Resplendence:

A Cosmological Theory of Knowing
Complementing the Scientific Description of Reality

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Abstract: *Existential cosmology consists of a complementarity between subjective and objective aspects of existence – broadly expressed as mind and brain, or self and world. These appear to be irreducible complements because all our access to the world is via subjective consciousness while we also know that, as biological organisms we depend on our organismic integrity for conscious survival. These are in turn reflected in other complementarities in the physical description of the quantum universe, including continuous and discrete wave and particle aspects, the complementation of bosons and fermions manifesting force and radiation on the one hand and matter on the other, and symmetry-broken manifestations of biology, in the forms of ovum and sperm and female and male organisms. Human emergence has likewise been characterized by two complementary descriptions of reality, reflecting practical survival in the natural world on the one hand, which ultimately leads to science and technology, and the existential dilemma of conscious existence on the other, which ultimately leads to the major world religions and their diverse ethnic counterparts.*

While the scientific description of reality has undergone an explosive quantum leap of complexification, leading to a vastly deeper understanding of physical cosmology, the fundamental forces of nature, and the emergence and evolution of complex life, the existential description remains rooted in archaic beliefs, largely unchanged over the last two thousand years. At the same time the objective methods of science have extreme difficulty dealing with the purely subjective aspects of conscious existence. This has lead to a schizophrenic situation in world cultures, where existential beliefs are in manifest conflict, both with the scientific description of the universe we find ourselves in, and in a time of annihilating weapons of mass destruction and human impacts on natural habitats and world climate, precipitating a mass extinction of biodiversity, and thus remain completely unsuited to provide humanity with the existential world view we need to be able to responsibly protect the planet and its biosphere over evolutionary time scales and thus ensure our own survival as a consciously sentient species.

Resplendence forms a paradigm-shifting response to this predicament, by forming a cosmological theory of gnosis – i.e. subjective knowledge and wisdom – fully informed by, and consistent with, fundamental features of the scientific description of reality, presenting a method of subjective investigation complementary to the objective methods of scientific skepticism which have propelled science into its fully developed form. Far more than being merely a theory, resplendence also transcends traditional religious beliefs by providing a fulfillment of our existential quest for meaning in existence, in putting consciousness back into the natural description of cosmic evolution, as a climax manifestation of the biota complementing and consummating physical cosmology.

Complementarity in the Physical Universe

Since the advent of quantum physics, our scientific description of reality has become founded on complementary principles. At the core of this is wave-particle complementarity – the idea that every quantum manifests both discrete and continuous aspects depending on the way we are interacting with it. Complementarity is fundamental to quantum reality because the energy and momentum of a single quantum are defined by its frequency and wavelength, by defining relations, such as Einstein's law $E = h\upsilon$.

In turn the uncertainty relations such as $\Delta E \Delta t \geq h / 2\pi$ are a direct result of an energy measurement being equivalent to a frequency measurement, which requires a corresponding time interval to estimate as we can measure a quantum only by interacting with it e.g. by counting wave beats.

For example, in a two-slit interference experiment a photon is emitted as a discrete quantum of energy from a luminous source and then passes as a wave through both slits before being locally absorbed on the photographic plate again as a discrete quantum. The wave properties of quanta are as evident as their discrete particle properties, although they tend to be manifest statistically by particle absorption, via the probability interpretation of the wave function $P = \varphi^* \varphi$, as the evidence in the above experiment shows.

Moreover, although the wave function is sometimes viewed simply as a background rule determining particle statistics, all physical theories based on particle interactions implicitly have to use the wave function to make any theory make practical sense. For example, quantum electrodynamics, which is the most accurate physical

theory ever devised describes electromagnetic force fields through the interaction of all possible virtual particle interaction diagrams, in which the wave function takes the form of a Green's function particle propagator, so is still implicitly present. This complementary view fundamentally alters our idea of a classical 'atomic' universe where everything is deemed to be composed out of discrete particles.

Quantum reality also overthrows the causal determinism of the classical Newtonian universe, because the uncertainty relation places a strict limit on predictability. For each individual photon in the interference experiment we have no idea of where it will end up and only after a number have been detected do we begin to see evidence of wave interference from the statistics of particle absorption.

