itself as a coherent and stable pattern, then all that exists is a singular orchestration. All flows comprise one grand symphony in which we are all players, a single creative expression -- a uni-verse.

4. Consciousness at Every Scale—With increasingly sophisticated tools, scientists are finding a spectrum of consciousness ranging from what might be called primary perception at the atomic and cellular level to a capacity for reflective consciousness at the human level.¹¹ From the atomic level to the human scale and in between, we find a capacity for reflection and choice that is fitting for that scale.

The physicist and cosmologist Freeman Dyson writes that, at the atomic level, “Matter in quantum mechanics is not an inert substance but an active agent, constantly making choices between alternative possibilities. . . It appears that mind, as manifested by the capacity to make choices, is to some extent inherent in every electron.”¹² This does not mean that an atom has the same consciousness as a human being, but rather that an atom has a reflective capacity appropriate to its form and function. Max Planck, developer of quantum theory, stated, “I regard consciousness as fundamental. I regard matter as derivative from consciousness. We cannot get behind consciousness. Everything that we talk about, everything that we regard as existing, postulates consciousness.”¹³

Consciousness is also present at the primitive molecular level with molecules consisting of no more than a few simple proteins. Researchers have found that such molecules have the capacity for complex interaction that is the signature of living systems. As one of the researchers who made this discovery stated, “We were surprised that such simple proteins can act as if they had a mind of their own.”¹⁴

At a still higher level, we find consciousness operating in the behavior of forest slime mold in search of a new feeding area. For most of its life, slime mold exists as a single-cell amoeba. When it needs food, however, it can transform itself into a much larger entity with new capacities. Individual amoebas send out signals to others nearby until thousands assemble. When they reach a critical mass, they organize themselves, without the aid of any apparent leader, into an organism that can move across the forest floor. Upon reaching a better feeding area, they release spores from which new amoebas are formed.¹⁵ Under conditions of great stress, the forest slime mold mobilizes a capacity for collective consciousness and action that insures its own survival.

As these examples illustrate, if some form of consciousness is operating at the level of atoms, molecules, and single-cell organisms, then we should not exclude the possibility that “consciousness” is a very sophisticated, invisible, and basic capacity that is manifest at every level of the universe and has been an integral aspect from its beginning.

5. Freedom at the Foundations—Uncertainty—and therefore freedom—is fundamental to a quantum view of the universe. Quantum physics describes reality in terms of probabilities, not certainties. Uncertainty and freedom are built into the very

foundations of material existence. No one part of the cosmos determines the functioning of the whole; rather, everything seems to be connected with everything else, weaving the cosmos into one, vast interacting system. Everything that exists contributes to the cosmic web at each moment, whether it is conscious of its contribution or not. In turn, it is the consistency of interrelations of all the parts of the universe that determines the condition of the whole. We therefore have great freedom to act within the limits established by the larger web of life within which we are immersed.

Summarizing, there is scientific support for regarding the universe as *a unified system that is sustained continuously by the flow-through of phenomenal amounts of energy and whose essential nature includes consciousness or a self-reflective capacity that enables systems at every scale of existence to exercise some freedom of choice*. While these scientific properties do not “prove” the universe is a living system, they clearly point in that direction and invite a much deeper inquiry into how a living systems perspective could manifest in big history. Overall, there is compelling and growing scientific evidence to support a living systems perspective as one legitimate track in big history.

Contributions of a Living Systems Paradigm

What value does a living systems perspective contribute to big history? Importantly, a living systems paradigm includes the co-evolution of culture and consciousness as an important aspect of the human journey.¹⁶ Through history, humanity’s capacity for self-reflective consciousness has developed progressively—from the magical world of the hunter-gatherer, to the nature-based world of the agrarian farmer, then into the dynamic world of the urban-industrial society, and now into a holographic perspective and collective consciousness rapidly awakening within our global brain.¹⁷

1. Transformed Identity: In the paradigm of scientific materialism, we are no more than bio-chemical beings—evolutionary accidents whose consciousness and aliveness are ultimately separate from the rest of the non-living and unconscious universe that surrounds us. In contrast, from a living systems perspective, we are both biological beings and cosmic participants in a vast field of life-energy. Our identity is immeasurably deeper and larger than imagined by scientific materialism: Physicist Brian Swimme explains that the intimate sense of self-awareness we experience bubbling up at each moment, “is rooted in the originating activity of the universe. We are all of us arising together at the center of the cosmos.”¹⁸ We thought that we were no bigger than our physical bodies, but now we are learning that we are participants in the flow of continuous creation of the cosmos. Awakening to our identity as simultaneously distinct

and intimately interconnected with a living universe can help us transform feelings of existential separation and species-arrogance that threaten our future.

2. Compelling Purpose: A non-living universe is not conscious and is therefore oblivious to any sense of human purpose. As existentially separate life-forms, we may strive heroically to impose some reason for our existence on the universe, but this is ultimately fruitless in a cosmos unaware of life. In dramatic contrast, a living universe is intent on growing self-referencing and self-organizing systems within itself at every scale.¹⁹ We are expressions of aliveness that, after nearly 14 billion years, enable the universe to look back and reflect upon itself. A living universe paradigm brings a profound shift in our evolutionary purpose: We are moving from seeing ourselves dropped into a fragmented and lifeless cosmos without apparent meaning or purpose, to seeing ourselves on a sacred journey within a living and unified cosmos whose purpose is to serve as a learning system. If the cosmos is a learning system, then a primary purpose would be for us to learn from both the pleasures and the pains of the world. If there were no freedom to make mistakes, there would be no pain. If there were no freedom for authentic discovery, there would be no ecstasy. In freedom, we experience both pleasure and pain in the process of discovering our identity as beings of both earthly and cosmic dimensions. After nearly 14 billion years of evolution, we stand upon the Earth as agents of self-reflective and creative action who are engaged in a time of great transition and conscious learning.

3. Deep Meaning & Feeling: If the universe is dead at its foundations, then, in its depths it has no feelings for us as human beings nor does it offer a sense of meaning and purpose. Because a non-living universe is unconscious at its foundations, it is indifferent to humanity and unknowing of our evolving creations and conditions. Nothing will ultimately matter to non-living matter. All will be forgotten. An old saying goes, “A dead man tells no stories.” In a similar way, “A dead universe tells no stories.” In contrast, a living universe is itself a vast story continuously unfolding with countless characters playing out gripping dramas of awakening. Could the *essence* of learning embodied in countless life stories be remembered within invisible or non-material ecologies of our living universe as well as passed along to enhance the field of intelligence on behalf of other cosmic systems blossoming within a larger multi-verse?²⁰

With regard to feeling, how we experience ourselves within the surrounding universe has an enormous impact on our approach to life. If we are indifferent and unconscious to the miraculous cosmos we exist within, then our life-experience and reality will often collapse down to the scope of our everyday lives—and a socially constructed existence that is deeply disconnected from conscious connection with a

living universe. Or, if we regard the universe as dead at the foundations, then feelings of existential alienation, anxiety, dread, and fear are quite reasonable. Why seek communion with the cold indifference of lifeless matter and empty space? If we allow ourselves to drop into life, won't we simply sink into existential despair? However, if we live in a living universe, then feelings of subtle connection, curiosity, and gratitude are understandable. We see ourselves as participants in a cosmic garden of life that the universe has been patiently nurturing over billions of years. A living universe invites us to shift from feelings of indifference, fear, and cynicism to feelings of curiosity, love, awe, and participation.