This 'collapse' of the wave function remains enigmatic because quantum physics predicts a superposition of states, only one of which is realized for each quantum when we examine the end result. Thus in the cat paradox experiment where a cat is given a 50-50 chance of being killed when a Geiger counter detects a radioactive scintillation, we find the cat is either alive or dead but quantum physics says it is both alive and dead, as two superimposed shadow cats, forming a kind of probability multiverse.

This has led some physicists, including Max Planck and John von Neumann to conclude that the consciousness of the observer is critical in collapsing the wave function. Physical theories that try to get around this, such as spontaneous collapse and decoherence theories, themselves run into other problems, leaving this question unresolved.

This problem becomes compounded in the fact that any special relativistic theory such as quantum electrodynamics has both advanced and retarded solutions, implying that the wave function performs a kind of hand-shaking interaction between past emitters and future absorbers, so that the wave function is as sensitive to its future boundary conditions as it is to it past, exemplified on other experiments such as the delayed choice experiment where altering the detection apparatus appears to retrospectively determine the path of an exchanged quantum.

Finally, we have the phenomenon of quantum entanglement, where two or more quanta caught coherently in the same wave function display statistics consistent with instantaneous coupling between the quanta over space-like intervals transcending local communication at the speed of light.

This fundamental wave-particle complementarity at the foundation of the physical universe is further reflected in a series of ensuing symmetry-breaking phenomena generating further complementarities. The spin of a quantum is an intrinsic wave property of its angular momentum that can have either integral or half-integral values resulting in two different forms of statistic Bose-Einstein and Fermi-Dirac. The integer spin bosons superimpose freely in a wave function as in a laser, while the half-integer fermions can only exist in complementary pairs in a single wave function. The bosons such as photons thus constitute radiation also transmitting electromagnetic force between charged particles, while the fermions such as electrons and protons constitute incompressible matter.

These lead to a chain of ensuing effects, from the complementation of real and virtual particles based on either having real positive energy or appearing and disappearing again within uncertainty, to the cosmological symmetry-breaking that result in the diverse fundamental forces of nature, electromagnetism the weak and color forces and gravity, also shaping the large-scale structure of the universe.

Complementarity in the Existential Condition

The existential condition likewise appears to be founded on an even more fundamental complementarity – that of subjective consciousness and the objective world.

From birth to death all of our experience of reality comes exclusively without exception through our subjective awareness, spanning a number of modes, from experiences of the everyday waking world, through introspective meditative and contemplative states, to the experiences of dreaming and visionary and hallucinogenic states generated by psychedelics, dissociative anesthetics and deliriants.

The fact that we are able to have highly integrated experiences of an illusory world, such as in vivid dreams and nightmares, indicates that what we assume to be experiences of the real world are actually an internal model of reality somehow generated by the brain. But this doesn't solve the problem of consciousness, because no internal model of reality, as such, using any objective physical mechanisms we know of, is of itself

capable of manifesting a completely subjective aspect transcending the very objective principles on which its function is founded.

Philosopher Jerry Fodor has made this point very succinctly: "Nobody has the slightest idea how anything material could be conscious. Nobody even knows what it would be like to have the slightest idea about how anything material could be conscious".

However, our subjective experiences of the world around us also show that we are biological organisms living in a physical universe and that if we are knocked on the head we may lose consciousness and if we are seriously injured we may die. We thus discover indirectly through our conscious experience that we are dependent on our organismic integrity to maintain consciousness and thus that our conscious condition is somehow a delicate and vulnerable product of our actively excitable brain states.

In the physical universe, consciousness remains an enigma, which we possess subjectively in ourselves, but do not directly experience the consciousness of others. Neither do we assume that machines such as a digital computer are subjectively conscious, simply because they have enough complexity to compute. We do conclude that other humans like ourselves are sentient conscious beings in a whole series of subtle ways through watching their expressions and behavior and sharing their emotions and concerns, which vividly portray their stream of consciousness in ways we can intuitively associate with our own conscious experiences, thus coming to the conclusion that we are sentient beings living in a world shared with other sentient beings.