5. Natural Ethics: In a non-living, bio-mechanical cosmos, we are existentially isolated entities whose being stops at the edge of our skin. In turn, it is rational that our scope of ethical concern would not extend much further than ourselves, our family, and others on whom we depend for our well-being. In contrast, a larger scope of ethics can emerge from an intuitive connection with a living universe that provides us with a "moral tuning fork." We can each tune into this living field and sense what is in harmony with the well-being of the whole. When we are in alignment, we can experience a positive hum of well-being as a kinesthetic sense that we call "compassion."²¹ In a similar way, we can also experience the dissonant hum of discordance. When we are truly centered in the life current flowing through us, we tend to act in ways that promote the well-being and harmony of the whole. When we discover that we are part of the seamless fabric of creation, it naturally awakens a sense of connection with and compassion for the rest of life.

6. Sustainable Living: In a dead universe, consumerism makes sense. In a living universe, simplicity makes sense. On the one hand, if the universe is unconscious and dead at its foundations and each of us is the product of blind chance among materialistic forces, then it seems fitting that we, the living, exploit on our own behalf that which is not alive. If most of the known universe is lifeless, then it has no deeper purpose, meaning—or value. If we are separate beings in a lifeless universe, there are no deeper ethical or moral consequences to our actions beyond their immediate, physical impacts. It is only natural, therefore, that we focus on consuming material things to minimize life's pains and maximize its comforts. How do we know we "matter"? By how much matter we have in our lives: a big house, a big car, a big bank account, and so on. In this view, the more matter we have the more we must matter. An alternative view is that, if the universe is conscious and alive, then we are the product of a deep intelligence that infuses the entire cosmos. We shift from feelings of existential isolation in a lifeless universe to a sense of intimate communion within a living universe. If life is nested within life, then it is only fitting that we treat everything that exists as alive and worthy

of respect. Every action in a living universe has ethical consequences that reverberate throughout the ecosystem of the living cosmos. In turn, the search for a meaningful way of life shifts from a desire for high-consumption lifestyles that distract us from an indifferent, non-living universe, and toward simpler ways of living that enable us to connect more directly with a living universe of which we are an integral part. In a living universe, it is only natural that people would choose simpler ways of living that afford greater time and opportunity for connecting with the aliveness of the world in meaningful relationships, creative expressions, and rewarding experiences.

In conclusion, as a provisional paradigm, a living systems perspective brings with it a transformed description of our cosmic identity, purpose, meaning, consciousness, and ethics as well as a compassionate concern for sustainable ways of living. These are of immeasurable value to humanity as we seek to grow consciously through a time of profound planetary transition and come together to build a promising species-civilization. *It is scientifically valid, critical to our pathway into the future, and enormously enriching to bring a living systems paradigm into big history as a legitimate track of discovery and development.*

¹ Duane Elgin can be contacted at: Duane@DuaneElgin.com The author greatly appreciates feedback on this essay received from: Christopher Bache, William Barnard, Jim Garrison, David Korten, Ervin Laszlo, Philip Novak, Rupert Sheldrake, Brian Swimme, Jeff Vander Clute, and Roger Walsh. I also want to express my gratitude to Lynnaea Lombard and Louis & Jean Elsa Sloss for their support in developing this essay for the IBHA conference.

² This essay draws upon books I've authored in the area of big history including *The Living Universe: Where Are We? Who Are We? Where Are We Going?* San Francisco: Berrett-Koehler, 2009, *Awakening Earth: Exploring the Evolution of Human Culture and Consciousness*, New York: William Morrow, 1993, *Promise Ahead: A Vision of Hope and Action for Humanity's Future*, New York: Harper, 2000 and a book I co-authored with Joseph Campbell and a small team of scholars, *Changing Images of Man*, New York: Pergamon Press, 1982 (based on a report of the same name written in 1974 at the Stanford Research Institute, now SRI International, Menlo Park, California). Also see the extended essay: "The Living Cosmos: A Theory of Continuous Creation," in the journal *ReVision*, Vol 11, No. 1, Summer, 1988. For further information, see my website: www.DuaneElgin.com

³ "Materialism" is the belief that only physical reality truly exists and nothing else. In this view, all things are composed of physical matter and all phenomena, including consciousness, are the result of mechanical interactions of matter. Physical matter is regarded as the sole cause of every possible occurrence, including human thought, feeling, and action. See: <http://en.wikipedia.org/wiki/Materialism> In this view, the universe is dead at the foundations—animate, mindless and without consciousness. Materialism contrasts with the living systems view that there is vastly more to reality than interactions of physical matter. For example, given recent findings that 95 percent of the known universe is non-material and invisible, it raises the possibility that materialism applies to only a very small fraction of the overall universe.

⁴ For example, see: Duane Elgin, *The Living Universe*, Op.Cit.; Rupert Sheldrake, *Science Set Free*, New York: Crown Publishing, 2012; Thomas Nagel, *Mind and Cosmos: Why the Materialist Neo-Darwinian Conception of Nature is Almost Certainly False*, Oxford: Oxford University Press, 2012, p. 85; Robert Lanza with Bob Berman, *Biocentrism: How Life and Consciousness are the Keys to Understanding the True Nature of the Universe*, Dallas: Benbella Books, 2009.

⁵ Bohm, *Wholeness and the Implicate Order*, London: Routledge & Kegan Paul, 1980, p. 11.

⁶ *Ibid*, p. 191.

⁷ Brian Swimme, *The Hidden Heart of the Cosmos*, New York: Orbis Books, 1996, p. 100.

⁸ Guy Murchie, *Music of the Spheres*, Cambridge, Mass: The Riverside Press, 1961. P. 451.

⁹ Norbert Wiener, *The Human Use of Human Beings*, New York: Avon Books, 1954., p. 130.

¹⁰ Max Born, *The Restless Universe*, New York: Harper & Brothers, 1936, p. 277.

¹¹ See the discussion in my book, *Promise Ahead*, New York: Quill Books, 2000, pp. 52-57.

¹² Freeman Dyson, *Infinite In All Directions*, New York: Harper & Row, 1988, p. 297.

¹³ An interview with Max Planck by Mr. J. W. N. and published in *THE OBSERVER*, January 25, 1931. See: <http://organizedreligion.me/2013/11/07/i-regard-matter-as-derivative-from-consciousness-max-planck-the-observer-january-25th-1931/>

¹⁴ Philip Cohen, "Can Protein Spring into Life?" in *New Scientist*, April 26, 1997, p. 18.

¹⁵ Mitchel Resnick, "Changing the Centralized Mind," *Technology Review*, July 1994 (available on the internet, revised January 1995).

¹⁶ Elgin, *Awakening Earth*, Op. Cit.

¹⁷ A living systems track will also bring new richness and dynamism into big history with, for example, the inclusion of scholars such as Arnold Toynbee. Although controversial because of the enormous scope of his work and his views on the rise and fall of civilizations, *none* of Toynbee's voluminous works are included in the core bibliography of big history! See: <http://www.ibhanet.org/Default.aspx?pagelid=1362386#Books & Articles about Big History> Below are a few illustrative quotes to suggest his connection with a living systems perspective. As a distinguished historian who made a thorough study of twenty-one civilizations covering the bulk of recorded human history, Arnold Toynbee was unequivocal in describing the relevance of the perennial wisdom to human evolution. He said that the cause of "*suffering and sorrow is the separation of sentient beings...from the timeless reality behind the phenomena, and a reunion with this reality is the sole but sovereign cure for our ailing world's ills.*" [Arnold Toynbee, *A Study of History* (abridged with Jane Caplan), New York: Weathervane Books, p. 498.] After reviewing the world's major religions, he concluded they all agree that humanity's goal is "*to seek communion with the presence behind the phenomena, and to seek it with the aim of bringing the self into harmony with this absolute spiritual reality.*" [Arnold Toynbee, *An Historian's Approach to Religion*, New York: Oxford University Press, 1956, p. 275.] He also said that, "*...the flickering film of the phenomenal world is an illusion which cannot obscure the eternal unity that lies behind it...*" [Arnold Toynbee, *A Study of History*, (abridgement of Vol's I-VI by D.C. Somervell), New York: Oxford University Press, 1947, p. 495.]