Indeed, without subjective consciousness, it remains uncertain whether the physical universe would have any form of observable existence in and of itself. Thus, despite the vulnerability of conscious organisms and the ephemeral nature of biological life in the universe, subjective consciousness and objective reality appear to be irreducible existential complementarities in a very similar manner to the irreducible complementarity of wave and particle in physics.

Complementary Dialogues in the Historical Perspective

Since the dawn of history, humans have been involved in two complementary discovery processes, reflecting the subject-object complementarity of the existential condition.

The first is the practical knowledge of how to survive. The gatherer-hunter practical survival dialogue led to the development of tools, hunting skills and arrow poisons on the one hand and classification of food and medicinal plants, textiles, cosmetics and cooking as broadly complementary gender-based skills and discoveries. This practical knowledge is something we have had to achieve at to survive and succeed, so we have had to analyze carefully from the word go and be doubtful enough to make sure the ideas we accept actually work. This discovery process ultimately became analytical science and technology and is founded on verifiable objective assessment and being skeptical enough to flush out false beliefs.

The other discovery process has involved trying to make sense of our conscious existence in the world - where we came from, whether there is any meaning to it all and what will happen to us when we die. This has become the stuff of the creation myths and legends all cultures tell of their origins.

To survive in the world the brain has also had to strike a balance between doubt and belief and to navigate through life, we have a predilection to form central beliefs we have faith in as a working basis for confidence in the world, even though the evidence may be flimsy or non-existent. This predilection became the foundation of religious belief.

People invested the forces of nature with personalities and told one another stories of the powerful beings who made the world. These stories are not practical accounts. They are told in super-natural realms that are an imaginary extension of our conscious experience, designed to make conscious life sensible and meaningful in a precarious world.

Over time, with the formation of powerful urban cultures, these stories coalesced into our major world religions and took on other guises of a completely worldly nature. To hold large societies together it was advantageous to develop moral imperatives that inhibited intra-social strife to strengthen inter-social dominance. Despite Cicero's disclaimer subtly changing the key vowel, that the etymology of religion came from *relegere* "go through again" (in reading or in thought), consensus opinion, running, from Cicero's

contemporary Lucretius, who, in “On the Nature of Things” stated *religionum animum nodis exsolvere* – “the religious mind binds fast”, to modern scholars, considers that the word religion takes its meaning from *religere* "to bind fast" or "place an obligation upon", running back to the proto-Indo-European root *leig-* "to bind".

The great religions thus became moral cosmologies that severely punish transgressors, while holding out fantastic rewards of a life hereafter in heavenly realms. All of these are root violations of nature. The Western traditions of monotheism have been crafted in a desert atmosphere where the diversity of life is subsidiary and the Eastern traditions advocate renunciation of the natural world in favour of conscious retreat from attachments. Patriarchal religions have also sought to control female choice, ring-fenced with dire penalties to ensure the men in these societies control the reproductive process.

Both these processes are highly deleterious in a closing sustainable world. The prime necessity informing our meaning in existence is to preserve the continuity and diversity of life. None of the major religions succeed in this quest. Neither physical cosmology, nor biological evolution, are moral imperatives. Evolution fills all the niches – plants, fungi, animals, bacteria and archaea – involving both predators and prey, parasites and hosts, to reach climax diversity, with no overarching moral imperative. Morality is simply an evolutionary feature of dominant animal societies. Astute female reproductive choice has been pivotal in the emergence of human super-intelligence and needs to operate naturally without patriarchal repression for our future survival.

The Explosion of Science and the Problem of Consciousness

After several fits and starts in places, such as ancient Greece, where atomic theory was invented by Democritus around 430 BC, repeatedly resisted by religious dogma, such as the trial and indefinite imprisonment of Galileo by the Inquisition in 1633, for conclusively overthrowing the flat-Earth centric Christian cosmology, an explosion occurred in science and technology.

In the classical era, triggered by Isaac Newton’s discovery of gravity, capped by his publication in 1687 of "Mathematical Principles of Natural Philosophy", laying the foundations of classical mechanics, and co-invention of mathematical calculus, our idea of the universe became one of atomic determinism. Laplace noted that an intellect knowing the defining parameters in sufficient detail could predict the future state of the entire universe. Newtonian physics was used to support the deistic view that God had created the world as a perfect machine that then required no further interference from Him, the Newtonian world machine or Clockwork Universe.