¹⁸ Swimme, Op. Cit., p. 112.

¹⁹ How does the aliveness of the universe enter into material form and manifest itself as coherent and persisting structures? Everything that exists is a flowing movement that endures, not because it has inherent solidity but because the life-energy of the universe flows through it. Like a vortex in a whirlpool, all that exists depends upon the flow-through to sustain a persisting pattern. If the flow-through stops, the whirlpool disappears. What is true for the fabric of reality is also true for us. Human beings are not solid or permanently existing entities—we are flow-through beings whose very existence depends completely on the life-energy of universe flowing through us. Instead of energy spraying out in all directions and losing coherence, the universe is continually focusing and conserving its flow-through energy by creating self-organizing systems. At every level, the universe is busy with one, overriding project: creating and sustaining, dynamically stable entities. Throughout the natural world, we see a recurring organizing pattern of dynamic stability. This form is called a "torus," which has the shape of a donut. At every level of the cosmos, we find the characteristic structure and geometry of "torus-like" or toroidal forms. The torus is significant because it is the simplest geometry of a dynamic, self-referencing, and self-organizing system that has the capacity to keep pulling together and sustaining itself. By virtue of its reflexive nature that curves back upon itself, the torus has the potential to be connected with and "know" its own dynamics. Because we find this characteristic form at every level of the universe, it shows that life is constantly seeking to connect with itself—to know itself and grow itself to higher levels of self-organization. A natural expression of this deep, evolutionary impulse is humanity's striving to fulfill our scientific name as a species: "homo sapiens sapiens"—creatures who are doubly wise. We not only "know," we "know that we know." Humanity's efforts to awaken and evolve are a direct expression of this central project of the cosmos. See: *The Living Universe*, Op. Cit., pp. 119 – 123.

²⁰ The recent and widely reported discovery of gravitational waves gives support for the theory of eternal inflation where our universe is regarded as only one seed that has inflated in a multi-verse containing countless seeds of other inflating universes.

²¹ Mary Maxwell, *Human Evolution: A Philosophical Anthropology*, New York: Columbia University Press, 1984, p. 111. Across thousands of years and diverse cultures there have been numerous reports of spontaneous insight that suggest the universe is a living system within which we are intimate participants. Spontaneous, unitive experiences generally take people beyond their limited sense of biological self and into feelings of direct communion with the entirety of existence. These experiences are often accompanied by feelings of love at the foundation of the cosmos, a sense that we belong here, that the universe is our larger home, and that the universe is uniquely alive. Surveys of “mystical” experiences in the general population indicate that this experience has been growing. For example, in 1962 a survey of the adult population in the U.S. found that 22 percent reported having a profound mystical experience. By 2009, this had grown dramatically to 49 percent of the adult population. With roughly half of the U.S. population reporting a personal experience of communion with the larger universe, it suggests these experiences of connection with the cosmos are not a fringe phenomenon but rather are part of the life-experience of the mainstream culture. For a longitudinal overview, see: Andrew Greeley and William McCready, “Are We A Nation of Mystics,” in the *New York Times Magazine*, January 26, 1975. Also see: Andrew Greeley, *Ecstasy as a Way of Knowing*, New Jersey: Prentice-Hall, Inc., 1974, p. 57. For more recent longitudinal findings, see: “Many Americans Mix Multiple Faiths,” Pew Forum on Religion & Public Life, December 2009, Pew Research Center, 1615 L St., NW., Suite 700, Washington, D.C. 20036, <http://www.pewforum.org/files/2009/12/multiplefaiths.pdf>