Despite these attempts to give it a religious complexion, taken at face value, the classical scientific description of reality in the absence of a real role for consciousness becomes a living nightmare, as appeared to be the case at the beginning of the 20th century, when Bertrand Russell stated his stark and somber assessment:

Such in outline, but even more purposeless, more devoid of meaning is the world which science presents for our belief. Amid such a world, if anywhere, our ideals henceforward must find a home. That man is the product of causes that had no prevision of the end they were achieving; that his origin, his growth, his hopes and fears, his loves and his beliefs, are but the outcome of accidental collocations of atoms; that no fire, no heroism, no intensity of thought and feeling, can preserve an individual life beyond the grave, that all the labours of the ages, all the devotion, all the inspirations, all the noon-day brightness of human genius, are destined to extinction in the vast death of the solar system, and that the whole temple of man's achievement must inevitably be buried beneath the debris of a universe in ruins - all these things, if not quite beyond dispute, are yet so nearly certain, that no philosophy that rejects them can hope to stand. Only within the scaffolding of these truths, only on the firm foundation of unyielding despair, can the soul's habitation henceforth be safely built. ... Brief and powerless is man's life, on him and all his race the slow, sure doom falls pitiless and dark ...

Since this dire statement, the prognosis has improved. We understand the universe is vastly older the four thousand years presumed from Biblical genesis and that it engages annihilating forces unconceived of in religious cosmologies and yet it is teeming with billons of galaxies each hosting billions of stars, may of which have orbiting planets, and more recently, we have also discovered that the elementary molecules of life permeate the galactic gas clouds, showered down on Earth in comets and meteorites, and that life has evolved on Earth since shortly after its birth, leading to all the diverse organisms we find today, giving rise along the way to our own conscious existence.

This is without a doubt the most enthralling hopeful and exciting situation we could hope to find ourselves in. Life has been able to pull itself up by its bootstraps develop cellular organisms, and with the emergence of sexuality has managed to evolve not just the diversity of living plants fungi and animals forming a living paradise of biological diversity, but conscious humans, who can ponder our fate, into the bargain.

But what do we find? This explosion of the practical discovery process has left modern culture in a schizophrenic quandary. On the one hand we have the practical knowledge to develop weapons of mass destruction that could annihilate life as we know it and due to our exploding population are seriously disrupting the very biosphere on which we depend for our survival, but on the other hand a clear majority of people, even in developed cultures are still clinging to the ancient creation myths and ideas of God, heaven and hell that dominated our forebears thousands of years ago. Instead of being overjoyed that life can evolve to even greater heights, a good half of people flatly reject the clear evidence of evolution and cling to the archaic allegories of Biblical Genesis and an endearing inconsistent and simplistic six day creation by God.

There is a clear reason for this. The objective approach of science has fundamental difficulty dealing with the subjective conscious account of the existential dilemma.

Science and technology set out from the very beginning to be the practical knowledge of the world and how to survive. This knowledge has to be objectively right and it had to be based on careful analysis. The etymology of the word science is from *sciens* (genitive *scientis*) "intelligent, skilled," present participle of *scire* "to know," probably originally "to separate one thing from another, to distinguish," going back to the proto-Indo-European root *skei-* "to cut, split". Hence, science is and has to be analytical and verifiable to get the objective story right.

The explosion of scientific discovery has swept through all fields of investigation, leaving only three root questions not fully resolved. The first is the TOE, or theory of everything, uniting the forces of nature with cosmological processes, the second is exactly how life began on Earth and the third is how the brain generates subjective consciousness. Although the first two of these are not fully resolved, we do already have a good idea about both, with powerful theories and a good collection of confirming evidence, but the third – subjective consciousness and with it the notion of free-will remains an enigma that challenges the foundations of our scientific description of the universe.

But science, despite the burgeoning field of consciousness research into the relationship between mind and brain, has a very difficult job dealing with the central theme of the complementary story - how to make sense of a pivotally conscious existence, which is purely subjective and lies at the opposite extreme from objective scientific method of objective verification. Science is thus accused of being merely materialistic and not providing any meaning in a senseless world of tooth and claw.

The trouble is that, in basing its approach on the objective natural world and replicable phenomena that we can all agree on, classical science has great difficulty dealing with the purely subjective phenomena of sentient consciousness. We can experimentally investigate a brain state, but how do we make a scientific description of a conscious state which you claim to experience, but I can't see directly at all? Of course we are all conscious, so some aspects of the subjective realm are familiar to all, but others remain rare, controversial or enigmatic. And this leaves the thorny question: How does the objective brain generate an entirely subjective phenomenon?

Biota as Cosmological Interactive Consummation

Looked at in terms of physical cosmology, although conscious brains might appear to be an ephemeral or even accidental product of cosmic evolution, clinging to a thin layer of the planetary surface and atmosphere, dwarfed to the point of immanent annihilation by large scale energetics, from the nuclear reactions of stars to the all-consuming vortices of black holes, there is nevertheless a fundamental reason, in structural terms, why biological organisms, and with them our conscious brains, represent an absolute pinnacle of interactive cosmology.

The symmetry-breaking of the forces of nature leads to a scale-dependent interactive process, in which the fundamental particles composing matter – the fermions - form an interactive hierarchy. The quarks firstly combine in colour triplets, to form protons and neutrons and their secondary colour interactions in the form of the strong nuclear force lead to the 100 odd atomic nuclei, with the proton-neutron balance equilibriated to minimum energy by the weak radioactive force, itself a massive symmetry-broken version of electromagnetism.

In this process, a fundamental symmetry has been broken in the electromagnetic force, because the matter quarks, as opposed to their antimatter complements, have net positive electric charge, so the atomic nuclei all

have escalating positive electric charges. This in turn leads to the electronic orbitals of the chemical elements, in which negatively charges electrons orbit around positively charge nuclei.

These have periodic behavior determined by the spins of the *s*, *p*, *d*, and *f* orbitals and their hierarchy of completed shells $1s$, $2s+2p_x+2p_y+2p_z$ etc. However, the charge interactions are non-linear inverse square law forces shared by both electromagnetism and gravity in space-time, causing both forces to have chaotic properties in 3D space. This non-linear charge interaction means that the periodic table is not actually periodic, but more of a quasi-periodic spiral, in which for example the properties of O, S, Se and C, Si, Ge are quite distinct.

In turn these non-linear charge interactions lead to a cascade of bond effects, from strong covalent and ionic bonds, through polar and H-bond interactions, delocalized conjugated orbitals, hydrophobic and hydrophilic interactions in the aqueous milieu and van-der-Waal forces, with strong bonds giving way to diverse cooperative weak-bonding effects. Thus the apparent simplicity of the ball-and-stick view of molecules gives way to a fractal process, in which complex molecules such as proteins and nucleic acids have primary, secondary and tertiary structures and associate further into molecular complexes, leading to the fractal architecture of subcellular organelles such as the membrane and ribosome, to cells, tissues and organisms.

The capacity of genetically coded organisms to assemble this fractal complexity is a direct consequence of the non-linear nature of the interactions, and, if we did live in a ball-and-stick universe rather than a complementary wave-particle universe, complex life as we know it would be impossible.

From the point that replicative life emerges, we then have an interplay between the fractal laws of chemistry and the informational capacity of nucleic acids to evolve by mutation and natural selection. In this process life is able to diversify and radiate into the available ecological niches. As a result of endosymbiosis between the two founding branches of life, archaea and bacteria, the higher nucleated eukaryote cells emerged. From this point, sexuality and sexual recombination enabled the shuffling of homologous new combinations of viable genome, leading to the potentially unlimited variety of sexual organisms. This genetic altruism in turn made the emergence of complex multi-cellular organisms possible and conscious life able to evolve. We thus owe the existence of our individual consciousness to the genetic altruism of sexuality and the unbounded variety of sexual recombination as a trade-off for our mortality as sexual organisms.

In this perspective, tissues and the biota become the consummation of the interactive hierarchy of the fundamental forces of nature and thus represent a sigma of interactive complexity, as fundamental to cosmology as the alpha of the big bang and the Omega of the final heat death, big rip, or big crunch. Nowhere else in the universe, not on black holes, nor in the core of stars, nor in the trackless reaches of empty space, can the four forces of nature all enter into cumulative expression in this way.

Within this interactive pinnacle of complexity, the conscious brain forms the ultimate globally resonant dynamical system.

The Chaotically Excitable Brain, Quantum Entanglement and Free-will

This brings us to the question of how the brain generates consciousness. All the experimental evidence to date points to consciousness not being a product of any specific brain region, but rather an expression of the most integrated perceptual and cognitive processes occurring as collective product of the global brain dynamic, coordinating local processes that would otherwise be unconscious or subconscious.

Pivotal in this process are three key ideas. The first is that in terms of global activity, the brain behaves as a dynamical system, rather than the strictly 0/1 discrete signaling of a digital computer. Although neurons with long axons send pulse coded action potentials, other interneurons some of which are pivotal in organizing the overall response use continuous graded potentials. The cortex is also organized in feedback loops between excitatory and inhibitory neurons, whose interactive dynamics is consistent with a dynamical system manifest in the broad spectrum excitations we see in the EEG.

This picture is consistent with two complementary notions. The first is that the brain uses transitions in and out of chaotic phases to enable this dynamical system to be arbitrarily sensitive to environmental boundary conditions detection of which is essential for survival. The chaotic regime frees the dynamic from entrapment so it can explore the dynamical space of possibilities, while a transition to more ordered lower energy dynamic corresponds to a perceived outcome.

The second is that the many to many connections of dendritic and axonal synapses lead to a distributed form of processing somewhat like a dynamical version of a hologram, where different regions of the cortex represent different aspects of processing of a whole integrated dynamical representation. The third, closely related to this, is that phase coherence appears to be utilized in enabling networks of neurons that rise and fall together in synchrony to become reinforced, while those out of phase are filtered from conscious attention as noise.

This form of processing has a very close analogy, and possibly a common underlying basis, to the fundamental wave-particle processes in which quantum wave functions and phase beats of two waves determine the time energy/frequency relationships defining quantum uncertainty. Thus the coherent excitations of global brain dynamics may have a form of dynamical homology with events at the quantum level including the phenomena of quantum entanglement and quantum computing.

The brain is a molecular dynamical system founded on the quantum properties of the molecules, ion channels, synapses and neurons of which it is composed, and there is also evidence that when the brain is critically poised, the global dynamic can become arbitrarily sensitive to instabilities as the single neuron, ion channel or molecular level, meaning that an uncertain conscious decision may correspond to a quantum uncertain brain dynamic. This kind of processing opens up fundamental questions about entanglement and the fact that past and future boundary conditions are both involved in the quantum wave function in space-time.

In turn, a quantum-uncertain dynamic opens the Pandora's box of free-will. If the brain state of a person about to make an uncertain decision is not deterministic but is in the midst of a sensitively dependent transition out of chaos, the ensuing coherence may be a manifestation of collective quantum properties of the excitons of which the dynamic is composed inflating the implicate order of quantum entanglement and uncertainty into a global phenomenon. This would give subjective consciousness a loophole through which a subjectively conscious decision could become physically manifest.

In addition to being conscious, we all depend on an integral sense of voluntary autonomy to make any decision as simple as making a cup of coffee. None of us, with the exception of a few catatonic individuals, consider themselves to be the empty victims of their deterministic brains. Even though many decisions we do make are based on known circumstances and logical principles, much of the decision-making we address, as basis as driving a car, or walking a jungle trail, has to be done on the fly. Many decisions are also made on hunch, or intuitively without knowing all the factors involved and life is a chain of such uncertainties which are rarely, if ever repeated in a way which comes down to statistical regularity.

The critical function of consciousness is not computation as such. Despite having some 10^{10} neurons and 10^{15} synapses, we are lousy computers, with a digit span of only about seven. What consciousness provides is not computation per se, but a real time anticipatory organ that can generate an immediate response when we are about to be sprung on by a tiger, or hear the faint sound that may be a snake about to strike. These kinds of open environment anticipation problems are computationally intractable and real time anticipation is the key.

This also explains succinctly how consciousness could have evolved, firstly as a sensitively dependent environmental sense organ in single cells, through chaotic excitability, then leading to chaotically excitable globally conscious brains as multi-celled organisms evolved.

We thus end up with a plausible description of how the very complementary principles at the foundation of quantum reality, utilized in the physics of conscious brains, both represent the four-force pinnacle of cosmological interactive consummation and at the same time possess a real avenue for conscious free-will to act upon the superimposed shadow multiverses of quantum reality, to produce the line of history we see unfolding, through the conscious decision-making processes of ourselves and other's interacting with the physical world.

Resplendence as a Natural Complement to Science

To form a subjective complement to objective science requires a second description of reality possessing several key features:

(1) It needs to form a seamless complement to the existing scientific description of the natural universe, giving both descriptions mutual consistency, so that together they form a complete cosmological theory of knowledge.
(2) It requires a method of investigation specific for the subjective realm, involving validation by first-person subjective experience, with a skeptical testing of the validity of second and third person accounts, which fully complements the objective methods of empirical verification in a context of theoretical skepticism pivotal to the scientific method.
(3) It needs to be subjectively fulfilling in providing a legitimate and convincing account of the existential dilemma of incarnate conscious existence addressing the ultimate questions of the meaning of conscious life in the natural world.
(4) It needs to provide a viable world-view conducive to planetary and human survival, by addressing the role humanity plays in ensuring the resilience and abundance of the biosphere and the ongoing continuity and diversity of life, including our own species.
(5) It needs to be effective as a discovery process of the intrinsic nature of subjective consciousness, which fulfills a true understanding of consciousness from a cosmological perspective.
(6) It needs to succeed in being a communicable path of knowledge, which provides catalytic means of expression of its central principles, which can facilitate a social movement of autonomous individuals acting together with compassionate heart, to engender a realization of human culture ensuring a paradisiacal and abundant future.

This is where resplendence comes to the rescue, by forming a path of discovery of the conscious condition fully complementary to the scientific description and transcending religion by liberating the conscious discovery quest from the bondage of moral and social imperatives.

Resplendence comes from *resplendere* to "shine brightly" or "shine again", whose Proto-Indo-European root is *splend-* "to shine, glow", thus directly realizing the subjective illumination, or enlightenment, of true conscious discovery unfettered by any religious or social taboos.

The title describes resplendence as a theory of “knowing”, following the Greek *gnosis* "a knowing, knowledge, investigation; a being known," and in religious history, "higher knowledge of spiritual things," with a root *gno-* "to know" in proto-Indo-European. In this sense, it encompasses both subjective “knowing” as complementary to objective “knowledge” and “wisdom” in the sense of knowing the underlying realities and principles that are conducive to the continuity and sanctity of life and acting accordingly to facilitate a long-term epoch of future abundance.

Just as science is founded on objective verification, resplendence is founded on an exploration of knowing by each of us in the first person, not fettered by any reliance on second, or third-hand, accounts, or proscriptive, or prescriptive, religious doctrine. Just as the acid test of the scientific method is empirical verification in an atmosphere of theoretical skepticism, where a proposition holds only so long as no experimental test, which could in principle invalidate it, succeeds and every test that is consistent with the proposition is validated and independently verified. Thus the acid test of resplendence is to accept only those ideas and spiritual notions that we can independently affirm in our own subjective experience and also if necessary verify personally that people we know whose character and trustworthiness we can vouch for, also find this to be the case in their own first-person experience. Religious propositions, from the Trinity, through the Immaculate Conception, to the Day of Judgment, clearly do not fall into this category.

By putting consciousness back into its cosmological role in the natural universe, humanity and subjective existence gain a true and pivotal meaning in preserving and unfolding the diversity of life in the ongoing passage of the generations, while exploring the ever-deepening nature of subjective consciousness, resplendence provides an avenue for all of us to find true, rather than illusory, fulfillment of our life’s quest.

By opening all available routes to personal enlightenment, using all means at our disposal, including natural visionary sacraments, currently outlawed, as well as the breadth of meditative and contemplative methods, including exploration of dreaming and other forms of non-ordinary conscious experience, all the methods for visionary and mystical experience again become available in the first person, without the autonomy of the

subject being subjugated by religious imperatives, doctrines and the claimed powers of remote or long-dead prophets and sages.

Finally and pivotally, resplendence is both a basis for a vital and creative social movement, founded on personal autonomy rather than prescriptive or proscriptive belief, and collective action through shared motivation, capable of being celebrated creatively in diverse ways through art, music and cultural festivities, invoking both the abundance of planetary paradise and a fulfilling compassionate path of restorative justice.

Just as science explains how things happen, resplendence explains why we are here, as manifestations of the universe coming to know and understand itself and as conscious guardians of the diversity of life – in achieving the one thing we as conscious beings can do to fulfill our life quest and give full meaning to all our lives, in protecting the diversity of life and the future generations of humanity, so that we can all discover every more deeply the conscious condition in a resilient planetary biosphere over evolutionary time.

Rather than doctrines of faith and obedience, the three foundations of resplendence *sine qua non* are consciousness, sexuality and biodiversity – consciousness because it is the very foundation of our realization as sentient beings, sexuality because it is from the genetic altruism of sexual complementarity and the warp and weft of sexual recombination that complex, conscious multi-celled organisms have evolved and biodiversity because we as individuals, as a culture, and as a species are interdependent with the diversity of life, and as knowing guardians of this diversity, have a primary responsibility to ensure its continued survival and resilience, so long as the generations of life shall continue.

Resplendence as a Cosmology of Consciousness

As a subjective description of reality, complementing the natural universe, an outline of the cosmological landscape of resplendence becomes apparent.

Resplendence fulfills our meaning in life by consciousness shining forth in evoking a resplendent planetary paradise in which the diversity life can flourish in verdant abundance.

Subjective consciousness is a complementary manifestation of the quantum physics of how the brain forms an anticipatory internal model of reality.

As a complementary manifestation of the quantum physics in excitable nervous systems, consciousness can be manifest in a spectrum of forms and dynamics and can occur in any organism, or physical process, which manifests these physical principles, including other organisms with the same underlying basis of coherent excitability and conceivably also in other forms of physically unstable quantum process.

At an extreme, the wave function of every quantum could be considered to form the support of an elementary form of quantum consciousness as a complementary phenomenon, manifest in the collapse of the wave function, thus exerting an elementary form free-will.

Our subjective consciousness empirically spans a spectrum of ordinary and non-ordinary experiential modes, from waking sensory life, through reverie and dreaming to non-ordinary visionary experiences. These can lead to complex ornate inner experiences, which may display paradoxical features such as parallel streams of consciousness.

Some of these conscious states may have exotic space-time properties such as prescience, telepathic intuition or clairvoyance, but these may be sporadic and not consistently verifiable statistically in the way we expect of replicable physical phenomena. Therefore, second and third hand accounts need to be treated with skeptical caution.

They can also lead to states of stillness or oneness, in which the organismic boundaries of our conscious selves become unraveled. It is thus possible through meditative repose for the egotistical form of our individual consciousness to ‘relax’ into ‘disembodied’ states converging towards a form of cosmic consciousness, as the organismic constraints binding conscious experience are released, leading to the experience of ego dissolution, and oneness in Samadhi. These can also involve self-transcendent states of illuminated transfiguration.

Through our individual oneness with the cosmic subjective, our individual consciousness can merge into the consciousness of the universe experiencing and thus knowing itself – no longer through a glass darkly and come to know even also as it is known.

Through the conscious experiences of the living biota, the universe becomes self-aware, in a state of cosmological transcendence, manifest through consciousness itself. In this sense cosmic consciousness is 'reincarnated' in each of us as sentient beings by the very physics supporting conscious brain processing.

Because the laws of nature give rise to conscious biota during the mid-life phase of the universe, conscious life can exist as a perennially immortal process only during this mid-life phase of "paradise of the cosmic equator" in a consummative interactive process spanned at the extremes of time between the alpha of the cosmic origin and the Omega of the eventual demise.

In the relativistic view, space-time is eternally extant, so this does not mean that conscious existence and the meaning of life is meaningless or futile, even if the universe eventually becomes inhospitable to life, because this is the only way the universe can succeed in consummating its transcendence through manifesting consciousness in the biota.

This is a necessary trade-off to enable cosmic existence to become manifest, in much the same way sexuality is essential to create the diversity of complex individual sexual organisms, even though this results in a paradigm of mortal individuals woven together through sexual recombination of half our genes in the genetically altruistic passage of the generations.

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